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

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 1/16/13
INITIAL/DATE

COMMENTS:

SDG KP0169 SAF-RC-189

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 128-N-1 Verification Sample - SPA

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

11 January 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 #	1212059
SDG #	KP0169
SAF #	RC-189
Date Received	12/19/12
# Samples	1
Matrix	SOIL
Volatiles	
Semivolatiles	X
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	X
Herbicides	
Metals	
Inorganics	

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

Sincerely,

Lionville Laboratory
A Division of Eberline Analytical Corporation

Orlette S. Johnson
Project Manager

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 35 pages.

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

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1212059

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 W.C. Hanford SAF# RC-189 KA0169

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager Delette Johnson

QC SW Del Std TAT 7 Days

Date Rec'd 12-19-12 Date Due 12-27-12

Refrigerator #		A			B										
		2			2										
#/Type Container	Liquid														
	Solid	1qt			1qt										
Volume	Liquid														
	Solid	120			120										
Preservatives		—			—										
ANALYSES REQUESTED →		ORGANIC						INORG							
		VOA	BNA	Pest/PCB	Herb	PAHS 8310			Metal	CN					
Lionville Laboratory Use Only			8270 BNA			PAH 8310									

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																
01	JIR794	✓	✓	S	12-18-12	0937		X			X											

Special Instructions:

Special Instructions:

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

Relinquished by	Received by	Date	Time
Leo Dix	[signature]	12-19-12	10:10

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

0000000003

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-189-149	Page 1 of 1

Collector: Q. Stowe	Company Contact: Joan Kessner; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8J DA 12/18/12; Data Turnaround: ~~21~~ Days 7 DA 12/18/12
Project Designation: 100N Field Remediation - Soil Full Protocol	Sampling Location: 128-N-1 Verification Sample - SPA	SAF No.: RC-189	
Ice Chest No.: RC-08-025	Field Logbook No.: EI-1652-08; COA: R128N12000	Method of Shipment: Fed Ex	
Shipped To: ~~EBERLINE SERVICES~~ LIONVILLE DA 12/18/12	Offsite Property No.: A120685	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									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	120mL	120mL									
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	PAHs - 8310									

Sample No.	Matrix *	Sample Date	Sample Time										
J1R794	SOIL	12-18-12	0937	X	X								

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	0945 12/18/12	Dennis Newman	0945 12/18/12
Dennis Newman	1040 12/18/12	Chad Bingham	1040 12-18-12
Chad Bingham	1040 12-18-12	Fed Ex	1058
Fed Ex	1058 12-19-12		12-19-12 10:10
	12-19-12 10:10		

SPECIAL INSTRUCTIONS

KP0169

REVIEWED BY [signature] DATE 12/18/12

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

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

WCH-EE-011

0000000004

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC. Hanford
Project/SAF/SOW/Release #: RC-189

Date: 12-19-12

LvL Batch #: 1212059

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7943 3673 0130
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** 2.7	**°C**	Cooler # RCC-08-025
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 _____

SR-002-B-1112.doc

SEMIVOLATILES

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: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R794	1212059-01	Soil	12/18/2012 09:37	12/19/2012 10:10

LIONVILLE LABORATORY
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264 Welsh Pool Road
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Phone (610) 280-3000
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Case Narrative

Client: WC-HANFORD RC-189 KP0169
LVL #: 1212059

W.O. #: 60049-001-001-0001-00
Date Received: 12-19-2012

SEMIVOLATILE

One (1) soil sample was collected on 12-18-2012.

The sample and associated QC samples were extracted 12-19-2012 and analyzed 12-20-2012 according to Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C, and the analysis procedure was based on SW846 Method 8270C for client specified target compounds.

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

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

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

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

4. All obtainable surrogate recoveries were within acceptance criteria.

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

6. Two (2) of sixty-four (64) blank spike recoveries were within acceptance criteria. A copy of the Sample Discrepancy Report SDR# 12MS217 has been enclosed.

7. Four (4) of one hundred and twenty-eight (128) matrix spike recoveries were outside acceptance criteria.

8. The sample was reported on a dry weight basis.

9. All initial calibrations associated with this data set were within acceptance criteria. Per method 8000B/8270C, the attached Table 1 shows the target compounds where the RSD exceeded 15%, and the mean RSD was used for evaluation of the initial calibration. Results associated with these compounds are considered to have greater uncertainty. Refer to the Analysis Batch Sequence Summary Forms to associate the calibration with client samples.

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

11. Internal standard area and retention time criteria were met.

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12. 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").

13. 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

1/12/13
Date

TABLE 1

TCL - 8000B/8270C COMPOUNDS WHERE THE MEAN %RSD IS USED TO MEET CRITERIA FOR INITIAL CALIBRATION OF AN INDIVIDUAL COMPOUND

