

SAF-RC-225
100K Remaining Waste Sites –
Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt

H4-21

KW 1/24/13
INITIAL/DATE

COMMENTS:

SDG KP0170

SAF-RC-225

Rad only

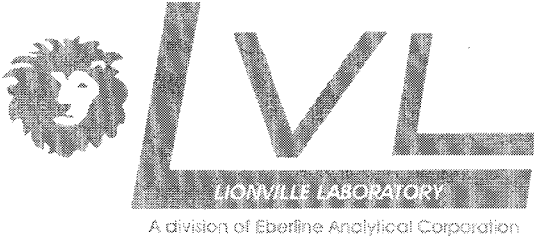
Chem only

Rad & Chem

Complete

Partial

Sample Location: 100-K-86



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

22 January 2013

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

Subject: Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	1301012
SDG #	KP0170
SAF #	RC-225
Date Received	01/04/13
# Samples	3
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	X
PAHs	X
Herbicides	
Metals	
Inorganics	

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

Sincerely,

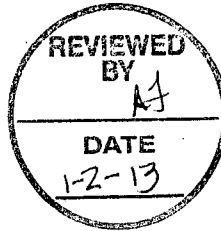
Lionville Laboratory
 A Division of Eberline Analytical Corporation



Orlette S. Johnson
 Project Manager

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 25 pages.

CHAIN OF CUSTODY

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-225-080	Page 1 of 1				
Collector Brackett, R		Company Contact Joan Kessner		Telephone No. (509) 375-4688		Project Coordinator KESSNER, JH	Price Code 8B	Data Turnaround 7 Days			
Project Designation 100K Remaining Waste Sites - Soil In-Process		Sampling Location 100-K-86		SAF No. RC-225							
Ice Chest No. <i>WCH-12-021</i>		Field Logbook No. EL-1666		COA 010K862600		Method of Shipment FedEx					
Shipped To EBERLINE SERVICES / LIONVILLE <i>DWS 12/31/12</i>		Offsite Property No. <i>A 1-2-13</i> <i>A-120628</i> <i>A120687</i>		Bill of Lading/Air Bill No. See OSPC							
POSSIBLE SAMPLE HAZARDS/REMARKS <i>None</i>			Preservation	Cool 4C	<i>Cool 4C</i>						
Special Handling and/or Storage <i>Cool 4C</i>			Type of Container	aG	<i>aG</i>						
			No. of Container(s)	1	<i>1</i>						
			Volume	125mL	<i>125mL</i>						
			SAMPLE ANALYSIS	TPH-Diesel Range - WTPH-D+	<i>PAH</i> <i>8270 A</i> <i>8310 12/31/12</i>						
Sample No.	Matrix *	Sample Date	Sample Time								
J1R7D6	SOIL	<i>12/31/12</i>	<i>0840</i>	<i>X</i>							
J1R7D7	SOIL	<i>12/31/12</i>	<i>0955</i>	<i>X</i>							
J1R7D8	SOIL	<i>12/31/12</i>	<i>1020</i>	<i>X</i>							
J1R7D9	SOIL										
J1R7F0	SOIL	<i>12/31/12</i>									
CHAIN OF POSSESSION				Sign/Print Names		SPECIAL INSTRUCTIONS			Matrix *		
Relinquished By/Removed From <i>Ed Baker</i>		Date/Time <i>12-31-12</i>		Received By/Stored In <i>B Hudson</i>					<ul style="list-style-type: none"> S=Soil SE=Sediment SO=Solid SH=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other 		
Relinquished By/Removed From <i>B Hudson</i>		Date/Time <i>12/31/12 1050</i>		Received By/Stored In <i>DWS Hudson</i>						Date/Time <i>12/31/12 1050</i>	
Relinquished By/Removed From <i>DWS Hudson</i>		Date/Time <i>12/31/12 1222</i>		Received By/Stored In <i>W W</i>						Date/Time <i>12-31-12 1222</i>	
Relinquished By/Removed From <i>W W</i>		Date/Time <i>1-2-13 1240</i>		Received By/Stored In <i>Fed Ex</i>						Date/Time	
Relinquished By/Removed From <i>Ed Baker</i>		Date/Time <i>1-4-13 1025</i>		Received By/Stored In <i>VICTOR HERNANDEZ</i>						Date/Time <i>1-4-13 1025</i>	
Relinquished By/Removed From		Date/Time		Received By/Stored In						Date/Time	
LABORATORY SECTION	Received By		Title		Date/Time						
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By		Date/Time						

