0079276

SAF-RC-074
100-D/DR Burial Grounds & Remaining Sites – Soil Quick Turn
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 11/3/08
INITIAL/DATE

COMMENTS:

SDG K1328 SAF RC-074

Rad only X Chem only Rad & Chem

X Complete Partial

RECEIVED
NOV 13 2008
EDMC

Waste Sites: 118-D-6:4 in-process sampling

LvLI
LIONVILLE LABORATORY INC.

RECEIVED
OCT 2008

27 October 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 #	0809L053
SDG #	K1328
SAF #	RC-074
Date Received	9/09/08
# Samples	3
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	X

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 Incorporated

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

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

RECEIVED
OCT 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/09/08 LVL LOT # :0809L053

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17HL6						
% SOLIDS	001	S	08L%S074	09/03/08	09/10/08	09/10/08
% SOLIDS	001 REP	S	08L%S074	09/03/08	09/10/08	09/10/08
CHROMIUM VI	001	S	08LVI062	09/03/08	09/10/08	09/10/08
CHROMIUM VI	001 REP	S	08LVI062	09/03/08	09/10/08	09/10/08
CHROMIUM VI	001 MS	S	08LVI062	09/03/08	09/10/08	09/10/08
CHROMIUM VI	001 MSD	S	08LVI062	09/03/08	09/10/08	09/10/08
J17HL7						
% SOLIDS	002	S	08L%S074	09/03/08	09/10/08	09/10/08
CHROMIUM VI	002	S	08LVI062	09/03/08	09/10/08	09/10/08
J17HL8						
% SOLIDS	003	S	08L%S074	09/03/08	09/10/08	09/10/08
CHROMIUM VI	003	S	08LVI062	09/03/08	09/10/08	09/10/08
LAB QC:						
CHROMIUM VI	MB1	S	08LVI062	N/A	09/10/08	09/10/08
CHROMIUM VI	MB1 BS	S	08LVI062	N/A	09/10/08	09/10/08
CHROMIUM VI	MB1 BSD	S	08LVI062	N/A	09/10/08	09/10/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: WC-HANFORD RC-074 K1328
LVL#: 0809L053

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

INORGANIC NARRATIVE

1. This narrative covers the analyses of 3 soil samples.

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

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

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. The method blank for Chromium VI was within the method criteria.

6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.

7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for soil samples are reported on a dry weight basis.

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory

10/3/08
Date

njp\i09-053

The results presented in this report relate to the analytical testing and conditions of the samples upon 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 11 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		__ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	
Other:	**Method:**		
Other:	**Method**		

L-WI-034/B-01/01

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
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/19/08

CLIENT: WC-HANFORD RC-074 K1328

LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17HL6	% Solids	99.0	%	0.01	1.0
		Chromium VI	3.8	MG/KG	0.20	1.0
-002	J17HL7	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-003	J17HL8	% Solids	99.2	%	0.01	1.0
		Chromium VI	4.3	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/19/08

CLIENT: WC-HANFORD RC-074 K1328

LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LVI062-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/19/08

CLIENT: WC-HANFORD RC-074 K1328

LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J17HL6	Soluble Chromium VI	8.1	3.8	4.0	106.8	1.0
		Insoluble Chromium VI	1480	3.8	1290	114.9	100
BLANK10	08LVI062-MB1	Soluble Chromium VI	4.2	0.20u	4.0	104.9	1.0
		Insoluble Chromium VI	1070	0.20u	1150	93.0	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/19/08

CLIENT: WC-HANFORD RC-074 K1328

LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J17HL6	% Solids	99.0	98.9	0.10	1.0
		Chromium VI	3.8	3.8	0.87	1.0

nville Laboratory Use Only

08091053

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

nt Washington Closure Hanford SAF#RC04

Final Proj. Sampling Date

ject# 60049-001-001-0001-00

ject Contact/Phone#

nville Laboratory Project Manager O. JOHNSON

SW846 Del STD TAT 7DAYS

e Rec'd 9-9-08 Date Due 9-16-08

		A	B
Refrigerator #			
#/Type Container	Liquid / Solid	1G	1G
Volume		60	60
Preservatives			
ANALYSES REQUESTED	ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: ICP Metal, CN	Metal	ICP6

Lionville Laboratory Use Only

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	A Metal	B ICP6
001	J17HL6			Soil	9-3-08	0946	X	X
002	J17HL7			Soil	1	1010	X	X
003	J17HL8			Soil	1	1018	X	X

ecial Instructions: Run matrix qc

met ① = HSL + B, Bi, Li, Mg, P, Si, Sr, Sn, U

Special Instructions:

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9/9/08	0955

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN		COMPOSITE WASTE	

000000009

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-074-089 | Page 1 of 1

Collector: D.W. Shea/Sub-contractor SEE D. RIOS	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8J	Data Turnaround: 7 days		
Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Quick Tu	Sampling Location: 118-D-6:4 in-process sampling		SAF No.: RC-074
Ice Chest No.: ERC-02-407	Field Logbook No.: EL-1607-4	COA: R118D68100	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: See OPSC A080346		Bill of Lading/Air Bill No.: see OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially radioactive

Special Handling and/or Storage

Preservation	None	Cool 4C	None								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	60mL	60mL	60mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.								

DWSheu entered wrong date

Sample No.	Matrix *	Sample Date	Sample Time									
17HL6	SOIL	9/4/08 9/3/08	0946	✓	✓							
17HL7	SOIL	↓	1010	✓	✓							
17HL8	SOIL	↓	1018	✓	✓							
~~17HL9~~	~~SOIL~~	DWSheu	9/3/08									
~~17HM0~~	~~SOIL~~											

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From	Date/Time 1506	Received By/Stored In: DWSheu DWSheu	Date/Time: 9/3/08 1506
Relinquished By/Removed From: DWSheu DWSheu	Date/Time: 9/3/08 1742	Received By/Stored In: Fridge 1A	Date/Time: 9/3/08 1742
Relinquished By/Removed From: 1060/1A	Date/Time: SEP 0 8 2008 1015	Received By/Stored In: MS Stankovich	Date/Time: SEP 0 8 2008 1015
Relinquished By/Removed From: MS Stankovich	Date/Time: SEP 0 8 2008 1015	Received By/Stored In: Fed Ex	Date/Time
Relinquished By/Removed From: [illegible]	Date/Time: 9-9-08 0955	Received By/Stored In: [illegible]	Date/Time: 9-9-08 0955
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc} and Hg via CVAA

(2) RCF GEA Shipping Screen {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

note: custody seal tape indicates samples collected on 9/4/08 this is wrong samples were collected on 9/3/08 - DWSheu 9/3/08

Matrix *

S=Soil
SF=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation

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

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

FCH-EE-011

000000010

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: Washington Closure Hanford Date: 9-9-08

Project/SAF/SOW/Release #: RC-074

LvLI Batch #: 0809L053 Sample Custodian: [signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7980 0730 0170
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 3.9	°C	Cooler # ERC-02407
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

