0078878

SAF-RC-029
Remaining Sites Confirmation Sampling - Soil
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 9/24/08
INITIAL/DATE

COMMENTS:

SDG K1317 SAF RC-029

Rad only X Chem only Rad & Chem

X Complete Partial

Waste Site: 100-H-28:1

RECEIVED
OCT 08 2008
EDMC

LIONVILLE LABORATORY INC.

RECEIVED
SEP 2008

23 September 2008

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 #	0809L022
SDG #	K1317
SAF #	RC-029
Date Received	9/4/08
# Samples	3
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	X
Herbicides	
Metals	X
Inorganics	

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

Sincerely,
Lionville Laboratory

Orlette S. Johnson
Project Manager
r:\group\pm\orlette\hanford\data\b_ltrs.doc

RECEIVED
SEP 2008

Lionville Laboratory, Inc.
8310 ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-029 K1317

DATE RECEIVED: 09/04/08 LVL LOT # :0809L022

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17FX6	002	S	08LE0432	08/28/08	09/11/08	09/18/08
J17FX6	002 MS	S	08LE0432	08/28/08	09/11/08	09/18/08
J17FX6	002 MSD	S	08LE0432	08/28/08	09/11/08	09/18/08
J17FX7	003	S	08LE0432	08/28/08	09/11/08	09/18/08

LAB QC:

BLK	MB1	S	08LE0432	N/A	09/11/08	09/18/08
BLK	MB1 BS	S	08LE0432	N/A	09/11/08	09/18/08

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-014
LVL #: 0809L022
SDG/SAF # K1317 /RC-029

W.O. #: 11343-606-001-9999-00
Date Received: 09-04-2008

POLYAROMATIC HYDROCARBONS

Two (2) soil samples were collected on 08-28-2008.

The samples and associated QC samples were extracted on 09-11-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 09-18-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8310.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. The sample shipment met the sample acceptance policy for Lionville Laboratory.
2. The samples were extracted and analyzed within hold time.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. The initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. LvLI 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.

Iain Daniels
Laboratory Manager
Lionville Laboratory

9/23/08
Date

r:\group\data\2008\8310\tnu\0809-022oj2.8310.doc

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 8 pages.

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.

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.
P	=	This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I 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.
NPM	=	No pattern match for multi-component target analytes.

Lionville Laboratory, Inc.

PAH'S by HPLC / Method 8310

Report Date: 09/19/08 12:42

RFW Batch Number: **0809L022** Client: **WC-HANFORD RC-029 K1317** Work Order: 60049001001 Page: 1

	Cust ID:	J17FX6	J17FX6	J17FX6	J17FX7	BLK	BLK BS
Sample Information	RFW#:	002	002 MS	002 MSD	003	08LE0432-MB1	08LE0432-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg

Triphenylene	99	%	91	%	101	%	99	%	101	%	109	%
==========		fl		fl		fl		fl		fl		fl
Naphthalene	22	J	112	%	100	%	23	J	33.3	U	100	%
Acenaphthylene	34.0	U	71	%	70	%	34.0	U	33.3	U	93	%
Acenaphthene	34.0	U	93	%	113	%	22	J	33.3	U	79	%
Fluorene	6.9		81	%	91	%	6.4		3.33	U	90	%
Phenathrene	15		89	%	90	%	4.4		3.33	U	93	%
Anthracene	3.40	U	90	%	105	%	3.40	U	3.33	U	108	%
Fluoranthrene	7.2		89	%	99	%	1.8	J	3.33	U	92	%
Indeno (1,2,3-cd) pyrene	34		89	%	93	%	24		3.33	U	98	%
Pyrene	8.3		71	%	80	%	2.8	J	3.33	U	90	%
Benzo (a) anthracene	3.7		69	%	79	%	3.6		3.33	U	85	%
Chrysene	4.3		74	%	85	%	3.40	U	3.33	U	93	%
Benzo (b) fluoranthrene	19		110	%	127	%	58		3.33	U	97	%
Benzo (k) fluoranthrene	2.0	J	81	%	93	%	2.4	J	3.33	U	98	%
Benzo (a) pyrene	4.2		71	%	80	%	3.2	J	3.33	U	95	%
Dibenzo (a,h) anthracene	1.7	J	77	%	86	%	2.2	J	3.33	U	96	%
Benzo (ghi) perylene	10		67	%	75	%	12		3.33	U	92	%

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

000000004

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 09/11/08 Extraction Batch No: 08LE0432 Analyst: MF Method: **** 3540 SOX

Test: O831 Cleanup Date: Analyst: Client: WC-HANFORD RC-029 K1317

LIMS Report Date: 09/16/08 Solvent: DCM,ACN Adsorbent:

