SAF-RC-191
100N Field Remediation - Other
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

No Distribution Required

COMMENTS:

SDG KP0137 SAF RC-191

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: UPR-100-N-19

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

11 October 2012

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

Subject: Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	1209079
SDG #	KP0137
SAF #	RC-191
Date Received	09/27/12
# Samples	1
Matrix	OTHER SOLID
Volatiles	
Semivolatiles	X
Pest/PCB	
Glycols	
DRO/KRO/GRO	X
PAHs	X
Herbicides	
Metals	
Inorganics	

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

Sincerely,

Lionville Laboratory
A Division of Eberline Analytical Corporation

Orlette S. Johnson
Project Manager

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 46 pages.

CHAIN OF CUSTODY

Lionville Laboratory Use Only

1209079

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client WC HANFORD SAF# RC-191 KP0137

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager O JOHNSON

QC SW Del Std TAT 7 DAY

Date Rec'd 9/27/12 Date Due 10/4/12

		A			B	C									
Refrigerator #		1			1	1									
#/Type Container	Liquid														
	Solid	1AG			1AG	1AG									
Volume	Liquid														
	Solid	60			60	60									
Preservatives		—			—	—									
ANALYSES REQUESTED →		ORGANIC						INORG							
		VOA	BNA	Pest/PCB	Herb	PAHs	WPHD		Metal	CN					
		Lionville Laboratory Use Only													
			8270			8310	DRO/MO								

MATRIX CODES:
W Water
WW Waste Water
GW Groundwater
WST Waste
WI Wipe
SO Solid
S Soil
SL Sludge
SE Sediment
PC Paint Chips
O Oil
NAL Non-Aqueous Liquid
L Leachate
A Air
T Tissue
F Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected		BNA	Herb	PAHs	WPHD	Metal	CN
01	J1R2J3	✓	✓	soil	9-26-12	1015		X		X	X		

Special Instructions:

Special Instructions:

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9/27/12	0955

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-191-031	Page 1 of 1

Collector Q. Stowe	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH
Price Code ~~9L~~ 9F DL 9/26/12	**Data Turnaround** ~~21~~ 7 Days DM 9/26/12		
Project Designation 100N Field Remediation - Other	**Sampling Location** UPR100N19		**SAF No.** RC-191
Ice Chest No. WCH-12-026	**Field Logbook No.** EL-1652-07	**COA** R11NX3Y000	**Method of Shipment** Fed Ex
Shipped To ~~EBERLINE SERVICES~~ LIONVILLE DM 9/26/12	**Offsite Property No.** A110535		**Bill of Lading/Air Bill No.** See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

~~Potential~~ Rad < DOT limits 9-26-12 CMB

Special Handling and/or Storage

Cool 4C

Preservation	Cool 4C	Cool 4C	Cool 4C								
Type of Container	G	aG	aG								
No. of Container(s)	1	1	1								
Volume	60mL	60mL	60mL								
SAMPLE ANALYSIS	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PAHs - 8310		RCF	33559					
Sample No. / Matrix * / Sample Date / Sample Time											
J1R2J3 / OTHER / 9-26-12 / 1015	X	X	X								

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	9/26/12 1025	Dennis Newman	9/26/12 1025
Dennis Newman	9/26/12 1310	A. Freier	1310 9-26-12
A. Freier	WCH 1330 9-26-12	Fed EX	
Fed EX	9-27-12 0955	Victor Hernandez	9-27-12 0955

SPECIAL INSTRUCTIONS

REVIEWED BY CMB DATE 9-26-12

KP0137

Matrix *

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

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

WCH-EE-011

0000000004

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford

Project/SAF/SOW/Release #: RC-191

Date: 9/27/12

LvL Batch #: 1209079

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7990 5955 5669
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 2°	°C	Cooler # WCH-12-026
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvL) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☑ Yes	☐ No	☐ N/A
15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A

Person Contacted _____ Date _____

SR-002-B.doc

SEMIVOLATILES

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/02/2012 13:31

Analytical Report for Semivolatile Organic Compounds by SW846 8270C

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R2J3	1209079-01	Other Solid	09/26/2012 10:15	09/27/2012 09:55

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

Case Narrative

Client: WC-HANFORD RC-191 KP0137
LVL #: 1209079

W.O. #: 60049-001-001-0001-00
Date Received: 09-27-2012

SEMIVOLATILE

One (1) other solid sample was collected on 09-26-2012.

The sample and associated QC samples were extracted 09-27-2012 and analyzed 10-01,02-2012 according to Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C, and the analysis procedure was based on SW846 Method 8270C for client specified target compounds.

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

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

2. The samples were extracted and analyzed within holding time.

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

4. The samples had an elevated final volume of 4 ml due to the sample matrix. Reporting limits have been adjusted to reflect this change.

5. Samples J1R2J3, L209220-MS3 and L209220-MSD3 required 100-fold instrument dilutions due to the sample matrix.

6. Three (3) of thirty (30) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS173) has been enclosed.

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

8. One (1) of sixty-four (64) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 12MS173) has been enclosed.

9. Matrix spike recoveries were outside acceptance criteria. Spike recoveries were unobtainable due to dilution required for analysis. A copy of the Sample Discrepancy Report (SDR# 12MS173) has been enclosed.

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

10. The samples were reported on a wet weight 'as received' basis.

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

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

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

14. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

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 hardcopy package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

10/11/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS173

Initiator: Sharon Saylor
Date: 10-2-12
Client: Wallingford

Batch: 1209079
Samples: L209220-BS1, ms3, msd3
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: SOLID
Prep Batch: L209220

1. Reason for SDR

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

b. General Discrepancy

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

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

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

(1) low recovery of 2,4-dinitrophenol in L209220-BS1 21% (25-130%) Rec 10/2/12
(2) <10% recovery of 2,4,6-tribromophenol in L209220-ms3, L209220-msd3, JIR2J3
(3) Spiker diluted out of L209220-ms3 and L209220-msd3

2. Known or Probable Causes(s) (1) Acidic phenols subject to erratic chromatographic behavior. (2) Matrix effect; samples required a 100fold dilution for analysis, in addition had an elevated final volume of 4 mls

Rec 10/2/12

3. Discussion and Proposed Action Other Description: narrate

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

4. Project Manager Instructions...signature/date: 10/11/12

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

5. Final Action...signature/date: 10/11/12 Other Explanation:

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

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

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

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

QA-139-A-0208

000000010

TABLE 1

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

MEAN RSD USED FOR EVALUATION: 7.0133 CALIBRATION: 1210004

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

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	KP0137
Client:	WC-Hanford, Inc.	Project:	RC-191
Sequence:	2100009	Instrument:	HP5972N
Matrix:	Solid	Calibration:	1210004

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2100009-TUN1	N092901.D	09/29/12 17:26
Cal Standard	2100009-CAL5	N092903.D	09/29/12 18:37
Cal Standard	2100009-CAL1	N092904.D	09/29/12 19:18
Cal Standard	2100009-CAL2	N092905.D	09/29/12 20:00
Cal Standard	2100009-CAL3	N092906.D	09/29/12 20:41
Cal Standard	2100009-CAL4	N092907.D	09/29/12 21:22
Secondary Cal Check	2100009-SCV1	N092909.D	09/29/12 22:45