RECEIVED
OCT 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/09/08 LVL LOT # :0809L053

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17HL6						
SILVER, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
SILVER, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
SILVER, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
ALUMINUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
ALUMINUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
ALUMINUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
ARSENIC, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
ARSENIC, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
ARSENIC, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
BORON, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
BORON, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
BORON, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
BARIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
BARIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
BARIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
BERYLLIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
BERYLLIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
BERYLLIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
BISMUTH, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
BISMUTH, TOTAL REP	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
BISMUTH, TOTAL SPIKE	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
CALCIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
CALCIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
CALCIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
CADMIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
CADMIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
CADMIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
COBALT, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
COBALT, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
COBALT, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
CHROMIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
CHROMIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
CHROMIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
COPPER, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
COPPER, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/09/08 LVL LOT # :0809L053

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COPPER, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
IRON, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
IRON, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
IRON, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
MERCURY, TOTAL	001	S	08C0160	09/03/08	09/15/08	09/16/08
MERCURY, TOTAL	001 REP	S	08C0160	09/03/08	09/15/08	09/16/08
MERCURY, TOTAL	001 MS	S	08C0160	09/03/08	09/15/08	09/16/08
POTASSIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
POTASSIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
POTASSIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
LITHIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
LITHIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
LITHIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
MAGNESIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
MAGNESIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
MAGNESIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
MANGANESE, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
MANGANESE, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
MANGANESE, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
MOLYBDENUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
MOLYBDENUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
MOLYBDENUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
SODIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
SODIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
SODIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
NICKEL, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
NICKEL, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
NICKEL, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
PHOSPHORUS, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
PHOSPHORUS, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
PHOSPHORUS, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
LEAD, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
LEAD, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
LEAD, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
ANTIMONY, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
ANTIMONY, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
ANTIMONY, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
SELENIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/09/08 LVL LOT # :0809L053

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
SELENIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
SILICON, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
SILICON, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
SILICON, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
TIN, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
TIN, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
TIN, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
STRONTIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
STRONTIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
STRONTIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
THALLIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
THALLIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
THALLIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
URANIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
URANIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
URANIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
VANADIUM, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
VANADIUM, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
VANADIUM, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
ZINC, TOTAL	001	S	08L0331	09/03/08	09/10/08	09/12/08
ZINC, TOTAL	001 REP	S	08L0331	09/03/08	09/10/08	09/12/08
ZINC, TOTAL	001 MS	S	08L0331	09/03/08	09/10/08	09/12/08
J17HL7						
SILVER, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
ALUMINUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
ARSENIC, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
BORON, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
BARIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
BERYLLIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
BISMUTH, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
CALCIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
CADMIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
COBALT, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
CHROMIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
COPPER, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/09/08 LVL LOT # :0809L053

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
MERCURY, TOTAL	002	S	08C0160	09/03/08	09/15/08	09/16/08
POTASSIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
LITHIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
MAGNESIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
MANGANESE, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
MOLYBDENUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
SODIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
NICKEL, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
PHOSPHORUS, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
LEAD, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
ANTIMONY, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
SELENIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
SILICON, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
TIN, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
STRONTIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
THALLIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
URANIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
VANADIUM, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
ZINC, TOTAL	002	S	08L0331	09/03/08	09/10/08	09/12/08
J17HL8						
SILVER, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
ALUMINUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
ARSENIC, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
BORON, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
BARIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
BERYLLIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
BISMUTH, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
CALCIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
CADMIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
COBALT, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
CHROMIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
COPPER, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
IRON, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
MERCURY, TOTAL	003	S	08C0160	09/03/08	09/15/08	09/16/08
POTASSIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/09/08 LVL LOT # :0809L053

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LITHIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
MAGNESIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
MANGANESE, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
MOLYBDENUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
SODIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
NICKEL, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
PHOSPHORUS, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
LEAD, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
ANTIMONY, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
SELENIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
SILICON, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
TIN, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
STRONTIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
THALLIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
URANIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
VANADIUM, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08
ZINC, TOTAL	003	S	08L0331	09/03/08	09/10/08	09/12/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
SILVER, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
ALUMINUM LABORTORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
ALUMINUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
ARSENIC LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
ARSENIC, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
BORON LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
BORON, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
BARIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
BARIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
BERYLLIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
BISMUTH, LCS	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
BISMUTH, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
CALCIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
CALCIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
CADMIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
CADMIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/09/08 LVL LOT # :0809L053

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COBALT LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
COBALT, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
CHROMIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
CHROMIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
COPPER LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
COPPER, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
IRON LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
IRON, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
MERCURY LABORATORY	LC1 BS	S	08C0160	N/A	09/15/08	09/16/08
MERCURY, TOTAL	MB1	S	08C0160	N/A	09/15/08	09/16/08
POTASSIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
POTASSIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
LITHIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
LITHIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
MAGNESIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
MANGANESE LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
MANGANESE, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
MOLYBDENUM LABORATOR	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
MOLYBDENUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
SODIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
SODIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
NICKEL LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
NICKEL, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
PHOSPHORUS LCS	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
PHOSPHORUS, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
LEAD LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
LEAD, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
ANTIMONY LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
ANTIMONY, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
SELENIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
SELENIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
SILICON LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
SILICON, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
TIN LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
TIN, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
STRONTIUM LCS STANDA	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
STRONTIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/09/08

LVL LOT # :0809L053

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
THALLIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
THALLIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
URANIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
URANIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
VANADIUM LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
VANADIUM, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08
ZINC LABORATORY	LC1 BS	S	08L0331	N/A	09/10/08	09/12/08
ZINC, TOTAL	MB1	S	08L0331	N/A	09/10/08	09/12/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: WC-HANFORD RC-074
LVL#: 0809L053
SDG/SAF#: K1328/RC-074

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

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 were run with 3-fold dilutions for ICP metals due to sample matrix.

   The samples were run on a different instrument for Phosphorous.

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).

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

6. The preparation/method blank for 1 analyte was 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 result for Sodium was greater than the Limit of Quantitation (LOQ) {3-10x the (LOD) Limit of Detection} and the samples 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 levels found in the MB.

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

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 24 pages.

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon (24.2%). The sample results may be biased low. Refer to the Inorganics Laboratory Control Standards Report.