Sample No:	Client Name / Client ID	pH	Initial WT/VOL	Surr. Mult.	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solids	C/D FACTOR
0809L022-	WC-HANFORD RC-029 K1317										
002 0	J17FX6		30	1.0		5.0		1.0	N	98.08	169.9
002 0S	J17FX6		30	1.0	1.0	5.0		1.0	N	98.08	169.9
002 0T	J17FX6		30	1.0	1.0	5.0		1.0	N	98.08	169.9
003 0	J17FX7		30	1.0		5.0		1.0	N	98.07	169.9
08LE0432-MB1 0	BLK		30	1.0		5.0		1.0	N	100.00	166.7
08LE0432-MB1 0S	BLK		30	1.0	1.0	5.0		1.0	N	100.00	166.7

Comments:
Surrogate: 500 UL 8310 SURR 86971906
Spike: 1.0 8310 SPIKE 86971907

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
[illegible]	[illegible]	9/16/08 1630	SZ	9/16/08 1635	BC

000000005

nville Laboratory Use Only

809L022

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

000000006

nt Washington Closure Hanford RC-029

Final Proj. Sampling Date

ect# 60049-001-001-0001-00

ect Contact/Phone#

ville Laboratory Project Manager Arlette Johnson

SW846 Del STD TAT 15 days

e Rec'd 9.4.08 Date Due 9-19-08

		A	B
Refrigerator #		3	3
#/Type Container	Liquid		
	Solid	1gl	1gl
Volume	Solid	250	250
Preservatives		—	—
ANALYSES REQUESTED → ORGANIC: VOA			
BNA			
Pest/PCB			
Herb			
INORG: Metal + HG		PAHs	
CN			

RIX
ES:
Soil
Sediment
Solid
Sludge
Water
Oil
Air
Drum Solids
Drum Liquids
EP/TCLP
Leachate
Wipe
Other
Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only													
												08310		Mat D						
001	J17FX5			S	9.2.08	1040								X						
002	J17FX6			J	J	1045						X		X						
003	J17FX7			J	J	1050						X		X						

cial Instructions: Run matrix QC

mat ① = HSL + B, MO, S1

NOTL

Special Instructions:

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

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9.4.08	0955

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN		COMPOSITE WASTE	

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-052	Page 1 of 1
llector WELCH-KOELLING	Company Contact: Matt Perrott; Telephone No.: 372-9088	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 Days
oject Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: 100-H-28:1	SAF No.: RC-029	
e Chest No. AFS-06-004	Field Logbook No.: EL-1601-2; COA: C00H28A000	Method of Shipment: FedEx	
ipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No. A080344	Bill of Lading/Air Bill No. SEE GSPC	

OSSIBLE SAMPLE HAZARDS/REMARKS

pecial Handling and/or Storage

Preservation	None	Cool 4C									
Type of Container	G/P	aG									
No. of Container(s)	1	1									
Volume	250mL	250mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PAHs - 8310									

Sample No.	Matrix *	Sample Date	Sample Time										
17FX5	SOIL	8/28/08	1040	X									
17FX6	SOIL	8/28/08	1045	X	X								
17FX7	SOIL	8/28/08	1050	X	X								
~~17FX8~~	~~SOIL~~												
~~17FX9~~	~~SOIL~~	~~BH 8/28/08~~											

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: DH WELCH KOELLING; Date/Time: 8/28/08 ~~1046~~ 1056 MD 9/3/08	Received By/Stored In: BHUDSON BHudson; Date/Time: 8/28/08 ~~1046~~ 1056 MD 9/3/08	ICP Metals - 6010TR (Client List {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)
Relinquished By/Removed From: BHUDSON BHudson; Date/Time: 8/28/07 1630	Received By/Stored In: 1060 #3C; Date/Time: 8/28/08 1630	
Relinquished By/Removed From: 1060 3C; Date/Time: 9/3/08 0900	Received By/Stored In: MStankovich; Date/Time: 9/3/08 0900	First time times changed per B. Hudson mm 9/3/08
Relinquished By/Removed From: WCH MStankovich; Date/Time: 9/3/08 0900	Received By/Stored In: FedEx; Date/Time:	
Relinquished By/Removed From: FedEx; Date/Time: 9.4.08 0955	Received By/Stored In: D Jones; Date/Time: 9.4.08/0955	Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab. BW
Relinquished By/Removed From: Date/Time	Received By/Stored In: Date/Time	

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

ABORATORY SECTION	Received By	Title	Date/Time
INAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

CH-EE-011

000000007

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hanford

Project/SAF/SOW/Release #: RC-029

Date: 9-4-08

LvLI Batch #: 0809L022

Sample Custodian: D. Smith

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7980 0495 30
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 3.7	°C	Cooler # AFS-06-004
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 & LvLI) 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 LvLI 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 _____

LvLI LIONVILLE LABORATORY INC.

