

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 K2670 SAF-RC-195

Rad only

Chem only

Rad & Chem

Complete

Partial

WITH CORRECTED PCB'S

Sample Location: C7847 (118-B-8); I-001, I-002





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

14 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:

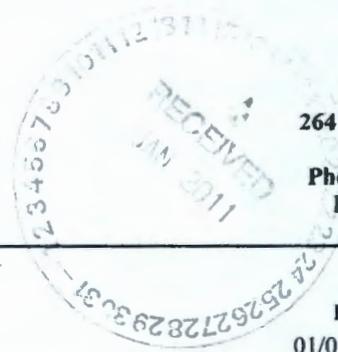
LvLI Batch #	1011233
SDG #	K2670
SAF #	RC-172
Date Received	11/30/10
# Samples	2
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	X
Glycols	
DRO/KRO/GRO	X
PAHs	X
Herbicides	
Metals	X
Inorganics	X

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: K2670
Project Manager: Joan Kessner

Reported:
01/05/2011 20:02

Analytical Report for Extractable Petroleum Hydrocarbons by SW846 8015

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B28N87	1011233-01	Soil	11/17/2010 12:55	11/30/2010 09:40
B28N91	1011233-02	Soil	11/17/2010 13:50	11/30/2010 09:40



264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
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Case Narrative

Client: WC-HANFORD RC-195 K2670
LVL #: 1011233

W.O. #: 60049-001-001-0001-00
Date Received: 11-30-2010

DIESEL RANGE ORGANICS

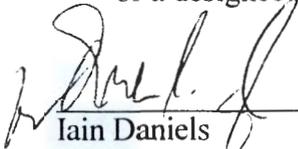
Two (2) soil samples were collected on 11-17-2010.

The samples and associated QC samples were extracted 12-01-2010 and analyzed 12-11-2010 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 samples that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The samples had an elevated final volume of 4ml. Report limits have been adjusted to reflect this 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. One (1) of four (4) matrix spike recoveries was outside acceptance criteria. Matrix spike recoveries for DRO are low in MS1 due to a high concentration of analytes in the sample.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. The samples were reported on a dry weight basis.

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



Iain Daniels
LvL Laboratory Manager

1/12/11

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

Project: RC-195
 Project Number: K2670
 Project Manager: Joan Kessner

Reported:
 01/05/2011 20:02

Extractable Petroleum Hydrocarbons by SW846 8015
Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
B28N87 (1011233-01) Soil								
<i>Surrogate: p-Terphenyl</i>	55 %	39-129			L012020	12/01/2010	12/11/2010	8015M
Diesel Range Organics	211000	15100	ug/kg dry	1	L012020	12/01/2010	12/11/2010	8015M
Motor Oil	612000	45300	ug/kg dry	1	L012020	12/01/2010	12/11/2010	8015M
Kerosene	45300 U	45300	ug/kg dry	1	L012020	12/01/2010	12/11/2010	8015M
B28N91 (1011233-02) Soil								
<i>Surrogate: p-Terphenyl</i>	82 %	39-129			L012020	12/01/2010	12/11/2010	8015M
Diesel Range Organics	70900	13700	ug/kg dry	1	L012020	12/01/2010	12/11/2010	8015M
Motor Oil	251000	41100	ug/kg dry	1	L012020	12/01/2010	12/11/2010	8015M
Kerosene	41100 U	41100	ug/kg dry	1	L012020	12/01/2010	12/11/2010	8015M



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Project: RC-195
 Project Number: K2670
 Project Manager: Joan Kessner

Reported:
 01/05/2011 20:02

Extractable Petroleum Hydrocarbons by SW846 8015 - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012020 - SW 3540C									
Blank (L012020-BLK1)				Prepared: 12/01/2010 Analyzed: 12/11/2010					
Diesel Range Organics	3330 U	3330	ug/kg wet						
Motor Oil	10000 U	10000	ug/kg wet						
<i>Surrogate: p-Terphenyl</i>	6060		ug/kg wet	6666.7		91	39-129		
Blank (L012020-BLK2)				Prepared: 12/01/2010 Analyzed: 12/11/2010					
Kerosene	10000 U	10000	ug/kg wet						
LCS (L012020-BS1)				Prepared: 12/01/2010 Analyzed: 12/11/2010					
Diesel Range Organics	59300	3330	ug/kg wet	66667		89	42-133		
<i>Surrogate: p-Terphenyl</i>	5170		ug/kg wet	6666.7		78	39-129		
LCS (L012020-BS2)				Prepared: 12/01/2010 Analyzed: 12/11/2010					
Kerosene	58300	10000	ug/kg wet	66667		87	0-200		
Matrix Spike (L012020-MS1)				Source: 1011233-02		Prepared: 12/01/2010 Analyzed: 12/11/2010			
Diesel Range Organics	87800	14000	ug/kg dry	69799	70900	24*	42-133		
<i>Surrogate: p-Terphenyl</i>	6030		ug/kg dry	6979.9		86	39-129		
Matrix Spike (L012020-MS2)				Source: 1011233-02		Prepared: 12/01/2010 Analyzed: 12/11/2010			
Kerosene	80100	42800	ug/kg dry	71280	41100 U	112	0-200		
Matrix Spike Dup (L012020-MSD1)				Source: 1011233-02		Prepared: 12/01/2010 Analyzed: 12/11/2010			
Diesel Range Organics	107000	13800	ug/kg dry	69015	70900	53	42-133	74*	40
<i>Surrogate: p-Terphenyl</i>	5890		ug/kg dry	6901.5		85	39-129		
Matrix Spike Dup (L012020-MSD2)				Source: 1011233-02		Prepared: 12/01/2010 Analyzed: 12/11/2010			
Kerosene	61400	40500	ug/kg dry	67478	41100 U	91	0-200	21	200

PREPARATION BENCH SHEET

REVISION

L012020

Lionville Laboratory

Printed: 1/2/2011 9:09:29AM

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
1011233-01	8015M DRO	12/01/2010 15:14	28.51	4				1000	WC-Hanford, Inc.	
1011233-01	8015M KRO	12/01/2010 15:14	28.51	4				1000	WC-Hanford, Inc.	
1011233-02	8015M DRO	12/01/2010 15:14	31.43	4				1000	WC-Hanford, Inc.	
1011233-02	8015M KRO	12/01/2010 15:14	31.43	4				1000	WC-Hanford, Inc.	
1011234-01	8015M DRO	12/01/2010 15:14	30.5	1				1000	WC-Hanford, Inc.	
1011234-01	8015M KRO	12/01/2010 15:14	30.5	1				1000	WC-Hanford, Inc.	
1011234-02	8015M DRO	12/01/2010 15:14	31.57	1				1000	WC-Hanford, Inc.	
1011234-02	8015M KRO	12/01/2010 15:14	31.57	1				1000	WC-Hanford, Inc.	
1011234-03	8015M DRO	12/01/2010 15:14	30	1				1000	WC-Hanford, Inc.	
1011234-03	8015M KRO	12/01/2010 15:14	30	1				1000	WC-Hanford, Inc.	
1011234-04	8015M DRO	12/01/2010 15:14	31.87	1				1000	WC-Hanford, Inc.	
1011234-04	8015M KRO	12/01/2010 15:14	31.87	1				1000	WC-Hanford, Inc.	
1011234-05	8015M DRO	12/01/2010 15:14	30.06	1				1000	WC-Hanford, Inc.	
1011234-05	8015M KRO	12/01/2010 15:14	30.06	1				1000	WC-Hanford, Inc.	
1011234-06	8015M DRO	12/01/2010 15:14	30.55	1				1000	WC-Hanford, Inc.	
1011234-06	8015M KRO	12/01/2010 15:14	30.55	1				1000	WC-Hanford, Inc.	
1011234-07	8015M DRO	12/01/2010 15:14	30.58	1				1000	WC-Hanford, Inc.	
1011234-07	8015M KRO	12/01/2010 15:14	30.58	1				1000	WC-Hanford, Inc.	
1011234-08	8015M DRO	12/01/2010 15:14	30.37	1				1000	WC-Hanford, Inc.	
1011234-08	8015M KRO	12/01/2010 15:14	30.37	1				1000	WC-Hanford, Inc.	

Revision for BIK 2

CAC 01/02/11

Extracts Relinquished By _____ Date _____

Extracts Received By _____ Date _____

PREPARATION BENCH SHEET

L012020

Lionville Laboratory

Printed: 1/2/2011 9:09:29AM

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
L012020-BLK1	QC	12/01/2010 15:14	30	1				1000		
L012020-BLK2	QC	12/01/2010 15:14	30	1				1000		
L012020-BS1	QC	12/01/2010 15:14	30	1	1001788		1000	1000		
L012020-BS2	QC	12/01/2010 15:14	30	1	1001587		500	1000		
L012020-MS1	QC	12/01/2010 15:14	30.81	4	1001788	1011233-02	1000	1000		ODRO
L012020-MS2	QC	12/01/2010 15:14	30.17	4	1001587	1011233-02	500	1000		KDRO
L012020-MS3	QC	12/01/2010 15:14	31.51	1	1001788	1011234-01	1000	1000		ODRO
L012020-MS4	QC	12/01/2010 15:14	30	1	1001587	1011234-02	500	1000		KDRO
L012020-MSD1	QC	12/01/2010 15:14	31.16	4	1001788	1011233-02	1000	1000		ODRO
L012020-MSD2	QC	12/01/2010 15:14	31.87	4	1001587	1011233-02	500	1000		KDRO
L012020-MSD3	QC	12/01/2010 15:14	31.43	1	1001788	1011234-01	1000	1000		ODRO
L012020-MSD4	QC	12/01/2010 15:14	30.03	1	1001587	1011234-02	500	1000		KDRO

