

**SAF-RC-031**  
**100-F Burial Grounds Remaining Sites -**  
**Soil Quick Turn**  
**FINAL DATA PACKAGE**

**COMPLETE COPY OF DATA PACKAGE TO:**

Jeff DeBuigne      X9-07      KW 4/22/08  
INITIAL/DATE

Kathy Wendt      H4-21      KW 4/22/08  
INITIAL/DATE

**COMMENTS:**

**SDG: K1169**

**SAF-RC-031**

Rad only

Chem only

Rad & Chem

Complete

Partial

**Waste Site: 126-F-2 well decon soils composite**

**RECEIVED**  
MAY 01 2008  
EDMC



# EBERLINE

SERVICES

April 1, 2008

Ms. Joan Kessner  
Washington Closure Hanford  
2620 Fermi Avenue  
MSIN H4-21  
Richland, WA 99352



Reference: **P.O. #S00W235A00**  
**Eberline Services R8-03-149-7787, SDG K1169**

Dear Ms. Kessner:

Enclosed is a data report for one solid (soil) sample designated under SAF No. RC-031 received at Eberline Services on March 28, 2008. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion  
Senior Program Manager

MCM/njv

Enclosure: Data Package

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

**1.0 GENERAL**

Washington Closure Hanford (WCH) Sample Delivery Group K1169 was composed of one solid (soil) sample designated under SAF No. RC-031 with a Project Designation of: 100-F Burial Grounds Remaining Sites-Soil Quick Turn.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on April 1, 2008.

**2.0 ANALYSIS NOTES**

**2.1 Gross Alpha and Gross Beta Analysis**

No problems were encountered during the course of the analyses.

**2.2 Gamma Spectroscopy**

No problems were encountered during the course of the analyses.

**3.0 Case Narrative Certification Statement**

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

Melissa C. Mannion  
Melissa C. Mannion  
Senior Program Manager

04/01/08  
Date

EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP K1169

SDG 7787  
Contact Melissa C. Mannion

Client Hanford  
Contract No. S00W235A00  
Case no SDG\_K1169

S U M M A R Y   D A T A   S E C T I O N

T A B L E   O F   C O N T E N T S				
About this section	.	.	.	1
Sample Summaries	.	.	.	3
Prep Batch Summary	.	.	.	5
Work Summary	.	.	.	6
Method Blanks	.	.	.	7
Lab Control Samples	.	.	.	8
Duplicates	.	.	.	9
Data Sheets	.	.	.	10
Method Summaries	.	.	.	11
Report Guides	.	.	.	14
End of Section	.	.	.	28

Melissa Mannion  
Prepared by

Melissa Mannion  
Reviewed by

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-TOC  
Version 3.06  
Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. S00W235A00  
Case no SDG K1169

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 1

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. S00W235A00  
Case no SDG\_K1169

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

Page 2

SUMMARY DATA SECTION

Page 2

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 04/01/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

**LAB SAMPLE SUMMARY**

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

LAB						CHAIN OF	
SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CUSTODY	COLLECTED
R803149-01	J16J16	126-F-2 Well Decon Soils	SOLID		RC-031	RC-031-117	03/26/08 10:50
R803149-02	Lab Control Sample		SOLID		RC-031		
R803149-03	Method Blank		SOLID		RC-031		
R803149-04	Duplicate (R803149-01)	126-F-2 Well Decon Soils	SOLID		RC-031		03/26/08 10:50

LAB SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-LS  
 Version 3.06  
 Report date 04/01/08

# EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787

Contact Melissa C. Mannion

## QC SUMMARY

Client Hanford

Contract No. S00W235A00

Case no SDG K1169

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7787	RC-031-117	J16J16	SOLID	87.8	764.5 g		03/28/08	2	R803149-01	7787-001
		Method Blank	SOLID						R803149-03	7787-003
		Lab Control Sample	SOLID						R803149-02	7787-002
		Duplicate (R803149-01)	SOLID	87.8	764.5 g		03/28/08	2	R803149-04	7787-004

QC SUMMARY

Page 1

SUMMARY DATA SECTION

Page 4

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-QS

Version 3.06

Report date 04/01/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

**PREP BATCH SUMMARY**

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS
			BATCH	2σ %	CLIENT	MORE	RE BLANK	LCS	
Gas Proportional Counting									
93A	SOLID	Gross Alpha in Solids	6148-053	20.6	1		1	1	1/1
93B	SOLID	Gross Beta in Solids	6148-053	20.6	1		1	1	1/1
Gamma Spectroscopy									
GAM	SOLID	Gamma Scan	6148-053	7.0	1		1	1	1/1

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.  
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-PBS  
 Version 3.06  
 Report date 04/01/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

**LAB WORK SUMMARY**

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

LAB SAMPLE	CLIENT SAMPLE ID				SUF-					
COLLECTED	LOCATION	MATRIX								
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
R803149-01	J16J16		7787-001	93A/93		03/31/08	04/01/08	MWT	Gross Alpha in Solids	
03/26/08	126-F-2 Well Decon Soils	SOLID	7787-001	93B/93		03/31/08	04/01/08	MWT	Gross Beta in Solids	
03/28/08	RC-031-117	RC-031	7787-001	GAM		03/29/08	03/31/08	MWT	Gamma Scan	
R803149-02	Lab Control Sample		7787-002	93A/93	R1	03/31/08	04/01/08	MWT	Gross Alpha in Solids	
		SOLID	7787-002	93B/93	R1	03/31/08	04/01/08	MWT	Gross Beta in Solids	
		RC-031	7787-002	GAM		03/29/08	03/31/08	MWT	Gamma Scan	
R803149-03	Method Blank		7787-003	93A/93		03/31/08	04/01/08	MWT	Gross Alpha in Solids	
		SOLID	7787-003	93B/93		03/31/08	04/01/08	MWT	Gross Beta in Solids	
		RC-031	7787-003	GAM		03/29/08	03/31/08	MWT	Gamma Scan	
R803149-04	Duplicate (R803149-01)		7787-004	93A/93		03/31/08	04/01/08	MWT	Gross Alpha in Solids	
03/26/08	126-F-2 Well Decon Soils	SOLID	7787-004	93B/93		03/31/08	04/01/08	MWT	Gross Beta in Solids	
03/28/08		RC-031	7787-004	GAM		03/29/08	03/31/08	MWT	Gamma Scan	

**COUNTS OF TESTS BY SAMPLE TYPE**

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	RC-031	Gross Alpha in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	RC-031	Gross Beta in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
GAM	RC-031	Gamma Scan	GAMMA_GS	1			1	1	1	4
TOTALS				3			3	3	3	12

WORK SUMMARY

Page 1

SUMMARY DATA SECTION

Page 6

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-LWS  
 Version 3.06  
 Report date 04/01/08

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP K1169**

7787-003

Method Blank

**METHOD BLANK**

SDG <u>7787</u>	Client/Case no <u>Hanford</u>	SDG <u>K1169</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. S00W235A00</u>	
Lab sample id <u>R803149-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7787-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>RC-031</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.121	2.6	5.84	10.0	U	93A
Gross Beta	12587-47-2	-0.140	3.0	5.26	15.0	U	93B
Potassium 40	13966-00-2	U		0.470		U	GAM
Cobalt 60	10198-40-0	U		0.018	0.050	U	GAM
Cesium 137	10045-97-3	U		0.018	0.100	U	GAM
Radium 226	13982-63-3	U		0.038	0.100	U	GAM
Radium 228	15262-20-1	U		0.091	0.200	U	GAM
Europium 152	14683-23-9	U		0.048	0.100	U	GAM
Europium 154	15585-10-1	U		0.052	0.100	U	GAM
Europium 155	14391-16-3	U		0.048	0.100	U	GAM
Thorium 228	14274-82-9	U		0.027		U	GAM
Thorium 232	TH-232	U		0.091		U	GAM
Uranium 235	15117-96-1	U		0.076		U	GAM
Uranium 238	U-238	U		2.12		U	GAM
Americium 241	14596-10-2	U		0.100		U	GAM
Silver 108m	14391-65-2	U		0.013		U	GAM
Barium 133	13981-41-4	U		0.020		U	GAM

100-F Burial Grounds Remaining Sites

QC-BLANK #65219

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/01/08</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1169

7787-002

Lab Control Sample

**LAB CONTROL SAMPLE**

SDG <u>7787</u> Contact <u>Melissa C. Mannion</u>  Lab sample id <u>R803149-02</u> Dept sample id <u>7787-002</u>	Client/Case no <u>Hanford</u> <u>SDG K1169</u> Contract <u>No. S00W235A00</u>  Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>RC-031</u>
---	--

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMMS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	120	17	6.44	10.0	93A	112	4.5	107	59-141	70-130
Gross Beta	108	7.7	5.64	15.0	93B	112	4.5	96	68-132	80-120
Cobalt 60	0.964	0.070	0.031	0.050	GAM	0.942	0.038	102	83-117	80-120
Cesium 137	1.07	0.063	0.040	0.100	GAM	1.00	0.040	107	84-116	80-120

100-F Burial Grounds Remaining Sites

QC-LCS #65218

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1169

7787-004

J16J16

**DUPLICATE**

SDG <u>7787</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R803149-04</u> Dept sample id <u>7787-004</u> % solids <u>87.8</u>	ORIGINAL Lab sample id <u>R803149-01</u> Dept sample id <u>7787-001</u> Received <u>03/28/08</u> % solids <u>87.8</u>	Client/Case no <u>Hanford</u> <u>SDG K1169</u> Contract No. <u>S00W235A00</u> Client sample id <u>J16J16</u> Location/Matrix <u>126-F-2 Well Decon Soils SOLID</u> Collected/Weight <u>03/26/08 10:50 764.5 g</u> Custody/SAF No <u>RC-031-117</u> <u>RC-031</u>
--	---	---