0000000004



Lionville Laboratory
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford
Project/PAF/SOW/Release #: RC-225

Date: 1/4/13

LvL Batch #: 1301012

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | | |
|--|--|--|---|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>Fed Ex</u> | <input type="checkbox"/> Yes <input type="checkbox"/> No | Airbill # <u>794427535476</u> |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Comments: |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received cooled or ambient?
How was the temperature taken?
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | Temp <u>2-3</u> °C
<input checked="" type="checkbox"/> IR | <input type="checkbox"/> Temp. Blank <input type="checkbox"/> No | Cooler # <u>WCH-12-021</u>
<input type="checkbox"/> Other (Specify): |
| 6. Custody seals on sample containers intact, signed and dated? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. COC (Client & LvL) signed & dated? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on COC received?
All samples received on COC? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches COC? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times?
Short holds taken to wet lab? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 13. VOA, TOC, TOX, RSK-175, Sulfides, Non-Halogenated VOAs (Alcohol/Glycol) free of headspace? | | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> 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.) | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |

Person Contacted _____

Date _____

PAHs

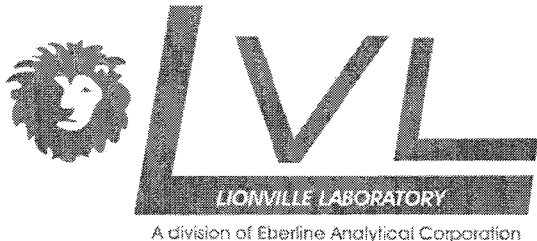


264 Welsh Pool Road
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Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-225 Project Number: KP0170 Project Manager: Joan Kessner	Reported: 01/08/2013 22:38
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Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R7D8	1301012-03	Soil	12/31/2012 10:20	01/04/2013 10:25



264 Welsh Pool Road
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Case Narrative

Client: WC-HANFORD RC-225 KP0170
LVL #: 1301012

W.O. #: 60049-001-001-0001-00
Date Received: 01-04-2013

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

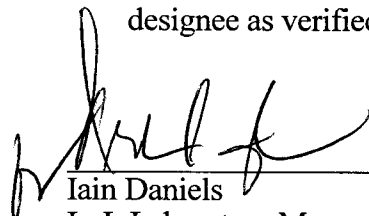
One (1) soil sample was collected on 12-31-2012.

The sample and associated QC samples were extracted 01-05-2013 and analyzed 01-07-2013 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8310.

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

1. The results presented in this report are derived from a sample that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. The method blank was below the reporting limits for all target compounds.
5. All blank spike recoveries were within acceptance criteria.
6. One (1) of thirty-two matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR #13GC001) has been enclosed.
7. The sample was reported on a dry weight basis.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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



Iain Daniels
LvL Laboratory Manager

1/11/13

Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 13GCO01

Initiator: Catherine Carey Batch: 1301012 Parameter: PAH
 Date: 01/08/13 Samples: MSD1 Matrix: SOIL
 Client: WC Hartford Method: SW846/MCAWW/CLPI Prep Batch: L301028

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)

*Acenaphthylene recovery is high in B⁺ MSD1
 CAC 01/08/13*

BSI + MSI 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)

*Narrative ID.
 [Signature] 1/11/13*

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

[Signature]

5. Final Action...signature/date: _____

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 disposition.

Route

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

Route

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



GLOSSARY 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.