Extracts Relinquished By _____ Date _____

Extracts Received By _____ Date _____

PREPARATION BENCH SHEET

L012020

Lionville Laboratory

Printed: 12/8/2010 10:53:21AM

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
1011233-01	8015M DRO	12/01/2010 15:14	28.51	4				1000	WC-Hanford, Inc.	
1011233-01	8015M KRO	12/01/2010 15:14	28.51	4				1000	WC-Hanford, Inc.	
1011233-02	8015M DRO	12/01/2010 15:14	31.43	4				1000	WC-Hanford, Inc.	
1011233-02	8015M KRO	12/01/2010 15:14	31.43	4				1000	WC-Hanford, Inc.	
1011234-01	8015M DRO	12/01/2010 15:14	30.5	1				1000	WC-Hanford, Inc.	
1011234-01	8015M KRO	12/01/2010 15:14	30.5	1				1000	WC-Hanford, Inc.	
1011234-02	8015M DRO	12/01/2010 15:14	31.57	1				1000	WC-Hanford, Inc.	
1011234-02	8015M KRO	12/01/2010 15:14	31.57	1				1000	WC-Hanford, Inc.	
1011234-03	8015M DRO	12/01/2010 15:14	30	1				1000	WC-Hanford, Inc.	
1011234-03	8015M KRO	12/01/2010 15:14	30	1				1000	WC-Hanford, Inc.	
1011234-04	8015M DRO	12/01/2010 15:14	31.87	1				1000	WC-Hanford, Inc.	
1011234-04	8015M KRO	12/01/2010 15:14	31.87	1				1000	WC-Hanford, Inc.	
1011234-05	8015M DRO	12/01/2010 15:14	30.06	1				1000	WC-Hanford, Inc.	
1011234-05	8015M KRO	12/01/2010 15:14	30.06	1				1000	WC-Hanford, Inc.	
1011234-06	8015M DRO	12/01/2010 15:14	30.55	1				1000	WC-Hanford, Inc.	
1011234-06	8015M KRO	12/01/2010 15:14	30.55	1				1000	WC-Hanford, Inc.	
1011234-07	8015M DRO	12/01/2010 15:14	30.58	1				1000	WC-Hanford, Inc.	
1011234-07	8015M KRO	12/01/2010 15:14	30.58	1				1000	WC-Hanford, Inc.	
1011234-08	8015M DRO	12/01/2010 15:14	30.37	1				1000	WC-Hanford, Inc.	
1011234-08	8015M KRO	12/01/2010 15:14	30.37	1				1000	WC-Hanford, Inc.	

CC. Ami 12/8/10 10:53
 Extracts Relinquished By _____ Date _____

UC 12-8-10
 Extracts Received By _____ Date _____

PREPARATION BENCH SHEET

L012020

Lionville Laboratory

Printed: 12/8/2010 10:53:21AM

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
L012020-BLK1	QC	12/01/2010 15:14	30	1				1000		
L012020-BS1	QC	12/01/2010 15:14	30	1	1001788		1000	1000		
L012020-BS2	QC	12/01/2010 15:14	30	1	1001587		500	1000		
L012020-MS1	QC	12/01/2010 15:14	30.81	4	1001788	1011233-02	1000	1000		ODRO
L012020-MS2	QC	12/01/2010 15:14	30.17	4	1001587	1011233-02	500	1000		KDRO
L012020-MS3	QC	12/01/2010 15:14	31.51	1	1001788	1011234-01	1000	1000		ODRO
L012020-MS4	QC	12/01/2010 15:14	30	1	1001587	1011234-02	500	1000		KDRO
L012020-MSD1	QC	12/01/2010 15:14	31.16	4	1001788	1011233-02	1000	1000		ODRO
L012020-MSD2	QC	12/01/2010 15:14	31.87	4	1001587	1011233-02	500	1000		KDRO
L012020-MSD3	QC	12/01/2010 15:14	31.43	1	1001788	1011234-01	1000	1000		ODRO
L012020-MSD4	QC	12/01/2010 15:14	30.03	1	1001587	1011234-02	500	1000		KDRO

CSA
 Extracts Relinquished By CSA Date 12/8/10 10:53

CK
 Extracts Received By CK Date 12-8-10

Custody Transfer Record/Lab Work Request

SAC



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

1011233

Client <u>WC Home Gro SAE# RC-195</u>	Refrigerator #														
Est. Final Proj. Sampling Date _____	#/Type Container	Liquid													
Project# _____	Solid		1 gal	1 gal	1 gal	1 gal	1 gal	1 gal	1 gal	1 gal	1 gal	1 gal	1 gal	1 gal	1 gal
Project Contact/Phone# _____	Volume		250	250	120	250	120	120	250	120	120	250	120	120	250
Lionville Laboratory Project Manager <u>O. Johnson</u>	Preservatives														
QC <u>SW</u> Del <u>STP</u> TAT <u>30 days</u>	ANALYSES REQUESTED		ORGANIC				INORG								
Date Rec'd <u>11-30-10</u> Date Due <u>12-30-10</u>	VOA	BNA	PAHs	PCB	Herb	Metal + Hg	CN	Cr6	IC (mg)	PCB	202	203	2H	I	

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only																	
			MS	MSD				8082	8310	KRO DRO	Met	ERG	Anion2	N3N2	P#	Met									
S- Soil	01	B28N87			S	11-17-10	1255		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE- Sediment	02	B28N91			L	11-17-10	1350		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
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																									

Special Instructions: Run Matrix QC

- Special Instructions:
- _____
 - _____
 - _____
 - _____
 - _____
 - _____

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>11-30-10</u>	<u>0940</u>

Relinquished by	Received by	Date	Time

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

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						RC-195-513		PAGE 1 OF 1		
COLLECTOR BAILEY		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-001		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud				SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>				
ICE CHEST NO. 665-111		FIELD LOGBOOK NO. HNF-N-585-3/79		ACTUAL SAMPLE DEPTH 01-2.5'		COA 302512ES10		METHOD OF SHIPMENT FEDERAL EXPRESS				
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 796494654051						
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
				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: B28N45		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						
B28N87		SOIL		11-17-10		1255		✓	✓	✓	✓	✓

CHAIN OF POSSESSION				SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS			
RELINQUISHED BY/REMOVED FROM BAILEY / DRB		DATE/TIME 11-17-10/1410		RECEIVED BY/STORED IN M0413 SSUR2		DATE/TIME 11-17-10/1410		** 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 - (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);			
RELINQUISHED BY/REMOVED FROM SSU-R2		DATE/TIME NOV 29 2010 1000		RECEIVED BY/STORED IN M. A. White		DATE/TIME NOV 29 2010 1000					
RELINQUISHED BY/REMOVED FROM M.A. White		DATE/TIME NOV 29 2010 1400		RECEIVED BY/STORED IN FEDEX		DATE/TIME					
RELINQUISHED BY/REMOVED FROM See Ex		DATE/TIME 11-30-10 0940		RECEIVED BY/STORED IN See Ex		DATE/TIME 11-30-10 0940					
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			

ORIGINAL

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-002		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud				SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>				
ICE CHEST NO. GWS-111		FIELD LOGBOOK NO. HNF-N-585-3 879		ACTUAL SAMPLE DEPTH 5'-7.5'		COA 302512ES10		METHOD OF SHIPMENT FEDERAL EXPRESS				
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 7964946540511						
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
				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: B28N45		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						
B28N91		SOIL		11-17-10		1350		✓	✓	✓	✓	✓

CHAIN OF POSSESSION			SIGN/ PRINT NAMES			SPECIAL INSTRUCTIONS		
RELINQUISHED BY/REMOVED FROM <i>J Bailey</i>	DATE/TIME 11-17-10/1410	RECEIVED BY/STORED IN <i>M. A. White</i>	DATE/TIME 11-17-10/1410	** 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"/>				
RELINQUISHED BY/REMOVED FROM SSU-R2	DATE/TIME NOV 29 2010 1000	RECEIVED BY/STORED IN <i>M. A. White</i>	DATE/TIME NOV 29 2010 1000	(1) TPH-DieselKerosene Range - WTPH-D (100 Area RIFS);				
RELINQUISHED BY/REMOVED FROM <i>M. A. White</i>	DATE/TIME NOV 29 2010 1400	RECEIVED BY/STORED IN <i>FEDEX</i>	DATE/TIME NOV 29 2010	(2) ICP Metals - 6010TR (100 Area RIFS Client List); Mercury - 7471 - (100 Area RIFS);				
RELINQUISHED BY/REMOVED FROM <i>FEDEX</i>	DATE/TIME 11-30-10 0940	RECEIVED BY/STORED IN <i>J. Smith</i>	DATE/TIME 11-30-10 0940	(3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	ORIGINAL				
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 Hamford
Project/SAF/SOW/Release #: RC 195

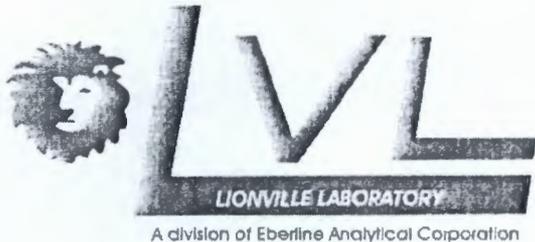
Date: 11.30.10

LvL Batch #: 1011233

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|--|--|---|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>TEX</u> | Airbill # <u>7964 9465 405</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 <u>cooled</u> or ambient? | Temp <u>1.8</u> °C | Cooler # <u>GWS-111</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 checked="" 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 type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies?
Person Contacted _____ | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A
Date _____ |



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

Case Narrative

Client: WC-HANFORD RC-195
LVL#: 1011233
SDG/SAF#: K2670/RC-195

W.O.#: 60049-001-001-0001-00
Date Received: 12-16-10

METALS

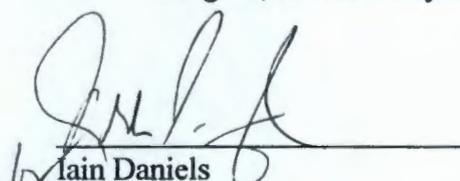
The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) certifies that all test results meet the requirements of NELAC except as noted below.

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 analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with methods listed on the data report forms.
3. All analyses were performed within the required holding times.
4. Please refer to the Sample Receipt Check List for any sample discrepancies in LvLI'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 4 analytes were outside the 75-125% control limits.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

<u>Sample ID</u>	<u>Element</u>	<u>PDS Concentration (ppb)</u>	<u>PDS % Recovery</u>
B28N87	Aluminum	22,000	102.5
	Antimony	100	100.2
	Iron	42,000	88.3
	Silicon	2,100	122.0

12. All duplicate analyses were within 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.
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.