9. The matrix spike (MS) recoveries for 6 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
J17HL6	Aluminum	30,000	97.7
	Magnesium	30,000	94.2
	Iron	60,000	80.6
	Antimony	300	94.1
	Zinc	300	91.4
	Phosphorous	6,000	95.3

11. The duplicate analysis for 5 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

9/16/08
Date

alm/m09-053

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

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

t#: 0809L053

aching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
uminum	✓6010B		__200.7				__99
ntimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
rsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
arium	✓6010B		__200.7				__99
eryllium	✓6010B		__200.7				__99
ismuth	✓6010B [2]		__200.7 [1]			__1620	__99
oron	✓6010B		__200.7				__99
admium	✓6010B	__7131A [5]	__200.7	__213.2			__99
alcium	✓6010B		__200.7				__99
hromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
obalt	✓6010B		__200.7				__99
opper	✓6010B	__7211 [5]	__200.7	__220.2			__99
on	✓6010B		__200.7				__99
ead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
ithium	✓6010B	__7430 [4]	__200.7			__1620	__99
lagnesium	✓6010B		__200.7				__99
langanese	✓6010B		__200.7				__99
lercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
lolybdenum	✓6010B		__200.7				__99
ickel	✓6010B		__200.7				__99
otassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
are Earths	__6010B [1]		__200.7 [1]			__1620	__99
elenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
ilicon	✓6010B [1]		__200.7			__1620	__99
ilica	__6010B		__200.7			__1620	__99
ilver	✓6010B	__7761 [5]	__200.7	__272.2			__99
odium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
trontium	✓6010B		__200.7				__99
hallium	✓6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
in	✓6010B		__200.7				__99
itanium	__6010B		__200.7				__99
Jranium	✓6010B [1]		__200.7 [1]			__1620	__99
anadium	✓6010B		__200.7				__99
inc	✓6010B		__200.7				__99
irconium	__6010B [1]		__200.7 [1]			__1620	__99

... Phosphorus Method: 6010B

LW1000000010

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 09/16/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17HL6	Silver, Total	0.24 u	MG/KG	0.24	3.0
		Aluminum, Total	6050	MG/KG	9.5	3.0
		Arsenic, Total	1.2 u	MG/KG	1.2	3.0
		Boron, Total	1.4	MG/KG	1.2	3.0
		Barium, Total	79.3	MG/KG	0.24	3.0
		Beryllium, Total	0.12 u	MG/KG	0.12	3.0
		Bismuth, Total	1.8	MG/KG	1.4	3.0
		Calcium, Total	5990	MG/KG	9.5	3.0
		Cadmium, Total	0.26	MG/KG	0.12	3.0
		Cobalt, Total	10.5	MG/KG	0.48	3.0
		Chromium, Total	41.0	MG/KG	0.48	3.0
		Copper, Total	18.5	MG/KG	0.48	3.0
		Iron, Total	29800	MG/KG	10.7	3.0
		Mercury, Total	0.03	MG/KG	0.009	1.0
		Potassium, Total	557	MG/KG	9.5	3.0
		Lithium, Total	5.0	MG/KG	0.1	3.0
		Magnesium, Total	5070	MG/KG	6.0	3.0
		Manganese, Total	370	MG/KG	0.1	3.0
		Molybdenum, Total	0.90	MG/KG	0.72	3.0
		Sodium, Total	230	MG/KG	4.8	3.0
		Nickel, Total	11.0	MG/KG	0.48	3.0
		Phosphorus, Total	1430	MG/KG	11.9	3.0
		Lead, Total	3.8	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	142	MG/KG	9.5	3.0
		Tin, Total	1.4 u	MG/KG	1.4	3.0
		Strontium, Total	22.8	MG/KG	0.07	3.0
		Thallium, Total	1.4 u	MG/KG	1.4	3.0
		Uranium, Total	4.8 u	MG/KG	4.8	3.0
		Vanadium, Total	79.5	MG/KG	0.33	3.0
		Zinc, Total	66.1	MG/KG	1.4	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/16/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J17HL7	Silver, Total	0.24 u	MG/KG	0.24	3.0
		Aluminum, Total	8380	MG/KG	9.7	3.0
		Arsenic, Total	3.9	MG/KG	1.2	3.0
		Boron, Total	2.6	MG/KG	1.2	3.0
		Barium, Total	85.3	MG/KG	0.24	3.0
		Beryllium, Total	0.15	MG/KG	0.12	3.0
		Bismuth, Total	1.5	MG/KG	1.5	3.0
		Calcium, Total	10500	MG/KG	9.7	3.0
		Cadmium, Total	0.13	MG/KG	0.12	3.0
		Cobalt, Total	7.9	MG/KG	0.48	3.0
		Chromium, Total	14.2	MG/KG	0.48	3.0
		Copper, Total	17.5	MG/KG	0.48	3.0
		Iron, Total	20100	MG/KG	10.9	3.0
		Mercury, Total	0.07	MG/KG	0.01	1.0
		Potassium, Total	1470	MG/KG	9.7	3.0
		Lithium, Total	9.5	MG/KG	0.1	3.0
		Magnesium, Total	5170	MG/KG	6.0	3.0
		Manganese, Total	329	MG/KG	0.1	3.0
		Molybdenum, Total	0.77	MG/KG	0.73	3.0
		Sodium, Total	231	MG/KG	4.8	3.0
		Nickel, Total	13.5	MG/KG	0.48	3.0
		Phosphorus, Total	745	MG/KG	12.1	3.0
		Lead, Total	6.2	MG/KG	0.73	3.0
		Antimony, Total	0.73 u	MG/KG	0.73	3.0
		Selenium, Total	1.5 u	MG/KG	1.5	3.0
		Silicon, Total	167	MG/KG	9.7	3.0
		Tin, Total	1.5 u	MG/KG	1.5	3.0
		Strontium, Total	46.0	MG/KG	0.07	3.0
		Thallium, Total	1.5 u	MG/KG	1.5	3.0
		Uranium, Total	4.8 u	MG/KG	4.8	3.0
		Vanadium, Total	43.3	MG/KG	0.34	3.0
		Zinc, Total	45.9	MG/KG	1.5	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/16/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J17HL8	Silver, Total	0.24 u	MG/KG	0.24	3.0
		Aluminum, Total	5380	MG/KG	9.6	3.0
		Arsenic, Total	2.2	MG/KG	1.2	3.0
		Boron, Total	1.2 u	MG/KG	1.2	3.0
		Barium, Total	71.9	MG/KG	0.24	3.0
		Beryllium, Total	0.12 u	MG/KG	0.12	3.0
		Bismuth, Total	2.0	MG/KG	1.4	3.0
		Calcium, Total	4720	MG/KG	9.6	3.0
		Cadmium, Total	0.79	MG/KG	0.12	3.0
		Cobalt, Total	8.6	MG/KG	0.48	3.0
		Chromium, Total	218	MG/KG	0.48	3.0
		Copper, Total	20.1	MG/KG	0.48	3.0
		Iron, Total	26500	MG/KG	10.8	3.0
		Mercury, Total	0.82	MG/KG	0.008	1.0
		Potassium, Total	620	MG/KG	9.6	3.0
		Lithium, Total	4.5	MG/KG	0.1	3.0
		Magnesium, Total	3820	MG/KG	6.0	3.0
		Manganese, Total	273	MG/KG	0.1	3.0
		Molybdenum, Total	0.80	MG/KG	0.72	3.0
		Sodium, Total	267	MG/KG	4.8	3.0
		Nickel, Total	12.5	MG/KG	0.48	3.0
		Phosphorus, Total	1740	MG/KG	12.0	3.0
		Lead, Total	19.5	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	128	MG/KG	9.6	3.0
		Tin, Total	1.4 u	MG/KG	1.4	3.0
		Strontium, Total	21.9	MG/KG	0.07	3.0
		Thallium, Total	1.4 u	MG/KG	1.4	3.0
		Uranium, Total	4.8 u	MG/KG	4.8	3.0
		Vanadium, Total	74.6	MG/KG	0.34	3.0
		Zinc, Total	132	MG/KG	1.4	3.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/16/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0331-MB1	Silver, Total	0.10 u	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	0.10 u	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Bismuth, Total	0.60 u	MG/KG	0.60	1.0
		Calcium, Total	6.0	MG/KG	4.0	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.20 u	MG/KG	0.20	1.0
		Copper, Total	0.20 u	MG/KG	0.20	1.0
		Iron, Total	4.5 u	MG/KG	4.5	1.0
		Potassium, Total	4.0 u	MG/KG	4.0	1.0
		Lithium, Total	0.07	MG/KG	0.04	1.0
		Magnesium, Total	2.5 u	MG/KG	2.5	1.0
		Manganese, Total	0.04	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Sodium, Total	17.9	MG/KG	2.0	1.0
		Nickel, Total	0.20 u	MG/KG	0.20	1.0
		Phosphorus, Total	5.0 u	MG/KG	5.0	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
		Tin, Total	0.72	MG/KG	0.60	1.0
		Strontium, Total	0.03 u	MG/KG	0.03	1.0
		Thallium, Total	0.60 u	MG/KG	0.60	1.0
		Uranium, Total	2.0 u	MG/KG	2.0	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	08C0160-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/16/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J17HL6	Silver, Total	3.8	0.24u	3.9	97.4	3.0
		Aluminum, Total	6790	6050	158	471.2*	3.0
		Arsenic, Total	147	1.2 u	158	93.3	3.0
		Boron, Total	72.3	1.4	78.9	89.9	3.0
		Barium, Total	235	79.3	158	98.9	3.0
		Beryllium, Total	3.6	0.12u	3.9	92.3	3.0
		Bismuth, Total	374	1.8	394	94.4	3.0
		Calcium, Total	7980	5990	1970	100.6	3.0
		Cadmium, Total	3.9	0.26	3.9	93.5	3.0
		Cobalt, Total	47.2	10.5	39.4	93.1	3.0
		Chromium, Total	54.6	41.0	15.8	86.1	3.0
		Copper, Total	36.3	18.5	19.7	90.4	3.0
		Iron, Total	27600	29800	78.9	-2700. *	3.0
		Mercury, Total	0.20	0.03	0.14	119.4	1.0
		Potassium, Total	2350	557	1970	90.9	3.0
		Lithium, Total	82.5	5.0	78.9	98.2	3.0
		Magnesium, Total	6530	5070	1970	74.1	3.0
		Manganese, Total	407	370	39.4	93.4*	3.0
		Molybdenum, Total	73.6	0.90	78.9	92.1	3.0
		Sodium, Total	2140	230	1970	96.7	3.0
		Nickel, Total	47.0	11.0	39.4	91.4	3.0
		Phosphorus, Total	1570	1430	394	36.1	3.0
		Lead, Total	40.7	3.8	39.4	93.7	3.0
		Antimony, Total	16.5	0.72u	39.4	41.9	3.0
		Selenium, Total	127	1.4 u	158	80.7	3.0
		Silicon, Total	225	142	78.9	104.6	3.0
		Tin, Total	74.1	1.4 u	78.9	93.9	3.0
		Strontium, Total	104	22.8	78.9	102.9	3.0
		Thallium, Total	148	1.4 u	158	93.7	3.0
		Uranium, Total	367	4.8 u	394	92.9	3.0
		Vanadium, Total	113	79.5	39.4	84.3	3.0
		Zinc, Total	94.7	66.1	39.4	72.6	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/16/08