ANALYSIS BATCH (SEQUENCE) SUMMARY
8270C

Laboratory:	Lionville Laboratory	SDG:	KP0137
Client:	WC-Hanford, Inc.	Project:	RC-191
Sequence:	2100010	Instrument:	HP5972N
Matrix:	Solid	Calibration:	1210004

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	2100010-TUN1	N100101.D	10/01/12 14:22
Calibration Check	2100010-CCV1	N100102.D	10/01/12 14:43
LCS	L209220-BS1	N100103.D	10/01/12 15:32
Blank	L209220-BLK1	N100104.D	10/01/12 16:14
J1R2J3	1209079-01	N100114.D	10/01/12 23:09
J1R2J3	L209220-MS3	N100115.D	10/01/12 23:50
J1R2J3	L209220-MSD3	N100116.D	10/02/12 00:31

GLOSSARY

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit, which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

MP - Missed Peak: Manually added peak not found by automatic quantitation program.

PA - Peak Assignment: quantitation report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene, which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/02/2012 13:31

J1R2J3
1209079-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
1,2-Dichlorobenzene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
1,3-Dichlorobenzene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
1,4-Dichlorobenzene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2,4,5-Trichlorophenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2,4,6-Trichlorophenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2,4-Dichlorophenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2,4-Dimethylphenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2,4-Dinitrophenol	650000	U	650000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2,4-Dinitrotoluene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2,6-Dinitrotoluene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2-Chloronaphthalene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2-Chlorophenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2-Methylnaphthalene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2-Methylphenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2-Nitroaniline	650000	U	650000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
2-Nitrophenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
3,3'-Dichlorobenzidine	260000	U	260000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
3-Nitroaniline	650000	U	650000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
4,6-Dinitro-2-methylphenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
4-Bromophenyl Phenyl Ether	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
4-Chloro-3-methylphenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
4-Chloroaniline	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
4-Chlorophenyl Phenyl Ether	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
3- and/or 4-Methylphenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
4-Nitroaniline	650000	U	650000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
4-Nitrophenol	650000	U	650000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Acenaphthene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Acenaphthylene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Anthracene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Benz[a]anthracene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Benzo[a] pyrene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Benzo[b] fluoranthene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Benzo[g,h,i] perylene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Benzo[k] fluoranthene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Bis(2-chloroethoxy) methane	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/02/2012 13:31

J1R2J3
1209079-01 (Other Solid)

Lionville Laboratory

Semivolatile Organic Compounds by SW846 8270C

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Bis(2-chloroethyl) ether	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Bis(2-chloroisopropyl) ether	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Bis(2-ethylhexyl) phthalate	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Butyl Benzyl Phthalate	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Carbazole	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Chrysene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Dibenz[a,h]anthracene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Dibenzofuran	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Diethyl Phthalate	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Dimethyl Phthalate	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Di-n-butyl Phthalate	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Di-n-octyl Phthalate	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Fluoranthene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Fluorene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Hexachlorobenzene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Hexachlorobutadiene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Hexachlorocyclopentadiene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Hexachloroethane	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Indeno[1,2,3-cd]pyrene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Isophorone	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Naphthalene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Nitrobenzene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
N-Nitrosodi-n-propylamine	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
N-Nitrosodiphenylamine	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Pentachlorophenol	650000	U	650000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Phenanthrene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Phenol	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Pyrene	130000	U	130000	ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
TIC:Aldol Condensate 1	**111000**	A, B, J, D		ug/kg wet	100	L209220	09/27/2012	10/01/2012	8270C
Surrogate: 2-Fluorophenol	*55 %*		*25-121*			*L209220*	*09/27/2012*	*10/01/2012*	*8270C*
Surrogate: Phenol-d5	*49 %*		*24-113*			*L209220*	*09/27/2012*	*10/01/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*69 %*		*23-120*			*L209220*	*09/27/2012*	*10/01/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*77 %*		*30-115*			*L209220*	*09/27/2012*	*10/01/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*% **	*U*	*19-122*			*L209220*	*09/27/2012*	*10/01/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*94 %*		*18-137*			*L209220*	*09/27/2012*	*10/01/2012*	*8270C*

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Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209220 - SW 3540C										
Blank (L209220-BLK1)				Prepared: 09/27/2012 Analyzed: 10/01/2012						
1,2,4-Trichlorobenzene	330	U	330	ug/kg wet						
1,2-Dichlorobenzene	330	U	330	ug/kg wet						
1,3-Dichlorobenzene	330	U	330	ug/kg wet						
1,4-Dichlorobenzene	330	U	330	ug/kg wet						
2,4,5-Trichlorophenol	330	U	330	ug/kg wet						
2,4,6-Trichlorophenol	330	U	330	ug/kg wet						
2,4-Dichlorophenol	330	U	330	ug/kg wet						
2,4-Dimethylphenol	330	U	330	ug/kg wet						
2,4-Dinitrophenol	1650	U	1650	ug/kg wet						
2,4-Dinitrotoluene	330	U	330	ug/kg wet						
2,6-Dinitrotoluene	330	U	330	ug/kg wet						
2-Chloronaphthalene	330	U	330	ug/kg wet						
2-Chlorophenol	330	U	330	ug/kg wet						
2-Methylnaphthalene	330	U	330	ug/kg wet						
2-Methylphenol	330	U	330	ug/kg wet						
2-Nitroaniline	1650	U	1650	ug/kg wet						
2-Nitrophenol	330	U	330	ug/kg wet						
3,3'-Dichlorobenzidine	660	U	660	ug/kg wet						
3-Nitroaniline	1650	U	1650	ug/kg wet						
4,6-Dinitro-2-methylphenol	330	U	330	ug/kg wet						
4-Bromophenyl Phenyl Ether	330	U	330	ug/kg wet						
4-Chloro-3-methylphenol	330	U	330	ug/kg wet						
4-Chloroaniline	330	U	330	ug/kg wet						
4-Chlorophenyl Phenyl Ether	330	U	330	ug/kg wet						
3- and/or 4-Methylphenol	330	U	330	ug/kg wet						
4-Nitroaniline	1650	U	1650	ug/kg wet						
4-Nitrophenol	1650	U	1650	ug/kg wet						
Acenaphthene	330	U	330	ug/kg wet						
Acenaphthylene	330	U	330	ug/kg wet						
Anthracene	330	U	330	ug/kg wet						
Benz[a]anthracene	330	U	330	ug/kg wet						
Benzo[a] pyrene	330	U	330	ug/kg wet						
Benzo[b] fluoranthene	330	U	330	ug/kg wet						
Benzo[g,h,i] perylene	330	U	330	ug/kg wet						
Benzo[k] fluoranthene	330	U	330	ug/kg wet						
Bis(2-chloroethoxy) methane	330	U	330	ug/kg wet						