 Brian Daniels
 Laboratory Manager
 Lionville Laboratory

1/8/11

 Date

alm/11-233



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

Project: RC-195
Project Number: K2670
Project Manager: Joan Kessner

Reported:
01/06/2011 10:45

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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B28N91
1011233-02 (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	6790		3.63	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Antimony	0.436	U	0.436	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Arsenic	3.23		0.727	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Barium	61.9		0.363	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Beryllium	0.266		0.145	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Bismuth	7.27	U	7.27	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Boron	1.45	U	1.45	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Cadmium	0.0981	B	0.145	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Calcium	6760		72.7	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Chromium	12.1		0.145	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Cobalt	6.91		1.45	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Copper	14.2		0.727	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Iron	19700		14.5	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Lead	4.72		0.363	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Lithium	7.52		1.82	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Magnesium	4320		54.5	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Manganese	304		3.63	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Molybdenum	0.475	B	1.45	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Nickel	11.0		2.91	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Phosphorus	827		36.3	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Potassium	1050		291	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Selenium	0.218	U	0.218	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Silicon	596		1.45	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Silver	0.145	U	0.145	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Sodium	300		36.3	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Strontium	26.6		0.727	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Thallium	0.363	U	0.363	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Tin	2.08	B	7.27	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Vanadium	53.5		1.82	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Zinc	46.3		7.27	mg/kg dry	1	L012287	12/23/2010	01/04/2011	6010B
Mercury	0.0276	U	0.0276	mg/kg dry	1	L012091	12/07/2010	12/08/2010	7471A



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 Project Manager: Joan Kessner

Reported:
 01/06/2011 10:45

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 L012091 - SW 7471A Prep									
Blank (L012091-BLK1)					Prepared: 12/07/2010 Analyzed: 12/08/2010				
Mercury	0.0300 U	0.0300	mg/kg wet						
Duplicate (L012091-DUP4)					Source: 1011233-01 Prepared: 12/07/2010 Analyzed: 12/08/2010				
Mercury	0.0262 U	0.0262	mg/kg dry		0.0103				20
Matrix Spike (L012091-MS4)					Source: 1011233-01 Prepared: 12/07/2010 Analyzed: 12/08/2010				
Mercury	0.166	0.0262	mg/kg dry	0.14533	0.0103	107	75-125		
Reference (L012091-SRM1)					Prepared: 12/07/2010 Analyzed: 12/08/2010				
Mercury	1.33	0.0273	mg/kg wet	1.2600		105	65.9-133.3		
Batch L012287 - SW 3050B									
Blank (L012287-BLK1)					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	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 Number: K2670
 Project Manager: Joan Kessner

Reported:
 01/06/2011 10:45

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-DUP1)

Source: 1011233-01

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

Aluminum	5340	3.84	mg/kg dry		5800			8	20
Antimony	0.461 U	0.461	mg/kg dry		0.547 U				20
Arsenic	2.79	0.768	mg/kg dry		2.37			16	20
Barium	55.6	0.384	mg/kg dry		66.2			17	20
Beryllium	0.196	0.154	mg/kg dry		0.208			6	20
Bismuth	0.517 B	7.68	mg/kg dry		0.564			9	20
Boron	1.54 U	1.54	mg/kg dry		1.82 U				20
Cadmium	0.0936 B	0.154	mg/kg dry		0.0945			0.9	20
Calcium	4940	76.8	mg/kg dry		5290			7	20
Chromium	7.87	0.154	mg/kg dry		8.70			10	20
Cobalt	5.39	1.54	mg/kg dry		6.17			13	20
Copper	13.3	0.768	mg/kg dry		12.9			3	20
Iron	17000	15.4	mg/kg dry		18900			10	20
Lead	4.10	0.384	mg/kg dry		4.06			0.9	20
Lithium	5.81	1.92	mg/kg dry		6.55			12	20
Magnesium	3460	57.6	mg/kg dry		3990			14	20
Manganese	244	3.84	mg/kg dry		279			13	20
Molybdenum	0.421 B	1.54	mg/kg dry		0.495			16	20
Nickel	8.85	3.07	mg/kg dry		9.58			8	20
Phosphorus	701	38.4	mg/kg dry		726			4	20
Potassium	868	307	mg/kg dry		930			7	20
Selenium	0.230 U	0.230	mg/kg dry		0.273 U				20
Silicon	621	1.54	mg/kg dry		744			18	20
Silver	0.154 U	0.154	mg/kg dry		0.182 U				20
Sodium	328	38.4	mg/kg dry		305			7	20
Strontium	21.8	0.768	mg/kg dry		23.6			8	20
Thallium	0.384 U	0.384	mg/kg dry		0.456 U				20
Tin	2.21 B	7.68	mg/kg dry		2.37			7	20
Vanadium	49.8	1.92	mg/kg dry		51.9			4	20
Zinc	37.3	7.68	mg/kg dry		40.8			9	20





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Metals by SW846 6000/7000 series - Quality Control
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Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012287 - SW 3050B									
Matrix Spike (L012287-MS1)		Source: 1011233-01		Prepared: 12/23/2010		Analyzed: 01/04/2011			
Aluminum	6410	3.79	mg/kg dry	151.47	5800	401*	75-125		
Antimony	15.9	0.454	mg/kg dry	37.868	0.547 U	42*	75-125		
Arsenic	125	0.757	mg/kg dry	151.47	2.37	81	75-125		
Barium	190	0.379	mg/kg dry	151.47	66.2	82	75-125		
Beryllium	3.31	0.151	mg/kg dry	3.7868	0.208	82	75-125		
Bismuth	318	7.57	mg/kg dry	378.68	0.564	84	75-125		
Boron	59.0	1.51	mg/kg dry	75.736	1.82 U	78	75-125		
Cadmium	3.38	0.151	mg/kg dry	3.7868	0.0945	87	75-125		
Calcium	7170	75.7	mg/kg dry	1893.4	5290	99	75-125		
Chromium	20.0	0.151	mg/kg dry	15.147	8.70	75	75-125		
Cobalt	35.9	1.51	mg/kg dry	37.868	6.17	79	75-125		
Copper	27.4	0.757	mg/kg dry	18.934	12.9	76	75-125		
Iron	19800	15.1	mg/kg dry	75.736	18900	1190*	75-125		
Lead	33.7	0.379	mg/kg dry	37.868	4.06	78	75-125		
Lithium	70.3	1.89	mg/kg dry	75.736	6.55	84	75-125		
Magnesium	5650	56.8	mg/kg dry	1893.4	3990	87	75-125		
Manganese	308	3.79	mg/kg dry	37.868	279	77	75-125		
Molybdenum	61.6	1.51	mg/kg dry	75.736	0.495	81	75-125		
Nickel	38.8	3.03	mg/kg dry	37.868	9.58	77	75-125		
Phosphorus	1050	37.9	mg/kg dry	378.68	726	86	75-125		
Potassium	2600	303	mg/kg dry	1893.4	930	88	75-125		
Selenium	117	0.227	mg/kg dry	151.47	0.273 U	77	75-125		
Silicon	777	1.51	mg/kg dry	75.736	744	44*	75-125		
Silver	3.13	0.151	mg/kg dry	3.7868	0.182 U	83	75-125		
Sodium	2010	37.9	mg/kg dry	1893.4	305	90	75-125		
Strontium	91.3	0.757	mg/kg dry	75.736	23.6	89	75-125		
Thallium	115	0.379	mg/kg dry	151.47	0.456 U	76	75-125		
Tin	59.9	7.57	mg/kg dry	75.736	2.37	76	75-125		
Vanadium	81.8	1.89	mg/kg dry	37.868	51.9	79	75-125		
Zinc	72.5	7.57	mg/kg dry	37.868	40.8	84	75-125		



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: K2670
 Project Manager: Joan Kessner

Reported:
 01/06/2011 10:45

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

Reference (L012287-SRM1)

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 one): Soil Water Other
 Method (circle one): 3005A 3010A 3050 200.7 (1994)

Digested / Undigested (circle one)
 Balance #: 317
 Balance Cal Verification: (Y) NA
 Temp: 96
 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 - Dup 1		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 ₂ O	
L012287 - Dup 2		0.58	50						
-ms2	0.5	0.69	50						
1012018-01		0.59	50			Fine	Brown	Rocky	
L012287 - Dup 3		0.64	50						
-ms3	0.5	0.52	50						
1012019-01		0.26	50			Fine	Black	Rocky	
L012287 - Dup 4		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 - (RM)		0.79	50			Coarse	Boiling Chips		
- (RM)		0.61	50			Fine	dusty pink sand		

JSS
12/23/10

Spiking IDs / Expiration Date:

MS#: 1001897

LCS#: 1001320

Reagent IDs:

HNO₃: J29049
 HCl: J37056
 H₂O₂: J47417
 1:1 HNO₃: 637-033-02
 1:1 HCl: _____

File ID#: _____

Data Review By / Date:

Alm 12/23/10

R:\group\QA\SOP\

Signed\SPM\Metals Digestion log.doc

* 6077-089-15 JSS and
 ↓ 087-17 ↓

Page #:

Analyst: ED
 Date: 12/7/10
 Start Time/Temp: 10:55 2255/93°
 End Time/Temp: 2:30/95°

Instrument ID: HG-3.4
 Balance #: B29 /NA
 Pipette Calibration (Daily) Y

Prep Batch: L012091
 Worksheet: H6120803
 SOP No. ME-HgCVAA
 BLOCK ① 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LVL Work Order#	pH <2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
Blank				10mL	50	
0.2 µg/L		0.100		10mL	50	
1.0 µg/L		0.500		10mL	50	
2.0 µg/L		1.000		10mL	50	
5.0 µg/L		2.500		10mL	50	
10.0 µg/L		5.000		10mL	50	
ICV		0.225	2.5	10mL	50	
CCV		0.250	5.0	10mL	50	
ICB/CCB				10mL	50	
L012091-BLKI				0.30	50	
SRM1		⊗	⊗	0.33	50	
101195-01				0.30	50	
DIR				0.33	50	
01S		0.500	1.0	0.30	50	
02				0.35 TE	50	
03				0.31 ^{TE} _{12/7/10}	50	
04				0.32	50	
05				0.30	50	
06				0.35	50	
1011230-01				0.40	50	
DIR				0.36	50	
01S		0.500	1.0	0.40	50	
1011231-01				0.37	50	
DIR				0.37	50	
1 01S		0.500	1.0	0.36	50	
1011232-01*				0.31	50	
1011233-01R*				0.38	50	

Standard:	ID	Prep Date/Time
ICAL/MS	R1 0901985B	12/7/10 1300
ICV/CCV/LCS	IV 0902297A	I I

Reviewed By/Date: [Signature]

see book # 9368 for std traceability information

Soil LCS True Value = 0.26 mg/Kg
 Standard # 1001320

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

*-TE ED 12/7/10

Analyst: EB
 Date: 12/7/12
 Start Time/Temp: _____
 End Time/Temp: see page 2

Instrument ID: HL3.1 W.E. W/12/10
 Balance #: 1329 /NA
 Pipette Calibration (Daily) Y

Logbook # 844
 Prep Batch: L012091
 Worksheet: HG-120803
 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.
1011233-015		0.500	1.0	0.37	50	
02				0.35	50	
1012015-01				0.31	50	
01A				0.34	50	
01S		0.500	1.0	0.31	50	
02				0.34	50	
1011233-01A				0.37	50	
1011181-01				0.04	50	
02				0.33	50	
03				0.18	50	
04				0.20	50	

