0076854

SAF-RC-087
618-7 Burial Ground - Soil
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Rick Kerkow	L6-06	KW 4/7/08 Initials/Date
Kathy Wendt	H4-21	KW 4/7/08 Initials/Date

COMMENTS:

SDG K1148 SAF-RC-087

Rad only Chem only X Rad & Chem

X Complete Partial

WASTE SITE: 618-7 Stockpiles

RECEIVED
APR 1 0 2008
EDMC

EBERLINE
SERVICES

RECEIVED
APR 2008

April 1, 2008

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

Reference: **P.O. #S00W235A00**
Eberline Services R8-03-069-7782, SDG K1148

Dear Ms. Kessner:

Enclosed are the data reports for one solid (soil) sample designated under SAF No. RC-087 received at Eberline Services on March 14, 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 Mannion

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

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1148 was composed of one solid (soil) sample designated under SAF No. RC-087 with a Project Designation of: 618-7 Burial Grounds-Soil.

The sample was 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 March 28, 2008.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analysis.

2.2 Tritium Analysis

No problems were encountered during the course of the analysis.

2.3 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.4 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analysis

No problems were encountered during the course of the analyses.

2.8 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 Mannion

Melissa C. Mannion
Senior Program Manager

04/01/08
Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP K1148

SDG 7782	Client Hanford
Contact Melissa C. Mannion	Contract No. S00W235A00
	Case no SDG K1148

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

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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	03/28/08

SDG 7782
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/28/08

SDG 7782
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

SDG 7782
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R803069-01	J169C7	618-7 Stockpiles	SOLID		RC-087	RC-087-015	03/06/08 09:50
R803069-02	Lab Control Sample		SOLID		RC-087		
R803069-03	Method Blank		SOLID		RC-087		
R803069-04	Duplicate (R803069-01)	618-7 Stockpiles	SOLID		RC-087		03/06/08 09:50

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

QC SUMMARY

SDG 7782
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
82	RC-087-015	J169C7	SOLID	91.6	1594 g		03/14/08	8	R803069-01	7782-001
		Method Blank	SOLID						R803069-03	7782-003
		Lab Control Sample	SOLID						R803069-02	7782-002
		Duplicate (R803069-01)	SOLID	91.6	1594 g		03/14/08	8	R803069-04	7782-004

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

SDG 7782
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Solids	6148-040	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6148-040	5.0	1			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Solids	6148-040	5.0	1			1	1	1/1		
U	SOLID	Uranium, Isotopic in Solids	6148-040	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Solids	6148-040	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Solids	6148-040	20.0	1			1	1	1/1		
93B	SOLID	Gross Beta in Solids	6148-040	15.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6148-040	15.0	1			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Solids	6148-040	10.0	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 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

