SAF-RC-230
100N D4/ISS – Soil Full Protocol
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 7/24/12
INITIAL/DATE

COMMENTS:

SDG K3940 SAF-RC-230

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 108-N

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

2 July 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 #	1206075
SDG #	K3940
SAF #	RC-230
Date Received	06/26/12
# Samples	4
Matrix	SOIL
Volatiles	
Semivolatiles	X
Pest/PCB	X
Glycols	
DRO/KRO/GRO	X
PAHs	X
Herbicides	
Metals	X
Inorganics	X

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

Sincerely,

Lionville Laboratory
A Division of Eberline Analytical Corporation

Orlette S. Johnson
Project Manager

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 100 pages.

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

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1206075

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-230

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager Arlette Johnson

QC SW Del STD TAT 21 days

Date Rec'd 6-26-12 Date Due 7-17-12

		A	B		C	D		E		F					
Refrigerator #		2	2		2	2		2		2					
#/Type Container	Liquid														
	Solid	1aql	1aql		1aql	1aql		1aql		1aq					
Volume	Liquid														
	Solid	120	120		120	120		60		60					
Preservatives		—	—		—	—		—		—					
ANALYSES REQUESTED →		ORGANIC						INORG							
		VOA	BNA	~~Best~~ PCB	Herb	TPH-D	PAHs 8310	Metal + HS	CN	Anions	pH				
		Lionville Laboratory Use Only													
			8270	8082		ORO	PAH	Metal		Anions 9056	pH				

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
W Water WW Waste Water GW Groundwater WST Waste WI Wipe SO Solid S Soil SL Sludge SE Sediment PC Paint Chips O Oil NAL Non-Aqueous Liquid L Leachate A Air T Tissue F Fish	01	JIPTF2			S	6-21-12	1145								X		~~X~~	6/26/12				
	02	JIPTF3			↓	↓	1150		X	X		X	X		X		X	X				
	03	JIPTF4					1215		X	X		X	X		X		X	X				
	04	JIPTF5					1220		X	X		X	X		X		X	X				

Special Instructions: Run matrix QC

Met (1) = HSL + B, Mo, Si (NOTL)

Special Instructions:

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	6-26-12	0955

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-230-2	Page 1 of 1

Collector: R. Strickland	Company Contact: Bill Rodgers	Telephone No.: 206.257.7439	Project Coordinator: KESSNER, JH
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 100N D4/ISS - Soil Full Protocol	Sampling Location: 108-N		SAF No.: RC-230
Ice Chest No.: WCH-11-017, WCH-11-077	Field Logbook No.: EL-1576-20	COA: RD4MX2FD0	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A110 403		Bill of Lading/Air Bill No.: SEE DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A RS 06/25/12

Special Handling and/or Storage
Cool to 4°C

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	60mL	60mL	120mL	120mL	120mL	120mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	PAHs - 8310					
Sample No. / Matrix * / Sample Date / Sample Time											
J1PTF2 / SOIL / 6-21-12 / 1145	X	~~X~~	~~X~~	~~X~~	~~WHK~~	6-21-12					
J1PTF3 / SOIL / ↓ / 1150	X	X	X	X	X	X					
J1PTF4 / SOIL / / 1215	X	X	X	X	X	X					
J1PTF5 / SOIL / ↓ / 1220	X	X	X	X	X	X					
J1PTF6 / SOIL / /											

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. STRICKLAND WCH / R. Strickland	6/21/12 1347	R. STRICKLAND / R. Strickland / M0767 FRIDGE	6/21/12 1347
R. STRICKLAND / R. Strickland / M0767 FRIDGE	06/25/12 1400	FED EX	
FED EX	6.26.12 / 0955	DSMITH	6.26.12 / 0955

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
(2) IC Anions - 300.0 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2; pH (Soil) - 9045

REVIEWED BY SMS
DATE 6/25/12

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

000000004

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WCHanford
Project/SAF/SOW/Release #: RC-230

Date: 6-26-12

LvL Batch #: 1206075

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7937 1847 4754 / 4880
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 3.8 °C (4.7°C)		Cooler # WCH-11-017
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify): #WCH-11-077
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 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.doc

SEMIVOLATILES

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-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/11/2012 08:04

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF3	1206075-02	Soil	06/21/2012 11:50	06/26/2012 09:55
J1PTF4	1206075-03	Soil	06/21/2012 12:15	06/26/2012 09:55
J1PTF5	1206075-04	Soil	06/21/2012 12:20	06/26/2012 09:55

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

Case Narrative

Client: WC-HANFORD RC-230 K3940
LVL #: 1206075

W.O. #: 60049-001-001-0001-00
Date Received: 06-26-2012

SEMIVOLATILE

Three (3) soil samples were collected on 06-21-2012.

The samples and associated QC samples were extracted 06-28-2012 and analyzed 07-02,05-2012 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. The results presented in this report are derived from samples that met LvL's sample acceptance policy.

2. Samples were extracted and analyzed within holding time.

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

4. Five (5) samples required dilution due to high levels of target analytes. Samples J1PTF3, L206240-MS2, L206240-MSD2 and J1PTF4 required 5-fold dilutions; sample J1PTF5 required a 10-fold dilution. Reporting limits have been adjusted to reflect the necessary dilutions.

5. All obtainable surrogate recoveries were within acceptance criteria.

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

7. One (1) of sixty-four (64) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12MS133) has been enclosed.

8. Four (4) of one hundred and twenty-eight (128) obtainable matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12MS133) has been enclosed.

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

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10. All initial calibrations associated with this data set were within acceptance criteria using the mean RSD described in method 8000B. Per method 8000B/8270C, the attached Table 1 provides the mean RSD and indicates the target compounds where the RSD exceeded 15%; results for the indicated target compounds are considered to have greater uncertainty. Refer to the Analysis Batch Sequence Summary Form(s) to associate the calibration with samples.

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

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

13. 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").

14. 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

7/13/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS133

Initiator: Sharon Saylor
Date: 7-10-12
Client: WCHanford RC-230 K3940

Batch: 1206075
Samples: L206240-MS1, ms2, msd2
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: SOIL
Prep Batch: L206240

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) lowrecovery of 2,4-dinitrophenol in L206240-MS1
(2) lowrecovery of 2,4-dinitrophenol + pentachlorophenol in L206240-ms2
(3) lowrecovery of pentachlorophenol and highbiased carbazole in L206240-msd2

2. Known or Probable Causes(s) (1) Acidic phenols subject to erratic chromatographic behavior (2) + (3) Possible matrix effect samples required a 5 fold dilution for analysis

Pw 7/11/12

3. Discussion and Proposed Action Other Description: namate

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

4. Project Manager Instructions...signature/date: 7/13/12

__ 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: 7/11/12 Other Explanation:

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

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

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

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

QA-139-A-0208

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: 10.6 CALIBRATION: 1207001

>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				

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: 10.4 CALIBRATION: 1207002

>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				

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	K3940
Client:	WC-Hanford, Inc.	Project:	RC-230
Sequence:	2070015	Instrument:	HP5972N
Matrix:	Solid	Calibration:	1207001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2070015-TUN1	N070201.D	07/02/12 12:43
Cal Standard	2070015-CAL5	N070203.D	07/02/12 14:09
Cal Standard	2070015-CAL1	N070204.D	07/02/12 15:00
Cal Standard	2070015-CAL2	N070205.D	07/02/12 15:50
Cal Standard	2070015-CAL3	N070206.D	07/02/12 16:41
Cal Standard	2070015-CAL4	N070207.D	07/02/12 17:31
Secondary Cal Check	2070015-SCV1	N070208.D	07/02/12 18:22
LCS	L206240-BS1	N070209.D	07/02/12 19:12
Blank	L206240-BLK1	N070210.D	07/02/12 20:02

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	K3940
Client:	WC-Hanford, Inc.	Project:	RC-230
Sequence:	2070021	Instrument:	HP5972N
Matrix:	Solid	Calibration:	1207002

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2070021-TUN1	N070501.D	07/05/12 11:00
Calibration Check	2070021-CCV1	N070502.D	07/05/12 11:24
J1PTF3	1206075-02	N070506.D	07/05/12 14:51
J1PTF3	L206240-MS2	N070507.D	07/05/12 15:41
J1PTF3	L206240-MSD2	N070508.D	07/05/12 16:32
J1PTF4	1206075-03	N070509.D	07/05/12 17:23
J1PTF5	1206075-04	N070510.D	07/05/12 18:14

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.

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

J1PTF3
1206075-02 (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	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
1,2-Dichlorobenzene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
1,3-Dichlorobenzene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
1,4-Dichlorobenzene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4,5-Trichlorophenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4,6-Trichlorophenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4-Dichlorophenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4-Dimethylphenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4-Dinitrophenol	8460	U	8460	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4-Dinitrotoluene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,6-Dinitrotoluene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Chloronaphthalene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Chlorophenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Methylnaphthalene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Methylphenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Nitroaniline	8460	U	8460	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Nitrophenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
3,3'-Dichlorobenzidine	3380	U	3380	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
3-Nitroaniline	8460	U	8460	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4,6-Dinitro-2-methylphenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Bromophenyl Phenyl Ether	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Chloro-3-methylphenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Chloroaniline	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Chlorophenyl Phenyl Ether	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
3- and/or 4-Methylphenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Nitroaniline	8460	U	8460	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Nitrophenol	8460	U	8460	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Acenaphthene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Acenaphthylene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Anthracene	**496**	J, D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benz[a]anthracene	**977**	J, D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benzo[a] pyrene	**782**	J, D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benzo[b] fluoranthene	**559**	J, D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benzo[g,h,i] perylene	**427**	J, D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benzo[k] fluoranthene	**754**	J, D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C

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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-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/11/2012 08:04

J1PTF3
1206075-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethoxy) methane	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Bis(2-chloroethyl) ether	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Bis(2-chloroisopropyl) ether	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Bis(2-ethylhexyl) phthalate	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Butyl Benzyl Phthalate	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Carbazole	**272**	J, D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Chrysene	**1210**	J, D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Dibenz[a,h]anthracene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Dibenzofuran	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Diethyl Phthalate	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Dimethyl Phthalate	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Di-n-butyl Phthalate	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Di-n-octyl Phthalate	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Fluoranthene	**2410**	D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Fluorene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Hexachlorobenzene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Hexachlorobutadiene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Hexachlorocyclopentadiene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Hexachloroethane	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Indeno[1,2,3-cd]pyrene	**394**	D, J	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Isophorone	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Naphthalene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Nitrobenzene	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
N-Nitrosodi-n-propylamine	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
N-Nitrosodiphenylamine	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Pentachlorophenol	8460	U	8460	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Phenanthrene	**1980**	D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Phenol	1690	U	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Pyrene	**2390**	D	1690	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:Unknown 1	**654**	J, D		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:PAH 1	**529**	D, J		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:Aldol Condensate 3	**462**	A, B, J, D		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:Aldol Condensate 2	**43000**	A, B, J, D		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:Aldol Condensate 1	**963**	A, B, D, J		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Surrogate: 2-Fluorophenol	*61 %*		*25-121*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: Phenol-d5	*63 %*		*24-113*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

J1PTF3

1206075-02 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: Nitrobenzene-d5	*63 %*	*23-120*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*68 %*	*30-115*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*25 %*	*19-122*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*75 %*	*18-137*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	Reported: 07/11/2012 08:04

J1PTF4
1206075-03 (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	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
1,2-Dichlorobenzene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
1,3-Dichlorobenzene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
1,4-Dichlorobenzene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4,5-Trichlorophenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4,6-Trichlorophenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4-Dichlorophenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4-Dimethylphenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4-Dinitrophenol	8530	U	8530	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,4-Dinitrotoluene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2,6-Dinitrotoluene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Chloronaphthalene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Chlorophenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Methylnaphthalene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Methylphenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Nitroaniline	8530	U	8530	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
2-Nitrophenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
3,3'-Dichlorobenzidine	3410	U	3410	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
3-Nitroaniline	8530	U	8530	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4,6-Dinitro-2-methylphenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Bromophenyl Phenyl Ether	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Chloro-3-methylphenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Chloroaniline	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Chlorophenyl Phenyl Ether	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
3- and/or 4-Methylphenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Nitroaniline	8530	U	8530	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
4-Nitrophenol	8530	U	8530	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Acenaphthene	**549**	J, D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Acenaphthylene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Anthracene	**1160**	J, D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benz[a]anthracene	**2140**	D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benzo[a] pyrene	**1680**	D, J	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benzo[b] fluoranthene	**1190**	D, J	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benzo[g,h,i] perylene	**899**	D, J	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Benzo[k] fluoranthene	**1540**	J, D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Bis(2-chloroethoxy) methane	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C

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264 Welsh Pool Road
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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

J1PTF4
1206075-03 (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	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Bis(2-chloroisopropyl) ether	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Bis(2-ethylhexyl) phthalate	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Butyl Benzyl Phthalate	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Carbazole	**661**	J, D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Chrysene	**2620**	D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Dibenz[a,h]anthracene	**441**	J, D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Dibenzofuran	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Diethyl Phthalate	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Dimethyl Phthalate	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Di-n-butyl Phthalate	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Di-n-octyl Phthalate	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Fluoranthene	**5200**	D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Fluorene	**495**	J, D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Hexachlorobenzene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Hexachlorobutadiene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Hexachlorocyclopentadiene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Hexachloroethane	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Indeno[1,2,3-cd]pyrene	**852**	J, D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Isophorone	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Naphthalene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Nitrobenzene	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
N-Nitrosodi-n-propylamine	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
N-Nitrosodiphenylamine	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Pentachlorophenol	8530	U	8530	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Phenanthrene	**4600**	D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Phenol	1710	U	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Pyrene	**5070**	D	1710	ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:Aldol Condensate 1	**2530**	A, B, J, D		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:Aldol Condensate 2	**58800**	A, B, J, D		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:PAH 1	**1040**	J, D		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:Unknown 1	**4830**	B, J, D		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
TIC:Unknown 2	**2460**	J, D		ug/kg dry	5	L206240	06/28/2012	07/05/2012	8270C
Surrogate: 2-Fluorophenol	*72 %*		*25-121*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: Phenol-d5	*76 %*		*24-113*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*73 %*		*23-120*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*