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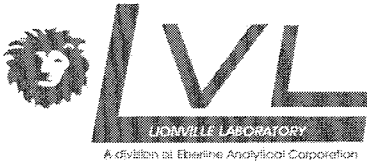
J1R7D8
1301012-03 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Naphthalene	18.6		3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Acenaphthylene	8.55		3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Acenaphthene	3.54	U	3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Fluorene	3.54	U	3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Phenanthrene	6.38		3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Anthracene	3.54	U	3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Fluoranthene	25.8		3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Indeno[1,2,3-cd]pyrene	3.54	U	3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Pyrene	39.4		3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Benz[a]anthracene	21.6		3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Chrysene	13.8		3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Benzo[b] fluoranthene	12.7		3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Benzo[k] fluoranthene	3.37	J	3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Benzo[a] pyrene	23.5		3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Dibenz[a,h]anthracene	2.18	J	3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
Benzo[g,h,i] perylene	3.54	U	3.54	ug/kg dry	1	L301028	01/05/2013	01/07/2013	8310
<i>Surrogate: Triphenylene</i>	<i>99 %</i>		<i>68-129</i>			<i>L301028</i>	<i>01/05/2013</i>	<i>01/07/2013</i>	<i>8310</i>



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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
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Batch L301028 - SW 3540C

Blank (L301028-BLK1)			Prepared: 01/05/2013 Analyzed: 01/07/2013						
Naphthalene	3.33 U	3.33	ug/kg wet						
Acenaphthylene	3.33 U	3.33	ug/kg wet						
Acenaphthene	3.33 U	3.33	ug/kg wet						
Fluorene	3.33 U	3.33	ug/kg wet						
Phenanthrene	3.33 U	3.33	ug/kg wet						
Anthracene	3.33 U	3.33	ug/kg wet						
Fluoranthene	3.33 U	3.33	ug/kg wet						
Indeno[1,2,3-cd]pyrene	3.33 U	3.33	ug/kg wet						
Pyrene	3.33 U	3.33	ug/kg wet						
Benz[a]anthracene	3.33 U	3.33	ug/kg wet						
Chrysene	3.33 U	3.33	ug/kg wet						
Benzo[b] fluoranthene	3.33 U	3.33	ug/kg wet						
Benzo[k] fluoranthene	3.33 U	3.33	ug/kg wet						
Benzo[a] pyrene	3.33 U	3.33	ug/kg wet						
Dibenz[a,h]anthracene	3.33 U	3.33	ug/kg wet						
Benzo[g,h,i] perylene	3.33 U	3.33	ug/kg wet						
<i>Surrogate: Triphenylene</i>	<i>154</i>		<i>ug/kg wet</i>	<i>166.67</i>	<i>92</i>	<i>68-129</i>			

LCS (L301028-BS1)			Prepared: 01/05/2013 Analyzed: 01/07/2013						
Naphthalene	134	3.33	ug/kg wet	166.67	80	0-127			
Acenaphthylene	146	3.33	ug/kg wet	166.67	88	50-140			
Acenaphthene	139	3.33	ug/kg wet	166.67	84	17-139			
Fluorene	146	3.33	ug/kg wet	166.67	87	28-145			
Phenanthrene	148	3.33	ug/kg wet	166.67	89	30-152			
Anthracene	154	3.33	ug/kg wet	166.67	92	19-171			
Fluoranthene	151	3.33	ug/kg wet	166.67	90	34-159			
Indeno[1,2,3-cd]pyrene	159	3.33	ug/kg wet	166.67	95	31-156			
Pyrene	154	3.33	ug/kg wet	166.67	92	33-152			
Benz[a]anthracene	163	3.33	ug/kg wet	166.67	98	32-157			
Chrysene	155	3.33	ug/kg wet	166.67	93	31-159			
Benzo[b] fluoranthene	165	3.33	ug/kg wet	166.67	99	33-164			
Benzo[k] fluoranthene	162	3.33	ug/kg wet	166.67	97	28-161			
Benzo[a] pyrene	166	3.33	ug/kg wet	166.67	99	29-149			
Dibenz[a,h]anthracene	164	3.33	ug/kg wet	166.67	98	27-153			
Benzo[g,h,i] perylene	164	3.33	ug/kg wet	166.67	99	32-157			
<i>Surrogate: Triphenylene</i>	<i>151</i>		<i>ug/kg wet</i>	<i>166.67</i>	<i>91</i>	<i>68-129</i>			



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 Richland WA, 99354

Project: RC-225
 Project Number: KP0170
 Project Manager: Joan Kessner

Reported:
 01/08/2013 22:38

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
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Batch L301028 - SW 3540C