MEAN RSD USED FOR EVALUATION: 10.46 CALIBRATION: 1212036

>15% RSD	Compound	>15% RSD	Compound	>15% RSD	Compound
	1,2,4-Trichlorobenzene		Di-n-butyl Phthalate		Surrogates:
	1,2-Dichlorobenzene		Di-n-octyl Phthalate	✓	2-Fluorophenol
	1,3-Dichlorobenzene	✓	Fluoranthene		Phenol-d5
	1,4-Dichlorobenzene		Fluorene	✓	Nitrobenzene-d5
	2,4,5-Trichlorophenol		Hexachlorobenzene		2-Fluorobiphenyl
	2,4,6-Trichlorophenol		Hexachlorobutadiene	✓	2,4,6-Tribromophenol
	2,4-Dichlorophenol		Hexachlorocyclopentadiene		p-Terphenyl-d14
	2,4-Dimethylphenol	✓	Hexachloroethane		
✓	2,4-Dinitrophenol		Indeno[1,2,3-cd]pyrene		
	2,4-Dinitrotoluene	✓	Isophorone		
	2,6-Dinitrotoluene		Naphthalene		
	2-Chloronaphthalene	✓	Nitrobenzene		
	2-Chlorophenol	✓	N-Nitrosodi-n-propylamine		
	2-Methylnaphthalene	✓	N-Nitrosodiphenylamine		
	2-Methylphenol	✓	Pentachlorophenol		
✓	2-Nitroaniline		Phenanthrene		
	2-Nitrophenol		Phenol		
	3- and/or 4-Methylphenol		Pyrene		
	3,3'-Dichlorobenzidine				
	3-Nitroaniline				
✓	4,6-Dinitro-2-methylphenol		**OLM04.2 TCL addons:**		
	4-Bromophenyl Phenyl Ether		1,1-Biphenyl		
	4-Chloro-3-methylphenol		Atrazine		
	4-Chloroaniline		Benzaldehyde		
	4-Chlorophenyl Phenyl Ether		Caprolactam		
✓	4-Nitroaniline				
	4-Nitrophenol		**NonTCL addons:**		
	Acenaphthene		1,2-Diphenylhydrazine		
	Acenaphthylene		1,4-Dioxane		
	Anthracene		1-Methylnapthalene		
	Benz[a]anthracene		2,3,4,6-Tetrachlorophenol		
	Benzo[a] pyrene		Acetophenone		
	Benzo[b] fluoranthene		Aniline		
	Benzo[g,h,i] perylene		Benzidine		
	Benzo[k] fluoranthene		Benzoic Acid		
	Benzyl alcohol		N-Nitrosodimethylamine		
	Bis(2-chloroethoxy) methane		Pyridine		
✓	Bis(2-chloroethyl) ether		Tributylphosphate		
✓	Bis(2-chloroisopropyl) ether				
	Bis(2-ethylhexyl) phthalate				
	Butyl Benzyl Phthalate				
✓	Carbazole				
	Chrysene				
	Dibenz[a,h]anthracene				
	Dibenzofuran				
	Diethyl Phthalate				
	Dimethyl Phthalate				

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS217

Initiator: Sharon Saylor
Date: 12-26-12
Client: WCHmstad

Batch: 1212059
Samples: L212173-BS1 msd1
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: SOIL
Prep Batch: L212173

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)

Spike recoveries outside QC acceptance limits in L212173-BS1 and L212173-msd1 but L212173-ms1 is 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)

namk

4. Project Manager Instructions...signature/date: 1/11/13

__ 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: 1/11/13 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

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. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

J1R794
1212059-01 (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	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
1,2-Dichlorobenzene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
1,3-Dichlorobenzene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
1,4-Dichlorobenzene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2,4,5-Trichlorophenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2,4,6-Trichlorophenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2,4-Dichlorophenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2,4-Dimethylphenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2,4-Dinitrophenol	1760	U	1760	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2,4-Dinitrotoluene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2,6-Dinitrotoluene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2-Chloronaphthalene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2-Chlorophenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2-Methylnaphthalene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2-Methylphenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2-Nitroaniline	1760	U	1760	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
2-Nitrophenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
3,3'-Dichlorobenzidine	706	U	706	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
3-Nitroaniline	1760	U	1760	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
4,6-Dinitro-2-methylphenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
4-Bromophenyl Phenyl Ether	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
4-Chloro-3-methylphenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
4-Chloroaniline	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
4-Chlorophenyl Phenyl Ether	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
3- and/or 4-Methylphenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
4-Nitroaniline	1760	U	1760	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
4-Nitrophenol	1760	U	1760	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Acenaphthene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Acenaphthylene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Anthracene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Benz[a]anthracene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Benzo[a] pyrene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Benzo[b] fluoranthene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Benzo[g,h,i] perylene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Benzo[k] fluoranthene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Bis(2-chloroethoxy) methane	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C

LIONVILLE LABORATORY
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

J1R794
1212059-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Bis(2-chloroisopropyl) ether	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Bis(2-ethylhexyl) phthalate	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Butyl Benzyl Phthalate	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Carbazole	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Chrysene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Dibenz[a,h]anthracene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Dibenzofuran	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Diethyl Phthalate	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Dimethyl Phthalate	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Di-n-butyl Phthalate	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Di-n-octyl Phthalate	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Fluoranthene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Fluorene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Hexachlorobenzene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Hexachlorobutadiene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Hexachlorocyclopentadiene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Hexachloroethane	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Indeno[1,2,3-cd]pyrene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Isophorone	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Naphthalene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Nitrobenzene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
N-Nitrosodi-n-propylamine	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
N-Nitrosodiphenylamine	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Pentachlorophenol	1760	U	1760	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Phenanthrene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Phenol	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Pyrene	353	U	353	ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
TIC:Aldol Condensate 1	**4020**	A, J		ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
TIC:Aldol Condensate 2	**85500**	A, B, J		ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
TIC:Unknown 1	**2390**	J		ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
TIC:Unknown 2	**1720**	B, J		ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
TIC:Unknown 3	**623**	J		ug/kg dry	1	L212173	12/19/2012	12/20/2012	8270C
Surrogate: 2-Fluorophenol	*59 %*		*25-121*			*L212173*	*12/19/2012*	*12/20/2012*	*8270C*
Surrogate: Phenol-d5	*60 %*		*24-113*			*L212173*	*12/19/2012*	*12/20/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*57 %*		*23-120*			*L212173*	*12/19/2012*	*12/20/2012*	*8270C*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