264 Welsh Pool Road
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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

J1PTF4
1206075-03 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*83 %*	*30-115*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*55 %*	*19-122*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*93 %*	*18-137*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

J1PTF5
1206075-04 (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	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
1,2-Dichlorobenzene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
1,3-Dichlorobenzene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
1,4-Dichlorobenzene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2,4,5-Trichlorophenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2,4,6-Trichlorophenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2,4-Dichlorophenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2,4-Dimethylphenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2,4-Dinitrophenol	33200	U	33200	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2,4-Dinitrotoluene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2,6-Dinitrotoluene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2-Chloronaphthalene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2-Chlorophenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2-Methylnaphthalene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2-Methylphenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2-Nitroaniline	33200	U	33200	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
2-Nitrophenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
3,3'-Dichlorobenzidine	13300	U	13300	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
3-Nitroaniline	33200	U	33200	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
4,6-Dinitro-2-methylphenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
4-Bromophenyl Phenyl Ether	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
4-Chloro-3-methylphenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
4-Chloroaniline	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
4-Chlorophenyl Phenyl Ether	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
3- and/or 4-Methylphenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
4-Nitroaniline	33200	U	33200	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
4-Nitrophenol	33200	U	33200	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Acenaphthene	**2320**	J, D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Acenaphthylene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Anthracene	**6720**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Benz[a]anthracene	**15300**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Benzo[a] pyrene	**12700**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Benzo[b] fluoranthene	**9260**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Benzo[g,h,i] perylene	**6440**	D, J	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Benzo[k] fluoranthene	**11400**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Bis(2-chloroethoxy) methane	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C

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Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	Reported: 07/11/2012 08:04

J1PTF5
1206075-04 (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	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Bis(2-chloroisopropyl) ether	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Bis(2-ethylhexyl) phthalate	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Butyl Benzyl Phthalate	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Carbazole	**2490**	D, J	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Chrysene	**18500**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Dibenz[a,h]anthracene	**3650**	D, J	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Dibenzofuran	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Diethyl Phthalate	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Dimethyl Phthalate	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Di-n-butyl Phthalate	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Di-n-octyl Phthalate	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Fluoranthene	**33900**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Fluorene	**1990**	D, J	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Hexachlorobenzene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Hexachlorobutadiene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Hexachlorocyclopentadiene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Hexachloroethane	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Indeno[1,2,3-cd]pyrene	**6730**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Isophorone	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Naphthalene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Nitrobenzene	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
N-Nitrosodi-n-propylamine	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
N-Nitrosodiphenylamine	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Pentachlorophenol	33200	U	33200	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Phenanthrene	**20100**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Phenol	6640	U	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Pyrene	**30800**	D	6640	ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
TIC:PAH 4	**7490**	J, D		ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
TIC:PAH 3	**4720**	D, J		ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
TIC:PAH 2	**5640**	D, J		ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
TIC:PAH 1	**5790**	D, J		ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
TIC:Aldol Condensate 1	**72600**	A, B, J, D		ug/kg dry	10	L206240	06/28/2012	07/05/2012	8270C
Surrogate: 2-Fluorophenol	*74 %*		*25-121*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: Phenol-d5	*72 %*		*24-113*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*72 %*		*23-120*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*

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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

J1PTF5
1206075-04 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*90 %*	*30-115*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*42 %*	*19-122*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*84 %*	*18-137*			*L206240*	*06/28/2012*	*07/05/2012*	*8270C*

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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

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 L206240 - SW 3540C										
Blank (L206240-BLK1)				Prepared: 06/28/2012 Analyzed: 07/02/2012						
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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Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/11/2012 08:04

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 L206240 - SW 3540C										
Blank (L206240-BLK1)				Prepared: 06/28/2012 Analyzed: 07/02/2012						
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 TICS	1520	J		ug/kg wet						
Aldol Condensate 2	30500	A, J		ug/kg wet						
Aldol Condensate 4	708	A, J		ug/kg wet						
Aldol Condensate 3	693	A, J		ug/kg wet						
Aldol Condensate 1 RDT 7/11/12	2270	A, J		ug/kg wet						
Surrogate: 2-Fluorophenol	*1630*			*ug/kg wet*	*2500.0*		*65*	*25-121*		
Surrogate: Phenol-d5	*1750*			*ug/kg wet*	*2500.0*		*70*	*24-113*		
Surrogate: Nitrobenzene-d5	*1110*			*ug/kg wet*	*1666.7*		*66*	*23-120*		

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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

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 L206240 - SW 3540C									
Blank (L206240-BLK1)			Prepared: 06/28/2012 Analyzed: 07/02/2012						
Surrogate: 2-Fluorobiphenyl	*1170*		*ug/kg wet*	*1666.7*		*70*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1270*		*ug/kg wet*	*2500.0*		*51*	*19-122*		
Surrogate: p-Terphenyl-d14	*1620*		*ug/kg wet*	*1666.7*		*97*	*18-137*		
LCS (L206240-BS1)			Prepared: 06/28/2012 Analyzed: 07/02/2012						
1,2,4-Trichlorobenzene	1430		ug/kg wet	2000.0		71	45-110		
1,2-Dichlorobenzene	1470		ug/kg wet	2000.0		73	45-105		
1,3-Dichlorobenzene	1410		ug/kg wet	2000.0		71	40-100		
1,4-Dichlorobenzene	1640		ug/kg wet	2000.0		82	35-105		
2,4,5-Trichlorophenol	1570		ug/kg wet	2000.0		78	30-140		
2,4,6-Trichlorophenol	1430		ug/kg wet	2000.0		71	20-110		
2,4-Dichlorophenol	1370		ug/kg wet	2000.0		69	40-110		
2,4-Dimethylphenol	1130		ug/kg wet	2000.0		56	30-105		
2,4-Dinitrophenol	183		ug/kg wet	2000.0		9*	25-130		
2,4-Dinitrotoluene	1620		ug/kg wet	2000.0		81	50-115		
2,6-Dinitrotoluene	1580		ug/kg wet	2000.0		79	40-120		
2-Chloronaphthalene	1530		ug/kg wet	2000.0		76	45-115		
2-Chlorophenol	1430		ug/kg wet	2000.0		72	45-105		
2-Methylnaphthalene	1460		ug/kg wet	2000.0		73	45-110		
2-Methylphenol	1440		ug/kg wet	2000.0		72	40-120		
2-Nitroaniline	1630		ug/kg wet	2000.0		81	45-120		
2-Nitrophenol	1300		ug/kg wet	2000.0		65	40-110		
3,3'-Dichlorobenzidine	1290		ug/kg wet	2000.0		65	15-130		
3-Nitroaniline	1860		ug/kg wet	2000.0		93	40-130		
4,6-Dinitro-2-methylphenol	413		ug/kg wet	2000.0		21	20-140		
4-Bromophenyl Phenyl Ether	1440		ug/kg wet	2000.0		72	45-115		
4-Chloro-3-methylphenol	1460		ug/kg wet	2000.0		73	35-115		
4-Chloroaniline	1210		ug/kg wet	2000.0		61	10-100		
4-Chlorophenyl Phenyl Ether	1540		ug/kg wet	2000.0		77	45-110		
3- and/or 4-Methylphenol	1440		ug/kg wet	2000.0		72	40-120		
4-Nitroaniline	1760		ug/kg wet	2000.0		88	40-130		
4-Nitrophenol	1410		ug/kg wet	2000.0		71	15-140		
Acenaphthene	1570		ug/kg wet	2000.0		78	45-110		
Acenaphthylene	1360		ug/kg wet	2000.0		68	45-115		
Anthracene	1550		ug/kg wet	2000.0		77	45-130		
Benz[a]anthracene	1680		ug/kg wet	2000.0		84	45-130		
Benzo[a] pyrene	1620		ug/kg wet	2000.0		81	45-130		

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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

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 L206240 - SW 3540C									
LCS (L206240-BS1)			Prepared: 06/28/2012 Analyzed: 07/02/2012						
Benzo[b] fluoranthene	1670		ug/kg wet	2000.0		84	40-130		
Benzo[g,h,i] perylene	1870		ug/kg wet	2000.0		94	45-125		
Benzo[k] fluoranthene	1650		ug/kg wet	2000.0		82	45-125		
Bis(2-chloroethoxy) methane	1460		ug/kg wet	2000.0		73	45-110		
Bis(2-chloroethyl) ether	1460		ug/kg wet	2000.0		73	40-110		
Bis(2-chloroisopropyl) ether	1510		ug/kg wet	2000.0		75	30-115		
Bis(2-ethylhexyl) phthalate	1770		ug/kg wet	2000.0		88	40-145		
Butyl Benzyl Phthalate	1670		ug/kg wet	2000.0		84	50-125		
Carbazole	2400		ug/kg wet	2000.0		120	40-140		
Chrysene	1720		ug/kg wet	2000.0		86	45-130		
Dibenz[a,h]anthracene	1610		ug/kg wet	2000.0		81	45-125		
Dibenzofuran	1600		ug/kg wet	2000.0		80	45-120		
Diethyl Phthalate	1650		ug/kg wet	2000.0		82	50-125		
Dimethyl Phthalate	1550		ug/kg wet	2000.0		78	45-130		
Di-n-butyl Phthalate	1580		ug/kg wet	2000.0		79	50-130		
Di-n-octyl Phthalate	1690		ug/kg wet	2000.0		84	40-150		
Fluoranthene	1580		ug/kg wet	2000.0		79	45-130		
Fluorene	1590		ug/kg wet	2000.0		79	45-120		
Hexachlorobenzene	1530		ug/kg wet	2000.0		77	45-130		
Hexachlorobutadiene	1510		ug/kg wet	2000.0		76	45-105		
Hexachlorocyclopentadiene	404		ug/kg wet	2000.0		20	10-100		
Hexachloroethane	1400		ug/kg wet	2000.0		70	35-110		
Indeno[1,2,3-cd]pyrene	1770		ug/kg wet	2000.0		89	45-130		
Isophorone	1400		ug/kg wet	2000.0		70	40-110		
Naphthalene	1620		ug/kg wet	2000.0		81	40-110		
Nitrobenzene	1440		ug/kg wet	2000.0		72	40-105		
N-Nitrosodi-n-propylamine	1480		ug/kg wet	2000.0		74	30-130		
N-Nitrosodiphenylamine	1520		ug/kg wet	2000.0		76	50-120		
Pentachlorophenol	820		ug/kg wet	2000.0		41	25-120		
Phenanthrene	1610		ug/kg wet	2000.0		81	50-120		
Phenol	1450		ug/kg wet	2000.0		73	40-115		
Pyrene	1620		ug/kg wet	2000.0		81	45-125		
Surrogate: 2-Fluorophenol	*1790*		*ug/kg wet*	*2500.0*		*72*	*25-121*		
Surrogate: Phenol-d5	*1930*		*ug/kg wet*	*2500.0*		*77*	*24-113*		
Surrogate: Nitrobenzene-d5	*1250*		*ug/kg wet*	*1666.7*		*75*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1320*		*ug/kg wet*	*1666.7*		*79*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1740*		*ug/kg wet*	*2500.0*		*70*	*19-122*		

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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-230 Project Number: K3940 Project Manager: Joan Kessner	Reported: 07/11/2012 08:04

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 L206240 - SW 3540C										
LCS (L206240-BS1)				Prepared: 06/28/2012 Analyzed: 07/02/2012						
Surrogate: p-Terphenyl-d14	*1400*			*ug/kg wet*	*1666.7*		*84*	*18-137*		
Matrix Spike (L206240-MS2)		**Source: 1206075-02**		Prepared: 06/28/2012 Analyzed: 07/05/2012						
1,2,4-Trichlorobenzene	1340	D		ug/kg dry	2055.7	1690 U	65	45-110		
1,2-Dichlorobenzene	1210	D		ug/kg dry	2055.7	1690 U	59	45-105		
1,3-Dichlorobenzene	1140	D		ug/kg dry	2055.7	1690 U	55	40-100		
1,4-Dichlorobenzene	1140	D		ug/kg dry	2055.7	1690 U	56	35-105		
2,4,5-Trichlorophenol	1350	D		ug/kg dry	2055.7	1690 U	66	30-140		
2,4,6-Trichlorophenol	1190	D		ug/kg dry	2055.7	1690 U	58	20-110		
2,4-Dichlorophenol	1370	D		ug/kg dry	2055.7	1690 U	67	40-110		
2,4-Dimethylphenol	1470	D		ug/kg dry	2055.7	1690 U	71	30-105		
2,4-Dinitrophenol	284	D		ug/kg dry	2055.7	8460 U	14*	25-130		
2,4-Dinitrotoluene	1400	D		ug/kg dry	2055.7	1690 U	68	50-115		
2,6-Dinitrotoluene	1450	D		ug/kg dry	2055.7	1690 U	70	40-120		
2-Chloronaphthalene	1460	D		ug/kg dry	2055.7	1690 U	71	45-115		
2-Chlorophenol	1320	D		ug/kg dry	2055.7	1690 U	64	45-105		
2-Methylnaphthalene	1440	D		ug/kg dry	2055.7	1690 U	70	45-110		
2-Methylphenol	1460	D		ug/kg dry	2055.7	1690 U	71	40-120		
2-Nitroaniline	1390	D		ug/kg dry	2055.7	8460 U	68	45-120		
2-Nitrophenol	1100	D		ug/kg dry	2055.7	1690 U	53	40-110		
3,3'-Dichlorobenzidine	1320	D		ug/kg dry	2055.7	3380 U	64	15-130		
3-Nitroaniline	1620	D		ug/kg dry	2055.7	8460 U	79	40-130		
4,6-Dinitro-2-methylphenol	663	D		ug/kg dry	2055.7	1690 U	32	20-140		
4-Bromophenyl Phenyl Ether	1590	D		ug/kg dry	2055.7	1690 U	77	45-115		
4-Chloro-3-methylphenol	1390	D		ug/kg dry	2055.7	1690 U	68	35-115		
4-Chloroaniline	1440	D		ug/kg dry	2055.7	1690 U	70	10-100		
4-Chlorophenyl Phenyl Ether	1560	D		ug/kg dry	2055.7	1690 U	76	45-110		
3- and/or 4-Methylphenol	1370	D		ug/kg dry	2055.7	1690 U	67	40-120		
4-Nitroaniline	1410	D		ug/kg dry	2055.7	8460 U	68	40-130		
4-Nitrophenol	779	D		ug/kg dry	2055.7	8460 U	38	15-140		
Acenaphthene	1730	D		ug/kg dry	2055.7	1690 U	84	45-110		
Acenaphthylene	1320	D		ug/kg dry	2055.7	1690 U	64	45-115		
Anthracene	2020	D		ug/kg dry	2055.7	496	74	45-130		
Benz[a]anthracene	2530	D		ug/kg dry	2055.7	977	75	45-130		
Benzo[a] pyrene	2250	D		ug/kg dry	2055.7	782	71	45-130		
Benzo[b] fluoranthene	2060	D		ug/kg dry	2055.7	559	73	40-130		
Benzo[g,h,i] perylene	1940	D		ug/kg dry	2055.7	427	74	45-125		