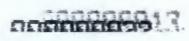
Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS		

Reviewed By/Date: [Signature] 12/8/12

see book # 9368 for std traceability information

Soil LCS True Value = see page 2 mg/Kg
 Standard # 031

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



Custody Transfer Record/Lab Work Request



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

1011233

Client WC Hartford SAF# RC-195
 Est. Final Proj. Sampling Date _____
 Project# _____
 Project Contact/Phone# _____
 Lionville Laboratory Project Manager D. Johnson
 QC SW Del STP TAT 30 days
 Date Rec'd 11-30-10 Date Due 12-30-10

Refrigerator #	A							B		C		D		E		F		G		
	1	2	3	4	5	6	7	1	2	1	2	1	2	1	2	1	2	1	2	
#/Type Container								1a ₁	1a ₁	1a ₁		1a ₁		1a ₁						
Liquid																				
Solid																				
Volume								250	250	120		250		120	120	120	120	250	250	
Preservatives																				
ANALYSES REQUESTED →	ORGANIC						INORG													
	VOA	BNA	Pest/PCB	Herb	PAHS	PAH-D	Metal	CN	Cu	Fe	As	202	203	pH	I					

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only														
			MS	MSD				8082	8310	KRO	DRO	Met	ER6	Anions	N3N2	pH	7% Meq/L					
S- Soil	01	B28N87			S	11-17-10	1255		X	X	X	X	X	X	X	X	X	X	X	X	X	X
SE- Sediment	02	B28N91			L	11-17-10	1350		X	X	X	X	X	X	X	X	X	X	X	X	X	X
SO- Solid																						
SL- Sludge																						
W- Water																						
O- Oil																						
A- Air																						
DS- Drum																						
DL- Drum																						
L- Liquids																						
EP/TCLP																						
Leachate																						
WI- Wipe																						
X- Other																						
F- Fish																						

Special Instructions: Run matrix QC

- Special Instructions:
- _____
 - _____
 - _____
 - _____
 - _____
 - _____

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>11/30/10</u>	<u>0940</u>

Relinquished by	Received by	Date	Time

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

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						RC-195-513		PAGE 1 OF 1		
COLLECTOR BAILEY		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-001		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud				SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>				
ICE CHEST NO. 6WS-111		FIELD LOGBOOK NO. HNF-N-585-3/79		ACTUAL SAMPLE DEPTH 0'-2.5'		COA 302512ES10		METHOD OF SHIPMENT FEDERAL EXPRESS				
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 796494654051!						
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
				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: B28N45		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						
B28N87		SOIL		11-17-10		1255		✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM BAILEY / DR	DATE/TIME 11-17-10/1410	RECEIVED BY/STORED IN MOYI3 SSUR2	DATE/TIME 11-17-10/1410	** 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 - (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
RELINQUISHED BY/REMOVED FROM SSU-R2	DATE/TIME NOV 29 2010 1000	RECEIVED BY/STORED IN M. A. White	DATE/TIME NOV 29 2010 1000		
RELINQUISHED BY/REMOVED FROM M. A. White	DATE/TIME NOV 29 2010 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM See Ex	DATE/TIME 11-30-10 0940	RECEIVED BY/STORED IN See Ex	DATE/TIME 11-30-10 0940		
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	

ORIGINAL

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						RC-195-518	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-002		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud				SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>			
ICE CHEST NO. <i>QWS-111</i>		FIELD LOGBOOK NO. <i>HNF-N-585-3 B79</i>		ACTUAL SAMPLE DEPTH <i>5'-7.5'</i>		COA 302512ES10		METHOD OF SHIPMENT FEDERAL EXPRESS			
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 7964016540511					
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
			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: B28N45		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								
B28N91	SOIL	11-17-10	1350	✓	✓	✓	✓	✓	✓	✓	

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>J Bailey</i>	DATE/TIME 11-17-10/1410	RECEIVED BY/STORED IN <i>M. A. White</i>	DATE/TIME 11-17-10/1410	** 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 - (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
RELINQUISHED BY/REMOVED FROM SSU-R2	DATE/TIME NOV 29 2010 1000	RECEIVED BY/STORED IN <i>M. A. White</i>	DATE/TIME NOV 29 2010 1000		
RELINQUISHED BY/REMOVED FROM <i>M. A. White</i>	DATE/TIME NOV 29 2010 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME NOV 29 2010		
RELINQUISHED BY/REMOVED FROM <i>FEDEX</i>	DATE/TIME 11-30-10 0940	RECEIVED BY/STORED IN <i>J. Smith</i>	DATE/TIME 11-30-10 0940		
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	

000000010

Lionville Laboratory
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hamford
Project/SAF/SOW/Release #: RC 195

Date: 11-30-10

LvL Batch #: 1011233

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|--|---|---|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>FEDEX</u> | Airbill # <u>7964 9465 405</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 <u>cooled</u> or ambient? | Temp <u>1.8</u> °C | Cooler # <u>GWS-111</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? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> 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 type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | Date _____ | |

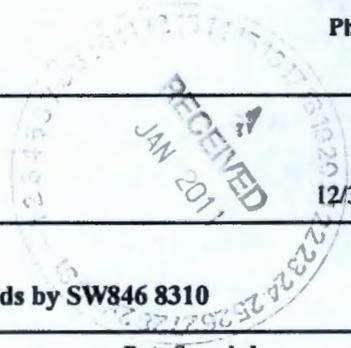


264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

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

Project: RC-195
Project Number: K2670
Project Manager: Joan Kessner

Reported:
12/30/2010 19:14



Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B28N87	1011233-01	Soil	11/17/2010 12:55	11/30/2010 09:40
B28N91	1011233-02	Soil	11/17/2010 13:50	11/30/2010 09:40

Case Narrative

Client: WC-HANFORD RC-195 K2670
LVL #: 1011233

W.O. #: 60049-001-001-0001-00
Date Received: 11-30-2010

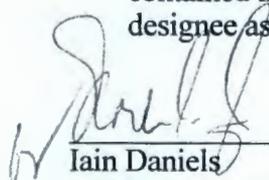
POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

Two (2) soil samples were collected on 11-17-2010.

The samples and associated QC samples were extracted 12-01-2010 and analyzed 12-17,21,23-2010 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 samples 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. Seven (7) of thirty-two (32) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#10GC421) has been enclosed.
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 samples were 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

1/4/11
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 1060421

Initiator: Catherine Carey
Date: 12/30/10
Client: WC Hanford

Batch: 1011233
Samples: ms3/ms03
Method: SW846/MCAWW/CLPI

Parameter: PAH
Matrix: SOIL
Prep Batch: L012019

1. Reason for SDR

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

b. General Discrepancy

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

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

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

several spike recoveries outside qc limits (m ms3/ms03)

BS okay

2. Known or Probable Causes(s)

presence of target analytes in sample

3. Discussion and Proposed Action

Other Description:

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

Narrate

[Handwritten signature] 1/4/11

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

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

5. Final Action...signature/date:

Other Explanation:

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

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

Route

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

Route

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



GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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



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: K2670
 Project Manager: Joan Kessner

Reported:
 12/30/2010 19:14

B28N87
1011233-01 (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	22.2	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Acenaphthylene	283	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Acenaphthene	264	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Fluorene	21.8	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Phenanthrene	23.2	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Anthracene	1.14 J	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Fluoranthene	57.3	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Indeno[1,2,3-cd]pyrene	3.57 U	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Pyrene	50.4	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benz[a]anthracene	22.3	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Chrysene	13.2	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benzo[b] fluoranthene	154	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benzo[k] fluoranthene	26.5	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benzo[a] pyrene	9.16	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Dibenz[a,h]anthracene	5.80	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benzo[g,h,i] perylene	3.57 U	3.57	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Surrogate: Triphenylene	92 %	68-129			L012019	12/01/2010	12/21/2010	8310



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Project Manager: Joan Kessner

Reported:
12/30/2010 19:14

B28N91
1011233-02 (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	3.52 U	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Acenaphthylene	3.52 U	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Acenaphthene	2.71 J	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Fluorene	3.08 J	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Phenanthrene	26.3	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Anthracene	3.21 J	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Fluoranthene	37.8	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Indeno[1,2,3-cd]pyrene	17.9	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Pyrene	32.7	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benz[a]anthracene	5.41	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Chrysene	6.20	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benzo[b] fluoranthene	22.3	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benzo[k] fluoranthene	8.23	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benzo[a] pyrene	11.7	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Dibenz[a,h]anthracene	3.52 U	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Benzo[g,h,i] perylene	1.83 J	3.52	ug/kg dry	1	L012019	12/01/2010	12/21/2010	8310
Surrogate: Triphenylene	95 %	68-129			L012019	12/01/2010	12/21/2010	8310



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Reported:
 12/30/2010 19:14

Polynuclear Aromatic Compounds by SW846 8310 - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012019 - SW 3540C									
Blank (L012019-BLK1)					Prepared: 12/01/2010 Analyzed: 12/17/2010				
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>	173		ug/kg wet	166.67		104	68-129		
LCS (L012019-BS1)					Prepared: 12/01/2010 Analyzed: 12/17/2010				
Naphthalene	130	3.33	ug/kg wet	166.67		78	0-127		
Acenaphthylene	153	3.33	ug/kg wet	166.67		92	50-140		
Acenaphthene	144	3.33	ug/kg wet	166.67		86	17-139		
Fluorene	145	3.33	ug/kg wet	166.67		87	28-145		
Phenanthrene	149	3.33	ug/kg wet	166.67		89	30-152		
Anthracene	160	3.33	ug/kg wet	166.67		96	19-171		
Fluoranthene	150	3.33	ug/kg wet	166.67		90	34-159		
Indeno[1,2,3-cd]pyrene	148	3.33	ug/kg wet	166.67		89	31-156		
Pyrene	168	3.33	ug/kg wet	166.67		101	33-152		
Benz[a]anthracene	159	3.33	ug/kg wet	166.67		95	32-157		
Chrysene	163	3.33	ug/kg wet	166.67		98	31-159		
Benzo[b] fluoranthene	159	3.33	ug/kg wet	166.67		95	33-164		
Benzo[k] fluoranthene	165	3.33	ug/kg wet	166.67		99	28-161		
Benzo[a] pyrene	150	3.33	ug/kg wet	166.67		90	29-149		
Dibenz[a,h]anthracene	159	3.33	ug/kg wet	166.67		96	27-153		
Benzo[g,h,i] perylene	170	3.33	ug/kg wet	166.67		102	32-157		
<i>Surrogate: Triphenylene</i>	156		ug/kg wet	166.67		94	68-129		