LAB WORK SUMMARY

SDG 7782
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

LB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
03069-01	J169C7			7782-001	93A/93		03/20/08	03/21/08	BW	Gross Alpha in Solids
03/06/08	618-7 Stockpiles		SOLID	7782-001	93B/93		03/20/08	03/21/08	BW	Gross Beta in Solids
03/14/08	RC-087-015	RC-087		7782-001	AM		03/22/08	03/24/08	BW	Americium 241 in Solids
				7782-001	GAM		03/18/08	03/20/08	MWT	Gamma Scan
				7782-001	H		03/20/08	03/24/08	BW	Tritium in Solids
				7782-001	PU		03/27/08	03/27/08	BW	Plutonium, Isotopic in Solids
				7782-001	SR		03/20/08	03/21/08	BW	Total Strontium in Solids
				7782-001	TH		03/22/08	03/24/08	BW	Thorium, Isotopic in Solids
				7782-001	U		03/27/08	03/27/08	BW	Uranium, Isotopic in Solids
103069-02	Lab Control Sample			7782-002	93A/93		03/20/08	03/21/08	BW	Gross Alpha in Solids
			SOLID	7782-002	93B/93		03/20/08	03/21/08	BW	Gross Beta in Solids
		RC-087		7782-002	AM		03/22/08	03/24/08	BW	Americium 241 in Solids
				7782-002	GAM		03/18/08	03/20/08	MWT	Gamma Scan
				7782-002	H		03/20/08	03/24/08	BW	Tritium in Solids
				7782-002	PU		03/27/08	03/27/08	BW	Plutonium, Isotopic in Solids
				7782-002	SR		03/20/08	03/24/08	BW	Total Strontium in Solids
				7782-002	TH		03/22/08	03/24/08	BW	Thorium, Isotopic in Solids
				7782-002	U		03/26/08	03/26/08	BW	Uranium, Isotopic in Solids
803069-03	Method Blank			7782-003	93A/93		03/21/08	03/21/08	BW	Gross Alpha in Solids
			SOLID	7782-003	93B/93		03/21/08	03/21/08	BW	Gross Beta in Solids
		RC-087		7782-003	AM		03/26/08	03/26/08	BW	Americium 241 in Solids
				7782-003	GAM		03/18/08	03/20/08	MWT	Gamma Scan
				7782-003	H		03/20/08	03/24/08	BW	Tritium in Solids
				7782-003	PU		03/27/08	03/27/08	BW	Plutonium, Isotopic in Solids
				7782-003	SR		03/20/08	03/21/08	BW	Total Strontium in Solids
				7782-003	TH		03/22/08	03/24/08	BW	Thorium, Isotopic in Solids
				7782-003	U		03/26/08	03/26/08	BW	Uranium, Isotopic in Solids
803069-04	Duplicate (R803069-01)			7782-004	93A/93		03/20/08	03/21/08	BW	Gross Alpha in Solids
03/06/08	618-7 Stockpiles		SOLID	7782-004	93B/93		03/20/08	03/21/08	BW	Gross Beta in Solids
03/14/08		RC-087		7782-004	AM		03/26/08	03/26/08	BW	Americium 241 in Solids
				7782-004	GAM		03/18/08	03/20/08	MWT	Gamma Scan
				7782-004	H		03/20/08	03/24/08	BW	Tritium in Solids
				7782-004	PU		03/27/08	03/27/08	BW	Plutonium, Isotopic in Solids
				7782-004	SR		03/20/08	03/24/08	BW	Total Strontium in Solids
				7782-004	TH		03/22/08	03/24/08	BW	Thorium, Isotopic in Solids
				7782-004	U		03/27/08	03/27/08	BW	Uranium, Isotopic in Solids

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

SDG 7782
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	RC-087	Gross Alpha in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	RC-087	Gross Beta in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
AM	RC-087	Americium 241 in Solids	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
GAM	RC-087	Gamma Scan	GAMMA_GS	1			1	1	1	4
H	RC-087	Tritium in Solids	TRITIUM_COX_LSC	1			1	1	1	4
PU	RC-087	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
SR	RC-087	Total Strontium in Solids	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TH	RC-087	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	1			1	1	1	4
U	RC-087	Uranium, Isotopic in Solids	UISO_PLATE_AEA	1			1	1	1	4
TOTALS				9			9	9	9	36

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

7782-003 Method Blank

METHOD BLANK

SDG	7782	Client/Case no	Hanford SDG K1148
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R803069-03	Client sample id	Method Blank
Dept sample id	7782-003	Material/Matrix	SOLID
		SAF No	RC-087