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Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209220 - SW 3540C										
Blank (L209220-BLK1)				Prepared: 09/27/2012 Analyzed: 10/01/2012						
Bis(2-chloroethyl) ether	330	U	330	ug/kg wet						
Bis(2-chloroisopropyl) ether	330	U	330	ug/kg wet						
Bis(2-ethylhexyl) phthalate	330	U	330	ug/kg wet						
Butyl Benzyl Phthalate	330	U	330	ug/kg wet						
Carbazole	330	U	330	ug/kg wet						
Chrysene	330	U	330	ug/kg wet						
Dibenz[a,h]anthracene	330	U	330	ug/kg wet						
Dibenzofuran	330	U	330	ug/kg wet						
Diethyl Phthalate	330	U	330	ug/kg wet						
Dimethyl Phthalate	330	U	330	ug/kg wet						
Di-n-butyl Phthalate	330	U	330	ug/kg wet						
Di-n-octyl Phthalate	330	U	330	ug/kg wet						
Fluoranthene	330	U	330	ug/kg wet						
Fluorene	330	U	330	ug/kg wet						
Hexachlorobenzene	330	U	330	ug/kg wet						
Hexachlorobutadiene	330	U	330	ug/kg wet						
Hexachlorocyclopentadiene	330	U	330	ug/kg wet						
Hexachloroethane	330	U	330	ug/kg wet						
Indeno[1,2,3-cd]pyrene	330	U	330	ug/kg wet						
Isophorone	330	U	330	ug/kg wet						
Naphthalene	330	U	330	ug/kg wet						
Nitrobenzene	330	U	330	ug/kg wet						
N-Nitrosodi-n-propylamine	330	U	330	ug/kg wet						
N-Nitrosodiphenylamine	330	U	330	ug/kg wet						
Pentachlorophenol	1650	U	1650	ug/kg wet						
Phenanthrene	330	U	330	ug/kg wet						
Phenol	330	U	330	ug/kg wet						
Pyrene	330	U	330	ug/kg wet						
Unknown 2 TICs	827	J		ug/kg wet						
Trichloro-1-propene	1590	J		ug/kg wet						
Aldol Condensate 2	39100	A, J		ug/kg wet						
Aldol Condensate 1	1610	A, J		ug/kg wet						
Unknown 1 Reviewed	2760	J		ug/kg wet						
Surrogate: 2-Fluorophenol	*1510*			*ug/kg wet*	*2500.0*		*60*	*25-121*		
Surrogate: Phenol-d5	*1580*			*ug/kg wet*	*2500.0*		*63*	*24-113*		
Surrogate: Nitrobenzene-d5	*606*			*ug/kg wet*	*1666.7*		*36*	*23-120*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/02/2012 13:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209220 - SW 3540C									
Blank (L209220-BLK1)			Prepared: 09/27/2012 Analyzed: 10/01/2012						
Surrogate: 2-Fluorobiphenyl	*1110*		*ug/kg wet*	*1666.7*		*67*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1510*		*ug/kg wet*	*2500.0*		*61*	*19-122*		
Surrogate: p-Terphenyl-d14	*1160*		*ug/kg wet*	*1666.7*		*69*	*18-137*		
LCS (L209220-BS1)			Prepared: 09/27/2012 Analyzed: 10/01/2012						
1,2,4-Trichlorobenzene	981		ug/kg wet	2000.0		49	45-110		
1,2-Dichlorobenzene	1140		ug/kg wet	2000.0		57	45-105		
1,3-Dichlorobenzene	1110		ug/kg wet	2000.0		55	40-100		
1,4-Dichlorobenzene	1130		ug/kg wet	2000.0		57	35-105		
2,4,5-Trichlorophenol	1320		ug/kg wet	2000.0		66	30-140		
2,4,6-Trichlorophenol	1100		ug/kg wet	2000.0		55	20-110		
2,4-Dichlorophenol	1030		ug/kg wet	2000.0		51	40-110		
2,4-Dimethylphenol	777		ug/kg wet	2000.0		39	30-105		
2,4-Dinitrophenol	414		ug/kg wet	2000.0		21*	25-130		
2,4-Dinitrotoluene	1410		ug/kg wet	2000.0		71	50-115		
2,6-Dinitrotoluene	1360		ug/kg wet	2000.0		68	40-120		
2-Chloronaphthalene	1230		ug/kg wet	2000.0		62	45-115		
2-Chlorophenol	1170		ug/kg wet	2000.0		59	45-105		
2-Methylnaphthalene	977		ug/kg wet	2000.0		49	45-110		
2-Methylphenol	1190		ug/kg wet	2000.0		60	40-120		
2-Nitroaniline	1480		ug/kg wet	2000.0		74	45-120		
2-Nitrophenol	1040		ug/kg wet	2000.0		52	40-110		
3,3'-Dichlorobenzidine	1400		ug/kg wet	2000.0		70	15-130		
3-Nitroaniline	1330		ug/kg wet	2000.0		66	40-130		
4,6-Dinitro-2-methylphenol	731		ug/kg wet	2000.0		37	20-140		
4-Bromophenyl Phenyl Ether	1340		ug/kg wet	2000.0		67	45-115		
4-Chloro-3-methylphenol	1050		ug/kg wet	2000.0		53	35-115		
4-Chloroaniline	845		ug/kg wet	2000.0		42	10-100		
4-Chlorophenyl Phenyl Ether	1290		ug/kg wet	2000.0		64	45-110		
3- and/or 4-Methylphenol	1160		ug/kg wet	2000.0		58	40-120		
4-Nitroaniline	1420		ug/kg wet	2000.0		71	40-130		
4-Nitrophenol	1330		ug/kg wet	2000.0		67	15-140		
Acenaphthene	1270		ug/kg wet	2000.0		64	45-110		
Acenaphthylene	1320		ug/kg wet	2000.0		66	45-115		
Anthracene	1270		ug/kg wet	2000.0		64	45-130		
Benz[a]anthracene	1330		ug/kg wet	2000.0		67	45-130		
Benzo[a] pyrene	1230		ug/kg wet	2000.0		61	45-130		