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

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 L206240 - SW 3540C										
Matrix Spike (L206240-MS2)		**Source: 1206075-02**		Prepared: 06/28/2012 Analyzed: 07/05/2012						
Benzo[k] fluoranthene	2210	D		ug/kg dry	2055.7	754	71	45-125		
Bis(2-chloroethoxy) methane	1390	D		ug/kg dry	2055.7	1690 U	67	45-110		
Bis(2-chloroethyl) ether	1240	D		ug/kg dry	2055.7	1690 U	60	40-110		
Bis(2-chloroisopropyl) ether	1290	D		ug/kg dry	2055.7	1690 U	63	30-115		
Bis(2-ethylhexyl) phthalate	1470	D		ug/kg dry	2055.7	1690 U	72	40-145		
Butyl Benzyl Phthalate	1460	D		ug/kg dry	2055.7	1690 U	71	50-125		
Carbazole	2790	D		ug/kg dry	2055.7	272	122	40-140		
Chrysene	2820	D		ug/kg dry	2055.7	1210	78	45-130		
Dibenz[a,h]anthracene	1500	D		ug/kg dry	2055.7	1690 U	73	45-125		
Dibenzofuran	1690	D		ug/kg dry	2055.7	1690 U	82	45-120		
Diethyl Phthalate	1560	D		ug/kg dry	2055.7	1690 U	76	50-125		
Dimethyl Phthalate	1540	D		ug/kg dry	2055.7	1690 U	75	45-130		
Di-n-butyl Phthalate	1720	D		ug/kg dry	2055.7	1690 U	84	50-130		
Di-n-octyl Phthalate	1190	D		ug/kg dry	2055.7	1690 U	58	40-150		
Fluoranthene	3810	D		ug/kg dry	2055.7	2410	68	45-130		
Fluorene	1740	D		ug/kg dry	2055.7	1690 U	85	45-120		
Hexachlorobenzene	1720	D		ug/kg dry	2055.7	1690 U	84	45-130		
Hexachlorobutadiene	1390	D		ug/kg dry	2055.7	1690 U	67	45-105		
Hexachlorocyclopentadiene	486	D		ug/kg dry	2055.7	1690 U	24	10-100		
Hexachloroethane	1080	D		ug/kg dry	2055.7	1690 U	52	35-110		
Indeno[1,2,3-cd]pyrene	1870	D		ug/kg dry	2055.7	394	72	45-130		
Isophorone	1270	D		ug/kg dry	2055.7	1690 U	62	40-110		
Naphthalene	1540	D		ug/kg dry	2055.7	1690 U	75	40-110		
Nitrobenzene	1290	D		ug/kg dry	2055.7	1690 U	63	40-105		
N-Nitrosodi-n-propylamine	1290	D		ug/kg dry	2055.7	1690 U	63	30-130		
N-Nitrosodiphenylamine	1610	D		ug/kg dry	2055.7	1690 U	78	50-120		
Pentachlorophenol	360	D		ug/kg dry	2055.7	8460 U	18*	25-120		
Phenanthrene	3230	D		ug/kg dry	2055.7	1980	61	50-120		
Phenol	1350	D		ug/kg dry	2055.7	1690 U	66	40-115		
Pyrene	3700	D		ug/kg dry	2055.7	2390	64	45-125		
Surrogate: 2-Fluorophenol	*1720*			*ug/kg dry*	*2569.7*		*67*	*25-121*		
Surrogate: Phenol-d5	*1880*			*ug/kg dry*	*2569.7*		*73*	*24-113*		
Surrogate: Nitrobenzene-d5	*1170*			*ug/kg dry*	*1713.1*		*68*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1340*			*ug/kg dry*	*1713.1*		*78*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1500*			*ug/kg dry*	*2569.7*		*58*	*19-122*		
Surrogate: p-Terphenyl-d14	*1440*			*ug/kg dry*	*1713.1*		*84*	*18-137*		

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/11/2012 08:04

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 L206240 - SW 3540C										
Matrix Spike Dup (L206240-MSD2)		**Source: 1206075-02**		Prepared: 06/28/2012 Analyzed: 07/05/2012						
1,2,4-Trichlorobenzene	1650	D		ug/kg dry	2065.1	1690 U	80	45-110	20	40
1,2-Dichlorobenzene	1620	D		ug/kg dry	2065.1	1690 U	79	45-105	29	40
1,3-Dichlorobenzene	1540	D		ug/kg dry	2065.1	1690 U	74	40-100	30	40
1,4-Dichlorobenzene	1550	D		ug/kg dry	2065.1	1690 U	75	35-105	30	40
2,4,5-Trichlorophenol	1540	D		ug/kg dry	2065.1	1690 U	74	30-140	12	40
2,4,6-Trichlorophenol	1220	D		ug/kg dry	2065.1	1690 U	59	20-110	2	40
2,4-Dichlorophenol	1580	D		ug/kg dry	2065.1	1690 U	76	40-110	13	40
2,4-Dimethylphenol	1630	D		ug/kg dry	2065.1	1690 U	79	30-105	10	40
2,4-Dinitrophenol	671	D		ug/kg dry	2065.1	8460 U	32	25-130	81*	40
2,4-Dinitrotoluene	1750	D		ug/kg dry	2065.1	1690 U	85	50-115	22	40
2,6-Dinitrotoluene	1680	D		ug/kg dry	2065.1	1690 U	82	40-120	15	40
2-Chloronaphthalene	1670	D		ug/kg dry	2065.1	1690 U	81	45-115	13	40
2-Chlorophenol	1600	D		ug/kg dry	2065.1	1690 U	78	45-105	19	40
2-Methylnaphthalene	1710	D		ug/kg dry	2065.1	1690 U	83	45-110	17	40
2-Methylphenol	1720	D		ug/kg dry	2065.1	1690 U	83	40-120	16	40
2-Nitroaniline	1620	D		ug/kg dry	2065.1	8460 U	78	45-120	15	40
2-Nitrophenol	1350	D		ug/kg dry	2065.1	1690 U	65	40-110	20	40
3,3'-Dichlorobenzidine	1420	D		ug/kg dry	2065.1	3380 U	69	15-130	7	40
3-Nitroaniline	1940	D		ug/kg dry	2065.1	8460 U	94	40-130	17	40
4,6-Dinitro-2-methylphenol	1150	D		ug/kg dry	2065.1	1690 U	55	20-140	53*	40
4-Bromophenyl Phenyl Ether	1780	D		ug/kg dry	2065.1	1690 U	86	45-115	11	40
4-Chloro-3-methylphenol	1660	D		ug/kg dry	2065.1	1690 U	81	35-115	17	40
4-Chloroaniline	1590	D		ug/kg dry	2065.1	1690 U	77	10-100	9	40
4-Chlorophenyl Phenyl Ether	1780	D		ug/kg dry	2065.1	1690 U	86	45-110	13	40
3- and/or 4-Methylphenol	1620	D		ug/kg dry	2065.1	1690 U	78	40-120	16	40
4-Nitroaniline	1750	D		ug/kg dry	2065.1	8460 U	85	40-130	21	40
4-Nitrophenol	1090	D		ug/kg dry	2065.1	8460 U	53	15-140	33	40
Acenaphthene	1900	D		ug/kg dry	2065.1	1690 U	92	45-110	9	40
Acenaphthylene	1520	D		ug/kg dry	2065.1	1690 U	74	45-115	14	40
Anthracene	2210	D		ug/kg dry	2065.1	496	83	45-130	11	40
Benz[a]anthracene	2660	D		ug/kg dry	2065.1	977	82	45-130	8	40
Benzo[a] pyrene	2430	D		ug/kg dry	2065.1	782	80	45-130	11	40
Benzo[b] fluoranthene	2280	D		ug/kg dry	2065.1	559	83	40-130	13	40
Benzo[g,h,i] perylene	2130	D		ug/kg dry	2065.1	427	82	45-125	11	40
Benzo[k] fluoranthene	2480	D		ug/kg dry	2065.1	754	84	45-125	17	40
Bis(2-chloroethoxy) methane	1640	D		ug/kg dry	2065.1	1690 U	79	45-110	16	40

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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-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/11/2012 08:04

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 L206240 - SW 3540C										
Matrix Spike Dup (L206240-MSD2)		**Source: 1206075-02**		Prepared: 06/28/2012 Analyzed: 07/05/2012						
Bis(2-chloroethyl) ether	1610	D		ug/kg dry	2065.1	1690 U	78	40-110	25	40
Bis(2-chloroisopropyl) ether	1660	D		ug/kg dry	2065.1	1690 U	80	30-115	25	40
Bis(2-ethylhexyl) phthalate	1780	D		ug/kg dry	2065.1	1690 U	86	40-145	18	40
Butyl Benzyl Phthalate	1780	D		ug/kg dry	2065.1	1690 U	86	50-125	19	40
Carbazole	3180	D		ug/kg dry	2065.1	272	141*	40-140	14	40
Chrysene	2930	D		ug/kg dry	2065.1	1210	83	45-130	6	40
Dibenz[a,h]anthracene	1670	D		ug/kg dry	2065.1	1690 U	81	45-125	10	40
Dibenzofuran	1910	D		ug/kg dry	2065.1	1690 U	93	45-120	12	40
Diethyl Phthalate	1850	D		ug/kg dry	2065.1	1690 U	90	50-125	17	40
Dimethyl Phthalate	1770	D		ug/kg dry	2065.1	1690 U	85	45-130	13	40
Di-n-butyl Phthalate	1850	D		ug/kg dry	2065.1	1690 U	90	50-130	7	40
Di-n-octyl Phthalate	1670	D		ug/kg dry	2065.1	1690 U	81	40-150	33	40
Fluoranthene	3860	D		ug/kg dry	2065.1	2410	70	45-130	3	40
Fluorene	1970	D		ug/kg dry	2065.1	1690 U	96	45-120	12	40
Hexachlorobenzene	1930	D		ug/kg dry	2065.1	1690 U	94	45-130	11	40
Hexachlorobutadiene	1760	D		ug/kg dry	2065.1	1690 U	85	45-105	23	40
Hexachlorocyclopentadiene	414	D		ug/kg dry	2065.1	1690 U	20	10-100	16	40
Hexachloroethane	1490	D		ug/kg dry	2065.1	1690 U	72	35-110	32	40
Indeno[1,2,3-cd]pyrene	2070	D		ug/kg dry	2065.1	394	81	45-130	13	40
Isophorone	1550	D		ug/kg dry	2065.1	1690 U	75	40-110	20	40
Naphthalene	1900	D		ug/kg dry	2065.1	1690 U	92	40-110	20	40
Nitrobenzene	1610	D		ug/kg dry	2065.1	1690 U	78	40-105	21	40
N-Nitrosodi-n-propylamine	1500	D		ug/kg dry	2065.1	1690 U	72	30-130	15	40
N-Nitrosodiphenylamine	1760	D		ug/kg dry	2065.1	1690 U	85	50-120	8	40
Pentachlorophenol	296	D		ug/kg dry	2065.1	8460 U	14*	25-120	20	40
Phenanthrene	3240	D		ug/kg dry	2065.1	1980	61	50-120	0.4	40
Phenol	1630	D		ug/kg dry	2065.1	1690 U	79	40-115	18	40
Pyrene	3690	D		ug/kg dry	2065.1	2390	63	45-125	2	40
Surrogate: 2-Fluorophenol	*1920*			*ug/kg dry*	*2581.4*		*74*	*25-121*		
Surrogate: Phenol-d5	*2080*			*ug/kg dry*	*2581.4*		*81*	*24-113*		
Surrogate: Nitrobenzene-d5	*1310*			*ug/kg dry*	*1720.9*		*76*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1410*			*ug/kg dry*	*1720.9*		*82*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1340*			*ug/kg dry*	*2581.4*		*52*	*19-122*		
Surrogate: p-Terphenyl-d14	*1550*			*ug/kg dry*	*1720.9*		*90*	*18-137*		