RECEIVED
SEP 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-029 K1317

DATE RECEIVED: 09/04/08 LVL LOT # :0809L022

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17FX5						
SILVER, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
ALUMINUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
ARSENIC, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
BORON, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
BARIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
BERYLLIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
CALCIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
CADMIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
COBALT, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
CHROMIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
COPPER, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
IRON, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
MERCURY, TOTAL	001	S	08C0157	08/28/08	09/10/08	09/10/08
POTASSIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
MAGNESIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
MANGANESE, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
MOLYBDENUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
SODIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
NICKEL, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
LEAD, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
ANTIMONY, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
SELENIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
SILICON, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
VANADIUM, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
ZINC, TOTAL	001	S	08L0338	08/28/08	09/17/08	09/18/08
J17FX6						
SILVER, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
SILVER, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
SILVER, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
ALUMINUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
ALUMINUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
ALUMINUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
ARSENIC, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-029 K1317

DATE RECEIVED: 09/04/08 LVL LOT # :0809L022

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
ARSENIC, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
BORON, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
BORON, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
BORON, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
BARIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
BARIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
BARIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
BERYLLIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
BERYLLIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
BERYLLIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
CALCIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
CALCIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
CALCIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
CADMIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
CADMIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
CADMIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
COBALT, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
COBALT, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
COBALT, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
CHROMIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
CHROMIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
CHROMIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
COPPER, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
COPPER, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
COPPER, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
IRON, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
IRON, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
IRON, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
MERCURY, TOTAL	002	S	08C0157	08/28/08	09/10/08	09/10/08
MERCURY, TOTAL	002 REP	S	08C0157	08/28/08	09/10/08	09/10/08
MERCURY, TOTAL	002 MS	S	08C0157	08/28/08	09/10/08	09/10/08
POTASSIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
POTASSIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
POTASSIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
MAGNESIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
MAGNESIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
MAGNESIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-029 K1317

DATE RECEIVED: 09/04/08 LVL LOT # :0809L022

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MANGANESE, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
MANGANESE, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
MANGANESE, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
MOLYBDENUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
MOLYBDENUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
MOLYBDENUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
SODIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
SODIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
SODIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
NICKEL, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
NICKEL, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
NICKEL, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
LEAD, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
LEAD, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
LEAD, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
ANTIMONY, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
ANTIMONY, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
ANTIMONY, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
SELENIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
SELENIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
SELENIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
SILICON, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
SILICON, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
SILICON, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
VANADIUM, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
VANADIUM, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
VANADIUM, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
ZINC, TOTAL	002	S	08L0338	08/28/08	09/17/08	09/18/08
ZINC, TOTAL	002 REP	S	08L0338	08/28/08	09/17/08	09/18/08
ZINC, TOTAL	002 MS	S	08L0338	08/28/08	09/17/08	09/18/08
J17FX7						
SILVER, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
ALUMINUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
ARSENIC, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
BORON, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
BARIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-029 K1317

DATE RECEIVED: 09/04/08 LVL LOT # :0809L022

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BERYLLIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
CALCIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
CADMIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
COBALT, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
CHROMIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
COPPER, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
IRON, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
MERCURY, TOTAL	003	S	08C0157	08/28/08	09/10/08	09/10/08
POTASSIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
MAGNESIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
MANGANESE, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
MOLYBDENUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
SODIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
NICKEL, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
LEAD, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
ANTIMONY, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
SELENIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
SILICON, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
VANADIUM, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08
ZINC, TOTAL	003	S	08L0338	08/28/08	09/17/08	09/18/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
SILVER, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
ALUMINUM LABORTORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
ALUMINUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
ARSENIC LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
ARSENIC, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
BORON LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
BORON, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
BARIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
BARIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
BERYLLIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
CALCIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
CALCIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
CADMIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-029 K1317