Matrix Spike (L301028-MS1)		Source: 1301012-03		Prepared: 01/05/2013 Analyzed: 01/07/2013					
Naphthalene	176	3.56	ug/kg dry	178.08	18.6	88	0-127		
Acenaphthylene	202	3.56	ug/kg dry	178.08	8.55	109	50-140		
Acenaphthene	130	3.56	ug/kg dry	178.08	3.54 U	73	17-139		
Fluorene	171	3.56	ug/kg dry	178.08	3.54 U	96	28-145		
Phenanthrene	180	3.56	ug/kg dry	178.08	6.38	97	30-152		
Anthracene	179	3.56	ug/kg dry	178.08	3.54 U	100	19-171		
Fluoranthene	224	3.56	ug/kg dry	178.08	25.8	111	34-159		
Indeno[1,2,3-cd]pyrene	188	3.56	ug/kg dry	178.08	3.54 U	106	31-156		
Pyrene	215	3.56	ug/kg dry	178.08	39.4	98	33-152		
Benz[a]anthracene	208	3.56	ug/kg dry	178.08	21.6	105	32-157		
Chrysene	195	3.56	ug/kg dry	178.08	13.8	101	31-159		
Benzo[b] fluoranthene	202	3.56	ug/kg dry	178.08	12.7	106	33-164		
Benzo[k] fluoranthene	176	3.56	ug/kg dry	178.08	3.37	97	28-161		
Benzo[a] pyrene	209	3.56	ug/kg dry	178.08	23.5	104	29-149		
Dibenz[a,h]anthracene	181	3.56	ug/kg dry	178.08	2.18	101	27-153		
Benzo[g,h,i] perylene	215	3.56	ug/kg dry	178.08	3.54 U	121	32-157		
<i>Surrogate: Triphenylene</i>	202		<i>ug/kg dry</i>	178.08		113	68-129		

Matrix Spike Dup (L301028-MSD1)		Source: 1301012-03		Prepared: 01/05/2013 Analyzed: 01/07/2013					
Naphthalene	182	3.57	ug/kg dry	178.44	18.6	92	0-127	4	40
Acenaphthylene	269	3.57	ug/kg dry	178.44	8.55	146*	50-140	29	40
Acenaphthene	139	3.57	ug/kg dry	178.44	3.54 U	78	17-139	6	40
Fluorene	163	3.57	ug/kg dry	178.44	3.54 U	91	28-145	5	40
Phenanthrene	207	3.57	ug/kg dry	178.44	6.38	113	30-152	14	40
Anthracene	176	3.57	ug/kg dry	178.44	3.54 U	98	19-171	2	40
Fluoranthene	283	3.57	ug/kg dry	178.44	25.8	144	34-159	26	40
Indeno[1,2,3-cd]pyrene	186	3.57	ug/kg dry	178.44	3.54 U	104	31-156	1	40
Pyrene	248	3.57	ug/kg dry	178.44	39.4	117	33-152	17	40
Benz[a]anthracene	229	3.57	ug/kg dry	178.44	21.6	116	32-157	10	40
Chrysene	212	3.57	ug/kg dry	178.44	13.8	111	31-159	9	40
Benzo[b] fluoranthene	185	3.57	ug/kg dry	178.44	12.7	97	33-164	9	40
Benzo[k] fluoranthene	174	3.57	ug/kg dry	178.44	3.37	96	28-161	1	40
Benzo[a] pyrene	207	3.57	ug/kg dry	178.44	23.5	103	29-149	1	40
Dibenz[a,h]anthracene	179	3.57	ug/kg dry	178.44	2.18	99	27-153	2	40
Benzo[g,h,i] perylene	218	3.57	ug/kg dry	178.44	3.54 U	122	32-157	1	40
<i>Surrogate: Triphenylene</i>	200		<i>ug/kg dry</i>	178.44		112	68-129		

