SAF-RC-189
100N Field Remediation – Soil Full Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 3/11/13
INITIAL/DATE

COMMENTS:

SDG K4064 SAF-RC-189

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 124-N-9 Verification

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 #	1302002
SDG #	K4064
SAF #	RC-189
Date Received	02/01/13
# Samples	16
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	X
PAHs	X
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 82 pages.

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1302002

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client WC Hanford SAF# RC-189

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager O. Johnson

QC SW Del STL TAT 15 Days

Date Rec'd 2-1-13 Date Due 2-16-13

		A	B		C				D			
Refrigerator #		2	2		2				2			
#/Type Container	Liquid											
	Solid	1AG	1AG		1AG				1AG			
Volume	Liquid											
	Solid	120	120		125				60			
Preservatives		—	—		—				—			
ANALYSES REQUESTED →	ORGANIC: VOA	BNA	Pest/PCB	Herb	PAHs	WTPHD		INORG: Metal		NO2 NO3	PH	HEX. CHROM			

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	Lionville Laboratory Use Only: BSD	DRO/MO		METALS		N3N2	PH	ORG			
01	J1R8P6			Soil	1-30-13	1116	X	X		X		X	X	X			
02	J1R8P7			Soil	1-30-13	1110	X	X		X		X	X	X			
03	J1R8P8			Soil	1-30-13	1102	X	X		X		X	X	X			
04	J1R8P9			Soil	1-30-13	1058	X	X		X		X	X	X			
05	J1R8R0			Soil	1-30-13	1054	X	X		X		X	X	X			
06	J1R8R1			Soil	1-30-13	1121	X	X		X		X	X	X			
07	J1R8R2			Soil	1-30-13	1051	X	X		X		X	X	X			
08	J1R8R3			Soil	1-30-13	1040	X	X		X		X	X	X			
09	J1R8R4			Soil	1-30-13	1045	X	X		X		X	X	X			
10	J1R8R5			Soil	1-30-13	1035	X	X		X		X	X	X			

Special Instructions: MATRIX QC

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

Special Instructions:

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

Relinquished by	Received by	Date	Time
FedEx	[signature]	2-1-13	0950

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

0000000003

Lionville Laboratory Use Only

1302 002

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client WC Hanford OAF # RC-189

Est. Final Proj. Sampling Date

Project# Pg 1

Project Contact/Phone# Pete

Lionville Laboratory Project Manager O. Johnson

QC Del TAT 15 Days

Date Rec'd Date Due

Refrigerator #

#/Type Container	Liquid	A: 2	B: 2		C: 2			D: 2				
	Solid	1AG	1AG		1AG			1AG				
Volume	Liquid											
	Solid	120	120		120			60				
Preservatives		—	—					—				

ANALYSES REQUESTED →

	ORGANIC							INORG							
	VOA	BNA	Pest/PCB	Herb	PAHs	8310		Metal Hg	CN	NO2 NO3	PH	Hex Chrom.			
Lionville Laboratory Use Only							DRO/MO								
								METALS		NO2 NO3	PH	ANC			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
W Water, WW Waste Water, GW Groundwater, WST Waste, WI Wipe, SO Solid, S Soil, SL Sludge, SE Sediment, PC Paint Chips, O Oil, NAL Non-Aqueous Liquid, L Leachate, A Air, T Tissue, F Fish	11	J1R8R6			Soil	1-30-13	1026
	12	J1R8R7			Soil	1-30-13	1031
	13	J1R8R8			Soil	1-30-13	1112
	14	J1R8R9			Soil	1-30-13	1106
	15	J1R8T0			Soil	1-30-13	1051
	16	J1R8T1			Soil	1-30-13	1119

Special Instructions:

Special Instructions:

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

Relinquished by	Received by	Date	Time
FedEx		2-1-13	0950

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

0000000004

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-189-152 | Page 1 of 4

Collector Q. Stowe	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH
Price Code ~~8L~~ 8C 1/30/13	**Data Turnaround** ~~21~~ Days 15 1/30/13		
Project Designation 100N Field Remediation - Soil Full Protocol	**Sampling Location** 124-N-9 Verification		**SAF No.** RC-189
Ice Chest No. RCC-07-005	**Field Logbook No.** El-1652-08	**COA** R124N92000	**Method of Shipment** Fed Ex
Shipped To ~~EBERLINE SERVICES~~ LIONVILLE 1/7/13	**Offsite Property No.** A120782		**Bill of Lading/Air Bill No.** See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G	aG					
No. of Container(s)	1	1	0	1	1					
Volume	120mL	60mL	120mL	120mL	120mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	TPH-Diesel Range - WTPH-D +	PAHs - 8310					
Sample No.	Matrix *	Sample Date	Sample Time							
J1R8P6	SOIL	1-30-13	1116	X	X	X	X	X		
J1R8P7	SOIL	1-30-13	1110	X	X	X	X	X		
J1R8P8	SOIL	1-30-13	1102	X	X	X	X	X		
J1R8P9	SOIL	1-30-13	1058	X	X	X	X	X		
J1R8R0	SOIL	1-30-13	1054	X	X	X	X	X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1147 1130/13	Received By/Stored In Dennis Newman 1-30-13	Date/Time 1147
Relinquished By/Removed From Dennis Newman 1-30-13	Date/Time 1531	Received By/Stored In 1060#1 A. Freier 1-30-13	Date/Time 1531
Relinquished By/Removed From WCH A. Freier 1-31-13	Date/Time 1060#1 1153	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex 2-1-13	Date/Time 0950	Received By/Stored In VICTOR HERNANDEZ 2/1/13	Date/Time 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; pH (Soil) - 9045 1/7/13

REVIEWED BY CMB DATE 1-31-13

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

00000000005

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-152	Page 2 of 4

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Q. Stowe	Joan Kessner 375-4688	KESSNER, JH	~~8L~~ 8C dn 1/30/13 — 21 Days 15 dn 1/30/13
Project Designation 100N Field Remediation - Soil Full Protocol	**Sampling Location** 124-N-9 Verification	**SAF No.** RC-189	
Ice Chest No. RCC-07-002	**Field Logbook No.** El-1652-08 / **COA** R124N92000	**Method of Shipment** Fed Ex	
Shipped To ~~EBERLINE SERVICES~~ LIONVILLE dn 1/7/13	**Offsite Property No.** A120732	**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
None

Special Handling and/or Storage
Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G	aG					
No. of Container(s)	1	1	0	1	1					
Volume	120mL	60mL	120mL	120mL	120mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	TPH-Diesel Range - WTPH-D +	PAHs - 8310					

Sample No.	Matrix *	Sample Date	Sample Time									
J1R8R1	SOIL	1-30-13	1121	X	X	X	X	X				
J1R8R2	SOIL	1-30-13	1051	X	X	X	X	X				
J1R8R3	SOIL	1-30-13	1040	X	X	X	X	X				
J1R8R4	SOIL	1-30-13	1045	X	X	X	X	X				
J1R8R5	SOIL	1-30-13	1035	X	X	X	X	X				

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1130/13	Dennis Newman	1147 1-30-13
Dennis Newman	1-30-13 1531	A. Freier 1060#1	1531 1-30-13
A. Freier 1060#1 WCH	1-31-13 1153	Fed Ex	
Fed Ex	2-1-13 0920	Victor Hernandez	2-1-13 0920

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; pH (Soil) - 9045 dn 1/7/13

REVIEWED BY CMB DATE 1-31-13

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

0000000006

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-189-152	Page 3 of 4
Collector Q. Stowe	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH	**Price Code** ~~8L~~ 8C DN 1/30/13 **Data Turnaround** ~~21~~ 15 Days DN 1/30/13
Project Designation 100N Field Remediation - Soil Full Protocol	**Sampling Location** 124-N-9 Verification		**SAF No.** RC-189	
Ice Chest No. RCC-07-007	**Field Logbook No.** EL-1652-08	**COA** R124N92000	**Method of Shipment** Fed Ex	
Shipped To ~~EDERLINE SERVICES~~ LIONVILLE DN 1/7/13	**Offsite Property No.** A120782		**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G	aG					
No. of Container(s)	1	1	0	1	1					
Volume	120mL	60mL	120mL	120mL	120mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	TPH-Diesel Range - WTPH-D +	PAHs - 8310					
Sample No.	Matrix *	Sample Date	Sample Time							
J1R8R6	SOIL	1-30-13	1026	X	X	X	X	X		
J1R8R7	SOIL	1-30-13	1031	X	X	X	X	X		
J1R8R8	SOIL	1-30-13	1112	X	X	X	X	X		
J1R8R9	SOIL	1-30-13	1106	X	X	X	X	X		
J1R8T0	SOIL	1-30-13	1057	X	X	X	X	X		

CHAIN OF POSSESSION — **Sign/Print Names** AJ 1-30-13

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1147 1130/13	Dennis Newman	1147 1-30-13
Dennis Newman 1-30-13	1531	1060 #31 A. Freier	1531 1-30-13
A. Freier WCH	1060 #1 1-31-13 1153	Fed Ex	
Fed Ex 2-1-13	0950	Victor Hernandez 2-1-13	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; pH (Soil) - 9045 DN 1/7/13

REVIEWED BY CMB DATE 1-31-13

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

0000000007

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-152	Page 4 of 4

Collector Q. Stowe	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH	**Price Code** ~~8L~~ 8C 1/30/13	**Data Turnaround** ~~21~~ Days 15 1/30/13
Project Designation 100N Field Remediation - Soil Full Protocol	**Sampling Location** 124-N-9 Verification		**SAF No.** RC-189		
Ice Chest No. RCC-07-007	**Field Logbook No.** El-1652-08	**COA** R124N92000	**Method of Shipment** Fed Ex		
Shipped To ~~EBERLINE SERVICES~~ LIONVILLE 1/31/13	**Offsite Property No.** A 120732		**Bill of Lading/Air Bill No.** See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G	aG					
No. of Container(s)	1	1	0	1	1					
Volume	120mL	60mL	120mL	120mL	120mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions	TPH-Diesel Range - WTPH-D +	PAHs - 8310					