PREPARATION BENCH SHEET

L206240

Lionville Laboratory

Printed: 6/29/2012 2:08:39PM

00000035

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
1206070-01	8270C TCL SVOC	06/28/2012 15:08	30.32	1				500	WC-Hanford, Inc.	
1206070-02	8270C TCL SVOC	06/28/2012 15:08	31.52	1				500	WC-Hanford, Inc.	
1206070-03	8270C TCL SVOC	06/28/2012 15:08	31.11	1				500	WC-Hanford, Inc.	
1206070-04	8270C TCL SVOC	06/28/2012 15:08	30.18	1				500	WC-Hanford, Inc.	
1206070-05	8270C TCL SVOC	06/28/2012 15:08	30.46	1				500	WC-Hanford, Inc.	
1206070-06	8270C TCL SVOC	06/28/2012 15:08	30.57	1				500	WC-Hanford, Inc.	
1206070-07	8270C TCL SVOC	06/28/2012 15:08	30.57	1				500	WC-Hanford, Inc.	
1206070-08	8270C TCL SVOC	06/28/2012 15:08	30.47	1				500	WC-Hanford, Inc.	
1206070-15	8270C TCL SVOC	06/28/2012 15:08	30.12	1				500	WC-Hanford, Inc.	
1206075-02	8270C TCL SVOC	06/28/2012 15:08	30.93	1				500	WC-Hanford, Inc.	
1206075-03	8270C TCL SVOC	06/28/2012 15:08	30.49	1				500	WC-Hanford, Inc.	
1206075-04	8270C TCL SVOC	06/28/2012 15:08	30.38	2				500	WC-Hanford, Inc.	
L206240-BLK1	QC	06/28/2012 15:08	30	1				500		
L206240-BS1	QC	06/28/2012 15:08	30	1	1200337		600	500		
L206240-MS1	QC	06/28/2012 15:08	30.32	1	1200337	1206070-01	600	500		
L206240-MS2	QC	06/28/2012 15:08	30.84	1	1200337	1206075-02	600	500		
L206240-MSD1	QC	06/28/2012 15:08	30.3	1	1200337	1206070-01	600	500		
L206240-MSD2	QC	06/28/2012 15:08	30.7	1	1200337	1206075-02	600	500		

Extracts Relinquished By 6/29/12 Date 1408

Extracts Received By 6/29/12 Date 1415

PCBS

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/10/2012 21:48

Analytical Report for Polychlorinated Biphenyls by SW846 8082

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF3	1206075-02	Soil	06/21/2012 11:50	06/26/2012 09:55
J1PTF4	1206075-03	Soil	06/21/2012 12:15	06/26/2012 09:55
J1PTF5	1206075-04	Soil	06/21/2012 12:20	06/26/2012 09:55

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A division of Eberline Analytical Corporation

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

Case Narrative

Client: WC-HANFORD RC-230 K3940
LVL #: 1206075

W.O. #: 60049-001-001-0001-00
Received: 06-26-2012

PCBs

Three (3) soil samples were collected on 06-21-2012.

The samples and associated QC samples were extracted 06-27-2012, 07-06-2012 and analyzed 06-29-2012, 07-09-2012 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 8082. All samples received Copper-Sulfur and Sulfuric Acid cleanups based on SW846 methods 3660A and 3665A.

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

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

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

3. One (1) of twenty-four (24) surrogate recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12GC114) has been enclosed.

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

5. All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

7. Samples J1PTF3-RE2, L207029-MS2 and L207029-MSD2 required 4-fold instrument dilutions due to high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

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

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

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

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

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

Iain Daniels
LvL Laboratory Manager

7/13/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC 114

Initiator: Catherine Corey
Date: 07.10.12
Client: WC Hanford

Batch: 1206075
Samples: MS2
Method: SW846/MCAWW/CLP/

Parameter: PCB
Matrix: SOIL
Prep Batch: L207029

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)

DCB recovery is high in MS2 (153%)

BS1 + MSD2 okay

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)

narrate

4. Project Manager Instructions...signature/date: _____ 7/12/12

✓ 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: _____ 7/13/12 Other Explanation:

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

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

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

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

QA-139-A-0208

GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

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-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/10/2012 21:48

J1PTF3
1206075-02RE2 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	55.9	U	55.9	ug/kg dry	4	L207029	07/06/2012	07/09/2012	8082
Aroclor 1221	55.9	U	55.9	ug/kg dry	4	L207029	07/06/2012	07/09/2012	8082
Aroclor 1232	55.9	U	55.9	ug/kg dry	4	L207029	07/06/2012	07/09/2012	8082
Aroclor 1242	55.9	U	55.9	ug/kg dry	4	L207029	07/06/2012	07/09/2012	8082
Aroclor 1248	55.9	U	55.9	ug/kg dry	4	L207029	07/06/2012	07/09/2012	8082
Aroclor 1254	**256**	D	55.9	ug/kg dry	4	L207029	07/06/2012	07/09/2012	8082
Aroclor 1260	**52.1**	J, D	55.9	ug/kg dry	4	L207029	07/06/2012	07/09/2012	8082
Aroclor 1262	55.9	U	55.9	ug/kg dry	4	L207029	07/06/2012	07/09/2012	8082
Aroclor 1268	55.9	U	55.9	ug/kg dry	4	L207029	07/06/2012	07/09/2012	8082
Surrogate: Decachlorobiphenyl	*132 %*		*43-144*			*L207029*	*07/06/2012*	*07/09/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*100 %*		*52-141*			*L207029*	*07/06/2012*	*07/09/2012*	*8082*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/10/2012 21:48

J1PTF4
1206075-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.7	U	13.7	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1221	13.7	U	13.7	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1232	13.7	U	13.7	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1242	13.7	U	13.7	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1248	13.7	U	13.7	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1254	**162**		13.7	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1260	**38.3**		13.7	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1262	13.7	U	13.7	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1268	13.7	U	13.7	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Surrogate: Decachlorobiphenyl	*77 %*		*43-144*			*L206221*	*06/27/2012*	*06/29/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*71 %*		*52-141*			*L206221*	*06/27/2012*	*06/29/2012*	*8082*

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/10/2012 21:48

J1PTF5
1206075-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.6	U	13.6	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1221	13.6	U	13.6	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1232	13.6	U	13.6	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1242	13.6	U	13.6	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1248	13.6	U	13.6	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1254	**229**		13.6	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1260	**86.9**		13.6	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1262	13.6	U	13.6	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Aroclor 1268	13.6	U	13.6	ug/kg dry	1	L206221	06/27/2012	06/29/2012	8082
Surrogate: Decachlorobiphenyl	*97 %*		*43-144*			*L206221*	*06/27/2012*	*06/29/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*84 %*		*52-141*			*L206221*	*06/27/2012*	*06/29/2012*	*8082*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/10/2012 21:48

Polychlorinated Biphenyls by SW846 8082 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206221 - SW 3540C										
Blank (L206221-BLK2)				Prepared: 06/27/2012 Analyzed: 06/29/2012						
Aroclor 1016	13.3	U	13.3	ug/kg wet						
Aroclor 1221	13.3	U	13.3	ug/kg wet						
Aroclor 1232	13.3	U	13.3	ug/kg wet						
Aroclor 1242	13.3	U	13.3	ug/kg wet						
Aroclor 1248	13.3	U	13.3	ug/kg wet						
Aroclor 1254	13.3	U	13.3	ug/kg wet						
Aroclor 1260	13.3	U	13.3	ug/kg wet						
Aroclor 1262	13.3	U	13.3	ug/kg wet						
Aroclor 1268	13.3	U	13.3	ug/kg wet						
Surrogate: Decachlorobiphenyl	*38.2*			*ug/kg wet*	*33.333*		*115*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*32.6*			*ug/kg wet*	*33.337*		*98*	*52-141*		
LCS (L206221-BS2)				Prepared: 06/27/2012 Analyzed: 06/29/2012						
Aroclor 1016	103		13.3	ug/kg wet	166.67		62	50-138		
Aroclor 1260	125		13.3	ug/kg wet	166.67		75	50-148		
Surrogate: Decachlorobiphenyl	*29.7*			*ug/kg wet*	*33.333*		*89*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*27.7*			*ug/kg wet*	*33.337*		*83*	*52-141*		
Matrix Spike (L206221-MS7)		**Source: 1206075-02**		Prepared: 06/27/2012 Analyzed: 06/29/2012						
Aroclor 1016	150		14.0	ug/kg dry	175.46	13.9 U	85	50-138		
Aroclor 1260	168		14.0	ug/kg dry	175.46	15.3	87	50-148		
Surrogate: Decachlorobiphenyl	*27.6*			*ug/kg dry*	*35.093*		*79*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*26.7*			*ug/kg dry*	*35.096*		*76*	*52-141*		
Matrix Spike Dup (L206221-MSD7)		**Source: 1206075-02**		Prepared: 06/27/2012 Analyzed: 06/29/2012						
Aroclor 1016	161		14.0	ug/kg dry	175.23	13.9 U	92	50-138	7	40
Aroclor 1260	171		14.0	ug/kg dry	175.23	15.3	89	50-148	2	40
Surrogate: Decachlorobiphenyl	*28.2*			*ug/kg dry*	*35.046*		*81*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*26.5*			*ug/kg dry*	*35.050*		*76*	*52-141*		

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/10/2012 21:48

Polychlorinated Biphenyls by SW846 8082 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207029 - SW 3540C										
Blank (L207029-BLK1)				Prepared: 07/06/2012 Analyzed: 07/09/2012						
Aroclor 1016	13.3	U	13.3	ug/kg wet						
Aroclor 1221	13.3	U	13.3	ug/kg wet						
Aroclor 1232	13.3	U	13.3	ug/kg wet						
Aroclor 1242	13.3	U	13.3	ug/kg wet						
Aroclor 1248	13.3	U	13.3	ug/kg wet						
Aroclor 1254	13.3	U	13.3	ug/kg wet						
Aroclor 1260	13.3	U	13.3	ug/kg wet						
Aroclor 1262	13.3	U	13.3	ug/kg wet						
Aroclor 1268	13.3	U	13.3	ug/kg wet						
Surrogate: Decachlorobiphenyl	*37.4*			*ug/kg wet*	*33.333*		*112*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*34.4*			*ug/kg wet*	*33.337*		*103*	*52-141*		
LCS (L207029-BS1)				Prepared: 07/06/2012 Analyzed: 07/09/2012						
Aroclor 1016	141		13.3	ug/kg wet	166.67		85	50-138		
Aroclor 1260	165		13.3	ug/kg wet	166.67		99	50-148		
Surrogate: Decachlorobiphenyl	*37.0*			*ug/kg wet*	*33.333*		*111*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*33.8*			*ug/kg wet*	*33.337*		*101*	*52-141*		
Matrix Spike (L207029-MS2)		**Source: 1206075-02RE2**		Prepared: 07/06/2012 Analyzed: 07/09/2012						
Aroclor 1016	219	D	55.5	ug/kg dry	173.91	55.9 U	126	50-138		
Aroclor 1260	253	D	55.5	ug/kg dry	173.91	52.1	116	50-148		
Surrogate: Decachlorobiphenyl	*53.2*			*ug/kg dry*	*34.781*		*153**	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*45.8*			*ug/kg dry*	*34.785*		*132*	*52-141*		
Matrix Spike Dup (L207029-MSD2)		**Source: 1206075-02RE2**		Prepared: 07/06/2012 Analyzed: 07/09/2012						
Aroclor 1016	190	D	55.9	ug/kg dry	175.17	55.9 U	109	50-138	15	40
Aroclor 1260	246	D	55.9	ug/kg dry	175.17	52.1	111	50-148	4	40
Surrogate: Decachlorobiphenyl	*46.2*			*ug/kg dry*	*35.035*		*132*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*32.7*			*ug/kg dry*	*35.038*		*93*	*52-141*		

PREPARATION BENCH SHEET

L207029

Lionville Laboratory

Printed: 7/9/2012 2:41:38PM

00000047

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1200502**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206071-01RE2	8082 PCBs	07/06/2012 11:59	30.67	10				250	WC-Hanford, Inc.	Added 7/9/2012 by J_S
1206075-02RE2	8082 PCBs	07/06/2012 11:59	30.16	10				250	WC-Hanford, Inc.	Added 7/9/2012 by J_S
L207029-BLK1	QC	07/06/2012 11:59	30	10				250		
L207029-BS1	QC	07/06/2012 11:59	30	10	1200123		250	250		
L207029-MS1	QC	07/06/2012 11:59	30	10	1200123	206071-01RE	250	250		
L207029-MS2	QC	07/06/2012 11:59	30.38	10	1200123	206075-02RE	250	250		
L207029-MSD1	QC	07/06/2012 11:59	30.67	10	1200123	206071-01RE	250	250		
L207029-MSD2	QC	07/06/2012 11:59	30.16	10	1200123	206075-02RE	250	250		