J1R794
1212059-01 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*67 %*	*30-115*			*L212173*	*12/19/2012*	*12/20/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*23 %*	*19-122*			*L212173*	*12/19/2012*	*12/20/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*80 %*	*18-137*			*L212173*	*12/19/2012*	*12/20/2012*	*8270C*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

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 L212173 - SW 3540/3550										
Blank (L212173-BLK1)				Prepared: 12/19/2012 Analyzed: 12/20/2012						
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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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: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

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 L212173 - SW 3540/3550										
Blank (L212173-BLK1)				Prepared: 12/19/2012 Analyzed: 12/20/2012						
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 3	1830	J		ug/kg wet						
Unknown 1	5760	J		ug/kg wet						
Aldol Condensate 2	1520	A, J		ug/kg wet						
Aldol Condensate 1	13500	A, J		ug/kg wet						
Unknown 2	1620	J		ug/kg wet						
Surrogate: 2-Fluorophenol	*1520*			*ug/kg wet*	*2500.0*		*61*	*25-121*		
Surrogate: Phenol-d5	*1560*			*ug/kg wet*	*2500.0*		*63*	*24-113*		
Surrogate: Nitrobenzene-d5	*651*			*ug/kg wet*	*1666.7*		*39*	*23-120*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

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 L212173 - SW 3540/3550									
Blank (L212173-BLK1)			Prepared: 12/19/2012 Analyzed: 12/20/2012						
Surrogate: 2-Fluorobiphenyl	*1030*		*ug/kg wet*	*1666.7*		*62*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1350*		*ug/kg wet*	*2500.0*		*54*	*19-122*		
Surrogate: p-Terphenyl-d14	*1310*		*ug/kg wet*	*1666.7*		*79*	*18-137*		
LCS (L212173-BS1)			Prepared: 12/19/2012 Analyzed: 12/20/2012						
1,2,4-Trichlorobenzene	930		ug/kg wet	2000.0		47	45-110		
1,2-Dichlorobenzene	1100		ug/kg wet	2000.0		55	45-105		
1,3-Dichlorobenzene	1020		ug/kg wet	2000.0		51	40-100		
1,4-Dichlorobenzene	1040		ug/kg wet	2000.0		52	35-105		
2,4,5-Trichlorophenol	1210		ug/kg wet	2000.0		61	30-140		
2,4,6-Trichlorophenol	958		ug/kg wet	2000.0		48	20-110		
2,4-Dichlorophenol	962		ug/kg wet	2000.0		48	40-110		
2,4-Dimethylphenol	820		ug/kg wet	2000.0		41	30-105		
2,4-Dinitrophenol	136		ug/kg wet	2000.0		7*	25-130		
2,4-Dinitrotoluene	1430		ug/kg wet	2000.0		72	50-115		
2,6-Dinitrotoluene	1240		ug/kg wet	2000.0		62	40-120		
2-Chloronaphthalene	1170		ug/kg wet	2000.0		58	45-115		
2-Chlorophenol	1070		ug/kg wet	2000.0		53	45-105		
2-Methylnaphthalene	914		ug/kg wet	2000.0		46	45-110		
2-Methylphenol	1090		ug/kg wet	2000.0		54	40-120		
2-Nitroaniline	1090		ug/kg wet	2000.0		55	45-120		
2-Nitrophenol	964		ug/kg wet	2000.0		48	40-110		
3,3'-Dichlorobenzidine	1080		ug/kg wet	2000.0		54	15-130		
3-Nitroaniline	1150		ug/kg wet	2000.0		58	40-130		
4,6-Dinitro-2-methylphenol	315		ug/kg wet	2000.0		16*	20-140		
4-Bromophenyl Phenyl Ether	1530		ug/kg wet	2000.0		76	45-115		
4-Chloro-3-methylphenol	959		ug/kg wet	2000.0		48	35-115		
4-Chloroaniline	816		ug/kg wet	2000.0		41	10-100		
4-Chlorophenyl Phenyl Ether	1510		ug/kg wet	2000.0		75	45-110		
3- and/or 4-Methylphenol	1080		ug/kg wet	2000.0		54	40-120		
4-Nitroaniline	1400		ug/kg wet	2000.0		70	40-130		
4-Nitrophenol	983		ug/kg wet	2000.0		49	15-140		
Acenaphthene	1200		ug/kg wet	2000.0		60	45-110		
Acenaphthylene	1180		ug/kg wet	2000.0		59	45-115		
Anthracene	1220		ug/kg wet	2000.0		61	45-130		
Benz[a]anthracene	1330		ug/kg wet	2000.0		67	45-130		
Benzo[a] pyrene	1280		ug/kg wet	2000.0		64	45-130		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