CLIENT: WC-HANFORD RC-074 K1328

LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J17HL6	Silver, Total	0.24u	0.25u	NC	3.0
		Aluminum, Total	6050	6220	2.8	3.0
		Arsenic, Total	1.2 u	1.7	~~NC~~ 200	3.0
		Boron, Total	1.4	1.2 u	~~NC~~ 200 *	3.0
		Barium, Total	79.3	83.5	5.2	3.0
		Beryllium, Total	0.12u	0.12u	NC	3.0
		Bismuth, Total	1.8	1.7	5.7	3.0
		Calcium, Total	5990	6180	3.1	3.0
		Cadmium, Total	0.26	0.14	55.6	3.0
		Cobalt, Total	10.5	10.7	1.9	3.0
		Chromium, Total	41.0	43.0	4.8	3.0
		Copper, Total	18.5	18.9	2.1	3.0
		Iron, Total	29800	30900	3.6	3.0
		Mercury, Total	0.03	0.02	31.6	1.0
		Potassium, Total	557	592	6.1	3.0
		Lithium, Total	5.0	4.8	4.1	3.0
		Magnesium, Total	5070	4960	2.3	3.0
		Manganese, Total	370	386	4.1	3.0
		Molybdenum, Total	0.90	0.88	1.7	3.0
		Sodium, Total	230	270	16.2	3.0
		Nickel, Total	11.0	9.6	13.6	3.0
		Phosphorus, Total	1430	1410	1.6	3.0
		Lead, Total	3.8	4.1	7.6	3.0
		Antimony, Total	0.72u	0.75u	NC	3.0
		Selenium, Total	1.4 u	1.5 u	NC	3.0
		Silicon, Total	142	155	8.4	3.0
		Tin, Total	1.4 u	1.5 u	NC	3.0
		Strontium, Total	22.8	29.8	26.6	3.0
		Thallium, Total	1.4 u	1.5 u	NC	3.0
		Uranium, Total	4.8 u	5.0 u	NC	3.0
		Vanadium, Total	79.5	84.2	5.7	3.0
		Zinc, Total	66.1	64.3	2.8	3.0

* corrected RPD
aem 9/16/08

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/16/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L053

