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

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 6/26/12
INITIAL/DATE

COMMENTS:

SDG K3917 SAF RC-029

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Waste Site: 100-D-101 Test Pits

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

11 June 2012

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

Subject: Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	1206019
SDG #	K3917
SAF #	RC-029
Date Received	06/07/12
# Samples	3
Matrix	SOIL
Volatiles	
Semivolatiles	X
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	
Herbicides	
Metals	X
Inorganics	X

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

Sincerely,

Lionville Laboratory
A Division of Eberline Analytical Corporation

Orlette S. Johnson
Project Manager

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1206019

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client WC Hanford SAF# RC-029

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager O. Johnson

QC SW Del STD TAT 15 Days

Date Rec'd 6-7-12 Date Due 6-22-19

		A	B	C	D	E
Refrigerator #		2	2	2	2	2
#/Type Container	Liquid					
	Solid	1AG	1AG	1AG	1AG	1AG
Volume	Liquid					
	Solid	120	125	125	125	125
Preservatives		-	-	-	-	-
ANALYSES REQUESTED →		ORGANIC: VOA, BNA, Pest/PCB, Herb	INORG: Metal Hg, CN	IC Anions	CrVI	PH

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

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	A 8270	B Met①	C Anions NO3,NO2	D CrVI	E PH
01	J1PPM7			S	6-4-12	0816	X	X	X	X	X
02	J1PPM8			L	L	1408	X	X	X	X	X
03	J1PPM9			L	L	1430		X			

Special Instructions: Run matrix QC

Met① = HSL + B, Mo, Si (NOTL)

Special Instructions:

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

Relinquished by	Received by	Date	Time
FedEx	V. Hernandez	6/7/12	0950

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-029-140	Page 1 of 21
Collector Q Stowe	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 8C Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 100-D-101 Test Pits		SAF No. RC-029	
Ice Chest No. RCC-07-001	Field Logbook No. EL-1601-06	COA C1D101A000	Method of Shipment fed EX	
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A110362		Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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

Preservation	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	G/P	G/P	aG					
No. of Container(s)	1	1	1	1	1					
Volume	125mL	125mL	125mL	125mL	120mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	pH (Soil) - 9045	Semi-VOA - 8270A (TCL)					

Sample No. (6-4-12 cmb)	Matrix *	Sample Date	Sample Time								
~~J1PPM6~~	~~SOIL~~										
J1PPM7	SOIL	6/4/12	0816	X	X	X	X	X			
J1PPM8	SOIL	6/4/12	1408	X	X	X	X	X			
~~J1PPM9~~ AJ 6-5-12	~~SOIL~~	~~6/4/12~~	1430	X	X	X NO	6/4/12 X				
~~J1PPN0~~ AJ 6-5-12	~~SOIL~~	NO 6/4/12									

CHAIN OF POSSESSION 6-4-12 cmb — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	6/4/12 1500	WCH MStankouch	6/4/12 1500
WCH MStankouch	6/4/12 1620	Cindy Bingham	6-4-12 1620
Cindy Bingham WCH	6-5-12 0830	Fed Ex	
Fed Ex	6-7-12 0950	VICTOR HERNANDEZ	6-7-12 0950

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2

REVIEWED BY AJ
DATE 6-5-12

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-029-140	Page 1 of 2
Collector: Q Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 8C
Data Turnaround: 15 Days (AF 6-4-12)				
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 100-D-101 Test Pits		SAF No.: RC-029	
Ice Chest No.: RCC-08-022	Field Logbook No.: EL-1601-06	COA: C1D101A000	Method of Shipment: fed EX	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A110363		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

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

Special Handling and/or Storage

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

Preservation	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C						
Type of Container	G/P	G/P	G/P	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	125mL	125mL	125mL	125mL	120mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	pH (Soil) - 9045	Semi-VOA - 8270A (TCL)						
Sample No. (6-4-12 cmb) / Matrix * / Sample Date / Sample Time											
~~J1PPM6~~ / ~~SOIL~~											
J1PPM7 / SOIL / 6/4/2012 / 0816	X	X	X	X	X	AF 6-5-12					
~~J1PPM8~~ / ~~SOIL~~ / 6/4/2012 / 1408	X	X	X	X	X	AF 6-5-12					
J1PPM9 / SOIL / 6/4/2012 / 1430	X	X	X (MS)	6/4/12 X							
~~J1PPN0~~ / ~~SOIL~~ / MS 6/4/12											

CHAIN OF POSSESSION (6-4-12 cmb) — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	6/4/12 1500	WCH MStankovich	6/4/12 1500
WCH MStankovich	6/4/12 1620	Cmb Bingham	6-4-12 1620
Cmb Bingham	6-6-12 0905	FedEx	
FedEx	6-7-12 0950	Victor Hernandez	6-7-12 0950

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2

REVIEWED BY AF DATE 6-6-12

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

WCH-EE-011

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WCH Hanford Date: 6/7/12

Project/SAF/SOW/Release #: RC-029

LvL Batch #: 1206019 Sample Custodian: Ted Hunt

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7984 7225 4714
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 3.9	°C	Cooler # RCC07-001
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvL) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☐ Yes	☑ No	NO_2, NO_3, PO_4 rec'd past recommended hold time JES 6/7/12
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☐ Yes	☑ No	see item # 12 JES 6/7/12
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A
Person Contacted _____		Date _____	

SEMIVOLATILES

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

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PPM7	1206019-01	Soil	06/04/2012 08:16	06/07/2012 09:50
J1PPM8	1206019-02	Soil	06/04/2012 14:08	06/07/2012 09:50

LIONVILLE LABORATORY
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Case Narrative

Client: WC-HANFORD RC-029 K3917
LVL #: 1206019

W.O. #: 60049-001-001-0001-00
Date Received: 06-07-2012

SEMIVOLATILE

Two (2) soil samples were collected on 06-04-2012.

The samples and associated QC samples were extracted 06-12-2012 and analyzed 06-13,18-2012 according to Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C, and the analysis procedure was based on SW846 Method 8270C for TCL Semivolatile target compounds.

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

1. Discrepancies from the sample acceptance policy have been recorded on the Sample Receipt Checklist.

2. Samples were extracted and analyzed within holding time.

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

4. All obtainable surrogate recoveries were within acceptance criteria.

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

6. All blank spike recoveries were within acceptance criteria.

7. One (1) of one hundred and twenty-eight (128) obtainable matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (12MS#116) has been enclosed.

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

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

10. Internal standard area and retention time criteria were not met for sample L206087-MSD2. The GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly and all surrogate recoveries were within QC limits; consequently, the sample was not reanalyzed.

11. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

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

Iain Daniels
LvL Laboratory Manager

6/20/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS116

Initiator: Sharon Saylor
Date: 6-19-12
Client: WCHanford 15917 RC-029

Batch: 1206019
Samples: L1206087-MS2
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: Soil
Prep Batch: L1206087

1. Reason for SDR

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

b. General Discrepancy

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

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

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

① low recovery of Dibenz[a,h]anthracene in L1206087-MS2 but L1206087-MSD2 and L1206087-BS1 are ok

2. Known or Probable Causes(s)

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)

normal

4. Project Manager Instructions...signature/date: 6/21/12

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

5. Final Action...signature/date: 6/21/12 Other Explanation:

✓ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for diposition.

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

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

GLOSSARY

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit, which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

MP - Missed Peak: Manually added peak not found by automatic quantitation program.

PA - Peak Assignment: quantitation report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene, which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

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

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

J1PPM7

1206019-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
1,2-Dichlorobenzene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
1,3-Dichlorobenzene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
1,4-Dichlorobenzene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4,5-Trichlorophenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4,6-Trichlorophenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4-Dichlorophenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4-Dimethylphenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4-Dinitrophenol	1720	U	1720	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4-Dinitrotoluene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,6-Dinitrotoluene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Chloronaphthalene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Chlorophenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Methylnaphthalene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Methylphenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Nitroaniline	1720	U	1720	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Nitrophenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
3,3'-Dichlorobenzidine	689	U	689	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
3-Nitroaniline	1720	U	1720	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4,6-Dinitro-2-methylphenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Bromophenyl Phenyl Ether	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Chloro-3-methylphenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Chloroaniline	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Chlorophenyl Phenyl Ether	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
3- and/or 4-Methylphenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Nitroaniline	1720	U	1720	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Nitrophenol	1720	U	1720	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Acenaphthene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Acenaphthylene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Anthracene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benz[a]anthracene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benzo[a] pyrene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benzo[b] fluoranthene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benzo[g,h,i] perylene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benzo[k] fluoranthene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Bis(2-chloroethoxy) methane	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C

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-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

J1PPM7

1206019-01 (Soil)