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Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209220 - SW 3540C									
LCS (L209220-BS1)			Prepared: 09/27/2012 Analyzed: 10/01/2012						
Benzo[b] fluoranthene	1280		ug/kg wet	2000.0		64	40-130		
Benzo[g,h,i] perylene	1360		ug/kg wet	2000.0		68	45-125		
Benzo[k] fluoranthene	1300		ug/kg wet	2000.0		65	45-125		
Bis(2-chloroethoxy) methane	938		ug/kg wet	2000.0		47	45-110		
Bis(2-chloroethyl) ether	1160		ug/kg wet	2000.0		58	40-110		
Bis(2-chloroisopropyl) ether	1130		ug/kg wet	2000.0		56	30-115		
Bis(2-ethylhexyl) phthalate	1460		ug/kg wet	2000.0		73	40-145		
Butyl Benzyl Phthalate	1330		ug/kg wet	2000.0		66	50-125		
Carbazole	1340		ug/kg wet	2000.0		67	40-140		
Chrysene	1420		ug/kg wet	2000.0		71	45-130		
Dibenz[a,h]anthracene	1310		ug/kg wet	2000.0		65	45-125		
Dibenzofuran	1300		ug/kg wet	2000.0		65	45-120		
Diethyl Phthalate	1310		ug/kg wet	2000.0		65	50-125		
Dimethyl Phthalate	1250		ug/kg wet	2000.0		63	45-130		
Di-n-butyl Phthalate	1280		ug/kg wet	2000.0		64	50-130		
Di-n-octyl Phthalate	1370		ug/kg wet	2000.0		68	40-150		
Fluoranthene	1290		ug/kg wet	2000.0		64	45-130		
Fluorene	1310		ug/kg wet	2000.0		65	45-120		
Hexachlorobenzene	1450		ug/kg wet	2000.0		72	45-130		
Hexachlorobutadiene	1070		ug/kg wet	2000.0		53	45-105		
Hexachlorocyclopentadiene	486		ug/kg wet	2000.0		24	10-100		
Hexachloroethane	1090		ug/kg wet	2000.0		54	35-110		
Indeno[1,2,3-cd]pyrene	1360		ug/kg wet	2000.0		68	45-130		
Isophorone	1020		ug/kg wet	2000.0		51	40-110		
Naphthalene	1070		ug/kg wet	2000.0		54	40-110		
Nitrobenzene	970		ug/kg wet	2000.0		49	40-105		
N-Nitrosodi-n-propylamine	1230		ug/kg wet	2000.0		61	30-130		
N-Nitrosodiphenylamine	1270		ug/kg wet	2000.0		63	50-120		
Pentachlorophenol	1000		ug/kg wet	2000.0		50	25-120		
Phenanthrene	1350		ug/kg wet	2000.0		67	50-120		
Phenol	1190		ug/kg wet	2000.0		59	40-115		
Pyrene	1260		ug/kg wet	2000.0		63	45-125		
Surrogate: 2-Fluorophenol	*1520*		*ug/kg wet*	*2500.0*		*61*	*25-121*		
Surrogate: Phenol-d5	*1570*		*ug/kg wet*	*2500.0*		*63*	*24-113*		
Surrogate: Nitrobenzene-d5	*905*		*ug/kg wet*	*1666.7*		*54*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1160*		*ug/kg wet*	*1666.7*		*69*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1440*		*ug/kg wet*	*2500.0*		*58*	*19-122*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/02/2012 13:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit
Batch L209220 - SW 3540C											
LCS (L209220-BS1)				Prepared: 09/27/2012 Analyzed: 10/01/2012							
Surrogate: p-Terphenyl-d14	*1060*			*ug/kg wet*	*1666.7*		*64*		*18-137*		
Matrix Spike (L209220-MS3)		**Source: 1209079-01**		Prepared: 09/27/2012 Analyzed: 10/01/2012							
1,2,4-Trichlorobenzene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-110		
1,2-Dichlorobenzene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-105		
1,3-Dichlorobenzene	0.00	U		ug/kg wet	1996.0	130000 U		*	40-100		
1,4-Dichlorobenzene	0.00	U		ug/kg wet	1996.0	130000 U		*	35-105		
2,4,5-Trichlorophenol	0.00	U		ug/kg wet	1996.0	130000 U		*	30-140		
2,4,6-Trichlorophenol	0.00	U		ug/kg wet	1996.0	130000 U		*	20-110		
2,4-Dichlorophenol	0.00	U		ug/kg wet	1996.0	130000 U		*	40-110		
2,4-Dimethylphenol	0.00	U		ug/kg wet	1996.0	130000 U		*	30-105		
2,4-Dinitrophenol	0.00	U		ug/kg wet	1996.0	650000 U		*	25-130		
2,4-Dinitrotoluene	0.00	U		ug/kg wet	1996.0	130000 U		*	50-115		
2,6-Dinitrotoluene	0.00	U		ug/kg wet	1996.0	130000 U		*	40-120		
2-Chloronaphthalene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-115		
2-Chlorophenol	0.00	U		ug/kg wet	1996.0	130000 U		*	45-105		
2-Methylnaphthalene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-110		
2-Methylphenol	0.00	U		ug/kg wet	1996.0	130000 U		*	40-120		
2-Nitroaniline	0.00	U		ug/kg wet	1996.0	650000 U		*	45-120		
2-Nitrophenol	0.00	U		ug/kg wet	1996.0	130000 U		*	40-110		
3,3'-Dichlorobenzidine	0.00	U		ug/kg wet	1996.0	260000 U		*	15-130		
3-Nitroaniline	0.00	U		ug/kg wet	1996.0	650000 U		*	40-130		
4,6-Dinitro-2-methylphenol	0.00	U		ug/kg wet	1996.0	130000 U		*	20-140		
4-Bromophenyl Phenyl Ether	0.00	U		ug/kg wet	1996.0	130000 U		*	45-115		
4-Chloro-3-methylphenol	0.00	U		ug/kg wet	1996.0	130000 U		*	35-115		
4-Chloroaniline	0.00	U		ug/kg wet	1996.0	130000 U		*	10-100		
4-Chlorophenyl Phenyl Ether	0.00	U		ug/kg wet	1996.0	130000 U		*	45-110		
3- and/or 4-Methylphenol	0.00	U		ug/kg wet	1996.0	130000 U		*	40-120		
4-Nitroaniline	0.00	U		ug/kg wet	1996.0	650000 U		*	40-130		
4-Nitrophenol	0.00	U		ug/kg wet	1996.0	650000 U		*	15-140		
Acenaphthene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-110		
Acenaphthylene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-115		
Anthracene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-130		
Benz[a]anthracene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-130		
Benzo[a] pyrene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-130		
Benzo[b] fluoranthene	0.00	U		ug/kg wet	1996.0	130000 U		*	40-130		
Benzo[g,h,i] perylene	0.00	U		ug/kg wet	1996.0	130000 U		*	45-125		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/02/2012 13:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209220 - SW 3540C										
Matrix Spike (L209220-MS3)		**Source: 1209079-01**		Prepared: 09/27/2012 Analyzed: 10/01/2012						
Benzo[k] fluoranthene	0.00	U		ug/kg wet	1996.0	130000 U	*	45-125		
Bis(2-chloroethoxy) methane	0.00	U		ug/kg wet	1996.0	130000 U	*	45-110		
Bis(2-chloroethyl) ether	0.00	U		ug/kg wet	1996.0	130000 U	*	40-110		
Bis(2-chloroisopropyl) ether	0.00	U		ug/kg wet	1996.0	130000 U	*	30-115		
Bis(2-ethylhexyl) phthalate	7240	D		ug/kg wet	1996.0	130000 U	363*	40-145		
Butyl Benzyl Phthalate	0.00	U		ug/kg wet	1996.0	130000 U	*	50-125		
Carbazole	0.00	U		ug/kg wet	1996.0	130000 U	*	40-140		
Chrysene	0.00	U		ug/kg wet	1996.0	130000 U	*	45-130		
Dibenz[a,h]anthracene	0.00	U		ug/kg wet	1996.0	130000 U	*	45-125		
Dibenzofuran	0.00	U		ug/kg wet	1996.0	130000 U	*	45-120		
Diethyl Phthalate	0.00	U		ug/kg wet	1996.0	130000 U	*	50-125		
Dimethyl Phthalate	0.00	U		ug/kg wet	1996.0	130000 U	*	45-130		
Di-n-butyl Phthalate	0.00	U		ug/kg wet	1996.0	130000 U	*	50-130		
Di-n-octyl Phthalate	0.00	U		ug/kg wet	1996.0	130000 U	*	40-150		
Fluoranthene	0.00	U		ug/kg wet	1996.0	130000 U	*	45-130		
Fluorene	0.00	U		ug/kg wet	1996.0	130000 U	*	45-120		
Hexachlorobenzene	0.00	U		ug/kg wet	1996.0	130000 U	*	45-130		
Hexachlorobutadiene	0.00	U		ug/kg wet	1996.0	130000 U	*	45-105		
Hexachlorocyclopentadiene	0.00	U		ug/kg wet	1996.0	130000 U	*	10-100		
Hexachloroethane	0.00	U		ug/kg wet	1996.0	130000 U	*	35-110		
Indeno[1,2,3-cd]pyrene	0.00	U		ug/kg wet	1996.0	130000 U	*	45-130		
Isophorone	0.00	U		ug/kg wet	1996.0	130000 U	*	40-110		
Naphthalene	0.00	U		ug/kg wet	1996.0	130000 U	*	40-110		
Nitrobenzene	0.00	U		ug/kg wet	1996.0	130000 U	*	40-105		
N-Nitrosodi-n-propylamine	0.00	U		ug/kg wet	1996.0	130000 U	*	30-130		
N-Nitrosodiphenylamine	0.00	U		ug/kg wet	1996.0	130000 U	*	50-120		
Pentachlorophenol	0.00	U		ug/kg wet	1996.0	650000 U	*	25-120		
Phenanthrene	0.00	U		ug/kg wet	1996.0	130000 U	*	50-120		
Phenol	0.00	U		ug/kg wet	1996.0	130000 U	*	40-115		
Pyrene	0.00	U		ug/kg wet	1996.0	130000 U	*	45-125		
Surrogate: 2-Fluorophenol	*1810*			*ug/kg wet*	*2495.0*		*73*	*25-121*		
Surrogate: Phenol-d5	*1520*			*ug/kg wet*	*2495.0*		*61*	*24-113*		
Surrogate: Nitrobenzene-d5	*1200*			*ug/kg wet*	*1663.3*		*72*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1250*			*ug/kg wet*	*1663.3*		*75*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*0.00*	*U*		*ug/kg wet*	*2495.0*		*	*19-122*		
Surrogate: p-Terphenyl-d14	*1630*			*ug/kg wet*	*1663.3*		*98*	*18-137*		