Sample No.	Matrix *	Sample Date 1/30/13	Sample Time									
J1R8T1	SOIL	1-30-13	1119	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Quincy Stowe	Date/Time: 1130/13 1147	Received By/Stored In: Dennis Newman	Date/Time: 1-30-13 1147
Relinquished By/Removed From: Dennis Newman	Date/Time: 1-30-13 1531	Received By/Stored In: 1060#1 A. Freier	Date/Time: 1-30-13 1531
Relinquished By/Removed From: WCH 1060#1 A. Freier	Date/Time: 1-31-13 1153	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 2-1-13 0950	Received By/Stored In: Victor Hernandez	Date/Time: 2-1-13 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; pH (Soil) - 9045

REVIEWED BY CMB DATE 1-31-13

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

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford **Date:** 2-1-13

Project/SAF/SOW/Release #: RC-189

LvL Batch #: 1302002 **Sample Custodian:** Vicki Hennig

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 794650897774 1 1 6962 7134
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 2.0 2-1.0 2-6	°C	Cooler # RCC-07-002 RCC-07-005 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	
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 _____

DRO/MO

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/18/2013 19:31

Analytical Report for Extractable Petroleum Hydrocarbons by SW846 8015

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R8P6	1302002-01	Soil	01/30/2013 11:16	02/01/2013 09:50
J1R8P7	1302002-02	Soil	01/30/2013 11:10	02/01/2013 09:50
J1R8P8	1302002-03	Soil	01/30/2013 11:02	02/01/2013 09:50
J1R8P9	1302002-04	Soil	01/30/2013 10:58	02/01/2013 09:50
J1R8R0	1302002-05	Soil	01/30/2013 10:54	02/01/2013 09:50
J1R8R1	1302002-06	Soil	01/30/2013 11:21	02/01/2013 09:50
J1R8R2	1302002-07	Soil	01/30/2013 10:51	02/01/2013 09:50
J1R8R3	1302002-08	Soil	01/30/2013 10:40	02/01/2013 09:50
J1R8R4	1302002-09	Soil	01/30/2013 10:45	02/01/2013 09:50
J1R8R5	1302002-10	Soil	01/30/2013 10:35	02/01/2013 09:50
J1R8R6	1302002-11	Soil	01/30/2013 10:26	02/01/2013 09:50
J1R8R7	1302002-12	Soil	01/30/2013 10:31	02/01/2013 09:50
J1R8R8	1302002-13	Soil	01/30/2013 11:12	02/01/2013 09:50
J1R8R9	1302002-14	Soil	01/30/2013 11:06	02/01/2013 09:50
J1R8T0	1302002-15	Soil	01/30/2013 10:51	02/01/2013 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-189 K4064
LVL #: 1302002

W.O. #: 60049-001-001-0001-00
Date Received: 02-01-2013

DIESEL RANGE ORGANICS

Fifteen (15) soil samples were collected on 01-30-2013.

The samples and associated QC samples were extracted 02-06,14-2013 and analyzed 02-10,11,17-2013 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 8015B for Diesel Range Organics.

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

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

2. The samples were originally extracted within their required holding time. Due to low surrogate recoveries in samples J1R8R7 and J1R8R8 these samples were re-extracted 1 day outside the recommended hold time. Both the original and the re-extracted results have been reported. A copy of the Sample Discrepancy Report (SDR# 13GC018) has been enclosed.

3. All required holding times for analysis have been met.

4. Two (2) of twenty-five (25) surrogate recoveries were outside QC acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 13GC018) has been enclosed.

5. The method blank was below the reporting limits for all target compounds.

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

7. All matrix spike recoveries were within QC acceptance criteria.

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.

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

2/28/13

Iain Daniels
LvL Laboratory Manager

Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 1360018

Initiator: Catherine Carey
Date: 02/12/13
Client: WC Hanford

Batch: 1302002
Samples: 12 + 13
Method: SW846/MCAWW/CLP/

Parameter: DRO
Matrix: Soil
Prep Batch: L302053

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Very low surrogate recoveries

2. Known or Probable Causes(s) Extraction issue?

3. Discussion and Proposed Action Other Description:

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

Reextract 2D.

4. Project Manager Instructions...signature/date: 2/12/13

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

5. Final Action...signature/date: 2/25/13 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

LIONVILLE LABORATORY INC.

GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/18/2013 19:31

Extractable Petroleum Hydrocarbons by SW846 8015
Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R8P6 (1302002-01) Soil								
Surrogate: p-Terphenyl	*89 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/10/2013 23:10*	*8015M*
Diesel Range Organics	3620 U	3620	ug/kg dry	1	L302053	02/06/2013 15:29	02/10/2013 23:10	8015M
Motor Oil	10800 U	10800	ug/kg dry	1	L302053	02/06/2013 15:29	02/10/2013 23:10	8015M
J1R8P7 (1302002-02) Soil								
Surrogate: p-Terphenyl	*94 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 02:03*	*8015M*
Diesel Range Organics	3610 U	3610	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 02:03	8015M
Motor Oil	10800 U	10800	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 02:03	8015M
J1R8P8 (1302002-03) Soil								
Surrogate: p-Terphenyl	*82 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 03:01*	*8015M*
Diesel Range Organics	972 J	3740	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 03:01	8015M
Motor Oil	11200 U	11200	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 03:01	8015M
J1R8P9 (1302002-04) Soil								
Surrogate: p-Terphenyl	*93 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 03:59*	*8015M*
Diesel Range Organics	1150 J	3690	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 03:59	8015M
Motor Oil	11100 U	11100	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 03:59	8015M
J1R8R0 (1302002-05) Soil								
Surrogate: p-Terphenyl	*78 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 04:56*	*8015M*
Diesel Range Organics	3950 U	3950	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 04:56	8015M
Motor Oil	11900 U	11900	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 04:56	8015M
J1R8R1 (1302002-06) Soil								
Surrogate: p-Terphenyl	*109 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 05:54*	*8015M*
Diesel Range Organics	1130 J	3500	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 05:54	8015M
Motor Oil	10500 U	10500	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 05:54	8015M

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/18/2013 19:31

Extractable Petroleum Hydrocarbons by SW846 8015
Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R8R2 (1302002-07) Soil								
Surrogate: p-Terphenyl	*108 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 10:44*	*8015M*
Diesel Range Organics	3610	3550	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 10:44	8015M
Motor Oil	7950 J	10600	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 10:44	8015M
J1R8R3 (1302002-08) Soil								
Surrogate: p-Terphenyl	*89 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 11:42*	*8015M*
Diesel Range Organics	3570 U	3570	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 11:42	8015M
Motor Oil	10700 U	10700	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 11:42	8015M
J1R8R4 (1302002-09) Soil								
Surrogate: p-Terphenyl	*87 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 12:40*	*8015M*
Diesel Range Organics	1790 J	3650	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 12:40	8015M
Motor Oil	4570 J	11000	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 12:40	8015M
J1R8R5 (1302002-10) Soil								
Surrogate: p-Terphenyl	*78 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 13:38*	*8015M*
Diesel Range Organics	3670 U	3670	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 13:38	8015M
Motor Oil	11000 U	11000	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 13:38	8015M
J1R8R6 (1302002-11) Soil								
Surrogate: p-Terphenyl	*108 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 14:36*	*8015M*
Diesel Range Organics	1560 J	3700	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 14:36	8015M
Motor Oil	11100 U	11100	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 14:36	8015M
J1R8R7 (1302002-12) Soil								
Surrogate: p-Terphenyl	*4 % **	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 15:35*	*8015M*
Diesel Range Organics	3480 U	3480	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 15:35	8015M
Motor Oil	10500 U	10500	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 15:35	8015M

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/18/2013 19:31

Extractable Petroleum Hydrocarbons by SW846 8015
Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R8R7 (1302002-12RE1) Soil								
Surrogate: p-Terphenyl	*71 %*	*39-129*			*L302115*	*02/14/2013 14:49*	*02/17/2013 16:23*	*8015M*
Diesel Range Organics	3420 U	3420	ug/kg dry	1	L302115	02/14/2013 14:49	02/17/2013 16:23	8015M
Motor Oil	10300 U	10300	ug/kg dry	1	L302115	02/14/2013 14:49	02/17/2013 16:23	8015M
J1R8R8 (1302002-13) Soil								
Surrogate: p-Terphenyl	*4 % **	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 16:33*	*8015M*
Diesel Range Organics	4040 U	4040	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 16:33	8015M
Motor Oil	12100 U	12100	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 16:33	8015M
J1R8R8 (1302002-13RE1) Soil								
Surrogate: p-Terphenyl	*65 %*	*39-129*			*L302115*	*02/14/2013 14:49*	*02/17/2013 19:16*	*8015M*
Diesel Range Organics	4050 U	4050	ug/kg dry	1	L302115	02/14/2013 14:49	02/17/2013 19:16	8015M
Motor Oil	12200 U	12200	ug/kg dry	1	L302115	02/14/2013 14:49	02/17/2013 19:16	8015M
J1R8R9 (1302002-14) Soil								
Surrogate: p-Terphenyl	*96 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 17:31*	*8015M*
Diesel Range Organics	1310 J	3840	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 17:31	8015M
Motor Oil	11500 U	11500	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 17:31	8015M
J1R8T0 (1302002-15) Soil								
Surrogate: p-Terphenyl	*119 %*	*39-129*			*L302053*	*02/06/2013 15:29*	*02/11/2013 18:29*	*8015M*
Diesel Range Organics	1330 J	3560	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 18:29	8015M
Motor Oil	3890 J	10700	ug/kg dry	1	L302053	02/06/2013 15:29	02/11/2013 18:29	8015M