ANALYTE	DUPLICATE		MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	DER σ
	pCi/g	2σ ERR (COUNT)					pCi/g	2σ ERR (COUNT)					
Gross Alpha	10.2	5.7	5.67	10.0		93A	12.6	6.0	5.45		21	117	0.5
Gross Beta	18.7	4.3	5.50	15.0		93B	17.3	4.2	5.27		8	66	0.4
Potassium 40	3.87	1.2	0.337			GAM	3.97	1.2	0.239		3	67	0.1
Cobalt 60	U		0.035	0.050	U	GAM	U		0.028	U	-		0.3
Cesium 137	U		0.035	0.100	U	GAM	U		0.028	U	-		0.3
Radium 226	0.198	0.072	0.062	0.100		GAM	0.185	0.056	0.045		7	73	0.3
Radium 228	0.243	0.17	0.140	0.200		GAM	0.211	0.12	0.110		14	138	0.3
Europium 152	U		0.080	0.100	U	GAM	U		0.066	U	-		0.3
Europium 154	U		<u>0.103</u>	0.100	U	GAM	U		0.085	U	-		0.3
Europium 155	U		0.088	0.100	U	GAM	U		0.071	U	-		0.3
Thorium 228	0.193	0.036	0.038			GAM	0.214	0.031	0.030		10	38	0.8
Thorium 232	0.243	0.17	0.140			GAM	0.211	0.12	0.110		14	138	0.3
Uranium 235	U		0.115		U	GAM	U		0.098	U	-		0.2
Uranium 238	U		3.74		U	GAM	U		3.33	U	-		0.2
Americium 241	U		0.104		U	GAM	U		0.090	U	-		0.2
Silver 108m	U		0.023		U	GAM	U		0.019	U	-		0.3
Barium 133	U		0.032		U	GAM	U		0.025	U	-		0.3

100-F Burial Grounds Remaining Sites

QC-DUP#1 65220

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>04/01/08</u>

**EBERLINE SERVICES / RICHMOND**  
**SAMPLE DELIVERY GROUP K1169**

7787-001

J16J16

**DATA SHEET**

SDG <u>7787</u>	Client/Case no <u>Hanford</u>	SDG <u>K1169</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>R803149-01</u>	Client sample id <u>J16J16</u>	
Dept sample id <u>7787-001</u>	Location/Matrix <u>126-F-2 Well Decon Soils SOLID</u>	
Received <u>03/28/08</u>	Collected/Weight <u>03/26/08 10:50 764.5 g</u>	
% solids <u>87.8</u>	Custody/SAF No <u>RC-031-117</u>	<u>RC-031</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	12.6	6.0	5.45	10.0		93A
Gross Beta	12587-47-2	17.3	4.2	5.27	15.0		93B
Potassium 40	13966-00-2	3.97	1.2	0.239			GAM
Cobalt 60	10198-40-0	U		0.028	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.100	U	GAM
Radium 226	13982-63-3	0.185	0.056	0.045	0.100		GAM
Radium 228	15262-20-1	0.211	0.12	0.110	0.200		GAM
Europium 152	14683-23-9	U		0.066	0.100	U	GAM
Europium 154	15585-10-1	U		0.085	0.100	U	GAM
Europium 155	14391-16-3	U		0.071	0.100	U	GAM
Thorium 228	14274-82-9	0.214	0.031	0.030			GAM
Thorium 232	TH-232	0.211	0.12	0.110			GAM
Uranium 235	15117-96-1	U		0.098		U	GAM
Uranium 238	U-238	U		3.33		U	GAM
Americium 241	14596-10-2	U		0.090		U	GAM
Silver 108m	14391-65-2	U		0.019		U	GAM
Barium 133	13981-41-4	U		0.025		U	GAM

100-F Burial Grounds Remaining Sites

**DATA SHEETS**

Page 1

**SUMMARY DATA SECTION**

Page 10

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/01/08</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1169

**LAB METHOD SUMMARY**

GROSS ALPHA IN SOLIDS

GAS PROPORTIONAL COUNTING

Test 93A Matrix SOLID  
 SDG 7787  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Contract SDG K1169

**RESULTS**

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID		Gross Alpha
Preparation batch 6148-053					
R803149-01	93		7787-001 J16J16		12.6
R803149-02	93 R1		7787-002 LCS (QC ID=65218)		ok
R803149-03	93		7787-003 .BLK (QC ID=65219)		U
R803149-04	93		7787-004 Duplicate (R803149-01)		ok
Nominal values and limits from method RDLs (pCi/g) 10.0					
100-F Burial Grounds Remaining Sites					

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	RESID	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	mg	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 6148-053 2σ prep error 20.6 % Reference Lab Notebook #6148, pg. 53													
R803149-01	93	J16J16	5.45	0.100			47	100				5 03/31/08	03/31 GRB-109
R803149-02	93 R1	LCS (QC ID=65218)	6.44	0.100			47	100				03/31/07	03/31 GRB-209
R803149-03	93	BLK (QC ID=65219)	5.84	0.100			62	100				03/31/08	03/31 GRB-111
R803149-04	93	Duplicate (R803149-01) (QC ID=65220)	5.67	0.100			48	100				5 03/31/08	03/31 GRB-112
Nominal values and limits from method 10.0 0.100 5-250 100 180													

PROCEDURES REFERENCE 900.0\_ALPHABETA\_GPC  
 SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 7  
 SPP-125 Gross Alpha and Gross Beta in Dissolved Solids,  
 rev 0

AVERAGES ± 2 SD MDA 5.85 ± 0.849  
 FOR 4 SAMPLES RESIDUE 51 ± 15

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 04/01/08



**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1169

Test GAM Matrix SOLID  
 SDG 7787  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Contract SDG K1169

**LAB METHOD SUMMARY**

GAMMA SCAN  
 GAMMA SPECTROSCOPY

**RESULTS**

LAB	RAW	SUF-			
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137
Preparation batch 6148-053					
R803149-01		7787-001	J16J16	U	U
R803149-02		7787-002	LCS (QC ID=65218)	ok	ok
R803149-03		7787-003	BLK (QC ID=65219)	U	U
R803149-04		7787-004	Duplicate (R803149-01)	- U	- U
Nominal values and limits from method			RDLs (pCi/g)	0.050	0.100
100-F Burial Grounds Remaining Sites					

**METHOD PERFORMANCE**

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 6148-053			2σ prep error 7.0 %		Reference Lab Notebook #6148, pg. 53								
R803149-01		J16J16	<u>5.93</u>	469								3 03/28/08 03/29	02,04,00
R803149-02		LCS (QC ID=65218)	0.031	469								3 03/28/08 03/29	MB,05,00
R803149-03		BLK (QC ID=65219)	<u>4.62</u>	469								3 03/28/08 03/29	MB,08,00
R803149-04		Duplicate (R803149-01)	<u>7.49</u>	469								3 03/28/08 03/29	02,04,00
			(QC ID=65220)										
Nominal values and limits from method			0.050	469					100			180	

PROCEDURES REFERENCE GAMMA\_GS  
 SPP-100 Ge(Li) Preparation for Commercial Samples, rev 7

AVERAGES ± 2 SD MDA 4.52 ± 6.43  
 FOR 4 SAMPLES YIELD \_\_\_\_\_ ± \_\_\_\_\_

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. S00W235A00  
Case no SDG K1169

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- \* LAB SAMPLE ID is the lab's primary identification for a sample.
- \* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- \* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- \* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- \* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

Page 1

SUMMARY DATA SECTION

Page 14

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

REPORT GUIDE

SDG 7787  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- \* The preparation batches are shown in the same order as the Method Summary Reports are printed.
- \* Only analyses of plachets relevant to the SDG are included.
- \* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- \* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one plachet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- \* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- \* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- \* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- \* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- \* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- \* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

REPORT GUIDES

Page 3

SUMMARY DATA SECTION

Page 16

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

REPORT GUIDE

SDG 7787  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- \* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- \* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- \* ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- \* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- \* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

REPORT GUIDES

Page 4

SUMMARY DATA SECTION

Page 17

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

GUIDE, cont.

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
  - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
  - H Similar to 'L' except the recovery was high.
  - P The RESULT is 'preliminary'.
  - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
  - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- \* An MDA is underlined if it is bigger than its RDL.

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

DATA SHEET

- \* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- \* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- \* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

REPORT GUIDE

SDG 7787  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- \* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- \* The first, computed limits for the recovery reflect:
  1. The error of RESULT, including that introduced by rounding the result prior to printing.
 

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
  2. The error of ADDED.
  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- \* The second limits are protocol defined upper and lower QC limits for the recovery.
- \* The recovery is underlined if it is outside either of these ranges.

REPORT GUIDES

Page 7

SUMMARY DATA SECTION

Page 20

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

REPORT GUIDE

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- \* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- \* The second limit for the RPD is the larger of:
  1. A fixed percentage specified in the protocol.

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. S00W235A00  
Case no SDG K1169

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- \* The RPD is underlined if it is greater than either limit.
- \* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- \* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

REPORT GUIDES

Page 9

SUMMARY DATA SECTION

Page 22

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. S00W235A00  
Case no SDG K1169

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- \* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- \* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- \* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- \* The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- \* The second limits are protocol defined upper and lower QC limits

REPORT GUIDES

Page 10

SUMMARY DATA SECTION

Page 23

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787

Contact Melissa C. Mannion

Client Hanford

Contract No. S00W235A00

Case no SDG K1169

GUIDE, cont.

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- \* The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES

Page 11

SUMMARY DATA SECTION

Page 24

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- \* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- \* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- \* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- \* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- \* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

GUIDE, cont.

SDG 7787  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- \* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
  - \* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.
- MDAs are underlined if greater than the printed RDL.
- \* Aliquots are underlined if less than the nominal value specified for the method.
  - \* Preparation factors are underlined if greater than the nominal value specified for the method.
  - \* Dilution factors are underlined if greater than the nominal value specified for the method.
  - \* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
  - \* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
  - \* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES

Page 13

SUMMARY DATA SECTION

Page 26

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

GUIDE , cont .