Lionville Laboratory

Semivolatile Organic Compounds by SW846 8270C

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Bis(2-chloroethyl) ether	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Bis(2-chloroisopropyl) ether	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Bis(2-ethylhexyl) phthalate	**201**	J	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Butyl Benzyl Phthalate	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Carbazole	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Chrysene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Dibenz[a,h]anthracene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Dibenzofuran	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Diethyl Phthalate	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Dimethyl Phthalate	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Di-n-butyl Phthalate	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Di-n-octyl Phthalate	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Fluoranthene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Fluorene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Hexachlorobenzene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Hexachlorobutadiene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Hexachlorocyclopentadiene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Hexachloroethane	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Indeno[1,2,3-cd]pyrene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Isophorone	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Naphthalene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Nitrobenzene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
N-Nitrosodi-n-propylamine	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
N-Nitrosodiphenylamine	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Pentachlorophenol	1720	U	1720	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Phenanthrene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Phenol	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Pyrene	344	U	344	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Unknown 2	**1420**	J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Unknown 1	**1090**	J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Unknown 3	**1550**	J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Aldol Conensate 1	**2270**	A, J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Aldol Condensate 2	**46400**	A, B, J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Surrogate: 2-Fluorophenol	*53 %*		*25-121*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*
Surrogate: Phenol-d5	*55 %*		*24-113*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*53 %*		*23-120*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

J1PPM7

1206019-01 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*59 %*	*30-115*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*42 %*	*19-122*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*62 %*	*18-137*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

J1PPM8

1206019-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
1,2-Dichlorobenzene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
1,3-Dichlorobenzene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
1,4-Dichlorobenzene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4,5-Trichlorophenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4,6-Trichlorophenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4-Dichlorophenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4-Dimethylphenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4-Dinitrophenol	1660	U	1660	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,4-Dinitrotoluene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2,6-Dinitrotoluene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Chloronaphthalene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Chlorophenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Methylnaphthalene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Methylphenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Nitroaniline	1660	U	1660	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
2-Nitrophenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
3,3'-Dichlorobenzidine	664	U	664	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
3-Nitroaniline	1660	U	1660	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4,6-Dinitro-2-methylphenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Bromophenyl Phenyl Ether	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Chloro-3-methylphenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Chloroaniline	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Chlorophenyl Phenyl Ether	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
3- and/or 4-Methylphenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Nitroaniline	1660	U	1660	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
4-Nitrophenol	1660	U	1660	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Acenaphthene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Acenaphthylene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Anthracene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benz[a]anthracene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benzo[a] pyrene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benzo[b] fluoranthene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benzo[g,h,i] perylene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Benzo[k] fluoranthene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Bis(2-chloroethoxy) methane	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

J1PPM8

1206019-02 (Soil)

Lionville Laboratory

Semivolatile Organic Compounds by SW846 8270C

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Bis(2-chloroethyl) ether	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Bis(2-chloroisopropyl) ether	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Bis(2-ethylhexyl) phthalate	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Butyl Benzyl Phthalate	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Carbazole	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Chrysene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Dibenz[a,h]anthracene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Dibenzofuran	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Diethyl Phthalate	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Dimethyl Phthalate	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Di-n-butyl Phthalate	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Di-n-octyl Phthalate	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Fluoranthene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Fluorene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Hexachlorobenzene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Hexachlorobutadiene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Hexachlorocyclopentadiene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Hexachloroethane	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Indeno[1,2,3-cd]pyrene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Isophorone	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Naphthalene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Nitrobenzene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
N-Nitrosodi-n-propylamine	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
N-Nitrosodiphenylamine	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Pentachlorophenol	1660	U	1660	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Phenanthrene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Phenol	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Pyrene	332	U	332	ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Unknown 1	**269**	J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Unknown 2	**427**	B, J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Aldol Condensate 3	**694**	A, B, J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Aldol Condensate 2	**39100**	A, B, J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
TIC:Aldol Condensate 1	**1900**	A, J		ug/kg dry	1	L206087	06/12/2012	06/13/2012	8270C
Surrogate: 2-Fluorophenol	*50 %*		*25-121*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*
Surrogate: Phenol-d5	*54 %*		*24-113*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*54 %*		*23-120*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

J1PPM8

1206019-02 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*57 %*	*30-115*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*58 %*	*19-122*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*64 %*	*18-137*			*L206087*	*06/12/2012*	*06/13/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206087 - SW 3540C										
Blank (L206087-BLK1)				Prepared: 06/12/2012 Analyzed: 06/13/2012						
1,2,4-Trichlorobenzene	330	U	330	ug/kg wet						
1,2-Dichlorobenzene	330	U	330	ug/kg wet						
1,3-Dichlorobenzene	330	U	330	ug/kg wet						
1,4-Dichlorobenzene	330	U	330	ug/kg wet						
2,4,5-Trichlorophenol	330	U	330	ug/kg wet						
2,4,6-Trichlorophenol	330	U	330	ug/kg wet						
2,4-Dichlorophenol	330	U	330	ug/kg wet						
2,4-Dimethylphenol	330	U	330	ug/kg wet						
2,4-Dinitrophenol	1650	U	1650	ug/kg wet						
2,4-Dinitrotoluene	330	U	330	ug/kg wet						
2,6-Dinitrotoluene	330	U	330	ug/kg wet						
2-Chloronaphthalene	330	U	330	ug/kg wet						
2-Chlorophenol	330	U	330	ug/kg wet						
2-Methylnaphthalene	330	U	330	ug/kg wet						
2-Methylphenol	330	U	330	ug/kg wet						
2-Nitroaniline	1650	U	1650	ug/kg wet						
2-Nitrophenol	330	U	330	ug/kg wet						
3,3'-Dichlorobenzidine	660	U	660	ug/kg wet						
3-Nitroaniline	1650	U	1650	ug/kg wet						
4,6-Dinitro-2-methylphenol	330	U	330	ug/kg wet						
4-Bromophenyl Phenyl Ether	330	U	330	ug/kg wet						
4-Chloro-3-methylphenol	330	U	330	ug/kg wet						
4-Chloroaniline	330	U	330	ug/kg wet						
4-Chlorophenyl Phenyl Ether	330	U	330	ug/kg wet						
3- and/or 4-Methylphenol	330	U	330	ug/kg wet						
4-Nitroaniline	1650	U	1650	ug/kg wet						
4-Nitrophenol	1650	U	1650	ug/kg wet						
Acenaphthene	330	U	330	ug/kg wet						
Acenaphthylene	330	U	330	ug/kg wet						
Anthracene	330	U	330	ug/kg wet						
Benz[a]anthracene	330	U	330	ug/kg wet						
Benzo[a] pyrene	330	U	330	ug/kg wet						
Benzo[b] fluoranthene	330	U	330	ug/kg wet						
Benzo[g,h,i] perylene	330	U	330	ug/kg wet						
Benzo[k] fluoranthene	330	U	330	ug/kg wet						
Bis(2-chloroethoxy) methane	330	U	330	ug/kg wet						

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206087 - SW 3540C										
Blank (L206087-BLK1)				Prepared: 06/12/2012 Analyzed: 06/13/2012						
Bis(2-chloroethyl) ether	330	U	330	ug/kg wet						
Bis(2-chloroisopropyl) ether	330	U	330	ug/kg wet						
Bis(2-ethylhexyl) phthalate	330	U	330	ug/kg wet						
Butyl Benzyl Phthalate	330	U	330	ug/kg wet						
Carbazole	330	U	330	ug/kg wet						
Chrysene	330	U	330	ug/kg wet						
Dibenz[a,h]anthracene	330	U	330	ug/kg wet						
Dibenzofuran	330	U	330	ug/kg wet						
Diethyl Phthalate	330	U	330	ug/kg wet						
Dimethyl Phthalate	330	U	330	ug/kg wet						
Di-n-butyl Phthalate	330	U	330	ug/kg wet						
Di-n-octyl Phthalate	330	U	330	ug/kg wet						
Fluoranthene	330	U	330	ug/kg wet						
Fluorene	330	U	330	ug/kg wet						
Hexachlorobenzene	330	U	330	ug/kg wet						
Hexachlorobutadiene	330	U	330	ug/kg wet						
Hexachlorocyclopentadiene	330	U	330	ug/kg wet						
Hexachloroethane	330	U	330	ug/kg wet						
Indeno[1,2,3-cd]pyrene	330	U	330	ug/kg wet						
Isophorone	330	U	330	ug/kg wet						
Naphthalene	330	U	330	ug/kg wet						
Nitrobenzene	330	U	330	ug/kg wet						
N-Nitrosodi-n-propylamine	330	U	330	ug/kg wet						
N-Nitrosodiphenylamine	330	U	330	ug/kg wet						
Pentachlorophenol	1650	U	1650	ug/kg wet						
Phenanthrene	330	U	330	ug/kg wet						
Phenol	330	U	330	ug/kg wet						
Pyrene	330	U	330	ug/kg wet						
Unknown 1	2240	J		ug/kg wet						
Trichloro-1-propene	1250	J		ug/kg wet						
Aldol Condensate 2	924	A, J		ug/kg wet						
Aldol Condensate 3	740	A, J		ug/kg wet						
Aldol Condensate 1	10900	A, J		ug/kg wet						
Surrogate: 2-Fluorophenol	*1490*			*ug/kg wet*	*2500.0*		*60*	*25-121*		
Surrogate: Phenol-d5	*1570*			*ug/kg wet*	*2500.0*		*63*	*24-113*		
Surrogate: Nitrobenzene-d5	*756*			*ug/kg wet*	*1666.7*		*45*	*23-120*		