From L206221 on 07/06/2012 by SA

Revision

Extracts Relinquished By Date

Extracts Received By Date

PREPARATION BENCH SHEET

L206221

Lionville Laboratory

Printed: 6/28/2012 2:02:00PM

000000048

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1200502**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206058-01	8081A TCL Pesticides	06/27/2012 13:35	30.45	10				250	WC-Hanford, Inc.	
1206058-01	8082 PCBs	06/27/2012 13:35	30.45	10				250	WC-Hanford, Inc.	
1206058-02	8081A TCL Pesticides	06/27/2012 13:35	30.26	10				250	WC-Hanford, Inc.	
1206058-02	8082 PCBs	06/27/2012 13:35	30.26	10				250	WC-Hanford, Inc.	
~~1206068-01~~	~~8081A TCL Pesticides~~ VOID	~~06/27/2012 13:35~~	~~30.45~~	~~10~~		VOID		~~250~~	~~WC-Hanford, Inc.~~ 6/28/12	~~Added for BatchQC in: L206221~~
1206068-01	8082 PCBs	06/27/2012 13:35	30.45	10				250	WC-Hanford, Inc.	
1206068-02	8082 PCBs	06/27/2012 13:35	30.1	10				250	WC-Hanford, Inc.	
1206071-01	8081A TCL Pesticides	06/27/2012 13:35	30.14	10				250	WC-Hanford, Inc.	
1206071-01	8082 PCBs	06/27/2012 13:35	30.14	10				250	WC-Hanford, Inc.	
~~1206072-01~~	~~8081A TCL Pesticides~~ VOID	~~06/27/2012 13:35~~	~~30.22~~	~~10~~		VOID		~~250~~	~~WC-Hanford, Inc.~~ 6/28/12	~~Added for BatchQC in: L206221~~
1206072-01	8082 PCBs	06/27/2012 13:35	30.22	10				250	WC-Hanford, Inc.	
~~1206075-02~~	~~8081A TCL Pesticides~~ VOID	~~06/27/2012 13:35~~	~~30.42~~	~~10~~		VOID		~~250~~	~~WC-Hanford, Inc.~~ 6/28/12	~~Added for BatchQC in: L206221~~
1206075-02	8082 PCBs	06/27/2012 13:35	30.42	10				250	WC-Hanford, Inc.	
1206075-03	8082 PCBs	06/27/2012 13:35	30.59	10				250	WC-Hanford, Inc.	
1206075-04	8082 PCBs	06/27/2012 13:35	30.01	10				250	WC-Hanford, Inc.	
~~1206076-01~~	~~8081A TCL Pesticides~~ VOID	~~06/27/2012 13:35~~	~~30.18~~	~~10~~		VOID		~~250~~	~~Fluor-B&W Portsmouth~~ 6/28/12	~~Added for BatchQC in: L206221~~
1206076-01	8082 PCBs	06/27/2012 13:35	30.18	10				250	Fluor-B&W Portsmouth	Report wet weight
1206076-02	8082 PCBs	06/27/2012 13:35	30.8	10				250	Fluor-B&W Portsmouth	Report wet weight
1206076-03	8082 PCBs	06/27/2012 13:35	30.22	10				250	Fluor-B&W Portsmouth	Report wet weight
1206076-04	8082 PCBs	06/27/2012 13:35	30.43	10				250	Fluor-B&W Portsmouth	Report wet weight

S cleaned Cu lot G16W031

Extracts Relinquished By 6/28/12 1440 Date

Extracts Received By 06.28.12 14:00 Date

PREPARATION BENCH SHEET

L206221

Lionville Laboratory

Printed: 6/28/2012 2:02:00PM

000000049

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1200502**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206076-05	8082 PCBs	06/27/2012 13:35	30.71	10				250	Fluor-B&W Portsmouth	Report wet weight
1206076-06	8082 PCBs	06/27/2012 13:35	30.64	10				250	Fluor-B&W Portsmouth	Report wet weight
1206076-07	8082 PCBs	06/27/2012 13:35	30.89	10				250	Fluor-B&W Portsmouth	Report wet weight
1206076-08	8082 PCBs	06/27/2012 13:35	30.41	10				250	Fluor-B&W Portsmouth	Report wet weight
1206076-09	8082 PCBs	06/27/2012 13:35	30.19	10				250	Fluor-B&W Portsmouth	Report wet weight
L206221-BLK1	QC	06/27/2012 13:35	30	10				250		PEST
L206221-BLK2	QC	06/27/2012 13:35	30	10				250		PCB
L206221-BS1	QC	06/27/2012 13:35	30	10	1200281		250	250		PEST
L206221-BS2	QC	06/27/2012 13:35	30	10	1200123		250	250		PCB
L206221-MS1	QC	06/27/2012 13:35	30.7	10	1200281	1206058-01	250	250		Pest
L206221-MS2	QC	06/27/2012 13:35	30.6	10	1200123	1206058-01	250	250		PCB
L206221-MS3	QC	06/27/2012 13:35	30.09	10	1200123	1206068-01	250	250		PCB
L206221-MS4	QC	06/27/2012 13:35	30.17	10	1200281	1206071-01	250	250		PEST
L206221-MS5	QC	06/27/2012 13:35	30.1	10	1200123	1206071-01	250	250		PCB
L206221-MS6	QC	06/27/2012 13:35	30.23	10	1200123	1206072-01	250	250		PCB
L206221-MS7	QC	06/27/2012 13:35	30.11	10	1200123	1206075-02	250	250		PCB
L206221-MS8	QC	06/27/2012 13:35	30.03	10	1200123	1206076-01	250	250		PCB
L206221-MSD1	QC	06/27/2012 13:35	30.51	10	1200281	1206058-01	250	250		Pest
L206221-MSD2	QC	06/27/2012 13:35	30.51	10	1200123	1206058-01	250	250		PCB
L206221-MSD3	QC	06/27/2012 13:35	30.46	10	1200123	1206068-01	250	250		PCB

S cleaned Cu lot 616W031

6/28/12 1410

Extracts Relinquished By Date

06.28.12 14.10

Extracts Received By Date

PREPARATION BENCH SHEET

L206221

Lionville Laboratory

Printed: 6/28/2012 2:02:00PM

000000050

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1200502**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L206221-MSD4	QC	06/27/2012 13:35	30.58	10	1200281	1206071-01	250	250		PEST
L206221-MSD5	QC	06/27/2012 13:35	30.7	10	1200123	1206071-01	250	250		PCB
L206221-MSD6	QC	06/27/2012 13:35	30.83	10	1200123	1206072-01	250	250		PCB
L206221-MSD7	QC	06/27/2012 13:35	30.15	10	1200123	1206075-02	250	250		PCB
L206221-MSD8	QC	06/27/2012 13:35	30.07	10	1200123	1206076-01	250	250		PCB

S cleaned
Cu lot G160031

6/28/12 1410 S Zak 06.28.12 14.10

Extracts Relinquished By Date Extracts Received By Date

DIESEL

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/03/2012 10:28

Analytical Report for Extractable Petroleum Hydrocarbons by SW846 8015

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF3	1206075-02	Soil	06/21/2012 11:50	06/26/2012 09:55
J1PTF4	1206075-03	Soil	06/21/2012 12:15	06/26/2012 09:55
J1PTF5	1206075-04	Soil	06/21/2012 12:20	06/26/2012 09:55

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-230 K3940
LVL #: 1206075

W.O. #: 60049-001-001-0001-00
Date Received: 06-26-2012

DIESEL RANGE ORGANICS

Three (3) soil samples were collected on 06-21-2012.

The samples and associated QC samples were extracted 06-26-2012 and analyzed 06-30-2012 and 07-01-2012 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 8015B for Diesel Range Organics.

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

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

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

3. One (1) of seven (7) surrogate recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12GC105) has been enclosed.

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

5. All blank spike recoveries were within acceptance criteria.

6. One (1) of two (2) matrix spike recoveries was outside acceptance criteria. Matrix spike recoveries were unobtainable due to high concentration of target analytes. A copy of the Sample Discrepancy Report (SDR#12GC105) has been enclosed.

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

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

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

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.

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 hardcopy data package has been authorized by the laboratory manager or a designee as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

7/3/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC105

Initiator: Catherine Carey
Date: 07/02/12
Client: WC Hanford

Batch: 1206075
Samples: #04(JIPTF5) +ms4/
Method: SW846/MCAWW/CLP/ ms04

Parameter: DRO
Matrix: SOIL
Prep Batch: L206217

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)

surrogate recovery in sample #04 is high (133%)

spike recoveries in 1206075-02ms4/ms04 are high (271%/166%)

2. Known or Probable Causes(s)

high concentration of target analytes

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)

narrate

4. Project Manager Instructions...signature/date: _____

✓ 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: 7/3/12 Other Explanation:

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

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

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

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

QA-139-A-0208

GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/03/2012 10:28

J1PTF3
1206075-02 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	**30000**	3410	ug/kg dry	1	L206217	06/26/2012	07/01/2012	8015M
Motor Oil	**51400**	10200	ug/kg dry	1	L206217	06/26/2012	07/01/2012	8015M
Surrogate: p-Terphenyl	*80 %*	*39-129*			*L206217*	*06/26/2012*	*07/01/2012*	*8015M*

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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/03/2012 10:28

J1PTF4
1206075-03 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	**20100**	3430	ug/kg dry	1	L206217	06/26/2012	07/01/2012	8015M
Motor Oil	**36900**	10300	ug/kg dry	1	L206217	06/26/2012	07/01/2012	8015M
Surrogate: p-Terphenyl	*83 %*	*39-129*			*L206217*	*06/26/2012*	*07/01/2012*	*8015M*

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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/03/2012 10:28

J1PTF5

1206075-04 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Extractable Petroleum Hydrocarbons by SW846 8015								
Diesel Range Organics	**452000**	13500	ug/kg dry	1	L206217	06/26/2012	07/01/2012	8015M
Motor Oil	**777000**	40400	ug/kg dry	1	L206217	06/26/2012	07/01/2012	8015M
Surrogate: p-Terphenyl	*133 % **	*39-129*			*L206217*	*06/26/2012*	*07/01/2012*	*8015M*

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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/03/2012 10:28

Extractable Petroleum Hydrocarbons by SW846 8015 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206217 - SW 3540C										
Blank (L206217-BLK1)				Prepared: 06/26/2012 Analyzed: 06/30/2012						
Diesel Range Organics	3330	U	3330	ug/kg wet						
Motor Oil	10000	U	10000	ug/kg wet						
Surrogate: p-Terphenyl	*5420*			*ug/kg wet*	*6666.7*		*81*	*39-129*		
LCS (L206217-BS1)				Prepared: 06/26/2012 Analyzed: 06/30/2012						
Diesel Range Organics	51100		3330	ug/kg wet	66667		77	42-133		
Surrogate: p-Terphenyl	*5350*			*ug/kg wet*	*6666.7*		*80*	*39-129*		
Matrix Spike (L206217-MS4)		**Source: 1206075-02**		Prepared: 06/26/2012 Analyzed: 07/01/2012						
Diesel Range Organics	184000		3390	ug/kg dry	67821	30000	227*	42-133		
Surrogate: p-Terphenyl	*6320*			*ug/kg dry*	*6782.1*		*93*	*39-129*		
Matrix Spike Dup (L206217-MSD4)		**Source: 1206075-02**		Prepared: 06/26/2012 Analyzed: 07/01/2012						
Diesel Range Organics	116000		3500	ug/kg dry	69977	30000	123	42-133	59*	40
Surrogate: p-Terphenyl	*5960*			*ug/kg dry*	*6997.7*		*85*	*39-129*		

PREPARATION BENCH SHEET

L206217

Lionville Laboratory

Printed: 6/27/2012 3:14:05PM

Matrix: Solid **Prepared using: GC - SW 3540C** **Surrogate used: 1200549**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206068-01	8015M DRO	06/26/2012 15:08	30.26	1				1000	WC-Hanford, Inc.	
1206068-02	8015M DRO	06/26/2012 15:08	30.37	1				1000	WC-Hanford, Inc.	
1206071-01	8015M DRO	06/26/2012 15:08	30.3	1				1000	WC-Hanford, Inc.	
1206072-01	8015M DRO	06/26/2012 15:08	30.01	1				1000	WC-Hanford, Inc.	
1206075-02	8015M DRO	06/26/2012 15:08	30.94	1				1000	WC-Hanford, Inc.	
1206075-03	8015M DRO	06/26/2012 15:08	30.59	1				1000	WC-Hanford, Inc.	
1206075-04	8015M DRO	06/26/2012 15:08	30.27	4				1000	WC-Hanford, Inc.	
L206217-BLK1	QC	06/26/2012 15:08	30	1				1000		
L206217-BS1	QC	06/26/2012 15:08	30	1	1101936		1000	1000		
L206217-MS1	QC	06/26/2012 15:08	30.73	1	1101936	1206068-01	1000	1000		
L206217-MS2	QC	06/26/2012 15:08	30.04	1	1101936	1206071-01	1000	1000		
L206217-MS3	QC	06/26/2012 15:08	30.05	1	1101936	1206072-01	1000	1000		
L206217-MS4	QC	06/26/2012 15:08	31.16	1	1101936	1206075-02	1000	1000		
L206217-MSD1	QC	06/26/2012 15:08	31.5	1	1101936	1206068-01	1000	1000		
L206217-MSD2	QC	06/26/2012 15:08	30.72	1	1101936	1206071-01	1000	1000		
L206217-MSD3	QC	06/26/2012 15:08	30.1	1	1101936	1206072-01	1000	1000		
L206217-MSD4	QC	06/26/2012 15:08	30.2	1	1101936	1206075-02	1000	1000		

Extracts Relinquished By 6/27/12 15:15 Date

UK 6-27-12
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-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/08/2012 08:22

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF3	1206075-02	Soil	06/21/2012 11:50	06/26/2012 09:55
J1PTF4	1206075-03	Soil	06/21/2012 12:15	06/26/2012 09:55
J1PTF5	1206075-04	Soil	06/21/2012 12:20	06/26/2012 09:55

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Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-230 K3940
LVL #: 1206075

W.O. #: 60049-001-001-0001-00
Date Received: 06-26-2012

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

Three (3) soil samples were collected on 06-21-2012.

The samples and associated QC samples were extracted 06-26-2012 and analyzed 07-03,05,06-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8310.

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

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

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

3. Five (5) of seven (7) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12GC113) has been enclosed.

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

5. One (1) of sixteen (16) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12GC113) has been enclosed.

6. Eighteen (18) of thirty-two (32) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12GC113) has been enclosed. Matrix spike recoveries were unobtainable due to high concentration of analytes.