DATE RECEIVED: 09/04/08 LVL LOT # :0809L022

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
COBALT LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
COBALT, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
CHROMIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
CHROMIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
COPPER LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
COPPER, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
IRON LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
IRON, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
MERCURY LABORATORY	LC1 BS	S	08C0157	N/A	09/10/08	09/10/08
MERCURY, TOTAL	MB1	S	08C0157	N/A	09/10/08	09/10/08
POTASSIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
POTASSIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
MAGNESIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
MANGANESE LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
MANGANESE, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
MOLYBDENUM LABORATOR	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
MOLYBDENUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
SODIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
SODIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
NICKEL LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
NICKEL, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
LEAD LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
LEAD, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
ANTIMONY LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
ANTIMONY, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
SELENIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
SELENIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
SILICON LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
SILICON, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
VANADIUM LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
VANADIUM, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08
ZINC LABORATORY	LC1 BS	S	08L0338	N/A	09/17/08	09/18/08
ZINC, TOTAL	MB1	S	08L0338	N/A	09/17/08	09/18/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: WC-HANFORD RC-029
LVL#: 0809L022
SDG/SAF#: K1317/RC-029

W.O.#: 60049-001-001-0001-00
Date Received: 09-04-08

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) 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 3 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

   The samples, with the exception of J17FX5, were run with 3-fold dilutions for ICP metals due to sample matrix.

   All samples for Aluminum were run on a different instrument due to sample matrix.

3. All analyses were performed within the required holding times.

4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury) with the exception of Potassium and Sodium in file TA0918C. All samples were run and reported for Potassium and Sodium from file PS0918B along with Aluminum.

5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).

6. The preparation/method blanks for 2 analytes were outside method criteria. {less than the Limit of Quantitation (3-10X the LOD), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB results for Manganese and Sodium were greater than the Limit of Quantitation (LOQ) {3-10x the (LOD) Limit of Detection} and sample J17FX5 for Sodium and Manganese read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample result was reported herein "uncorrected" for the

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 22 pages.

levels found in the MB.

7. All ICP Interference Check Standards were within control limits.

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon (20%). Sample results for Silicon may be biased low. Refer to the Inorganics Laboratory Control Standards Report.

9. All matrix spike (MS) recoveries for 5 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

10. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J17FX6	Aluminum	126,000	94.9
	Iron	60,000	94.5
	Antimony	300	101.1
	Manganese	3,000	105.7
	Calcium	60,000	92.6

11. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has 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.

13. LvLI 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.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

9/22/08
Date

alm/m09-022

LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within th

Lot#: 08091L022

Leaching Procedure: __1310 __1311 __1312 __Other:_____

TCLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	✓6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	__7470A [3]	✓__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	✓6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	✓6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2 __200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Method:

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Flame AA.

4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/22/08

CLIENT: WC-HANFORD RC-029 K1317 LVL LOT #: 0809L022

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17FX5	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	66.3	MG/KG	3.1	1.0
		Arsenic, Total	0.39 u	MG/KG	0.39	1.0
		Boron, Total	0.39 u	MG/KG	0.39	1.0
		Barium, Total	1.2	MG/KG	0.08	1.0
		Beryllium, Total	0.04 u	MG/KG	0.04	1.0
		Calcium, Total	24.2	MG/KG	3.1	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.16 u	MG/KG	0.16	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Copper, Total	0.27	MG/KG	0.16	1.0
		Iron, Total	128	MG/KG	3.5	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	67.4	MG/KG	38.2	1.0
		Magnesium, Total	12.3	MG/KG	1.9	1.0
		Manganese, Total	4.9	MG/KG	0.03	1.0
		Molybdenum, Total	0.23 u	MG/KG	0.23	1.0
		Sodium, Total	60.5	MG/KG	1.6	1.0
		Nickel, Total	0.16 u	MG/KG	0.16	1.0
		Lead, Total	0.23 u	MG/KG	0.23	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	44.8	MG/KG	3.1	1.0
		Vanadium, Total	0.14	MG/KG	0.11	1.0
		Zinc, Total	0.77	MG/KG	0.46	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/22/08

CLIENT: WC-HANFORD RC-029 K1317 LVL LOT #: 0809L022

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J17FX6	Silver, Total	0.24 u	MG/KG	0.24	3.0
		Aluminum, Total	12100	MG/KG	9.6	3.0
		Arsenic, Total	3.3	MG/KG	1.2	3.0
		Boron, Total	66.4	MG/KG	1.2	3.0
		Barium, Total	540	MG/KG	0.24	3.0
		Beryllium, Total	0.53	MG/KG	0.12	3.0
		Calcium, Total	15400	MG/KG	9.6	3.0
		Cadmium, Total	0.12 u	MG/KG	0.12	3.0
		Cobalt, Total	8.0	MG/KG	0.48	3.0
		Chromium, Total	15.0	MG/KG	0.48	3.0
		Copper, Total	22.7	MG/KG	0.48	3.0
		Iron, Total	21800	MG/KG	10.8	3.0
		Mercury, Total	0.03	MG/KG	0.01	1.0
		Potassium, Total	1300	MG/KG	119	3.0
		Magnesium, Total	6450	MG/KG	6.0	3.0
		Manganese, Total	340	MG/KG	0.1	3.0
		Molybdenum, Total	1.1	MG/KG	0.72	3.0
		Sodium, Total	774	MG/KG	4.8	3.0
		Nickel, Total	17.2	MG/KG	0.48	3.0
		Lead, Total	5.7	MG/KG	0.72	3.0
		Antimony, Total	0.72 u	MG/KG	0.72	3.0
		Selenium, Total	1.4 u	MG/KG	1.4	3.0
		Silicon, Total	415	MG/KG	9.6	3.0
		Vanadium, Total	52.7	MG/KG	0.34	3.0
		Zinc, Total	44.5	MG/KG	1.4	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/22/08