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.597	1.9	4.22	10.0	U	93A
Gross Beta	12587-47-2	-0.499	2.5	4.19	15.0	U	93B
Tritium	10028-17-8	-0.633	1.9	3.34	400	U	H
Total Strontium	SR-RAD	-0.119	0.14	0.323	1.00	U	SR
Americium 241	14596-10-2	0.035	0.21	0.386	1.00	U	AM
Thorium 228	14274-82-9	0.079	0.24	0.437	1.00	U	TH
Thorium 230	14269-63-7	0.198	0.24	0.378	1.00	U	TH
Thorium 232	TH-232	-0.040	0.079	0.302	1.00	U	TH
Uranium 233/234	U-233/234	0	0.044	0.169	1.00	U	U
Uranium 235	15117-96-1	0.027	0.054	0.205	1.00	U	U
Uranium 238	U-238	0	0.044	0.169	1.00	U	U
Plutonium 238	13981-16-3	-0.018	0.036	0.139	1.00	U	PU
Plutonium 239/240	PU-239/240	0.036	0.036	0.139	1.00	U	PU
Potassium 40	13966-00-2	U		0.115		U	GAM
Cobalt 60	10198-40-0	U		0.009	0.050	U	GAM
Cesium 137	10045-97-3	U		0.010	0.100	U	GAM
Radium 226	13982-63-3	U		0.017	0.100	U	GAM
Radium 228	15262-20-1	U		0.045	0.200	U	GAM
Europium 152	14683-23-9	U		0.030	0.100	U	GAM
Europium 154	15585-10-1	U		0.025	0.100	U	GAM
Europium 155	14391-16-3	U		0.021	0.100	U	GAM
Thorium 228	14274-82-9	U		0.015		U	GAM
Thorium 232	TH-232	U		0.045		U	GAM
Uranium 235	15117-96-1	U		0.035		U	GAM
Uranium 238	U-238	U		1.19		U	GAM
Americium 241	14596-10-2	U		0.013		U	GAM

618-7 Burial Ground - Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

7782-003 Method Blank

BLANK, cont.

SDG	7782	Client/Case no	Hanford SDG K1148
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R803069-03	Client sample id	Method Blank
Dept sample id	7782-003	Material/Matrix	SOLID
		SAF No	RC-087

QC-BLANK #65091

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

7782-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7782
Contact Melissa C. Mannion

Client/Case no Hanford SDG K1148
Contract No. S00W235A00

Lab sample id R803069-02
Dept sample id 7782-002

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No RC-087

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 LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	108	17	6.48	10.0		93A	112	4.5	96	63-137	70-130
Gross Beta	106	9.0	9.02	15.0		93B	112	4.5	95	75-125	80-120
Tritium	479	9.8	3.12	400		H	496	20	97	84-116	80-120
Total Strontium	9.92	0.62	0.286	1.00		SR	10.3	0.41	96	82-118	80-120
Americium 241	21.9	2.4	0.316	1.00		AM	22.4	0.90	98	81-119	80-120
Thorium 230	41.9	5.2	0.428	1.00		TH	40.0	1.6	105	78-122	80-120
Uranium 233/234	19.5	2.1	0.918	1.00		U	19.3	0.77	101	81-119	80-120
Uranium 235	15.4	1.8	0.220	1.00		U	15.7	0.63	98	80-120	80-120
Uranium 238	20.8	2.2	0.882	1.00		U	21.0	0.84	99	82-118	80-120
Plutonium 238	24.1	2.0	0.219	1.00		PU	25.8	1.0	93	85-115	80-120
Plutonium 239/240	28.7	2.3	0.152	1.00		PU	29.0	1.2	99	85-115	80-120
Cobalt 60	0.653	0.058	0.023	0.050		GAM	0.650	0.026	100	73-127	80-120
Cesium 137	0.718	0.053	0.038	0.100		GAM	0.709	0.028	101	74-126	80-120

618-7 Burial Ground - Soil

QC-LCS #65090

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

7782-004 J169C7

DUPLICATE

SDG	7782			Client/Case no	Hanford SDG K1148
Contact	Melissa C. Mannion			Contract	No. S00W235A00
DUPLICATE		ORIGINAL			
Lab sample id	R803069-04	Lab sample id	R803069-01	Client sample id	J169C7
Dept sample id	7782-004	Dept sample id	7782-001	Location/Matrix	618-7 Stockpiles SOLID
		Received	03/14/08	Collected/Weight	03/06/08 09:50 1594 g
% solids	91.6	% solids	91.6	Custody/SAF No	RC-087-015 RC-087