METHOD SUMMARY

- \* Count times are underlined if less than the nominal value specified for the method.
- \* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- \* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- \* Days Held are underlined if greater than the holding time specified in the protocol.
- \* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1169

SDG 7787  
 Contact Melissa C. Mannion

GUIDE , cont .

Client Hanford  
 Contract No. S00W235A00  
 Case no SDG K1169

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-RG  
 Version 3.06  
 Report date 04/01/08

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					RC-031-117		Page 1 of 1			
Collector T. Welch-Koelling		Company Contact J. R. DeBuigne		Telephone No. 528-6409		Project Coordinator KESSNER, JH		Price Code 8A		Data Turnaround 3 DAY		
Project Designation 100-F Burial Grounds Remaining Sites - Soil Quick Turn		Sampling Location 126-F-2 well decom soils composite			K1169 (7787)		SAF No. RC-031					
Ice Chest No. ERC-04-014		Field Logbook No. EFL-1174-4		COA R126F22000		Method of Shipment Fed Ex						
Shipped To EBERLINE SERVICES/ LIONVILLE		Offsite Property No. 4080216			Bill of Lading/Air Bill No. See OSPC							
POSSIBLE SAMPLE HAZARDS/REMARKS NA				Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	
Special Handling and/or Storage NA				Type of Container	P	aG	aG	P	aG	P	P	
				No. of Container(s)	1	1	1	1	1	1	1	
				Volume	125mL	60mL	60mL	125mL	60mL	500mL	125mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	See item (2) in Special Instructions.	Gross Alpha; Gross Beta		
Sample No.	Matrix *	Sample Date	Sample Time									
J16J16	SOIL	3/26/08	1050									
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time		(1) HCP Metals - 6010 (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 - 7470-(CV); (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Barium-133, Silver-108 metastable, Uranium-235, Uranium-238)				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	
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time							
Relinquished By/Removed From		Date/Time	Received By/Stored In		Date/Time							
LABORATORY SECTION	Received By	Title				Date/Time						
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time						



# RICHMOND, CA LABORATORY

## SAMPLE RECEIPT CHECKLIST

JHC 3/28/08

Client: W.C. HANFORD City RICHLAND State WA

Date/Time received 03/28/08 09:00 CoC No. RC-031-117

Container ID No. ERC-09-014 Requested TAT (Days) 3 P.O. Received Yes [ ] No [ ]

### INSPECTION

1. Custody seals on shipping container intact? Yes [X] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [X] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [X] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [X] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [X]
6. Number of samples in shipping container: 1 Sample Matrix S
7. Number of containers per sample: 2 (Or see CoC \_\_\_\_\_)
8. Samples are in correct container Yes [X] No [ ]
9. Paperwork agrees with samples? Yes [X] No [ ]
10. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]
11. Samples are: in good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]
12. Samples are: Preserved [ ] Not preserved [ ] pH \_\_\_\_\_ Preservative \_\_\_\_\_
13. Describe any anomalies: \_\_\_\_\_

14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date \_\_\_\_\_

15. Inspected by JHC Date: 03/28/08 Time: 10:00

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
J16-116	260						

Ion Chamber Ser. No. \_\_\_\_\_

Calibration date \_\_\_\_\_

Alpha Meter Ser. No. \_\_\_\_\_

Calibration date \_\_\_\_\_

Beta/Gamma Meter Ser. No. 100482

Calibration date 09 MAY 07



21 April 2008



Joan Kessner  
WC-Hanford  
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 #	0803L836
SDG #	K1169
SAF #	RC-031
Date Received	3/28/08
# Samples	1
Matrix	SOIL
Volatiles	
Semivolatiles	X
Pest/PCB	X
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\tnu-hanford\data\b\_ltrs.doc

Lionville Laboratory, Inc.  
 BNA ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-031 K1169



DATE RECEIVED: 03/28/08

LVL LOT # : 08031836

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16J16	001	S	08LE0147	03/26/08	03/30/08	04/09/08
J16J16	001 MS	S	08LE0147	03/26/08	03/30/08	04/09/08
J16J16	001 MSD	S	08LE0147	03/26/08	03/30/08	04/09/08

LAB QC:

SBLKTP	MB1	S	08LE0147	N/A	03/30/08	04/08/08
SBLKTP	MB1 BS	S	08LE0147	N/A	03/30/08	04/08/08



## Case Narrative

---

**Client:** TNU-HANFORD RC-031  
**LVL #:** 0803L836  
**SDG/SAF #** K1169 / RC-031

**W.O. #:** 11343-606-001-9999-00  
**Date Received:** 03-28-2008

### SEMIVOLATILE

One (1) soil sample was collected on 03-26-2008.

The sample and its associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 03-30-2008 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 04-08,09-2008.

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:

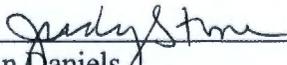
1. The sample was extracted and analyzed within holding time.
2. Non-target compounds were detected in these samples.
3. Samples J16J16, J16J16 MS, and J16J16 MSD required a 3-fold instrument dilution, because they contained high levels of chromatographic anomalies.
4. All surrogate recoveries were within acceptance criteria.
5. Twenty-five (25) of one hundred and twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. Two (2) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. The method blank was below the reporting limit for all target compounds.
8. All initial calibrations associated with this data set were within acceptance criteria.

r:\group\data\2008\bna\tnu\0803-836ks1.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 14 pages.



9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. Internal standard area and retention time criteria were met.
11. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
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

4/14/08  
Date



## GLOSSARY

### DATA QUALIFIERS

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

## GLOSSARY

### ABBREVIATIONS

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

## TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

- MP - Missed Peak: manually added peak not found by automatic quan program.
- PA - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.



	Cust ID:	J16J16	J16J16	J16J16	SBLKTP	SBLKTP BS
RFW#:	001	001 MS	001 MSD	08LE0147-MB1	08LE0147-MB1	
2-Chloronaphthalene	1300	U	68 %	107 %	330 U	83 %
2-Nitroaniline	3200	U	36 * %	32 * %	830 U	88 %
Dimethylphthalate	1300	U	14 * %	30 * %	330 U	91 %
Acenaphthylene	1300	U	57 * %	88 %	330 U	87 %
2,6-Dinitrotoluene	1300	U	21 * %	48 * %	330 U	90 %
3-Nitroaniline	3200	U	18 * %	8 * %	830 U	93 %
Acenaphthene	1300	U	54 %	94 %	330 U	84 %
2,4-Dinitrophenol	3200	U	27 %	69 %	830 U	16 * %
4-Nitrophenol	3200	U	11 * %	37 * %	830 U	96 %
Dibenzofuran	1300	U	71 %	100 %	330 U	89 %
2,4-Dinitrotoluene	1300	U	26 * %	53 * %	330 U	100 %
Diethylphthalate	1300	U	23 * %	52 %	330 U	93 %
4-Chlorophenyl-phenylether	1300	U	69 %	109 %	330 U	87 %
Fluorene	1300	U	67 %	97 %	330 U	90 %
4-Nitroaniline	3200	U	29 * %	50 %	830 U	106 %
4,6-Dinitro-2-methylphenol	3200	U	57 %	67 %	830 U	22 * %
N-Nitrosodiphenylamine (1)	1300	U	44 * %	57 %	330 U	66 %
4-Bromophenyl-phenylether	1300	U	102 %	65 %	330 U	70 %
Hexachlorobenzene	1300	U	96 %	124 %	330 U	86 %
Pentachlorophenol	3200	U	103 %	115 %	830 U	37 %
Phenanthrene	1300	U	79 %	87 %	330 U	88 %
Anthracene	1300	U	60 %	76 %	330 U	92 %
Carbazole	1300	U	70 %	87 %	330 U	96 %
Di-n-butylphthalate	1300	U	70 %	89 %	330 U	96 %
Fluoranthene	1300	U	87 %	113 %	330 U	108 %
Pyrene	1300	U	67 %	84 %	330 U	86 %
Butylbenzylphthalate	1300	U	58 %	79 %	330 U	91 %
3,3'-Dichlorobenzidine	1300	U	16 * %	14 * %	330 U	69 %
Benzo (a) anthracene	1300	U	73 %	107 %	330 U	94 %
Chrysene	1300	U	74 %	109 %	330 U	94 %
bis (2-Ethylhexyl)phthalate	1300	U	70 %	94 %	330 U	92 %
Di-n-octyl phthalate	1300	U	73 %	96 %	330 U	92 %
Benzo (b) fluoranthene	1300	U	79 %	103 %	330 U	91 %
Benzo (k) fluoranthene	1300	U	70 %	110 %	330 U	96 %
Benzo (a) pyrene	1300	U	72 %	105 %	330 U	94 %
Indeno (1,2,3-cd) pyrene	1300	U	65 %	98 %	330 U	92 %
Dibenz (a,h) anthracene	1300	U	66 %	101 %	330 U	96 %
Benzo (g,h,i) perylene	1300	U	60 %	92 %	330 U	93 %

(1) - Cannot be separated from Diphenylamine. \*= Outside of EPA CLP QC limits.