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/18/2013 19:31

Extractable Petroleum Hydrocarbons by SW846 8015 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L302053 - SW 3540C									
Blank (L302053-BLK1)			Prepared: 02/06/2013 15:29 Analyzed: 02/10/2013 21:15						
Diesel Range Organics	3330 U	3330	ug/kg wet						
Motor Oil	10000 U	10000	ug/kg wet						
Surrogate: p-Terphenyl	*6850*		*ug/kg wet*	*6666.7*		*103*	*39-129*		
LCS (L302053-BS1)			Prepared: 02/06/2013 15:29 Analyzed: 02/10/2013 22:13						
Diesel Range Organics	60000	3330	ug/kg wet	66667		90	42-133		
Surrogate: p-Terphenyl	*6570*		*ug/kg wet*	*6666.7*		*99*	*39-129*		
Matrix Spike (L302053-MS1)	**Source: 1302002-01**		Prepared: 02/06/2013 15:29 Analyzed: 02/11/2013 00:08						
Diesel Range Organics	55600	3570	ug/kg dry	71372	3620 U	78	42-133		
Surrogate: p-Terphenyl	*6180*		*ug/kg dry*	*7137.2*		*87*	*39-129*		
Matrix Spike Dup (L302053-MSD1)	**Source: 1302002-01**		Prepared: 02/06/2013 15:29 Analyzed: 02/11/2013 01:01						
Diesel Range Organics	75200	3610	ug/kg dry	72293	3620 U	104	42-133	29	40
Surrogate: p-Terphenyl	*8350*		*ug/kg dry*	*7229.3*		*116*	*39-129*		
Batch L302115 - SW 3540C									
Blank (L302115-BLK1)			Prepared: 02/14/2013 14:49 Analyzed: 02/17/2013 14:27						
Diesel Range Organics	3330 U	3330	ug/kg wet						
Motor Oil	10000 U	10000	ug/kg wet						
Surrogate: p-Terphenyl	*4450*		*ug/kg wet*	*6666.7*		*67*	*39-129*		
LCS (L302115-BS1)			Prepared: 02/14/2013 14:49 Analyzed: 02/17/2013 15:25						
Diesel Range Organics	57600	3330	ug/kg wet	66667		86	42-133		
Surrogate: p-Terphenyl	*5370*		*ug/kg wet*	*6666.7*		*81*	*39-129*		

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/18/2013 19:31

Extractable Petroleum Hydrocarbons by SW846 8015 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L302115 - SW 3540C									
Matrix Spike (L302115-MS1)	**Source: 1302002-12RE1**		Prepared: 02/14/2013 14:49 Analyzed: 02/17/2013 17:20						
Diesel Range Organics	53700	3560	ug/kg dry	71203	3420 U	75	42-133		
Surrogate: p-Terphenyl	*5430*		*ug/kg dry*	*7120.3*		*76*	*39-129*		
Matrix Spike Dup (L302115-MSD1)	**Source: 1302002-12RE1**		Prepared: 02/14/2013 14:49 Analyzed: 02/17/2013 18:18						
Diesel Range Organics	63200	3540	ug/kg dry	70755	3420 U	89	42-133	17	40
Surrogate: p-Terphenyl	*6310*		*ug/kg dry*	*7075.5*		*89*	*39-129*		

PREPARATION BENCH SHEET

L302053

Lionville Laboratory

Printed: 2/8/2013 2:56:43PM

0000000021

Matrix: Solid **Prepared using: Extraction - SW 3540C** **Surrogate used: 1300029**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1302002-01	8015M DRO	02/06/2013 15:29	30.21	1				1000	WC-Hanford, Inc.	
1302002-02	8015M DRO	02/06/2013 15:29	30.22	1				1000	WC-Hanford, Inc.	
1302002-03	8015M DRO	02/06/2013 15:29	30.32	1				1000	WC-Hanford, Inc.	
1302002-04	8015M DRO	02/06/2013 15:29	30.74	1				1000	WC-Hanford, Inc.	
1302002-05	8015M DRO	02/06/2013 15:29	30.14	1				1000	WC-Hanford, Inc.	
1302002-06	8015M DRO	02/06/2013 15:29	30.46	1				1000	WC-Hanford, Inc.	
1302002-07	8015M DRO	02/06/2013 15:29	30.48	1				1000	WC-Hanford, Inc.	
1302002-08	8015M DRO	02/06/2013 15:29	30.41	1				1000	WC-Hanford, Inc.	
1302002-09	8015M DRO	02/06/2013 15:29	30.36	1				1000	WC-Hanford, Inc.	
1302002-10	8015M DRO	02/06/2013 15:29	30.39	1				1000	WC-Hanford, Inc.	
1302002-11	8015M DRO	02/06/2013 15:29	30.58	1				1000	WC-Hanford, Inc.	
1302002-12	8015M DRO	02/06/2013 15:29	30.66	1				1000	WC-Hanford, Inc.	
1302002-13	8015M DRO	02/06/2013 15:29	30.54	1				1000	WC-Hanford, Inc.	
1302002-14	8015M DRO	02/06/2013 15:29	30.41	1				1000	WC-Hanford, Inc.	
1302002-15	8015M DRO	02/06/2013 15:29	30.62	1				1000	WC-Hanford, Inc.	
L302053-BLK1	QC	02/06/2013 15:29	30	1				1000		
L302053-BS1	QC	02/06/2013 15:29	30	1	1201538		1000	1000		
L302053-MS1	QC	02/06/2013 15:29	30.61	1	1201538	1302002-01	1000	1000		
L302053-MSD1	QC	02/06/2013 15:29	30.22	1	1201538	1302002-01	1000	1000		

2/8/13 1458

Extracts Relinquished By Date

Extracts Received By Date

PREPARATION BENCH SHEET

L302115

Lionville Laboratory

Printed: 2/15/2013 12:43:08PM

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1300029**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1302002-12RE1	8015M DRO	02/14/2013 14:49	31.23	1				1000	WC-Hanford, Inc.	From L302053 by MLF on 02/14/2013
1302002-13RE1	8015M DRO	02/14/2013 14:49	30.45	1				1000	WC-Hanford, Inc.	From L302053 by MLF on 02/14/2013
L302115-BLK1	QC	02/14/2013 14:49	30	1				1000		
L302115-BS1	QC	02/14/2013 14:49	30	1	1201538		1000	1000		
L302115-MS1	QC	02/14/2013 14:49	30	1	1201538	302002-12RE	1000	1000		
L302115-MSD1	QC	02/14/2013 14:49	30.19	1	1201538	302002-12RE	1000	1000		

From L302053 on 2/14/2013 by MLF

Extracts Relinquished By — Date: 2/15/13 1243

Extracts Received By — Date: 2/15/13

PAHs

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R8P6	1302002-01	Soil	01/30/2013 11:16	02/01/2013 09:50
J1R8P7	1302002-02	Soil	01/30/2013 11:10	02/01/2013 09:50
J1R8P8	1302002-03	Soil	01/30/2013 11:02	02/01/2013 09:50
J1R8P9	1302002-04	Soil	01/30/2013 10:58	02/01/2013 09:50
J1R8R0	1302002-05	Soil	01/30/2013 10:54	02/01/2013 09:50
J1R8R1	1302002-06	Soil	01/30/2013 11:21	02/01/2013 09:50
J1R8R2	1302002-07	Soil	01/30/2013 10:51	02/01/2013 09:50
J1R8R3	1302002-08	Soil	01/30/2013 10:40	02/01/2013 09:50
J1R8R4	1302002-09	Soil	01/30/2013 10:45	02/01/2013 09:50
J1R8R5	1302002-10	Soil	01/30/2013 10:35	02/01/2013 09:50
J1R8R6	1302002-11	Soil	01/30/2013 10:26	02/01/2013 09:50
J1R8R7	1302002-12	Soil	01/30/2013 10:31	02/01/2013 09:50
J1R8R8	1302002-13	Soil	01/30/2013 11:12	02/01/2013 09:50
J1R8R9	1302002-14	Soil	01/30/2013 11:06	02/01/2013 09:50
J1R8T0	1302002-15	Soil	01/30/2013 10:51	02/01/2013 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-189 K4064
LVL #: 1302002

W.O. #: 60049-001-001-0001-00
Date Received: 02-01-2013

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

Fifteen (15) soils sample were collected on 01-30-2013.

The samples and associated QC samples were extracted 02-06-2013 and analyzed 02-11,12-2013 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8310.

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

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

Iain Daniels
LvL Laboratory Manager

2/28/13
Date

LIONVILLE LABORATORY INC.

GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

LIONVILLE LABORATORY
A division of Shealine Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8P6

1302002-01 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**10.3**		3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.55	U	3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	**14.4**		3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	**1.92**	J	3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**5.72**		3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.55	U	3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**11.2**		3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	**6.35**		3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**11.6**		3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**5.90**		3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**7.61**		3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	**2.79**	J	3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	**1.97**	J	3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**5.21**		3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.55	U	3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	**3.20**	J	3.55	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*90 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8P7

1302002-02 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**1.96**	J	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	**3.67**	J	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**2.73**	J	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**1.61**	J	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**2.25**	J	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	5.35	U	5.35	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*88 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8P8

1302002-03 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**30.5**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	**1.15**	J	3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	**36.0**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	3.70	U	3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**13.2**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.70	U	3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**32.2**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	**9.81**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**28.1**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**11.8**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**16.0**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	**8.48**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	**6.98**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**16.2**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	**1.05**	J	3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	**17.1**		3.70	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*90 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8P9

1302002-04 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**11.2**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.71	U	3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	**8.30**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	3.71	U	3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**5.07**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.71	U	3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	3.71	U	3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	**11.8**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**12.1**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**3.95**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**6.94**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	**16.2**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	**2.65**	J	3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**6.79**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.71	U	3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	**9.39**		3.71	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*92 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R0

1302002-05 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**13.9**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.90	U	3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	**25.2**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	3.90	U	3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**6.71**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.90	U	3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**14.2**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	**5.15**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**15.5**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	3.90	U	3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**7.82**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	**16.7**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	**3.04**	J	3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**8.80**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.90	U	3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	**7.02**		3.90	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*87 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R1

1302002-06 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**2.14**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**4.21**		3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	**4.49**		3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**4.60**		3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**1.76**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**2.65**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	**1.37**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**1.86**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	**1.95**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*80 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R2

1302002-07 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**2.22**	J	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**5.04**		3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**4.88**		3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**2.58**	J	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**3.05**	J	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**3.01**	J	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	3.58	U	3.58	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*86 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R3

1302002-08 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**1.15**	J	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	**1.59**	J	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	3.60	U	3.60	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*85 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R4

1302002-09 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	3.68	U	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.68	U	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	**7.21**		3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	**1.71**	J	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**1.79**	J	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.68	U	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**4.44**		3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	3.68	U	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**3.98**		3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**1.99**	J	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**3.23**	J	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	3.68	U	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	3.68	U	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**2.12**	J	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.68	U	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	**1.70**	J	3.68	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*89 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R5

