

**SAF-RC-195**  
**Soil/Sediment Sampling – Integrated**  
**Remedial Investigation/Feasibility Study,**  
**100-BC Boreholes**  
**FINAL DATA PACKAGE**

**COMPLETE COPY OF DATA PACKAGE TO:**

No Distribution Required

**COMMENTS:**

**SDG K2689                      SAF-RC-195**

Rad only

Chem only

Rad & Chem

Complete

Partial

**WITH CORRECTED PCB'S**

**Sample Location:      C7847 (118-B-8); I-003**





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

21 January 2011

Joan Kessner  
WC-Hanford, Inc.  
2620 Fermi Avenue  
MSIN H9-03  
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:

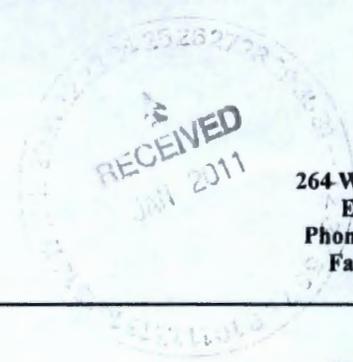
LvLI Batch #	1012018
SDG #	K2689
SAF #	RC-195
Date Received	12/02/10
# Samples	1
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	X
Glycols	
DRO/KRO/GRO	X
PAHs	X
Herbicides	
Metals	X
Inorganics	X

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



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-195 Project Number: K2689 Project Manager: Joan Kessner	Reported: 01/20/2011 12:13
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**Analytical Report for Wet Chemistry**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B28N94	1012018-01	Soil	11/18/2010 09:40	12/02/2010 09:45

## Case Narrative

**Client:** WC-HANFORD RC-195 K2689

**LVL#:** 1012018

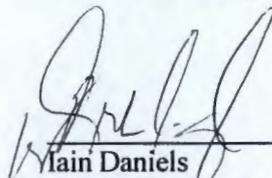
**Date Received:** 12-02-10

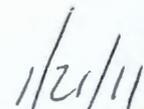
### INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was 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 not met for Anions, Nitrate Nitrite and Hexavalent Chromium ( $\text{Cr}^{6+}$ ).
4. The results presented in this report are derived from samples that met LvL's sample acceptance policy with the 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 with the exception of Chloride at 24.9% for which the results were below the limit of quantitation.
9. Results for soil samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

  
Main Daniels  
Laboratory Manager  
Lionville Laboratory  
njpi12-018

  
Date



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Project Number: K2689  
Project Manager: Joan Kessner

Reported:  
01/20/2011 12:13

### 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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 Project Manager: Joan Kessner

Reported:  
 01/20/2011 12:13

**Wet Chemistry**  
**Lionville Laboratory**

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
<b>B28N94 (1012018-01) Soil</b>									
%Solids	94.2	0.1	0.1	% by Weight	1	L012130	12/09/2010	12/09/2010	SM2540G
Bromide	1.6 U	1.6	2.4	mg/kg dry	1	L101187	01/13/2011	01/13/2011	EPA 300.0 (1993)
Chloride	1.1 B	0.6	2.4	mg/kg dry	1	L101187	01/13/2011	01/13/2011	EPA 300.0 (1993)
Fluoride	0.6 B	0.3	2.4	mg/kg dry	1	L101187	01/13/2011	01/13/2011	EPA 300.0 (1993)
Nitrate	3.4	1.1	2.4	mg/kg dry	1	L101187	01/13/2011	01/13/2011	EPA 300.0 (1993)
Nitrite	1.0 U	1.0	2.4	mg/kg dry	1	L101187	01/13/2011	01/13/2011	EPA 300.0 (1993)
Orthophosphate	3.3 U	3.3	4.8	mg/kg dry	1	L101187	01/13/2011	01/13/2011	EPA 300.0 (1993)
Sulfate	15.3	1.0	2.4	mg/kg dry	1	L101187	01/13/2011	01/13/2011	EPA 300.0 (1993)
Nitrate/Nitrite as N	1.09	0.10	0.48	mg/kg dry	1	L101182	01/13/2011	01/14/2011	EPA 353.2
Hexavalent Chromium	0.29 B	0.21	0.53	mg/kg dry	1	L101135	01/13/2011	01/13/2011	ISW846 7196A
pH	8.81		0.10	pH Units	1	L012307	12/23/2010	12/23/2010	ISW846 9045D
%Moisture	5.78		0.01	% by Weight	1	L012131	12/09/2010	12/09/2010	D2216



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**Wet Chemistry - Quality Control**  
**Lionville Laboratory**

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch L012130 - % Solids</b>										
<b>Duplicate (L012130-DUP3)</b>		<b>Source: 1012018-01</b>		<b>Prepared &amp; Analyzed: 12/09/2010</b>						
%Solids	93.1	0.1	0.1	% by Weight		94.2			1	20
<b>Batch L012131 - Default Prep GenChem</b>										
<b>Duplicate (L012131-DUP3)</b>		<b>Source: 1012018-01</b>		<b>Prepared &amp; Analyzed: 12/09/2010</b>						
%Moisture	6.90		0.01	% by Weight		5.78			17.6	20
<b>Batch L012307 - Default Prep GenChem</b>										
<b>Duplicate (L012307-DUP6)</b>		<b>Source: 1012018-01</b>		<b>Prepared &amp; Analyzed: 12/23/2010</b>						
pH	8.96		0.10	pH Units		8.81			1.69	20
<b>Reference (L012307-SRM1)</b>				<b>Prepared &amp; Analyzed: 12/23/2010</b>						
pH	9.98		0.10	pH Units	10.000		99.8	99-101		
<b>Batch L101135 - SW 3060A</b>										
<b>Blank (L101135-BLK1)</b>				<b>Prepared &amp; Analyzed: 01/13/2011</b>						
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
<b>LCS (L101135-BS1)</b>				<b>Prepared &amp; Analyzed: 01/13/2011</b>						
Hexavalent Chromium	3.25	0.20	0.50	mg/kg wet	4.0000		81	80-120		
<b>LCS (L101135-BS2)</b>				<b>Prepared &amp; Analyzed: 01/13/2011</b>						
Hexavalent Chromium	1240 D	20.0	50.0	mg/kg wet	1081.9		115	80-120		



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Project Number: K2689  
Project Manager: Joan Kessner

Reported:  
01/20/2011 12:13

**Wet Chemistry - Quality Control**  
**Lionville Laboratory**

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch L101135 - SW 3060A</b>										
<b>Duplicate (L101135-DUP5)</b>		<b>Source: 1012018-01</b>			<b>Prepared &amp; Analyzed: 01/13/2011</b>					
Hexavalent Chromium	0.36 B	0.21	0.53	mg/kg dry		0.29			20	20
<b>Matrix Spike (L101135-MS9)</b>		<b>Source: 1012018-01</b>			<b>Prepared &amp; Analyzed: 01/13/2011</b>					
Hexavalent Chromium	3.57	0.21	0.53	mg/kg dry	4.2455	0.29	77	75-125		
<b>Matrix Spike (L101135-MSA)</b>		<b>Source: 1012018-01</b>			<b>Prepared &amp; Analyzed: 01/13/2011</b>					
Hexavalent Chromium	1590 D	21.2	53.1	mg/kg dry	1326.0	0.29	120	75-125		
<b>Batch L101182 - Default Prep GenChem</b>										
<b>Blank (L101182-BLK1)</b>		<b>Prepared: 01/13/2011 Analyzed: 01/14/2011</b>								
Nitrate/Nitrite as N	0.10 U	0.10	0.48	mg/kg wet						
<b>Blank (L101182-BLK2)</b>		<b>Prepared: 01/13/2011 Analyzed: 01/14/2011</b>								
Nitrate/Nitrite as N	0.10 U	0.10	0.50	mg/kg wet						
<b>LCS (L101182-BS1)</b>		<b>Prepared: 01/13/2011 Analyzed: 01/14/2011</b>								
Nitrate/Nitrite as N	4.57	0.09	0.45	mg/kg wet	4.5372		101	90-110		
<b>LCS (L101182-BS2)</b>		<b>Prepared: 01/13/2011 Analyzed: 01/14/2011</b>								
Nitrate/Nitrite as N	4.90	0.10	0.50	mg/kg wet	4.9505		99.0	90-110		
<b>Duplicate (L101182-DUP5)</b>		<b>Source: 1012018-01</b>			<b>Prepared: 01/13/2011 Analyzed: 01/14/2011</b>					
Nitrate/Nitrite as N	0.99	0.10	0.48	mg/kg dry		1.09			9.53	20
<b>Matrix Spike (L101182-MS5)</b>		<b>Source: 1012018-01</b>			<b>Prepared: 01/13/2011 Analyzed: 01/14/2011</b>					
Nitrate/Nitrite as N	6.19	0.10	0.52	mg/kg dry	5.2011	1.09	98.0	75-125		



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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-195 Project Number: K2689 Project Manager: Joan Kessner	Reported: 01/21/2011 13:46
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**Wet Chemistry - Quality Control**  
**Lionville Laboratory**

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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**Batch L101187 - Default Prep GenChem**

<b>Blank (L101187-BLK1)</b>		Prepared & Analyzed: 01/13/2011								
Fluoride	0.3 U	0.3	2.4	mg/kg wet						
Chloride	0.6 U	0.6	2.4	mg/kg wet						
Bromide	1.6 U	1.6	2.4	mg/kg wet						
Orthophosphate	3.2 U	3.2	4.8	mg/kg wet						
Sulfate	1.0 U	1.0	2.4	mg/kg wet						
Nitrate	1.0 U	1.0	2.4	mg/kg wet						
Nitrite	1.0 U	1.0	2.4	mg/kg wet						

<b>LCS (L101187-BS1)</b>		Prepared & Analyzed: 01/13/2011								
Fluoride	60.0	0.3	2.3	mg/kg wet	60.716	98.8		90-110		
Chloride	58.2	0.6	2.3	mg/kg wet	60.716	95.9		90-110		
Bromide	58.9	1.5	2.3	mg/kg wet	60.716	97.0		90-110		
Orthophosphate	59.9	3.1	4.6	mg/kg wet	60.716	98.7		90-110		
Sulfate	58.2	0.9	2.3	mg/kg wet	60.716	95.8		90-110		
Nitrate	60.1	1.0	2.3	mg/kg wet	60.716	98.9		90-110		
Nitrite	61.4	0.9	2.3	mg/kg wet	60.716	101		90-110		