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 L212173 - SW 3540/3550									
LCS (L212173-BS1)			Prepared: 12/19/2012 Analyzed: 12/20/2012						
Benzo[b] fluoranthene	1400		ug/kg wet	2000.0		70	40-130		
Benzo[g,h,i] perylene	1310		ug/kg wet	2000.0		65	45-125		
Benzo[k] fluoranthene	1500		ug/kg wet	2000.0		75	45-125		
Bis(2-chloroethoxy) methane	930		ug/kg wet	2000.0		47	45-110		
Bis(2-chloroethyl) ether	961		ug/kg wet	2000.0		48	40-110		
Bis(2-chloroisopropyl) ether	963		ug/kg wet	2000.0		48	30-115		
Bis(2-ethylhexyl) phthalate	1260		ug/kg wet	2000.0		63	40-145		
Butyl Benzyl Phthalate	1350		ug/kg wet	2000.0		67	50-125		
Carbazole	1120		ug/kg wet	2000.0		56	40-140		
Chrysene	1440		ug/kg wet	2000.0		72	45-130		
Dibenz[a,h]anthracene	1500		ug/kg wet	2000.0		75	45-125		
Dibenzofuran	1370		ug/kg wet	2000.0		69	45-120		
Diethyl Phthalate	1420		ug/kg wet	2000.0		71	50-125		
Dimethyl Phthalate	1190		ug/kg wet	2000.0		59	45-130		
Di-n-butyl Phthalate	1070		ug/kg wet	2000.0		54	50-130		
Di-n-octyl Phthalate	1360		ug/kg wet	2000.0		68	40-150		
Fluoranthene	1110		ug/kg wet	2000.0		56	45-130		
Fluorene	1460		ug/kg wet	2000.0		73	45-120		
Hexachlorobenzene	1630		ug/kg wet	2000.0		81	45-130		
Hexachlorobutadiene	1080		ug/kg wet	2000.0		54	45-105		
Hexachlorocyclopentadiene	586		ug/kg wet	2000.0		29	10-100		
Hexachloroethane	1080		ug/kg wet	2000.0		54	35-110		
Indeno[1,2,3-cd]pyrene	1360		ug/kg wet	2000.0		68	45-130		
Isophorone	906		ug/kg wet	2000.0		45	40-110		
Naphthalene	1040		ug/kg wet	2000.0		52	40-110		
Nitrobenzene	927		ug/kg wet	2000.0		46	40-105		
N-Nitrosodi-n-propylamine	1050		ug/kg wet	2000.0		52	30-130		
N-Nitrosodiphenylamine	1190		ug/kg wet	2000.0		59	50-120		
Pentachlorophenol	642		ug/kg wet	2000.0		32	25-120		
Phenanthrene	1290		ug/kg wet	2000.0		65	50-120		
Phenol	1050		ug/kg wet	2000.0		53	40-115		
Pyrene	1470		ug/kg wet	2000.0		73	45-125		
Surrogate: 2-Fluorophenol	*1390*		*ug/kg wet*	*2500.0*		*56*	*25-121*		
Surrogate: Phenol-d5	*1410*		*ug/kg wet*	*2500.0*		*56*	*24-113*		
Surrogate: Nitrobenzene-d5	*791*		*ug/kg wet*	*1666.7*		*47*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*971*		*ug/kg wet*	*1666.7*		*58*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1220*		*ug/kg wet*	*2500.0*		*49*	*19-122*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

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 L212173 - SW 3540/3550									
LCS (L212173-BS1)			Prepared: 12/19/2012 Analyzed: 12/20/2012						
Surrogate: p-Terphenyl-d14	*1140*		*ug/kg wet*	*1666.7*		*69*	*18-137*		
Matrix Spike (L212173-MS1)		**Source: 1212059-01**	Prepared: 12/19/2012 Analyzed: 12/20/2012						
1,2,4-Trichlorobenzene	1000		ug/kg dry	2109.4	353 U	48	45-110		
1,2-Dichlorobenzene	993		ug/kg dry	2109.4	353 U	47	45-105		
1,3-Dichlorobenzene	864		ug/kg dry	2109.4	353 U	41	40-100		
1,4-Dichlorobenzene	903		ug/kg dry	2109.4	353 U	43	35-105		
2,4,5-Trichlorophenol	1030		ug/kg dry	2109.4	353 U	49	30-140		
2,4,6-Trichlorophenol	665		ug/kg dry	2109.4	353 U	32	20-110		
2,4-Dichlorophenol	1130		ug/kg dry	2109.4	353 U	54	40-110		
2,4-Dimethylphenol	1080		ug/kg dry	2109.4	353 U	51	30-105		
2,4-Dinitrophenol	1240		ug/kg dry	2109.4	1760 U	59	25-130		
2,4-Dinitrotoluene	1610		ug/kg dry	2109.4	353 U	76	50-115		
2,6-Dinitrotoluene	1610		ug/kg dry	2109.4	353 U	76	40-120		
2-Chloronaphthalene	1520		ug/kg dry	2109.4	353 U	72	45-115		
2-Chlorophenol	1320		ug/kg dry	2109.4	353 U	63	45-105		
2-Methylnaphthalene	1090		ug/kg dry	2109.4	353 U	52	45-110		
2-Methylphenol	1310		ug/kg dry	2109.4	353 U	62	40-120		
2-Nitroaniline	1420		ug/kg dry	2109.4	1760 U	67	45-120		
2-Nitrophenol	1150		ug/kg dry	2109.4	353 U	54	40-110		
3,3'-Dichlorobenzidine	1470		ug/kg dry	2109.4	706 U	70	15-130		
3-Nitroaniline	1450		ug/kg dry	2109.4	1760 U	69	40-130		
4,6-Dinitro-2-methylphenol	1470		ug/kg dry	2109.4	353 U	70	20-140		
4-Bromophenyl Phenyl Ether	1760		ug/kg dry	2109.4	353 U	83	45-115		
4-Chloro-3-methylphenol	1140		ug/kg dry	2109.4	353 U	54	35-115		
4-Chloroaniline	1060		ug/kg dry	2109.4	353 U	50	10-100		
4-Chlorophenyl Phenyl Ether	1610		ug/kg dry	2109.4	353 U	76	45-110		
3- and/or 4-Methylphenol	1310		ug/kg dry	2109.4	353 U	62	40-120		
4-Nitroaniline	1520		ug/kg dry	2109.4	1760 U	72	40-130		
4-Nitrophenol	951		ug/kg dry	2109.4	1760 U	45	15-140		
Acenaphthene	1540		ug/kg dry	2109.4	353 U	73	45-110		
Acenaphthylene	1600		ug/kg dry	2109.4	353 U	76	45-115		
Anthracene	1420		ug/kg dry	2109.4	353 U	67	45-130		
Benz[a]anthracene	1610		ug/kg dry	2109.4	353 U	76	45-130		
Benzo[a] pyrene	1540		ug/kg dry	2109.4	353 U	73	45-130		
Benzo[b] fluoranthene	1560		ug/kg dry	2109.4	353 U	74	40-130		
Benzo[g,h,i] perylene	1570		ug/kg dry	2109.4	353 U	74	45-125		