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/02/2012 13:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit
Batch L209220 - SW 3540C											
Matrix Spike Dup (L209220-MSD3)		**Source: 1209079-01**		Prepared: 09/27/2012 Analyzed: 10/02/2012							
1,2,4-Trichlorobenzene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-110		40
1,2-Dichlorobenzene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-105		40
1,3-Dichlorobenzene	0.00	U		ug/kg wet	1994.0	130000 U	*		40-100		40
1,4-Dichlorobenzene	0.00	U		ug/kg wet	1994.0	130000 U	*		35-105		40
2,4,5-Trichlorophenol	0.00	U		ug/kg wet	1994.0	130000 U	*		30-140		40
2,4,6-Trichlorophenol	0.00	U		ug/kg wet	1994.0	130000 U	*		20-110		40
2,4-Dichlorophenol	0.00	U		ug/kg wet	1994.0	130000 U	*		40-110		40
2,4-Dimethylphenol	0.00	U		ug/kg wet	1994.0	130000 U	*		30-105		40
2,4-Dinitrophenol	0.00	U		ug/kg wet	1994.0	650000 U	*		25-130		40
2,4-Dinitrotoluene	0.00	U		ug/kg wet	1994.0	130000 U	*		50-115		40
2,6-Dinitrotoluene	0.00	U		ug/kg wet	1994.0	130000 U	*		40-120		40
2-Chloronaphthalene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-115		40
2-Chlorophenol	0.00	U		ug/kg wet	1994.0	130000 U	*		45-105		40
2-Methylnaphthalene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-110		40
2-Methylphenol	0.00	U		ug/kg wet	1994.0	130000 U	*		40-120		40
2-Nitroaniline	0.00	U		ug/kg wet	1994.0	650000 U	*		45-120		40
2-Nitrophenol	0.00	U		ug/kg wet	1994.0	130000 U	*		40-110		40
3,3'-Dichlorobenzidine	0.00	U		ug/kg wet	1994.0	260000 U	*		15-130		40
3-Nitroaniline	0.00	U		ug/kg wet	1994.0	650000 U	*		40-130		40
4,6-Dinitro-2-methylphenol	0.00	U		ug/kg wet	1994.0	130000 U	*		20-140		40
4-Bromophenyl Phenyl Ether	0.00	U		ug/kg wet	1994.0	130000 U	*		45-115		40
4-Chloro-3-methylphenol	0.00	U		ug/kg wet	1994.0	130000 U	*		35-115		40
4-Chloroaniline	0.00	U		ug/kg wet	1994.0	130000 U	*		10-100		40
4-Chlorophenyl Phenyl Ether	0.00	U		ug/kg wet	1994.0	130000 U	*		45-110		40
3- and/or 4-Methylphenol	0.00	U		ug/kg wet	1994.0	130000 U	*		40-120		40
4-Nitroaniline	0.00	U		ug/kg wet	1994.0	650000 U	*		40-130		40
4-Nitrophenol	0.00	U		ug/kg wet	1994.0	650000 U	*		15-140		40
Acenaphthene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-110		40
Acenaphthylene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-115		40
Anthracene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-130		40
Benz[a]anthracene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-130		40
Benzo[a] pyrene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-130		40
Benzo[b] fluoranthene	0.00	U		ug/kg wet	1994.0	130000 U	*		40-130		40
Benzo[g,h,i] perylene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-125		40
Benzo[k] fluoranthene	0.00	U		ug/kg wet	1994.0	130000 U	*		45-125		40
Bis(2-chloroethoxy) methane	0.00	U		ug/kg wet	1994.0	130000 U	*		45-110		40