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206087 - SW 3540C									
Blank (L206087-BLK1)			Prepared: 06/12/2012 Analyzed: 06/13/2012						
Surrogate: 2-Fluorobiphenyl	*1200*		*ug/kg wet*	*1666.7*		*72*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1870*		*ug/kg wet*	*2500.0*		*75*	*19-122*		
Surrogate: p-Terphenyl-d14	*1250*		*ug/kg wet*	*1666.7*		*75*	*18-137*		
LCS (L206087-BS1)			Prepared: 06/12/2012 Analyzed: 06/18/2012						
1,2,4-Trichlorobenzene	1210		ug/kg wet	2000.0		60	45-110		
1,2-Dichlorobenzene	1380		ug/kg wet	2000.0		69	45-105		
1,3-Dichlorobenzene	1320		ug/kg wet	2000.0		66	40-100		
1,4-Dichlorobenzene	1360		ug/kg wet	2000.0		68	35-105		
2,4,5-Trichlorophenol	1350		ug/kg wet	2000.0		68	30-140		
2,4,6-Trichlorophenol	805		ug/kg wet	2000.0		40	20-110		
2,4-Dichlorophenol	1240		ug/kg wet	2000.0		62	40-110		
2,4-Dimethylphenol	1160		ug/kg wet	2000.0		58	30-105		
2,4-Dinitrophenol	744		ug/kg wet	2000.0		37	25-130		
2,4-Dinitrotoluene	1600		ug/kg wet	2000.0		80	50-115		
2,6-Dinitrotoluene	1550		ug/kg wet	2000.0		77	40-120		
2-Chloronaphthalene	1460		ug/kg wet	2000.0		73	45-115		
2-Chlorophenol	1350		ug/kg wet	2000.0		68	45-105		
2-Methylnaphthalene	1200		ug/kg wet	2000.0		60	45-110		
2-Methylphenol	1430		ug/kg wet	2000.0		71	40-120		
2-Nitroaniline	1570		ug/kg wet	2000.0		79	45-120		
2-Nitrophenol	1200		ug/kg wet	2000.0		60	40-110		
3,3'-Dichlorobenzidine	1210		ug/kg wet	2000.0		60	15-130		
3-Nitroaniline	1500		ug/kg wet	2000.0		75	40-130		
4,6-Dinitro-2-methylphenol	1040		ug/kg wet	2000.0		52	20-140		
4-Bromophenyl Phenyl Ether	1520		ug/kg wet	2000.0		76	45-115		
4-Chloro-3-methylphenol	1330		ug/kg wet	2000.0		67	35-115		
4-Chloroaniline	843		ug/kg wet	2000.0		42	10-100		
4-Chlorophenyl Phenyl Ether	1510		ug/kg wet	2000.0		76	45-110		
3- and/or 4-Methylphenol	1450		ug/kg wet	2000.0		73	40-120		
4-Nitroaniline	1540		ug/kg wet	2000.0		77	40-130		
4-Nitrophenol	1560		ug/kg wet	2000.0		78	15-140		
Acenaphthene	1470		ug/kg wet	2000.0		73	45-110		
Acenaphthylene	1220		ug/kg wet	2000.0		61	45-115		
Anthracene	1490		ug/kg wet	2000.0		75	45-130		
Benz[a]anthracene	1540		ug/kg wet	2000.0		77	45-130		
Benzo[a] pyrene	1500		ug/kg wet	2000.0		75	45-130		

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206087 - SW 3540C									
LCS (L206087-BS1)			Prepared: 06/12/2012 Analyzed: 06/18/2012						
Benzo[b] fluoranthene	1600		ug/kg wet	2000.0		80	40-130		
Benzo[g,h,i] perylene	1670		ug/kg wet	2000.0		83	45-125		
Benzo[k] fluoranthene	1510		ug/kg wet	2000.0		75	45-125		
Bis(2-chloroethoxy) methane	1200		ug/kg wet	2000.0		60	45-110		
Bis(2-chloroethyl) ether	1360		ug/kg wet	2000.0		68	40-110		
Bis(2-chloroisopropyl) ether	1310		ug/kg wet	2000.0		65	30-115		
Bis(2-ethylhexyl) phthalate	1590		ug/kg wet	2000.0		79	40-145		
Butyl Benzyl Phthalate	1510		ug/kg wet	2000.0		75	50-125		
Carbazole	1640		ug/kg wet	2000.0		82	40-140		
Chrysene	1620		ug/kg wet	2000.0		81	45-130		
Dibenz[a,h]anthracene	1060		ug/kg wet	2000.0		53	45-125		
Dibenzofuran	1510		ug/kg wet	2000.0		76	45-120		
Diethyl Phthalate	1540		ug/kg wet	2000.0		77	50-125		
Dimethyl Phthalate	1480		ug/kg wet	2000.0		74	45-130		
Di-n-butyl Phthalate	1480		ug/kg wet	2000.0		74	50-130		
Di-n-octyl Phthalate	1570		ug/kg wet	2000.0		78	40-150		
Fluoranthene	1560		ug/kg wet	2000.0		78	45-130		
Fluorene	1540		ug/kg wet	2000.0		77	45-120		
Hexachlorobenzene	1660		ug/kg wet	2000.0		83	45-130		
Hexachlorobutadiene	1340		ug/kg wet	2000.0		67	45-105		
Hexachlorocyclopentadiene	311		ug/kg wet	2000.0		16	10-100		
Hexachloroethane	1320		ug/kg wet	2000.0		66	35-110		
Indeno[1,2,3-cd]pyrene	1560		ug/kg wet	2000.0		78	45-130		
Isophorone	1140		ug/kg wet	2000.0		57	40-110		
Naphthalene	1300		ug/kg wet	2000.0		65	40-110		
Nitrobenzene	1150		ug/kg wet	2000.0		57	40-105		
N-Nitrosodi-n-propylamine	1430		ug/kg wet	2000.0		72	30-130		
N-Nitrosodiphenylamine	1480		ug/kg wet	2000.0		74	50-120		
Pentachlorophenol	1220		ug/kg wet	2000.0		61	25-120		
Phenanthrene	1570		ug/kg wet	2000.0		78	50-120		
Phenol	1420		ug/kg wet	2000.0		71	40-115		
Pyrene	1490		ug/kg wet	2000.0		75	45-125		
Surrogate: 2-Fluorophenol	*1800*		*ug/kg wet*	*2500.0*		*72*	*25-121*		
Surrogate: Phenol-d5	*1840*		*ug/kg wet*	*2500.0*		*74*	*24-113*		
Surrogate: Nitrobenzene-d5	*974*		*ug/kg wet*	*1666.7*		*58*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1190*		*ug/kg wet*	*1666.7*		*71*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*959*		*ug/kg wet*	*2500.0*		*38*	*19-122*		

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206087 - SW 3540C									
LCS (L206087-BS1)			Prepared: 06/12/2012 Analyzed: 06/18/2012						
Surrogate: p-Terphenyl-d14	*1260*		*ug/kg wet*	*1666.7*		*75*	*18-137*		
Matrix Spike (L206087-MS2)	**Source: 1206019-01**		Prepared: 06/12/2012 Analyzed: 06/18/2012						
1,2,4-Trichlorobenzene	987	346	ug/kg dry	2099.1	344 U	47	45-110		
1,2-Dichlorobenzene	1070	346	ug/kg dry	2099.1	344 U	51	45-105		
1,3-Dichlorobenzene	1020	346	ug/kg dry	2099.1	344 U	48	40-100		
1,4-Dichlorobenzene	1030	346	ug/kg dry	2099.1	344 U	49	35-105		
2,4,5-Trichlorophenol	1240	346	ug/kg dry	2099.1	344 U	59	30-140		
2,4,6-Trichlorophenol	1020	346	ug/kg dry	2099.1	344 U	48	20-110		
2,4-Dichlorophenol	1030	346	ug/kg dry	2099.1	344 U	49	40-110		
2,4-Dimethylphenol	937	346	ug/kg dry	2099.1	344 U	45	30-105		
2,4-Dinitrophenol	1130 J	1730	ug/kg dry	2099.1	1720 U	54	25-130		
2,4-Dinitrotoluene	1370	346	ug/kg dry	2099.1	344 U	65	50-115		
2,6-Dinitrotoluene	1330	346	ug/kg dry	2099.1	344 U	63	40-120		
2-Chloronaphthalene	1140	346	ug/kg dry	2099.1	344 U	54	45-115		
2-Chlorophenol	1120	346	ug/kg dry	2099.1	344 U	53	45-105		
2-Methylnaphthalene	1010	346	ug/kg dry	2099.1	344 U	48	45-110		
2-Methylphenol	1210	346	ug/kg dry	2099.1	344 U	58	40-120		
2-Nitroaniline	1340 J	1730	ug/kg dry	2099.1	1720 U	64	45-120		
2-Nitrophenol	1030	346	ug/kg dry	2099.1	344 U	49	40-110		
3,3'-Dichlorobenzidine	1350	693	ug/kg dry	2099.1	689 U	64	15-130		
3-Nitroaniline	1410 J	1730	ug/kg dry	2099.1	1720 U	67	40-130		
4,6-Dinitro-2-methylphenol	1250	346	ug/kg dry	2099.1	344 U	60	20-140		
4-Bromophenyl Phenyl Ether	1270	346	ug/kg dry	2099.1	344 U	61	45-115		
4-Chloro-3-methylphenol	1130	346	ug/kg dry	2099.1	344 U	54	35-115		
4-Chloroaniline	940	346	ug/kg dry	2099.1	344 U	45	10-100		
4-Chlorophenyl Phenyl Ether	1270	346	ug/kg dry	2099.1	344 U	60	45-110		
3- and/or 4-Methylphenol	1220	346	ug/kg dry	2099.1	344 U	58	40-120		
4-Nitroaniline	1480 J	1730	ug/kg dry	2099.1	1720 U	70	40-130		
4-Nitrophenol	1410 J	1730	ug/kg dry	2099.1	1720 U	67	15-140		
Acenaphthene	1200	346	ug/kg dry	2099.1	344 U	57	45-110		
Acenaphthylene	1030	346	ug/kg dry	2099.1	344 U	49	45-115		
Anthracene	1250	346	ug/kg dry	2099.1	344 U	60	45-130		
Benz[a]anthracene	1310	346	ug/kg dry	2099.1	344 U	63	45-130		
Benzo[a] pyrene	1280	346	ug/kg dry	2099.1	344 U	61	45-130		
Benzo[b] fluoranthene	1270	346	ug/kg dry	2099.1	344 U	61	40-130		
Benzo[g,h,i] perylene	1380	346	ug/kg dry	2099.1	344 U	66	45-125		