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Exton, PA 19341
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Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

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 L212173 - SW 3540/3550									
Matrix Spike (L212173-MS1)		**Source: 1212059-01**	Prepared: 12/19/2012 Analyzed: 12/20/2012						
Benzo[k] fluoranthene	1720		ug/kg dry	2109.4	353 U	82	45-125		
Bis(2-chloroethoxy) methane	1130		ug/kg dry	2109.4	353 U	54	45-110		
Bis(2-chloroethyl) ether	1130		ug/kg dry	2109.4	353 U	54	40-110		
Bis(2-chloroisopropyl) ether	1080		ug/kg dry	2109.4	353 U	51	30-115		
Bis(2-ethylhexyl) phthalate	1450		ug/kg dry	2109.4	353 U	69	40-145		
Butyl Benzyl Phthalate	1390		ug/kg dry	2109.4	353 U	66	50-125		
Carbazole	1490		ug/kg dry	2109.4	353 U	71	40-140		
Chrysene	1730		ug/kg dry	2109.4	353 U	82	45-130		
Dibenz[a,h]anthracene	1780		ug/kg dry	2109.4	353 U	84	45-125		
Dibenzofuran	1540		ug/kg dry	2109.4	353 U	73	45-120		
Diethyl Phthalate	1510		ug/kg dry	2109.4	353 U	72	50-125		
Dimethyl Phthalate	1480		ug/kg dry	2109.4	353 U	70	45-130		
Di-n-butyl Phthalate	1370		ug/kg dry	2109.4	353 U	65	50-130		
Di-n-octyl Phthalate	1530		ug/kg dry	2109.4	353 U	72	40-150		
Fluoranthene	1570		ug/kg dry	2109.4	353 U	75	45-130		
Fluorene	1610		ug/kg dry	2109.4	353 U	76	45-120		
Hexachlorobenzene	1890		ug/kg dry	2109.4	353 U	90	45-130		
Hexachlorobutadiene	1050		ug/kg dry	2109.4	353 U	50	45-105		
Hexachlorocyclopentadiene	800		ug/kg dry	2109.4	353 U	38	10-100		
Hexachloroethane	785		ug/kg dry	2109.4	353 U	37	35-110		
Indeno[1,2,3-cd]pyrene	1600		ug/kg dry	2109.4	353 U	76	45-130		
Isophorone	1130		ug/kg dry	2109.4	353 U	54	40-110		
Naphthalene	1190		ug/kg dry	2109.4	353 U	56	40-110		
Nitrobenzene	1080		ug/kg dry	2109.4	353 U	51	40-105		
N-Nitrosodi-n-propylamine	1260		ug/kg dry	2109.4	353 U	60	30-130		
N-Nitrosodiphenylamine	1450		ug/kg dry	2109.4	353 U	69	50-120		
Pentachlorophenol	1390		ug/kg dry	2109.4	1760 U	66	25-120		
Phenanthrene	1550		ug/kg dry	2109.4	353 U	74	50-120		
Phenol	1340		ug/kg dry	2109.4	353 U	64	40-115		
Pyrene	1660		ug/kg dry	2109.4	353 U	79	45-125		
Surrogate: 2-Fluorophenol	*1520*		*ug/kg dry*	*2636.8*		*58*	*25-121*		
Surrogate: Phenol-d5	*1610*		*ug/kg dry*	*2636.8*		*61*	*24-113*		
Surrogate: Nitrobenzene-d5	*881*		*ug/kg dry*	*1757.8*		*50*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1180*		*ug/kg dry*	*1757.8*		*67*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*853*		*ug/kg dry*	*2636.8*		*32*	*19-122*		
Surrogate: p-Terphenyl-d14	*1190*		*ug/kg dry*	*1757.8*		*68*	*18-137*		

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: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