<b>Duplicate (L101187-DUP5)</b>		Source: 1012018-01		Prepared & Analyzed: 01/13/2011						
Fluoride	0.7 B	0.3	2.4	mg/kg dry		0.6			14.2	20
Chloride	1.4 B	0.6	2.4	mg/kg dry		1.1			24.9*	20
Bromide	1.6 U	1.6	2.4	mg/kg dry		1.6 U				20
Orthophosphate	3.3 U	3.3	4.8	mg/kg dry		3.3 U				20
Sulfate	14.1	1.0	2.4	mg/kg dry		15.3			7.87	20
Nitrate	3.1	1.1	2.4	mg/kg dry		3.4			9.66	20
Nitrite	1.0 U	1.0	2.4	mg/kg dry		1.0 U				20

<b>Matrix Spike (L101187-MS6)</b>		Source: 1012018-01		Prepared & Analyzed: 01/13/2011						
Fluoride	58.6	0.3	2.6	mg/kg dry	52.011	0.6	112		75-125	
Chloride	63.0	0.6	2.6	mg/kg dry	52.011	1.1	119		75-125	
Bromide	57.5	1.8	2.6	mg/kg dry	52.011	1.6 U	111		75-125	
Orthophosphate	62.7	3.5	5.2	mg/kg dry	52.011	3.3 U	121		75-125	
Sulfate	73.8	1.0	2.6	mg/kg dry	52.011	15.3	112		75-125	
Nitrate	64.0	1.1	2.6	mg/kg dry	52.011	3.4	117		75-125	
Nitrite	59.0	1.0	2.6	mg/kg dry	52.011	1.0 U	113		75-125	



COLLECTOR <i>J. Barkley</i>		COMPANY CONTACT RADLOFF, ANNA			TELEPHONE NO. (509) 376-4554			PROJECT COORDINATOR KESSNER, JH			PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION C7847 (118-B-8); I-003		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud			SAF NO. RC-195			AIR QUALITY <input type="checkbox"/>			45 Days / 45 Days	
ICE CHEST NO. <i>GWS-091</i>		FIELD LOGBOOK NO. <i>HNF-N-585-S 881</i>			ACTUAL SAMPLE DEPTH <i>9.7' - 12.2'</i>			COA 302512ES10			METHOD OF SHIPMENT FEDERAL EXPRESS <i>JA 12/1/10</i>	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR			BILL OF LADING/AIR BILL NO. SEE PTR <del>7841842004567</del> <i>796502875002</i>							
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	None	<i>796502875002</i>	
		HOLDING TIME	14/40 Days	14/40 Days	1 yr/1 yr	6 Months	30 Days	28 Days/48 Hours	ASAP			
		TYPE OF CONTAINER	aG	G	aG	G/P	G/P	G/P	G/P			
		NO. OF CONTAINER(S)	1	1	1	1	1	1	1			
		VOLUME	250mL	120mL	250mL	250mL	120mL	120mL	250mL			
SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B28N46	SAMPLE ANALYSIS	PAHs - 8310 (100 Area RI/FS);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	PCBs - 8082 (100 Area RI/FS);	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196 (100 Area RIFS);	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	pH (Soil) - 9045 (100 Area RIFS);				
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME									
B28N94	SOIL	<i>11-18-10</i>	<i>0940</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>J. Barkley / JKB</i>	DATE/TIME <i>11-18-10 / 1330</i>	RECEIVED BY/STORED IN <i>M0413 SSUES</i>	DATE/TIME <i>11-18-10 / 1330</i>	** The laboratory is to analyze pH within 24 hours of receipt. <input type="checkbox"/> <input type="checkbox"/> ** The RCCC acknowledges that the analytical holding time for Nitrate, Nitrite, and Phosphate by EPA methods 300.0 or 9056 will not be met. <input type="checkbox"/> <input type="checkbox"/> ** Physical Properties laboratory: Conduct the hydraulic conductivity test (ASTM 5084 or 2434) as appropriate to the sample matrix. <input type="checkbox"/> <input type="checkbox"/> (1) TPH-Diesel/Kerosene Range - WTPH-D (100 Area RIFS); (2) ICP Metals - 6010TR (100 Area RIFS Client List); Mercury - 7471 - (CV) (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
RELINQUISHED BY/REMOVED FROM <i>SSU-R2</i>	DATE/TIME <i>11-30-10 0730</i>	RECEIVED BY/STORED IN <i>cm Daular cm Cgh</i>	DATE/TIME <i>11-30-10 0730</i>		
RELINQUISHED BY/REMOVED FROM <i>cm Daular cm Cgh</i>	DATE/TIME <i>11-30-10 1400</i>	RECEIVED BY/STORED IN <i>FEDEX</i>	DATE/TIME		
RELINQUISHED BY/REMOVED FROM <i>F. S. E.</i>	DATE/TIME <i>12-2-10 0945</i>	RECEIVED BY/STORED IN <i>VICTOR HERNANDEZ</i>	DATE/TIME <i>12-2-10 0945</i>		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

 ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Lionville Laboratory  
**SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: WC Hornford  
 Project/SAF/BOW/Release #: RC-195

Date: 12-2-10

LvL Batch #: 1012018

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- |  |   |  |  |
|--|---|--|--|
| 1. Samples Hand Delivered or <u>Shipped?</u>   | Carrier   | Airbill # <u>796502875002</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?<br><br>How was the temperature taken?<br><br>Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | Temp <u>26</u> °C<br><input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank<br><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Cooler # <u>GWS-091</u><br><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?<br>All samples received on COC?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br><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"/> Yes<br><input checked="" type="checkbox"/> No <input type="checkbox"/> No                              | <input checked="" type="checkbox"/> No <u>NO2 NO3 NO4 rec'd past</u><br><input type="checkbox"/> N/A |  |
| 13. VOA, TOC, TOX free of headspace?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   | <input type="checkbox"/> N/A   |  |
| 14. QC stickers placed on bottles designated by client?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   | <input 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<br><u>11/19-11</u>  | <input type="checkbox"/> No <u>See #12</u>   |  |
| 16. Project Manager contacted concerning any discrepancies?<br>Person Contacted _____  | <input type="checkbox"/> Yes <input type="checkbox"/> No  | <input type="checkbox"/> N/A<br>Date _____   |  |



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RECEIVED  
JAN 11 2011

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-195 Project Number: K2689 Project Manager: Joan Kessner	Reported: 01/09/2011 09:13
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**Analytical Report for Polynuclear Aromatic Compounds by SW846 8310**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B28N94	1012018-01	Soil	11/18/2010 09:40	12/02/2010 09:45



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

### Case Narrative

**Client:** WC-HANFORD RC-195 K2689  
**LVL #:** 1012018

**W.O. #:** 60049-001-001-0001-00  
**Date Received:** 12-02-2010

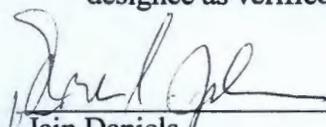
### POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

One (1) soil sample was collected on 11-18-2010.

The sample and associated QC samples were extracted 12-07-2010 and analyzed 12-28,29-2010 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. The sample was extracted five (5) days outside of recommended hold time. The sample was received on the last day of hold.
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. All matrix spike recoveries were within acceptance criteria.
7. The initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. The sample was reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory manager or a designee as verified by the following signature.

  
Iain Daniels  
LvL Laboratory Manager

  
Date



## GLOSSARY OF DATA

### DATA QUALIFIERS

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

### ABBREVIATIONS

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



264 Welsh Pool Road  
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 Phone: 610-280-3000  
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WC-Hanford, Inc.  
 2620 Fermi Avenue  
 Richland WA, 99354

Project: RC-195  
 Project Number: K2689  
 Project Manager: Joan Kessner

Reported:  
 01/09/2011 09:13

**B28N94**  
**1012018-01 (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	3.46 U	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Acenaphthylene</b>	<b>3.97</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
Acenaphthene	3.46 U	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
Fluorene	3.46 U	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Phenanthrene</b>	<b>4.83</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Anthracene</b>	<b>1.00 J</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Fluoranthene</b>	<b>5.67</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
Indeno[1,2,3-cd]pyrene	3.46 U	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Pyrene</b>	<b>2.06 J</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
Benz[a]anthracene	3.46 U	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Chrysene</b>	<b>5.04</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Benzo[b] fluoranthene</b>	<b>18.3</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Benzo[k] fluoranthene</b>	<b>1.51 J</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Benzo[a] pyrene</b>	<b>1.51 J</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
Dibenz[a,h]anthracene	3.46 U	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
<b>Benzo[g,h,i] perylene</b>	<b>5.20</b>	3.46	ug/kg dry	1	L012089	12/07/2010	12/29/2010	8310
Surrogate: Triphenylene	103 %	68-129			L012089	12/07/2010	12/29/2010	8310

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

Project: RC-195  
 Project Number: K2689  
 Project Manager: Joan Kessner

Reported:  
 01/09/2011 09:13

**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 L012089 - SW 3540C**

**Blank (L012089-BLK1)**

Prepared: 12/07/2010 Analyzed: 12/28/2010

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>	171		ug/kg wet	166.67		102	68-129		

**LCS (L012089-BS1)**

Prepared: 12/07/2010 Analyzed: 12/28/2010

Naphthalene	150	3.33	ug/kg wet	166.67		90	0-127		
Acenaphthylene	159	3.33	ug/kg wet	166.67		96	50-140		
Acenaphthene	159	3.33	ug/kg wet	166.67		95	17-139		
Fluorene	156	3.33	ug/kg wet	166.67		94	28-145		
Phenanthrene	160	3.33	ug/kg wet	166.67		96	30-152		
Anthracene	171	3.33	ug/kg wet	166.67		103	19-171		
Fluoranthene	157	3.33	ug/kg wet	166.67		94	34-159		
Indeno[1,2,3-cd]pyrene	157	3.33	ug/kg wet	166.67		94	31-156		
Pyrene	175	3.33	ug/kg wet	166.67		105	33-152		
Benz[a]anthracene	168	3.33	ug/kg wet	166.67		101	32-157		
Chrysene	172	3.33	ug/kg wet	166.67		103	31-159		
Benzo[b] fluoranthene	168	3.33	ug/kg wet	166.67		101	33-164		
Benzo[k] fluoranthene	177	3.33	ug/kg wet	166.67		106	28-161		
Benzo[a] pyrene	165	3.33	ug/kg wet	166.67		99	29-149		
Dibenz[a,h]anthracene	169	3.33	ug/kg wet	166.67		101	27-153		
Benzo[g,h,i] perylene	181	3.33	ug/kg wet	166.67		108	32-157		
<i>Surrogate: Triphenylene</i>	168		ug/kg wet	166.67		101	68-129		



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Reported:  
 01/09/2011 09:13