0000000009

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J16J16

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-031 K1169

Matrix: (soil/water) SOIL

Lab Sample ID: 0803L836-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: N040913

Level: (low/med) LOW

Date Received: 03/28/08

% Moisture: 21 decanted: (Y/N)

Date Extracted: 03/30/08

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 04/09/08

Injection Volume: 2.0 (uL)

Dilution Factor: 3.00

GPC Cleanup: (Y/N) N

pH:

CONCENTRATION UNITS:

Number TICs found: 5

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.612	10000	JB
2.	UNKNOWN	4.745	800000	JB
3.	UNKNOWN	5.225	100000	J
4.	ALKANE	15.679	500	J
5.	UNKNOWN	18.704	800	JB

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKTP

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-031 K1169

Matrix: (soil/water) SOIL

Lab Sample ID: 08LE0147-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: N040806

Level: (low/med) LOW

Date Received: 03/30/08

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_

Date Extracted: 03/30/08

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 04/08/08

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: \_\_\_\_\_

CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/Kg

Number TICs found: 5

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.658	200	J
2.	UNKNOWN	3.963	100	J
3.	UNKNOWN	4.626	50000	J
4.	UNKNOWN	7.006	100	J
5.	UNKNOWN	18.751	400	J



<b>Washington Closure Hanford</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				<b>RC-031-117</b>		Page 1 of 1	
Collector T. Welch-Koelling		Company Contact J. R. DeBuigne		Telephone No. 528-6409		Project Coordinator KESSNER, JH		Price Code 8A	
Project Designation 100-F Burial Grounds Remaining Sites - Soil Quick Turn		Sampling Location 126-F-2 well decom soils composite				SAF No. RC-031		Data Turnaround 3 DAY	
Ice Chest No. ERC-02-404 & ERC-02-406		Field Logbook No. EFL-1174-4		COA R126F22000		Method of Shipment Fed Ex			
Shipped To EBERLINE SERVICES (LIONVILLE)		Offsite Property No. A080207				Bill of Lading/Air Bill No. See OSCP			

<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> NA  <b>Special Handling and/or Storage</b> NA DAS 3/27/08 COOL 40C	<b>Preservation</b>	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None				
	<b>Type of Container</b>	P	aG	aG	P	aG	P	P				
	<b>No. of Container(s)</b>	1	1	1	1	1	1	1				
	<b>Volume</b>	125mL	60mL	60mL	125mL	60mL	500mL	125mL				

<b>SAMPLE ANALYSIS</b>				See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	See item (2) in Special Instructions.	Gross Alpha; Gross Beta		
<b>Sample No.</b>	<b>Matrix *</b>	<b>Sample Date</b>	<b>Sample Time</b>									
J16J16	SOIL	3/26/08	1050	X	X	X	X	X				

<b>CHAIN OF POSSESSION</b>			<b>Sign/Print Names</b>			<b>SPECIAL INSTRUCTIONS</b>					<b>Matrix *</b>		
Relinquished By/Removed From <i>T Welch-Koelling</i>	Date/Time 3-26-08 1200	Received By/Stored In <i>JR DeBuigne</i>	Date/Time 3-26-08	Relinquished By/Removed From <i>JR DeBuigne</i>	Date/Time 3-26-08	Received By/Stored In <i>Daniel S. ...</i>	Date/Time 3/26/08 1515	(1) ICP Metals - 6010 (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 - 7470 - (CV) (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Barium-133, Silver-108 metastable, Uranium-235, Uranium-238)  <i>com 03/27/08</i>					S=Soil SE=Soil/sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>Daniel S. ...</i>	Date/Time 3/27/08 1130	Received By/Stored In <b>FED EX</b>	Date/Time	Relinquished By/Removed From <i>T Welch-Koelling</i>	Date/Time 3/28/08 0955	Received By/Stored In <i>T Welch-Koelling</i>	Date/Time 3/28/08 0955						
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time						
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time						
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time						

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

000000013

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

CLIENT: TNU-HANFORD  
 Project/SAP/SOW/Release #: RC-031

Date: 3-28-09

LvLI Batch #: 0803L 836

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered <u>or Shipped?</u>	Carrier <u>FWEK</u>	Airbill # <u>79890636 8613</u>
2. Custody Seals on coolers or shipping containers intact, signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
3. Outside of coolers or shipping containers are free from damage?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Samples received cooled or ambient?	Temp <u>3.1</u> °C	Cooler # <u>ERC-02-406</u>
How was the temperature taken?	<input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank	<input type="checkbox"/> Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
6. Custody seals on sample containers intact, signed and dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
7. COC (Client & LvLI) signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
8. Sample containers are intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
9. All samples on COC received?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
All samples received on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
10. All sample label information matches COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
11. Samples properly preserved? (If #5 is no, then this is no.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
12. Samples received within hold times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Short holds taken to wet lab?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
13. VOA, TOC, TOX free of headspace?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
14. QC stickers placed on bottles designated by client?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> 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.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
16. Project Manager contacted concerning any discrepancies?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Person Contacted _____	Date _____	





Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD RC-031 K1169

DATE RECEIVED: 03/28/08

LVL LOT # :0803L836

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16J16						
SILVER, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
SILVER, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
SILVER, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
ALUMINUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
ALUMINUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
ALUMINUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
ARSENIC, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
ARSENIC, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
ARSENIC, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
BORON, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
BORON, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
BORON, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
BARIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
BARIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
BARIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
BERYLLIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
BERYLLIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
BERYLLIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
CALCIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/10/08
CALCIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/10/08
CALCIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/10/08
CADMIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
CADMIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
CADMIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
COBALT, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
COBALT, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
COBALT, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
CHROMIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
CHROMIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
CHROMIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
COPPER, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
COPPER, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
COPPER, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
IRON, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/10/08
IRON, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/10/08

Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-031 K1169

DATE RECEIVED: 03/28/08

LVL LOT # :0803L836

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/10/08
MERCURY, TOTAL	001	S	08C0054	03/26/08	03/31/08	04/01/08
MERCURY, TOTAL	001 REP	S	08C0054	03/26/08	03/31/08	04/01/08
MERCURY, TOTAL	001 MS	S	08C0054	03/26/08	03/31/08	04/01/08
POTASSIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/10/08
POTASSIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/10/08
POTASSIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/10/08
MAGNESIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
MAGNESIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
MAGNESIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
MANGANESE, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
MANGANESE, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
MANGANESE, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
MOLYBDENUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
MOLYBDENUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
MOLYBDENUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
SODIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/10/08
SODIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/10/08
SODIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/10/08
NICKEL, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
NICKEL, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
NICKEL, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
LEAD, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
LEAD, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
LEAD, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
ANTIMONY, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
ANTIMONY, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
ANTIMONY, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
SELENIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
SELENIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
SELENIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
SILICON, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
SILICON, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
SILICON, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
VANADIUM, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08
VANADIUM, TOTAL	001 REP	S	08L0133	03/26/08	04/07/08	04/09/08
VANADIUM, TOTAL	001 MS	S	08L0133	03/26/08	04/07/08	04/09/08
ZINC, TOTAL	001	S	08L0133	03/26/08	04/07/08	04/09/08



Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-031 K1169

DATE RECEIVED: 03/28/08

LVL LOT # :0803L836

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MOLYBDENUM, TOTAL	MB1	S	08L0133	N/A	04/07/08	04/09/08
SODIUM LABORATORY	LC1 BS	S	08L0133	N/A	04/07/08	04/10/08
SODIUM, TOTAL	MB1	S	08L0133	N/A	04/07/08	04/10/08
NICKEL LABORATORY	LC1 BS	S	08L0133	N/A	04/07/08	04/09/08
NICKEL, TOTAL	MB1	S	08L0133	N/A	04/07/08	04/09/08
LEAD LABORATORY	LC1 BS	S	08L0133	N/A	04/07/08	04/09/08
LEAD, TOTAL	MB1	S	08L0133	N/A	04/07/08	04/09/08
ANTIMONY LABORATORY	LC1 BS	S	08L0133	N/A	04/07/08	04/09/08
ANTIMONY, TOTAL	MB1	S	08L0133	N/A	04/07/08	04/09/08
SELENIUM LABORATORY	LC1 BS	S	08L0133	N/A	04/07/08	04/09/08
SELENIUM, TOTAL	MB1	S	08L0133	N/A	04/07/08	04/09/08
SILICON LABORATORY	LC1 BS	S	08L0133	N/A	04/07/08	04/09/08
SILICON, TOTAL	MB1	S	08L0133	N/A	04/07/08	04/09/08
VANADIUM LABORATORY	LC1 BS	S	08L0133	N/A	04/07/08	04/09/08
VANADIUM, TOTAL	MB1	S	08L0133	N/A	04/07/08	04/09/08
ZINC LABORATORY	LC1 BS	S	08L0133	N/A	04/07/08	04/09/08
ZINC, TOTAL	MB1	S	08L0133	N/A	04/07/08	04/09/08



## Analytical Report

Client: TNU-HANFORD RC-031  
LVL#: 0803L836  
SDG/SAF#: K1169/RC-031

W.O.#: 11343-606-001-9999-00  
Date Received: 03-28-08

### 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 analysis of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary. All samples were run and reported with a 3-fold dilution. The samples were rerun on a different instrument for Calcium, Iron 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 the ICV for Sodium and Potassium in file TA0409B. All samples were rerun for Sodium and Potassium along with Calcium and Iron in file PS0410A.
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), 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 with the exception of both LCS for Silicon at 49.2%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low for Silicon.

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 19 pages.