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206087 - SW 3540C									
Matrix Spike (L206087-MS2)	**Source: 1206019-01**	Prepared: 06/12/2012 Analyzed: 06/18/2012							
Benzo[k] fluoranthene	1250	346	ug/kg dry	2099.1	344 U	60	45-125		
Bis(2-chloroethoxy) methane	1020	346	ug/kg dry	2099.1	344 U	48	45-110		
Bis(2-chloroethyl) ether	1100	346	ug/kg dry	2099.1	344 U	53	40-110		
Bis(2-chloroisopropyl) ether	1100	346	ug/kg dry	2099.1	344 U	52	30-115		
Bis(2-ethylhexyl) phthalate	1520	346	ug/kg dry	2099.1	201	63	40-145		
Butyl Benzyl Phthalate	1340	346	ug/kg dry	2099.1	344 U	64	50-125		
Carbazole	1460	346	ug/kg dry	2099.1	344 U	70	40-140		
Chrysene	1360	346	ug/kg dry	2099.1	344 U	65	45-130		
Dibenz[a,h]anthracene	876	346	ug/kg dry	2099.1	344 U	42*	45-125		
Dibenzofuran	1270	346	ug/kg dry	2099.1	344 U	61	45-120		
Diethyl Phthalate	1320	346	ug/kg dry	2099.1	344 U	63	50-125		
Dimethyl Phthalate	1240	346	ug/kg dry	2099.1	344 U	59	45-130		
Di-n-butyl Phthalate	1220	346	ug/kg dry	2099.1	344 U	58	50-130		
Di-n-octyl Phthalate	1240	346	ug/kg dry	2099.1	344 U	59	40-150		
Fluoranthene	1320	346	ug/kg dry	2099.1	344 U	63	45-130		
Fluorene	1280	346	ug/kg dry	2099.1	344 U	61	45-120		
Hexachlorobenzene	1330	346	ug/kg dry	2099.1	344 U	63	45-130		
Hexachlorobutadiene	1060	346	ug/kg dry	2099.1	344 U	50	45-105		
Hexachlorocyclopentadiene	358	346	ug/kg dry	2099.1	344 U	17	10-100		
Hexachloroethane	1020	346	ug/kg dry	2099.1	344 U	49	35-110		
Indeno[1,2,3-cd]pyrene	1280	346	ug/kg dry	2099.1	344 U	61	45-130		
Isophorone	962	346	ug/kg dry	2099.1	344 U	46	40-110		
Naphthalene	1070	346	ug/kg dry	2099.1	344 U	51	40-110		
Nitrobenzene	983	346	ug/kg dry	2099.1	344 U	47	40-105		
N-Nitrosodi-n-propylamine	1180	346	ug/kg dry	2099.1	344 U	56	30-130		
N-Nitrosodiphenylamine	1260	346	ug/kg dry	2099.1	344 U	60	50-120		
Pentachlorophenol	1050 J	1730	ug/kg dry	2099.1	1720 U	50	25-120		
Phenanthrene	1300	346	ug/kg dry	2099.1	344 U	62	50-120		
Phenol	1110	346	ug/kg dry	2099.1	344 U	53	40-115		
Pyrene	1240	346	ug/kg dry	2099.1	344 U	59	45-125		
Surrogate: 2-Fluorophenol	*1420*		*ug/kg dry*	*2623.9*		*54*	*25-121*		
Surrogate: Phenol-d5	*1560*		*ug/kg dry*	*2623.9*		*59*	*24-113*		
Surrogate: Nitrobenzene-d5	*884*		*ug/kg dry*	*1749.3*		*51*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1010*		*ug/kg dry*	*1749.3*		*58*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1390*		*ug/kg dry*	*2623.9*		*53*	*19-122*		
Surrogate: p-Terphenyl-d14	*1140*		*ug/kg dry*	*1749.3*		*65*	*18-137*		

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206087 - SW 3540C									
Matrix Spike Dup (L206087-MSD2)	**Source: 1206019-01**	Prepared: 06/12/2012 Analyzed: 06/18/2012							
1,2,4-Trichlorobenzene	1350	338	ug/kg dry	2049.4	344 U	66	45-110	33	40
1,2-Dichlorobenzene	1570	338	ug/kg dry	2049.4	344 U	77	45-105	40	40
1,3-Dichlorobenzene	1480	338	ug/kg dry	2049.4	344 U	72	40-100	39	40
1,4-Dichlorobenzene	1500	338	ug/kg dry	2049.4	344 U	73	35-105	40	40
2,4,5-Trichlorophenol	1950	338	ug/kg dry	2049.4	344 U	95	30-140	47*	40
2,4,6-Trichlorophenol	1700	338	ug/kg dry	2049.4	344 U	83	20-110	53*	40
2,4-Dichlorophenol	1480	338	ug/kg dry	2049.4	344 U	72	40-110	38	40
2,4-Dimethylphenol	1370	338	ug/kg dry	2049.4	344 U	67	30-105	40	40
2,4-Dinitrophenol	1320 J	1690	ug/kg dry	2049.4	1720 U	64	25-130	18	40
2,4-Dinitrotoluene	2130	338	ug/kg dry	2049.4	344 U	104	50-115	46*	40
2,6-Dinitrotoluene	2040	338	ug/kg dry	2049.4	344 U	99	40-120	45*	40
2-Chloronaphthalene	1710	338	ug/kg dry	2049.4	344 U	83	45-115	42*	40
2-Chlorophenol	1650	338	ug/kg dry	2049.4	344 U	80	45-105	41*	40
2-Methylnaphthalene	1380	338	ug/kg dry	2049.4	344 U	67	45-110	33	40
2-Methylphenol	1740	338	ug/kg dry	2049.4	344 U	85	40-120	38	40
2-Nitroaniline	2030	1690	ug/kg dry	2049.4	1720 U	99	45-120	43*	40
2-Nitrophenol	1470	338	ug/kg dry	2049.4	344 U	72	40-110	37	40
3,3'-Dichlorobenzidine	2010	676	ug/kg dry	2049.4	689 U	98	15-130	41*	40
3-Nitroaniline	2230	1690	ug/kg dry	2049.4	1720 U	109	40-130	47*	40
4,6-Dinitro-2-methylphenol	1570	338	ug/kg dry	2049.4	344 U	77	20-140	25	40
4-Bromophenyl Phenyl Ether	1920	338	ug/kg dry	2049.4	344 U	94	45-115	43*	40
4-Chloro-3-methylphenol	1650	338	ug/kg dry	2049.4	344 U	81	35-115	40	40
4-Chloroaniline	1350	338	ug/kg dry	2049.4	344 U	66	10-100	38	40
4-Chlorophenyl Phenyl Ether	1880	338	ug/kg dry	2049.4	344 U	92	45-110	41*	40
3- and/or 4-Methylphenol	1830	338	ug/kg dry	2049.4	344 U	89	40-120	42*	40
4-Nitroaniline	2440	1690	ug/kg dry	2049.4	1720 U	119	40-130	51*	40
4-Nitrophenol	2080	1690	ug/kg dry	2049.4	1720 U	102	15-140	41*	40
Acenaphthene	1750	338	ug/kg dry	2049.4	344 U	86	45-110	39	40
Acenaphthylene	1580	338	ug/kg dry	2049.4	344 U	77	45-115	44*	40
Anthracene	1820	338	ug/kg dry	2049.4	344 U	89	45-130	39	40
Benz[a]anthracene	2010	338	ug/kg dry	2049.4	344 U	98	45-130	44*	40
Benzo[a] pyrene	1950	338	ug/kg dry	2049.4	344 U	95	45-130	44*	40
Benzo[b] fluoranthene	1890	338	ug/kg dry	2049.4	344 U	92	40-130	41*	40
Benzo[g,h,i] perylene	2060	338	ug/kg dry	2049.4	344 U	101	45-125	42*	40
Benzo[k] fluoranthene	1940	338	ug/kg dry	2049.4	344 U	95	45-125	45*	40
Bis(2-chloroethoxy) methane	1410	338	ug/kg dry	2049.4	344 U	69	45-110	35	40