000000007



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 Richland WA, 99354

Project: RC-195
 Project Number: K2670
 Project Manager: Joan Kessner

Reported:
 12/30/2010 19:14

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 L012019 - SW 3540C

Matrix Spike (L012019-MS3)	Source: 1011233-01	Prepared: 12/01/2010	Analyzed: 12/21/2010						
Naphthalene	143	3.52	ug/kg dry	176.30	22.2	69	0-127		
Acenaphthylene	292	3.52	ug/kg dry	176.30	283	5*	50-140		
Acenaphthene	183	3.52	ug/kg dry	176.30	264	-46*	17-139		
Fluorene	148	3.52	ug/kg dry	176.30	21.8	72	28-145		
Phenanthrene	203	3.52	ug/kg dry	176.30	23.2	102	30-152		
Anthracene	156	3.52	ug/kg dry	176.30	1.14	88	19-171		
Fluoranthene	202	3.52	ug/kg dry	176.30	57.3	82	34-159		
Indeno[1,2,3-cd]pyrene	167	3.52	ug/kg dry	176.30	3.57 U	95	31-156		
Pyrene	123	3.52	ug/kg dry	176.30	50.4	41	33-152		
Benz[a]anthracene	221	3.52	ug/kg dry	176.30	22.3	112	32-157		
Chrysene	52.5	3.52	ug/kg dry	176.30	13.2	22*	31-159		
Benzo[b] fluoranthene	190	3.52	ug/kg dry	176.30	154	20*	33-164		
Benzo[k] fluoranthene	137	3.52	ug/kg dry	176.30	26.5	63	28-161		
Benzo[a] pyrene	149	3.52	ug/kg dry	176.30	9.16	79	29-149		
Dibenz[a,h]anthracene	118	3.52	ug/kg dry	176.30	5.80	64	27-153		
Benzo[g,h,i] perylene	200	3.52	ug/kg dry	176.30	3.57 U	113	32-157		
Surrogate: Triphenylene	170		ug/kg dry	176.30		96	68-129		

Matrix Spike Dup (L012019-MSD3)	Source: 1011233-01	Prepared: 12/01/2010	Analyzed: 12/23/2010						
Naphthalene	146	3.57	ug/kg dry	178.59	22.2	69	0-127	0.6	40
Acenaphthylene	468	3.57	ug/kg dry	178.59	283	103	50-140	182*	40
Acenaphthene	139	3.57	ug/kg dry	178.59	264	-70*	17-139	-42	40
Fluorene	145	3.57	ug/kg dry	178.59	21.8	69	28-145	4	40
Phenanthrene	207	3.57	ug/kg dry	178.59	23.2	103	30-152	0.8	40
Anthracene	167	3.57	ug/kg dry	178.59	1.14	93	19-171	6	40
Fluoranthene	191	3.57	ug/kg dry	178.59	57.3	75	34-159	10	40
Indeno[1,2,3-cd]pyrene	239	3.57	ug/kg dry	178.59	3.57 U	134	31-156	34	40
Pyrene	101	3.57	ug/kg dry	178.59	50.4	28*	33-152	38	40
Benz[a]anthracene	150	3.57	ug/kg dry	178.59	22.3	71	32-157	45*	40
Chrysene	53.7	3.57	ug/kg dry	178.59	13.2	23*	31-159	2	40
Benzo[b] fluoranthene	227	3.57	ug/kg dry	178.59	154	41	33-164	68*	40
Benzo[k] fluoranthene	150	3.57	ug/kg dry	178.59	26.5	69	28-161	10	40
Benzo[a] pyrene	134	3.57	ug/kg dry	178.59	9.16	70	29-149	12	40
Dibenz[a,h]anthracene	121	3.57	ug/kg dry	178.59	5.80	64	27-153	0.7	40
Benzo[g,h,i] perylene	171	3.57	ug/kg dry	178.59	3.57 U	96	32-157	17	40
Surrogate: Triphenylene	151		ug/kg dry	178.59		84	68-129		

PREPARATION BENCH SHEET

L012019

Lionville Laboratory

Printed: 12/7/2010 3:50:19PM

L012019

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
1011218-01	8310 PAH	12/01/2010 15:11	30.11	5				500	WC-Hanford, Inc.	
1011226-01	8310 PAH	12/01/2010 15:11	31.32	5				500	WC-Hanford, Inc.	
1011226-02	8310 PAH	12/01/2010 15:11	30.86	5				500	WC-Hanford, Inc.	
1011226-03	8310 PAH	12/01/2010 15:11	30.9	5				500	WC-Hanford, Inc.	
1011226-04	8310 PAH	12/01/2010 15:11	16.71	5				500	WC-Hanford, Inc.	
1011233-01	8310 PAH	12/01/2010 15:11	30.13	5				500	WC-Hanford, Inc.	
1011233-02	8310 PAH	12/01/2010 15:11	30.51	5				500	WC-Hanford, Inc.	
1011234-01	8310 PAH	12/01/2010 15:11	30.31	5				500	WC-Hanford, Inc.	
1011234-02	8310 PAH	12/01/2010 15:11	31.31	5				500	WC-Hanford, Inc.	
1011234-03	8310 PAH	12/01/2010 15:11	31.78	5				500	WC-Hanford, Inc.	
1011234-04	8310 PAH	12/01/2010 15:11	30.8	5				500	WC-Hanford, Inc.	
1011234-05	8310 PAH	12/01/2010 15:11	30.44	5				500	WC-Hanford, Inc.	
1011234-06	8310 PAH	12/01/2010 15:11	30.73	5				500	WC-Hanford, Inc.	
1011234-07	8310 PAH	12/01/2010 15:11	31.32	5				500	WC-Hanford, Inc.	
1011234-08	8310 PAH	12/01/2010 15:11	31.23	5				500	WC-Hanford, Inc.	
L012019-BLK1	QC	12/01/2010 15:11	30	5				500		
L012019-BS1	QC	12/01/2010 15:11	30	5	1001668		1000	500		
L012019-MS1	QC	12/01/2010 15:11	30.17	5	1001668	1011218-01	1000	500		
L012019-MS2	QC	12/01/2010 15:11	30.7	5	1001668	1011226-03	1000	500		
L012019-MS3	QC	12/01/2010 15:11	30.5	5	1001668	1011233-01	1000	500		

J. Am 12/7/10 16:05
 Extracts Relinquished By Date

Elah 12/07/10 16:05
 Extracts Received By Date

PREPARATION BENCH SHEET

L012019

Lionville Laboratory

Printed: 12/7/2010 3:50:19PM

Matrix: Solid

Prepared using: HPLC - SW 3540C

Surrogate used: 1001909

0100000000

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
L012019-MS4	QC	12/01/2010 15:11	30	5	1001668	1011234-01	1000	500		
L012019-MSD1	QC	12/01/2010 15:11	30.45	5	1001668	1011218-01	1000	500		
L012019-MSD2	QC	12/01/2010 15:11	30.67	5	1001668	1011226-03	1000	500		
L012019-MSD3	QC	12/01/2010 15:11	30.11	5	1001668	1011233-01	1000	500		
L012019-MSD4	QC	12/01/2010 15:11	31.31	5	1001668	1011234-01	1000	500		

C. J. Ahern 12/7/10 16:05
 Extracts Relinquished By Date

E. Zah 12/07/10 16:05
 Extracts Received By Date

Custody Transfer Record/Lab Work Request



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

1011233

Client <u>WC Hanford SAF# RC-195</u>	Refrigerator #	A	B	C	D	E	F	G	H
Est. Final Proj. Sampling Date _____	#/Type Container	Liquid							
Project# _____	Solid	1a ₁							
Project Contact/Phone# _____	Volume	Solid	250	250	120	250	120	120	250
Lionville Laboratory Project Manager <u>O. Johnson</u>	Preservatives								
QC <u>SW</u> Del <u>STP</u> TAT <u>30 days</u>									

Date Rec'd 11-30-10 Date Due 12-30-10

ANALYSES REQUESTED →

ORGANIC				INORG			
VOA	BNA	PEST	PCB	Herb	PAHS	TH-D	(S)

MATRIX CODES: S- Soil SE- Sediment SO- Solid SL- Sludge W- Water O- Oil A- Air DS- Drum SOL- Solids DL- Drum L- Liquids 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				8082	8310	KRO	ORO	Met	ERG	Amigos	N3N2	PH	79						
	01	B28N87			S	11-17-10	1255		X		X	X	X	X	X	X	X	X	X	X	X	X	
	02	B28N91			L		1350		X		X	X	X	X	X	X	X	X	X	X	X	X	

Special Instructions: Run matrix GC

- Special Instructions:
- _____
 - _____
 - _____
 - _____
 - _____
 - _____

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>11/30/10</u>	<u>0940</u>

Relinquished by	Received by	Date	Time

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

110888888

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-195-513	PAGE 1 OF 1
COLLECTOR BAILEY		COMPANY CONTACT RADLOFF, ANNA		TELEPHONE NO. (509) 376-4554		PROJECT COORDINATOR KESSNER, JH	
SAMPLING LOCATION C7847 (118-B-8); I-001		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud				SAF NO. RC-195	
ICE CHEST NO. GLWS-111		FIELD LOGBOOK NO. HNF-N-585-3/79		ACTUAL SAMPLE DEPTH 01-2.5'		METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. 796494654051	

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
		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: B28N45		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							
B28N87	SOIL	11-17-10	1255	✓	✓	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM BAILEY / DRB	DATE/TIME 11-17-10/1410	RECEIVED BY/STORED IN M0413 SSUR2	DATE/TIME 11-17-10/1410	** The laboratory is to analyze pH within 24 hours of receipt. □□** The RCCC acknowledges that the analytical holding time for Nitrate, Nitrite, and Phosphate by EPA methods 300.0 or 9056 will not be met. □□** Physical Properties laboratory: Conduct the hydraulic conductivity test (ASTM 5084 or 2434) as appropriate to the sample matrix. □□ (1) TPH-DieselKerosene Range - WTPH-D (100 Area RIFS); (2) ICP Metals - 6010TR (100 Area RIFS Client List); Mercury - 7471 - 100 (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
RELINQUISHED BY/REMOVED FROM SSU-R2	DATE/TIME NOV 29 2010 1000	RECEIVED BY/STORED IN M. A. White	DATE/TIME NOV 29 2010 1000		
RELINQUISHED BY/REMOVED FROM M. A. White	DATE/TIME NOV 29 2010 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM Ex	DATE/TIME 11-30-10 0940	RECEIVED BY/STORED IN DSUR2	DATE/TIME 11-30-10 0940		
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