CLIENT: WC-HANFORD RC-029 K1317 LVL LOT #: 0809L022

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J17FX7	Silver, Total	0.25 u	MG/KG	0.25	3.0
		Aluminum, Total	11200	MG/KG	9.9	3.0
		Arsenic, Total	2.6	MG/KG	1.2	3.0
		Boron, Total	56.2	MG/KG	1.2	3.0
		Barium, Total	500	MG/KG	0.25	3.0
		Beryllium, Total	0.47	MG/KG	0.12	3.0
		Calcium, Total	14200	MG/KG	9.9	3.0
		Cadmium, Total	0.12 u	MG/KG	0.12	3.0
		Cobalt, Total	8.0	MG/KG	0.50	3.0
		Chromium, Total	13.9	MG/KG	0.50	3.0
		Copper, Total	21.3	MG/KG	0.50	3.0
		Iron, Total	21500	MG/KG	11.2	3.0
		Mercury, Total	0.02	MG/KG	0.009	1.0
		Potassium, Total	1220	MG/KG	123	3.0
		Magnesium, Total	6050	MG/KG	6.2	3.0
		Manganese, Total	306	MG/KG	0.1	3.0
		Molybdenum, Total	0.99	MG/KG	0.75	3.0
		Sodium, Total	663	MG/KG	5.0	3.0
		Nickel, Total	16.2	MG/KG	0.50	3.0
		Lead, Total	5.4	MG/KG	0.75	3.0
		Antimony, Total	0.75 u	MG/KG	0.75	3.0
		Selenium, Total	1.5 u	MG/KG	1.5	3.0
		Silicon, Total	470	MG/KG	9.9	3.0
		Vanadium, Total	51.5	MG/KG	0.35	3.0
		Zinc, Total	45.2	MG/KG	1.5	3.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/22/08

CLIENT: WC-HANFORD RC-029 K1317 LVL LOT #: 0809L022

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0338-MB1	Silver, Total	0.16	MG/KG	0.10	1.0
		Aluminum, Total	4.0 u	MG/KG	4.0	1.0
		Arsenic, Total	0.50 u	MG/KG	0.50	1.0
		Boron, Total	0.50 u	MG/KG	0.50	1.0
		Barium, Total	0.13	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	6.6	MG/KG	4.0	1.0
		Cadmium, Total	0.06	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.25	MG/KG	0.20	1.0
		Copper, Total	0.20 u	MG/KG	0.20	1.0
		Iron, Total	5.5	MG/KG	4.5	1.0
		Potassium, Total	49.3 u	MG/KG	49.3	1.0
		Magnesium, Total	3.1	MG/KG	2.5	1.0
		Manganese, Total	0.45	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Sodium, Total	22.1	MG/KG	2.0	1.0
		Nickel, Total	0.20 u	MG/KG	0.20	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.30 u	MG/KG	0.30	1.0
		Selenium, Total	0.60 u	MG/KG	0.60	1.0
		Silicon, Total	4.0 u	MG/KG	4.0	1.0
		Vanadium, Total	0.14 u	MG/KG	0.14	1.0
		Zinc, Total	0.60 u	MG/KG	0.60	1.0
BLANK1	08C0157-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/22/08