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/20/2012 21:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206087 - SW 3540C									
Matrix Spike Dup (L206087-MSD2)	**Source: 1206019-01**		Prepared: 06/12/2012 Analyzed: 06/18/2012						
Bis(2-chloroethyl) ether	1630	338	ug/kg dry	2049.4	344 U	80	40-110	41*	40
Bis(2-chloroisopropyl) ether	1610	338	ug/kg dry	2049.4	344 U	79	30-115	40	40
Bis(2-ethylhexyl) phthalate	2150	338	ug/kg dry	2049.4	201	95	40-145	41*	40
Butyl Benzyl Phthalate	1890	338	ug/kg dry	2049.4	344 U	92	50-125	37	40
Carbazole	2260	338	ug/kg dry	2049.4	344 U	110	40-140	45*	40
Chrysene	1930	338	ug/kg dry	2049.4	344 U	94	45-130	37	40
Dibenz[a,h]anthracene	1380	338	ug/kg dry	2049.4	344 U	67	45-125	47*	40
Dibenzofuran	1860	338	ug/kg dry	2049.4	344 U	91	45-120	40	40
Diethyl Phthalate	1920	338	ug/kg dry	2049.4	344 U	94	50-125	40	40
Dimethyl Phthalate	1840	338	ug/kg dry	2049.4	344 U	90	45-130	41*	40
Di-n-butyl Phthalate	1760	338	ug/kg dry	2049.4	344 U	86	50-130	39	40
Di-n-octyl Phthalate	1790	338	ug/kg dry	2049.4	344 U	88	40-150	39	40
Fluoranthene	1910	338	ug/kg dry	2049.4	344 U	93	45-130	39	40
Fluorene	1840	338	ug/kg dry	2049.4	344 U	90	45-120	39	40
Hexachlorobenzene	2000	338	ug/kg dry	2049.4	344 U	98	45-130	43*	40
Hexachlorobutadiene	1450	338	ug/kg dry	2049.4	344 U	71	45-105	34	40
Hexachlorocyclopentadiene	772	338	ug/kg dry	2049.4	344 U	38	10-100	75*	40
Hexachloroethane	1480	338	ug/kg dry	2049.4	344 U	72	35-110	39	40
Indeno[1,2,3-cd]pyrene	1960	338	ug/kg dry	2049.4	344 U	96	45-130	45*	40
Isophorone	1320	338	ug/kg dry	2049.4	344 U	64	40-110	34	40
Naphthalene	1420	338	ug/kg dry	2049.4	344 U	69	40-110	30	40
Nitrobenzene	1330	338	ug/kg dry	2049.4	344 U	65	40-105	33	40
N-Nitrosodi-n-propylamine	1780	338	ug/kg dry	2049.4	344 U	87	30-130	43*	40
N-Nitrosodiphenylamine	1860	338	ug/kg dry	2049.4	344 U	91	50-120	41*	40
Pentachlorophenol	1870	1690	ug/kg dry	2049.4	1720 U	91	25-120	58*	40
Phenanthrene	1960	338	ug/kg dry	2049.4	344 U	96	50-120	43*	40
Phenol	1670	338	ug/kg dry	2049.4	344 U	81	40-115	43*	40
Pyrene	1760	338	ug/kg dry	2049.4	344 U	86	45-125	37	40
Surrogate: 2-Fluorophenol	*1970*		*ug/kg dry*	*2561.7*		*77*	*25-121*		
Surrogate: Phenol-d5	*2190*		*ug/kg dry*	*2561.7*		*86*	*24-113*		
Surrogate: Nitrobenzene-d5	*1120*		*ug/kg dry*	*1707.8*		*65*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1410*		*ug/kg dry*	*1707.8*		*82*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*2230*		*ug/kg dry*	*2561.7*		*87*	*19-122*		
Surrogate: p-Terphenyl-d14	*1590*		*ug/kg dry*	*1707.8*		*93*	*18-137*		

PREPARATION BENCH SHEET

L206087

Lionville Laboratory

Printed: 6/13/2012 12:26:17PM

Matrix: Solid **Prepared using: SVOCGCMS - SW 3540C** **Surrogate used: 1200548**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206018-01	8270C TCL SVOC	06/12/2012 14:43	31.8	1				500	WC-Hanford, Inc.	
1206018-02	8270C TCL SVOC	06/12/2012 14:43	30.31	4				500	WC-Hanford, Inc.	
1206018-03	8270C TCL SVOC	06/12/2012 14:43	30.15	1				500	WC-Hanford, Inc.	
1206019-01	8270C TCL SVOC	06/12/2012 14:43	30.26	1				500	WC-Hanford, Inc.	
1206019-02	8270C TCL SVOC	06/12/2012 14:43	30.99	1				500	WC-Hanford, Inc.	
1206020-01	8270C TCL SVOC	06/12/2012 14:43	30.45	4				500	WC-Hanford, Inc.	
1206022-01	8270C TCL SVOC	06/12/2012 14:43	30	4				500	WC-Hanford, Inc.	
1206022-02	8270C TCL SVOC	06/12/2012 14:43	30.35	4				500	WC-Hanford, Inc.	
1206022-03	8270C TCL SVOC	06/12/2012 14:43	30.07	4				500	WC-Hanford, Inc.	
L206087-BLK1	QC	06/12/2012 14:43	30	1				500		
L206087-BS1	QC	06/12/2012 14:43	30	1	1200337		600	500		
L206087-MS1	QC	06/12/2012 14:43	30.28	1	1200337	1206018-01	600	500		
L206087-MS2	QC	06/12/2012 14:43	30.08	1	1200337	1206019-01	600	500		
L206087-MS3	QC	06/12/2012 14:43	30.23	4	1200337	1206020-01	600	500		
L206087-MS4	QC	06/12/2012 14:43	31.19	4	1200337	1206022-01	600	500		
L206087-MSD1	QC	06/12/2012 14:43	30.4	1	1200337	1206018-01	600	500		
L206087-MSD2	QC	06/12/2012 14:43	30.81	1	1200337	1206019-01	600	500		
L206087-MSD3	QC	06/12/2012 14:43	30.68	4	1200337	1206020-01	600	500		
L206087-MSD4	QC	06/12/2012 14:43	30.07	4	1200337	1206022-01	600	500		

6/13/12 1240
Extracts Relinquished By Date

6/13/12 1300
Extracts Received By Date

METALS

LVL
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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/14/2012 07:43

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PPM7	1206019-01	Soil	06/04/2012 08:16	06/07/2012 09:50
J1PPM8	1206019-02	Soil	06/04/2012 14:08	06/07/2012 09:50
J1PPM9	1206019-03	Soil	06/04/2012 14:30	06/07/2012 09:50

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Case Narrative

Client: WC-HANFORD RC-029
LVL#: 1206019
SDG/SAF#: K3917/RC-029

W.O.#: 60049-001-001-0001-00
Date Received: 06-07-12

METALS

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

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

1. This narrative covers the analyses of 3 soil samples.

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

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

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

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

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

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

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

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

10. The matrix spike (MS) recoveries for 18 analytes were outside the 75-125% control limits.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the

following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J1PPM7	Aluminum	22,000	71.1
	Antimony	100	80.7
	Arsenic	100	89.7
	Beryllium	100	83.7
	Boron	100	85.1
	Cadmium	100	86.7
	Calcium	20,800	38.0
	Chromium	100	85.6
	Cobalt	100	79.5
	Copper	100	80.0
	Iron	42,000	33.0
	Lead	100	73.9
	Molybdenum	100	83.7
	Nickel	100	77.4
	Selenium	100	88.5
	Silicon	2,100	77.4
	Silver	100	76.9
	Vanadium	1,000	69.3

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL. The sample result for Molybdenum was less than ten times the MDL.