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						RC-195-518	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-002		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud				SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>				
ICE CHEST NO. <i>QWS-111</i>		FIELD LOGBOOK NO. <i>HNF-N-585-3 879</i>		ACTUAL SAMPLE DEPTH <i>5'-7.5'</i>		COA 302512ES10		METHOD OF SHIPMENT FEDERAL EXPRESS				
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. <i>7964006540511</i>						
MATRIX* A=Air DL=Drum L=Liquid 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
				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: B28N45		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						
B28N91		SOIL		11-17-10		1350		✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>J Bailey</i>	DATE/TIME 11-17-10/1410	RECEIVED BY/STORED IN <i>M. A. White</i>	DATE/TIME 11-17-10/1410	** 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 - (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
RELINQUISHED BY/REMOVED FROM SSU-R2	DATE/TIME NOV 29 2010 1000	RECEIVED BY/STORED IN <i>M. A. White</i>	DATE/TIME NOV 29 2010 1000		
RELINQUISHED BY/REMOVED FROM <i>M. A. White</i>	DATE/TIME NOV 29 2010 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME NOV 29 2010		
RELINQUISHED BY/REMOVED FROM <i>Ex</i>	DATE/TIME 11-30-10 0940	RECEIVED BY/STORED IN <i>Smith</i>	DATE/TIME 11-30-10 0940		
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 Hamford
Project/SAF/SOW/Release #: RC 195

Date: 11-30-10

LvL Batch #: 1011233

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|--|---|---|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>FEDEX</u> | Airbill # <u>7964 9465 405</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 <u>cooled</u> or ambient? | Temp <u>1.8</u> °C | Cooler # <u>GWS-111</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? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| All samples received on COC? | <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? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Short holds taken to wet lab? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 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 type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | Date _____ | |



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

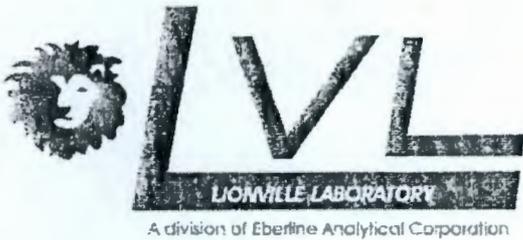
WC-Hanford, Inc.
2620 Fermi Avenue
Richland WA, 99354

Project: RC-195
Project Number: K2670
Project Manager: Joan Kessner

Reported:
02/10/2011 22:48

Analytical Report for Polychlorinated Biphenyls by SW846 8082

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B28N87	1011233-01	Soil	11/17/2010 12:55	11/30/2010 09:40
B28N91	1011233-02	Soil	11/17/2010 13:50	11/30/2010 09:40



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

Case Narrative

Client: WC-HANFORD RC-195 K2670
LVL #: 1011233

W.O. #: 60049-001-001-0001-00
Received: 11-30-2010

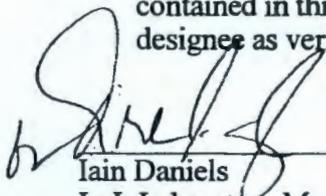
PCBs

Two (2) soil samples were collected on 11-17-2010.

The samples and associated QC samples were extracted 12-14-2010 and analyzed 12-21,28-2010 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 8082. All samples received Copper-Sulfur and Sulfuric Acid cleanups based on SW846 methods 3660A and 3665A.

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

1. The results presented in this report are derived from samples that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. 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 samples are 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

1/4/11
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: K2670
 Project Manager: Joan Kessner

Reported:
 02/10/2011 22:48

B28N87
1011233-01 (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	L012185	12/14/2010	12/28/2010	8082
Aroclor 1221	13.9 U	13.9	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1232	13.9 U	13.9	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1242	13.9 U	13.9	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1248	13.9 U	13.9	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1254	8.45 J	13.9	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1260	13.9 U	13.9	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1262	13.9 U	13.9	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1268	13.9 U	13.9	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Surrogate: Decachlorobiphenyl	77 %	43-144			L012185	12/14/2010	12/28/2010	8082
Surrogate: Tetrachloro-meta-xylene	90 %	52-141			L012185	12/14/2010	12/28/2010	8082



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 Exton, PA 19341
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WC-Hanford, Inc.
 2620 Fermi Avenue
 Richland WA, 99354

Project: RC-195
 Project Number: K2670
 Project Manager: Joan Kessner

Reported:
 02/10/2011 22:48

B28N91
1011233-02 (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	14.0 U	14.0	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1221	14.0 U	14.0	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1232	14.0 U	14.0	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1242	14.0 U	14.0	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1248	14.0 U	14.0	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1254	14.0 U	14.0	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1260	14.0 U	14.0	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1262	14.0 U	14.0	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Aroclor 1268	14.0 U	14.0	ug/kg dry	1	L012185	12/14/2010	12/28/2010	8082
Surrogate: Decachlorobiphenyl	89 %	43-144			L012185	12/14/2010	12/28/2010	8082
Surrogate: Tetrachloro-meta-xylene	93 %	52-141			L012185	12/14/2010	12/28/2010	8082



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

Project: RC-195
 Project Number: K2670
 Project Manager: Joan Kessner

Reported:
 02/10/2011 22:48

Polychlorinated Biphenyls by SW846 8082 - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012185 - SW 3540C									
Blank (L012185-BLK1)					Prepared: 12/14/2010 Analyzed: 12/21/2010				
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	35.3		ug/kg wet	33.333		106	43-144		
Surrogate: Tetrachloro-meta-xylene	39.1		ug/kg wet	33.337		117	52-141		
LCS (L012185-BS1)					Prepared: 12/14/2010 Analyzed: 12/21/2010				
Aroclor 1016	131	13.3	ug/kg wet	166.67		79	50-138		
Aroclor 1260	150	13.3	ug/kg wet	166.67		90	50-148		
Surrogate: Decachlorobiphenyl	31.7		ug/kg wet	33.333		95	43-144		
Surrogate: Tetrachloro-meta-xylene	33.1		ug/kg wet	33.337		99	52-141		
Matrix Spike (L012185-MS3)					Source: 1011233-02 Prepared: 12/14/2010 Analyzed: 12/28/2010				
Aroclor 1016	123	13.8	ug/kg dry	173.43	14.0 U	71	50-138		
Aroclor 1260	134	13.8	ug/kg dry	173.43	14.0 U	77	50-148		
Surrogate: Decachlorobiphenyl	25.7		ug/kg dry	34.686		74	43-144		
Surrogate: Tetrachloro-meta-xylene	28.2		ug/kg dry	34.689		81	52-141		
Matrix Spike Dup (L012185-MSD3)					Source: 1011233-02 Prepared: 12/14/2010 Analyzed: 12/28/2010				
Aroclor 1016	181	13.4	ug/kg dry	168.01	14.0 U	108	50-138	42*	40
Aroclor 1260	200	13.4	ug/kg dry	168.01	14.0 U	119	50-148	43*	40
Surrogate: Decachlorobiphenyl	37.4		ug/kg dry	33.602		111	43-144		
Surrogate: Tetrachloro-meta-xylene	43.6		ug/kg dry	33.605		130	52-141		

PREPARATION BENCH SHEET

L012185

Lionville Laboratory

Printed: 12/16/2010 11:24:52AM

1000000007

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
1011223-01	8082 PCBs	12/14/2010 15:13	30.28	10				250	WC-Hanford, Inc.	
1011223-02	8082 PCBs	12/14/2010 15:13	31.27	10				250	WC-Hanford, Inc.	
1011223-03	8082 PCBs	12/14/2010 15:13	30.86	10				250	WC-Hanford, Inc.	
1011223-04	8082 PCBs	12/14/2010 15:13	31.86	10				250	WC-Hanford, Inc.	
1011223-05	8082 PCBs	12/14/2010 15:13	30.06	10				250	WC-Hanford, Inc.	
1011223-06	8082 PCBs	12/14/2010 15:13	31.86	10				250	WC-Hanford, Inc.	
1011226-01	8082 PCBs	12/14/2010 15:13	31.02	10				250	WC-Hanford, Inc.	
1011226-02	8082 PCBs	12/14/2010 15:13	30.18	10				250	WC-Hanford, Inc.	
1011226-03	8082 PCBs	12/14/2010 15:13	31.43	10				250	WC-Hanford, Inc.	
1011226-04	8082 PCBs	12/14/2010 15:13	19.87	10				250	WC-Hanford, Inc.	
1011233-01	8082 PCBs	12/14/2010 15:13	30.93	10				250	WC-Hanford, Inc.	
1011233-02	8082 PCBs	12/14/2010 15:13	30.56	10				250	WC-Hanford, Inc.	
1011234-01	8082 PCBs	12/14/2010 15:13	31.16	10				250	WC-Hanford, Inc.	
1011234-02	8082 PCBs	12/14/2010 15:13	30.38	10				250	WC-Hanford, Inc.	
1011234-03	8082 PCBs	12/14/2010 15:13	31.7	10				250	WC-Hanford, Inc.	
1011234-04	8082 PCBs	12/14/2010 15:13	31.11	10				250	WC-Hanford, Inc.	
1011234-05	8082 PCBs	12/14/2010 15:13	31.07	10				250	WC-Hanford, Inc.	
1011234-06	8082 PCBs	12/14/2010 15:13	31.61	10				250	WC-Hanford, Inc.	
1011234-07	8082 PCBs	12/14/2010 15:13	30.16	10				250	WC-Hanford, Inc.	
1011234-08	8082 PCBs	12/14/2010 15:13	32.01	10				250	WC-Hanford, Inc.	