**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 L012089 - SW 3540C**

<b>Matrix Spike (L012089-MS1)</b>		<b>Source: 1012018-01</b>		<b>Prepared: 12/07/2010</b>		<b>Analyzed: 12/29/2010</b>			
Naphthalene	137	3.43	ug/kg dry	171.74	3.46 U	80	0-127		
Acenaphthylene	134	3.43	ug/kg dry	171.74	3.97	76	50-140		
Acenaphthene	127	3.43	ug/kg dry	171.74	3.46 U	74	17-139		
Fluorene	145	3.43	ug/kg dry	171.74	3.46 U	85	28-145		
Phenanthrene	154	3.43	ug/kg dry	171.74	4.83	87	30-152		
Anthracene	156	3.43	ug/kg dry	171.74	1.00	91	19-171		
Fluoranthene	145	3.43	ug/kg dry	171.74	5.67	81	34-159		
Indeno[1,2,3-cd]pyrene	154	3.43	ug/kg dry	171.74	3.46 U	90	31-156		
Pyrene	158	3.43	ug/kg dry	171.74	2.06	91	33-152		
Benz[a]anthracene	155	3.43	ug/kg dry	171.74	3.46 U	90	32-157		
Chrysene	122	3.43	ug/kg dry	171.74	5.04	68	31-159		
Benzo[b] fluoranthene	155	3.43	ug/kg dry	171.74	18.3	80	33-164		
Benzo[k] fluoranthene	163	3.43	ug/kg dry	171.74	1.51	94	28-161		
Benzo[a] pyrene	150	3.43	ug/kg dry	171.74	1.51	86	29-149		
Dibenz[a,h]anthracene	150	3.43	ug/kg dry	171.74	3.46 U	88	27-153		
Benzo[g,h,i] perylene	160	3.43	ug/kg dry	171.74	5.20	90	32-157		
<i>Surrogate: Triphenylene</i>	<i>151</i>		<i>ug/kg dry</i>	<i>171.74</i>		<i>88</i>	<i>68-129</i>		

<b>Matrix Spike Dup (L012089-MSD1)</b>		<b>Source: 1012018-01</b>		<b>Prepared: 12/07/2010</b>		<b>Analyzed: 12/29/2010</b>			
Naphthalene	175	3.49	ug/kg dry	174.85	3.46 U	100	0-127	22	40
Acenaphthylene	183	3.49	ug/kg dry	174.85	3.97	103	50-140	30	40
Acenaphthene	151	3.49	ug/kg dry	174.85	3.46 U	86	17-139	15	40
Fluorene	169	3.49	ug/kg dry	174.85	3.46 U	97	28-145	13	40
Phenanthrene	180	3.49	ug/kg dry	174.85	4.83	100	30-152	14	40
Anthracene	180	3.49	ug/kg dry	174.85	1.00	102	19-171	12	40
Fluoranthene	180	3.49	ug/kg dry	174.85	5.67	100	34-159	21	40
Indeno[1,2,3-cd]pyrene	196	3.49	ug/kg dry	174.85	3.46 U	112	31-156	22	40
Pyrene	167	3.49	ug/kg dry	174.85	2.06	94	33-152	4	40
Benz[a]anthracene	154	3.49	ug/kg dry	174.85	3.46 U	88	32-157	2	40
Chrysene	142	3.49	ug/kg dry	174.85	5.04	78	31-159	14	40
Benzo[b] fluoranthene	173	3.49	ug/kg dry	174.85	18.3	88	33-164	10	40
Benzo[k] fluoranthene	180	3.49	ug/kg dry	174.85	1.51	102	28-161	8	40
Benzo[a] pyrene	170	3.49	ug/kg dry	174.85	1.51	97	29-149	11	40
Dibenz[a,h]anthracene	166	3.49	ug/kg dry	174.85	3.46 U	95	27-153	8	40
Benzo[g,h,i] perylene	185	3.49	ug/kg dry	174.85	5.20	103	32-157	13	40
<i>Surrogate: Triphenylene</i>	<i>169</i>		<i>ug/kg dry</i>	<i>174.85</i>		<i>97</i>	<i>68-129</i>		

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PREPARATION BENCH SHEET

L012089

Lionville Laboratory

Printed: 12/9/2010 10:16:56AM

Matrix: Solid

Prepared using: HPLC - SW 3540C

Surrogate used: 1001909

1001909

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1012018-01	8310 PAH	12/07/2010 16:22	30.63	5				500	WC-Hanford, Inc.	
1012019-01	8310 PAH	12/07/2010 16:22	31.86	5				500	WC-Hanford, Inc.	
1012019-02	8310 PAH	12/07/2010 16:22	30.34	5				500	WC-Hanford, Inc.	
1012019-03	8310 PAH	12/07/2010 16:22	31.91	5				500	WC-Hanford, Inc.	
1012019-04	8310 PAH	12/07/2010 16:22	30.81	5				500	WC-Hanford, Inc.	
1012019-05	8310 PAH	12/07/2010 16:22	30.18	5				500	WC-Hanford, Inc.	
1012019-06	8310 PAH	12/07/2010 16:22	30.38	5				500	WC-Hanford, Inc.	
1012019-07	8310 PAH	12/07/2010 16:22	30.41	5				500	WC-Hanford, Inc.	
1012020-01	8310 PAH	12/07/2010 16:22	30.11	5				500	WC-Hanford, Inc.	
1012020-02	8310 PAH	12/07/2010 16:22	30.85	5				500	WC-Hanford, Inc.	
1012020-03	8310 PAH	12/07/2010 16:22	30.05	5				500	WC-Hanford, Inc.	
1012020-05	8310 PAH	12/07/2010 16:22	30.79	5				500	WC-Hanford, Inc.	
1012046-01	8310 PAH	12/07/2010 16:22	30.08	5				500	WC-Hanford, Inc.	
L012089-BLK1	QC	12/07/2010 16:22	30	5				500		
L012089-BS1	QC	12/07/2010 16:22	30	5	1001668		1000	500		
L012089-MS1	QC	12/07/2010 16:22	30.9	5	1001668	1012018-01	1000	500		
L012089-MS2	QC	12/07/2010 16:22	30.31	5	1001668	1012019-01	1000	500		
L012089-MS3	QC	12/07/2010 16:22	31.62	5	1001668	1012020-01	1000	500		
L012089-MS4	QC	12/07/2010 16:22	31.55	5	1001668	1012046-01	1000	500		
L012089-MSD1	QC	12/07/2010 16:22	30.35	5	1001668	1012018-01	1000	500		

*[Signature]*  
 Extracts Relinquished By \_\_\_\_\_ Date 12/9/10 10:16

*[Signature]*  
 Extracts Received By \_\_\_\_\_ Date 12/09/10 10:20

PREPARATION BENCH SHEET

L012089

Lionville Laboratory

Printed: 12/9/2010 10:16:56AM

88888888

Matrix: Solid

Prepared using: HPLC - SW 3540C

Surrogate used: 1001909

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L012089-MSD2	QC	12/07/2010 16:22	30.08	5	1001668	1012019-01	1000	500		
L012089-MSD3	QC	12/07/2010 16:22	30.1	5	1001668	1012020-01	1000	500		
L012089-MSD4	QC	12/07/2010 16:22	30.23	5	1001668	1012046-01	1000	500		

*SA* 12/9/10 10:16  
 Extracts Relinquished By \_\_\_\_\_ Date \_\_\_\_\_

*Shah* 12.09.10 10:20  
 Extracts Received By \_\_\_\_\_ Date \_\_\_\_\_

# Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



10/2018

Client WC Hazardous SAF#RC-195  
 Est. Final Proj. Sampling Date \_\_\_\_\_  
 Project# \_\_\_\_\_  
 Project Contact/Phone# \_\_\_\_\_  
 Lionville Laboratory Project Manager O.J.  
 QC SW Del STD TAT 30 days

Refrigerator #	A	B	C	D	SAC	F	G
	1	1	1	1	1	1	1
#/Type Container							
Liquid							
Solid	1AG	1AG	1AC	1AC	1AC	1AC	1AG
Volume	250	250	120	250	120	120	250
Preservatives	-	-	-	-	-	-	-

Date Rec'd 12-2-10 Date Due 1-1-11

ANALYSES REQUESTED	ORGANIC					INORG				
	VOA	BNA	PAH's	TPH.D	Herb	Metal	HG	As	PH	Moisture

MATRIX CODES: S- Soil SE- Sediment SO- Solid SL- Sludge W- Water O- Oil A- Air DS- Drum Solids DL- Drum Liquids L- EP/TCLP Leachate WI- Wipe X- Other F- Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only													
			MS	MSD				VOA	BNA	PAH's	TPH.D	Herb	Metal	HG	As	PH	Moisture				
	01	B28N94	✓	✓	Soil	11-18-10	0940	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Special Instructions:

Special Instructions:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>12/2/10</u>	<u>0945</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
<b>ORIGINAL</b>			
<b>REWRITTEN</b>			

COLLECTOR <i>J Bailey</i>		COMPANY CONTACT RADLOFF, ANNA	TELEPHONE NO. (509) 376-4554	PROJECT COORDINATOR KESSNER, JH	PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION C7847 (118-B-B); I-003		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud		SAF NO. RC-195	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>GWS-091</i>		FIELD LOGBOOK NO. <i>HNF-N-585-3 881</i>	ACTUAL SAMPLE DEPTH <i>9.7' - 12.2'</i>	COA 302512ES10	METHOD OF SHIPMENT FEDERAL EXPRESS <i>JA 12/1/10</i>	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. <i>784164206456</i>		

RECEIVED

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	None	<i>796502875002</i>
		HOLDING TIME	14/40 Days	14/40 Days	1 yr/1 yr	6 Months	30 Days	28 Days/48 Hours	ASAP	
		TYPE OF CONTAINER	aG	G	aG	G/P	G/P	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	1	1	1	1	1	
		VOLUME	250mL	120mL	250mL	250mL	120mL	120mL	250mL	
		SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B28N46	SAMPLE ANALYSIS	PAHs - 8310 (100 Area RI/FS);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	PCBs - 8082 (100 Area RI/FS);	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196 (100 Area RIFS);	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME							
B28N94	SOIL	<i>11-18-10</i>	<i>0940</i>	✓	✓	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** The laboratory is to analyze pH within 24 hours of receipt. <input type="checkbox"/> <input type="checkbox"/> ** The RCCC acknowledges that the analytical holding time for Nitrate, Nitrite, and Phosphate by EPA methods 300.0 or 9056 will not be met. <input type="checkbox"/> <input type="checkbox"/> ** Physical Properties laboratory: Conduct the hydraulic conductivity test (ASTM 5084 or 2434) as appropriate to the sample matrix. <input type="checkbox"/> <input type="checkbox"/> (1) TPH-Diesel/Kerosene Range - WTPH-D (100 Area RIFS); (2) ICP Metals - 6010TR (100 Area RIFS Client List); Mercury - 7471 - (CV) (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
<i>JX Bailey / OKB</i>	<i>11-18-10 1330</i>	<i>M0413 SSUES</i>	<i>11-18-10 1330</i>		
<i>SSU-R2</i>	<i>11-30-10 0730</i>	<i>cm Daular cm Gb</i>	<i>11-30-10 0730</i>		
<i>cm Daular cm Gb</i>	<i>11-30-10 1400</i>	<i>FEDEX</i>			
<i>FedEx</i>	<i>12-2-10 0945</i>	<i>VICTOR HERNANDEZ</i>	<i>12-2-10 0945</i>		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

 ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Lionville Laboratory  
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford  
Project/SAF/BOW/Release #: RC-195

Date: 12-2-10

LvL Batch #: 1012018

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or <u>Shipped?</u>	Carrier		Airbill # <u>796502875002</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?	Temp <u>2-6</u> °C		Cooler # <u>GWS-091</u>
How was the temperature taken?	<input checked="" type="checkbox"/> IR	<input type="checkbox"/> Temp. Blank	<input type="checkbox"/> Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
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 checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <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 checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
13. VOA, TOC, TOX 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 checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input 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? Person Contacted _____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A Date _____



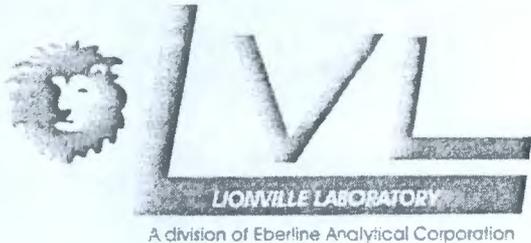
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Exton, PA 19341  
Phone: 610-280-3000  
Fax: 610-280-3041

RECEIVED  
11  
2011

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-195 Project Number: K2689 Project Manager: Joan Kessner	Reported: 01/07/2011 07:16
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**Analytical Report for Metals by SW846 6000/7000 series**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B28N94	1012018-01	Soil	11/18/2010 09:40	12/02/2010 09:45



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## Case Narrative

**Client:** WC-HANFORD RC-195  
**LVL#:** 1012018  
**SDG/SAF#:** K2689/RC-195

**W.O.#:** 60049-001-001-0001-00  
**Date Received:** 12-02-10

### METALS

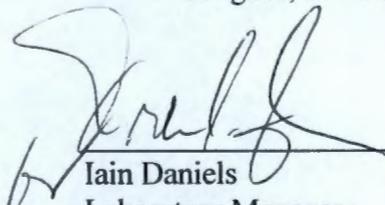
The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) certifies that all test results meet the requirements of NELAC except as noted below.

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 analysis of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods listed on the data report forms.
3. All analyses were performed within the required holding times.
4. Please refer to the Sample Receipt Check List for any sample discrepancies in LvL's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).
7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), samples were greater than 20X MB value}.
8. All ICP Interference Check Standards were within control limits.
9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer.
10. The matrix spike (MS) recoveries for 9 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 serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

<u>Sample ID</u>	<u>Element</u>	<u>PDS Concentration (ppb)</u>	<u>PDS % Recovery</u>
B28N94	Aluminum	22,000	87.0
	Antimony	100	93.2
	Calcium	20,800	72.5
	Iron	42,000	60.7
	Manganese	1,000	72.2
	Phosphorous	2,000	71.5
	Silicon	2,100	107.1
	Vanadium	1,000	87.5
	Mercury	1.0	75.3

12. The duplicate analyses for 14 analytes were outside the 20% Relative Percent Difference (RPD) control limit criteria. The  $\pm 20\%$  RPD control limit applies to sample results greater than ten times the MDL. The sample results for Mercury, Antimony, Beryllium, and Tin were 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

1/8/11  
 Date



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### 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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**B28N94**  
**1012018-01 (Soil)**

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

**Metals by SW846 6000/7000 series**

Aluminum	7400		4.50	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Antimony	0.342	B	0.540	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Arsenic	3.53		0.899	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Barium	66.6		0.450	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Beryllium	0.282		0.180	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Bismuth	0.624	B	8.99	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Boron	1.80	U	1.80	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Cadmium	0.0993	B	0.180	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Calcium	8880		89.9	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Chromium	11.2		0.180	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Cobalt	8.44		1.80	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Copper	16.1		0.899	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Iron	25300		18.0	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Lead	5.37		0.450	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Lithium	7.61		2.25	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Magnesium	5140		67.5	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Manganese	411		4.50	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Molybdenum	0.500	B	1.80	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Nickel	10.7		3.60	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Phosphorus	972		45.0	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Potassium	1060		360	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Selenium	0.270	U	0.270	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Silicon	1080		1.80	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Silver	0.180	U	0.180	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Sodium	362		45.0	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Strontium	30.3		0.899	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Thallium	0.450	U	0.450	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Tin	2.86	B	8.99	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Vanadium	66.6		2.25	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Zinc	49.4		8.99	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Mercury	0.174		0.0265	mg/kg dry	1	L012122	12/09/2010	12/10/2010	7471A



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 Project Number: K2689  
 Project Manager: Joan Kessner

Reported:  
 01/07/2011 07:16

**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
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**Batch L012122 - SW 7471A Prep**

<b>Blank (L012122-BLK1)</b>		Prepared: 12/09/2010 Analyzed: 12/10/2010							
Mercury	0.0290 U	0.0290	mg/kg wet						
<b>Duplicate (L012122-DUP3)</b>		<b>Source: 1012018-01</b>		Prepared: 12/09/2010 Analyzed: 12/10/2010					
Mercury	0.0575	0.0265	mg/kg dry		0.174			101*	20
<b>Matrix Spike (L012122-MS3)</b>		<b>Source: 1012018-01</b>		Prepared: 12/09/2010 Analyzed: 12/10/2010					
Mercury	0.211	0.0265	mg/kg dry	0.14741	0.174	25.0*	75-125		
<b>Reference (L012122-SRM1)</b>		Prepared: 12/09/2010 Analyzed: 12/10/2010							
Mercury	1.31	0.0281	mg/kg wet	1.2600		104	65.9-133.3		

**Batch L012287 - SW 3050B**

<b>Blank (L012287-BLK1)</b>		Prepared: 12/23/2010 Analyzed: 01/04/2011							
Aluminum	3.16 U	3.16	mg/kg wet						
Antimony	0.380 U	0.380	mg/kg wet						
Arsenic	0.633 U	0.633	mg/kg wet						
Barium	0.316 U	0.316	mg/kg wet						
Beryllium	0.127 U	0.127	mg/kg wet						
Bismuth	6.33 U	6.33	mg/kg wet						
Boron	1.27 U	1.27	mg/kg wet						
Cadmium	0.127 U	0.127	mg/kg wet						
Calcium	4.38 B	63.3	mg/kg wet						
Chromium	0.127 U	0.127	mg/kg wet						
Cobalt	1.27 U	1.27	mg/kg wet						
Copper	0.633 U	0.633	mg/kg wet						
Iron	12.7 U	12.7	mg/kg wet						
Lead	0.316 U	0.316	mg/kg wet						
Lithium	1.58 U	1.58	mg/kg wet						
Magnesium	47.5 U	47.5	mg/kg wet						
Manganese	3.16 U	3.16	mg/kg wet						
Molybdenum	1.27 U	1.27	mg/kg wet						
Nickel	2.53 U	2.53	mg/kg wet						
Phosphorus	31.6 U	31.6	mg/kg wet						
Potassium	253 U	253	mg/kg wet						
Selenium	0.190 U	0.190	mg/kg wet						
Silicon	2.09 U	1.27	mg/kg wet						
Silver	0.127 U	0.127	mg/kg wet						
Sodium	31.6 U	31.6	mg/kg wet						



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 Project Manager: Joan Kessner

Reported:  
 01/07/2011 07:16

**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
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**Batch L012287 - SW 3050B**

**Blank (L012287-BLK1)**

Prepared: 12/23/2010 Analyzed: 01/04/2011

Strontium	0.633 U	0.633	mg/kg wet						
Thallium	0.316 U	0.316	mg/kg wet						
Tin	1.37 B	6.33	mg/kg wet						
Vanadium	1.58 U	1.58	mg/kg wet						
Zinc	6.33 U	6.33	mg/kg wet						

**Duplicate (L012287-DUP3)**

Source: 1012018-01

Prepared: 12/23/2010 Analyzed: 01/04/2011

Aluminum	5300		4.15	mg/kg dry	7400			33*	20
Antimony	0.268	B	0.498	mg/kg dry	0.342			24*	20
Arsenic	3.05		0.829	mg/kg dry	3.53			15	20
Barium	48.0		0.415	mg/kg dry	66.6			32*	20
Beryllium	0.228		0.166	mg/kg dry	0.282			21*	20
Bismuth	8.29	U	8.29	mg/kg dry	0.624				20
Boron	1.66	U	1.66	mg/kg dry	1.80 U				20
Cadmium	0.0810	B	0.166	mg/kg dry	0.0993			20	20
Calcium	6040		82.9	mg/kg dry	8880			38*	20
Chromium	7.74		0.166	mg/kg dry	11.2			37*	20
Cobalt	7.61		1.66	mg/kg dry	8.44			10	20
Copper	15.0		0.829	mg/kg dry	16.1			7	20
Iron	19500		16.6	mg/kg dry	25300			26*	20
Lead	3.68		0.415	mg/kg dry	5.37			37*	20
Lithium	6.47		2.07	mg/kg dry	7.61			16	20
Magnesium	3890		62.2	mg/kg dry	5140			28*	20
Manganese	268		4.15	mg/kg dry	411			42*	20
Molybdenum	0.419	B	1.66	mg/kg dry	0.500			18	20
Nickel	8.51		3.32	mg/kg dry	10.7			23*	20
Phosphorus	955		41.5	mg/kg dry	972			2	20
Potassium	862		332	mg/kg dry	1060			21*	20
Selenium	0.249	U	0.249	mg/kg dry	0.270 U				20
Silicon	524		1.66	mg/kg dry	1080			69*	20
Silver	0.166	U	0.166	mg/kg dry	0.180 U				20
Sodium	282		41.5	mg/kg dry	362			25*	20
Strontium	22.3		0.829	mg/kg dry	30.3			30*	20
Thallium	0.415	U	0.415	mg/kg dry	0.450 U				20
Tin	2.03	B	8.29	mg/kg dry	2.86			34*	20
Vanadium	47.6		2.07	mg/kg dry	66.6			33*	20
Zinc	40.4		8.29	mg/kg dry	49.4			20	20