9. The matrix spike (MS) recoveries for 7 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:

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
J16J16	Aluminum	66,000	102.3
	Iron	72,000	77.5
	Antimony	300	102.3
	Manganese	3,000	104.8
	Silicon	6,300	98.6
	Zinc	300	94.5
	Calcium	72,000	77.5

11. The duplicate analyses for 8 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

  
 Date

# METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 08031836

Leaching Procedure: 1310 1311 1312 Other: \_\_\_\_\_

CLP 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	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Antimony	<u>6010B</u> <u>7041</u> <sup>s</sup>	<u>200.7</u> <u>204.2</u>			<u>99</u>
Arsenic	<u>6010B</u> <u>7060A</u> <sup>s</sup>	<u>200.7</u> <u>206.2</u>	<u>3113B</u>		<u>99</u>
Barium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Beryllium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Bismuth	<u>6010B</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>		<u>1620</u>	<u>99</u>
Boron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Cadmium	<u>6010B</u> <u>7131A</u> <sup>s</sup>	<u>200.7</u> <u>213.2</u>			<u>99</u>
Calcium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Chromium	<u>6010B</u> <u>7191</u> <sup>s</sup>	<u>200.7</u> <u>218.2</u>			<u>SS17</u>
Cobalt	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Copper	<u>6010B</u> <u>7211</u> <sup>s</sup>	<u>200.7</u> <u>220.2</u>			<u>99</u>
Iron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Lead	<u>6010B</u> <u>7421</u> <sup>s</sup>	<u>200.7</u> <u>239.2</u>	<u>3113B</u>		<u>99</u>
Lithium	<u>6010B</u> <u>7430</u> <sup>4</sup>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Magnesium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Manganese	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Mercury	<u>7470A</u> <sup>3</sup> <u>7471A</u> <sup>3</sup>	<u>245.1</u> <sup>2</sup> <u>245.5</u> <sup>2</sup>			<u>99</u>
Molybdenum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Nickel	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Potassium	<u>6010B</u> <u>7610</u> <sup>4</sup>	<u>200.7</u> <u>258.1</u> <sup>4</sup>			<u>99</u>
Rare Earths	<u>6010B</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>		<u>1620</u>	<u>99</u>
Selenium	<u>6010B</u> <u>7740</u> <sup>s</sup>	<u>200.7</u> <u>270.2</u>	<u>3113B</u>		<u>99</u>
Silicon	<u>6010B</u> <sup>1</sup>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silica	<u>6010B</u>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silver	<u>6010B</u> <u>7761</u> <sup>s</sup>	<u>200.7</u> <u>272.2</u>			<u>99</u>
Sodium	<u>6010B</u> <u>7770</u> <sup>4</sup>	<u>200.7</u> <u>273.1</u> <sup>4</sup>			<u>99</u>
Strontium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Thallium	<u>6010B</u> <u>7841</u> <sup>s</sup>	<u>200.7</u> <u>279.2</u> <u>200.9</u>			<u>99</u>
Tin	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Titanium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Uranium	<u>6010B</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>		<u>1620</u>	<u>99</u>
Vanadium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zinc	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zirconium	<u>6010B</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>		<u>1620</u>	<u>99</u>

Other: \_\_\_\_\_ 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.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/15/08

CLIENT: TNUHANFORD RC-031 K1169

LVL LOT #: 0803L836

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	J16J16	Silver, Total	0.35	MG/KG	0.31	3.0
		Aluminum, Total	2980	MG/KG	12.6	3.0
		Arsenic, Total	2.8	MG/KG	1.6	3.0
		Boron, Total	5.5	MG/KG	1.6	3.0
		Barium, Total	174	MG/KG	0.31	3.0
		Beryllium, Total	0.20	MG/KG	0.16	3.0
		Calcium, Total	60400	MG/KG	12.6	3.0
		Cadmium, Total	0.24	MG/KG	0.16	3.0
		Cobalt, Total	3.6	MG/KG	0.63	3.0
		Chromium, Total	14.2	MG/KG	0.63	3.0
		Copper, Total	45.3	MG/KG	0.63	3.0
		Iron, Total	26500	MG/KG	14.1	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	430	MG/KG	155	3.0
		Magnesium, Total	1490	MG/KG	7.8	3.0
		Manganese, Total	179	MG/KG	0.13	3.0
		Molybdenum, Total	2.6	MG/KG	0.94	3.0
		Sodium, Total	293	MG/KG	6.3	3.0
		Nickel, Total	4.9	MG/KG	0.63	3.0
		Lead, Total	3.7	MG/KG	0.94	3.0
		Antimony, Total	1.6	MG/KG	0.94	3.0
		Selenium, Total	1.9 u	MG/KG	1.9	3.0
		Silicon, Total	305	MG/KG	12.6	3.0
		Vanadium, Total	15.1	MG/KG	0.44	3.0
		Zinc, Total	200	MG/KG	1.9	3.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/15/08

CLIENT: TNUHANFORD RC-031 K1169  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK1	08L0133-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
		Calcium, Total	8.8	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	49.3	u MG/KG	49.3	1.0
		Magnesium, Total	2.5	u MG/KG	2.5	1.0
		Manganese, Total	0.04	u MG/KG	0.04	1.0
		Molybdenum, Total	0.30	u MG/KG	0.30	1.0
		Sodium, Total	5.4	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	0.81	MG/KG	0.60	1.0
BLANK1	08C0054-MB1	Mercury, Total	0.01	u MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/15/08

CLIENT: TNUHANFORD RC-031 K1169  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J16J16	Silver, Total	5.5	0.35	5.2	99.1	3.0
		Aluminum, Total	2980	2980	209	-0.2*	3.0
		Arsenic, Total	197	2.8	209	92.9	3.0
		Boron, Total	107	5.5	105	96.7	3.0
		Barium, Total	337	174	209	77.9	3.0
		Beryllium, Total	5.2	0.20	5.2	96.1	3.0
		Calcium, Total	55100	60400	2620	-210. *	3.0
		Cadmium, Total	5.1	0.24	5.2	93.5	3.0
		Cobalt, Total	53.2	3.6	52.3	94.8	3.0
		Chromium, Total	33.9	14.2	20.9	94.3	3.0
		Copper, Total	65.8	45.3	26.2	78.2	3.0
		Iron, Total	23200	26500	105	-3200. *	3.0
		Mercury, Total	0.18	0.01u	0.19	98.9	1.0
		Potassium, Total	3210	430	2620	106.2	3.0
		Magnesium, Total	3960	1490	2620	94.4	3.0
		Manganese, Total	215	179	52.3	68.5	3.0
		Molybdenum, Total	97.8	2.6	105	91.0	3.0
		Sodium, Total	2800	293	2620	96.0	3.0
		Nickel, Total	54.0	4.9	52.3	93.9	3.0
		Lead, Total	52.7	3.7	52.3	93.7	3.0
		Antimony, Total	28.6	1.6	52.3	51.6	3.0
		Selenium, Total	172	1.9 u	209	82.4	3.0
		Silicon, Total	503	305	105	189.2	3.0
		Vanadium, Total	62.1	15.1	52.3	89.9	3.0
		Zinc, Total	224	200	52.3	45.7	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/15/08

CLIENT: TNUHANFORD RC-031 K1169  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR(REP)
			RESULT	REPLICATE	RPD	
-001REP	J16J16	Silver, Total	0.35	0.33u	NC	3.0
		Aluminum, Total	2980	2440	19.9	3.0
		Arsenic, Total	2.8	1.7 u	NC	3.0
		Boron, Total	5.5	4.3	24.5	3.0
		Barium, Total	174	142	20.5	3.0
		Beryllium, Total	0.20	0.17	16.7	3.0
		Calcium, Total	60400	47500	23.9	3.0
		Cadmium, Total	0.24	0.21	11.2	3.0
		Cobalt, Total	3.6	3.2	11.8	3.0
		Chromium, Total	14.2	12.2	15.2	3.0
		Copper, Total	45.3	35.8	23.4	3.0
		Iron, Total	26500	24400	8.2	3.0
		Mercury, Total	0.01u	0.01u	NC	1.0
		Potassium, Total	430	434	0.83	3.0
		Magnesium, Total	1490	1200	21.7	3.0
		Manganese, Total	179	159	12.1	3.0
		Molybdenum, Total	2.6	2.1	21.3	3.0
		Sodium, Total	293	259	12.5	3.0
		Nickel, Total	4.9	4.7	4.2	3.0
		Lead, Total	3.7	4.0	7.8	3.0
		Antimony, Total	1.6	1.6	0.00	3.0
		Selenium, Total	1.9 u	2.0 u	NC	3.0
		Silicon, Total	305	307	0.69	3.0
		Vanadium, Total	15.1	12.0	22.9	3.0
		Zinc, Total	200	155	25.2	3.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/15/08

CLIENT: TNUHANFORD RC-031 K1169  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	SPIKED		UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	08L0133-LC1	Silver, LCS	47.0	50.0	MG/KG	94.0
		Aluminum, LCS	482	500	MG/KG	96.4
		Arsenic, LCS	901	1000	MG/KG	90.1
		Boron, LCS	464	500	MG/KG	92.8
		Barium, LCS	477	500	MG/KG	95.5
		Beryllium, LCS	23.6	25.0	MG/KG	94.4
		Calcium, LCS	2250	2500	MG/KG	89.8
		Cadmium, LCS	23.2	25.0	MG/KG	92.8
		Cobalt, LCS	237	250	MG/KG	94.8
		Chromium, LCS	47.4	50.0	MG/KG	94.8
		Copper, LCS	121	125	MG/KG	96.6
		Iron, LCS	468	500	MG/KG	93.6
		Potassium, LCS	2270	2500	MG/KG	90.9
		Magnesium, LCS	2270	2500	MG/KG	90.7
		Manganese, LCS	70.3	75.0	MG/KG	93.7
		Molybdenum, LCS	461	500	MG/KG	92.2
		Sodium, LCS	2260	2500	MG/KG	90.6
		Nickel, LCS	188	200	MG/KG	94.2
		Lead, LCS	235	250	MG/KG	94.1
		Antimony, LCS	276	300	MG/KG	92.1
		Selenium, LCS	878	1000	MG/KG	87.8
		Silicon, LCS	246	500	MG/KG	49.2
		Vanadium, LCS	231	250	MG/KG	92.5
		Zinc, LCS	93.3	100	MG/KG	93.3
LCS1	08C0054-LC1	Mercury, LCS	4.8	4.7	MG/KG	102.0

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 0820133  
 Date/Time Initiated: 4/7/08 1300  
 Date/Time Completed: 4/7/08 2200  
 Analyst(s): MW  
 Matrix:  Soil  Water  Other: \_\_\_\_\_  
 Instr. Type: AA CP  
 Parameters: See backlog