1302002-10 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**11.1**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.67	U	3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	**17.1**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	3.67	U	3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**6.95**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.67	U	3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**14.1**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	**5.90**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**14.0**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**5.29**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**6.73**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	**5.48**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	**3.55**	J	3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**8.32**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.67	U	3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	**5.53**		3.67	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*92 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R6

1302002-11 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	3.74	U	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.74	U	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	**4.89**		3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	3.74	U	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**1.69**	J	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.74	U	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**4.25**		3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	**2.70**	J	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**4.16**		3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**1.39**	J	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**2.70**	J	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	3.74	U	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	3.74	U	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**1.76**	J	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.74	U	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	**1.52**	J	3.74	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*91 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R7

1302002-12 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**2.74**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthylene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Acenaphthene	**7.29**		3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluorene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Phenanthrene	**2.49**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Anthracene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Fluoranthene	**5.53**		3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Indeno[1,2,3-cd]pyrene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Pyrene	**5.27**		3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benz[a]anthracene	**3.18**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Chrysene	**2.88**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[b] fluoranthene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[k] fluoranthene	**1.19**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[a] pyrene	**2.55**	J	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Dibenz[a,h]anthracene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Benzo[g,h,i] perylene	3.51	U	3.51	ug/kg dry	1	L302051	02/06/2013	02/11/2013	8310
Surrogate: Triphenylene	*88 %*		*68-129*			*L302051*	*02/06/2013*	*02/11/2013*	*8310*

LIONVILLE LABORATORY
A division of Eastline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R8

1302002-13 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**11.4**		4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Acenaphthylene	4.04	U	4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Acenaphthene	4.04	U	4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Fluorene	4.04	U	4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Phenanthrene	**6.53**		4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Anthracene	4.04	U	4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Fluoranthene	**10.0**		4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Indeno[1,2,3-cd]pyrene	4.04	U	4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Pyrene	**11.5**		4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benz[a]anthracene	**5.93**		4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Chrysene	**5.54**		4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[b] fluoranthene	**2.83**	J	4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[k] fluoranthene	**2.77**	J	4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[a] pyrene	**5.78**		4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Dibenz[a,h]anthracene	4.04	U	4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[g,h,i] perylene	**5.88**		4.04	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Surrogate: Triphenylene	*88 %*		*68-129*			*L302051*	*02/06/2013*	*02/12/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8R9

1302002-14 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**6.77**		3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Acenaphthylene	3.79	U	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Acenaphthene	3.79	U	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Fluorene	3.79	U	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Phenanthrene	3.79	U	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Anthracene	3.79	U	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Fluoranthene	**17.2**		3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Indeno[1,2,3-cd]pyrene	**4.38**		3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Pyrene	**6.96**		3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benz[a]anthracene	**2.84**	J	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Chrysene	**3.68**	J	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[b] fluoranthene	3.79	U	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[k] fluoranthene	**1.19**	J	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[a] pyrene	**3.64**	J	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Dibenz[a,h]anthracene	3.79	U	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[g,h,i] perylene	**2.88**	J	3.79	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Surrogate: Triphenylene	*86 %*		*68-129*			*L302051*	*02/06/2013*	*02/12/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

J1R8T0

1302002-15 (Soil)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**2.41**	J	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Acenaphthylene	3.59	U	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Acenaphthene	**6.87**		3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Fluorene	3.59	U	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Phenanthrene	**2.30**	J	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Anthracene	3.59	U	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Fluoranthene	**5.30**		3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Indeno[1,2,3-cd]pyrene	**8.95**		3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Pyrene	**4.76**		3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benz[a]anthracene	**2.37**	J	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Chrysene	**3.42**	J	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[b] fluoranthene	3.59	U	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[k] fluoranthene	3.59	U	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[a] pyrene	**2.39**	J	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Dibenz[a,h]anthracene	3.59	U	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Benzo[g,h,i] perylene	**2.01**	J	3.59	ug/kg dry	1	L302051	02/06/2013	02/12/2013	8310
Surrogate: Triphenylene	*90 %*		*68-129*			*L302051*	*02/06/2013*	*02/12/2013*	*8310*

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

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 L302051 - SW 3540C										
Blank (L302051-BLK1)				Prepared: 02/06/2013 Analyzed: 02/11/2013						
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	*143*			*ug/kg wet*	*166.67*		*86*	*68-129*		
LCS (L302051-BS1)				Prepared: 02/06/2013 Analyzed: 02/11/2013						
Naphthalene	199		3.33	ug/kg wet	166.67		119	0-127		
Acenaphthylene	136		3.33	ug/kg wet	166.67		82	50-140		
Acenaphthene	138		3.33	ug/kg wet	166.67		83	17-139		
Fluorene	138		3.33	ug/kg wet	166.67		83	28-145		
Phenanthrene	143		3.33	ug/kg wet	166.67		86	30-152		
Anthracene	136		3.33	ug/kg wet	166.67		82	19-171		
Fluoranthene	154		3.33	ug/kg wet	166.67		92	34-159		
Indeno[1,2,3-cd]pyrene	148		3.33	ug/kg wet	166.67		89	31-156		
Pyrene	151		3.33	ug/kg wet	166.67		91	33-152		
Benz[a]anthracene	157		3.33	ug/kg wet	166.67		94	32-157		
Chrysene	148		3.33	ug/kg wet	166.67		89	31-159		
Benzo[b] fluoranthene	158		3.33	ug/kg wet	166.67		95	33-164		
Benzo[k] fluoranthene	154		3.33	ug/kg wet	166.67		92	28-161		
Benzo[a] pyrene	144		3.33	ug/kg wet	166.67		87	29-149		
Dibenz[a,h]anthracene	155		3.33	ug/kg wet	166.67		93	27-153		
Benzo[g,h,i] perylene	153		3.33	ug/kg wet	166.67		92	32-157		
Surrogate: Triphenylene	*153*			*ug/kg wet*	*166.67*		*92*	*68-129*		

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/17/2013 09:01

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 L302051 - SW 3540C									
Matrix Spike (L302051-MS1)	**Source: 1302002-01**		Prepared: 02/06/2013 Analyzed: 02/11/2013						
Naphthalene	211	3.63	ug/kg dry	181.57	10.3	111	0-127		
Acenaphthylene	149	3.63	ug/kg dry	181.57	3.55 U	82	50-140		
Acenaphthene	141	3.63	ug/kg dry	181.57	14.4	70	17-139		
Fluorene	150	3.63	ug/kg dry	181.57	1.92	82	28-145		
Phenanthrene	155	3.63	ug/kg dry	181.57	5.72	82	30-152		
Anthracene	147	3.63	ug/kg dry	181.57	3.55 U	81	19-171		
Fluoranthene	168	3.63	ug/kg dry	181.57	11.2	87	34-159		
Indeno[1,2,3-cd]pyrene	163	3.63	ug/kg dry	181.57	6.35	86	31-156		
Pyrene	161	3.63	ug/kg dry	181.57	11.6	82	33-152		
Benz[a]anthracene	160	3.63	ug/kg dry	181.57	5.90	85	32-157		
Chrysene	154	3.63	ug/kg dry	181.57	7.61	81	31-159		
Benzo[b] fluoranthene	172	3.63	ug/kg dry	181.57	2.79	93	33-164		
Benzo[k] fluoranthene	162	3.63	ug/kg dry	181.57	1.97	88	28-161		
Benzo[a] pyrene	158	3.63	ug/kg dry	181.57	5.21	84	29-149		
Dibenz[a,h]anthracene	162	3.63	ug/kg dry	181.57	3.55 U	89	27-153		
Benzo[g,h,i] perylene	164	3.63	ug/kg dry	181.57	3.20	88	32-157		
Surrogate: Triphenylene	*162*		*ug/kg dry*	*181.57*		*89*	*68-129*		
Matrix Spike Dup (L302051-MSD1)	**Source: 1302002-01**		Prepared: 02/06/2013 Analyzed: 02/11/2013						
Naphthalene	194	3.62	ug/kg dry	181.15	10.3	101	0-127	9	40
Acenaphthylene	129	3.62	ug/kg dry	181.15	3.55 U	71	50-140	14	40
Acenaphthene	127	3.62	ug/kg dry	181.15	14.4	62	17-139	11	40
Fluorene	134	3.62	ug/kg dry	181.15	1.92	73	28-145	12	40
Phenanthrene	150	3.62	ug/kg dry	181.15	5.72	80	30-152	3	40
Anthracene	141	3.62	ug/kg dry	181.15	3.55 U	78	19-171	4	40
Fluoranthene	169	3.62	ug/kg dry	181.15	11.2	87	34-159	0.5	40
Indeno[1,2,3-cd]pyrene	163	3.62	ug/kg dry	181.15	6.35	87	31-156	0.7	40
Pyrene	165	3.62	ug/kg dry	181.15	11.6	85	33-152	3	40
Benz[a]anthracene	164	3.62	ug/kg dry	181.15	5.90	87	32-157	3	40
Chrysene	158	3.62	ug/kg dry	181.15	7.61	83	31-159	3	40
Benzo[b] fluoranthene	176	3.62	ug/kg dry	181.15	2.79	95	33-164	3	40
Benzo[k] fluoranthene	164	3.62	ug/kg dry	181.15	1.97	89	28-161	2	40
Benzo[a] pyrene	160	3.62	ug/kg dry	181.15	5.21	86	29-149	1	40
Dibenz[a,h]anthracene	163	3.62	ug/kg dry	181.15	3.55 U	90	27-153	1	40
Benzo[g,h,i] perylene	169	3.62	ug/kg dry	181.15	3.20	92	32-157	4	40
Surrogate: Triphenylene	*161*		*ug/kg dry*	*181.15*		*89*	*68-129*		