7. Five (5) samples required dilutions due to high concentrations of target analytes. Samples J1PTF3, J1PTF4, L206218-MS5 and L206218-MSD required 50-fold dilutions; sample J1PTF5 required a 200-fold dilution. Reporting limits have been adjusted to reflect the necessary changes.

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. The samples were reported on a dry weight basis.

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

11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this 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

7/13/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 126C113

Initiator: Catherine Carey
Date: 07.08.12
Client: WC Hanford

Batch: 1206075
Samples: 02, 03, 04, BS1, MS5, MSD5
Method: SW846/MCAWW/CLP/

Parameter: PAH
Matrix: SOIL
Prep Batch: L206218

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)

Surrogate recoveries out in samples 02, 03, 04, MS5, MSD5

Naphthalene recovery is high in BS1 (323%)

Several spike recoveries are outside QC limits in MS5, MSD5

2. Known or Probable Causes(s) Naphthalene - suspect problem w/ spiking solution contribution verified

3. Discussion and Proposed Action Other Description: Matrix - high background Naphthalene

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

4. Project Manager Instructions...signature/date: [signature] for DJohnson 7-9

✓ 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: [signature] Other Explanation:

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

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

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

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

QA-139-A-0208

GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/08/2012 08:22

J1PTF3
1206075-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**1130**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Acenaphthylene	172	U	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Acenaphthene	**2580**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Fluorene	**147**	J, D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Phenanthrene	**1620**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Anthracene	**468**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Fluoranthene	**2720**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Indeno[1,2,3-cd]pyrene	**499**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Pyrene	**2560**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benz[a]anthracene	**1360**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Chrysene	**1200**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benzo[b] fluoranthene	**617**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benzo[k] fluoranthene	**424**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benzo[a] pyrene	**1270**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Dibenz[a,h]anthracene	**113**	J, D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benzo[g,h,i] perylene	172	U	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Surrogate: Triphenylene	*225 % **		*68-129*			*L206218*	*06/26/2012*	*07/05/2012*	*8310*

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/08/2012 08:22

J1PTF4
1206075-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**1530**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Acenaphthylene	172	U	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Acenaphthene	**4590**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Fluorene	**403**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Phenanthrene	**2470**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Anthracene	**752**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Fluoranthene	**3900**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Indeno[1,2,3-cd]pyrene	**638**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Pyrene	**2460**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benz[a]anthracene	**1960**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Chrysene	**1280**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benzo[b] fluoranthene	**593**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benzo[k] fluoranthene	**374**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benzo[a] pyrene	**1060**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Dibenz[a,h]anthracene	**96.2**	J, D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Benzo[g,h,i] perylene	**948**	D	172	ug/kg dry	50	L206218	06/26/2012	07/05/2012	8310
Surrogate: Triphenylene	*430 % **		*68-129*			*L206218*	*06/26/2012*	*07/05/2012*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/08/2012 08:22

J1PTF5

1206075-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polynuclear Aromatic Compounds by SW846 8310									
Naphthalene	**9740**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Acenaphthylene	**2090**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Acenaphthene	**22200**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Fluorene	**1310**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Phenanthrene	**15400**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Anthracene	**4750**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Fluoranthene	**25100**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Indeno[1,2,3-cd]pyrene	**2160**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Pyrene	**22000**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Benz[a]anthracene	**9080**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Chrysene	**8250**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Benzo[b] fluoranthene	**3630**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Benzo[k] fluoranthene	**2330**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Benzo[a] pyrene	**6900**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Dibenz[a,h]anthracene	**392**	J, D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Benzo[g,h,i] perylene	**2790**	D	670	ug/kg dry	200	L206218	06/26/2012	07/06/2012	8310
Surrogate: Triphenylene	*646 % **		*68-129*			*L206218*	*06/26/2012*	*07/06/2012*	*8310*

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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/08/2012 08:22

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 L206218 - SW 3540C										
Blank (L206218-BLK1)				Prepared: 06/26/2012 Analyzed: 07/03/2012						
Naphthalene	3.33	U	3.33	ug/kg wet						
Acenaphthylene	3.33	U	3.33	ug/kg wet						
Acenaphthene	3.33	U	3.33	ug/kg wet						
Fluorene	3.33	U	3.33	ug/kg wet						
Phenanthrene	3.33	U	3.33	ug/kg wet						
Anthracene	3.33	U	3.33	ug/kg wet						
Fluoranthene	3.33	U	3.33	ug/kg wet						
Indeno[1,2,3-cd]pyrene	3.33	U	3.33	ug/kg wet						
Pyrene	3.33	U	3.33	ug/kg wet						
Benz[a]anthracene	0.833	J	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	*163*			*ug/kg wet*	*166.67*		*98*	*68-129*		
LCS (L206218-BS1)				Prepared: 06/26/2012 Analyzed: 07/03/2012						
Naphthalene	539		3.33	ug/kg wet	166.67		323*	0-127		
Acenaphthylene	151		3.33	ug/kg wet	166.67		90	50-140		
Acenaphthene	142		3.33	ug/kg wet	166.67		85	17-139		
Fluorene	144		3.33	ug/kg wet	166.67		86	28-145		
Phenanthrene	141		3.33	ug/kg wet	166.67		85	30-152		
Anthracene	73.0		3.33	ug/kg wet	166.67		44	19-171		
Fluoranthene	145		3.33	ug/kg wet	166.67		87	34-159		
Indeno[1,2,3-cd]pyrene	148		3.33	ug/kg wet	166.67		89	31-156		
Pyrene	142		3.33	ug/kg wet	166.67		85	33-152		
Benz[a]anthracene	139		3.33	ug/kg wet	166.67		83	32-157		
Chrysene	150		3.33	ug/kg wet	166.67		90	31-159		
Benzo[b] fluoranthene	142		3.33	ug/kg wet	166.67		85	33-164		
Benzo[k] fluoranthene	148		3.33	ug/kg wet	166.67		89	28-161		
Benzo[a] pyrene	135		3.33	ug/kg wet	166.67		81	29-149		
Dibenz[a,h]anthracene	133		3.33	ug/kg wet	166.67		80	27-153		
Benzo[g,h,i] perylene	134		3.33	ug/kg wet	166.67		80	32-157		
Surrogate: Triphenylene	*170*			*ug/kg wet*	*166.67*		*102*	*68-129*		

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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/08/2012 08:22

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 L206218 - SW 3540C										
Matrix Spike (L206218-MS5)		**Source: 1206075-02**		Prepared: 06/26/2012 Analyzed: 07/06/2012						
Naphthalene	1600	D	170	ug/kg dry	170.10	1130	279*	0-127		
Acenaphthylene	477	D	170	ug/kg dry	170.10	172 U	280*	50-140		
Acenaphthene	2340	D	170	ug/kg dry	170.10	2580	-145*	17-139		
Fluorene	270	D	170	ug/kg dry	170.10	147	73	28-145		
Phenanthrene	1420	D	170	ug/kg dry	170.10	1620	-115*	30-152		
Anthracene	507	D	170	ug/kg dry	170.10	468	23	19-171		
Fluoranthene	2170	D	170	ug/kg dry	170.10	2720	-327*	34-159		
Indeno[1,2,3-cd]pyrene	556	D	170	ug/kg dry	170.10	499	33	31-156		
Pyrene	2370	D	170	ug/kg dry	170.10	2560	-115*	33-152		
Benz[a]anthracene	1130	D	170	ug/kg dry	170.10	1360	-136*	32-157		
Chrysene	1210	D	170	ug/kg dry	170.10	1200	9*	31-159		
Benzo[b] fluoranthene	645	D	170	ug/kg dry	170.10	617	16*	33-164		
Benzo[k] fluoranthene	438	D	170	ug/kg dry	170.10	424	9*	28-161		
Benzo[a] pyrene	1080	D	170	ug/kg dry	170.10	1270	-113*	29-149		
Dibenz[a,h]anthracene	207	D	170	ug/kg dry	170.10	113	55	27-153		
Benzo[g,h,i] perylene	957	D	170	ug/kg dry	170.10	172 U	563*	32-157		
Surrogate: Triphenylene	*318*			*ug/kg dry*	*170.10*		*187**	*68-129*		
Matrix Spike Dup (L206218-MSD5)		**Source: 1206075-02**		Prepared: 06/26/2012 Analyzed: 07/06/2012						
Naphthalene	2040	D	171	ug/kg dry	171.14	1130	535*	0-127	63*	40
Acenaphthylene	217	D	171	ug/kg dry	171.14	172 U	127	50-140	76*	40
Acenaphthene	2810	D	171	ug/kg dry	171.14	2580	132	17-139	-4410	40
Fluorene	340	D	171	ug/kg dry	171.14	147	113	28-145	44*	40
Phenanthrene	2150	D	171	ug/kg dry	171.14	1620	312*	30-152	433*	40
Anthracene	697	D	171	ug/kg dry	171.14	468	133	19-171	142*	40
Fluoranthene	2880	D	171	ug/kg dry	171.14	2720	89	34-159	-348	40
Indeno[1,2,3-cd]pyrene	628	D	171	ug/kg dry	171.14	499	75	31-156	78*	40
Pyrene	2770	D	171	ug/kg dry	171.14	2560	125	33-152	4810*	40
Benz[a]anthracene	1310	D	171	ug/kg dry	171.14	1360	-33*	32-157	-122	40
Chrysene	1420	D	171	ug/kg dry	171.14	1200	131	31-159	173*	40
Benzo[b] fluoranthene	608	D	171	ug/kg dry	171.14	617	-5*	33-164	389*	40
Benzo[k] fluoranthene	484	D	171	ug/kg dry	171.14	424	35	28-161	122*	40
Benzo[a] pyrene	1240	D	171	ug/kg dry	171.14	1270	-17*	29-149	-148	40
Dibenz[a,h]anthracene	215	D	171	ug/kg dry	171.14	113	60	27-153	8	40
Benzo[g,h,i] perylene	944	D	171	ug/kg dry	171.14	172 U	552*	32-157	2	40
Surrogate: Triphenylene	*368*			*ug/kg dry*	*171.14*		*215**	*68-129*		

PREPARATION BENCH SHEET

L206218

Lionville Laboratory

Printed: 6/27/2012 3:12:16PM

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

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1206058-01	8310 PAH	06/26/2012 15:50	30.57	5				50	WC-Hanford, Inc.	
1206058-02	8310 PAH	06/26/2012 15:50	30.54	5				50	WC-Hanford, Inc.	
1206068-01	8310 PAH	06/26/2012 15:50	31.17	5				50	WC-Hanford, Inc.	
1206068-02	8310 PAH	06/26/2012 15:50	30.32	5				50	WC-Hanford, Inc.	
1206071-01	8310 PAH	06/26/2012 15:50	30.95	5				50	WC-Hanford, Inc.	
1206072-01	8310 PAH	06/26/2012 15:50	30.34	5				50	WC-Hanford, Inc.	
1206075-02	8310 PAH	06/26/2012 15:50	30.75	5				50	WC-Hanford, Inc.	
1206075-03	8310 PAH	06/26/2012 15:50	30.49	5				50	WC-Hanford, Inc.	
1206075-04	8310 PAH	06/26/2012 15:50	30.41	5				50	WC-Hanford, Inc.	
L206218-BLK1	QC	06/26/2012 15:50	30	5				50		
L206218-BS1	QC	06/26/2012 15:50	30	5	1200436		50	50		
L206218-MS1	QC	06/26/2012 15:50	30.59	5	1200436	1206058-02	50	50		
L206218-MS2	QC	06/26/2012 15:50	30.8	5	1200436	1206068-01	50	50		
L206218-MS3	QC	06/26/2012 15:50	30.31	5	1200436	1206071-01	50	50		
L206218-MS4	QC	06/26/2012 15:50	30.05	5	1200436	1206072-01	50	50		
L206218-MS5	QC	06/26/2012 15:50	31.06	5	1200436	1206075-02	50	50		
L206218-MSD1	QC	06/26/2012 15:50	30.38	5	1200436	1206058-02	50	50		
L206218-MSD2	QC	06/26/2012 15:50	30.6	5	1200436	1206068-01	50	50		
L206218-MSD3	QC	06/26/2012 15:50	30.8	5	1200436	1206071-01	50	50		
L206218-MSD4	QC	06/26/2012 15:50	30.25	5	1200436	1206072-01	50	50		

Extracts Relinquished By 6/27/12 1515 Date

LK 6-27-12
Extracts Received By Date

PREPARATION BENCH SHEET

L206218

Lionville Laboratory

Printed: 6/27/2012 3:12:16PM

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

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L206218-MSD5	QC	06/26/2012 15:50	30.87	5	1200436	1206075-02	50	50		

Extracts Relinquished By 6/27/12 1515 Date

UC 6-27-12
Extracts Received By Date

METALS

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

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 12:41

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF2	1206075-01	Soil	06/21/2012 11:45	06/26/2012 09:55
J1PTF3	1206075-02	Soil	06/21/2012 11:50	06/26/2012 09:55
J1PTF4	1206075-03	Soil	06/21/2012 12:15	06/26/2012 09:55
J1PTF5	1206075-04	Soil	06/21/2012 12:20	06/26/2012 09:55

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

Case Narrative

Client: WC-HANFORD RC-230
LVL#: 1206075
SDG/SAF#: K3940/RC-230

W.O.#: 60049-001-001-0001-00
Date Received: 06-26-12

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 4 soil samples.

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

   The metals internal standard, Yttrium, was not used in the calculation of these data due to the native concentrations of Yttrium in the client samples. Please refer to the SEQ-CAL1 page of the ICP raw data.

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.

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.