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

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

MW

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <	Type: To/So/ TC	Texture	Color/Appearance	Artifact	Turb
<u>08031836-027</u>		<u>1.21 gm</u>	<u>100ml</u>	<u>22</u>	<u>TO</u>	<u>coarse</u>	<u>gray-brown / rocks</u>		
<u>CDR</u>		<u>1.14 gm</u>	<u>100ml</u>	<u>22</u>	<u>1</u>	<u>1</u>	<u>1</u>		
<u>0015</u>	<u>1.0ml</u>	<u>1.21 gm</u>	<u>100ml</u>	<u>22</u>	<u>1</u>	<u>1</u>	<u>1</u>		
<u>0820133-MB7</u>		<u>1.0 gm</u>	<u>100ml</u>	<u>22</u>	<u>1</u>	<u>1</u>	<u>boiling chips</u>		
<u>1e1</u>	<u>1.0ml</u>	<u>1.0 gm</u>	<u>100ml</u>	<u>22</u>	<u>1</u>	<u>1</u>	<u>1</u>		

MW 4/7/08

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

Reagent IDs:  
 HNO<sub>3</sub> E46025  
 HCL E45047  
 H<sub>2</sub>O<sub>2</sub> E44A06  
 1:1 HNO<sub>3</sub> 9789-07-06  
 1:1 HCL 070  
W.E.  
MW 4/10/08

File ID#: IC013301  
 LIMS Transfer:  N updated  
 Data Review By/Date: pmp, 04/10/08

MERCURY PREPARATION

Analyst: UP  
Date: 3/31/08  
Start Time/Temp: 1610 | 92°  
End Time/Temp: 1640 | 96°

Instrument ID: H03.1/3.2  
Balance #: B29 / NA  
Pipette Calibration (Daily) Y

Logbook #: 422  
Prep Batch: 08C0054  
Worksheet: HG040101/02  
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 Initial/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	2V			10mL	50mL	
0.2 µg/L	857	0.100				
1.0	55	0.500				
2.0	92	1.000				
5.0	31	2.500				
10.0	194	5.000				
1CV	LV	0.125	2.5			
CCV	154	0.250	5.0			
ICB/CCB	C4D					92.50L
MB1	X5			0.30		PBS154 100.00
L21	Z8	*	*	0.30		LCS154
0803L836-001	QTR			0.34		79.02
	001R	B32		0.32		
	001S	AB	0.500	1.0	0.34	
0803L798-001	SPRT			0.34		98.30
	002	NB		0.40		97.13
	003	L15		0.33		97.57
	004	PA		0.40		97.54
0803L761-003	X3			0.32		100.00
	009	40		0.33		
	009S	P3	0.050	10.0	0.33	
	009T	B2	0.050	10.0	0.32	
	011	A901		0.31		
	013	55		0.32		
	015	AN		0.31		
	017	C9		0.32 <sup>2.5mL</sup>		
0803L816-001	JC			0.326		

Standard:	ID	Prep Date/Time
ICAL/MS	R16072-75-07A	3/31/08 1030
ICV/CCV/LCS	US6072-75-08B	L

Reviewed By/Date: M. White 4/4/08  
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

MERCURY PREPARATION

Analyst: TLO  
Date: 3/31/08  
Start Time/Temp: \_\_\_\_\_  
End Time/Temp: see page 050

Instrument ID: HG31/3.2  
Balance #: B29 /NA  
Pipette Calibration (Daily) Y

Logbook # 422  
Prep Batch: 08C0054  
Worksheet: HG040101/02  
SOP No. ME-HgCVAA, Rev. 02

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

NOTE: The Initial/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.
0803L816-002	CGR			0.32	50mL	97.45
004	2I			0.33		98.54
0803L837-001	222			0.32		89.42
001R	CT			0.37		I
001S	IC	0.500	1.0	0.33		
002	K17			0.30		98.77
003	S			0.31		96.32

see page 050 3/31/08

Standard:	ID	Prep Date/Time
ICALMS		
ICVCCV/LCS	<u>see page 050</u>	

Reviewed By/Date: [Signature] 4/4/08  
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



<b>Washington Closure Hanford</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				RC-031-117		Page 1 of 1	
Collector T. Welch-Koelling		Company Contact J. R. DeBuigne		Telephone No. 528-6409		Project Coordinator KESSNER, JH		Price Code 8A	
Project Designation 100-F Burial Grounds Remaining Sites - Soil Quick Turn		Sampling Location 126-F-2 well decom soils composite				SAF No. RC-031		Data Turnaround 3 DAY	
Ice Chest No. ERC-02-404 + ERC-02-406		Field Logbook No. EFL-1174-4		COA R126F22000		Method of Shipment Fed Ex			
Shipped To EBERLINE SERVICES (LIONVILLE)		Offsite Property No. A080207				Bill of Lading/Air Bill No. See OSPC			

<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> NA  <b>Special Handling and/or Storage</b> NAT DAS 3/27/08 COOL 40C	<b>Preservation</b>	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None
	<b>Type of Container</b>	P	aG	aG	P	aG	P	P
	<b>No. of Container(s)</b>	1	1	1	1	1	1	1
	<b>Volume</b>	125mL	60mL	60mL	125mL	60mL	500mL	125mL

<b>SAMPLE ANALYSIS</b>				See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	See item (2) in Special Instructions.	Gross Alpha; Gross Beta
<b>Sample No.</b>	<b>Matrix *</b>	<b>Sample Date</b>	<b>Sample Time</b>							
J16J16	SOIL	3/26/08	1050	X	X	X	X	X		

<b>CHAIN OF POSSESSION</b>		<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b>
Relinquished By/Removed From <i>T. Welch-Koelling</i>	Date/Time 3-26-08 1200	Received By/Stored In <i>JR DeBuigne</i>	Date/Time 3-26-08 1200	(1) ICP Metals - 6010 (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 - 7470 - (CV) (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Barium-135, Silver-108 metastable, Uranium-235, Uranium-238) <i>(cm) 03/27/08</i>				S=Soil SE=Soil/soil SO=Soil SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Transe WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>JR DeBuigne</i>	Date/Time 3-26-08 1515	Received By/Stored In <i>Dennis S. ...</i>	Date/Time 3/26/08 1515					
Relinquished By/Removed From <i>Dennis S. ...</i>	Date/Time 3/27/08 1130	Received By/Stored In <b>FED EX</b>	Date/Time					
Relinquished By/Removed From <i>Fed Ex</i>	Date/Time 3/28/08 0955	Received By/Stored In <i>...</i>	Date/Time 3/28/08 0955					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

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

CLIENT: TNU-HANFORD  
 Project/SAP/SOW/Release #: RC-031

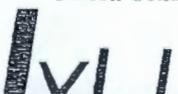
Date: 3-28-09

LvLI Batch #: 0803L 836

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |   |
|---|---|---|
| 1. Samples Hand Delivered or Shipped?   | Carrier <u>Fed Ex</u>   | Airbill # <u>7989 0636 8613</u>           |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         | <input type="checkbox"/> No Seals         |
| 3. Outside of coolers or shipping containers are free from damage?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         | Comments:                                 |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible?                   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 5. Samples received cooled or ambient?  | Temp <u>3.1</u> °C  | Cooler # <u>ERC-02-406</u>                |
| How was the temperature taken?  | <input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 6. Custody seals on sample containers intact, signed and dated?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         | <input type="checkbox"/> No Seals         |
| 7. COC (Client & LvLI) signed & dated?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 8. Sample containers are intact?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 9. All samples on COC received?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| All samples received on COC?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 10. All sample label information matches COC?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 11. Samples properly preserved? (If #5 is no, then this is no.)   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 12. Samples received within hold times?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| Short holds taken to wet lab?   | <input type="checkbox"/> Yes <input type="checkbox"/> No                    | <input checked="" type="checkbox"/> N/A   |
| 13. VOA, TOC, TOX free of headspace?  | <input type="checkbox"/> Yes <input type="checkbox"/> No                    | <input checked="" type="checkbox"/> N/A   |
| 14. QC stickers placed on bottles designated by client?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         | <input type="checkbox"/> N/A              |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No         |   |
| 16. Project Manager contacted concerning any discrepancies?   | <input type="checkbox"/> Yes <input type="checkbox"/> No                    | <input checked="" type="checkbox"/> N/A   |
| Person Contacted _____  | Date _____  |   |



Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-031 K1169



DATE RECEIVED: 03/28/08

LVL LOT # :08031836

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16J16						
% SOLIDS	001	S	08L&S028	03/26/08	03/28/08	03/31/08
% SOLIDS	001 REP	S	08L&S028	03/26/08	03/28/08	03/31/08
BROMIDE BY IC	001	S	08LICS24	03/26/08	03/31/08	03/31/08
BROMIDE BY IC	001 REP	S	08LICS24	03/26/08	03/31/08	03/31/08
BROMIDE BY IC	001 MS	S	08LICS24	03/26/08	03/31/08	03/31/08
CHLORIDE BY IC	001	S	08LICS24	03/26/08	03/31/08	03/31/08
CHLORIDE BY IC	001 REP	S	08LICS24	03/26/08	03/31/08	03/31/08
CHLORIDE BY IC	001 MS	S	08LICS24	03/26/08	03/31/08	03/31/08
FLUORIDE BY IC	001	S	08LICS24	03/26/08	03/31/08	03/31/08
FLUORIDE BY IC	001 REP	S	08LICS24	03/26/08	03/31/08	03/31/08
FLUORIDE BY IC	001 MS	S	08LICS24	03/26/08	03/31/08	03/31/08
NITRITE BY IC	001	S	08LICS24	03/26/08	03/31/08	03/31/08
NITRITE BY IC	001 REP	S	08LICS24	03/26/08	03/31/08	03/31/08
NITRITE BY IC	001 MS	S	08LICS24	03/26/08	03/31/08	03/31/08
NITRATE BY IC	001	S	08LICS24	03/26/08	03/31/08	03/31/08
NITRATE BY IC	001 REP	S	08LICS24	03/26/08	03/31/08	03/31/08
NITRATE BY IC	001 MS	S	08LICS24	03/26/08	03/31/08	03/31/08
TOTAL CYANIDE	001	S	08LC020	03/26/08	03/31/08	03/31/08
TOTAL CYANIDE	001 REP	S	08LC020	03/26/08	03/31/08	03/31/08
TOTAL CYANIDE	001 MS	S	08LC020	03/26/08	03/31/08	03/31/08
PHOSPHATE BY IC	001	S	08LICS24	03/26/08	03/31/08	03/31/08
PHOSPHATE BY IC	001 REP	S	08LICS24	03/26/08	03/31/08	03/31/08
PHOSPHATE BY IC	001 MS	S	08LICS24	03/26/08	03/31/08	03/31/08
SULFATE BY IC	001	S	08LICS24	03/26/08	03/31/08	03/31/08
SULFATE BY IC	001 REP	S	08LICS24	03/26/08	03/31/08	03/31/08
SULFATE BY IC	001 MS	S	08LICS24	03/26/08	03/31/08	03/31/08
PH	001	S	08LPH016	03/26/08	04/01/08	04/01/08
PH	001 REP	S	08LPH016	03/26/08	04/01/08	04/01/08
SULFIDE	001	S	08LSD019	03/26/08	03/31/08	03/31/08
SULFIDE	001 REP	S	08LSD019	03/26/08	03/31/08	03/31/08
SULFIDE	001 MS	S	08LSD019	03/26/08	03/31/08	03/31/08