PREPARATION BENCH SHEET

L302051

Lionville Laboratory

Printed: 2/8/2013 12:02:08PM

0000000044

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

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1302002-01	8310 PAH	02/06/2013 12:42	30.72	5				50	WC-Hanford, Inc.	
1302002-02	8310 PAH	02/06/2013 12:42	20.35	5				50	WC-Hanford, Inc.	
1302002-03	8310 PAH	02/06/2013 12:42	30.61	5				50	WC-Hanford, Inc.	
1302002-04	8310 PAH	02/06/2013 12:42	30.53	5				50	WC-Hanford, Inc.	
1302002-05	8310 PAH	02/06/2013 12:42	30.56	5				50	WC-Hanford, Inc.	
1302002-06	8310 PAH	02/06/2013 12:42	30.36	5				50	WC-Hanford, Inc.	
1302002-07	8310 PAH	02/06/2013 12:42	30.14	5				50	WC-Hanford, Inc.	
1302002-08	8310 PAH	02/06/2013 12:42	30.07	5				50	WC-Hanford, Inc.	
1302002-09	8310 PAH	02/06/2013 12:42	30.09	5				50	WC-Hanford, Inc.	
1302002-10	8310 PAH	02/06/2013 12:42	30.34	5				50	WC-Hanford, Inc.	
1302002-11	8310 PAH	02/06/2013 12:42	30.21	5				50	WC-Hanford, Inc.	
1302002-12	8310 PAH	02/06/2013 12:42	30.41	5				50	WC-Hanford, Inc.	
1302002-13	8310 PAH	02/06/2013 12:42	30.5	5				50	WC-Hanford, Inc.	
1302002-14	8310 PAH	02/06/2013 12:42	30.81	5				50	WC-Hanford, Inc.	
1302002-15	8310 PAH	02/06/2013 12:42	30.32	5				50	WC-Hanford, Inc.	
L302051-BLK1	QC	02/06/2013 12:42	30	5				50		
L302051-BS1	QC	02/06/2013 12:42	30	5	1300078		50	50		
L302051-MS1	QC	02/06/2013 12:42	30.08	5	1300078	1302002-01	50	50		
L302051-MSD1	QC	02/06/2013 12:42	30.15	5	1300078	1302002-01	50	50		

Extracts Relinquished By — Date: 2/8/13 1205

Extracts Received By — Date: 2513

METALS

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R8P6	1302002-01	Soil	01/30/2013 11:16	02/01/2013 09:50
J1R8P7	1302002-02	Soil	01/30/2013 11:10	02/01/2013 09:50
J1R8P8	1302002-03	Soil	01/30/2013 11:02	02/01/2013 09:50
J1R8P9	1302002-04	Soil	01/30/2013 10:58	02/01/2013 09:50
J1R8R0	1302002-05	Soil	01/30/2013 10:54	02/01/2013 09:50
J1R8R1	1302002-06	Soil	01/30/2013 11:21	02/01/2013 09:50
J1R8R2	1302002-07	Soil	01/30/2013 10:51	02/01/2013 09:50
J1R8R3	1302002-08	Soil	01/30/2013 10:40	02/01/2013 09:50
J1R8R4	1302002-09	Soil	01/30/2013 10:45	02/01/2013 09:50
J1R8R5	1302002-10	Soil	01/30/2013 10:35	02/01/2013 09:50
J1R8R6	1302002-11	Soil	01/30/2013 10:26	02/01/2013 09:50
J1R8R7	1302002-12	Soil	01/30/2013 10:31	02/01/2013 09:50
J1R8R8	1302002-13	Soil	01/30/2013 11:12	02/01/2013 09:50
J1R8R9	1302002-14	Soil	01/30/2013 11:06	02/01/2013 09:50
J1R8T0	1302002-15	Soil	01/30/2013 10:51	02/01/2013 09:50
J1R8T1	1302002-16	Soil	01/30/2013 11:19	02/01/2013 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-189
LVL#: 1302002
SDG/SAF#: K4064/RC-189

W.O.#: 60049-001-001-0001-00
Date Received: 02-01-13

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 16 soil samples.

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

   All samples, with the exception of sample J1R8T1, were analyzed 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 LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within method criteria.

7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD or samples greater than 20X MB value}.

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

9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer.

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

11. For analytes where the MS is out of control, a post-digestion MS (PDS) is performed. A

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

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 criteria.

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 hardcopy 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

m1302002hg%rgc.doc

LVL
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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

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 Eastline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8P6

1302002-01 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**6850**		14.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.76	U	1.76	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**1.93**	B	2.93	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**49.5**		1.46	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.275**	B	0.585	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	5.85	U	5.85	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.585	U	0.585	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**7040**		293	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**7.79**		0.585	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**8.50**		5.85	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**16.8**		2.93	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**25500**		58.5	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**4.32**		1.46	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4470**		219	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**316**		14.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	5.85	U	5.85	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**9.64**	B	11.7	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1220**		1170	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.878	U	0.878	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**329**		5.85	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.585	U	0.585	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**427**		146	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**65.3**		7.31	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**49.4**		29.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0259	U	0.0259	mg/kg dry	1	L302098	02/12/2013	02/13/2013	7471A

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8P7

1302002-02 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**7270**		15.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.85	U	1.85	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.19**	B	3.09	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**53.1**		1.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.312**	B	0.617	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	6.17	U	6.17	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.617	U	0.617	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**6370**		309	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**9.12**		0.617	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**8.36**		6.17	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**17.3**		3.09	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**25600**		61.7	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**3.94**		1.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4750**		231	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**322**		15.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.17	U	6.17	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**10.2**	B	12.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1270**		1230	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.926	U	0.926	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**504**		6.17	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.617	U	0.617	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**301**		154	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**66.5**		7.72	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**47.6**		30.9	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0317	U	0.0317	mg/kg dry	1	L302098	02/12/2013	02/13/2013	7471A

LIONVILLE LABORATORY
A division of Eastern Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8P8

1302002-03 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**9450**		15.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.85	U	1.85	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.49**	B	3.09	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**81.4**		1.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.385**	B	0.618	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	6.18	U	6.18	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.618	U	0.618	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**3550**		309	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**13.7**		0.618	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**7.19**		6.18	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**13.4**		3.09	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**20800**		61.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**6.78**		1.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4220**		232	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**393**		15.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.18	U	6.18	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**16.2**		12.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1750**		1240	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.927	U	0.927	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**692**		6.18	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.618	U	0.618	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**261**		154	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**51.8**		7.72	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**41.6**		30.9	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0319	U	0.0319	mg/kg dry	1	L302098	02/12/2013	02/13/2013	7471A

LIONVILLE LABORATORY
A division of Eastern Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8P9

1302002-04 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**8510**		16.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.96	U	1.96	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.60**	B	3.27	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**68.7**		1.63	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.304**	B	0.654	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	**1.92**	B	6.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.654	U	0.654	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**6230**		327	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**11.7**		0.654	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**7.89**		6.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**15.7**		3.27	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**23900**		65.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**5.68**		1.63	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4610**		245	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**353**		16.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.54	U	6.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**12.1**	B	13.1	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1670**		1310	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.981	U	0.981	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**523**		6.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.654	U	0.654	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**291**		163	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**62.5**		8.17	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**46.9**		32.7	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0309	U	0.0309	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R0

1302002-05 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**9580**		15.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.85	U	1.85	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**3.26**		3.08	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**77.1**		1.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.334**	B	0.617	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	**2.07**	B	6.17	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.617	U	0.617	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**8990**		308	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**14.4**		0.617	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**7.54**		6.17	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**15.5**		3.08	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**21700**		61.7	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**7.06**		1.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4730**		231	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**359**		15.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.17	U	6.17	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**15.5**		12.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1880**		1230	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.925	U	0.925	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**578**		6.17	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.617	U	0.617	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**279**		154	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**54.0**		7.71	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**43.9**		30.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0316	U	0.0316	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R1

1302002-06 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**7960**		15.1	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.81	U	1.81	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.68**	B	3.02	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**61.0**		1.51	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.316**	B	0.603	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	**1.54**	B	6.03	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.603	U	0.603	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**7310**		302	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**11.0**		0.603	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**8.42**		6.03	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**16.6**		3.02	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**25300**		60.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**7.54**		1.51	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4820**		226	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**329**		15.1	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.03	U	6.03	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**12.6**		12.1	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1440**		1210	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.905	U	0.905	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**412**		6.03	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.603	U	0.603	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**344**		151	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**70.0**		7.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**47.8**		30.2	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	**0.0107**	B	0.0291	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R2

1302002-07 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**7760**		15.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.84	U	1.84	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.11**	B	3.06	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**67.1**		1.53	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.306**	B	0.612	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	6.12	U	6.12	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.612	U	0.612	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**6030**		306	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**9.39**		0.612	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**8.08**		6.12	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**16.0**		3.06	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**26000**		61.2	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**4.78**		1.53	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4420**		230	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**341**		15.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.12	U	6.12	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**10.1**	B	12.2	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1440**		1220	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.918	U	0.918	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**399**		6.12	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.612	U	0.612	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**349**		153	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**70.9**		7.65	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**47.8**		30.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0278	U	0.0278	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R3

1302002-08 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**6120**		14.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.78	U	1.78	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**1.86**	B	2.96	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**57.6**		1.48	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.271**	B	0.592	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	5.92	U	5.92	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.592	U	0.592	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**7580**		296	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**8.01**		0.592	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**8.62**		5.92	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**16.9**		2.96	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**24400**		59.2	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**3.15**		1.48	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4570**		222	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**296**		14.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	5.92	U	5.92	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**9.49**	B	11.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**976**	B	1180	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.888	U	0.888	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**356**		5.92	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.592	U	0.592	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**358**		148	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**60.4**		7.40	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**42.8**		29.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0305	U	0.0305	mg/kg dry	1	L302098	02/12/2013	02/13/2013	7471A

LIONVILLE LABORATORY
A division of Eastline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R4

1302002-09 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**7310**		16.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.96	U	1.96	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.66**	B	3.26	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**63.1**		1.63	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.287**	B	0.653	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	6.53	U	6.53	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.653	U	0.653	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**6990**		326	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**9.36**		0.653	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**7.92**		6.53	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**16.7**		3.26	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**23700**		65.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**4.11**		1.63	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4800**		245	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**314**		16.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.53	U	6.53	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**10.5**	B	13.1	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1320**		1310	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.979	U	0.979	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**473**		6.53	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.653	U	0.653	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**327**		163	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**61.6**		8.16	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**44.4**		32.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0312	U	0.0312	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R5