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**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 L012287 - SW 3050B**

Matrix Spike (L012287-MS3)	Source: 1012018-01	Prepared: 12/23/2010	Analyzed: 01/04/2011			
Aluminum	7460	5.10	mg/kg dry 204.11	7400	32*	75-125
Antimony	24.2	0.612	mg/kg dry 51.027	0.342	47*	75-125
Arsenic	177	1.02	mg/kg dry 204.11	3.53	85	75-125
Barium	242	0.510	mg/kg dry 204.11	66.6	86	75-125
Beryllium	4.79	0.204	mg/kg dry 5.1027	0.282	88	75-125
Bismuth	440	10.2	mg/kg dry 510.27	0.624	86	75-125
Boron	83.2	2.04	mg/kg dry 102.05	1.80 U	82	75-125
Cadmium	4.65	0.204	mg/kg dry 5.1027	0.0993	89	75-125
Calcium	9420	102	mg/kg dry 2551.4	8880	21*	75-125
Chromium	27.1	0.204	mg/kg dry 20.411	11.2	78	75-125
Cobalt	50.4	2.04	mg/kg dry 51.027	8.44	82	75-125
Copper	36.8	1.02	mg/kg dry 25.514	16.1	81	75-125
Iron	23600	20.4	mg/kg dry 102.05	25300	-1740*	75-125
Lead	46.6	0.510	mg/kg dry 51.027	5.37	81	75-125
Lithium	98.1	2.55	mg/kg dry 102.05	7.61	89	75-125
Magnesium	7390	76.5	mg/kg dry 2551.4	5140	88	75-125
Manganese	372	5.10	mg/kg dry 51.027	411	-77*	75-125
Molybdenum	88.7	2.04	mg/kg dry 102.05	0.500	86	75-125
Nickel	54.1	4.08	mg/kg dry 51.027	10.7	85	75-125
Phosphorus	1340	51.0	mg/kg dry 510.27	972	72*	75-125
Potassium	3330	408	mg/kg dry 2551.4	1060	89	75-125
Selenium	166	0.306	mg/kg dry 204.11	0.270 U	81	75-125
Silicon	1080	2.04	mg/kg dry 102.05	1080	4*	75-125
Silver	4.22	0.204	mg/kg dry 5.1027	0.180 U	83	75-125
Sodium	2740	51.0	mg/kg dry 2551.4	362	93	75-125
Strontium	117	1.02	mg/kg dry 102.05	30.3	85	75-125
Thallium	162	0.510	mg/kg dry 204.11	0.450 U	79	75-125
Tin	85.9	10.2	mg/kg dry 102.05	2.86	81	75-125
Vanadium	104	2.55	mg/kg dry 51.027	66.6	73*	75-125
Zinc	92.2	10.2	mg/kg dry 51.027	49.4	84	75-125



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**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
<b>Batch L012287 - SW 3050B</b>									
<b>Reference (L012287-SRM1)</b>				Prepared: 12/23/2010 Analyzed: 01/04/2011					
Aluminum	6320	12.3	mg/kg wet	6766.6		93	0-225.5		
Antimony	57.2	1.48	mg/kg wet	56.630		101	0-225.6		
Arsenic	116	2.46	mg/kg wet	113.85		102	85-115		
Barium	298	1.23	mg/kg wet	298.35		100	75.7-124.3		
Beryllium	106	0.492	mg/kg wet	108.32		98	85.2-114.8		
Boron	80.1	4.92	mg/kg wet	86.580		92	68.5-131.6		
Cadmium	228	0.492	mg/kg wet	224.09		102	84.9-115.1		
Calcium	3320	246	mg/kg wet	3305.9		100	82.8-117.2		
Chromium	78.0	0.492	mg/kg wet	77.590		101	76.8-123.2		
Cobalt	164	4.92	mg/kg wet	163.19		100	79.4-120.6		
Copper	260	2.46	mg/kg wet	265.65		98	82.4-117.6		
Iron	8320	49.2	mg/kg wet	8202.8		101	78.9-121.1		
Lead	190	1.23	mg/kg wet	187.62		101	81.5-118.5		
Lithium	112	6.15	mg/kg wet	113.01		99	33.8-166.2		
Magnesium	8020	184	mg/kg wet	8352.3		96	84.2-115.8		
Manganese	978	12.3	mg/kg wet	951.35		103	69-131		
Molybdenum	245	4.92	mg/kg wet	234.78		104	80.1-119.9		
Nickel	223	9.84	mg/kg wet	220.85		101	81.4-118.6		
Potassium	14800	984	mg/kg wet	14177		104	85.7-114.3		
Selenium	187	0.738	mg/kg wet	187.99		100	78.8-121.2		
Silicon	1030	4.92	mg/kg wet	939.78		110	0-272.3		
Silver	84.6	0.492	mg/kg wet	83.960		101	81.9-118.1		
Sodium	9450	123	mg/kg wet	9587.1		99	83.5-116.4		
Strontium	169	2.46	mg/kg wet	171.65		99	67.5-132.5		
Thallium	87.1	1.23	mg/kg wet	85.410		102	77.1-122.9		
Tin	100	24.6	mg/kg wet	101.60		99	86.7-113.2		
Vanadium	102	6.15	mg/kg wet	97.430		105	75.8-124.2		
Zinc	197	24.6	mg/kg wet	196.52		100	78.9-121.1		

SAMPLE DIGESTION RECORD

Digestion Batch #: L012287  
 Date/Time Initiated: 12/23/10 0910  
 Date/Time Completed: 12/23/10 1250  
 Analyst: JSS  
 Matrix (circle): (Soil) Water Other  
 Method (circle one): 3005A 3010A (3050) 200.7 (1994)

(Digested) / Undigested (circle one)  
 Balance #: 317  
 Balance Cal Verification: (Y) NA  
 Temp: 95  
 BLOCK 1 2 (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
1011233-01		0.59	50		70	Fine	Black	Rocky	N/A
L012287 - Ag <sup>1</sup>		0.70	50						
-ms1	0.5	0.71	50						
1011233-02		0.79	50			Coarse	Brown	Rocky	
1012017-01		0.54	50			Coarse	grey	Rocky/H <sub>2</sub> O	
L012287 - Ag <sup>2</sup>		0.58	50						
-ms2	0.5	0.69	50						
1012018-01		0.59	50			Fine	Brown	Rocky	
L012287 - Ag <sup>3</sup>		0.64	50						
-ms3	0.5	0.52	50						
1012019-01		0.76	50			Fine	Black	Rocky	
L012287 - Ag <sup>4</sup>		0.65	50						
-ms4	0.5	0.74	50						
1012019-02		0.56	50			Fine	Black		
-03		0.57	50			Fine	Black		
-04		0.62	50			Fine	Black		
-05		0.74	50			Fine	Black		
-06		0.53	50			Fine	Black		
-07		0.63	50			Fine	Black		
L012287 - Cu		0.79	50			Coarse	Beily chips		
-ms1	0.5	0.61	50			Fine	dusty pink sand		

JSS  
12/23/10

Spiking IDs / Expiration Date:

MS#: 1001897

LCS#: 1001310

Reagent IDs:

HNO<sub>3</sub> J29049

HCl J37056

H<sub>2</sub>O<sub>2</sub> J47417

1:1 HNO<sub>3</sub> 637-033-02

1:1 HCl \_\_\_\_\_

File ID#: \_\_\_\_\_

Data Review By / Date:

Alm 12/23/10

\* 6077-089-15 250ml  
 ↓ 087-17 ↓



Analyst: M. Hill  
 Date: 12/9/10  
 Start Time/Temp: 11:03  
 End Time/Temp: 11:03

Instrument ID: HG3.1  
 Balance #: B29 /NA  
 Pipette Calibration (Daily) Y

Prep Batch: L012122  
 Worksheet: HG121001  
 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.
1012019-06				0.35	50	
07				0.36	50	
1012046-01				0.36	50	RAD
L012122-AUPS				0.37	50	I
MSS		0.500	1.0	0.35	50	I
<div style="transform: rotate(-45deg); font-size: 2em; opacity: 0.5;">                     12/9/10                 </div>						

Standard:	ID	Prep Date/Time	Reviewed By/Date: <u>AM 12/13/10</u>
ICAL/MS			
ICV/CCV/LCS			
Soil LCS True Value = <u>0.35</u> mg/Kg			se book # <u>9368</u> for std traceability information
Standard #			Water Matrix Spiking Solution Concentration = 0.1 µg/ml after LCS Spiking Concentration: 1.0 µg/ml



CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						RC-195-523		PAGE 1 OF 1			
COLLECTOR <i>J Bailey</i>		COMPANY CONTACT RADLOFF, ANNA		TELEPHONE NO. (509) 376-4554		PROJECT COORDINATOR KESSNER, JH		PRICE CODE 8N		DATA TURNAROUND 45 Days / 45 Days			
SAMPLING LOCATION C7847 (118-B-8); I-003		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud				SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>					
ICE CHEST NO. <i>CWS-091</i>		FIELD LOGBOOK NO. <i>HNF-N-585-3 081</i>		ACTUAL SAMPLE DEPTH <i>9.7' - 12.2'</i>		COA 302512ES10		METHOD OF SHIPMENT FEDERAL EXPRESS <i>JA 12/1/10</i>					
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. <i>7041642064567</i>							
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other		POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)		PRESERVATION		Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	None	
				HOLDING TIME		14/40 Days	14/40 Days	1 yr/1 yr	6 Months	30 Days	28 Days/48 Hours	ASAP	
				TYPE OF CONTAINER		aG	G	aG	G/P	G/P	G/P	G/P	G/P
				NO. OF CONTAINER(S)		1	1	1	1	1	1	1	1
				VOLUME		250mL	120mL	250mL	250mL	120mL	120mL	250mL	250mL
SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B28N46		SAMPLE ANALYSIS		PAHs - 8310 (100 Area RI/FS);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	PCBs - 8082 (100 Area RI/FS);	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196 (100 Area RIFS);	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	pH (Soil) - 9045 (100 Area RIFS);			
SAMPLE NO.		MATRIX*		SAMPLE DATE		SAMPLE TIME							
B28N94		SOIL		11-18-10		0940		✓	✓	✓	✓		