LAB QC:

BROMIDE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
---------------	-----	---	----------	-----	----------	----------

Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-031 K1169

DATE RECEIVED: 03/28/08

LVL LOT # :0803L836

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BROMIDE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
CHLORIDE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
CHLORIDE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
FLUORIDE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
FLUORIDE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
NITRITE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
NITRITE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
NITRATE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
NITRATE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
TOTAL CYANIDE	LCS L	S	08LC020	N/A	03/31/08	03/31/08
TOTAL CYANIDE	LCS L	S	08LC020	N/A	03/31/08	03/31/08
TOTAL CYANIDE	MB1	S	08LC020	N/A	03/31/08	03/31/08
PHOSPHATE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
PHOSPHATE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
SULFATE BY IC	MB1	S	08LICS24	N/A	03/31/08	03/31/08
SULFATE BY IC	MB1 BS	S	08LICS24	N/A	03/31/08	03/31/08
SULFIDE	MB1	S	08LSD019	N/A	03/31/08	03/31/08
SULFIDE	MB1 BS	S	08LSD019	N/A	03/31/08	03/31/08
SULFIDE	MB1 BSD	S	08LSD019	N/A	03/31/08	03/31/08



Analytical Report

Client: TNU-HANFORD RC-031 K1169  
LVL#: 0803L836

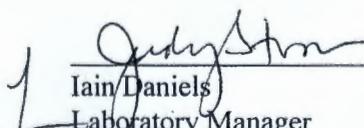
W.O.#: 11343-606-001-9999-00  
Date Received: 03-28-08

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.

LvLI 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. LvLI 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 a sample that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries were within the 75-125% control limits with the exception MS recoveries for Phosphate at 47.8% and Sulfate at 137.0%. Re-analysis of a second spiked aliquot yielded MS recoveries for Phosphate and Sulfate of 24.4% and 127.3%, respectively.
8. The replicate analyses were within the 20% 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.

  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated

4/9/08  
Date

njpl03-836

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 14 pages.

# Lionville Laboratory Incorporated

## WET CHEMISTRY

### METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% 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 / 19014	— 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 <sup>D</sup>	— EPA 418.1
pH, Soil		✓ 9045 <sup>D</sup> / 19014	
Sulfide, Reactive		— Section 7.3/9030B	
Sulfide		✓ 9030B(mod) / 19034	
Specific Gravity	— D1429-76C/	— D5057-90	
Sulfur, Total		— 9056	
Synthetic Preparation Leach		— 1312	
Paint Filter		— 9095A	
Other: Bromide, Chloride, Fluoride, Method: } EPA 300.0			
Other: Nitrite, Nitrate, Phosphate, Method } Sulfate			

# Lionville Laboratory Incorporated

## 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 04/04/08

CLIENT: TNUHANFORD RC-031 K1169  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J16J16	% Solids	79.0	%	0.01	1.0
		Bromide by IC	3.1	u MG/KG	3.1	1.0
		Chloride by IC	5.0	MG/KG	3.1	1.0
		Fluoride by IC	3.1	u MG/KG	3.1	1.0
		Nitrite by IC	3.09	u MG/KG	3.09	1.0
		Nitrate by IC	3.09	u MG/KG	3.09	1.0
		Cyanide, Total	0.72	u MG/KG	0.72	1.0
		Phosphate by IC	3.1	u MG/KG	3.1	1.0
		Sulfate by IC	71.1	MG/KG	3.1	1.0
		pH	11.6	SOIL PH	0.01	1.0
		Sulfide	27.2	u MG/KG	27.2	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/04/08

CLIENT: TNUHANFORD RC-031 K1169  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LICS24-MB1	Bromide by IC	2.5	u MG/KG	2.5	1.0
		Chloride by IC	2.5	u MG/KG	2.5	1.0
		Fluoride by IC	2.5	u MG/KG	2.5	1.0
		Nitrite by IC	2.52	u MG/KG	2.52	1.0
		Nitrate by IC	2.52	u MG/KG	2.52	1.0
		Phosphate by IC	2.5	u MG/KG	2.5	1.0
		Sulfate by IC	2.5	u MG/KG	2.5	1.0
BLANK1	08LC020-MB1	Cyanide, Total	0.49	u MG/KG	0.49	1.0
BLANK10	08LSD019-MB1	Sulfide	37.2	u MG/KG	37.2	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/04/08

CLIENT: TNUHANFORD RC-031 K1169  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J16J16	Bromide by IC	126	0.0	126	100	2.0
		Chloride by IC	124	5.0	126	94.6	2.0
		Fluoride by IC	122	2.4	126	94.8	2.0
		Nitrite by IC	114	3.09u	126	90.4	2.0
		Nitrate by IC	130	3.09u	126	102.7	2.0
		Cyanide, Total	6.92	0.72u	6.97	99.3	1.0
		Phosphate by IC	60.2	3.1 u	126	47.8	2.0
		Sulfate by IC	244	71.1	126	137.0	2.0
		Sulfide	327	8.2	364	87.7	1.0
BLANK10	08LICS24-MB1	Bromide by IC	54.2	2.5 u	60.9	89.0	1.0
		Chloride by IC	53.7	2.5 u	60.9	88.2	1.0
		Fluoride by IC	53.3	2.5 u	60.9	87.4	1.0
		Nitrite by IC	53.8	2.52u	60.9	88.2	1.0
		Nitrate by IC	54.0	2.52u	60.9	88.7	1.0
		Phosphate by IC	54.5	2.5 u	60.9	89.4	1.0
		Sulfate by IC	56.0	2.5 u	60.9	91.8	1.0
BLANK10	08ISD019-MB1	Sulfide	476	37.2 u	495	96.1	1.0
		Sulfide MSD	479	37.2 u	510	93.8	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 04/04/08

CLIENT: TNUHANFORD RC-031 K1169  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	SPIKE#1	SPIKE#2	%DIFF
			%RECOV	%RECOV	
BLANK10	08LSD019-MB1	Sulfide	96.1	93.8	2.4

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/04/08

CLIENT: TNUHANFORD RC-031 K1169  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	J16J16	% Solids	79.0	78.8	0.28	1.0
		Bromide by IC	3.1 u	3.1 u	NC	1.0
		Chloride by IC	5.0	5.5	10.1	1.0
		Fluoride by IC	3.1 u	3.1 u	NC	1.0
		Nitrite by IC	3.09u	3.12u	NC	1.0
		Nitrate by IC	3.09u	3.12u	NC	1.0
		Cyanide, Total	0.72u	0.77u	NC	1.0
		Phosphate by IC	3.1 u	3.1 u	NC	1.0
		Sulfate by IC	71.1	79.5	11.1	1.0
		pH	11.6	11.6	0.0	1.0
		Sulfide	27.2 u	27.9 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/04/08

CLIENT: TNUHANFORD RC-031 K1169  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0803L836

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCSS1	08LC020-LCS1	Cyanide, Total LCS	1.96	2.0	MG/KG	98.2
LCSS2	08LC020-LCS2	Cyanide, Total LCS	9.80	10.0	MG/KG	98.0



Collector T. Welch-Koelling	Company Contact J. R. DeBuigne	Telephone No. 528-6409	Project Coordinator KESSNER, JH	Price Code 8A	Data Turnaround 3 DAY
Project Designation 100-F Burial Grounds Remaining Sites - Soil Quick Turn	Sampling Location 126-F-2 well decom soils composite	SAF No. RC-031			
Ice Chest No. ERC-02-404, ERC-02-406	Field Logbook No. EFL-1174-4	COA R126F22000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A080207	Bill of Lading/Air Bill No. See OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS NA  Special Handling and/or Storage AT DAS 3/27/08 COOL 40C	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
	Type of Container	P	aG	aG	P	aG	P	P		
	No. of Container(s)	1	1	1	1	1	1	1		
	Volume	125mL	60mL	60mL	125mL	60mL	500mL	125mL		

SAMPLE ANALYSIS				See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0: pH (Soil) - 9045	Total Cyanide - 9010: Sulfides - 9030	See item (2) in Special Instructions.	Gross Alpha; Gross Beta		
Sample No.	Matrix *	Sample Date	Sample Time									
J16J16	SOIL	3/26/08	1050	X	X	X	X	X				

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From <i>T Welch-Koelling</i>	Date/Time 3-26-08 1200	Received By/Stored In <i>JR DeBuigne</i>	Date/Time 3-26-08	(1) ICP Metals - 6010 (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 - 7470 - (CV) (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Barium-133, Silver-108 metastable, Uranium-235, Uranium-238) (am) 03/27/08				S=Soil SB=Soil/water SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetative X=Other
Relinquished By/Removed From <i>JR DeBuigne</i>	Date/Time 3-26-08 1515	Received By/Stored In <i>David St...</i>	Date/Time 3/26/08 1515					
Relinquished By/Removed From <i>David St...</i>	Date/Time 3/27/08 1130	Received By/Stored In <b>FED EX</b>	Date/Time					
Relinquished By/Removed From <i>T Welch</i>	Date/Time 3/28/08 0955	Received By/Stored In <i>T Welch</i>	Date/Time 3/28/08 0955					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