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0331-LC1	Silver, LCS	47.3	50.0	MG/KG	94.6
		Aluminum, LCS	474	500	MG/KG	94.8
		Arsenic, LCS	889	1000	MG/KG	88.9
		Boron, LCS	440	500	MG/KG	88.1
		Barium, LCS	470	500	MG/KG	94.1
		Beryllium, LCS	23.1	25.0	MG/KG	92.4
		Bismuth, LCS	460	500	MG/KG	91.9
		Calcium, LCS	2320	2500	MG/KG	93.0
		Cadmium, LCS	22.6	25.0	MG/KG	90.4
		Cobalt, LCS	231	250	MG/KG	92.3
		Chromium, LCS	46.8	50.0	MG/KG	93.6
		Copper, LCS	120	125	MG/KG	95.8
		Iron, LCS	466	500	MG/KG	93.2
		Potassium, LCS	2260	2500	MG/KG	90.3
		Lithium, LCS	500	500	MG/KG	99.9
		Magnesium, LCS	2280	2500	MG/KG	91.2
		Manganese, LCS	70.7	75.0	MG/KG	94.3
		Molybdenum, LCS	456	500	MG/KG	91.1
		Sodium, LCS	2300	2500	MG/KG	92.1
		Nickel, LCS	186	200	MG/KG	92.9
		Phosphorus, LCS	440	500	MG/KG	88.1
		Lead, LCS	229	250	MG/KG	91.6
		Antimony, LCS	270	300	MG/KG	89.9
		Selenium, LCS	866	1000	MG/KG	86.6
		Silicon, LCS	121	500	MG/KG	24.2
		Tin, LCS	454	500	MG/KG	90.9
		Strontium, LCS	472	500	MG/KG	94.4
		Thallium, LCS	924	1000	MG/KG	92.4
		Uranium, LCS	465	500	MG/KG	93.1
		Vanadium, LCS	234	250	MG/KG	93.6
		Zinc, LCS	93.4	100	MG/KG	93.4
LCS1	08C0160-LC1	Mercury, LCS	4.7	4.7	MG/KG	100.9

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0331
Date/Time Initiated: 9/10/08 1245
Date/Time Completed: 9/10/08 2030
Analyst(s): MW
Matrix: (Soil) Water Other:
Instr. Type: AA (ICP)
Parameters: HBL + B-, Bi, Li, Mo, P-, Si, Sn, Sr, U-

(Digested) / Undigested (circle one)
Balance #: B20
Balance Cal Verif: (Y) NA
Hot Plate Temp: 92°

Method: SW (circle): 3005A, 3010A, 3015, 3020A, 7060A (As/Se), 7760A (Ag), (3050B), 3051
DW: 200.7 (1994), 200.9, 3113B
MCAWW: 200.7 (1982), 200 (AA), 206.2 (As/Se)
SM: 3030C (NC)
CLP: ILMO3.0, ILMO4.0
Other: tiffin

MW

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
0809L034-001		1.30 gm	100 ml	<2	TO	coarse	dk. brown soil	wrks	RAD
001R		1.39 gm							
001S	1.0 ml *	1.31 gm							
0809L055-001		1.27 gm					brown soil		
001R		1.22 gm							
001S	1.0 ml *	1.28 gm							
002		1.25 gm							
003		1.26 gm							
08L0331-MB1		1.0 gm					boiling chips		
LC1	1.0 ml *	1.0 gm							

MW 9/10/08

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

Reagent IDs:
HNO_3 G07057
HCL G15040
H_2O_2 G15A18
1:1 HNO_3 9789-083-08
1:1 HCL

File ID#: IC033101
LIMS Transfer: (Y) N
Data Review By/Date: RMP, 09/11/08

* also 0.5 ml 6072-076-11 (Bi)
0.5 ml 6072-079-14 (P-)
0.5 ml 6072-078-01 (U-)

Lionville Laboratory
Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: TLD
Date: 9/15/08
Start Time/Temp: 1815 / 94°
End Time/Temp: 1845 / 98°

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

Prep Batch: 08C0160
Worksheet: HG0911601
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? __ Yes ✓ 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	H3			10mL	50mL	
0.2 µg/L	8	0.100				
1.0	3VG	0.500				
2.0	5H	1.000				
5.0	3C	2.500				
10.0	41	5.000				
ICV	RU	0.125	2.5			
CCV	194	0.250	5.0			
ICB/CCB	C4D					90.50
MB1	KX			0.30		PBS160 100.0
LCI	CM	*	*	0.32		
0809L053-001	205			0.35		R 99.03
001R	AP			0.41		
001S	P3	0.500	1.0	0.35		
002	DX			0.31		99.25
003	114			0.37		
0809L076-001	5T			0.31		100.0
001R	Q12			0.31		
001S	154	0.050	10.0	0.31		
002	N2			0.33		
003	31			0.32		
004	F8			0.36		
005	514			0.39		
0809L086-001	537			0.32		R 98.61
001R	NR			0.36		
001S	81G	0.500	1.0	0.32		
0809L091-001	TR			0.30		102.00

Standard:	ID	Prep Date/Time
CAL/MS	R1 6072-78-14B	9/15/08 1035
CV/CCV/LCS	US 6072-78-15A	

Reviewed By/Date: [signature] 9/16/0

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

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: EA
Date 9/15/08
Start Time/Temp:
End Time/Temp: see page 020

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

Prep Batch: 08C0160
Worksheet: HG091601
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.
08091091-002	E			0.32	50mL	100.0
002R	676			0.33		
002S	112	0.050	10.0	0.33		
003	HH			0.30		R
004	P7			0.31		
005	L53			0.30		R
006	L2			0.30		

EA 9/15/08

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	see page 020	

Reviewed By/Date: [signature] 9/16/

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 #:

000000021

nville Laboratory Use Only

28091L053

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

000000022

nt Washington Closure Hanford SAFHRC014

. Final Proj. Sampling Date

ject# 60049-001-001-0001-00

ject Contact/Phone#

nville Laboratory Project Manager O. JOHNSON

SW846 Del STD TAT 7 DAYS

e Rec'd 9-9-08 Date Due 9-16-08

Refrigerator #																		
#/Type Container	Liquid																	
	Solid										1G		1G					
Volume											60		60					
Preservatives																		
ANALYSES REQUESTED →		ORGANIC								INORG								
		VOA	BNA	Pest/ PCB	Herb					ICP Metal	Hg	CN	Hex Chrom					
		Lionville Laboratory Use Only																
										Metal			ICP6					

Matrix Codes:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
Soil	001	J17HL6			Soil	9-3-08	0946								X		X			
Sediment	002	J17HL7			Soil	↓	1010								X		X			
Solid	003	J17HL8			Soil	↓	1018								X		X			
Sludge																				
Water																				
Oil																				
Air																				
Drum Solids																				
Drum Liquids																				
EP/TCLP Leachate																				
Wipe																				
Other																				
Fish																				

ecial Instructions: Run matrix QC

met ① = HSL + B, Bi, Li, Mo, P, Si, Sr, Sn, U

Special Instructions:

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9/9/08	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-074-089 | Page 1 of 1

llector: D.W. Shea/Sub-contractor SEE D.RIOS	Company Contact: D.W.Shea	Telephone No.: 521-6014	Project Coordinator: KESSNER, JH
Price Code: 8J	Data Turnaround: 7 days		
olect Designation: 100-D/DR Burial Grounds & Remaining Sites - Soil Quick Tu	Sampling Location: 118-D-6:4 in-process sampling		SAF No.: RC-074
Chest No.: ERC-02-407	Field Logbook No.: EL-1607-4	COA: R118D68100	Method of Shipment: Fed Ex
ipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: See OPSC A080346		Bill of Lading/Air Bill No.: SEE OSPC

OSSIBLE SAMPLE HAZARDS/REMARKS

otentially radioactive

pecial Handling and/or Storage

Preservation	None	Cool 4C	None
Type of Container	G/P	G/P	G/P
No. of Container(s)	1	1	1
Volume	60mL	60mL	60mL
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.