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/02/2012 13:31

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209220 - SW 3540C										
Matrix Spike Dup (L209220-MSD3)		**Source: 1209079-01**		Prepared: 09/27/2012 Analyzed: 10/02/2012						
Bis(2-chloroethyl) ether	0.00	U		ug/kg wet	1994.0	130000 U	*	40-110		40
Bis(2-chloroisopropyl) ether	0.00	U		ug/kg wet	1994.0	130000 U	*	30-115		40
Bis(2-ethylhexyl) phthalate	0.00	U		ug/kg wet	1994.0	130000 U	*	40-145		40
Butyl Benzyl Phthalate	0.00	U		ug/kg wet	1994.0	130000 U	*	50-125		40
Carbazole	0.00	U		ug/kg wet	1994.0	130000 U	*	40-140		40
Chrysene	0.00	U		ug/kg wet	1994.0	130000 U	*	45-130		40
Dibenz[a,h]anthracene	0.00	U		ug/kg wet	1994.0	130000 U	*	45-125		40
Dibenzofuran	0.00	U		ug/kg wet	1994.0	130000 U	*	45-120		40
Diethyl Phthalate	0.00	U		ug/kg wet	1994.0	130000 U	*	50-125		40
Dimethyl Phthalate	0.00	U		ug/kg wet	1994.0	130000 U	*	45-130		40
Di-n-butyl Phthalate	0.00	U		ug/kg wet	1994.0	130000 U	*	50-130		40
Di-n-octyl Phthalate	0.00	U		ug/kg wet	1994.0	130000 U	*	40-150		40
Fluoranthene	0.00	U		ug/kg wet	1994.0	130000 U	*	45-130		40
Fluorene	0.00	U		ug/kg wet	1994.0	130000 U	*	45-120		40
Hexachlorobenzene	0.00	U		ug/kg wet	1994.0	130000 U	*	45-130		40
Hexachlorobutadiene	0.00	U		ug/kg wet	1994.0	130000 U	*	45-105		40
Hexachlorocyclopentadiene	0.00	U		ug/kg wet	1994.0	130000 U	*	10-100		40
Hexachloroethane	0.00	U		ug/kg wet	1994.0	130000 U	*	35-110		40
Indeno[1,2,3-cd]pyrene	0.00	U		ug/kg wet	1994.0	130000 U	*	45-130		40
Isophorone	0.00	U		ug/kg wet	1994.0	130000 U	*	40-110		40
Naphthalene	0.00	U		ug/kg wet	1994.0	130000 U	*	40-110		40
Nitrobenzene	0.00	U		ug/kg wet	1994.0	130000 U	*	40-105		40
N-Nitrosodi-n-propylamine	0.00	U		ug/kg wet	1994.0	130000 U	*	30-130		40
N-Nitrosodiphenylamine	0.00	U		ug/kg wet	1994.0	130000 U	*	50-120		40
Pentachlorophenol	0.00	U		ug/kg wet	1994.0	650000 U	*	25-120		40
Phenanthrene	0.00	U		ug/kg wet	1994.0	130000 U	*	50-120		40
Phenol	0.00	U		ug/kg wet	1994.0	130000 U	*	40-115		40
Pyrene	0.00	U		ug/kg wet	1994.0	130000 U	*	45-125		40
Surrogate: 2-Fluorophenol	*2130*			*ug/kg wet*	*2492.5*		*85*	*25-121*		
Surrogate: Phenol-d5	*1980*			*ug/kg wet*	*2492.5*		*80*	*24-113*		
Surrogate: Nitrobenzene-d5	*1140*			*ug/kg wet*	*1661.7*		*69*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1710*			*ug/kg wet*	*1661.7*		*103*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*0.00*	*U*		*ug/kg wet*	*2492.5*		***	*19-122*		
Surrogate: p-Terphenyl-d14	*1550*			*ug/kg wet*	*1661.7*		*93*	*18-137*		

PREPARATION BENCH SHEET

L209220

Lionville Laboratory

Printed: 9/28/2012 12:20:11PM

000000027

Matrix: Solid **Prepared using: Extraction - SW 3540C** **Surrogate used: 1201164**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1209067-01	8270C TCL SVOC	09/27/2012 13:40	30.73	1				500	WC-Hanford, Inc.	
1209068-01	8270C TCL SVOC	09/27/2012 13:40	30.3	4				500	WC-Hanford, Inc.	
1209079-01	8270C TCL SVOC	09/27/2012 13:40	30.48	4				500	WC-Hanford, Inc.	
L209220-BLK1	QC	09/27/2012 13:40	30	1				500		
L209220-BS1	QC	09/27/2012 13:40	30	1	1201082		600	500		
L209220-MS1	QC	09/27/2012 13:40	30.01	1	1201082	1209067-01	600	500		
L209220-MS2	QC	09/27/2012 13:40	30.55	4	1201082	1209068-01	600	500		
L209220-MS3	QC	09/27/2012 13:40	30.06	4	1201082	1209079-01	600	500		
L209220-MSD1	QC	09/27/2012 13:40	30.06	1	1201082	1209067-01	600	500		
L209220-MSD2	QC	09/27/2012 13:40	30.72	4	1201082	1209068-01	600	500		
L209220-MSD3	QC	09/27/2012 13:40	30.09	4	1201082	1209079-01	600	500		

9/28/12 1220
Extracts Relinquished By Date

9/28/12 1230
Extracts Received By Date

DRO/MO

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/01/2012 21:27

Analytical Report for Extractable Petroleum Hydrocarbons by SW846 8015

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R2J3	1209079-01	Other Solid	09/26/2012 10:15	09/27/2012 09:55

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Case Narrative

Client: WC-HANFORD RC-191 KP0137
LVL #: 1209079

W.O. #: 60049-001-001-0001-00
Date Received: 09-27-2012

DIESEL RANGE ORGANICS

One (1) other solid sample was collected on 09-26-2012.

The sample and associated QC samples were extracted 09-37-2012 and analyzed 09-30-2012 and 10-01-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8015B for Diesel Range Organics.

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

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

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

3. All samples had an elevated final volume of 10 ml. Reporting limits have been adjusted to reflect this change.

4. All samples required 10 fold instrument dilutions due to high concentrations of target compounds.

5. Two (2) of five (5) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12GC161) has been enclosed.

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

7. All blank spike recoveries were within acceptance criteria.

8. Two (2) of two (2) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12GC161) has been enclosed.

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

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

11. The samples were reported on a wet weight 'as received' basis.

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

12. 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

10/11/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC161

Initiator: Catherine Carey
Date: 10/01/12
Client: LOC, Hanford

Batch: 1209079
Samples: MS1 + MSD1
Method: SW846/MCAWW/CLP/

Parameter: DRO
Matrix: SOLID
Prep Batch: L209221

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Surrogate + spike recoveries outside QC limits

2. Known or Probable Causes(s)

high dilution due to high concentration of target analytes and interference from high levels of motor oil

JD

3. Discussion and Proposed Action

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

Other Description: Effective dilution was 100 X

N route

JD.