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	205	22	8.22	10.0		93A	180	20	5.74		13	48	0.8
Gross Beta	127	8.7	5.78	15.0		93B	135	8.8	5.89		6	35	0.5
Tritium	-0.387	1.9	3.32	400	U	H	1.08	2.0	3.37	U	-		1.1
Total Strontium	0.035	0.16	0.306	1.00	U	SR	-0.002	0.15	0.314	U	-		0.3
Americium 241	0.029	0.11	0.273	1.00	U	AM	-0.060	0.12	0.285	U	-		1.1
Thorium 228	0.530	0.41	0.587	1.00	U	TH	0.159	0.53	0.940	U	-		1.1
Thorium 230	0.489	0.33	0.390	1.00		TH	1.06	0.54	0.508		74	123	1.8
Thorium 232	0.448	0.25	0.312	1.00		TH	0.424	0.32	0.406		6	140	0.1
Uranium 233/234	52.0	5.0	0.629	1.00		U	51.4	4.6	0.622		1	22	0.2
Uranium 235	5.49	0.98	0.256	1.00		U	6.39	0.99	0.219		15	37	1.2
Uranium 238	90.4	8.2	0.598	1.00		U	94.8	7.9	0.588		5	21	0.7
Plutonium 238	0.023	0.14	0.280	1.00	U	PU	0.044	0.13	0.293	U	-		0.2
Plutonium 239/240	0.023	0.046	0.174	1.00	U	PU	-0.022	0.044	0.168	U	-		1.4
Potassium 40	9.64	0.85	0.256			GAM	10.4	0.91	0.294		8	37	0.6
Cobalt 60	U		0.032	0.050	U	GAM	U		0.034	U	-		0.1
Cesium 137	U		0.044	0.100	U	GAM	U		0.047	U	-		0.1
Radium 226	0.321	0.077	0.080	0.100		GAM	0.369	0.091	0.093		14	61	0.7
Radium 228	0.646	0.14	0.132	0.200		GAM	0.536	0.14	0.129		19	60	0.9
Europium 152	U		0.118	0.100	U	GAM	U		0.127	U	-		0.1
Europium 154	U		0.099	0.100	U	GAM	U		0.106	U	-		0.1
Europium 155	U		0.226	0.100	U	GAM	U		0.241	U	-		0.1
Thorium 228	0.489	0.048	0.063			GAM	0.450	0.051	0.069		8	39	0.6
Thorium 232	0.646	0.14	0.132			GAM	0.536	0.14	0.129		19	60	0.9
Uranium 235	2.58	0.30	0.350			GAM	2.33	0.30	0.363		10	41	0.7
Uranium 238	171	7.4	4.92			GAM	168	8.2	5.92		2	33	0.2
Americium 241	U		0.309		U	GAM	U		0.325	U	-		0.1

618-7 Burial Ground - Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

7782-004 J169C7

DUPLICATE, cont.

SDG	7782			Client/Case no	Hanford SDG K1148
Contact	Melissa C. Mannion			Contract	No. S00W235A00
	DUPLICATE		ORIGINAL		
Lab sample id	R803069-04	Lab sample id	R803069-01	Client sample id	J169C7
Dept sample id	7782-004	Dept sample id	7782-001	Location/Matrix	618-7 Stockpiles SOLID
		Received	03/14/08	Collected/Weight	03/06/08 09:50 1594 g
% solids	91.6	% solids	91.6	Custody/SAF No	RC-087-015 RC-087

QC-DUP#1 65092

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

7782-001 J169C7

DATA SHEET

SDG	7782	Client/Case no	Hanford SDG K1148
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R803069-01	Client sample id	J169C7
Dept sample id	7782-001	Location/Matrix	618-7 Stockpiles SOLID
Received	03/14/08	Collected/Weight	03/06/08 09:50 1594 g
% solids	91.6	Custody/SAF No	RC-087-015 RC-087