SAMPLE ANALYSIS

DWShea entered wrong date

Sample No.	Matrix *	Sample Date	Sample Time			
7HL6	SOIL	~~9/4/08~~ 9/3/08	0946	✓	✓	
7HL7	SOIL	↓	1010	✓	✓	
7HL8	SOIL	↓	1018	✓	✓	
~~7HL9~~	~~SOIL~~	DWShea	9/3/08			
~~7HM0~~	~~SOIL~~					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1506	Received By/Stored In	Date/Time
[signature]	9-8-08	DWShea DWShea	9/3/08 1506
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DWShea DWShea	9/3/08 1742	Fridge 1A	9/3/08 1742
Relinquished By/Removed From	Date/Time 1015	Received By/Stored In	Date/Time 1015
060/1A	SEP 0 8 2008	MS Stankovich	SEP 0 8 2008
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fedex MS Stankovich	SEP 0 8 2008 1015	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	9-9-08 0955	[signature]	9-9-08 0955
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc} and Hg via CVAA

(2) RCF GEA Shipping Screen {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Note: custody seal tape indicates samples collected on 9/4/08 this is wrong samples were collected on 9/3/08 - DWShea 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.

Matrix *: S=Soil, SF=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, Other

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

CH-EE-011

000000023

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: Washington Closure Hanford Date: 9-9-08

Project/SAF/SOW/Release #: RC-074

LvLI Batch #: 0809L053 Sample Custodian: [signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7980 0730 0170
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 3.9	°C	Cooler # ERC-02407
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

LvLI
LIONVILLE LABORATORY INC.

RECEIVED
OCT 2008

27 October 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 #	0809L158
SDG #	K1328 ADDON
SAF #	RC-074
Date Received	9/23/08
# Samples	1
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
GC Alcohols	
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 Incorporated

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

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

RECEIVED
OCT 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/23/08 LVL LOT # :0809L158

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17HL8						
TCLP	001	S	08LT0095	09/03/08	09/23/08	09/24/08
SILVER, TCLP LEACHAT	002	W	08L0354	09/24/08	09/29/08	10/04/08
SILVER, TCLP LEACHAT	002 REP	W	08L0354	09/24/08	09/29/08	10/04/08
SILVER, TCLP LEACHAT	002 MS	W	08L0354	09/24/08	09/29/08	10/04/08
ARSENIC, TCLP LEACHA	002	W	08L0354	09/24/08	09/29/08	10/04/08
ARSENIC, TCLP LEACHA	002 REP	W	08L0354	09/24/08	09/29/08	10/04/08
ARSENIC, TCLP LEACHA	002 MS	W	08L0354	09/24/08	09/29/08	10/04/08
BARIUM, TCLP LEACHAT	002	W	08L0354	09/24/08	09/29/08	10/04/08
BARIUM, TCLP LEACHAT	002 REP	W	08L0354	09/24/08	09/29/08	10/04/08
BARIUM, TCLP LEACHAT	002 MS	W	08L0354	09/24/08	09/29/08	10/04/08
CADMIUM, TCLP LEACHA	002	W	08L0354	09/24/08	09/29/08	10/04/08
CADMIUM, TCLP LEACHA	002 REP	W	08L0354	09/24/08	09/29/08	10/04/08
CADMIUM, TCLP LEACHA	002 MS	W	08L0354	09/24/08	09/29/08	10/04/08
CHROMIUM, TCLP LEACH	002	W	08L0354	09/24/08	09/29/08	10/04/08
CHROMIUM, TCLP LEACH	002 REP	W	08L0354	09/24/08	09/29/08	10/04/08
CHROMIUM, TCLP LEACH	002 MS	W	08L0354	09/24/08	09/29/08	10/04/08
MERCURY, TCLP LEACHA	002	W	08C0172	09/24/08	09/30/08	09/30/08
MERCURY, TCLP LEACHA	002 REP	W	08C0172	09/24/08	09/30/08	09/30/08
MERCURY, TCLP LEACHA	002 MS	W	08C0172	09/24/08	09/30/08	09/30/08
LEAD, TCLP LEACHATE	002	W	08L0354	09/24/08	09/29/08	10/04/08
LEAD, TCLP LEACHATE	002 REP	W	08L0354	09/24/08	09/29/08	10/04/08
LEAD, TCLP LEACHATE	002 MS	W	08L0354	09/24/08	09/29/08	10/04/08
SELENIUM, TCLP LEACH	002	W	08L0354	09/24/08	09/29/08	10/04/08
SELENIUM, TCLP LEACH	002 REP	W	08L0354	09/24/08	09/29/08	10/04/08
SELENIUM, TCLP LEACH	002 MS	W	08L0354	09/24/08	09/29/08	10/04/08

LAB QC:

SILVER LABORATORY	LC1 BS	W	08L0354	N/A	09/29/08	10/04/08
SILVER, TCLP LEACHAT	MB1	W	08L0354	N/A	09/29/08	10/04/08
SILVER, TCLP LEACHAT	MB2	W	08L0354	N/A	09/29/08	10/04/08
ARSENIC LABORATORY	LC1 BS	W	08L0354	N/A	09/29/08	10/04/08
ARSENIC, TCLP LEACHA	MB1	W	08L0354	N/A	09/29/08	10/04/08
ARSENIC, TCLP LEACHA	MB2	W	08L0354	N/A	09/29/08	10/04/08
BARIUM LABORATORY	LC1 BS	W	08L0354	N/A	09/29/08	10/04/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-074 K1328

DATE RECEIVED: 09/23/08 LVL LOT # :0809L158

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BARIUM, TCLP LEACHAT	MB1	W	08L0354	N/A	09/29/08	10/04/08
BARIUM, TCLP LEACHAT	MB2	W	08L0354	N/A	09/29/08	10/04/08
CADMIUM LABORATORY	LC1 BS	W	08L0354	N/A	09/29/08	10/04/08
CADMIUM, TCLP LEACHA	MB1	W	08L0354	N/A	09/29/08	10/04/08
CADMIUM, TCLP LEACHA	MB2	W	08L0354	N/A	09/29/08	10/04/08
CHROMIUM LABORATORY	LC1 BS	W	08L0354	N/A	09/29/08	10/04/08
CHROMIUM, TCLP LEACH	MB1	W	08L0354	N/A	09/29/08	10/04/08
CHROMIUM, TCLP LEACH	MB2	W	08L0354	N/A	09/29/08	10/04/08
MERCURY LABORATORY	LC1 BS	W	08C0172	N/A	09/30/08	09/30/08
MERCURY, TOTAL	MB1	W	08C0172	N/A	09/30/08	09/30/08
MERCURY, TCLP LEACHA	MB2	W	08C0172	N/A	09/30/08	09/30/08
MERCURY, TCLP LEACHA	MB3	W	08C0172	N/A	09/30/08	09/30/08
LEAD LABORATORY	LC1 BS	W	08L0354	N/A	09/29/08	10/04/08
LEAD, TCLP LEACHATE	MB1	W	08L0354	N/A	09/29/08	10/04/08
LEAD, TCLP LEACHATE	MB2	W	08L0354	N/A	09/29/08	10/04/08
SELENIUM LABORATORY	LC1 BS	W	08L0354	N/A	09/29/08	10/04/08
SELENIUM, TCLP LEACH	MB1	W	08L0354	N/A	09/29/08	10/04/08
SELENIUM, TCLP LEACH	MB2	W	08L0354	N/A	09/29/08	10/04/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-074
LVL#: 0809L158
SDG/SAF#: K1328/RC-074

W.O.#: 60049-001-001-0001-00
Date Received: 09-23-08

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.