10. The matrix spike (MS) recoveries for 5 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
J1PTF3	Aluminum	22,000	110.0
	Antimony	100	106.3
	Iron	42,000	105.2
	Manganese	1,000	112.6
	Silicon	2,100	111.0

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL. 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

7/6/12
Date

alm/06-075

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-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/05/2012 12:41

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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Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 12:41

J1PTF2
1206075-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**218**		4.17	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Antimony	0.500	U	0.500	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Arsenic	0.834	U	0.834	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Barium	**2.00**		0.417	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Beryllium	0.167	U	0.167	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Boron	1.67	U	1.67	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Cadmium	0.167	U	0.167	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Calcium	**38.5**	B	83.4	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Chromium	0.167	U	0.167	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Cobalt	1.67	U	1.67	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Copper	0.834	U	0.834	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Iron	**299**		16.7	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Lead	**0.484**		0.417	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Magnesium	**22.0**	B	62.5	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Manganese	**6.28**		4.17	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Molybdenum	1.67	U	1.67	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Nickel	3.33	U	3.33	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Potassium	**51.8**	B	333	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Selenium	0.250	U	0.250	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Silicon	**112**		1.67	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Silver	0.167	U	0.167	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Sodium	41.7	U	41.7	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Vanadium	**0.407**	B	2.08	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Zinc	**2.05**	B	8.34	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Mercury	0.0250	U	0.0250	mg/kg dry	1	L207003	07/02/2012	07/03/2012	7471A

LIONVILLE LABORATORY
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/05/2012 12:41

J1PTF3
1206075-02 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**6930**		3.88	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Antimony	0.466	U	0.466	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Arsenic	**2.42**		0.777	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Barium	**84.7**		0.388	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Beryllium	**0.341**		0.155	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Boron	**1.27**	B	1.55	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Cadmium	**0.174**		0.155	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Calcium	**9050**		77.7	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Chromium	**7.05**		0.155	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Cobalt	**7.86**		1.55	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Copper	**19.1**		0.777	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Iron	**24700**		15.5	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Lead	**8.06**		0.388	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Magnesium	**4920**		58.3	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Manganese	**348**		3.88	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Molybdenum	**0.515**	B	1.55	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Nickel	**8.97**		3.11	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Potassium	**1070**		311	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Selenium	0.233	U	0.233	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Silicon	**308**		1.55	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Silver	0.155	U	0.155	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Sodium	**628**		38.8	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Vanadium	**63.3**		1.94	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Zinc	**56.5**		7.77	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Mercury	**0.0915**		0.0280	mg/kg dry	1	L207003	07/02/2012	07/03/2012	7471A

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/05/2012 12:41

J1PTF4
1206075-03 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**8120**		5.25	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Antimony	0.631	U	0.631	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Arsenic	**2.39**		1.05	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Barium	**88.3**		0.525	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Beryllium	**0.361**		0.210	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Boron	**1.39**	B	2.10	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Cadmium	**0.177**	B	0.210	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Calcium	**9720**		105	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Chromium	**8.98**		0.210	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Cobalt	**7.39**		2.10	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Copper	**19.6**		1.05	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Iron	**26200**		21.0	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Lead	**11.3**		0.525	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Magnesium	**5390**		78.8	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Manganese	**361**		5.25	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Molybdenum	**0.653**	B	2.10	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Nickel	**10.5**		4.20	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Potassium	**1430**		420	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Selenium	0.315	U	0.315	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Silicon	**292**		2.10	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Silver	0.210	U	0.210	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Sodium	**621**		52.5	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Vanadium	**72.8**		2.63	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Zinc	**65.6**		10.5	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Mercury	**0.117**		0.0249	mg/kg dry	1	L207003	07/02/2012	07/03/2012	7471A

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Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 12:41

J1PTF5
1206075-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**7340**		4.18	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Antimony	0.501	U	0.501	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Arsenic	**2.62**		0.836	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Barium	**77.2**		0.418	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Beryllium	**0.241**		0.167	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Boron	**1.52**	B	1.67	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Cadmium	**0.228**		0.167	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Calcium	**12700**		83.6	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Chromium	**11.3**		0.167	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Cobalt	**5.00**		1.67	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Copper	**19.9**		0.836	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Iron	**17200**		16.7	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Lead	**46.5**		0.418	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Magnesium	**4510**		62.7	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Manganese	**267**		4.18	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Molybdenum	**0.455**	B	1.67	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Nickel	**9.81**		3.34	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Potassium	**1410**		334	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Selenium	0.251	U	0.251	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Silicon	**355**		1.67	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Silver	0.167	U	0.167	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Sodium	**617**		41.8	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Vanadium	**42.6**		2.09	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Zinc	**76.2**		8.36	mg/kg dry	1	L206225	06/27/2012	06/28/2012	6010B
Mercury	**0.353**		0.0235	mg/kg dry	1	L207003	07/02/2012	07/03/2012	7471A

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-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/05/2012 12:41

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 L206225 - SW 3050B										
Blank (L206225-BLK1)				Prepared: 06/27/2012 Analyzed: 06/28/2012						
Aluminum	4.24	U	4.24	mg/kg wet						
Antimony	0.508	U	0.508	mg/kg wet						
Arsenic	0.847	U	0.847	mg/kg wet						
Barium	0.424	U	0.424	mg/kg wet						
Beryllium	0.169	U	0.169	mg/kg wet						
Boron	1.69	U	1.69	mg/kg wet						
Cadmium	0.169	U	0.169	mg/kg wet						
Calcium	84.7	U	84.7	mg/kg wet						
Chromium	0.169	U	0.169	mg/kg wet						
Cobalt	1.69	U	1.69	mg/kg wet						
Copper	0.847	U	0.847	mg/kg wet						
Iron	16.9	U	16.9	mg/kg wet						
Lead	0.424	U	0.424	mg/kg wet						
Magnesium	63.6	U	63.6	mg/kg wet						
Manganese	4.24	U	4.24	mg/kg wet						
Molybdenum	1.69	U	1.69	mg/kg wet						
Nickel	3.39	U	3.39	mg/kg wet						
Potassium	339	U	339	mg/kg wet						
Selenium	0.254	U	0.254	mg/kg wet						
Silicon	1.69	U	1.69	mg/kg wet						
Silver	0.169	U	0.169	mg/kg wet						
Sodium	42.4	U	42.4	mg/kg wet						
Vanadium	2.12	U	2.12	mg/kg wet						
Zinc	8.47	U	8.47	mg/kg wet						
Duplicate (L206225-DUP1)		**Source: 1206075-02**		Prepared: 06/27/2012 Analyzed: 06/28/2012						
Aluminum	7720		3.67	mg/kg dry		6930			11	20
Antimony	0.440	U	0.440	mg/kg dry		0.466 U				20
Arsenic	2.22		0.734	mg/kg dry		2.42			9	20
Barium	84.6		0.367	mg/kg dry		84.7			0.1	20
Beryllium	0.343		0.147	mg/kg dry		0.341			0.8	20
Boron	1.17	B	1.47	mg/kg dry		1.27			8	20
Cadmium	0.185		0.147	mg/kg dry		0.174			6	20
Calcium	18300		73.4	mg/kg dry		9050			67*	20
Chromium	6.87		0.147	mg/kg dry		7.05			3	20
Cobalt	6.51		1.47	mg/kg dry		7.86			19	20
Copper	18.1		0.734	mg/kg dry		19.1			5	20

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Exton, PA 19341
Phone: 610-280-3000
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/05/2012 12:41

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 L206225 - SW 3050B										
Duplicate (L206225-DUP1)		**Source: 1206075-02**		Prepared: 06/27/2012 Analyzed: 06/28/2012						
Iron	24000		14.7	mg/kg dry		24700			3	20
Lead	8.44		0.367	mg/kg dry		8.06			5	20
Magnesium	5180		55.0	mg/kg dry		4920			5	20
Manganese	517		3.67	mg/kg dry		348			39*	20
Molybdenum	0.404	B	1.47	mg/kg dry		0.515			24*	20
Nickel	9.14		2.94	mg/kg dry		8.97			2	20
Potassium	1170		294	mg/kg dry		1070			8	20
Selenium	0.220	U	0.220	mg/kg dry		0.233 U				20
Silicon	226		1.47	mg/kg dry		308			31*	20
Silver	0.147	U	0.147	mg/kg dry		0.155 U				20
Sodium	675		36.7	mg/kg dry		628			7	20
Vanadium	63.5		1.83	mg/kg dry		63.3			0.4	20
Zinc	63.1		7.34	mg/kg dry		56.5			11	20
Matrix Spike (L206225-MS1)		**Source: 1206075-02**		Prepared: 06/27/2012 Analyzed: 06/28/2012						
Aluminum	9230		4.33	mg/kg dry	173.22	6930	1330*	75-125		
Antimony	14.3		0.520	mg/kg dry	43.305	0.466 U	33*	75-125		
Arsenic	148		0.866	mg/kg dry	173.22	2.42	84	75-125		
Barium	240		0.433	mg/kg dry	173.22	84.7	90	75-125		
Beryllium	4.25		0.173	mg/kg dry	4.3305	0.341	90	75-125		
Boron	66.4		1.73	mg/kg dry	86.611	1.27	75	75-125		
Cadmium	3.44		0.173	mg/kg dry	4.3305	0.174	75	75-125		
Calcium	11300		86.6	mg/kg dry	2165.3	9050	103	75-125		
Chromium	22.9		0.173	mg/kg dry	17.322	7.05	92	75-125		
Cobalt	42.2		1.73	mg/kg dry	43.305	7.86	79	75-125		
Copper	37.7		0.866	mg/kg dry	21.653	19.1	86	75-125		
Iron	23600		17.3	mg/kg dry	86.611	24700	-1200*	75-125		
Lead	44.3		0.433	mg/kg dry	43.305	8.06	84	75-125		
Magnesium	7360		65.0	mg/kg dry	2165.3	4920	113	75-125		
Manganese	372		4.33	mg/kg dry	43.305	348	56*	75-125		
Molybdenum	72.3		1.73	mg/kg dry	86.611	0.515	83	75-125		
Nickel	44.4		3.46	mg/kg dry	43.305	8.97	82	75-125		
Potassium	3230		346	mg/kg dry	2165.3	1070	99	75-125		
Selenium	134		0.260	mg/kg dry	173.22	0.233 U	78	75-125		
Silicon	350		1.73	mg/kg dry	86.611	308	49*	75-125		
Silver	3.69		0.173	mg/kg dry	4.3305	0.155 U	85	75-125		
Sodium	2880		43.3	mg/kg dry	2165.3	628	104	75-125		

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Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2012 12:41

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 L206225 - SW 3050B									
Matrix Spike (L206225-MS1)		**Source: 1206075-02**	Prepared: 06/27/2012 Analyzed: 06/28/2012						
Vanadium	99.9	2.17	mg/kg dry	43.305	63.3	85	75-125		
Zinc	108	8.66	mg/kg dry	43.305	56.5	119	75-125		
Reference (L206225-SRM1)			Prepared: 06/27/2012 Analyzed: 06/28/2012						
Aluminum	9970	13.2	mg/kg wet	6670.0		149	0-200.89		
Antimony	28.7	1.58	mg/kg wet	53.000		54	0-235.8		
Arsenic	117	2.63	mg/kg wet	114.00		103	82.8-117.54		
Barium	314	1.32	mg/kg wet	307.00		102	79.8-120.2		
Beryllium	110	0.526	mg/kg wet	108.00		102	82.8-117.6		
Boron	77.9	5.26	mg/kg wet	85.100		92	67.5-132.8		
Cadmium	224	0.526	mg/kg wet	225.00		100	83.6-116.4		
Calcium	3470	263	mg/kg wet	3360.0		103	83.3-116.9		
Chromium	83.5	0.526	mg/kg wet	77.200		108	73.3-126.4		
Cobalt	165	5.26	mg/kg wet	166.00		99	80.7-118.7		
Copper	268	2.63	mg/kg wet	271.00		99	80.8-119.2		
Iron	8960	52.6	mg/kg wet	8420.0		106	78.6-121.1		
Lead	189	1.32	mg/kg wet	190.00		99	81.6-118.4		
Magnesium	8630	197	mg/kg wet	8570.0		101	83.2-116.7		
Manganese	1130	13.2	mg/kg wet	965.00		117	69.3-130.5		
Molybdenum	238	5.26	mg/kg wet	235.00		101	76.2-123.8		
Nickel	222	10.5	mg/kg wet	221.00		101	79.6-120.8		
Potassium	15500	1050	mg/kg wet	14400		108	81.9-118.1		
Selenium	185	0.789	mg/kg wet	187.00		99	75.9-124.6		
Silicon	286	5.26	mg/kg wet	807.00		35	0-219.3		
Silver	83.5	0.526	mg/kg wet	83.500		100	82.7-117.1		
Sodium	9720	132	mg/kg wet	9730.0		100	82.5-117.2		
Vanadium	114	6.58	mg/kg wet	98.700		115	75.9-123.6		
Zinc	197	26.3	mg/kg wet	199.00		99	78.4-121.6		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/05/2012 12:41

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 L207003 - SW 7471A Prep										
Blank (L207003-BLK1)				Prepared: 07/02/2012 Analyzed: 07/03/2012						
Mercury	0.0273	U	0.0273	mg/kg wet						
Duplicate (L207003-DUP2)		**Source: 1206075-02**		Prepared: 07/02/2012 Analyzed: 07/03/2012						
Mercury	0.0848		0.0280	mg/kg dry		0.0915			7.58	20
Matrix Spike (L207003-MS2)		**Source: 1206075-02**		Prepared: 07/02/2012 Analyzed: 07/03/2012						
Mercury	0.247		0.0280	mg/kg dry	0.15539	0.0915	100	75-125		20
Reference (L207003-SRM1)				Prepared: 07/02/2012 Analyzed: 07/03/2012						
Mercury	1.23		0.0281	mg/kg wet	1.2900		95.1	62.6-138		

Lionville Laboratory

Logbook #: 1128

SAMPLE DIGESTION RECORD

Digestion Batch #: L206225
Date/Time Initiated: 6/27/12 1020
Date/Time Completed: 6/27/12 1635
Analyst: JJS
Matrix (circle): Soil Water Other
Method (circle one): 3005A 3010A 3050 200.7 (1994)
pH/Turbidity: N/A for Solids.