13. For the purposes of this report, the data have been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.

14. LvL is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

6/14/12
Date

alm/06-019

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/14/2012 07:43

Notes and Definitions

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

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/14/2012 07:43

J1PPM7

1206019-01 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**4530**		4.38	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Antimony	0.526	U	0.526	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Arsenic	**1.88**		0.877	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Barium	**41.2**		0.438	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Beryllium	**0.200**		0.175	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Boron	**0.924**	B	1.75	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Cadmium	**0.0705**	B	0.175	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Calcium	**6600**		87.7	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Chromium	**5.95**		0.175	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Cobalt	**5.21**		1.75	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Copper	**11.6**		0.877	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Iron	**17700**		17.5	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Lead	**2.53**		0.438	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Magnesium	**3380**		65.8	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Manganese	**227**		4.38	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Molybdenum	**0.283**	B	1.75	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Nickel	**6.74**		3.51	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Potassium	**613**		351	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Selenium	0.263	U	0.263	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Silicon	**490**		1.75	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Silver	0.175	U	0.175	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Sodium	**296**		43.8	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Vanadium	**48.8**		2.19	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Zinc	**34.0**		8.77	mg/kg dry	1	L206084	06/12/2012	06/13/2012	6010B
Mercury	0.0256	U	0.0256	mg/kg dry	1	L206082	06/11/2012	06/12/2012	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/14/2012 07:43

J1PPM8

1206019-02 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**3550**		3.46	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Antimony	0.416	U	0.416	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Arsenic	**1.78**		0.693	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Barium	**43.4**		0.346	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Beryllium	**0.161**		0.139	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Boron	**1.58**		1.39	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Cadmium	**0.0612**	B	0.139	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Calcium	**4470**		69.3	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Chromium	**4.55**		0.139	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Cobalt	**5.60**		1.39	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Copper	**11.3**		0.693	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Iron	**16400**		13.9	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Lead	**5.39**		0.346	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Magnesium	**3580**		52.0	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Manganese	**229**		3.46	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Molybdenum	**0.195**	B	1.39	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Nickel	**6.56**		2.77	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Potassium	**526**		277	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Selenium	0.208	U	0.208	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Silicon	**262**		1.39	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Silver	0.139	U	0.139	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Sodium	**797**		34.6	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Vanadium	**45.8**		1.73	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Zinc	**31.8**		6.93	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Mercury	0.0240	U	0.0240	mg/kg dry	1	L206082	06/11/2012	06/12/2012	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/14/2012 07:43

J1PPM9

1206019-03 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**203**		3.68	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Antimony	0.441	U	0.441	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Arsenic	0.735	U	0.735	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Barium	**1.87**		0.368	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Beryllium	0.147	U	0.147	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Boron	1.47	U	1.47	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Cadmium	0.147	U	0.147	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Calcium	**34.1**	B	73.5	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Chromium	0.147	U	0.147	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Cobalt	1.47	U	1.47	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Copper	0.735	U	0.735	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Iron	**470**		14.7	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Lead	**0.484**		0.368	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Magnesium	**18.9**	B	55.2	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Manganese	**10.8**		3.68	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Molybdenum	1.47	U	1.47	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Nickel	2.94	U	2.94	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Potassium	**42.7**	B	294	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Selenium	0.221	U	0.221	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Silicon	**154**		1.47	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Silver	0.147	U	0.147	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Sodium	36.8	U	36.8	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Vanadium	**0.326**	B	1.84	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Zinc	**1.14**	B	7.35	mg/kg dry	1	L206084	06/12/2012	06/12/2012	6010B
Mercury	0.0243	U	0.0243	mg/kg dry	1	L206082	06/11/2012	06/12/2012	7471A

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/14/2012 07:43

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 L206082 - SW 7471A Prep										
Blank (L206082-BLK1)				Prepared: 06/11/2012 Analyzed: 06/12/2012						
Mercury	0.0281	U	0.0281	mg/kg wet						
Duplicate (L206082-DUP2)		**Source: 1206019-01**		Prepared: 06/11/2012 Analyzed: 06/12/2012						
Mercury	0.0279	U	0.0279	mg/kg dry		0.0256 U				20
Matrix Spike (L206082-MS2)		**Source: 1206019-01**		Prepared: 06/11/2012 Analyzed: 06/12/2012						
Mercury	0.152		0.0256	mg/kg dry	0.14221	0.0256 U	107	75-125		
Reference (L206082-SRM1)				Prepared: 06/11/2012 Analyzed: 06/12/2012						
Mercury	1.25		0.0290	mg/kg wet	1.2900		96.5	62.6-138		
Batch L206084 - SW 3050B										
Blank (L206084-BLK1)				Prepared & Analyzed: 06/12/2012						
Aluminum	3.85	U	3.85	mg/kg wet						
Antimony	0.462	U	0.462	mg/kg wet						
Arsenic	0.769	U	0.769	mg/kg wet						
Barium	0.385	U	0.385	mg/kg wet						
Beryllium	0.154	U	0.154	mg/kg wet						
Boron	1.54	U	1.54	mg/kg wet						
Cadmium	0.154	U	0.154	mg/kg wet						
Calcium	5.18	B	76.9	mg/kg wet						
Chromium	0.154	U	0.154	mg/kg wet						
Cobalt	1.54	U	1.54	mg/kg wet						
Copper	0.769	U	0.769	mg/kg wet						
Iron	15.4	U	15.4	mg/kg wet						
Lead	0.385	U	0.385	mg/kg wet						
Magnesium	0.942	B	57.7	mg/kg wet						
Manganese	3.85	U	3.85	mg/kg wet						
Molybdenum	1.54	U	1.54	mg/kg wet						
Nickel	3.08	U	3.08	mg/kg wet						
Potassium	308	U	308	mg/kg wet						
Selenium	0.231	U	0.231	mg/kg wet						
Silicon	1.54	U	1.54	mg/kg wet						
Silver	0.154	U	0.154	mg/kg wet						
Sodium	38.5	U	38.5	mg/kg wet						
Vanadium	1.92	U	1.92	mg/kg wet						
Zinc	7.69	U	7.69	mg/kg wet						

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/14/2012 07:43

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 L206084 - SW 3050B										
Duplicate (L206084-DUP2)		**Source: 1206019-01**		Prepared: 06/12/2012 Analyzed: 06/13/2012						
Aluminum	5010		4.24	mg/kg dry		4530			10.1	20
Antimony	0.509	U	0.509	mg/kg dry		0.526 U				20
Arsenic	1.94		0.849	mg/kg dry		1.88			3.22	20
Barium	45.9		0.424	mg/kg dry		41.2			10.8	20
Beryllium	0.211		0.170	mg/kg dry		0.200			5.38	20
Boron	0.944	B	1.70	mg/kg dry		0.924			2.08	20
Cadmium	0.0828	B	0.170	mg/kg dry		0.0705			16.0	20
Calcium	6260		84.9	mg/kg dry		6600			5.20	20
Chromium	6.58		0.170	mg/kg dry		5.95			10.1	20
Cobalt	5.29		1.70	mg/kg dry		5.21			1.50	20
Copper	12.2		0.849	mg/kg dry		11.6			5.71	20
Iron	17600		17.0	mg/kg dry		17700			0.690	20
Lead	2.63		0.424	mg/kg dry		2.53			3.85	20
Magnesium	3860		63.7	mg/kg dry		3380			13.4	20
Manganese	242		4.24	mg/kg dry		227			6.41	20
Molybdenum	0.221	B	1.70	mg/kg dry		0.283			24.4*	20
Nickel	6.93		3.39	mg/kg dry		6.74			2.75	20
Potassium	670		339	mg/kg dry		613			8.93	20
Selenium	0.255	U	0.255	mg/kg dry		0.263 U				20
Silicon	527		1.70	mg/kg dry		490			7.25	20
Silver	0.170	U	0.170	mg/kg dry		0.175 U				20
Sodium	315		42.4	mg/kg dry		296			6.13	20
Vanadium	50.5		2.12	mg/kg dry		48.8			3.45	20
Zinc	34.6		8.49	mg/kg dry		34.0			1.60	20
Matrix Spike (L206084-MS2)		**Source: 1206019-01**		Prepared: 06/12/2012 Analyzed: 06/13/2012						
Aluminum	5220		3.81	mg/kg dry	152.52	4530	454*	75-125		
Antimony	12.6		0.458	mg/kg dry	38.129	0.526 U	33.0*	75-125		
Arsenic	110		0.763	mg/kg dry	152.52	1.88	71.2*	75-125		
Barium	162		0.381	mg/kg dry	152.52	41.2	79.1	75-125		
Beryllium	2.83		0.153	mg/kg dry	3.8129	0.200	69.0*	75-125		
Boron	50.3		1.53	mg/kg dry	76.258	0.924	64.8*	75-125		
Cadmium	2.74		0.153	mg/kg dry	3.8129	0.0705	69.9*	75-125		
Calcium	7450		76.3	mg/kg dry	1906.5	6600	44.5*	75-125		
Chromium	16.9		0.153	mg/kg dry	15.252	5.95	72.0*	75-125		
Cobalt	30.4		1.53	mg/kg dry	38.129	5.21	66.0*	75-125		
Copper	23.7		0.763	mg/kg dry	19.065	11.6	63.6*	75-125		

LIONVILLE LABORATORY
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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/14/2012 07:43