PREPARATION BENCH SHEET

L301028

Lionville Laboratory

Printed: 1/7/2013 9:13:19AM

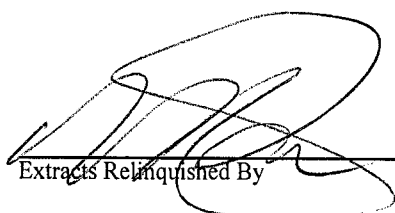
Matrix: Solid

Prepared using: Extraction - SW 3540C

Surrogate used: 120061

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1301012-03	8310 PAH	01/05/2013 12:09	30.32	5				50	WC-Hanford, Inc.	
1301014-01	8310 PAH	01/05/2013 12:09	30.18	5				50	WC-Hanford, Inc.	
1301014-02	8310 PAH	01/05/2013 12:09	30.65	5				50	WC-Hanford, Inc.	
1301014-03	8310 PAH	01/05/2013 12:09	31.38	5				50	WC-Hanford, Inc.	
1301014-04	8310 PAH	01/05/2013 12:09	30.29	5				50	WC-Hanford, Inc.	
1301014-05	8310 PAH	01/05/2013 12:09	30.24	5				50	WC-Hanford, Inc.	
1301014-06	8310 PAH	01/05/2013 12:09	30.08	5				50	WC-Hanford, Inc.	
1301014-07	8310 PAH	01/05/2013 12:09	30.09	5				50	WC-Hanford, Inc.	
1301014-08	8310 PAH	01/05/2013 12:09	30.24	5				50	WC-Hanford, Inc.	
1301014-09	8310 PAH	01/05/2013 12:09	30.24	5				50	WC-Hanford, Inc.	
1301014-10	8310 PAH	01/05/2013 12:09	30.17	5				50	WC-Hanford, Inc.	
1301014-11	8310 PAH	01/05/2013 12:09	30.34	5				50	WC-Hanford, Inc.	
1301014-12	8310 PAH	01/05/2013 12:09	30.97	5				50	WC-Hanford, Inc.	
L301028-BLK1	QC	01/05/2013 12:09	30	5				50		
L301028-BS1	QC	01/05/2013 12:09	30	5	1200436		50	50		
L301028-MS1	QC	01/05/2013 12:09	30.19	5	1200436	1301012-03	50	50		
L301028-MS2	QC	01/05/2013 12:09	30.8	5	1200436	1301014-02	50	50		
L301028-MSD1	QC	01/05/2013 12:09	30.13	5	1200436	1301012-03	50	50		
L301028-MSD2	QC	01/05/2013 12:09	30.48	5	1200436	1301014-02	50	50		

sample delivered on 1/6/13



Extracts Relinquished By

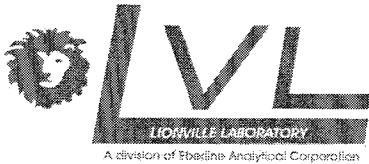
1/7/13 0913
Date

LE
Extracts Received By

1-7-13

Date

DRO/MO



Lionville Laboratory, PADEP Lab ID# 15-00009
264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

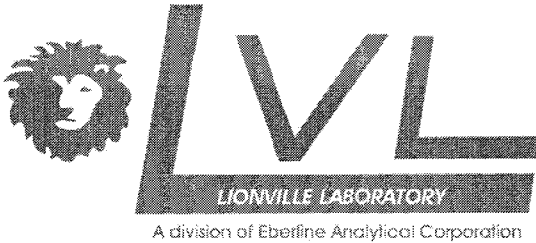
WC-Hanford, Inc.
2620 Fermi Avenue
Richland WA, 99354

Project: RC-225
Project Number: KP0170
Project Manager: Joan Kessner

Reported:
01/08/2013 23:30

Analytical Report for Extractable Petroleum Hydrocarbons by SW846 8015

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R7D6	1301012-01	Soil	12/31/2012 08:40	01/04/2013 10:25
J1R7D7	1301012-02	Soil	12/31/2012 09:55	01/04/2013 10:25



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

Case Narrative

Client: WC-HANFORD RC-225 KP0170
LVL #: 1301012

W.O. #: 60049-001-001-0001-00
Date Received: 01-04-2013

DIESEL RANGE ORGANICS

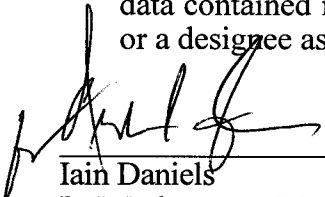
Two (2) soil samples were collected on 12-31-2012.

The samples and associated QC samples were extracted 01-04-2013 and analyzed 01-06,07-2013 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8015B for Diesel Range Organics.