[Signature]
 Extracts Relinquished By _____
 Date 12/14/10 11:22

S cleaned 12/16/10 SL
[Signature]
 Extracts Received By _____
 Date 12/16/10 11:30

PREPARATION BENCH SHEET

L012185

Lionville Laboratory

Printed: 12/16/2010 11:24:52AM

0000000000

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
L012185-BLK1	QC	12/14/2010 15:13	30	10				250		
L012185-BS1	QC	12/14/2010 15:13	30	10	1002000		250	250		
L012185-MS1	QC	12/14/2010 15:13	30.19	10	1002000	1011223-05	250	250		
L012185-MS2	QC	12/14/2010 15:13	30.16	10	1002000	1011226-03	250	250		
L012185-MS3	QC	12/14/2010 15:13	31	10	1002000	1011233-02	250	250		
L012185-MS4	QC	12/14/2010 15:13	30	10	1002000	1011234-01	250	250		
L012185-MSD1	QC	12/14/2010 15:13	31.86	10	1002000	1011223-05	250	250		
L012185-MSD2	QC	12/14/2010 15:13	29.81	10	1002000	1011226-03	250	250		
L012185-MSD3	QC	12/14/2010 15:13	32	10	1002000	1011233-02	250	250		
L012185-MSD4	QC	12/14/2010 15:13	30	10	1002000	1011234-01	250	250		

S cleaned 12/16/10 52

J. Shi 12/16/10 11:21
 Extracts Relinquished By _____ Date _____

B. Shah 12/16/10 11:30
 Extracts Received By _____ Date _____



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

1011233

Client WC Hanford SAF# RC-195
 Est. Final Proj. Sampling Date _____
 Project# _____
 Project Contact/Phone# _____
 Lionville Laboratory Project Manager O. Johnson
 QC SW Del STP TAT 30 days

Refrigerator #	A	B	C	D	E	F	G
#/Type Container	Liquid						
Volume	250	250	200	250	200	200	250
Preservatives							

Date Rec'd 11-30-10 Date Due 12-30-10

ANALYSES REQUESTED		ORGANIC				INORG			
VOA	BNA	Pest	PCB	Herb	PAHS	TH-D	Metal + Ag	CN	Cr6
					X	X			X

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only									
			MS	MSD				8082	8310	KRO	ORO	Met	ERG	Amion	N3N2	Pft	Mast
S- Soil	01	B28N87			S	11-17-10	1355	X	X	X	X	X	X	X	X	X	X
SE- Sediment	02	B28N91			L		1350	X	X	X	X	X	X	X	X	X	X
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																	

Special Instructions: Run matrix &c

- Special Instructions:
- _____
 - _____
 - _____
 - _____
 - _____
 - _____

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>11/30/10</u>	<u>0940</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-195-513	PAGE 1 OF 1
COLLECTOR BAILEY		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); 1-001		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud		SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GWS-111		FIELD LOGBOOK NO. HNF-N-585-3/79	ACTUAL SAMPLE DEPTH 01-2.5'		COA 302512ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR 796494654051			

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
		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: B28N45		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						
B28N87	SOIL	11-17-10	1255	✓	✓	✓	✓	✓	✓

0000000010

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS ** 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 - (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);
RELINQUISHED BY/REMOVED FROM BAILEY / DVB	DATE/TIME 11-17-10/1410	RECEIVED BY/STORED IN MOYI3 SSURE2	DATE/TIME 11-17-10/1410	
RELINQUISHED BY/REMOVED FROM SSU-R2	DATE/TIME NOV 29 2010 1000	RECEIVED BY/STORED IN M.A. White	DATE/TIME NOV 29 2010 1000	
RELINQUISHED BY/REMOVED FROM M.A. White	DATE/TIME NOV 29 2010 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME	
RELINQUISHED BY/REMOVED FROM Free Ex	DATE/TIME 11-30-10 0940	RECEIVED BY/STORED IN DSUR	DATE/TIME 11-30-10 0940	
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

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-195-518	PAGE 1 OF 1
COLLECTOR J Bailey		COMPANY CONTACT RADLOFF, ANNA		TELEPHONE NO. (509) 376-4554		PROJECT COORDINATOR KESSNER, JH	
SAMPLING LOCATION C7847 (118-B-8); I-002		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud				PRICE CODE 8N DATA TURNAROUND 45 Days / 45 Days	
ICE CHEST NO. QWS-111		FIELD LOGBOOK NO. HNF-N-585-3 679		ACTUAL SAMPLE DEPTH 5'-7.5'		AIR QUALITY <input type="checkbox"/>	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 7964826-549511	
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		METHOD OF SHIPMENT FEDERAL EXPRESS	

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION							
		HOLDING TIME	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	Cool~4C	None
		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	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						
B28N91	SOIL	11-17-10	1350	✓	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM J Bailey / JRP	DATE/TIME 11-17-10/1410	RECEIVED BY/STORED IN M. A. White	DATE/TIME 11-17-10/1410	** 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"/> (1) TPH-DieselKerosene Range - WTPH-D (100 Area RIFS); (2) ICP Metals - 6010TR (100 Area RIFS Client List); Mercury - 7471 - (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
RELINQUISHED BY/REMOVED FROM SSU-R2	DATE/TIME NOV 29 2010 1000	RECEIVED BY/STORED IN M.A. White	DATE/TIME NOV 29 2010 1000		
RELINQUISHED BY/REMOVED FROM M.A. White	DATE/TIME NOV 29 2010 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME NOV 29 2010		
RELINQUISHED BY/REMOVED FROM Fed Ex	DATE/TIME 11-30-10 0940	RECEIVED BY/STORED IN JRP	DATE/TIME 11-30-10 0940		
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

00000011

ORIGINAL

Lionville Laboratory
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hartford
 Project/SAF/SOW/Release #: RC 195

Date: 11-30-10

LvL Batch #: 1011233

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|--|---|--|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>FEDEX</u> | Airbill # <u>7964 9465 40E</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 <u>cooled</u> or ambient? | Temp <u>1.8</u> °C | Cooler # <u>GWS-111</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? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| All samples received on COC? | <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? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Short holds taken to wet lab? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 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 type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | Date _____ | |



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: K2670
Project Manager: Joan Kessner

Reported:
01/12/2011 18:41

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B28N87	1011233-01	Soil	11/17/2010 12:55	11/30/2010 09:40
B28N91	1011233-02	Soil	11/17/2010 13:50	11/30/2010 09:40



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

Case Narrative

Client: WC-HANFORD RC-195 K2670

LVL#: 1011233

Date Received: 11-30-10

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the data summary report. Results for soil or solid pH are measured in water at 25°C unless otherwise specified.

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

3. Sample holding times as required by the method and/or contract were met with the exceptions of Nitrate, Nitrite, Orthophosphate which were received past hold and Hexavalent Chromium which were analyzed past hold.
4. The results presented in this report are derived from samples that met LvL's sample acceptance policy with exceptions noted on the Sample Receipt Checklist.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits and method criteria.
7. The matrix spike recoveries were within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit with the exception of Fluoride at 48.6%; the replicate results for Fluoride are below the limit of quantitation.
9. Results for soil samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory

njpvi11-233

11/14/11
Date



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

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2620 Fermi Avenue
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Reported:
01/12/2011 18:41

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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Reported:
 01/12/2011 18:41

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
B28N87 (1011233-01) Soil									
%Solids	93.0	0.1	0.1	% by Weight	1	L012083	12/06/2010	12/06/2010	SM2540G
Bromide	1.8 U	1.8	2.7	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Chloride	0.7 U	0.7	2.7	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Fluoride	0.5 B	0.3	2.7	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Nitrate	5.2	1.2	2.7	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Nitrite	1.1 U	1.1	2.7	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Orthophosphate	3.7 U	3.7	5.4	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Sulfate	11.9	1.1	2.7	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Nitrate/Nitrite as N	1.48	0.11	0.54	mg/kg dry	1	L101104	01/07/2011	01/07/2011	EPA 353.2
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry	1	L101008	01/03/2011	01/03/2011	ISW846 7196A
pH	8.43		0.10	pH Units	1	L012115	12/08/2010	12/08/2010	ISW846 9045D
%Moisture	7.02		0.01	% by Weight	1	L012084	12/06/2010	12/06/2010	D2216
B28N91 (1011233-02) Soil									
%Solids	93.0	0.1	0.1	% by Weight	1	L012083	12/06/2010	12/06/2010	SM2540G
Bromide	1.7 U	1.7	2.5	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Chloride	1.2 B	0.6	2.5	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Fluoride	0.9 B	0.3	2.5	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Nitrate	2.0 B	1.1	2.5	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Nitrite	1.0 U	1.0	2.5	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Orthophosphate	3.4 U	3.4	5.0	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Sulfate	13.5	1.0	2.5	mg/kg dry	1	L101105	01/06/2011	01/06/2011	EPA 300.0 (1993)
Nitrate/Nitrite as N	0.77	0.10	0.50	mg/kg dry	1	L101104	01/07/2011	01/07/2011	EPA 353.2
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry	1	L101008	01/03/2011	01/03/2011	ISW846 7196A
pH	8.49		0.10	pH Units	1	L012115	12/08/2010	12/08/2010	ISW846 9045D
%Moisture	7.00		0.01	% by Weight	1	L012084	12/06/2010	12/06/2010	D2216

000000004



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 2620 Fermi Avenue
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Project: RC-195
 Project Number: K2670
 Project Manager: Joan Kessner

Reported:
 01/12/2011 18:41

Wet Chemistry - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L012115 - Default Prep GenChem										
Duplicate (L012115-DUP9)		Source: 1011233-01			Prepared & Analyzed: 12/08/2010					
pH	8.42		0.10	pH Units		8.43			0.119	20
Reference (L012115-SRM1)		Prepared & Analyzed: 12/08/2010								
pH	10.02		0.10	pH Units	10.000		100	99-101		
Reference (L012115-SRM5)		Prepared & Analyzed: 12/08/2010								
pH	6.95		0.10	pH Units	7.0000		99.3	99-101		
Batch L101008 - Default Prep GenChem										
Blank (L101008-BLK1)		Prepared & Analyzed: 01/03/2011								
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L101008-BS1)		Prepared & Analyzed: 01/03/2011								
Hexavalent Chromium	4.17	0.20	0.50	mg/kg wet	4.0000		104	80-120		
LCS (L101008-BS2)		Prepared & Analyzed: 01/03/2011								
Hexavalent Chromium	1110 D	20.0	50.0	mg/kg wet	1152.8		96	80-120		
Duplicate (L101008-DUP7)		Source: 1011233-01			Prepared & Analyzed: 01/03/2011					
Hexavalent Chromium	0.22 U	0.22	0.54	mg/kg dry		0.22 U				20
Matrix Spike (L101008-MSD)		Source: 1011233-01			Prepared & Analyzed: 01/03/2011					
Hexavalent Chromium	4.48	0.22	0.54	mg/kg dry	4.3018	0.22 U	104	75-125		
Matrix Spike (L101008-MSE)		Source: 1011233-01			Prepared & Analyzed: 01/03/2011					
Hexavalent Chromium	1070 D	21.5	53.8	mg/kg dry	1087.4	0.22 U	99	75-125		