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 L212173 - SW 3540/3550									
Matrix Spike Dup (L212173-MSD1)	**Source: 1212059-01**		Prepared: 12/19/2012 Analyzed: 12/20/2012						
1,2,4-Trichlorobenzene	1130		ug/kg dry	2133.0	353 U	53	45-110	10	40
1,2-Dichlorobenzene	1320		ug/kg dry	2133.0	353 U	62	45-105	27	40
1,3-Dichlorobenzene	1240		ug/kg dry	2133.0	353 U	58	40-100	34	40
1,4-Dichlorobenzene	1220		ug/kg dry	2133.0	353 U	57	35-105	29	40
2,4,5-Trichlorophenol	1340		ug/kg dry	2133.0	353 U	63	30-140	26	40
2,4,6-Trichlorophenol	828		ug/kg dry	2133.0	353 U	39	20-110	21	40
2,4-Dichlorophenol	1190		ug/kg dry	2133.0	353 U	56	40-110	4	40
2,4-Dimethylphenol	1190		ug/kg dry	2133.0	353 U	56	30-105	9	40
2,4-Dinitrophenol	1170		ug/kg dry	2133.0	1760 U	55	25-130	7	40
2,4-Dinitrotoluene	1720		ug/kg dry	2133.0	353 U	81	50-115	6	40
2,6-Dinitrotoluene	1750		ug/kg dry	2133.0	353 U	82	40-120	7	40
2-Chloronaphthalene	1910		ug/kg dry	2133.0	353 U	89	45-115	22	40
2-Chlorophenol	1510		ug/kg dry	2133.0	353 U	71	45-105	12	40
2-Methylnaphthalene	1150		ug/kg dry	2133.0	353 U	54	45-110	4	40
2-Methylphenol	1550		ug/kg dry	2133.0	353 U	73	40-120	16	40
2-Nitroaniline	1720		ug/kg dry	2133.0	1760 U	81	45-120	18	40
2-Nitrophenol	1190		ug/kg dry	2133.0	353 U	56	40-110	2	40
3,3'-Dichlorobenzidine	1590		ug/kg dry	2133.0	706 U	75	15-130	6	40
3-Nitroaniline	1610		ug/kg dry	2133.0	1760 U	75	40-130	9	40
4,6-Dinitro-2-methylphenol	1580		ug/kg dry	2133.0	353 U	74	20-140	6	40
4-Bromophenyl Phenyl Ether	2040		ug/kg dry	2133.0	353 U	96	45-115	14	40
4-Chloro-3-methylphenol	1250		ug/kg dry	2133.0	353 U	59	35-115	8	40
4-Chloroaniline	1110		ug/kg dry	2133.0	353 U	52	10-100	4	40
4-Chlorophenyl Phenyl Ether	2980		ug/kg dry	2133.0	353 U	140*	45-110	59*	40
3- and/or 4-Methylphenol	1510		ug/kg dry	2133.0	353 U	71	40-120	13	40
4-Nitroaniline	2860		ug/kg dry	2133.0	1760 U	134*	40-130	60*	40
4-Nitrophenol	1230		ug/kg dry	2133.0	1760 U	57	15-140	24	40
Acenaphthene	1670		ug/kg dry	2133.0	353 U	78	45-110	7	40
Acenaphthylene	1690		ug/kg dry	2133.0	353 U	79	45-115	4	40
Anthracene	1570		ug/kg dry	2133.0	353 U	74	45-130	9	40
Benz[a]anthracene	1780		ug/kg dry	2133.0	353 U	83	45-130	9	40
Benzo[a] pyrene	1660		ug/kg dry	2133.0	353 U	78	45-130	7	40
Benzo[b] fluoranthene	1680		ug/kg dry	2133.0	353 U	79	40-130	6	40
Benzo[g,h,i] perylene	1120		ug/kg dry	2133.0	353 U	52	45-125	35	40
Benzo[k] fluoranthene	1810		ug/kg dry	2133.0	353 U	85	45-125	4	40
Bis(2-chloroethoxy) methane	1150		ug/kg dry	2133.0	353 U	54	45-110	0.5	40

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. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 13:21

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 L212173 - SW 3540/3550									
Matrix Spike Dup (L212173-MSD1)		**Source: 1212059-01**	Prepared: 12/19/2012 Analyzed: 12/20/2012						
Bis(2-chloroethyl) ether	939		ug/kg dry	2133.0	353 U	44	40-110	20	40
Bis(2-chloroisopropyl) ether	1280		ug/kg dry	2133.0	353 U	60	30-115	16	40
Bis(2-ethylhexyl) phthalate	1740		ug/kg dry	2133.0	353 U	82	40-145	17	40
Butyl Benzyl Phthalate	1830		ug/kg dry	2133.0	353 U	86	50-125	26	40
Carbazole	1530		ug/kg dry	2133.0	353 U	72	40-140	1	40
Chrysene	1890		ug/kg dry	2133.0	353 U	88	45-130	7	40
Dibenz[a,h]anthracene	1300		ug/kg dry	2133.0	353 U	61	45-125	32	40
Dibenzofuran	1620		ug/kg dry	2133.0	353 U	76	45-120	4	40
Diethyl Phthalate	2730		ug/kg dry	2133.0	353 U	128*	50-125	56*	40
Dimethyl Phthalate	1960		ug/kg dry	2133.0	353 U	92	45-130	27	40
Di-n-butyl Phthalate	1470		ug/kg dry	2133.0	353 U	69	50-130	6	40
Di-n-octyl Phthalate	1710		ug/kg dry	2133.0	353 U	80	40-150	10	40
Fluoranthene	1530		ug/kg dry	2133.0	353 U	72	45-130	4	40
Fluorene	2870		ug/kg dry	2133.0	353 U	134*	45-120	55*	40
Hexachlorobenzene	2080		ug/kg dry	2133.0	353 U	97	45-130	8	40
Hexachlorobutadiene	1270		ug/kg dry	2133.0	353 U	59	45-105	18	40
Hexachlorocyclopentadiene	901		ug/kg dry	2133.0	353 U	42	10-100	11	40
Hexachloroethane	1040		ug/kg dry	2133.0	353 U	49	35-110	27	40
Indeno[1,2,3-cd]pyrene	1170		ug/kg dry	2133.0	353 U	55	45-130	32	40
Isophorone	1120		ug/kg dry	2133.0	353 U	52	40-110	3	40
Naphthalene	1320		ug/kg dry	2133.0	353 U	62	40-110	10	40
Nitrobenzene	1100		ug/kg dry	2133.0	353 U	52	40-105	1	40
N-Nitrosodi-n-propylamine	1490		ug/kg dry	2133.0	353 U	70	30-130	16	40
N-Nitrosodiphenylamine	1630		ug/kg dry	2133.0	353 U	76	50-120	11	40
Pentachlorophenol	1360		ug/kg dry	2133.0	1760 U	64	25-120	3	40
Phenanthrene	1630		ug/kg dry	2133.0	353 U	76	50-120	4	40
Phenol	1120		ug/kg dry	2133.0	353 U	53	40-115	19	40
Pyrene	2070		ug/kg dry	2133.0	353 U	97	45-125	21	40
Surrogate: 2-Fluorophenol	*1420*		*ug/kg dry*	*2666.3*		*53*	*25-121*		
Surrogate: Phenol-d5	*1360*		*ug/kg dry*	*2666.3*		*51*	*24-113*		
Surrogate: Nitrobenzene-d5	*870*		*ug/kg dry*	*1777.5*		*49*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1500*		*ug/kg dry*	*1777.5*		*84*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*927*		*ug/kg dry*	*2666.3*		*35*	*19-122*		
Surrogate: p-Terphenyl-d14	*1450*		*ug/kg dry*	*1777.5*		*82*	*18-137*		