1302002-10 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**7380**		15.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.89	U	1.89	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.13**	B	3.16	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**59.9**		1.58	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.302**	B	0.631	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	6.31	U	6.31	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.631	U	0.631	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**4760**		316	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**10.3**		0.631	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**7.35**		6.31	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**13.3**		3.16	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**22000**		63.1	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**4.90**		1.58	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4210**		237	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**308**		15.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.31	U	6.31	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**10.7**	B	12.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1430**		1260	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.947	U	0.947	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**489**		6.31	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.631	U	0.631	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**274**		158	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**54.3**		7.89	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**41.5**		31.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0304	U	0.0304	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R6

1302002-11 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**8360**		15.7	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.89	U	1.89	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.54**	B	3.14	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**61.8**		1.57	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.311**	B	0.629	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	**1.73**	B	6.29	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.629	U	0.629	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**6970**		314	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**11.9**		0.629	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**7.94**		6.29	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**15.7**		3.14	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**23200**		62.9	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**4.76**		1.57	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4690**		236	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**329**		15.7	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.29	U	6.29	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**11.7**	B	12.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1510**		1260	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.943	U	0.943	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**540**		6.29	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.629	U	0.629	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**354**		157	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**60.5**		7.86	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**44.6**		31.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0291	U	0.0291	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R7

1302002-12 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**6200**		15.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.85	U	1.85	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**1.53**	B	3.08	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**46.4**		1.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.252**	B	0.616	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	6.16	U	6.16	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.616	U	0.616	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**6150**		308	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**6.14**		0.616	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**9.01**		6.16	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**15.8**		3.08	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**25900**		61.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**3.58**		1.54	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4710**		231	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**327**		15.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.16	U	6.16	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**9.05**	B	12.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1030**	B	1230	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.924	U	0.924	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**328**		6.16	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.616	U	0.616	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**403**		154	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**62.7**		7.70	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**47.0**		30.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0300	U	0.0300	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R8

1302002-13 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**8390**		16.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	2.02	U	2.02	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.72**	B	3.36	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**65.3**		1.68	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.274**	B	0.673	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	6.73	U	6.73	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.673	U	0.673	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**7860**		336	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**14.2**		0.673	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**6.42**	B	6.73	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**13.6**		3.36	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**18000**		67.3	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**4.33**		1.68	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4550**		252	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**301**		16.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.73	U	6.73	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**12.8**	B	13.5	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1600**		1350	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	1.01	U	1.01	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**675**		6.73	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.673	U	0.673	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**265**		168	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**44.4**		8.41	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**37.1**		33.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0317	U	0.0317	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8R9

1302002-14 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**9080**		16.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	2.02	U	2.02	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.93**	B	3.37	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**76.0**		1.68	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.285**	B	0.674	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	**1.87**	B	6.74	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.674	U	0.674	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**6970**		337	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**13.9**		0.674	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**6.98**		6.74	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**17.4**		3.37	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**21800**		67.4	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**5.01**		1.68	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4690**		253	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**318**		16.8	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.74	U	6.74	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**12.8**	B	13.5	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1700**		1350	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	1.01	U	1.01	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**724**		6.74	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.674	U	0.674	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**298**		168	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**52.1**		8.42	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**46.3**		33.7	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0300	U	0.0300	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8T0

1302002-15 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**9280**		15.7	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Antimony	1.89	U	1.89	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Arsenic	**2.52**	B	3.15	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Barium	**66.4**		1.57	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.305**	B	0.629	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Boron	6.29	U	6.29	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.629	U	0.629	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Calcium	**7060**		315	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Chromium	**10.4**		0.629	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Cobalt	**7.88**		6.29	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Copper	**17.5**		3.15	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Iron	**23500**		62.9	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Lead	**5.12**		1.57	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**4360**		236	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Manganese	**309**		15.7	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	6.29	U	6.29	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Nickel	**11.2**	B	12.6	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Potassium	**1480**		1260	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.944	U	0.944	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silicon	**487**		6.29	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Silver	0.629	U	0.629	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Sodium	**542**		157	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**63.2**		7.86	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Zinc	**44.0**		31.5	mg/kg dry	3	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0297	U	0.0297	mg/kg dry	1	L302098	02/12/2013	02/13/2013	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

J1R8T1

1302002-16 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**212**		4.47	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Antimony	0.536	U	0.536	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Arsenic	0.893	U	0.893	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Barium	**2.55**		0.447	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Beryllium	**0.0447**	B	0.179	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Boron	1.79	U	1.79	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Cadmium	0.179	U	0.179	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Calcium	**31.4**	B	89.3	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Chromium	0.179	U	0.179	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Cobalt	1.79	U	1.79	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Copper	0.893	U	0.893	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Iron	**579**		17.9	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Lead	**0.927**		0.447	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Magnesium	**21.5**	B	67.0	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Manganese	**20.7**		4.47	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Molybdenum	1.79	U	1.79	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Nickel	3.57	U	3.57	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Potassium	**46.7**	B	357	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Selenium	0.268	U	0.268	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Silicon	**134**		1.79	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Silver	0.179	U	0.179	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Sodium	44.7	U	44.7	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Vanadium	**0.319**	B	2.23	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Zinc	**1.39**	B	8.93	mg/kg dry	1	L302097	02/12/2013	02/14/2013	6010B
Mercury	0.0281	U	0.0281	mg/kg dry	1	L302098	02/12/2013	02/13/2013	7471A

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

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 L302097 - SW 3050B										
Blank (L302097-BLK1)				Prepared: 02/12/2013 Analyzed: 02/14/2013						
Aluminum	4.90	U	4.90	mg/kg wet						
Antimony	0.588	U	0.588	mg/kg wet						
Arsenic	0.980	U	0.980	mg/kg wet						
Barium	0.490	U	0.490	mg/kg wet						
Beryllium	0.196	U	0.196	mg/kg wet						
Boron	1.96	U	1.96	mg/kg wet						
Cadmium	0.196	U	0.196	mg/kg wet						
Calcium	98.0	U	98.0	mg/kg wet						
Chromium	0.196	U	0.196	mg/kg wet						
Cobalt	1.96	U	1.96	mg/kg wet						
Copper	0.980	U	0.980	mg/kg wet						
Iron	19.6	U	19.6	mg/kg wet						
Lead	0.490	U	0.490	mg/kg wet						
Magnesium	73.5	U	73.5	mg/kg wet						
Manganese	4.90	U	4.90	mg/kg wet						
Molybdenum	1.96	U	1.96	mg/kg wet						
Nickel	3.92	U	3.92	mg/kg wet						
Potassium	392	U	392	mg/kg wet						
Selenium	0.294	U	0.294	mg/kg wet						
Silicon	1.96	U	1.96	mg/kg wet						
Silver	0.196	U	0.196	mg/kg wet						
Sodium	49.0	U	49.0	mg/kg wet						
Vanadium	2.45	U	2.45	mg/kg wet						
Zinc	9.80	U	9.80	mg/kg wet						
Duplicate (L302097-DUP1)		**Source: 1302002-01**		Prepared: 02/12/2013 Analyzed: 02/14/2013						
Aluminum	7240		15.5	mg/kg dry		6850			5	20
Antimony	1.85	U	1.85	mg/kg dry		1.76 U				20
Arsenic	2.17	B	3.09	mg/kg dry		1.93			12	20
Barium	58.6		1.55	mg/kg dry		49.5			17	20
Beryllium	0.299	B	0.618	mg/kg dry		0.275			8	20
Boron	6.18	U	6.18	mg/kg dry		5.85 U				20
Cadmium	0.618	U	0.618	mg/kg dry		0.585 U				20
Calcium	7330		309	mg/kg dry		7040			4	20
Chromium	8.19		0.618	mg/kg dry		7.79			5	20
Cobalt	7.78		6.18	mg/kg dry		8.50			9	20
Copper	17.1		3.09	mg/kg dry		16.8			2	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

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 L302097 - SW 3050B									
Duplicate (L302097-DUP1)	**Source: 1302002-01**	Prepared: 02/12/2013 Analyzed: 02/14/2013							
Iron	23300	61.8	mg/kg dry		25500			9	20
Lead	3.67	1.55	mg/kg dry		4.32			16	20
Magnesium	4640	232	mg/kg dry		4470			4	20
Manganese	320	15.5	mg/kg dry		316			1	20
Molybdenum	6.18 U	6.18	mg/kg dry		5.85 U				20
Nickel	10.1 B	12.4	mg/kg dry		9.64			4	20
Potassium	1290	1240	mg/kg dry		1220			5	20
Selenium	0.927 U	0.927	mg/kg dry		0.878 U				20
Silicon	331	6.18	mg/kg dry		329			0.8	20
Silver	0.618 U	0.618	mg/kg dry		0.585 U				20
Sodium	474	155	mg/kg dry		427			11	20
Vanadium	59.1	7.73	mg/kg dry		65.3			10	20
Zinc	42.9	30.9	mg/kg dry		49.4			14	20
Matrix Spike (L302097-MS1)	**Source: 1302002-01**	Prepared: 02/12/2013 Analyzed: 02/14/2013							
Aluminum	8710	13.9	mg/kg dry	185.14	6850	1000*	75-125		
Antimony	15.0	1.67	mg/kg dry	46.286	1.76 U	33*	75-125		
Arsenic	161	2.78	mg/kg dry	185.14	1.93	86	75-125		
Barium	235	1.39	mg/kg dry	185.14	49.5	100	75-125		
Beryllium	4.39	0.555	mg/kg dry	4.6286	0.275	89	75-125		
Boron	80.1	5.55	mg/kg dry	92.571	5.85 U	87	75-125		
Cadmium	3.96	0.555	mg/kg dry	4.6286	0.585 U	86	75-125		
Calcium	8560	278	mg/kg dry	2314.3	7040	66*	75-125		
Chromium	26.0	0.555	mg/kg dry	18.514	7.79	98	75-125		
Cobalt	47.7	5.55	mg/kg dry	46.286	8.50	85	75-125		
Copper	34.7	2.78	mg/kg dry	23.143	16.8	78	75-125		
Iron	23000	55.5	mg/kg dry	92.571	25500	-2720*	75-125		
Lead	44.9	1.39	mg/kg dry	46.286	4.32	88	75-125		
Magnesium	6540	208	mg/kg dry	2314.3	4470	89	75-125		
Manganese	391	13.9	mg/kg dry	46.286	316	162*	75-125		
Molybdenum	80.6	5.55	mg/kg dry	92.571	5.85 U	87	75-125		
Nickel	50.6	11.1	mg/kg dry	46.286	9.64	89	75-125		
Potassium	3590	1110	mg/kg dry	2314.3	1220	102	75-125		
Selenium	159	0.833	mg/kg dry	185.14	0.878 U	86	75-125		
Silicon	472	5.55	mg/kg dry	92.571	329	154*	75-125		
Silver	3.90	0.555	mg/kg dry	4.6286	0.585 U	84	75-125		
Sodium	2550	139	mg/kg dry	2314.3	427	92	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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