000000005



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 Richland WA, 99354

Project: RC-195
 Project Number: K2670
 Project Manager: Joan Kessner

Reported:
 01/12/2011 18:41

Wet Chemistry - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L101104 - Default Prep GenChem										
Blank (L101104-BLK1) Prepared & Analyzed: 01/07/2011										
Nitrate/Nitrite as N	0.09 U	0.09	0.46	mg/kg wet						
Blank (L101104-BLK2) Prepared & Analyzed: 01/07/2011										
Nitrate/Nitrite as N	0.10 U	0.10	0.50	mg/kg wet						
LCS (L101104-BS1) Prepared & Analyzed: 01/07/2011										
Nitrate/Nitrite as N	4.78	0.10	0.48	mg/kg wet	4.7969		99.6	90-110		
LCS (L101104-BS2) Prepared & Analyzed: 01/07/2011										
Nitrate/Nitrite as N	4.79	0.10	0.48	mg/kg wet	4.8216		99.4	90-110		
Duplicate (L101104-DUP6) Source: 1011233-01 Prepared & Analyzed: 01/07/2011										
Nitrate/Nitrite as N	1.81	0.10	0.52	mg/kg dry		1.48			19.9	20
Matrix Spike (L101104-MS6) Source: 1011233-01 Prepared & Analyzed: 01/07/2011										
Nitrate/Nitrite as N	6.58	0.10	0.51	mg/kg dry	5.1245	1.48	99.5	75-125		
Batch L101105 - Default Prep GenChem										
Blank (L101105-BLK1) Prepared & Analyzed: 01/06/2011										
Fluoride	0.3 U	0.3	2.3	mg/kg wet						
Chloride	0.6 U	0.6	2.3	mg/kg wet						
Bromide	1.6 U	1.6	2.3	mg/kg wet						
Orthophosphate	3.1 U	3.1	4.6	mg/kg wet						
Sulfate	0.9 U	0.9	2.3	mg/kg wet						
Nitrate	1.0 U	1.0	2.3	mg/kg wet						
Nitrite	0.9 U	0.9	2.3	mg/kg wet						

000000006



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: K2670
 Project Manager: Joan Kessner

Reported:
 01/12/2011 18:41

Wet Chemistry - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L101105 - Default Prep GenChem										
Blank (L101105-BLK2)					Prepared & Analyzed: 01/06/2011					
Fluoride	0.3 U	0.3	2.5	mg/kg wet						
Chloride	0.6 U	0.6	2.5	mg/kg wet						
Bromide	1.7 U	1.7	2.5	mg/kg wet						
Orthophosphate	3.4 U	3.4	5.0	mg/kg wet						
Sulfate	1.0 U	1.0	2.5	mg/kg wet						
Nitrate	1.1 U	1.1	2.5	mg/kg wet						
Nitrite	1.0 U	1.0	2.5	mg/kg wet						
LCS (L101105-BS1)					Prepared & Analyzed: 01/06/2011					
Fluoride	72.3	0.3	2.5	mg/kg wet	67.636		107	90-110		
Chloride	71.7	0.6	2.5	mg/kg wet	67.636		106	90-110		
Bromide	72.3	1.7	2.5	mg/kg wet	67.636		107	90-110		
Orthophosphate	73.7	3.4	5.1	mg/kg wet	67.636		109	90-110		
Sulfate	74.2	1.0	2.5	mg/kg wet	67.636		110	90-110		
Nitrate	71.5	1.1	2.5	mg/kg wet	67.636		106	90-110		
Nitrite	72.7	1.0	2.5	mg/kg wet	67.636		107	90-110		
LCS (L101105-BS2)					Prepared & Analyzed: 01/06/2011					
Fluoride	57.1	0.3	2.4	mg/kg wet	62.794		90.9	90-110		
Chloride	57.4	0.6	2.4	mg/kg wet	62.794		91.4	90-110		
Bromide	58.6	1.6	2.4	mg/kg wet	62.794		93.4	90-110		
Orthophosphate	62.8	3.2	4.7	mg/kg wet	62.794		100	90-110		
Sulfate	63.4	0.9	2.4	mg/kg wet	62.794		101	90-110		
Nitrate	60.5	1.0	2.4	mg/kg wet	62.794		96.4	90-110		
Nitrite	58.0	0.9	2.4	mg/kg wet	62.794		92.4	90-110		
Duplicate (L101105-DUP6)					Source: 1011233-01 Prepared & Analyzed: 01/06/2011					
Fluoride	0.9 B	0.3	2.6	mg/kg dry		0.5			48.6*	20
Chloride	1.4 B	0.6	2.6	mg/kg dry		0.7 U				20
Bromide	1.8 U	1.8	2.6	mg/kg dry		1.8 U				20
Orthophosphate	3.6 U	3.6	5.2	mg/kg dry		3.7 U				20
Sulfate	13.2	1.0	2.6	mg/kg dry		11.9			10.6	20
Nitrate	5.4	1.2	2.6	mg/kg dry		5.2			4.19	20
Nitrite	1.0 U	1.0	2.6	mg/kg dry		1.1 U				20

00000007



A Division of Eberline Analytical Corporation

264 Welsh Pool Road
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WC-Hanford, Inc.
 2620 Fermi Avenue
 Richland WA, 99354

Project: RC-195
 Project Number: K2670
 Project Manager: Joan Kessner

Reported:
 01/12/2011 18:41

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 L101105 - Default Prep GenChem

Matrix Spike (L101105-MS7)

Source: 1011233-01

Prepared & Analyzed: 01/06/2011

Fluoride	53.8	0.3	2.6	mg/kg dry	51.245	0.5	104	75-125		
Chloride	53.8	0.6	2.6	mg/kg dry	51.245	0.7 U	105	75-125		
Bromide	56.5	1.7	2.6	mg/kg dry	51.245	1.8 U	110	75-125		
Orthophosphate	62.1	3.5	5.1	mg/kg dry	51.245	3.7 U	121	75-125		
Sulfate	71.0	1.0	2.6	mg/kg dry	51.245	11.9	115	75-125		
Nitrate	61.3	1.1	2.6	mg/kg dry	51.245	5.2	110	75-125		
Nitrite	56.1	1.0	2.6	mg/kg dry	51.245	1.1 U	109	75-125		

Custody Transfer Record/Lab Work Request



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

1011233

Client WC Hanford SAF# RC-195
 Est. Final Proj. Sampling Date _____
 Project# _____
 Project Contact/Phone# _____
 Lionville Laboratory Project Manager O. Johnson
 QC SW Del STP TAT 30 days

Refrigerator #	A	B	C	D	E	F	G
#/Type Container	Liquid						
	Solid						
Volume							
Preservatives							

Date Rec'd 11-30-10 Date Due 12-30-10

ANALYSES REQUESTED →	ORGANIC				INORG			
	VOA	BNA	Pest/PCB	Herb	PAHS	TH-D	Metal	CN

MATRIX CODES: S- Soil SE- Sediment SD- Solid SL- Sludge W- Water O- Oil A- Air DS- Drum Solids DL- Drum Liquids L- 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				8082	8310	KRO DRO	Met	ERG	Anions	N3N2	pH	70 Marsh			
	01	B28N87			S	11-17-10	1255	X	X	X	X	X	X	X	X	X	X		
	02	B28N91			L	↓	1350	X	X	X	X	X	X	X	X	X	X		

Special Instructions: Run Matrix GC

- Special Instructions:
- _____
 - _____
 - _____
 - _____
 - _____
 - _____

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>11/30/10</u>	<u>0940</u>

Relinquished by	Received by	Date	Time

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

COLLECTOR BAILEY		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); T-001		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud				SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>			
ICE CHEST NO. GWS-111		FIELD LOGBOOK NO. HNF-N-585-3/79		ACTUAL SAMPLE DEPTH 0'-2.5'		COA 302512ES10		METHOD OF SHIPMENT FEDERAL EXPRESS			
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR				BILL OF LADING/AIR BILL NO. SEE PTR 7964946540511					

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	
		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: B28N45		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									
B28N87	SOIL	11-17-10	1255	✓	✓	✓	✓	✓	✓	✓	✓	

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-DieselKerosene Range - WTPH-D (100 Area RIFS); (2) ICP Metals - 6010TR (100 Area RIFS Client List); Mercury - 7471 - (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);	
BAILEY / JRB	11-17-10/1410	M0413 SSUR2	11-17-10/1410		
SSU-R2	NOV 29 2010 / 1600	M. A. White	NOV 29 2010 / 1600		
M. A. White	NOV 29 2010 / 1400	FEDEX			
FEDEX	11-30-10 0940	J. Smith	11-30-10 0940		
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

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-195-518	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-002		PROJECT DESIGNATION Soil/Sediment Sampling - Integrated Remedial Investigation/Feasibility Stud		SAF NO. RC-195		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>GLS-111</i>		FIELD LOGBOOK NO. <i>HNF-N-585-3 B79</i>	ACTUAL SAMPLE DEPTH <i>5'-7.5'</i>		COA 302512ES10	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO Lionville Laboratory Incorporated		OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. <i>7964046540511</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
		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: B28N45		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						
B28N91	SOIL	11-17-10	1350	✓	✓	✓	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM <i>J Bailey / KRS</i>	DATE/TIME 11-17-10/1410	RECEIVED BY/STORED IN <i>M. A. White</i>	DATE/TIME 11-17-10/1410	** 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 - (100 Area RIFS); (3) IC Anions - 300.0 (100 Area RI/FS); NO2/NO3 - 353.2 (100 Area RI/FS);
RELINQUISHED BY/REMOVED FROM SSU-R2	DATE/TIME NOV 29 2010 1000	RECEIVED BY/STORED IN <i>M. A. White</i>	DATE/TIME NOV 29 2010 1000	
RELINQUISHED BY/REMOVED FROM <i>M. A. White</i>	DATE/TIME NOV 29 2010 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME NOV 29 2010	
RELINQUISHED BY/REMOVED FROM <i>Ex</i>	DATE/TIME 1130-10 0940	RECEIVED BY/STORED IN <i>DS</i>	DATE/TIME 113010 0940	
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

ORIGINAL

Lionville Laboratory
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hamford
Project/SAF/SOW/Release #: RC 195

Date: 11.30.10

LvL Batch #: 1011233

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|--|--|---|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>FEDEX</u> | Airbill # <u>7964 9465 405</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 <u>cooled</u> or ambient? | Temp <u>1.8</u> °C | Cooler # <u>GWS-111</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 checked="" type="checkbox"/> No
<input type="checkbox"/> Yes <input type="checkbox"/> No | <u>NO₂ NO₃ TOC-0</u>
<u>rec'd past</u>
<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 type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes
<u>[Signature]</u> 1-14-11 | <input checked="" type="checkbox"/> No
<u>See # 12</u> |
| 16. Project Manager contacted concerning any discrepancies?
Person Contacted _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A
Date _____ |