1. This narrative covers the analyses of 1 TCLP leachate sample. The sample was relogged from LvLI batch# 0809L053.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

   The sample was prepped with a 2-fold dilution for ICP metals due to limited sample volume.

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 the ending CCV in file PS1004A. Sample J17HL8 was rerun and reported from file PS1004B. All sample results contained in this report were surrounded by QC within control.

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

6. All preparation/method blanks (MB) were within 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.

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

8. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

9. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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 17 pages.

10. The TCLP extract from sample J17HL8 was selected for the matrix spike (MS) for this analytical batch.

The matrix spike for Silver was below 50% recovery (8.1%). The recovery in the TCLP Leachate was below 80-120% of the action level so standard addition was not required per Federal Register, Vol.57, No.227, Nov. 24, 1992, page 55117.

11. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL).

12. 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.

13. 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

10-10-08
Date

alm/m09-158

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

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

ıt#: 0809L158

aching Procedure: __1310 ✓1311 __1312 __Other:_____

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

etals Digestion Methods: __3005A ✓3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
luminum	__6010B		__200.7				__99
ntimony	__6010B	__7041 [5]	__200.7	__204.2			__99
rsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
arium	✓6010B		__200.7				__99
eryllium	__6010B		__200.7				__99
ismuth	__6010B [1]		__200.7 [1]			__1620	__99
oron	__6010B		__200.7				__99
admium	✓6010B	__7131A [5]	__200.7	__213.2			__99
alcium	__6010B		__200.7				__99
hromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
obalt	__6010B		__200.7				__99
opper	__6010B	__7211 [5]	__200.7	__220.2			__99
ron	__6010B		__200.7				__99
ead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
ithium	__6010B	__7430 [4]	__200.7			__1620	__99
lagnesium	__6010B		__200.7				__99
langanese	__6010B		__200.7				__99
lercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
lolybdenum	__6010B		__200.7				__99
ickel	__6010B		__200.7				__99
otassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
are Earths	__6010B [1]		__200.7 [1]			__1620	__99
elenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
ilicon	__6010B [1]		__200.7			__1620	__99
ilica	__6010B		__200.7			__1620	__99
ilver	✓6010B	__7761 [5]	__200.7	__272.2			__99
odium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
trontium	__6010B		__200.7				__99
hallium	__6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
in	__6010B		__200.7				__99
itanium	__6010B		__200.7				__99
ranium	__6010B [1]		__200.7 [1]			__1620	__99
anadium	__6010B		__200.7				__99
inc	__6010B		__200.7				__99
irconium	__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 10/08/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L158

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J17HL8	Silver, TCLP Leachate	10.8		UG/L	9.0	1.0
		Arsenic, TCLP Leachate	63.4	u	UG/L	63.4	1.0
		Barium, TCLP Leachate	179		UG/L	6.2	1.0
		Cadmium, TCLP Leachate	11.2	u	UG/L	11.2	1.0
		Chromium, TCLP Leachate	29.7		UG/L	9.2	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Lead, TCLP Leachate	69.6	u	UG/L	69.6	1.0
		Selenium, TCLP Leachate	82.6	u	UG/L	82.6	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/08/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L158

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0354-MB1	Silver, TCLP Leachate	4.5	u	UG/L	4.5	1.0
		Arsenic, TCLP Leachate	31.7	u	UG/L	31.7	1.0
		Barium, TCLP Leachate	3.3		UG/L	3.1	1.0
		Cadmium, TCLP Leachate	5.6	u	UG/L	5.6	1.0
		Chromium, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Lead, TCLP Leachate	34.8	u	UG/L	34.8	1.0
		Selenium, TCLP Leachate	41.3	u	UG/L	41.3	1.0
BLANK2	08L0354-MB2	Silver, TCLP Leachate	4.5	u	UG/L	4.5	1.0
		Arsenic, TCLP Leachate	31.7	u	UG/L	31.7	1.0
		Barium, TCLP Leachate	3.1	u	UG/L	3.1	1.0
		Cadmium, TCLP Leachate	5.6	u	UG/L	5.6	1.0
		Chromium, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Lead, TCLP Leachate	34.8	u	UG/L	34.8	1.0
		Selenium, TCLP Leachate	41.3	u	UG/L	41.3	1.0
BLANK1	08C0172-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	08C0172-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
BLANK3	08C0172-MB3	Mercury, TCLP Leachate	0.26		UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/08/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L158

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J17HL8	Silver, TCLP Leachate	412	10.8	5000	8.0	1.0
		Arsenic, TCLP Leachate	4530	63.4 u	5000	90.6	1.0
		Barium, TCLP Leachate	23500	179	25000	93.1	1.0
		Cadmium, TCLP Leachate	888	11.2 u	1000	88.8	1.0
		Chromium, TCLP Leachat	4370	29.7	5000	86.8	1.0
		Mercury, TCLP Leachate	204	0.10u	200	101.8	50.0
		Lead, TCLP Leachate	4380	69.6 u	5000	87.7	1.0
		Selenium, TCLP Leachat	864	82.6 u	1000	86.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/08/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L158

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J17HL8	Silver, TCLP Leachate	10.8	10.2	5.7	1.0
		Arsenic, TCLP Leachate	63.4 u	63.4 u	NC	1.0
		Barium, TCLP Leachate	179	198	10.2	1.0
		Cadmium, TCLP Leachate	11.2 u	11.2 u	NC	1.0
		Chromium, TCLP Leachate	29.7	27.6	7.3	1.0
		Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0
		Lead, TCLP Leachate	69.6 u	69.6 u	NC	1.0
		Selenium, TCLP Leachate	82.6 u	82.6 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/08/08

CLIENT: WC-HANFORD RC-074 K1328 LVL LOT #: 0809L158

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0354-LC1	Silver, LCS	492	500	UG/L	98.4
		Arsenic, LCS	10400	10000	UG/L	104.3
		Barium, LCS	4980	5000	UG/L	99.7
		Cadmium, LCS	256	250	UG/L	102.3
		Chromium, LCS	501	500	UG/L	100.2
		Lead, LCS	2620	2500	UG/L	104.7
		Selenium, LCS	10300	10000	UG/L	102.8
LCS1	08C0172-LC1	Mercury, LCS	5.2	5.0	UG/L	104.8