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 L302097 - SW 3050B									
Matrix Spike (L302097-MS1)		**Source: 1302002-01**	Prepared: 02/12/2013 Analyzed: 02/14/2013						
Vanadium	102	6.94	mg/kg dry	46.286	65.3	79	75-125		
Zinc	86.3	27.8	mg/kg dry	46.286	49.4	80	75-125		
Post Spike (L302097-PS1)		**Source: 1302002-01**	Prepared: 02/12/2013 Analyzed: 02/14/2013						
Aluminum	127000		ug/L	66000	70300	86	75-125		
Antimony	279		ug/L	300.00	-3.46	94	75-125		
Calcium	125000		ug/L	62400	72200	85	75-125		
Iron	362000		ug/L	126000	261000	80	75-125		
Manganese	5770		ug/L	3000.0	3240	84	75-125		
Silicon	9120		ug/L	6300.0	3370	91	75-125		
Reference (L302097-SRM1)			Prepared: 02/12/2013 Analyzed: 02/14/2013						
Aluminum	9900	14.4	mg/kg wet	6670.0		148	0-200.89		
Antimony	45.3	1.73	mg/kg wet	53.000		85	0-235.8		
Arsenic	113	2.88	mg/kg wet	114.00		99	82.8-117.54		
Barium	291	1.44	mg/kg wet	307.00		95	79.8-120.2		
Beryllium	105	0.577	mg/kg wet	108.00		97	82.8-117.6		
Boron	81.1	5.77	mg/kg wet	85.100		95	67.5-132.8		
Cadmium	224	0.577	mg/kg wet	225.00		99	83.6-116.4		
Calcium	3290	288	mg/kg wet	3360.0		98	83.3-116.9		
Chromium	82.0	0.577	mg/kg wet	77.200		106	73.3-126.4		
Cobalt	161	5.77	mg/kg wet	166.00		97	80.7-118.7		
Copper	265	2.88	mg/kg wet	271.00		98	80.8-119.2		
Iron	8450	57.7	mg/kg wet	8420.0		100	78.6-121.1		
Lead	185	1.44	mg/kg wet	190.00		98	81.6-118.4		
Magnesium	8190	216	mg/kg wet	8570.0		96	83.2-116.7		
Manganese	958	14.4	mg/kg wet	965.00		99	69.3-130.5		
Molybdenum	233	5.77	mg/kg wet	235.00		99	76.2-123.8		
Nickel	224	11.5	mg/kg wet	221.00		102	79.6-120.8		
Potassium	14600	1150	mg/kg wet	14400		101	81.9-118.1		
Selenium	189	0.865	mg/kg wet	187.00		101	75.9-124.6		
Silicon	562	5.77	mg/kg wet	807.00		70	0-219.3		
Silver	82.8	0.577	mg/kg wet	83.500		99	82.7-117.1		
Sodium	9420	144	mg/kg wet	9730.0		97	82.5-117.2		
Vanadium	108	7.21	mg/kg wet	98.700		109	75.9-123.6		
Zinc	199	28.8	mg/kg wet	199.00		100	78.4-121.6		

LIONVILLE LABORATORY
A division of Environmental Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/19/2013 13:14

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 L302098 - SW 7471A Prep										
Blank (L302098-BLK1)				Prepared: 02/12/2013 Analyzed: 02/13/2013						
Mercury	0.0273	U	0.0273	mg/kg wet						
Duplicate (L302098-DUP1)		**Source: 1302002-01**		Prepared: 02/12/2013 Analyzed: 02/13/2013						
Mercury	0.0289	U	0.0289	mg/kg dry		0.0259 U				20
Matrix Spike (L302098-MS1)		**Source: 1302002-01**		Prepared: 02/12/2013 Analyzed: 02/13/2013						
Mercury	0.175		0.0259	mg/kg dry	0.14373	0.0259 U	122	75-125		20
Reference (L302098-SRM1)				Prepared: 02/12/2013 Analyzed: 02/13/2013						
Mercury	1.35		0.0281	mg/kg wet	1.2900		104	62.6-138		

Lionville Laboratory Logbook #: 1194

SAMPLE DIGESTION RECORD

Digestion Batch #: L302097
Date/Time Initiated: 2/12/13 1300
Date/Time Completed: ~~2/12/13~~ 2/13/13 2000
Analyst: MW w. E.M. Watkins
Matrix (circle): (Soil) / Water Other
Method (circle one): 3005A 3010A (3050) 200.7 (1994)
pH/Turbidity: N/A for Solids.
NOTE: All temperatures are recorded as corrected temperatures

(Digested) / Undigested (circle one)
Balance #: B14
Balance Cal Verification: (Y) NA
Temp: 94°
BLOCK 1 2 (circle one)
(3)

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1302002-01		0.56	50		TO	coarse	brown soil	vegetation	
L302097-DUP1		0.53	50			"	" "	"	
MS1	0.5	0.59	50			"	" "	"	
1302002-02		0.53	50			coarse	brown soil	N/A	
03		0.55	50			coarse	dark brown soil	vegetation	
04		0.52	50			coarse	dark brown soil	N/A	
05		0.58	50			coarse	dark brown soil	rocks	
06		0.53	50			not fine	brown soil	rocks	
07		0.53	50			not fine	brown soil	rocks	
08		0.55	50			coarse	brown/tan soil	rocks	
09		0.51	50			not fine	brown soil	rocks	
10		0.53	50			not fine	brown soil	rocks	
11		0.54	50			coarse	dark brown soil	N/A	
12		0.52	50			coarse	dark brown soil	rocks	
13		0.55	50			coarse	dark brown soil	N/A	
14		0.52	50			coarse	dark brown soil	N/A	
15		0.52	50			not fine	brown soil	N/A	
16		0.56	50			coarse	ottwa sand	N/A	
1302030-01		0.52	50			coarse	brown sandy soil	rocks	
L302097-DUP2		0.53	50			"	" " "	"	
MS2	0.5	0.51	50			"	" " "	"	
1302030-02		0.52	50			fine	brown soil	N/A	
03		0.55	50			v fine	brown/tan granules	N/A	
L302097-BLK1		0.51	50			coarse	boiling chips	N/A	
SRM1	(*)	0.52	50			fine	pink sandy	"	
			MW 2/12/13						

Spiking IDs / Expiration Date:
MS# : 1300144

LCS#: 1201014 (*)

Reagent IDs:
HNO_3 0000003390
HCl 0000018301
H_2O_2 L11A03
1:1 HNO_3 637-076-07
1:1 HCl

File ID#:

Data Review By/Date:
2/20/13
RWG 4/13/13

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

Page #:

Lionville Laboratory

MERCURY PREPARATION

Logbook # 1198

Analyst: [signature]
Date 2/12/13
Start Time/Temp: 1940/92°
End Time/Temp: 2010/97°

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

Prep Batch: L302098
Worksheet: HG021301
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	
0.2ug/L		0.100		10ml	50	
1.0ug/L		0.500		10ml	50	
2.0ug/L		1.000		10ml	50	
5.0ug/L		2.500		10ml	50	
10.0ug/L		5.000		10ml	50	
ICV		0.125	2.5	10ml	50	
CCV		0.250	5.0	10ml	50	
ICB/CCB				10ml	50	
L302098-BLK1				0.33	50	
SRM1		(A)	(A)	0.32	50	
1302002-01				0.38	50	
L302098-DUP1				0.34	50	
MS1		0.500	1.0	0.38	50	
1302002-02				0.31	50	
03				0.32	50	
04				0.33	50	
05				0.34	50	
06				0.33	50	
07				0.35	50	
08				0.32	50	
09				0.32	50	
10				0.33	50	
11				0.35	50	
12				0.32	50	
13				0.35	50	
14				0.35	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1201235	2/12/13 1310
ICV/CCV/LCS	(I.V. 1201411)	N/A

Reviewed By/Date: [signature] 2/13/13

Use book # 1198 for std traceability information

Soil LCS True Value = 1.29 mg/Kg
Standard # 1201014 (A)

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

0000000042
0000000071

Lionville Laboratory

MERCURY PREPARATION

Logbook # 1198

Analyst: MLL
Date 2/12/13
Start Time/Temp: 1045 / 04°C
End Time/Temp: 1330 / 04°C

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

Prep Batch: L302098
Worksheet: HG021301
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.
1302002-15				0.33	50	
16				0.32	50	ottawa sand
1302030-01				0.32	50	MS lost during digestion, samples screened, but require redigestion
L302098-DUP2				0.33	50	
MS2		0.500	1.0	0.32	50	
1302030-02				0.33	50	
03				0.32	50	

MLL 2/12/13

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

Reviewed By/Date: 2/12/13

Soil LCS True Value = 1.04 mg/Kg
Standard # 1.04 ug/ml 0472

see book # 1198 for std traceability information

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

0000000843
0000000072

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/15/2013 13:29

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R8P6	1302002-01	Soil	01/30/2013 11:16	02/01/2013 09:50
J1R8P7	1302002-02	Soil	01/30/2013 11:10	02/01/2013 09:50
J1R8P8	1302002-03	Soil	01/30/2013 11:02	02/01/2013 09:50
J1R8P9	1302002-04	Soil	01/30/2013 10:58	02/01/2013 09:50
J1R8R0	1302002-05	Soil	01/30/2013 10:54	02/01/2013 09:50
J1R8R1	1302002-06	Soil	01/30/2013 11:21	02/01/2013 09:50
J1R8R2	1302002-07	Soil	01/30/2013 10:51	02/01/2013 09:50
J1R8R3	1302002-08	Soil	01/30/2013 10:40	02/01/2013 09:50
J1R8R4	1302002-09	Soil	01/30/2013 10:45	02/01/2013 09:50
J1R8R5	1302002-10	Soil	01/30/2013 10:35	02/01/2013 09:50
J1R8R6	1302002-11	Soil	01/30/2013 10:26	02/01/2013 09:50
J1R8R7	1302002-12	Soil	01/30/2013 10:31	02/01/2013 09:50
J1R8R8	1302002-13	Soil	01/30/2013 11:12	02/01/2013 09:50
J1R8R9	1302002-14	Soil	01/30/2013 11:06	02/01/2013 09:50
J1R8T0	1302002-15	Soil	01/30/2013 10:51	02/01/2013 09:50
J1R8T1	1302002-16	Soil	01/30/2013 11:19	02/01/2013 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-189 K4064
LVL#: 1302002 **Date Received:** 02-01-13

INORGANIC NARRATIVE

1. This narrative covers the analyses of 16 soil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the data summary report. Results for soil or solid pH are measured in water at 25°C unless otherwise specified.