CLIENT: WC-HANFORD RC-029 K1317 LVL LOT #: 0809L022

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	J17FX6	Silver, Total	3.7	0.24u	3.9	94.9	3.0
		Aluminum, Total	12600	12100	158	360.3*	3.0
		Arsenic, Total	149	3.3	158	92.3	3.0
		Boron, Total	138	66.4	79.0	90.8	3.0
		Barium, Total	674	540	158	84.3	3.0
		Beryllium, Total	4.3	0.53	3.9	96.8	3.0
		Calcium, Total	16900	15400	1980	72.1*	3.0
		Cadmium, Total	3.8	0.12u	3.9	97.4	3.0
		Cobalt, Total	45.6	8.0	39.5	95.2	3.0
		Chromium, Total	29.5	15.0	15.8	91.8	3.0
		Copper, Total	41.0	22.7	19.8	92.4	3.0
		Iron, Total	22600	21800	79.0	908.1*	3.0
		Mercury, Total	0.21	0.03	0.16	110.7	1.0
		Potassium, Total	3070	1300	1980	89.5	3.0
		Magnesium, Total	8480	6450	1980	102.7	3.0
		Manganese, Total	342	340	39.5	5.8*	3.0
		Molybdenum, Total	73.2	1.1	79.0	91.3	3.0
		Sodium, Total	2810	774	1980	103.1	3.0
		Nickel, Total	55.0	17.2	39.5	95.7	3.0
		Lead, Total	42.0	5.7	39.5	91.9	3.0
		Antimony, Total	12.9	0.72u	39.5	32.7	3.0
		Selenium, Total	128	1.4 u	158	80.9	3.0
		Silicon, Total	504	415	79.0	112.7*	3.0
		Vanadium, Total	91.1	52.7	39.5	97.2	3.0
		Zinc, Total	81.2	44.5	39.5	92.9	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/22/08

CLIENT: WC-HANFORD RC-029 K1317 LVL LOT #: 0809L022

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J17FX6	Silver, Total	0.24u	0.22u	NC	3.0
		Aluminum, Total	12100	12000	0.28	3.0
		Arsenic, Total	3.3	2.6	23.7	3.0
		Boron, Total	66.4	72.8	9.2	3.0
		Barium, Total	540	571	5.5	3.0
		Beryllium, Total	0.53	0.53	1.1	3.0
		Calcium, Total	15400	15600	1.3	3.0
		Cadmium, Total	0.12u	0.11u	NC	3.0
		Cobalt, Total	8.0	7.6	5.1	3.0
		Chromium, Total	15.0	14.4	4.1	3.0
		Copper, Total	22.7	26.9	16.9	3.0
		Iron, Total	21800	20200	7.6	3.0
		Mercury, Total	0.03	0.02	22.2	1.0
		Potassium, Total	1300	1260	3.1	3.0
		Magnesium, Total	6450	6290	2.4	3.0
		Manganese, Total	340	295	14.1	3.0
		Molybdenum, Total	1.1	1.3	16.7	3.0
		Sodium, Total	774	1040	29.5	3.0
		Nickel, Total	17.2	16.1	6.6	3.0
		Lead, Total	5.7	5.5	3.6	3.0
		Antimony, Total	0.72u	0.67u	NC	3.0
		Selenium, Total	1.4 u	1.3 u	NC	3.0
		Silicon, Total	415	475	13.4	3.0
		Vanadium, Total	52.7	54.1	2.6	3.0
		Zinc, Total	44.5	43.2	3.0	3.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/22/08

CLIENT: WC-HANFORD RC-029 K1317 LVL LOT #: 0809L022

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0338-LC1	Silver, LCS	48.3	50.0	MG/KG	96.6
		Aluminum, LCS	456	500	MG/KG	91.3
		Arsenic, LCS	935	1000	MG/KG	93.5
		Boron, LCS	454	500	MG/KG	90.7
		Barium, LCS	474	500	MG/KG	94.8
		Beryllium, LCS	24.3	25.0	MG/KG	97.2
		Calcium, LCS	2450	2500	MG/KG	98.2
		Cadmium, LCS	23.8	25.0	MG/KG	95.2
		Cobalt, LCS	240	250	MG/KG	96.0
		Chromium, LCS	48.8	50.0	MG/KG	97.6
		Copper, LCS	121	125	MG/KG	96.9
		Iron, LCS	516	500	MG/KG	103.2
		Potassium, LCS	2200	2500	MG/KG	88.1
		Magnesium, LCS	2370	2500	MG/KG	94.9
		Manganese, LCS	73.7	75.0	MG/KG	98.3
		Molybdenum, LCS	482	500	MG/KG	96.4
		Sodium, LCS	2250	2500	MG/KG	90.1
		Nickel, LCS	194	200	MG/KG	96.8
		Lead, LCS	242	250	MG/KG	96.8
		Antimony, LCS	281	300	MG/KG	93.5
		Selenium, LCS	891	1000	MG/KG	89.1
		Silicon, LCS	100	500	MG/KG	20.0
		Vanadium, LCS	240	250	MG/KG	96.2
		Zinc, LCS	96.5	100	MG/KG	96.5
LCS1	08C0157-LC1	Mercury, LCS	4.7	4.7	MG/KG	99.3