*796502875002*

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** The laboratory is to analyze pH within 24 hours of receipt. <input type="checkbox"/> <input type="checkbox"/> ** The RCCC acknowledges that the analytical holding time for Nitrate, Nitrite, and Phosphate by EPA methods 300.0 or 9056 will not be met. <input type="checkbox"/> <input type="checkbox"/> ** Physical Properties laboratory: Conduct the hydraulic conductivity test (ASTM 5084 or 2434) as appropriate to the sample matrix. <input type="checkbox"/> <input type="checkbox"/> (1) TPH-Diesel/Kerosene Range - WTPH-D (100 Area RIFS); (2) ICP Metals - 6010TR (100 Area RIFS Client List); Mercury - 7471 - (CV) (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
<i>JK Bailey / OAK</i>	<i>11-18-10 1330</i>	<i>M0413 SSUES</i>	<i>11-18-10 1330</i>		
<i>SSU-R2</i>	<i>11-30-10 0730</i>	<i>cm Davila cm Cyle</i>	<i>11-30-10 0730</i>		
<i>Company cm Cyle</i>	<i>11-30-10 1400</i>	<i>FEDEX</i>			
<i>FEDEX</i>	<i>12-2-10 0945</i>	<i>VICTOR HERNANDEZ</i>	<i>12-2-10 0945</i>		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
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

Lionville Laboratory  
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hornford  
Project/SAF/BOW/Release #: RC-195

Date: 12-2-10

LvL Batch #: 1012018

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or <u>Shipped?</u>	Carrier		Airbill # <u>796502875002</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?	Temp <u>2-6</u> °C		Cooler # <u>GWS-091</u>
How was the temperature taken?	<input checked="" type="checkbox"/> IR	<input type="checkbox"/> Temp. Blank	<input type="checkbox"/> Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
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 checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <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 checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
13. VOA, TOC, TOX 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 checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input 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? Person Contacted _____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A Date _____



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

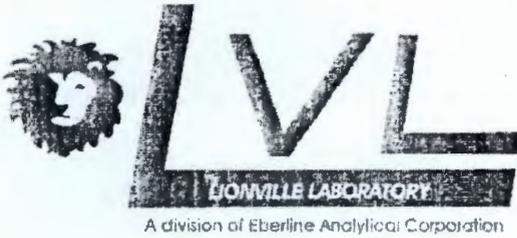
WC-Hanford, Inc.  
2620 Fermi Avenue  
Richland WA, 99354

Project: RC-195  
Project Number: K2689  
Project Manager: Joan Kessner

Reported:  
02/10/2011 22:57

**Analytical Report for Polychlorinated Biphenyls by SW846 8082**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B28N94	1012018-01	Soil	11/18/2010 09:40	12/02/2010 09:45



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

### Case Narrative

**Client:** WC-HANFORD RC-195 K2689  
**LVL #:** 1012018

**W.O. #:** 60049-001-001-0001-00  
**Received:** 12-02-2010

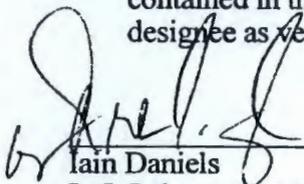
#### PCBs

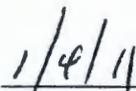
One (1) soil sample was collected on 11-18-2010.

The sample and associated QC samples were extracted 12-15-2010 and analyzed 12-28,29-2010 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 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. All matrix spike recoveries were within acceptance criteria.
7. The sample was reported on a dry weight basis.
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. 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



## 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-195  
 Project Number: K2689  
 Project Manager: Joan Kessner

Reported:  
 02/10/2011 22:57

**B28N94**  
**1012018-01 (Soil)**

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

**Polychlorinated Biphenyls by SW846 8082**

Aroclor 1016	13.9 U	13.9	ug/kg dry	1	L012198	12/15/2010	12/29/2010	8082
Aroclor 1221	13.9 U	13.9	ug/kg dry	1	L012198	12/15/2010	12/29/2010	8082
Aroclor 1232	13.9 U	13.9	ug/kg dry	1	L012198	12/15/2010	12/29/2010	8082
Aroclor 1242	13.9 U	13.9	ug/kg dry	1	L012198	12/15/2010	12/29/2010	8082
Aroclor 1248	13.9 U	13.9	ug/kg dry	1	L012198	12/15/2010	12/29/2010	8082
Aroclor 1254	13.9 U	13.9	ug/kg dry	1	L012198	12/15/2010	12/29/2010	8082
Aroclor 1260	13.9 U	13.9	ug/kg dry	1	L012198	12/15/2010	12/29/2010	8082
Aroclor 1262	13.9 U	13.9	ug/kg dry	1	L012198	12/15/2010	12/29/2010	8082
Aroclor 1268	13.9 U	13.9	ug/kg dry	1	L012198	12/15/2010	12/29/2010	8082
Surrogate: Decachlorobiphenyl	115 %	43-144			L012198	12/15/2010	12/29/2010	8082
Surrogate: Tetrachloro-meta-xylene	121 %	52-141			L012198	12/15/2010	12/29/2010	8082



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 Project Number: K2689  
 Project Manager: Joan Kessner

Reported:  
 02/10/2011 22:57

**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
<b>Batch L012198 - SW 3540C</b>									
<b>Blank (L012198-BLK1)</b>					Prepared: 12/15/2010 Analyzed: 12/28/2010				
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	32.7		ug/kg wet	33.333		98	43-144		
Surrogate: Tetrachloro-meta-xylene	33.3		ug/kg wet	33.337		100	52-141		
<b>LCS (L012198-BS1)</b>					Prepared: 12/15/2010 Analyzed: 12/28/2010				
Aroclor 1016	156	13.3	ug/kg wet	166.67		93	50-138		
Aroclor 1260	172	13.3	ug/kg wet	166.67		103	50-148		
Surrogate: Decachlorobiphenyl	34.4		ug/kg wet	33.333		103	43-144		
Surrogate: Tetrachloro-meta-xylene	35.5		ug/kg wet	33.337		106	52-141		
<b>Matrix Spike (L012198-MS3)</b>			<b>Source: 1012018-01</b>		Prepared: 12/15/2010 Analyzed: 12/29/2010				
Aroclor 1016	128	13.7	ug/kg dry	172.19	13.9 U	75	50-138		
Aroclor 1260	136	13.7	ug/kg dry	172.19	13.9 U	79	50-148		
Surrogate: Decachlorobiphenyl	26.7		ug/kg dry	34.438		77	43-144		
Surrogate: Tetrachloro-meta-xylene	30.1		ug/kg dry	34.441		87	52-141		
<b>Matrix Spike Dup (L012198-MSD3)</b>			<b>Source: 1012018-01</b>		Prepared: 12/15/2010 Analyzed: 12/29/2010				
Aroclor 1016	169	13.7	ug/kg dry	171.85	13.9 U	98	50-138	28	40
Aroclor 1260	165	13.7	ug/kg dry	171.85	13.9 U	96	50-148	19	40
Surrogate: Decachlorobiphenyl	33.7		ug/kg dry	34.371		98	43-144		
Surrogate: Tetrachloro-meta-xylene	36.1		ug/kg dry	34.374		105	52-141		

PREPARATION BENCH SHEET

L012198

Lionville Laboratory

Printed: 12/17/2010 10:17:35AM

0000000006

Matrix: Solid

Prepared using: GC - SW 3540C

Surrogate used: 1001998

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1011225-01	8082 PCBs	12/15/2010 16:16	10.42	10				250	WC-Hanford, Inc.	
1012012-01	8082 PCBs	12/15/2010 16:16	31.47	10				250	WC-Hanford, Inc.	
1012012-02	8082 PCBs	12/15/2010 16:16	31.45	10				250	WC-Hanford, Inc.	
1012012-03	8082 PCBs	12/15/2010 16:16	31.3	10				250	WC-Hanford, Inc.	
1012012-04	8082 PCBs	12/15/2010 16:16	31.37	10				250	WC-Hanford, Inc.	
1012012-05	8082 PCBs	12/15/2010 16:16	30.17	10				250	WC-Hanford, Inc.	
1012018-01	8082 PCBs	12/15/2010 16:16	30.56	10				250	WC-Hanford, Inc.	
1012019-01	8082 PCBs	12/15/2010 16:16	30.56	10				250	WC-Hanford, Inc.	
1012019-02	8082 PCBs	12/15/2010 16:16	30.08	10				250	WC-Hanford, Inc.	
1012019-03	8082 PCBs	12/15/2010 16:16	30.24	10				250	WC-Hanford, Inc.	
1012019-04	8082 PCBs	12/15/2010 16:16	31.65	10				250	WC-Hanford, Inc.	
1012019-05	8082 PCBs	12/15/2010 16:16	31.28	10				250	WC-Hanford, Inc.	
1012019-06	8082 PCBs	12/15/2010 16:16	31.66	10				250	WC-Hanford, Inc.	
1012019-07	8082 PCBs	12/15/2010 16:16	30	10				250	WC-Hanford, Inc.	
1012029-01	8082 PCBs	12/15/2010 16:16	30.16	10				250	WC-Hanford, Inc.	
L012198-BLK1	QC	12/15/2010 16:16	30	10				250		
L012198-BS1	QC	12/15/2010 16:16	30	10	1002000		250	250		
L012198-MS1	QC	12/15/2010 16:16	30	10	1002000	1011225-01	250	10.38		
L012198-MS2	QC	12/15/2010 16:16	30.67	10	1002000	1012012-02	250	250		
L012198-MS3	QC	12/15/2010 16:16	30.82	10	1002000	1012018-01	250	250		

*C. J. Arwini* 12/17/10 10:17  
 Extracts Relinquished By \_\_\_\_\_ Date \_\_\_\_\_

*LE* 12/17/10  
 Extracts Received By \_\_\_\_\_ Date \_\_\_\_\_

PREPARATION BENCH SHEET

L012198

Lionville Laboratory

Printed: 12/17/2010 10:17:35AM

000000007

Matrix: Solid

Prepared using: GC - SW 3540C

Surrogate used: 1001998

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L012198-MS4	QC	12/15/2010 16:16	30.48	10	1002000	1012019-01	250	250		
L012198-MS5	QC	12/15/2010 16:16	30.03	10	1002000	1012029-01	250	250		
L012198-MSD1	QC	12/15/2010 16:16	9.85	10	1002000	1011225-01	250	250		
L012198-MSD2	QC	12/15/2010 16:16	31.09	10	1002000	1012012-02	250	250		
L012198-MSD3	QC	12/15/2010 16:16	30.88	10	1002000	1012018-01	250	250		
L012198-MSD4	QC	12/15/2010 16:16	31	10	1002000	1012019-01	250	250		
L012198-MSD5	QC	12/15/2010 16:16	31.21	10	1002000	1012029-01	250	250		

*C. J. Anic* 12/17/10 10:17  
 Extracts Relinquished By \_\_\_\_\_ Date \_\_\_\_\_