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	180	20	5.74	10.0		93A
Gross Beta	12587-47-2	135	8.8	5.89	15.0		93B
Tritium	10028-17-8	1.08	2.0	3.37	400	U	H
Total Strontium	SR-RAD	-0.002	0.15	0.314	1.00	U	SR
Americium 241	14596-10-2	-0.060	0.12	0.285	1.00	U	AM
Thorium 228	14274-82-9	0.159	0.53	0.940	1.00	U	TH
Thorium 230	14269-63-7	1.06	0.54	0.508	1.00		TH
Thorium 232	TH-232	0.424	0.32	0.406	1.00		TH
Uranium 233/234	U-233/234	51.4	4.6	0.622	1.00		U
Uranium 235	15117-96-1	6.39	0.99	0.219	1.00		U
Uranium 238	U-238	94.8	7.9	0.588	1.00		U
Plutonium 238	13981-16-3	0.044	0.13	0.293	1.00	U	PU
Plutonium 239/240	PU-239/240	-0.022	0.044	0.168	1.00	U	PU
Potassium 40	13966-00-2	10.4	0.91	0.294			GAM
Cobalt 60	10198-40-0	U		0.034	0.050	U	GAM
Cesium 137	10045-97-3	U		0.047	0.100	U	GAM
Radium 226	13982-63-3	0.369	0.091	0.093	0.100		GAM
Radium 228	15262-20-1	0.536	0.14	0.129	0.200		GAM
Europium 152	14683-23-9	U		0.127	0.100	U	GAM
Europium 154	15585-10-1	U		0.106	0.100	U	GAM
Europium 155	14391-16-3	U		0.241	0.100	U	GAM
Thorium 228	14274-82-9	0.450	0.051	0.069			GAM
Thorium 232	TH-232	0.536	0.14	0.129			GAM
Uranium 235	15117-96-1	2.33	0.30	0.363			GAM
Uranium 238	U-238	168	8.2	5.92			GAM
Americium 241	14596-10-2	U		0.325		U	GAM

618-7 Burial Ground - Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

Test AM Matrix SOLID
SDG 7782
Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241 IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1148

ESULTS

B MPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Americium 241	
eparation batch 6148-040						
03069-01			7782-001	J169C7	U	
03069-02			7782-002	LCS (QC ID=65090)	ok	
03069-03			7782-003	BLK (QC ID=65091)	U	
03069-04			7782-004	Duplicate (R803069-01)	-	U

minal values and limits from method RDLs (pCi/g) 1.00
8-7 Burial Ground - Soil

ETHOD PERFORMANCE

B MPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
eparation batch 6148-040			2σ prep error 5.0 % Reference Lab Notebook #6148, pg. 40													
03069-01			J169C7	0.285	0.500			71		111			16	03/21/08	03/22	SS-033
03069-02			LCS (QC ID=65090)	0.316	0.500			74		111				03/21/08	03/22	SS-032
03069-03			BLK (QC ID=65091)	0.386	0.500			54		118				03/21/08	03/26	SS-027
03069-04			Duplicate (R803069-01) (QC ID=65092)	0.273	0.500			76		118			20	03/21/08	03/26	SS-028
minal values and limits from method				1.00	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.315 ± 0.101
YIELD 69 ± 20

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

Test PU Matrix SOLID
SDG 7782
Contact Melissa C. Mannion

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1148

ESULTS

B MPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240
eparation batch 6148-040						
03069-01			7782-001	J169C7	U	U
03069-02			7782-002	LCS (QC ID=65090)	ok	ok
03069-03			7782-003	BLK (QC ID=65091)	U	U
03069-04			7782-004	Duplicate (R803069-01)	- U	- U
minal values and limits from method				RDLs (pCi/g)	1.00	1.00
.8-7 Burial Ground - Soil						