Lionville Laboratory Incorporated

Logbook #: 482

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0338
Date/Time Initiated: 9/17/08 1130
Date/Time Completed: 9/17/08 2030
Analyst(s): PW
Matrix: (Soil) Water Other:
Instr. Type: AA (ICP)
Parameters: See backlog

(Digested) / Undigested (circle one)
Balance #: B20
Balance Cal Verif: (Y) NA
Hot Plate Temp: 91°

Method: SW (circle)
3005A
3010A
3015
3020A
7060A (As/Se)
7760A (Ag)
(3050B)
3051
CLP ILMO3.0
ILMO4.0

DW 200.7 (1994)
200.9
3113B
MCAWW 200.7 (1982)
200 (AA)
206.2 (As/Se)
SM 3030C (NC)
Other Tyler

TMW

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
0809L021-001		1.27gr	100ml	<2	TO	coarse	Ottawa sand		
002		1.23gr					brown soil - fine	with lumps	
002R		1.25gr							
002S	1.0ml	1.24gr							
003		1.35gr							
004		1.33gr					with ass't debris *		
0809L022-001		1.29gr					Ottawa sand		
002		1.27gr					brown soil - fine	w/ ass't debris	
002R		1.37gr							
002S	1.0ml	1.29gr							
003		1.23gr						rocks	
0809L055-001		1.28gr					dark brown soil	N/A	
001R		1.31gr							
001S	1.0ml	1.29gr							
002		1.24gr							
0809L036-001		1.28gr				fine	brown soil	rocks	
001R		1.32gr							
001S	1.0ml	1.28gr							
002		1.28gr							
003		1.24gr				coarse	Ottawa sand	N/A	
08L0338-MB1		1.0gr					bottling chips		
LC1	1.0ml	1.0gr					10		
			PW	9/17/08					

Spiking IDs:
MS #: 8100-04-01
02
03
6072-78-07
LCS #: 08
09
10
11

Reagent IDs:
HNO_3 607057
HCL 676054
H_2O_2 G15T18
1:1 HNO_3 9789-053-08
1:1 HCL

File ID#: IC033801 IC033802

LIMS Transfer: (Y) N Uploaded

Data Review By/Date: PMP, 09/17/08

* per COC, only soil (no debris) included in aliquot. PW 9/17/08

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MERCURY PREPARATION

Logbook # 498

Analyst: TEB
Date 9/10/08
Start Time/Temp: 1005 / 92°
End Time/Temp: 1235 / 92°

Instrument ID HG32
Balance #: B29 / NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0157
Worksheet: HG-091002
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? __ Yes N/A No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Inital/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
Blank	500			10mL	50mL	
0.2 µg/L	3VG	0.100				
1.0	PC	0.500				
2.0	Gd	1.000				
5.0	R	2.500				
10.0	11A	5.000				
ICV	H3	0.125	2.5			
CCV	8	0.250	5.0			
ICB/CCB	PA/NJ					9.80L
MB1	JC			0.30		PBS157 100.00
LC1	NR	*	*	0.30		LCSS157 ⊥
0809L034-001	1721			0.33		R 95.35
W1R	K17			0.38		⊥
W1S	6J	0.500	1.0	0.35		⊥
0809L006-001	L15			0.33		100.00
W1R	NB			0.39		⊥
001S	E7	0.500	1.0	0.33		⊥
0809L021-001	31			0.41		99.98
002	537			0.31		96.97
002R	N2			0.35		⊥
002S	KX	0.500	1.0	0.31		⊥
003	P3			0.31		96.99
004	CM			0.31		92.34
0809L022-001	514			0.31		99.97
002	AP			0.32		98.08
002R	114			0.36		⊥
002S	816	0.500	1.0	0.32		⊥

Standard:	ID	Prep Date/Time
CAL/MS	RI 6072-78-14B	9/10/08 0730
CV/CCV/LCS	US 6072-78-15A	⊥

Reviewed By/Date: [signature] 9/12/08

see book # 9368 for std traceability information

Soil LCS =US Metals in soil No.3; True Value = 4.70 mg/Kg
Catalogue #1RM-021, Lot # E021

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

onville Laboratory
corporated

MERCURY PREPARATION

Logbook # 498

Analyst: EA
Date: 9/10/08
Start Time/Temp:
End Time/Temp: See page 016

Instrument ID: HG-3.2
Balance #: B29 /NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0157
Worksheet: HG091002
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? __ Yes NA No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Inital/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
0809L022-003	P1			0.35	50mL	98.07
0809L035-001	40			0.31	↓	78.28
W1R	L53			0.32	↓	↓
W1S	UT	0.500	1.0	0.31	↓	↓
002	205			0.35	↓	82.56
0809L036-001	DX			0.36	↓	98.31
W1R	H2			0.32	↓	↓
W1S	41	0.500	1.0	0.37	↓	↓
002	RU			0.31	↓	97.75
W3	194			0.41	↓	99.95