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

CLIENT: TNU-HANFORD  
 Project/SAB/SOW/Release #: RC-031

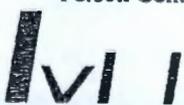
Date: 3-28-09

LvLI Batch #: 0803L 836

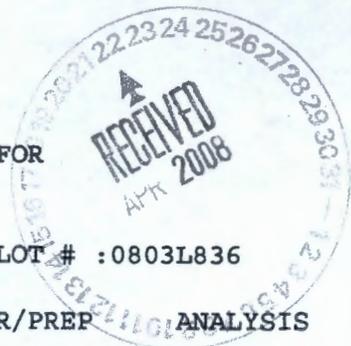
Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered <u>or Shipped?</u>	Carrier <u>FWR</u>		Airbill # <u>79890636 8613</u>
2. Custody Seals on coolers or shipping containers intact, signed & dated?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> No Seals
3. Outside of coolers or shipping containers are free from damage?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Comments:
4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
5. Samples received cooled or ambient?	Temp <u>3.1</u> °C		Cooler # <u>ERC-02-406</u>
How was the temperature taken?	<input checked="" type="checkbox"/> IR	<input type="checkbox"/> Temp. Blank	<input type="checkbox"/> Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
6. Custody seals on sample containers intact, signed and dated?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> No Seals
7. COC (Client & LvLI) signed & dated?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
8. Sample containers are intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
9. All samples on COC received?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
All samples received on COC?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
10. All sample label information matches COC?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
11. Samples properly preserved? (If #5 is no, then this is no.)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
12. Samples received within hold times?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Short holds taken to wet lab?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
13. VOA, TOC, TOX free of headspace?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
14. QC stickers placed on bottles designated by client?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
16. Project Manager contacted concerning any discrepancies?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Person Contacted _____		Date _____	



Lionville Laboratory, Inc.  
 PCB ANALYTICAL DATA PACKAGE FOR  
 TNU-HANFORD RC-031 *K1169*



DATE RECEIVED: 03/28/08

LVL LOT # :0803L836

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16J16	001	S	08LE0149	03/26/08	03/31/08	03/31/08
J16J16	001 MS	S	08LE0149	03/26/08	03/31/08	03/31/08
J16J16	001 MSD	S	08LE0149	03/26/08	03/31/08	03/31/08

LAB QC:

PBLKOK	MB1	S	08LE0149	N/A	03/31/08	03/31/08
PBLKOK	MB1 BS	S	08LE0149	N/A	03/31/08	03/31/08



## Case Narrative

---

**Client:** TNU-HANFORD RC-031  
**LVL #:** 0803L836  
**SDG/SAF #** K1169 / RC-031

**W.O. #:** 11343-606-001-9999-00  
**Date Received:** 03-28-2008

### PCB

One (1) soil sample was collected on 03-26-2008.

The sample and its associated QC samples was extracted on 03-31-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 03-31-2008. The extraction procedure was based on method 3550B and the extracts were analyzed based on method 8082.

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 the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

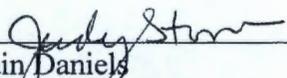
1. The sample was extracted and analyzed within required holding time
2. The sample and its associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. The blank spike recoveries were within acceptance criteria.
6. The matrix spike recoveries were within acceptance criteria.
7. The initial calibrations associated with this data set were within acceptance criteria.
8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

r:\group\data\2008\pest\tnu\0803-836ks1.pcb.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 9 pages.



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

  
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated

4/2/08  
Date



## GLOSSARY OF DATA

### DATA QUALIFIERS

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

### ABBREVIATIONS

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

Sample Information	Cust ID:	J16J16	J16J16	J16J16	PBLKOK	PBLKOK BS
	RFW#:	001	001 MS	001 MSD	08LE0149-MB1	08LE0149-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	86 %	81 %	81 %	86 %	82 %
	Decachlorobiphenyl	110 %	102 %	105 %	101 %	100 %
-----fl-----fl-----fl-----fl-----fl-----fl-----fl						
Aroclor-1016		34 U	73 %	76 %	13 U	76 %
Aroclor-1221		34 U	34 U	34 U	13 U	13 U
Aroclor-1232		34 U	34 U	34 U	13 U	13 U
Aroclor-1242		34 U	34 U	34 U	13 U	13 U
Aroclor-1248		34 U	34 U	34 U	13 U	13 U
Aroclor-1254		34 U	34 U	34 U	13 U	13 U
Aroclor-1260		34 U	80 %	83 %	13 U	81 %

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

00000005

Extract. Date: 03/31/08

Extraction Batch No: 08LE0149

Analyst: MF

Method: SONC3550

Test: OPCB

Cleanup Date: 03/31/08

Analyst: MF

Client: TNU-HANFORD RC-031

LIMS Report Date: 03/31/08

Solvent: DCM/ACETONE,HEXANE

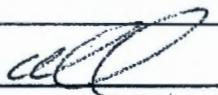
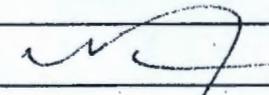
Adsorbent: H2SO4

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
0803L836-	TNU-HANFORD RC-031										
001	J16J16	15.0	1.0			10		1.0	N	79.02	843.7
001 -S	J16J16	15.0	1.0	1.0		10		1.0	N	79.02	843.7
001 -T	J16J16	15.0	1.0	1.0		10		1.0	N	79.02	843.7
08LE0149-MB1	PBLKOK	30.0	1.0			10		1.0	N	100.00	333.3
08LE0149-MB1 -S	PBLKOK	30.0	1.0	1.0		10		1.0	N	100.00	333.3

Comments:

Surrogate: 250 UL OLM PSURR 89916405

Spike: 250 UL AR1660 89916602

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
		3/31/08 16:10	SZ	3/31/08 16:10	GL

0000000000



Collector T. Welch-Koelling	Company Contact J. R. DeBuigne	Telephone No. 528-6409	Project Coordinator KESSNER, JH	Price Code 8A	Data Turnaround 3 DAY
Project Designation 100-F Burial Grounds Remaining Sites - Soil Quick Turn	Sampling Location 126-F-2 well decom soils composite	SAF No. RC-031			
Ice Chest No. ECL-02-404 & ERCC-02-406	Field Logbook No. EFL-1174-4	COA R126F22000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A080207	Bill of Lading/Air Bill No. See OSCP			

POSSIBLE SAMPLE HAZARDS/REMARKS NA  Special Handling and/or Storage NA DAS 3/27/08 COOL 40C	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None				
	Type of Container	P	aG	aG	P	aG	P	P				
	No. of Container(s)	1	1	1	1	1	1	1				
	Volume	125mL	60mL	60mL	125mL	60mL	500mL	125mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	See item (2) in Special Instructions.	Gross Alpha; Gross Beta					
	Sample No.	Matrix *	Sample Date	Sample Time								
J16J16	SOIL	3/26/08	1050	X	X	X	X	X				

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From <i>T Welch-Koelling</i>	Date/Time 3-26-08 1200	Received By/Stored In <i>JR DeBuigne</i>	Date/Time 3-26-08	(1) ICP Metals - 6010 (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 - 7470 - (CV) (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Barium-133, Silver-108 metastable, Uranium-235, Uranium-238) <i>com 03/27/08</i>		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
Relinquished By/Removed From <i>JR DeBuigne</i>	Date/Time 3-26-08 1515	Received By/Stored In <i>David...</i>	Date/Time 3/26/08 1515			
Relinquished By/Removed From <i>David...</i>	Date/Time 3/27/08 1130	Received By/Stored In FED EX	Date/Time			
Relinquished By/Removed From <i>Fed Ex</i>	Date/Time 3/28/08 0955	Received By/Stored In <i>David...</i>	Date/Time 3/28/08 0955			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			

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

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

CLIENT: TNU-HANFORD  
 Project SAP/SOW/Release #: RC-031

Date: 3-28-09

LvLI Batch #: 0803L 836

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |  |   |
|---|--|---|
| 1. Samples Hand Delivered <u>or Shipped?</u>  | Carrier <u>FedEx</u>   | Airbill # <u>79890636 8613</u>            |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated?  | <input type="checkbox"/> Yes <input type="checkbox"/> No   | <input type="checkbox"/> No Seals         |
| 3. Outside of coolers or shipping containers are free from damage?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | Comments:                                 |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible?                   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |   |
| 5. Samples received cooled or ambient?  | Temp <u>3.1</u> °C   | Cooler # <u>ERC-02-406</u>                |
| How was the temperature taken?  | <input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank  | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |   |
| 6. Custody seals on sample containers intact, signed and dated?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | <input type="checkbox"/> No Seals         |
| 7. COC (Client & LvLI) signed & dated?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |   |
| 8. Sample containers are intact?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |   |
| 9. All samples on COC received?<br>All samples received on COC?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |   |
| 10. All sample label information matches COC?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |   |
| 11. Samples properly preserved? (If #5 is no, then this is no.)   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |   |
| 12. Samples received within hold times?<br>Short holds taken to wet lab?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br><input type="checkbox"/> Yes <input type="checkbox"/> No            | <input checked="" type="checkbox"/> N/A   |
| 13. VOA, TOC, TOX free of headspace?  | <input type="checkbox"/> Yes <input type="checkbox"/> No   | <input checked="" type="checkbox"/> N/A   |
| 14. QC stickers placed on bottles designated by client?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | <input type="checkbox"/> N/A              |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |   |
| 16. Project Manager contacted concerning any discrepancies?<br>Person Contacted _____   | <input type="checkbox"/> Yes <input type="checkbox"/> No   | <input checked="" type="checkbox"/> N/A   |
|   | Date _____   |   |