UC 12-17-10  
 Extracts Received By \_\_\_\_\_ Date \_\_\_\_\_



CH2MHILL Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-195-523	PAGE 1 OF 1
COLLECTOR <i>J. Bailey</i>	COMPANY CONTACT RADLOFF, ANNA	TELEPHONE NO. (509) 376-4554	PROJECT COORDINATOR KESSNER, JH		PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days	
SAMPLING LOCATION C7847 (118-B-8); I-003	PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud		SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>BWS-091</i>	FIELD LOGBOOK NO. <i>HNF-N-585-S 881</i>	ACTUAL SAMPLE DEPTH <i>9.7' - 12.2'</i>	COA 302512ES10		METHOD OF SHIPMENT FEDERAL EXPRESS <i>JA 12/1/10</i>		
SHIPPED TO Lionville Laboratory Incorporated	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR <del>704164206456</del> <i>796502875002</i>				

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	<b>POSSIBLE SAMPLE HAZARDS/ REMARKS</b> Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	None	<i>796502875002</i>
		HOLDING TIME	14/40 Days	14/40 Days	1 yr/1 yr	6 Months	30 Days	28 Days/48 Hours	ASAP	
		TYPE OF CONTAINER	aG	G	aG	G/P	G/P	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	1	1	1	1	1	
		VOLUME	250mL	120mL	250mL	250mL	120mL	120mL	250mL	
<b>SPECIAL HANDLING AND/OR STORAGE</b> RADIOACTIVE TIE TO: B28N46		SAMPLE ANALYSIS	PAHs - 8310 (100 Area RI/FS);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	PCBs - 8062 (100 Area RI/FS);	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196 (100 Area RIFS);	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	pH (Soil) - 9045 (100 Area RIFS);	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME							
B28N94	SOIL	11-18-10	0940	✓	✓	✓	✓	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>J. Bailey / JKB</i>	DATE/TIME <i>11-18-10 / 1330</i>	RECEIVED BY/STORED IN <i>M0413 SSUES</i>	DATE/TIME <i>11-18-10 / 1330</i>	** The laboratory is to analyze pH within 24 hours of receipt. <input type="checkbox"/> <input type="checkbox"/> ** The RCCC acknowledges that the analytical holding time for Nitrate, Nitrite, and Phosphate by EPA methods 300.0 or 9056 will not be met. <input type="checkbox"/> <input type="checkbox"/> ** Physical Properties laboratory: Conduct the hydraulic conductivity test (ASTM 5084 or 2434) as appropriate to the sample matrix. <input type="checkbox"/> <input type="checkbox"/> (1) TPH-Diesel/Kerosene Range - WTPH-D (100 Area RIFS); (2) ICP Metals - 6010TR (100 Area RIFS Client List); Mercury - 7471 - (CV) (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
RELINQUISHED BY/REMOVED FROM <i>SSU-R2</i>	DATE/TIME <i>11-30-10 0730</i>	RECEIVED BY/STORED IN <i>Com. Daular Com. G. L.</i>	DATE/TIME <i>11-30-10 0730</i>		
RELINQUISHED BY/REMOVED FROM <i>Com. Daular Com. G. L.</i>	DATE/TIME <i>11-30-10 1400</i>	RECEIVED BY/STORED IN <i>FEDEx</i>	DATE/TIME		
RELINQUISHED BY/REMOVED FROM <i>F. S. P.</i>	DATE/TIME <i>12-2-10 0945</i>	RECEIVED BY/STORED IN <i>VICTOR HERNANDEZ</i>	DATE/TIME <i>12-2-10 0945</i>		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

 ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Lionville Laboratory  
**SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: WC Hornford  
 Project/SAF/ROW/Release #: RC-195

Date: 12-2-10

LvL Batch #: 1012018

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or <u>Shipped?</u>	Carrier	Airbill # <u>796502875002</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?	Temp <u>2-6</u> °C	Cooler # <u>GWS-091</u>	
How was the temperature taken?	<input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank	<input type="checkbox"/> Other (Specify)	
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
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 type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	
13. VOA, TOC, TOX 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input 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? Person Contacted _____	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	Date _____



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-195  
Project Number: K2689  
Project Manager: Joan Kessner

**Reported:**  
01/06/2011 23:27

**Analytical Report for Extractable Petroleum Hydrocarbons by SW846 8015**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B28N94	1012018-01	Soil	11/18/2010 09:40	12/02/2010 09:45



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

## Case Narrative

**Client:** WC-HANFORD RC-195 K2689  
**LVL #:** 1012018

**W.O. #:** 60049-001-001-0001-00  
**Date Received:** 12-02-2010

### DIESEL RANGE ORGANICS

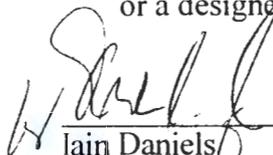
One (1) soil sample was collected on 11-18-2010.

The sample and associated QC samples were extracted 12-02-2010 and analyzed 12-28-2010 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 a sample that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The sample had an elevated final volume of 4ml. Reporting limits have been adjusted to reflect the change.
4. All obtainable surrogate recoveries were within acceptance criteria.
5. The method blank was below the reporting limits for all target compounds.
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. The sample was 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

1/12/4  
\_\_\_\_\_  
Date



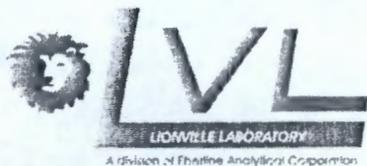
## GLOSSARY OF DATA

### 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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 2620 Fermi Avenue  
 Richland WA, 99354

Project: RC-195  
 Project Number: K2689  
 Project Manager: Joan Kessner

Reported:  
 01/06/2011 23:27

**Extractable Petroleum Hydrocarbons by SW846 8015**  
**Lionville Laboratory**

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
<b>B28N94 (1012018-01) Soil</b>								
Surrogate: <i>p</i> -Terphenyl	97 %	39-129			L012088	12/07/2010	12/28/2010	8015M
Diesel Range Organics	14100 U	14100	ug/kg dry	1	L012088	12/07/2010	12/28/2010	8015M
Motor Oil	174000	42400	ug/kg dry	1	L012088	12/07/2010	12/28/2010	8015M
Kerosene	42400 U	42400	ug/kg dry	1	L012088	12/07/2010	12/28/2010	8015M



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Project: RC-195  
Project Number: K2689  
Project Manager: Joan Kessner

Reported:  
01/06/2011 23:27

**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
<b>Batch L012088 - SW 3540C</b>									
<b>Blank (L012088-BLK1)</b>				Prepared: 12/07/2010 Analyzed: 12/28/2010					
Diesel Range Organics	3330 U	3330	ug/kg wet						
Motor Oil	10000 U	10000	ug/kg wet						
Surrogate: <i>p</i> -Terphenyl	5680		ug/kg wet	6666.7		85	39-129		
<b>Blank (L012088-BLK2)</b>				Prepared: 12/07/2010 Analyzed: 12/28/2010					
Kerosene	10000 U	10000	ug/kg wet						
<b>LCS (L012088-BS1)</b>				Prepared: 12/07/2010 Analyzed: 12/28/2010					
Diesel Range Organics	56000	3330	ug/kg wet	66667		84	42-133		
Surrogate: <i>p</i> -Terphenyl	6160		ug/kg wet	6666.7		92	39-129		
<b>LCS (L012088-BS2)</b>				Prepared: 12/07/2010 Analyzed: 12/28/2010					
Kerosene	52300	10000	ug/kg wet	66667		78	0-200		
<b>Matrix Spike (L012088-MS1)</b>				Source: 1012018-01		Prepared: 12/07/2010 Analyzed: 12/28/2010			
Diesel Range Organics	75700	14100	ug/kg dry	70734	14100 U	107	42-133		
Surrogate: <i>p</i> -Terphenyl	6690		ug/kg dry	7073.4		95	39-129		
<b>Matrix Spike (L012088-MS2)</b>				Source: 1012018-01		Prepared: 12/07/2010 Analyzed: 12/28/2010			
Kerosene	52400	42400	ug/kg dry	70638	42400 U	74	0-200		
<b>Matrix Spike Dup (L012088-MSD1)</b>				Source: 1012018-01		Prepared: 12/07/2010 Analyzed: 12/28/2010			
Diesel Range Organics	72000	14100	ug/kg dry	70640	14100 U	102	42-133	5	40
Surrogate: <i>p</i> -Terphenyl	6730		ug/kg dry	7064.0		95	39-129		
<b>Matrix Spike Dup (L012088-MSD2)</b>				Source: 1012018-01		Prepared: 12/07/2010 Analyzed: 12/28/2010			
Kerosene	51700	42400	ug/kg dry	70624	42400 U	73	0-200	1	200

PREPARATION BENCH SHEET

REVISION

L012088

Lionville Laboratory

Printed: 1/6/2011 11:16:35PM

Matrix: Solid

Prepared using: GC - SW 3540C

Surrogate used: 1001900

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1012018-01	8015M DRO	12/07/2010 14:45	30.01	4				1000	WC-Hanford, Inc.	
1012018-01	8015M KRO	12/07/2010 14:45	30.01	4				1000	WC-Hanford, Inc.	
1012019-01	8015M DRO	12/07/2010 14:45	30.92	1				1000	WC-Hanford, Inc.	
1012019-01	8015M KRO	12/07/2010 14:45	30.92	1				1000	WC-Hanford, Inc.	
1012019-02	8015M DRO	12/07/2010 14:45	31.12	1				1000	WC-Hanford, Inc.	
1012019-02	8015M KRO	12/07/2010 14:45	31.12	1				1000	WC-Hanford, Inc.	
1012019-03	8015M DRO	12/07/2010 14:45	30.6	1				1000	WC-Hanford, Inc.	
1012019-03	8015M KRO	12/07/2010 14:45	30.6	1				1000	WC-Hanford, Inc.	
1012019-04	8015M DRO	12/07/2010 14:45	30.55	1				1000	WC-Hanford, Inc.	
1012019-04	8015M KRO	12/07/2010 14:45	30.55	1				1000	WC-Hanford, Inc.	
1012019-05	8015M DRO	12/07/2010 14:45	30.26	1				1000	WC-Hanford, Inc.	
1012019-05	8015M KRO	12/07/2010 14:45	30.26	1				1000	WC-Hanford, Inc.	
1012019-06	8015M DRO	12/07/2010 14:45	30.2	1				1000	WC-Hanford, Inc.	
1012019-06	8015M KRO	12/07/2010 14:45	30.2	1				1000	WC-Hanford, Inc.	
1012019-07	8015M DRO	12/07/2010 14:45	30.15	1				1000	WC-Hanford, Inc.	
1012019-07	8015M KRO	12/07/2010 14:45	30.15	1				1000	WC-Hanford, Inc.	
L012088-BLK1	QC	12/07/2010 14:45	30	1				1000		ODRO
L012088-BLK2	QC	12/07/2010 14:45	30	1				1000		
L012088-BS1	QC	12/07/2010 14:45	30	1	1002032		1000	1000		ODRO
L012088-BS2	QC	12/07/2010 14:45	30	1	1001587		500	1000		OKRO