EA 9/10/08

Standard:	ID	Prep Date/Time
CAL/MS		
CV/CCV/LCS	See page 016	

Reviewed By/Date: [signature] 9/12/08

see book # 9368 for std traceability information

Soil LCS =US Metals in soil No.3; True Value = 4.70 mg/Kg
Catalogue #1RM-021, Lot # E021

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

ME-HgCVAA-Prep1007

Page #:

000000019

ville Laboratory Use Only

809L022

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

000000020

t Washington Closure Hanford RC-029

Final Proj. Sampling Date

ct# 60049-001-001-0001-00

ct Contact/Phone#

ville Laboratory Project Manager Arlette Johnson

SW846 Del STD TAT 15 days

Rec'd 9-4-08 Date Due 9-19-08

		A	B
Refrigerator #		3	3
#/Type Container	Liquid / Solid	1gl	1gl
Volume	Solid	250	250
Preservatives		—	—
ANALYSES REQUESTED → ORGANIC: VOA			
ORGANIC: BNA			
ORGANIC: Pest/PCB			
ORGANIC: Herb			
ANALYSES REQUESTED → INORG: Metal + HG			
INORG: CN			
Lionville Laboratory Use Only		08310	Metals

RIX
ES:
Soil
Sediment
Solid
Sludge
Water
Oil
Air
Drum Solids
Drum Liquids
EP/TCLP
Leachate
Wipe
Other
Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	08310	Metals
001	J17FX5			S	9-2-08	1040		X
002	J17FX6			J	J	1045	X	X
003	J17FX7			J	J	1050	X	X

cial Instructions: Run matrix QC

Met ① = HSL + B, Mo, Sn

NOT L

Special Instructions:

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

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9-4-08	0955

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN		COMPOSITE WASTE	

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-052	Page 1 of 1
llector WELCH-KOELLING	Company Contact: Matt Perrott; Telephone No.: 372-9088	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 Days
oject Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: 100-H-28:1	SAF No.: RC-029	
Chest No. AFS-06-004	Field Logbook No.: EL-1601-2; COA: C00H28A000	Method of Shipment: FedEx	
ipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080 344	Bill of Lading/Air Bill No.: SEE GSPC	

OSSIBLE SAMPLE HAZARDS/REMARKS

pecial Handling and/or Storage

Preservation	None	Cool 4C									
Type of Container	G/P	aG									
No. of Container(s)	1	1									
Volume	250mL	250mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PAHs - 8310									

Sample No.	Matrix *	Sample Date	Sample Time										
7FX5	SOIL	8/28/08	1040	X									
7FX6	SOIL	8/28/08	1045	X	X								
7FX7	SOIL	8/28/08	1050	X	X								
~~7FX8~~	SOIL												
~~7FX9~~	SOIL	BH 8/28/08											

CHAIN OF POSSESSION	Sign/Print Names
nquished By/Removed From: WELCH KOELLING Date/Time: 8/28/08 ~~1040~~ 1056	Received By/Stored In: BHUDSON BHuds Date/Time: 8/28/08 ~~1040~~ 1056
nquished By/Removed From: BHUDSON BHudson Date/Time: 8/28/07 1630	Received By/Stored In: 1060 #3C Date/Time: 8/28/08 1630
nquished By/Removed From: 1060 3C Date/Time: 9/3/08 0900	Received By/Stored In: MSTankovich Date/Time: 9/3/08 0900
nquished By/Removed From: WCH MStankovich Date/Time: 9/3/08 0900	Received By/Stored In: FedEx Date/Time:
nquished By/Removed From: FedEx Date/Time: 9.4.08 0955	Received By/Stored In: DJMuell Date/Time: 9.4.08/0955
nquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:

SPECIAL INSTRUCTIONS

ICP Metals - 6010TR (Client List {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

First time times changed per B. Hudson
mm 9/3/08

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

BW

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

ABORATORY SECTION	Received By	Title	Date/Time
NAL SAMPLE ISPOSITION	Disposal Method	Disposed By	Date/Time

H-EE-011

000000021

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hanford

Project/SAF/SOW/Release #: RC-029

Date: 9-4-08

LvLI Batch #: 0809L022

Sample Custodian: D. Smith

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7980 0495 30
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 3.7	°C	Cooler # AFS-06-004
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 & LvLI) 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 LvLI 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 _____

LvLI LIONVILLE LABORATORY INC.