4. Project Manager Instructions...signature/date: 10/11/12

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

5. Final Action...signature/date: 10/11/12 Other Explanation:

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

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

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

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

QA-139-A-0208

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.	Project: RC-191	
2620 Fermi Avenue	Project Number: KP0137	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	10/01/2012 21:27

J1R2J3
1209079-01 (Other Solid)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Extractable Petroleum Hydrocarbons by SW846 8015									
Diesel Range Organics	331000	U	331000	ug/kg wet	10	L209221	09/27/2012	10/01/2012	8015M
Motor Oil	**2930000**		992000	ug/kg wet	10	L209221	09/27/2012	10/01/2012	8015M
Surrogate: p-Terphenyl	*69 %*		*39-129*			*L209221*	*09/27/2012*	*10/01/2012*	*8015M*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/01/2012 21:27

Extractable Petroleum Hydrocarbons by SW846 8015 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L209221 - SW 3540C										
Blank (L209221-BLK1)				Prepared: 09/27/2012 Analyzed: 09/30/2012						
Diesel Range Organics	3330	U	3330	ug/kg wet						
Motor Oil	10000	U	10000	ug/kg wet						
Surrogate: p-Terphenyl	*5520*			*ug/kg wet*	*6666.7*		*83*	*39-129*		
LCS (L209221-BS1)				Prepared: 09/27/2012 Analyzed: 09/30/2012						
Diesel Range Organics	55200		3330	ug/kg wet	66667		83	42-133		
Surrogate: p-Terphenyl	*6020*			*ug/kg wet*	*6666.7*		*90*	*39-129*		
Matrix Spike (L209221-MS1)		**Source: 1209079-01**		Prepared: 09/27/2012 Analyzed: 10/01/2012						
Diesel Range Organics	774000		326000	ug/kg wet	65274	331000	U1190*	42-133		
Surrogate: p-Terphenyl	*2480*			*ug/kg wet*	*6527.4*		*38**	*39-129*		
Matrix Spike Dup (L209221-MSD1)		**Source: 1209079-01**		Prepared: 09/27/2012 Analyzed: 10/01/2012						
Diesel Range Organics	705000		320000	ug/kg wet	64020	331000	U1100*	42-133	7	40
Surrogate: p-Terphenyl	*2080*			*ug/kg wet*	*6402.0*		*32**	*39-129*		

PREPARATION BENCH SHEET

L209221

Lionville Laboratory

Printed: 9/28/2012 1:46:18PM

00000036

Matrix: Solid **Prepared using: Extraction - SW 3540C** **Surrogate used: 1201102**

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1209079-01	8015M DRO	09/27/2012 13:46	30.25	10				1000	WC-Hanford, Inc.	
L209221-BLK1	QC	09/27/2012 13:46	30	1				1000		
L209221-BS1	QC	09/27/2012 13:46	30	1	1200846		1000	1000		
L209221-MS1	QC	09/27/2012 13:46	30.64	10	1200846	1209079-01	1000	1000		
L209221-MSD1	QC	09/27/2012 13:46	31.24	10	1200846	1209079-01	1000	1000		

9/28/12

Extracts Relinquished By Date

Extracts Received By Date

PAHs

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WC-Hanford, Inc.	Project: RC-191	
2620 Fermi Avenue	Project Number: KP0137	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	10/03/2012 10:28

Analytical Report for Polynuclear Aromatic Compounds by SW846 8310

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1R2J3	1209079-01	Other Solid	09/26/2012 10:15	09/27/2012 09:55

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Case Narrative

Client: WC-HANFORD RC-191 KP0137
LVL #: 1209079

W.O. #: 60049-001-001-0001-00
Date Received: 09-27-2012

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)

One (1) other solid sample was collected on 09-26-2012.

The sample and associated QC samples were extracted 09-27-2012 and analyzed 09-17,18-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8310.

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

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

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

3. The samples required 50-fold dilutions due to high concentrations of target and non-target analytes.

4. Three (3) of five (5) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12GC162) has been enclosed.

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

6. All blank spike recoveries were within acceptance criteria.

7. Sixteen (16) of thirty-two (32) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR#12GC162) has been enclosed.

8. The initial calibrations associated with this data set were within acceptance criteria.

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

10. The samples were reported on a wet weight 'as received' basis.

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

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

Iain Daniels
LvL Laboratory Manager

10/12/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12GC162

Initiator: Catherine Carey
Date: 10/03/12
Client: WC Hanford

Batch: 1209079
Samples: 01, ms1/ms01
Method: SW846/MCAWW/CLP/

Parameter: PAH
Matrix: Solid
Prep Batch: L209222

1. Reason for SDR

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

b. General Discrepancy

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

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

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

surrogate + spike recoveries outside QC limits

2. Known or Probable Causes(s)

high dilution factor (50x) plus high concentration of target analytes

3. Discussion and Proposed Action Other Description:

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

N/A
ID

4. Project Manager Instructions...signature/date: [signature] 10/12/12

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

5. Final Action...signature/date: [signature] 10/12/12 Other Explanation:

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

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

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

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

QA-139-A-0208

GLOSSARY OF DATA

DATA QUALIFIERS

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

ABBREVIATIONS

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

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WC-Hanford, Inc.	Project: RC-191	
2620 Fermi Avenue	Project Number: KP0137	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	10/03/2012 10:28

J1R2J3
1209079-01 (Other Solid)

Lionville Laboratory

Polynuclear Aromatic Compounds by SW846 8310

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Naphthalene	**576**	D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Acenaphthylene	**1630**	D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Acenaphthene	**963**	D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Fluorene	**190**	J, D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Phenanthrene	**762**	D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Anthracene	332	U	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Fluoranthene	**1570**	D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Indeno[1,2,3-cd]pyrene	**176**	J, D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Pyrene	**109**	J, D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Benz[a]anthracene	**571**	D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Chrysene	332	U	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Benzo[b] fluoranthene	**168**	J, D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Benzo[k] fluoranthene	**357**	D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Benzo[a] pyrene	**304**	J, D	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Dibenz[a,h]anthracene	332	U	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Benzo[g,h,i] perylene	332	U	332	ug/kg wet	50	L209222	09/27/2012	10/01/2012	8310
Surrogate: Triphenylene	*161 % **		*68-129*			*L209222*	*09/27/2012*	*10/01/2012*	*8310*

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-191 Project Number: KP0137 Project Manager: Joan Kessner	**Reported:** 10/03/2012 10:28