PREPARATION BENCH SHEET

L212173

Lionville Laboratory

Printed: 12/20/2012 12:25:43PM

00000026

Matrix: Solid

Prepared using: SVOCGCMS - SW 3540/3550

Surrogate used: 1201561

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1212059-01	8270C TCL SVOC	12/19/2012 11:25	30.31	1				500	WC-Hanford, Inc.	
L212173-BLK1	QC	12/19/2012 11:25	30	1				500		
L212173-BS1	QC	12/19/2012 11:25	30	1	1201565		600	500		
L212173-MS1	QC	12/19/2012 11:25	30.72	1	1201565	1212059-01	600	500		
L212173-MSD1	QC	12/19/2012 11:25	30.38	1	1201565	1212059-01	600	500		

12/20/12 1230

Extracts Relinquished By — Date

12/20/12 1235

Extracts Received By — Date

PAHs

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: KP0169	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	12/26/2012 19:12

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R794	1212059-01	Soil	12/18/2012 09:37	12/19/2012 10:10

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

Case Narrative

Client: WC-HANFORD RC-189 KP0169
LVL #: 1212059

W.O. #: 60049-001-001-0001-00
Date Received: 12-19-2012

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

One (1) soil sample was collected on 12-18-2012.

The sample and associated QC samples were extracted 12-19-2012 and analyzed 12-20-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8310.

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

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

2. All required holding times for extraction and analysis have been met.

3. All obtainable surrogate recoveries were within acceptance criteria.

4. The method blank contained Fluorene at a level greater than the laboratory reporting limit, however, below the client required reporting limit. A copy of the Sample Discrepancy Report (SDR#12GC221) is enclosed.

5. All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

7. The sample was reported on a dry weight basis.

8. The 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. 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

1/14/13
Date

r:\group\data\2012\pah 8310\wc hanford\templateoj_s1.doc

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC221

Initiator: Catherine Carey
Date: 12/23/12
Client: WC Hanford

Batch: 1212059
Samples: B1KL1
Method: SW846/MCAWW/CLP/

Parameter: PAH
Matrix: SOIL
Prep Batch: L212174

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)

Fluorene hit in blank

2. Known or Probable Causes(s)

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

Other Description:
well below client required detection limit
Narrate
ID.

4. Project Manager Instructions...signature/date: 1/11/13
__ 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: 1/11/13
__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

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

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

QA-139-A-0208

GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

264 Welsh Pool Road
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-189 Project Number: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 19:12

J1R794

1212059-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**13.0**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Acenaphthylene	3.51	U	3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Acenaphthene	**33.2**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Fluorene	**5.40**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Phenanthrene	**10.7**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Anthracene	3.51	U	3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Fluoranthene	**23.6**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Indeno[1,2,3-cd]pyrene	**12.9**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Pyrene	**21.3**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Benz[a]anthracene	**16.6**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Chrysene	**12.1**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Benzo[b] fluoranthene	**11.6**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Benzo[k] fluoranthene	**5.89**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Benzo[a] pyrene	**19.1**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Dibenz[a,h]anthracene	**2.29**	J	3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Benzo[g,h,i] perylene	**12.4**		3.51	ug/kg dry	1	L212174	12/19/2012	12/20/2012	8310
Surrogate: Triphenylene	*94 %*		*68-129*			*L212174*	*12/19/2012*	*12/20/2012*	*8310*

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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: KP0169 Project Manager: Joan Kessner	**Reported:** 12/26/2012 19:12

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 L212174 - SW 3540C										
Blank (L212174-BLK1)				Prepared: 12/19/2012 Analyzed: 12/20/2012						
Naphthalene	3.33	U	3.33	ug/kg wet						
Acenaphthylene	3.33	U	3.33	ug/kg wet						
Acenaphthene	3.33	U	3.33	ug/kg wet						
Fluorene	4.93		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	*166*			*ug/kg wet*	*166.67*		*100*	*68-129*		
LCS (L212174-BS1)				Prepared: 12/19/2012 Analyzed: 12/20/2012						
Naphthalene	142		3.33	ug/kg wet	166.67		85	0-127		
Acenaphthylene	159		3.33	ug/kg wet	166.67		96	50-140		
Acenaphthene	180		3.33	ug/kg wet	166.67		108	17-139		
Fluorene	158		3.33	ug/kg wet	166.67		95	28-145		
Phenanthrene	158		3.33	ug/kg wet	166.67		95	30-152		
Anthracene	163		3.33	ug/kg wet	166.67		98	19-171		
Fluoranthene	161		3.33	ug/kg wet	166.67		96	34-159		
Indeno[1,2,3-cd]pyrene	161		3.33	ug/kg wet	166.67		96	31-156		
Pyrene	160		3.33	ug/kg wet	166.67		96	33-152		
Benz[a]anthracene	168		3.33	ug/kg wet	166.67		101	32-157		
Chrysene	155		3.33	ug/kg wet	166.67		93	31-159		
Benzo[b] fluoranthene	168		3.33	ug/kg wet	166.67		101	33-164		
Benzo[k] fluoranthene	166		3.33	ug/kg wet	166.67		100	28-161		
Benzo[a] pyrene	169		3.33	ug/kg wet	166.67		101	29-149		
Dibenz[a,h]anthracene	168		3.33	ug/kg wet	166.67		101	27-153		
Benzo[g,h,i] perylene	167		3.33	ug/kg wet	166.67		100	32-157		
Surrogate: Triphenylene	*150*			*ug/kg wet*	*166.67*		*90*	*68-129*		