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 L206084 - SW 3050B									
Matrix Spike (L206084-MS2)		**Source: 1206019-01**	Prepared: 06/12/2012 Analyzed: 06/13/2012						
Iron	17700	15.3	mg/kg dry	76.258	17700	28.5*	75-125		
Lead	25.8	0.381	mg/kg dry	38.129	2.53	60.9*	75-125		
Magnesium	5300	57.2	mg/kg dry	1906.5	3380	101	75-125		
Manganese	265	3.81	mg/kg dry	38.129	227	100	75-125		
Molybdenum	53.1	1.53	mg/kg dry	76.258	0.283	69.3*	75-125		
Nickel	31.4	3.05	mg/kg dry	38.129	6.74	64.7*	75-125		
Potassium	2140	305	mg/kg dry	1906.5	613	79.9	75-125		
Selenium	103	0.229	mg/kg dry	152.52	0.263 U	67.4*	75-125		
Silicon	497	1.53	mg/kg dry	76.258	490	8.64*	75-125		
Silver	2.48	0.153	mg/kg dry	3.8129	0.175 U	65.0*	75-125		
Sodium	1730	38.1	mg/kg dry	1906.5	296	75.1	75-125		
Vanadium	74.0	1.91	mg/kg dry	38.129	48.8	66.3*	75-125		
Zinc	63.0	7.63	mg/kg dry	38.129	34.0	75.9	75-125		
Reference (L206084-SRM1)			Prepared: 06/12/2012 Analyzed: 06/13/2012						
Aluminum	10100	13.2	mg/kg wet	6670.0		152	0-200.89		
Antimony	44.9	1.58	mg/kg wet	53.000		84.8	0-235.8		
Arsenic	122	2.63	mg/kg wet	114.00		107	82.8-117.54		
Barium	304	1.32	mg/kg wet	307.00		98.9	79.8-120.2		
Beryllium	112	0.526	mg/kg wet	108.00		104	82.8-117.6		
Boron	84.4	5.26	mg/kg wet	85.100		99.2	67.5-132.8		
Cadmium	235	0.526	mg/kg wet	225.00		104	83.6-116.4		
Calcium	3300	263	mg/kg wet	3360.0		98.1	83.3-116.9		
Chromium	85.8	0.526	mg/kg wet	77.200		111	73.3-126.4		
Cobalt	169	5.26	mg/kg wet	166.00		102	80.7-118.7		
Copper	275	2.63	mg/kg wet	271.00		101	80.8-119.2		
Iron	8790	52.6	mg/kg wet	8420.0		104	78.6-121.1		
Lead	181	1.32	mg/kg wet	190.00		95.5	81.6-118.4		
Magnesium	9260	197	mg/kg wet	8570.0		108	83.2-116.7		
Manganese	973	13.2	mg/kg wet	965.00		101	69.3-130.5		
Molybdenum	247	5.26	mg/kg wet	235.00		105	76.2-123.8		
Nickel	228	10.5	mg/kg wet	221.00		103	79.6-120.8		
Potassium	14600	1050	mg/kg wet	14400		101	81.9-118.1		
Selenium	202	0.789	mg/kg wet	187.00		108	75.9-124.6		
Silicon	1220	5.26	mg/kg wet	807.00		151	0-219.3		
Silver	83.8	0.526	mg/kg wet	83.500		100	82.7-117.1		
Sodium	9560	132	mg/kg wet	9730.0		98.3	82.5-117.2		

LIONVILLE LABORATORY
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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/14/2012 07:43

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 L206084 - SW 3050B									
Reference (L206084-SRM1)				Prepared: 06/12/2012 Analyzed: 06/13/2012					
Vanadium	110	6.58	mg/kg wet	98.700		111	75.9-123.6		
Zinc	206	26.3	mg/kg wet	199.00		103	78.4-121.6		

Lionville Laboratory

Logbook #: 1108

SAMPLE DIGESTION RECORD

Digestion Batch #: L206084
Date/Time Initiated: 6/12/12 0650
Date/Time Completed: 6/12/12 1220
Analyst: JS
Matrix (circle): (Soil) Water Other
Method (circle one): 3005A 3010A (3050) 200.7 (1994)
pH/Turbidity: N/A for Solids.
NOTE: All temperatures are recorded as corrected temperatures

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

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1206018-01		0.57	50		TO	Fine	Brown	Rocks	N/A
L206084-Rg1		0.53	50		↓	↓	↓	↓	↓
-MS1	0.5	0.54	50		↓	↓	↓	↓	↓
1206018-02		0.50	50		↓	Fine	Brown	Rocks	↓
-03		0.73	50		↓	Fine	↓	↓	↓
1206019-01		0.60	50		↓	Fine	Brown	Rocks	↓
L206084-Rg2		0.62	50		↓	↓	↓	↓	↓
-MS2	0.5	0.69	50		↓	↓	↓	↓	↓
1206019-02		0.75	50		↓	Fine	Brown	Rocks	↓
-03		0.68	50		↓	Coarse	Often Sand	↓	↓
1206020-01		0.61	50		↓	Fine	Brown	Rocks	↓
L206084-Rg3		0.62	50		↓	↓	↓	↓	↓
-MS3	0.5	0.56	50		↓	↓	↓	↓	↓
-BLK		0.65	50		↓	Coarse	Boulder Clay	↓	↓
-SRM1	(N/A)	0.57	50		↓	Fine	part Soil	↓	↓

JS 6/12/12

Spiking IDs / Expiration Date:
MS# : 1206457

LCS#: (N/A) 1601357

Reagent IDs:
HNO_3 K14023
HCl L01031
H_2O_2 K09A03
1:1 HNO_3 637-66-02
1:1 HCl

File ID#:

Data Review By/Date:
6/13/12

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Signed\SPI\Metals Digestion log.doc

Page #: 12

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 6/11/12
Start Time/Temp: 2020/94°
End Time/Temp: 2050/97°

Instrument ID: HG3.2
Balance # B29 /NA
Pipette Calibration (Daily) (Y) ____

Logbook # 1132
Prep Batch: L206082
Worksheet: HG061202
SOP No. ME-HgCVAA
BLOCK (1) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
blank				10ml	50	
0.2 ug/l		0.100		10 ml	50	
1.0 ug/l		0.500		10ml	50	
2.0 ug/l		1.000		10ml	50	
5.0 ug/l		2.500		10ml	50	
10.0 ug/l		5.000		10 ml	50	
ICV		0.125	2.5	10ml	50	
CCV		0.250	5.0	10ml	50	
ICB/CCB				10 ml	50	
L206082-BLK1				0.32	50	
SRM1		(*)	(*)	0.31	50	
1206018-01				0.35	50	
L206082-DUP1				0.33	50	
MS1		0.500	1.0	0.35	50	
1206018-02				0.35	50	
03				0.38	50	
1206019-01				0.37	50	
L206082-DUP2				0.34	50	
MS2		0.500	1.0	0.37	50	
1206019-02				0.39	50	
03				0.37	50	
1206020-01				0.37	50	
L206082-DUP3				0.37	50	
MS3		0.500	1.0	0.36	50	
1206020-01				0.38	50	
L206082-DUP4				0.37	50	1206002
MS4		0.500	1.0	0.35	50	

Standard:	ID	Prep Date/Time
ICAL/MS	BI 1200588	6/11/12 MS
ICV/CCV/LCS	(I.V. 1200552)	n/a

Soil LCS True Value = 1.29 mg/Kg
Standard # 1101357 (*)

Reviewed By/Date: [illegible] 6/13/12

se book # 9368 for std traceability information

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

Lionville Laboratory

MERCURY PREPARATION

Analyst: [illegible]
Date 6/11/12
Start Time/Temp: [illegible] 031
End Time/Temp: [illegible]

Instrument ID: HG3,2
Balance # B29 /NA
Pipette Calibration (Daily) (Y)

Logbook # 1132
Prep Batch: L206082
Worksheet: HG061202
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.
1206021-02				0.38	50	
03				0.38	50	
04				0.39	50	
1206022-01				0.34	50	
L206082-DUP5				0.36	50	
MS5		0.500	1.0	0.34	50	
1206022-02				0.34	50	
03				0.39	50	
1206024-01				0.34	50	
L206082-DUP6				0.33	50	
MS6		0.500	1.0	0.35	50	
1206024-02				0.34	50	

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

Soil LCS True Value = [illegible] 031 mg/Kg
Standard # [illegible]

Reviewed By/Date: [illegible] 6/13/12

se book # 9368 for std traceability information

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

PREPARATION BENCH SHEET

L206084

Lionville Laboratory

Printed: 6/18/2012 11:06:36AM

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

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206018-01	6010B ICP Metals	06/12/2012 06:42	0.57	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206018-02	6010B ICP Metals	06/12/2012 06:42	0.5	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206018-03	6010B ICP Metals	06/12/2012 06:42	0.73	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206019-01	6010B ICP Metals	06/12/2012 06:42	0.6	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206019-02	6010B ICP Metals	06/12/2012 06:42	0.75	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206019-03	6010B ICP Metals	06/12/2012 06:42	0.68	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206020-01	6010B ICP Metals	06/12/2012 06:42	0.61	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
L206084-BLK1	QC	06/12/2012 06:42	0.65	50						
L206084-DUP1	QC	06/12/2012 06:42	0.53	50		1206018-01				
L206084-DUP2	QC	06/12/2012 06:42	0.62	50		1206019-01				
L206084-DUP3	QC	06/12/2012 06:42	0.62	50		1206020-01				
L206084-MS1	QC	06/12/2012 06:42	0.54	50	1200457	1206018-01	500			
L206084-MS2	QC	06/12/2012 06:42	0.69	50	1200457	1206019-01	500			
L206084-MS3	QC	06/12/2012 06:42	0.56	50	1200457	1206020-01	500			
L206084-SRM1	QC	06/12/2012 06:42	0.57	50	1101357		570			

JJS 6/12/12
Extracts Relinquished By Date

Brent 06/12/12
Extracts Received By Date

INORGANICS

264 Welsh Pool Road
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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/19/2012 14:01

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PPM7	1206019-01	Soil	06/04/2012 08:16	06/07/2012 09:50
J1PPM8	1206019-02	Soil	06/04/2012 14:08	06/07/2012 09:50
J1PPM9	1206019-03	Soil	06/04/2012 14:30	06/07/2012 09:50

LIONVILLE LABORATORY
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Case Narrative

Client: WC-HANFORD RC-029 K3917
LVL#: 1206019 **Date Received:** 06-07-12

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 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 with the exception of Nitrite, Nitrate and Orthophosphate that were received past hold.