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 L209222 - SW 3540C										
Blank (L209222-BLK1)				Prepared: 09/27/2012 Analyzed: 10/01/2012						
Naphthalene	3.33	U	3.33	ug/kg wet						
Acenaphthylene	3.33	U	3.33	ug/kg wet						
Acenaphthene	3.33	U	3.33	ug/kg wet						
Fluorene	3.33	U	3.33	ug/kg wet						
Phenanthrene	3.33	U	3.33	ug/kg wet						
Anthracene	3.33	U	3.33	ug/kg wet						
Fluoranthene	3.33	U	3.33	ug/kg wet						
Indeno[1,2,3-cd]pyrene	3.33	U	3.33	ug/kg wet						
Pyrene	3.33	U	3.33	ug/kg wet						
Benz[a]anthracene	3.33	U	3.33	ug/kg wet						
Chrysene	3.33	U	3.33	ug/kg wet						
Benzo[b] fluoranthene	3.33	U	3.33	ug/kg wet						
Benzo[k] fluoranthene	3.33	U	3.33	ug/kg wet						
Benzo[a] pyrene	3.33	U	3.33	ug/kg wet						
Dibenz[a,h]anthracene	3.33	U	3.33	ug/kg wet						
Benzo[g,h,i] perylene	3.33	U	3.33	ug/kg wet						
Surrogate: Triphenylene	*143*			*ug/kg wet*	*166.67*		*86*	*68-129*		
LCS (L209222-BS1)				Prepared: 09/27/2012 Analyzed: 10/01/2012						
Naphthalene	134		3.33	ug/kg wet	166.67		80	0-127		
Acenaphthylene	152		3.33	ug/kg wet	166.67		91	50-140		
Acenaphthene	139		3.33	ug/kg wet	166.67		83	17-139		
Fluorene	141		3.33	ug/kg wet	166.67		85	28-145		
Phenanthrene	143		3.33	ug/kg wet	166.67		86	30-152		
Anthracene	149		3.33	ug/kg wet	166.67		90	19-171		
Fluoranthene	146		3.33	ug/kg wet	166.67		87	34-159		
Indeno[1,2,3-cd]pyrene	145		3.33	ug/kg wet	166.67		87	31-156		
Pyrene	147		3.33	ug/kg wet	166.67		88	33-152		
Benz[a]anthracene	154		3.33	ug/kg wet	166.67		92	32-157		
Chrysene	144		3.33	ug/kg wet	166.67		86	31-159		
Benzo[b] fluoranthene	158		3.33	ug/kg wet	166.67		95	33-164		
Benzo[k] fluoranthene	151		3.33	ug/kg wet	166.67		90	28-161		
Benzo[a] pyrene	149		3.33	ug/kg wet	166.67		89	29-149		
Dibenz[a,h]anthracene	152		3.33	ug/kg wet	166.67		91	27-153		
Benzo[g,h,i] perylene	151		3.33	ug/kg wet	166.67		91	32-157		
Surrogate: Triphenylene	*160*			*ug/kg wet*	*166.67*		*96*	*68-129*		

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WC-Hanford, Inc.	Project: RC-191	
2620 Fermi Avenue	Project Number: KP0137	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	10/03/2012 10:28

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 L209222 - SW 3540C										
Matrix Spike (L209222-MS1)		**Source: 1209079-01**		Prepared: 09/27/2012 Analyzed: 10/01/2012						
Naphthalene	790	D	329	ug/kg wet	164.42	576	130*	0-127		
Acenaphthylene	1560	D	329	ug/kg wet	164.42	1630	-39*	50-140		
Acenaphthene	832	D	329	ug/kg wet	164.42	963	-79*	17-139		
Fluorene	412	D	329	ug/kg wet	164.42	190	135	28-145		
Phenanthrene	915	D	329	ug/kg wet	164.42	762	93	30-152		
Anthracene	121	J, D	329	ug/kg wet	164.42	332 U	74	19-171		
Fluoranthene	1640	D	329	ug/kg wet	164.42	1570	42	34-159		
Indeno[1,2,3-cd]pyrene	152	J, D	329	ug/kg wet	164.42	176	-14*	31-156		
Pyrene	350	D	329	ug/kg wet	164.42	109	147	33-152		
Benz[a]anthracene	749	D	329	ug/kg wet	164.42	571	108	32-157		
Chrysene	633	D	329	ug/kg wet	164.42	332 U	385*	31-159		
Benzo[b] fluoranthene	263	J, D	329	ug/kg wet	164.42	168	58	33-164		
Benzo[k] fluoranthene	303	J, D	329	ug/kg wet	164.42	357	-33*	28-161		
Benzo[a] pyrene	398	D	329	ug/kg wet	164.42	304	57	29-149		
Dibenz[a,h]anthracene	329	U	329	ug/kg wet	164.42	332 U	*	27-153		
Benzo[g,h,i] perylene	329	U	329	ug/kg wet	164.42	332 U	*	32-157		
Surrogate: Triphenylene	*235*			*ug/kg wet*	*164.42*		*143**	*68-129*		
Matrix Spike Dup (L209222-MSD1)		**Source: 1209079-01**		Prepared: 09/27/2012 Analyzed: 10/01/2012						
Naphthalene	726	D	330	ug/kg wet	165.02	576	91	0-127	35	40
Acenaphthylene	1800	D	330	ug/kg wet	165.02	1630	103	50-140	443*	40
Acenaphthene	1220	D	330	ug/kg wet	165.02	963	158*	17-139	605*	40
Fluorene	414	D	330	ug/kg wet	165.02	190	136	28-145	0.2	40
Phenanthrene	1000	D	330	ug/kg wet	165.02	762	146	30-152	45*	40
Anthracene	114	J, D	330	ug/kg wet	165.02	332 U	69	19-171	6	40
Fluoranthene	2040	D	330	ug/kg wet	165.02	1570	283*	34-159	149*	40
Indeno[1,2,3-cd]pyrene	240	J, D	330	ug/kg wet	165.02	176	39	31-156	434*	40
Pyrene	484	D	330	ug/kg wet	165.02	109	228*	33-152	43*	40
Benz[a]anthracene	1030	D	330	ug/kg wet	165.02	571	278*	32-157	88*	40
Chrysene	973	D	330	ug/kg wet	165.02	332 U	590*	31-159	42*	40
Benzo[b] fluoranthene	278	J, D	330	ug/kg wet	165.02	168	67	33-164	15	40
Benzo[k] fluoranthene	320	J, D	330	ug/kg wet	165.02	357	-23*	28-161	-37	40
Benzo[a] pyrene	522	D	330	ug/kg wet	165.02	304	132	29-149	79*	40
Dibenz[a,h]anthracene	330	U	330	ug/kg wet	165.02	332 U	*	27-153		40
Benzo[g,h,i] perylene	330	U	330	ug/kg wet	165.02	332 U	*	32-157		40
Surrogate: Triphenylene	*253*			*ug/kg wet*	*165.02*		*153**	*68-129*		

PREPARATION BENCH SHEET

L209222

Lionville Laboratory

Printed: 9/28/2012 1:47:04PM

Matrix: Solid

Prepared using: Extraction - SW 3540C

Surrogate used: 1200612

Lab Number	Analysis	Prepared	Initial (g)	Final (mL)	Spike ID	Source ID	ul Spike	ul Surrogate	Client	Extraction Comments
1209079-01	8310 PAH	09/27/2012 13:48	30.08	10				50	WC-Hanford, Inc.	
L209222-BLK1	QC	09/27/2012 13:48	30	5				50		
L209222-BS1	QC	09/27/2012 13:48	30	5	1200963		50	50		
L209222-MS1	QC	09/27/2012 13:48	30.41	10	1200963	1209079-01	50	50		
L209222-MSD1	QC	09/27/2012 13:48	30.3	10	1200963	1209079-01	50	50		

9/28/12

Extracts Relinquished By — Date

IK 10-1-12

Extracts Received By — Date