Digested / Undigested (circle one)
Balance #: B19
Balance Cal Verification: Y NA
Temp: 99
BLOCK 1 2 3 (circle one)

NOTE: All temperatures are recorded as corrected temperatures

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1206075-01		0.60	50		TO	Coarse	Ottawa Sand		N/A
-02		0.68	50			Fine	Brown	Rocks	
L206225 Bgi		0.72	50						
-MSI	0.5	0.61	50						
1206075-03		0.50	50			Fine	Brown	Rocks	
04		0.61	50			Fine	Brown	Rocks	
L206225 BLGI		0.59	50			Coarse	Building chips		
SRM1		0.57	50			Fine	pink sand		

JJS 6/27/12

Spiking IDs / Expiration Date:
MS# : 1200457

LCS#: 1101357

Reagent IDs:
HNO_3 L08023
HCl L01031
H_2O_2 K09103
1:1 HNO_3 637-66-02
1:1 HCl

File ID#:

Data Review By/Date: CAM 7/2/12

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

Page #:

PREPARATION BENCH SHEET

L206225

Lionville Laboratory

Printed: 6/27/2012 4:10:04PM

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
1206075-01	6010B ICP Trace	06/27/2012 10:10	0.6	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206075-02	6010B ICP Trace	06/27/2012 10:10	0.68	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206075-03	6010B ICP Trace	06/27/2012 10:10	0.5	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
1206075-04	6010B ICP Trace	06/27/2012 10:10	0.61	50					WC-Hanford, Inc.	HSL + B, Mo, Si (no TL)
L206225-BLK1	QC	06/27/2012 10:10	0.59	50						
L206225-DUP1	QC	06/27/2012 10:10	0.72	50		1206075-02				
L206225-MS1	QC	06/27/2012 10:10	0.61	50	1200457	1206075-02	500			
L206225-SRM1	QC	06/27/2012 10:10	0.57	50	1101357		570			

JJS 6/28/12 Preetel 06/28/12

Extracts Relinquished By Date Extracts Received By Date

Lionville Laboratory

MERCURY PREPARATION

Logbook # 1143

Analyst: [illegible]
Date 7/2/12
Start Time/Temp: 1520/95
End Time/Temp: 1555/97°

Instrument ID: HG 3.1
Balance # B29 /NA
Pipette Calibration (Daily) (Y) ____

Prep Batch: L207003
Worksheet: HG070301
SOP No. ME-HgCVAA
BLOCK (1) 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LvL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
blank				10ml	50	
0.2 ug/l		0.100		10ml	50	
1.0 ug/l		0.500		10ml	50	
2.0 ug/l		1.000		10ml	50	
5.0 ug/l		2.500		10ml	50	
10.0 ug/l		5.000		10ml	50	
ICV		0.125	2.5	10ml	50	
CCV		0.250	5.0	10ml	50	
ICB/CCB				10ml	50	
L207003-BLK1				0.33	50	
SRM1		(A)	(A)	0.32	50	
1206062-01				0.30	50	
02				0.31	50	
03				0.31	50	
04				0.30	50	
05				0.31	50	
06				0.32	50	
07				0.30	50	
L207003-DUP1				0.30	50	
MS1		0.500	1.0	0.30	50	
1206062-09				0.31	50	
1206075-01				0.36	50	
02				0.34	50	
L207003-DUP2				0.34	50	
MS2		0.500	1.0	0.34	50	
1206075-03				0.38	50	
04				0.39	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1200533	7/2/12 1210
ICV/CCV/LCS	(IV 1200532)	N/A

Reviewed By/Date: [illegible] 7/5/12

se book # 1143, pg 1 for std traceability information

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

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

Lionville Laboratory

MERCURY PREPARATION

Analyst: MMelyk
Date 7/2/12
Start Time/Temp: See log 07
End Time/Temp:

Instrument ID: HG31
Balance # B29 /NA
Pipette Calibration (Daily) (✓)

Prep Batch: ~~L206~~ L207003 (MW 7/2/12)
Logbook # 1143
Worksheet: HG070301
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.
1206086-08				0.30	50	

MM 7/2/12

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

Reviewed By/Date: [illegible] 7/5/12

Soil LCS True Value = See log 07 mg/Kg
Standard # _____

se book # 1143, pg 1 for std traceability information
Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Soil LCS Spiking Concentration: 1.0 µg/ml

INORGANICS

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-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/06/2012 14:12

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1PTF2	1206075-01	Soil	06/21/2012 11:45	06/26/2012 09:55
J1PTF3	1206075-02	Soil	06/21/2012 11:50	06/26/2012 09:55
J1PTF4	1206075-03	Soil	06/21/2012 12:15	06/26/2012 09:55
J1PTF5	1206075-04	Soil	06/21/2012 12:20	06/26/2012 09:55

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

Case Narrative

Client: WC-HANFORD RC-230 K3940
LVL#: 1206075 **Date Received:** 06-26-12

INORGANIC NARRATIVE

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

2. The samples were prepared and analyzed in accordance with the methods indicated on the data summary report. 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, Nitate 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 exceptions noted on the Sample Receipt Checklist.

5. The method blanks were within the method criteria.

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

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

7/12/12
Date

njp\i06-075

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

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Exton, PA 19341
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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/06/2012 14:12

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.
B	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
*	Value outside QC acceptance criteria
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
Dry	Sample results reported on a dry weight basis
Wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference
LOD	Limit of Detection (LOD): the minimum estimated concentration of a target analyte that can be detected reliably. Concentrations at the LOD or between the LOD and LOQ are flagged estimated with either a 'J' qualifier or client-specific qualifier.
LOQ	Limit of Quantitation (LOQ): the minimum concentration of a target analyte that can be quantified reliably

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Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/06/2012 14:12

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1PTF2 (1206075-01) Soil									
%Solids	**100**		0.1	% by Weight	1	L206243	06/28/2012	06/28/2012	SM2540G
J1PTF3 (1206075-02) Soil									
%Solids	**94.6**		0.1	% by Weight	1	L206243	06/28/2012	06/28/2012	SM2540G
Bromide	1.0 U	1.0	5.0	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Chloride	**2.0** B	1.0	5.0	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Fluoride	1.0 U	1.0	5.0	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Nitrate	**2.6** B	1.0	5.0	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Nitrite	1.0 U	1.0	5.0	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Orthophosphate	2.0 U	2.0	10.0	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Sulfate	**41.1**	1.0	5.0	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**0.65**	0.10	0.50	mg/kg dry	1	L207025	07/05/2012	07/05/2012	EPA 353.2
pH	**9.63**		0.10	pH Units	1	L207011	07/02/2012	07/05/2012	SW846 9045D
J1PTF4 (1206075-03) Soil									
%Solids	**95.2**		0.1	% by Weight	1	L206243	06/28/2012	06/28/2012	SM2540G
Bromide	1.0 U	1.0	4.9	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Chloride	**2.2** B	1.0	4.9	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Fluoride	1.0 U	1.0	4.9	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Nitrate	**2.9** B	1.0	4.9	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Nitrite	1.0 U	1.0	4.9	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Orthophosphate	1.9 U	1.9	9.7	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Sulfate	**44.3**	1.0	4.9	mg/kg dry	1	L207024	07/02/2012	07/02/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**0.69**	0.10	0.49	mg/kg dry	1	L207025	07/05/2012	07/05/2012	EPA 353.2
pH	**9.64**		0.10	pH Units	1	L207011	07/02/2012	07/05/2012	SW846 9045D

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/06/2012 14:12

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier		LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1PTF5 (1206075-04) Soil										
%Solids	**98.1**			0.1	% by Weight	1	L206243	06/28/2012	06/28/2012	SM2540G
Bromide	0.9	U	0.9	4.5	mg/kg dry	1	L207024	07/02/2012	07/03/2012	EPA 300.0 (1993)
Chloride	**4.4**	B	0.9	4.5	mg/kg dry	1	L207024	07/02/2012	07/03/2012	EPA 300.0 (1993)
Fluoride	0.9	U	0.9	4.5	mg/kg dry	1	L207024	07/02/2012	07/03/2012	EPA 300.0 (1993)
Nitrate	**1.4**	B	0.9	4.5	mg/kg dry	1	L207024	07/02/2012	07/03/2012	EPA 300.0 (1993)
Nitrite	0.9	U	0.9	4.5	mg/kg dry	1	L207024	07/02/2012	07/03/2012	EPA 300.0 (1993)
Orthophosphate	1.8	U	1.8	9.0	mg/kg dry	1	L207024	07/02/2012	07/03/2012	EPA 300.0 (1993)
Sulfate	**169**	D	4.5	22.6	mg/kg dry	5	L207024	07/02/2012	07/03/2012	EPA 300.0 (1993)
Nitrate/Nitrite as N	**0.36**	B	0.09	0.45	mg/kg dry	1	L207025	07/05/2012	07/05/2012	EPA 353.2
pH	**9.68**			0.10	pH Units	1	L207011	07/02/2012	07/05/2012	SW846 9045D

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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-230 Project Number: K3940 Project Manager: Joan Kessner	**Reported:** 07/06/2012 14:12

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L206243 - % Solids										
Duplicate (L206243-DUP1)		**Source: 1206075-02**		Prepared & Analyzed: 06/28/2012						
%Solids	95.1		0.1	% by Weight		94.6			0.5	20
Batch L207011 - Default Prep GenChem										
Duplicate (L207011-DUP1)		**Source: 1206075-02**		Prepared: 07/02/2012 Analyzed: 07/05/2012						
pH	9.66		0.10	pH Units		9.63			0.311	20
Reference (L207011-SRM1)				Prepared: 07/02/2012 Analyzed: 07/05/2012						
pH	6.97		0.10	pH Units	7.0000		99.6	99-101		
Batch L207024 - Default Prep GenChem										
Blank (L207024-BLK1)				Prepared & Analyzed: 07/02/2012						
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 (L207024-BS1)				Prepared & Analyzed: 07/02/2012						
Fluoride	49.4	1.0	5.0	mg/kg wet	50.000		98.8	80-120		
Chloride	48.0	1.0	5.0	mg/kg wet	50.000		96.0	80-120		
Bromide	48.8	1.0	5.0	mg/kg wet	50.000		97.6	80-120		
Orthophosphate	51.1	2.0	10.0	mg/kg wet	50.000		102	80-120		
Sulfate	50.3	1.0	5.0	mg/kg wet	50.000		101	80-120		
Nitrate	48.2	1.0	5.0	mg/kg wet	50.000		96.4	80-120		
Nitrite	49.2	1.0	5.0	mg/kg wet	50.000		98.4	80-120		

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WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/06/2012 14:12

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207024 - Default Prep GenChem										
Duplicate (L207024-DUP3)	**Source: 1206075-02**			Prepared & Analyzed: 07/02/2012						
Fluoride	1.0 U	1.0	4.9	mg/kg dry		1.0 U				20
Chloride	1.9 B	1.0	4.9	mg/kg dry		2.0			2.61	20
Bromide	1.0 U	1.0	4.9	mg/kg dry		1.0 U				20
Orthophosphate	2.5 B	1.9	9.7	mg/kg dry		2.0 U				20
Sulfate	36.4	1.0	4.9	mg/kg dry		41.1			12.3	20
Nitrate	2.4 B	1.0	4.9	mg/kg dry		2.6			6.53	20
Nitrite	1.0 U	1.0	4.9	mg/kg dry		1.0 U				20
Matrix Spike (L207024-MS5)	**Source: 1206075-02**			Prepared & Analyzed: 07/02/2012						
Fluoride	49.2	1.0	4.9	mg/kg dry	48.949	1.0 U	101	75-125		
Chloride	49.8	1.0	4.9	mg/kg dry	48.949	2.0	97.7	75-125		
Bromide	48.5	1.0	4.9	mg/kg dry	48.949	1.0 U	99.0	75-125		
Orthophosphate	49.4	2.0	9.8	mg/kg dry	48.949	2.0 U	101	75-125		
Sulfate	88.5	1.0	4.9	mg/kg dry	48.949	41.1	96.7	75-125		
Nitrate	50.3	1.0	4.9	mg/kg dry	48.949	2.6	97.5	75-125		
Nitrite	49.4	1.0	4.9	mg/kg dry	48.949	1.0 U	101	75-125		
Batch L207025 - Default Prep GenChem										
Blank (L207025-BLK1)				Prepared & Analyzed: 07/05/2012						
Nitrate/Nitrite as N	0.10 U	0.10	0.49	mg/kg wet						
LCS (L207025-BS1)				Prepared & Analyzed: 07/05/2012						
Nitrate/Nitrite as N	4.88	0.10	0.50	mg/kg wet	4.9834		98.0	90-110		
Duplicate (L207025-DUP3)	**Source: 1206075-02**			Prepared & Analyzed: 07/05/2012						
Nitrate/Nitrite as N	0.58	0.10	0.49	mg/kg dry		0.65			10.8	20

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Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-230	
2620 Fermi Avenue	Project Number: K3940	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	07/06/2012 14:12

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L207025 - Default Prep GenChem										
Matrix Spike (L207025-MS3)		**Source: 1206075-02**		Prepared & Analyzed: 07/05/2012						
Nitrate/Nitrite as N	5.30	0.10	0.49	mg/kg dry	4.8949	0.65	95.0	75-125		