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: KP0169	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	12/26/2012 19:12

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 L212174 - SW 3540C									
Matrix Spike (L212174-MS1)	**Source: 1212059-01**		Prepared: 12/19/2012 Analyzed: 12/20/2012						
Naphthalene	208	3.54	ug/kg dry	177.23	13.0	110	0-127		
Acenaphthylene	189	3.54	ug/kg dry	177.23	3.51 U	107	50-140		
Acenaphthene	249	3.54	ug/kg dry	177.23	33.2	122	17-139		
Fluorene	180	3.54	ug/kg dry	177.23	5.40	99	28-145		
Phenanthrene	209	3.54	ug/kg dry	177.23	10.7	112	30-152		
Anthracene	195	3.54	ug/kg dry	177.23	3.51 U	110	19-171		
Fluoranthene	266	3.54	ug/kg dry	177.23	23.6	137	34-159		
Indeno[1,2,3-cd]pyrene	206	3.54	ug/kg dry	177.23	12.9	109	31-156		
Pyrene	257	3.54	ug/kg dry	177.23	21.3	133	33-152		
Benz[a]anthracene	236	3.54	ug/kg dry	177.23	16.6	124	32-157		
Chrysene	235	3.54	ug/kg dry	177.23	12.1	126	31-159		
Benzo[b] fluoranthene	221	3.54	ug/kg dry	177.23	11.6	118	33-164		
Benzo[k] fluoranthene	198	3.54	ug/kg dry	177.23	5.89	109	28-161		
Benzo[a] pyrene	237	3.54	ug/kg dry	177.23	19.1	123	29-149		
Dibenz[a,h]anthracene	191	3.54	ug/kg dry	177.23	2.29	106	27-153		
Benzo[g,h,i] perylene	266	3.54	ug/kg dry	177.23	12.4	143	32-157		
Surrogate: Triphenylene	*191*		*ug/kg dry*	*177.23*		*108*	*68-129*		
Matrix Spike Dup (L212174-MSD1)	**Source: 1212059-01**		Prepared: 12/19/2012 Analyzed: 12/20/2012						
Naphthalene	166	3.54	ug/kg dry	177.34	13.0	86	0-127	24	40
Acenaphthylene	172	3.54	ug/kg dry	177.34	3.51 U	97	50-140	10	40
Acenaphthene	177	3.54	ug/kg dry	177.34	33.2	81	17-139	40	40
Fluorene	179	3.54	ug/kg dry	177.34	5.40	98	28-145	0.6	40
Phenanthrene	192	3.54	ug/kg dry	177.34	10.7	102	30-152	9	40
Anthracene	190	3.54	ug/kg dry	177.34	3.51 U	107	19-171	3	40
Fluoranthene	208	3.54	ug/kg dry	177.34	23.6	104	34-159	27	40
Indeno[1,2,3-cd]pyrene	199	3.54	ug/kg dry	177.34	12.9	105	31-156	4	40
Pyrene	210	3.54	ug/kg dry	177.34	21.3	107	33-152	22	40
Benz[a]anthracene	209	3.54	ug/kg dry	177.34	16.6	109	32-157	13	40
Chrysene	202	3.54	ug/kg dry	177.34	12.1	107	31-159	16	40
Benzo[b] fluoranthene	206	3.54	ug/kg dry	177.34	11.6	110	33-164	8	40
Benzo[k] fluoranthene	193	3.54	ug/kg dry	177.34	5.89	105	28-161	3	40
Benzo[a] pyrene	219	3.54	ug/kg dry	177.34	19.1	113	29-149	9	40
Dibenz[a,h]anthracene	197	3.54	ug/kg dry	177.34	2.29	110	27-153	3	40
Benzo[g,h,i] perylene	235	3.54	ug/kg dry	177.34	12.4	125	32-157	13	40
Surrogate: Triphenylene	*202*		*ug/kg dry*	*177.34*		*114*	*68-129*		

PREPARATION BENCH SHEET

L212174

Lionville Laboratory

Printed: 12/20/2012 12:03:59PM

00000035

Matrix: Solid

Prepared using: Extraction - SW 3540/3550

Surrogate used: 1200612

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1212059-01	8310 PAH	12/19/2012 11:30	30.71	5				50	WC-Hanford, Inc.	
L212174-BLK1	QC	12/19/2012 11:30	30	5				50		
L212174-BS1	QC	12/19/2012 11:30	30	5	1200436		50	50		
L212174-MS1	QC	12/19/2012 11:30	30.47	5	1200963	1212059-01	50	50		
L212174-MSD1	QC	12/19/2012 11:30	30.45	5	1200963	1212059-01	50	50		

12/20/12 12:12
Extracts Relinquished By — Date

LK 12/20/12
Extracts Received By — Date