ETHOD PERFORMANCE

AB MPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
eparation batch 6148-040			2σ prep error 5.0 % Reference Lab Notebook #6148, pg. 40													
03069-01			J169C7	0.293	0.500			59		172			21	03/26/08	03/27	SS-055
03069-02			LCS (QC ID=65090)	0.219	0.500			70		172				03/26/08	03/27	SS-061
03069-03			BLK (QC ID=65091)	0.139	0.500			74		173				03/26/08	03/27	SS-064
03069-04			Duplicate (R803069-01) (QC ID=65092)	0.280	0.500			56		174			21	03/26/08	03/27	SS-027
minal values and limits from method				1.00	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.233 ± 0.141
YIELD 65 ± 17

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

Test TH Matrix SOLID
SDG 7782
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1148

ESULTS

B MPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 230
eparation batch 6148-040					
03069-01			7782-001	J169C7	1.06
03069-02			7782-002	LCS (QC ID=65090)	ok
03069-03			7782-003	BLK (QC ID=65091)	U
03069-04			7782-004	Duplicate (R803069-01)	ok
minal values and limits from method				RDLs (pCi/g)	1.00
.8-7 Burial Ground - Soil					

ETHOD PERFORMANCE

B MPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
eparation batch 6148-040			2σ prep error 5.0 % Reference Lab Notebook #6148, pg. 40													
03069-01			J169C7	0.940	0.250			38		235			16	03/21/08	03/22	SS-035
03069-02			LCS (QC ID=65090)	0.428	0.250			39		208				03/21/08	03/22	SS-036
03069-03			BLK (QC ID=65091)	0.437	0.250			55		208				03/21/08	03/22	SS-037
03069-04			Duplicate (R803069-01) (QC ID=65092)	0.587	0.250			58		208			16	03/21/08	03/22	SS-038
minal values and limits from method				1.00	0.250			20-105		150			180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD	MDA 0.598 ± 0.479
FOR 4 SAMPLES	YIELD 48 ± 21

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

Test U Matrix SOLID
SDG 7782
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1148

ESULTS

.B MPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1+3	2σ	2+3	2σ
'eparation batch 6148-040											
03069-01			7782-001	J169C7	51.4	6.39	94.8	54	7	7	1
03069-02			7782-002	LCS (QC ID=65090)	ok	ok	ok				
03069-03			7782-003	BLK (QC ID=65091)	U	U	U				
03069-04			7782-004	Duplicate (R803069-01)	ok	ok	ok	58	8	6	1
›minal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00	100		4	
.8-7 Burial Ground - Soil								Averages 56		6	

ETHOD PERFORMANCE

.B MPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
:eparation batch 6148-040 2σ prep error 5.0 % Reference Lab Notebook #6148, pg. 40																
:03069-01			J169C7	0.622	0.500			92		102			21	03/24/08	03/27	SS-027
:03069-02			LCS (QC ID=65090)	0.918	0.500			96		119				03/24/08	03/26	SS-032
:03069-03			BLK (QC ID=65091)	0.205	0.500			89		119				03/24/08	03/26	SS-033
:03069-04			Duplicate (R803069-01) (QC ID=65092)	0.629	0.500			90		102			21	03/24/08	03/27	SS-028
›minal values and limits from method				1.00	0.500			20-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-921	Uranium in Water and Dissolved Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 9

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.594 ± 0.587
YIELD 92 ± 6

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

Test SR Matrix SOLID
SDG 7782
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOLIDS

BETA COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1148

ESULTS

B MPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Total Strontium	
eparation batch 6148-040						
03069-01			7782-001	J169C7	U	
03069-02			7782-002	LCS (QC ID=65090)	ok	
03069-03			7782-003	BLK (QC ID=65091)	U	
03069-04			7782-004	Duplicate (R803069-01)	-	U
minal values and limits from method				RDLs (pCi/g)	1.00	