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

5. The method blanks were within the method criteria.

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

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

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit with the exception of Orthophosphate at 31.5% for which the replicate results were below the limit of quantitation.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory

6/19/12
Date

njp\i06-019

264 Welsh Pool Road
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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/19/2012 14:01

Notes and Definitions

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

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/19/2012 14:01

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1PPM7 (1206019-01) Soil									
%Solids	**95.0**		0.1	% by Weight	1	L206065	06/08/2012	06/08/2008	SM2540G
Bromide	1.0 U	1.0	5.0	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Chloride	**2.4** B	1.0	5.0	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Fluoride	**1.0** B	1.0	5.0	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Nitrate	**2.4** B	1.0	5.0	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Nitrite	1.0 U	1.0	5.0	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Orthophosphate	**2.7** B	2.0	10.1	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Sulfate	**16.1**	1.0	5.0	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**0.39** B	0.10	0.52	mg/kg dry	1	L206089	06/12/2012	06/12/2012	EPA 353.2
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry	1	L206069	06/08/2012	06/11/2012	SW846 7196A
pH	**9.37**	0.10	0.10	pH Units	1	L206051	06/07/2012	06/07/2012	SW846 9045D
J1PPM8 (1206019-02) Soil									
%Solids	**96.2**		0.1	% by Weight	1	L206065	06/08/2012	06/08/2008	SM2540G
Bromide	1.0 U	1.0	5.1	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Chloride	**3.2** B	1.0	5.1	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Fluoride	1.0 U	1.0	5.1	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Nitrate	**3.9** B	1.0	5.1	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Nitrite	1.0 U	1.0	5.1	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Orthophosphate	**3.8** B	2.0	10.2	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Sulfate	**19.4**	1.0	5.1	mg/kg dry	1	L206139	06/17/2012	06/17/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**0.89**	0.10	0.51	mg/kg dry	1	L206089	06/12/2012	06/12/2012	EPA 353.2
Hexavalent Chromium	0.21 U	0.21	0.52	mg/kg dry	1	L206069	06/08/2012	06/11/2012	SW846 7196A
pH	**9.74**	0.10	0.10	pH Units	1	L206051	06/07/2012	06/07/2012	SW846 9045D

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/19/2012 14:01

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1PPM9 (1206019-03) Soil									
%Solids	**100**		0.1	% by Weight	1	L206065	06/08/2012	06/08/2008	SM2540G

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WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3917	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	06/19/2012 14:01

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206051 - Default Prep GenChem										
Duplicate (L206051-DUP5)	**Source: 1206019-01**			Prepared & Analyzed: 06/07/2012						
pH	9.35	0.10	0.10	pH Units		9.37			0.214	20
Reference (L206051-SRM1)				Prepared & Analyzed: 06/07/2012						
pH	9.99	0.10	0.10	pH Units	10.000		99.9	99-101		
Batch L206069 - SW 3060A										
Blank (L206069-BLK1)				Prepared: 06/08/2012 Analyzed: 06/11/2012						
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L206069-BS1)				Prepared: 06/08/2012 Analyzed: 06/11/2012						
Hexavalent Chromium	3.73	0.20	0.50	mg/kg wet	4.0000		93	80-120		
LCS (L206069-BS2)				Prepared: 06/08/2012 Analyzed: 06/11/2012						
Hexavalent Chromium	981 D	20.0	50.0	mg/kg wet	1107.7		89	80-120		
Duplicate (L206069-DUP2)	**Source: 1206019-01**			Prepared: 06/08/2012 Analyzed: 06/11/2012						
Hexavalent Chromium	0.21 U	0.21	0.53	mg/kg dry		0.21 U				20
Matrix Spike (L206069-MS3)	**Source: 1206019-01**			Prepared: 06/08/2012 Analyzed: 06/11/2012						
Hexavalent Chromium	3.71	0.21	0.53	mg/kg dry	4.2094	0.21 U	88	75-125		
Matrix Spike (L206069-MS4)	**Source: 1206019-01**			Prepared: 06/08/2012 Analyzed: 06/11/2012						
Hexavalent Chromium	978 D	21.0	52.6	mg/kg dry	1097.9	0.21 U	89	75-125		
Batch L206089 - Default Prep GenChem										
Blank (L206089-BLK1)				Prepared & Analyzed: 06/12/2012						
Nitrate/Nitrite as N	0.10 U	0.10	0.49	mg/kg wet						

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Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206089 - Default Prep GenChem										
LCS (L206089-BS1)				Prepared & Analyzed: 06/12/2012						
Nitrate/Nitrite as N	5.08	0.10	0.48	mg/kg wet	4.8294		105	90-110		
Duplicate (L206089-DUP5)	**Source: 1206019-01**			Prepared & Analyzed: 06/12/2012						
Nitrate/Nitrite as N	0.36 B	0.11	0.53	mg/kg dry		0.39			8.19	20
Matrix Spike (L206089-MS5)	**Source: 1206019-01**			Prepared & Analyzed: 06/12/2012						
Nitrate/Nitrite as N	5.89	0.10	0.52	mg/kg dry	5.1994	0.39	106	75-125		
Batch L206139 - Default Prep GenChem										
Blank (L206139-BLK1)				Prepared & Analyzed: 06/17/2012						
Fluoride	1.0 U	1.0	5.0	mg/kg wet						
Chloride	1.0 U	1.0	5.0	mg/kg wet						
Bromide	1.0 U	1.0	5.0	mg/kg wet						
Orthophosphate	2.0 U	2.0	10.0	mg/kg wet						
Sulfate	1.0 U	1.0	5.0	mg/kg wet						
Nitrate	1.0 U	1.0	5.0	mg/kg wet						
Nitrite	1.0 U	1.0	5.0	mg/kg wet						
LCS (L206139-BS1)				Prepared & Analyzed: 06/17/2012						
Fluoride	49.2	1.0	5.0	mg/kg wet	50.000		98.4	80-120		
Chloride	46.5	1.0	5.0	mg/kg wet	50.000		93.0	80-120		
Bromide	48.0	1.0	5.0	mg/kg wet	50.000		96.0	80-120		
Orthophosphate	47.8	2.0	10.0	mg/kg wet	50.000		95.6	80-120		
Sulfate	48.2	1.0	5.0	mg/kg wet	50.000		96.4	80-120		
Nitrate	47.8	1.0	5.0	mg/kg wet	50.000		95.6	80-120		
Nitrite	48.4	1.0	5.0	mg/kg wet	50.000		96.8	80-120		

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Wet Chemistry - Quality Control

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Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206139 - Default Prep GenChem										
Duplicate (L206139-DUP4)	**Source: 1206019-01**			Prepared & Analyzed: 06/17/2012						
Fluoride	1.0 B	1.0	5.2	mg/kg dry		1.0			3.01	20
Chloride	2.7 B	1.0	5.2	mg/kg dry		2.4			11.0	20
Bromide	1.0 U	1.0	5.2	mg/kg dry		1.0 U				20
Orthophosphate	3.7 B	2.1	10.4	mg/kg dry		2.7			31.5*	20
Sulfate	16.1	1.0	5.2	mg/kg dry		16.1			0.166	20
Nitrate	2.3 B	1.0	5.2	mg/kg dry		2.4			5.69	20
Nitrite	1.0 U	1.0	5.2	mg/kg dry		1.0 U				20
Matrix Spike (L206139-MS6)	**Source: 1206019-01**			Prepared & Analyzed: 06/17/2012						
Fluoride	55.0	1.0	5.2	mg/kg dry	51.671	1.0	104	75-125		
Chloride	53.8	1.0	5.2	mg/kg dry	51.671	2.4	99.5	75-125		
Bromide	52.3	1.0	5.2	mg/kg dry	51.671	1.0 U	101	75-125		
Orthophosphate	53.7	2.1	10.3	mg/kg dry	51.671	2.7	98.7	75-125		
Sulfate	69.3	1.0	5.2	mg/kg dry	51.671	16.1	103	75-125		
Nitrate	54.7	1.0	5.2	mg/kg dry	51.671	2.4	101	75-125		
Nitrite	53.0	1.0	5.2	mg/kg dry	51.671	1.0 U	103	75-125		