   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 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.

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

2/28/13
Date

njp\i02-002

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 16 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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/15/2013 13:29

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/15/2013 13:29

Wet Chemistry

Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R8P6 (1302002-01) Soil									
%Solids	**91.5**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**0.82**	0.11	0.53	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 10:58	EPA 353.2
Hexavalent Chromium	0.22 U	0.22	0.55	mg/kg dry	1	L302099	02/12/2013 13:25	02/14/2013 15:30	SW846 7196A
pH	**8.79**		0.10	pH Units	1	L302047	02/05/2013 11:51	02/05/2013 11:51	SW846 9045D
J1R8P7 (1302002-02) Soil									
%Solids	**91.7**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**0.65**	0.10	0.50	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 10:59	EPA 353.2
Hexavalent Chromium	0.22 U	0.22	0.55	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.85**		0.10	pH Units	1	L302047	02/05/2013 12:00	02/05/2013 12:00	SW846 9045D
J1R8P8 (1302002-03) Soil									
%Solids	**88.3**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**5.14**	0.11	0.54	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:01	EPA 353.2
Hexavalent Chromium	0.23 U	0.23	0.57	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**7.27**		0.10	pH Units	1	L302047	02/05/2013 12:03	02/05/2013 12:03	SW846 9045D
J1R8P9 (1302002-04) Soil									
%Solids	**88.2**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**34.9** D	0.55	2.74	mg/kg dry	5	L302100	02/11/2013 08:00	02/11/2013 11:32	EPA 353.2
Hexavalent Chromium	0.23 U	0.23	0.57	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.11**		0.10	pH Units	1	L302047	02/05/2013 12:06	02/05/2013 12:06	SW846 9045D
J1R8R0 (1302002-05) Soil									
%Solids	**83.9**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**1.58**	0.12	0.59	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:03	EPA 353.2
Hexavalent Chromium	0.24 U	0.24	0.60	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.46**		0.10	pH Units	1	L302047	02/05/2013 12:08	02/05/2013 12:08	SW846 9045D

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/15/2013 13:29

Wet Chemistry

Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R8R1 (1302002-06) Soil									
%Solids	**93.8**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**0.82**	0.10	0.51	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:04	EPA 353.2
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.92**		0.10	pH Units	1	L302047	02/05/2013 12:11	02/05/2013 12:11	SW846 9045D
J1R8R2 (1302002-07) Soil									
%Solids	**92.5**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**1.13**	0.11	0.55	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:05	EPA 353.2
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.66**		0.10	pH Units	1	L302047	02/05/2013 12:13	02/05/2013 12:13	SW846 9045D
J1R8R3 (1302002-08) Soil									
%Solids	**92.2**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**0.57**	0.11	0.53	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:07	EPA 353.2
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.92**		0.10	pH Units	1	L302047	02/05/2013 12:16	02/05/2013 12:16	SW846 9045D
J1R8R4 (1302002-09) Soil									
%Solids	**90.1**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**1.67**	0.11	0.54	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:10	EPA 353.2
Hexavalent Chromium	0.22 U	0.22	0.55	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.81**		0.10	pH Units	1	L302047	02/05/2013 12:20	02/05/2013 12:20	SW846 9045D
J1R8R5 (1302002-10) Soil									
%Solids	**89.7**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**1.01**	0.11	0.56	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:11	EPA 353.2
Hexavalent Chromium	0.22 U	0.22	0.56	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.61**		0.10	pH Units	1	L302047	02/05/2013 12:26	02/05/2013 12:26	SW846 9045D

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. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: K4064 Project Manager: Joan Kessner	**Reported:** 02/15/2013 13:29

Wet Chemistry

Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R8R6 (1302002-11) Soil									
%Solids	**88.4**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**0.93**	0.11	0.57	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:13	EPA 353.2
Hexavalent Chromium	0.23 U	0.23	0.57	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.79**		0.10	pH Units	1	L302047	02/05/2013 12:29	02/05/2013 12:29	SW846 9045D
J1R8R7 (1302002-12) Soil									
%Solids	**93.6**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**0.54**	0.10	0.50	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:14	EPA 353.2
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.94**		0.10	pH Units	1	L302047	02/05/2013 12:33	02/05/2013 12:33	SW846 9045D
J1R8R8 (1302002-13) Soil									
%Solids	**81.1**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**2.04**	0.11	0.54	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:15	EPA 353.2
Hexavalent Chromium	0.25 U	0.25	0.62	mg/kg dry	1	L302099	02/12/2013 14:50	02/14/2013 15:30	SW846 7196A
pH	**8.51**		0.10	pH Units	1	L302047	02/05/2013 12:37	02/05/2013 12:37	SW846 9045D
J1R8R9 (1302002-14) Soil									
%Solids	**85.6**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**5.40**	0.10	0.52	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:16	EPA 353.2
Hexavalent Chromium	0.23 U	0.23	0.58	mg/kg dry	1	L302099	02/12/2013 16:35	02/14/2013 15:30	SW846 7196A
pH	**8.35**		0.10	pH Units	1	L302047	02/05/2013 12:41	02/05/2013 12:41	SW846 9045D
J1R8T0 (1302002-15) Soil									
%Solids	**91.7**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G
Nitrate/Nitrite as N	**2.07**	0.11	0.54	mg/kg dry	1	L302100	02/11/2013 08:00	02/11/2013 11:17	EPA 353.2
Hexavalent Chromium	0.22 U	0.22	0.55	mg/kg dry	1	L302099	02/12/2013 16:35	02/14/2013 15:30	SW846 7196A
pH	**8.75**		0.10	pH Units	1	L302047	02/05/2013 12:44	02/05/2013 12:44	SW846 9045D

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/15/2013 13:29

Wet Chemistry

Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R8T1 (1302002-16) Soil									
%Solids	**100**		0.1	% by Weight	1	L302030	02/04/2013 15:33	02/04/2013 15:33	SM2540G

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/15/2013 13:29

Wet Chemistry - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L302030 - % Solids										
Duplicate (L302030-DUP2)	**Source: 1302002-01**			Prepared & Analyzed: 02/04/2013 15:33						
%Solids	92.0		0.1	% by Weight		91.5			0.5	20
Batch L302047 - Default Prep GenChem										
Duplicate (L302047-DUP1)	**Source: 1302002-01**			Prepared & Analyzed: 02/05/2013 11:55						
pH	8.94		0.10	pH Units		8.79			1.69	20
Reference (L302047-SRM1)				Prepared & Analyzed: 02/05/2013 12:23						
pH	9.99		0.10	pH Units	10.000		99.9	99-101		
Reference (L302047-SRM2)				Prepared & Analyzed: 02/05/2013 13:00						
pH	3.97		0.10	pH Units	4.0000		99.2	99-101		
Reference (L302047-SRM3)				Prepared & Analyzed: 02/05/2013 13:23						
pH	10.0		0.10	pH Units	10.000		100	99-101		
Batch L302099 - Default Prep GenChem										
Blank (L302099-BLK1)				Prepared: 02/12/2013 13:25 Analyzed: 02/14/2013 15:30						
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L302099-BS1)				Prepared: 02/12/2013 13:25 Analyzed: 02/14/2013 15:30						
Hexavalent Chromium	3.86	0.20	0.50	mg/kg wet	4.0000		97	80-120		
LCS (L302099-BS2)				Prepared: 02/12/2013 13:25 Analyzed: 02/14/2013 15:30						
Hexavalent Chromium	1010 D	20.0	50.0	mg/kg wet	1036.8		98	80-120		

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-189	
2620 Fermi Avenue	Project Number: K4064	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	02/15/2013 13:29

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L302099 - Default Prep GenChem										
Duplicate (L302099-DUP1)	**Source: 1302002-01**			Prepared: 02/12/2013 13:25 Analyzed: 02/14/2013 15:30						
Hexavalent Chromium	0.22 U	0.22	0.55	mg/kg dry		0.22 U				20
Matrix Spike (L302099-MS1)	**Source: 1302002-01**			Prepared: 02/12/2013 13:25 Analyzed: 02/14/2013 15:30						
Hexavalent Chromium	3.41	0.22	0.55	mg/kg dry	4.3694	0.22 U	78	75-125		
Matrix Spike (L302099-MS2)	**Source: 1302002-01**			Prepared: 02/12/2013 13:25 Analyzed: 02/14/2013 15:30						
Hexavalent Chromium	1130 D	21.8	54.6	mg/kg dry	1238.1	0.22 U	91	75-125		
Batch L302100 - Default Prep GenChem										
Blank (L302100-BLK1)				Prepared: 02/11/2013 08:00 Analyzed: 02/11/2013 10:57						
Nitrate/Nitrite as N	0.10 U	0.10	0.50	mg/kg wet						
LCS (L302100-BS1)				Prepared: 02/11/2013 08:00 Analyzed: 02/11/2013 10:56						
Nitrate/Nitrite as N	5.39	0.10	0.50	mg/kg wet	5.0000		108	90-110		
Duplicate (L302100-DUP1)	**Source: 1302002-01**			Prepared: 02/11/2013 08:00 Analyzed: 02/11/2013 11:19						
Nitrate/Nitrite as N	0.87	0.11	0.54	mg/kg dry		0.82			5.58	20
Matrix Spike (L302100-MS1)	**Source: 1302002-01**			Prepared: 02/11/2013 08:00 Analyzed: 02/11/2013 11:31						
Nitrate/Nitrite as N	5.58	0.10	0.51	mg/kg dry	5.1493	0.82	92.5	75-125		