Extracts Relinquished By \_\_\_\_\_ Date \_\_\_\_\_

Extracts Received By \_\_\_\_\_ Date \_\_\_\_\_

PREPARATION BENCH SHEET

L012088

Lionville Laboratory

Printed: 1/6/2011 11:16:35PM

Matrix: Solid

Prepared using: GC - SW 3540C

Surrogate used: 1001900

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L012088-MS1	QC	12/07/2010 14:45	30.01	4	1002032	1012018-01	1000	1000		ODRO
L012088-MS2	QC	12/07/2010 14:45	30.051	4	1001587	1012018-01	500	1000		OKRO
L012088-MS3	QC	12/07/2010 14:45	31.92	1	1002032	1012019-01	1000	1000		ODRO
L012088-MS4	QC	12/07/2010 14:45	31.15	1	1001587	1012019-01	500	1000		OKRO
L012088-MSD1	QC	12/07/2010 14:45	30.05	4	1002032	1012018-01	1000	1000		ODRO
L012088-MSD2	QC	12/07/2010 14:45	30.057	4	1001587	1012018-01	500	1000		OKRO
L012088-MSD3	QC	12/07/2010 14:45	31.43	1	1002032	1012019-01	1000	1000		ODRO
L012088-MSD4	QC	12/07/2010 14:45	30.03	1	1001587	1012019-01	500	1000		OKRO

Extracts Relinquished By

Date

Extracts Received By

Date

PREPARATION BENCH SHEET

L012088

Lionville Laboratory

Printed: 12/8/2010 3:30:23PM

Matrix: Solid

Prepared using: GC - SW 3540C

Surrogate used: 1001900

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1012018-01	8015M DRO	12/07/2010 14:45	30.01	4				1000	WC-Hanford, Inc.	
1012018-01	8015M KRO	12/07/2010 14:45	30.01	4				1000	WC-Hanford, Inc.	
1012019-01	8015M DRO	12/07/2010 14:45	30.92	1				1000	WC-Hanford, Inc.	
1012019-01	8015M KRO	12/07/2010 14:45	30.92	1				1000	WC-Hanford, Inc.	
1012019-02	8015M DRO	12/07/2010 14:45	31.12	1				1000	WC-Hanford, Inc.	
1012019-02	8015M KRO	12/07/2010 14:45	31.12	1				1000	WC-Hanford, Inc.	
1012019-03	8015M DRO	12/07/2010 14:45	30.6	1				1000	WC-Hanford, Inc.	
1012019-03	8015M KRO	12/07/2010 14:45	30.6	1				1000	WC-Hanford, Inc.	
1012019-04	8015M DRO	12/07/2010 14:45	30.55	1				1000	WC-Hanford, Inc.	
1012019-04	8015M KRO	12/07/2010 14:45	30.55	1				1000	WC-Hanford, Inc.	
1012019-05	8015M DRO	12/07/2010 14:45	30.26	1				1000	WC-Hanford, Inc.	
1012019-05	8015M KRO	12/07/2010 14:45	30.26	1				1000	WC-Hanford, Inc.	
1012019-06	8015M DRO	12/07/2010 14:45	30.2	1				1000	WC-Hanford, Inc.	
1012019-06	8015M KRO	12/07/2010 14:45	30.2	1				1000	WC-Hanford, Inc.	
1012019-07	8015M DRO	12/07/2010 14:45	30.15	1				1000	WC-Hanford, Inc.	
1012019-07	8015M KRO	12/07/2010 14:45	30.15	1				1000	WC-Hanford, Inc.	
L012088-BLK1	QC	12/07/2010 14:45	30	1				1000		ODRO
L012088-BLK2	QC	12/07/2010 14:45	30	1				1000		
L012088-BS1	QC	12/07/2010 14:45	30	1	1002032		1000	1000		ODRO
L012088-BS2	QC	12/07/2010 14:45	30	1	1001587		1000	1000		

*[Signature]* 12/8/10 15:40  
 Extracts-Relinquished By \_\_\_\_\_ Date \_\_\_\_\_

UK 12-9-10  
 Extracts Received By \_\_\_\_\_ Date \_\_\_\_\_

PREPARATION BENCH SHEET

L012088

Lionville Laboratory

Printed: 12/8/2010 3:30:23PM

Matrix: Solid

Prepared using: GC - SW 3540C

Surrogate used: 1001900

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L012088-MS1	QC	12/07/2010 14:45	30.01	4	1002032	1012018-01	1000	1000		ODRO
L012088-MS2	QC	12/07/2010 14:45	30.051	4	1001587	1012018-01	1000	1000		ODRO
L012088-MS3	QC	12/07/2010 14:45	31.92	1	1002032	1012019-01	1000	1000		
L012088-MS4	QC	12/07/2010 14:45	31.15	1	1001587	1012019-01	1000	1000		
L012088-MSD1	QC	12/07/2010 14:45	30.05	4	1002032	1012018-01	1000	1000		ODRO
L012088-MSD2	QC	12/07/2010 14:45	30.057	4	1001587	1012018-01	1000	1000		ODRO
L012088-MSD3	QC	12/07/2010 14:45	31.43	1	1002032	1012019-01	1000	1000		
L012088-MSD4	QC	12/07/2010 14:45	30.03	1	1001587	1012019-01	1000	1000		

*J. Azi* 12/8/10 15:40  
 Extracts Relinquished By \_\_\_\_\_ Date \_\_\_\_\_

LC 12-9-10  
 Extracts Received By \_\_\_\_\_ Date \_\_\_\_\_



COLLECTOR <i>J Bailey</i>	COMPANY CONTACT RADLOFF, ANNA	TELEPHONE NO. (509) 376-4554	PROJECT COORDINATOR KESSNER, JH	PRICE CODE 8N	DATA TURNAROUND
SAMPLING LOCATION C7847 (118-B-8); I-003	PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud	SAF NO. RC-195	AIR QUALITY <input type="checkbox"/>	45 Days / 45 Days	
ICE CHEST NO. <i>CWS-091</i>	FIELD LOGBOOK NO. <i>HNF-N-585-3 881</i>	ACTUAL SAMPLE DEPTH <i>9.7' - 12.2'</i>	COA 302512ES10	METHOD OF SHIPMENT FEDERAL EXPRESS <i>JA 12/1/10</i>	

SHIPPED TO Lionville Laboratory Incorporated	OFFSITE PROPERTY NO. SEE PTR	BILL OF LADING/AIR BILL NO. SEE PTR <i>7841642 06456</i>
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MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	None	<i>796502875002</i>
		HOLDING TIME	14/40 Days	14/40 Days	1 yr/1 yr	6 Months	30 Days	28 Days/48 Hours	ASAP	
		TYPE OF CONTAINER	aG	G	aG	G/P	G/P	G/P	G/P	
		NO. OF CONTAINER(S)	1	1	1	1	1	1	1	
		VOLUME	250mL	120mL	250mL	250mL	120mL	120mL	250mL	
SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B28N46	SAMPLE ANALYSIS	PAHs - 8310 (100 Area RI/FS);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	PCBs - 8082 (100 Area RI/FS);	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	Chromium Hex - 7196 (100 Area RIFS);	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	pH (Soil) - 9045 (100 Area RIFS);		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME							
B28N94	SOIL	<i>11-18-10</i>	<i>0940</i>	<input checked="" type="checkbox"/>						

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS		
RELINQUISHED BY/REMOVED FROM <i>JKBailey / JKB</i>	DATE/TIME <i>11-18-10 / 1330</i>	RECEIVED BY/STORED IN <i>MO413 SSUES</i>	DATE/TIME <i>11-18-10 / 1330</i>	** The laboratory is to analyze pH within 24 hours of receipt. <input type="checkbox"/> <input type="checkbox"/> ** The RCCC acknowledges that the analytical holding time for Nitrate, Nitrite, and Phosphate by EPA methods 300.0 or 9056 will not be met. <input type="checkbox"/> <input type="checkbox"/> ** Physical Properties laboratory: Conduct the hydraulic conductivity test (ASTM 5084 or 2434) as appropriate to the sample matrix. <input type="checkbox"/> <input type="checkbox"/> (1) TPH-DieselKerosene Range - WTPH-D (100 Area RIFS); (2) ICP Metals - 6010TR (100 Area RIFS Client List); Mercury - 7471 - (CV) (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);
RELINQUISHED BY/REMOVED FROM <i>SSU-R2</i>	DATE/TIME <i>11-30-10 0730</i>	RECEIVED BY/STORED IN <i>cm Danular cm Cyle</i>	DATE/TIME <i>11-30-10 0730</i>	
RELINQUISHED BY/REMOVED FROM <i>cm Danular cm Cyle</i>	DATE/TIME <i>11-30-10 1400</i>	RECEIVED BY/STORED IN <i>FEDEX</i>	DATE/TIME <i>11-30-10 1400</i>	
RELINQUISHED BY/REMOVED FROM <i>FEDEX</i>	DATE/TIME <i>12-2-10 0945</i>	RECEIVED BY/STORED IN <i>VICTOR HERNANDEZ</i>	DATE/TIME <i>12-2-10 0945</i>	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

 ORIGINAL

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Lionville Laboratory  
**SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: WC Homfrid  
 Project/SAF/SOW/Release #: RC-195

Date: 12-2-10

LvL Batch #: 1012018

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- |  |  |  |   |
|--|--|--|---|
| 1. Samples Hand Delivered or <u>Shipped?</u>   | Carrier  |  | Airbill # <u>796502875002</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?   | Temp <u>26</u> °C  |  | Cooler # <u>GWS-091</u>                               |
| How was the temperature taken?   | <input checked="" type="checkbox"/> IR   | <input type="checkbox"/> Temp. Blank                       | <input type="checkbox"/> Other (Specify)              |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)   | <input checked="" type="checkbox"/> Yes  | <input type="checkbox"/> No                                |   |
| 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?<br>All samples received on COC?  | <input checked="" type="checkbox"/> Yes<br><input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No<br><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?<br>Short holds taken to wet lab?   | <input checked="" type="checkbox"/> Yes<br><input type="checkbox"/> Yes            | <input type="checkbox"/> No<br><input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A               |
| 13. VOA, TOC, TOX 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 checked="" type="checkbox"/> Yes  | <input type="checkbox"/> No                                | <input 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?<br>Person Contacted _____  | <input type="checkbox"/> Yes   | <input type="checkbox"/> No                                | <input checked="" type="checkbox"/> N/A<br>Date _____ |