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

1. The results presented in this report are derived from samples that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. One (1) of Six (6) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 13GC003) 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. Two (2) of two matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 13GC003) has been enclosed.
7. The samples J1R7D6, L301026-MS2, L301026-MSD2, and J1R7D7 required 2-fold instrument dilutions due to high concentrations of target analytes.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. The samples were reported on a dry weight basis.

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



Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: R3 GC003

Initiator: Catherine Carey Batch: 1301012 Parameter: DRO
 Date: 01/08/13 Samples: MS2 + MSD2 Matrix: SOIL
 Client: WC Hanford Method: SW846/MCAWW/CLP/ Prep Batch: L301026

1. Reason for SDR

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

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

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

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

spike recoveries are high in MS2 / MSD2
surrogate recovery high in MSD2

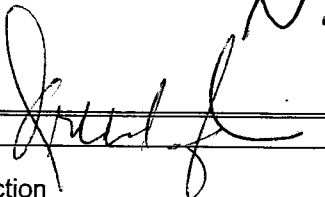
2. Known or Probable Causes(s)

high concentration of target analyte (MO) in sample

3. Discussion and Proposed Action

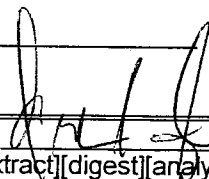
Other Description:

- 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
ID.
 1/11/13

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

 1/11/13

5. Final Action...signature/date:

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

Other Explanation:

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

Route

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

Route

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



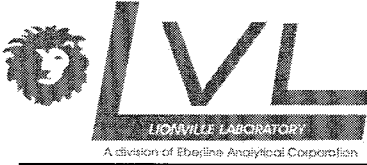
GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

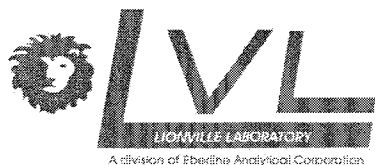


Lionville Laboratory, PADEP Lab ID# 15-00009
 264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-225 Project Number: KP0170 Project Manager: Joan Kessner	Reported: 01/08/2013 23:30
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Extractable Petroleum Hydrocarbons by SW846 8015
Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
J1R7D6 (1301012-01) Soil								
<i>Surrogate: p-Terphenyl</i>	98 %	39-129			L301026	01/04/2013 16:15	01/08/2013 07:51	8015M
Diesel Range Organics	7330 U	7330	ug/kg dry	2	L301026	01/04/2013 16:15	01/08/2013 07:51	8015M
Motor Oil	309000	22000	ug/kg dry	2	L301026	01/04/2013 16:15	01/08/2013 07:51	8015M
J1R7D7 (1301012-02) Soil								
<i>Surrogate: p-Terphenyl</i>	104 %	39-129			L301026	01/04/2013 16:15	01/08/2013 06:53	8015M
Diesel Range Organics	6990 U	6990	ug/kg dry	2	L301026	01/04/2013 16:15	01/08/2013 06:53	8015M
Motor Oil	236000	21000	ug/kg dry	2	L301026	01/04/2013 16:15	01/08/2013 06:53	8015M



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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-225 Project Number: KP0170 Project Manager: Joan Kessner	Reported: 01/08/2013 23:30
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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 L301026 - SW 3540C									
Blank (L301026-BLK1)									
				Prepared: 01/04/2013 14:34 Analyzed: 01/06/2013 22:56					
Diesel Range Organics	3330 U	3330	ug/kg wet						
Motor Oil	10000 U	10000	ug/kg wet						
Surrogate: p-Terphenyl	6610		ug/kg wet	6666.7		99	39-129		
LCS (L301026-BS1)									
				Prepared: 01/04/2013 14:34 Analyzed: 01/06/2013 23:54					
Diesel Range Organics	58600	3330	ug/kg wet	66667		88	42-133		
Surrogate: p-Terphenyl	6620		ug/kg wet	6666.7		99	39-129		
Matrix Spike (L301026-MS2)									
		Source: 1301012-01		Prepared: 01/04/2013 14:34 Analyzed: 01/08/2013 08:49					
Diesel Range Organics	234000	7180	ug/kg dry	71802	7330 U	326*	42-133		
Surrogate: p-Terphenyl	6590		ug/kg dry	7180.2		92	39-129		
Matrix Spike Dup (L301026-MSD2)									
		Source: 1301012-01		Prepared: 01/04/2013 14:34 Analyzed: 01/08/2013 09:47					
Diesel Range Organics	268000	7310	ug/kg dry	73090	7330 U	367*	42-133	12	40
Surrogate: p-Terphenyl	9660		ug/kg dry	7309.0		132*	39-129		