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0354
Date/Time Initiated: 9/29/08 1300
Date/Time Completed: 9/29/08 1330
Analyst(s): MW
Matrix: Soil Water/ Other: TCLP
Instr. Type: AA (ICP)
Parameters: RCRA/RCRA+Sb

(Digested) / Undigested (circle one)
Balance #: N/A
Balance Cal Verif: Y (NA)
Hot Plate Temp: 93°

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

TMW/BSC

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
0809L153-004		100 ml	100 ml	<2	TC	N/A	yellow stain		
005							clear/colorless		
005R									
005S	1.0 ml *								
006									
0809L158-002		50 ml							
002R									
002S	1.0 ml *	100 ml							
0809L167-002									
002R									
002S	1.0 ml *								
0809L142-023									
024									
025									
026									
027									
043									
08LT0096-LB1									
082-0354-MB1									
LL1	1.0 ml								
		MW 9/29/08							

Spiking IDs:
MS #: 6072-078-05 (TCLP-1)

Reagent IDs:
HNO_3 G11022
HCL
H_2O_2
1:1 HNO_3
1:1 HCL 9784-069-03

File ID#: IC035401
LIMS Transfer: (Y) N
Data Review By/Date: PMP, 09/29/08

LCS #: 6072-78-08
09
10
11

* also 0.25 ml 6072-078-06 (Ba)

Laboratory
Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: FEB
Date: 9/30/08
Time/Temp: 0945 / 94°
Time/Temp: 1145 / 93°

Instrument ID: HG-3.1
Balance #: NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0172
Worksheet: HG-093001
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? ✓ Yes __ 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	L56			33mL	33mL	
0.2 µg/L	M1	0.0667				
1.0	224	0.334				
2.0	AP	0.667				
5.0	WK	1.667				
10.0	R2	3.334				
ICV	700	0.0834	2.5			
CCV	A29	0.167	5.0			
ICB/CCB	AB					
MB1	PT					PBW172
LC1	41	0.167	5.0			LCSW172
0809L153-004	AHA			11mL		lmt'd vol
005	Q2			33mL		
005R	240					
005S	T4	0.667	200			
006	925					
0809L158-002	B2					
002R	N4					
002S	X3	0.667	200			
0809L167-002	NR					
002R	A94					
002S	4B	0.667	200			
0809L142-023	T					
024	224					
025	EMC					
026	C					
027	818					

Standard:	ID	Prep Date/Time
DUMS	RI 6072-78-14B	9/30/08 0800
DMCCV/LCS	US 6072-78-15A	↓

Reviewed By/Date: [signature] 10/7/09

see book # 9368 for std traceability information

SRMLCS =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 #:

000000013

Laboratory
Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: Ten
Date: 9/30/08
Time/Temp: see page 042
Time/Temp:

Instrument ID: HG-J.1
Balance #: (NA)
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0172
Worksheet: HG093001
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? ✓ Yes __ 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.
0809L142-029	11A			33mL	33mL	
029R	K					
029S	NJ	0.667	200			
031	Z					
035	RU					
036	SW					
038	V					
039	A7					
040	K9					
041	5H					
042	40					
043	6J					
08LT0095-4B1	K					
08LT0096-2B1	CT					

Ten 9/30/08

Standard:	ID	Prep Date/Time
ICAL/MS	see page 042	
ICV/CCV/LCS		

Reviewed By/Date: 10/1/08

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 #:

ville Laboratory Use Only
8091158

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

000000015

nt WC-HANFORD RC-074

Final Proj. Sampling Date

ect# 60049-001-001-0001-00

ect Contact/Phone#

ville Laboratory Project Manager O Johnson

SW846 Del STO TAT 1 day

Rec'd 9-23-08 Date Due 9-30-08

Refrigerator #															
#/Type Container	Liquid / Solid										LEACHATE				
Volume															
Preservatives															
ANALYSES REQUESTED →		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb				Metal	CN					
		Lionville Laboratory Use Only													
									TCLP		REPORT				

MIX
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													
001	J17HL8			SOIL	9-3-08	1018								X		X			
002	↓ TCLP05-001			L	*														

cial Instructions:

Special Instructions:

1. Relog of 0809L053-003
2.
3.
4.
5.
6.

See Lab chron

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-074-089 | Page 1 of 1

ector: W. Shea/Sub-contractor — SEE D. BIOS

Company Contact: D.W.Shea — Telephone No.: 521-6014 — Project Coordinator: KESSNER, JH — Price Code: 8J — Data Turnaround: 7 days

ect Designation: 0-D/DR Burial Grounds & Remaining Sites - Soil Quick Tu — Sampling Location: 118-D-6:4 in-process sampling — SAF No.: RC-074

Chest No.: ERC-02-407 — Field Logbook No.: EL-1607-4 — COA: R118D68100 — Method of Shipment: Fed Ex

ped To: BERLINE SERVICES / LIONVILLE — Offsite Property No.: See OPSC — A080346 — Bill of Lading/Air Bill No.: see OSPC

SSIBLE SAMPLE HAZARDS/REMARKS

ntially radioactive

ecial Handling and/or Storage

Preservation	None	Cool 4C	None								
Type of Container	G/P	G/P	G/P								
No. of Container(s)	1	1	1								
Volume	60mL	60mL	60mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.								

DWShea entered wrong date

Sample No.	Matrix *	Sample Date	Sample Time										
HL6	SOIL	9/4/08 9/3/08	0946	✓	✓								
HL7	SOIL	↓	1010	✓	✓								
HL8	SOIL	↓	1018	✓	✓								
~~HL9~~	~~SOIL~~	} DWShea	9/3/08										
~~HM0~~	~~SOIL~~												

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
quished By/Removed From	[signature]	9-8-08 1506
Received By/Stored In	DWShea DWShea	9/3/08 1506
quished By/Removed From	DWShea DWShea	9/3/08 1742
Received By/Stored In	Fridge 1A	9/3/08 1742
quished By/Removed From	260/1A	SEP 0 8 2008 1015
Received By/Stored In	MS Hankovich	SEP 0 8 2008 1015
quished By/Removed From	MS Hankovich	SEP 0 8 2008 1015
Received By/Stored In	Fed Ex	
quished By/Removed From	[signature]	9-9-08 0955
Received By/Stored In	[signature]	9-9-08 0955
quished By/Removed From		
Received By/Stored In		

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc} and Hg via CVAA

(2) RCF GEA Shipping Screen {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

note: custody seal tape indicates samples collected on 9/4/08 this is wrong samples were collected on 9/3/08 - DWShea 9/3/08

Matrix *: S=Soil, Sil=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

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

BORATORY ECTION	Received By	Title	Date/Time
AL SAMPLE SPOSITION	Disposal Method	Disposed By	Date/Time

I-EE-011

000000016

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: Washington Closure Hanford Date: 9-9-08

Project/SAF/SOW/Release #: RC-074

LvLI Batch #: 0809L053 Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7980 0730 0170
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 3.9	°C	Cooler # ERC-02407
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