PREPARATION BENCH SHEET

L301026

Lionville Laboratory

Printed: 1/11/2013 11:51:27AM

Matrix: Solid

Prepared using: GC - SW 3540C

Surrogate used: 1201463

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1301011-01	8015M DRO	01/04/2013 13:46	30.21	1				1000	WC-Hanford, Inc.	
1301012-01	8015M DRO	01/04/2013 13:46	30.04	1				1000	WC-Hanford, Inc.	
1301012-02	8015M DRO	01/04/2013 13:46	31.16	1				1000	WC-Hanford, Inc.	
1301013-01	8015M DRO	01/04/2013 13:46	30.08	1				1000	WC-Hanford, Inc.	
1301013-02	8015M DRO	01/04/2013 13:46	30.18	1				1000	WC-Hanford, Inc.	
L301026-BLK1	QC	01/04/2013 13:46	30	1				1000		
L301026-BS1	QC	01/04/2013 13:46	30	1	1201538		1000	1000		
L301026-MS1	QC	01/04/2013 13:46	30.01	1	1201538	1301011-01	1000	1000		
L301026-MS2	QC	01/04/2013 13:46	30.65	1	1201538	1301012-01	1000	1000		
L301026-MS3	QC	01/04/2013 13:46	30.18	1	1201538	1301013-01	1000	1000		
L301026-MSD1	QC	01/04/2013 13:46	30.34	1	1201538	1301011-01	1000	1000		
L301026-MSD2	QC	01/04/2013 13:46	30.11	1	1201538	1301012-01	1000	1000		
L301026-MSD3	QC	01/04/2013 13:46	30.29	1	1201538	1301013-01	1000	1000		

revision for prep time gem 1/11/13

Extracts Relinquished By _____ Date _____

Extracts Received By _____ Date _____

PREPARATION BENCH SHEET

L301026

Lionville Laboratory

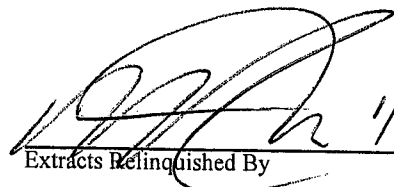
Printed: 1/5/2013 11:44:25AM

Matrix: Solid

Prepared using: Extraction - SW 3540C

Surrogate used: 1201463

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1301011-01	8015M DRO	01/04/2013 14:34	30.21	1				1000	WC-Hanford, Inc.	
1301012-01	8015M DRO	01/04/2013 16:15	30.04	1				1000	WC-Hanford, Inc.	
1301012-02	8015M DRO	01/04/2013 16:15	31.16	1				1000	WC-Hanford, Inc.	
1301013-01	8015M DRO	01/04/2013 16:15	30.08	1				1000	WC-Hanford, Inc.	
1301013-02	8015M DRO	01/04/2013 16:15	30.18	1				1000	WC-Hanford, Inc.	
L301026-BLK1	QC	01/04/2013 14:34	30	1				1000		
L301026-BS1	QC	01/04/2013 14:34	30	1	1201538		1000	1000		
L301026-MS1	QC	01/04/2013 14:34	30.01	1	1201538	1301011-01	1000	1000		
L301026-MS2	QC	01/04/2013 14:34	30.65	1	1201538	1301012-01	1000	1000		
L301026-MS3	QC	01/04/2013 14:34	30.18	1	1201538	1301013-01	1000	1000		
L301026-MSD1	QC	01/04/2013 14:34	30.34	1	1201538	1301011-01	1000	1000		
L301026-MSD2	QC	01/04/2013 14:34	30.11	1	1201538	1301012-01	1000	1000		
L301026-MSD3	QC	01/04/2013 14:34	30.29	1	1201538	1301013-01	1000	1000		

 1/5/13 1145
 Extracts Relinquished By _____ Date _____

Extracts Received By _____ Date _____