.8-7 Burial Ground - Soil

ETHOD PERFORMANCE

B MPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
eparation batch 6148-040			2σ prep error 10.0 % Reference Lab Notebook #6148, pg. 40													
03069-01			J169C7	0.314	1.00			93		100			14	03/20/08	03/20	GRB-201
03069-02			LCS (QC ID=65090)	0.286	1.00			94		100				03/20/08	03/20	GRB-203
03069-03			BLK (QC ID=65091)	0.323	1.00			90		100				03/20/08	03/20	GRB-204
03069-04			Duplicate (R803069-01) (QC ID=65092)	0.306	1.00			95		100			14	03/20/08	03/20	GRB-201
minal values and limits from method				1.00	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	CP-380	Strontium in Water Samples, rev 2

AVERAGES ± 2 SD MDA 0.307 ± 0.032
FOR 4 SAMPLES YIELD 93 ± 4

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

Test 93A Matrix SOLID
SDG 7782
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS ALPHA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1148

ESULTS

B MPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha
eparation batch 6148-040					
03069-01	93		7782-001	J169C7	180
03069-02	93		7782-002	LCS (QC ID=65090)	ok
03069-03	93		7782-003	BLK (QC ID=65091)	U
03069-04	93		7782-004	Duplicate (R803069-01)	ok
minal values and limits from method				RDLs (pCi/g)	10.0
8-7 Burial Ground - Soil					

ETHOD PERFORMANCE

B MPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
eparation batch 6148-040			2σ prep error 20.0 % Reference Lab Notebook #6148, pg. 40													
03069-01	93		J169C7	5.74	0.100			40		100			14	03/20/08	03/20	GRB-105
03069-02	93		LCS (QC ID=65090)	6.48	0.100			61		100				03/20/08	03/20	GRB-107
03069-03	93		BLK (QC ID=65091)	4.22	0.100			61		200				03/20/08	03/21	GRB-105
03069-04	93		Duplicate (R803069-01) (QC ID=65092)	8.22	0.100			40		100			14	03/20/08	03/20	GRB-115
minal values and limits from method				10.0	0.100			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	SPP-125	Gross Alpha and Gross Beta in Dissolved Solids, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 6.16 ± 3.32
RESIDUE 50 ± 24

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

Test 93B Matrix SOLID
SDG 7782
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS BETA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1148

ESULTS

B MPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta
eparation batch 6148-040					
03069-01	93		7782-001	J169C7	135
03069-02	93		7782-002	LCS (QC ID=64090)	ok
03069-03	93		7782-003	BLK (QC ID=64091)	U
03069-04	93		7782-004	Duplicate (R803069-01)	ok

minal values and limits from method RDLs (pCi/g) 15.0
.8-7 Burial Ground - Soil

ETHOD PERFORMANCE

AB MPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
eparation batch 6148-040			2σ prep error 15.0 % Reference Lab Notebook #6148, pg. 40													
03069-01	93		J169C7	5.89	0.100			40		100			14	03/20/08	03/20	GRB-105
03069-02	93		LCS (QC ID=64090)	9.02	0.100			61		100				03/20/08	03/20	GRB-107
03069-03	93		BLK (QC ID=64091)	4.19	0.100			61		200				03/20/08	03/21	GRB-105
03069-04	93		Duplicate (R803069-01) (QC ID=64092)	5.78	0.100			40		100			14	03/20/08	03/20	GRB-115
minal values and limits from method				15.0	0.100			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	SPP-125	Gross Alpha and Gross Beta in Dissolved Solids, rev 0

AVERAGES ± 2 SD MDA 6.22 ± 4.04
FOR 4 SAMPLES RESIDUE 50 ± 24

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

Test GAM Matrix SOLID
SDG 7782
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1148

ESULTS

B MPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137	
eparation batch 6148-040								
03069-01			7782-001	J169C7	U		U	
03069-02			7782-002	LCS (QC ID=65090)	ok		ok	
03069-03			7782-003	BLK (QC ID=65091)	U		U	
03069-04			7782-004	Duplicate (R803069-01)	-	U	-	U
ominal values and limits from method				RDLs (pCi/g)	0.050		0.100	
.8-7 Burial Ground - Soil								

ETHOD PERFORMANCE

AB MPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
reparation batch 6148-040			2σ prep error 15.0 % Reference Lab Notebook #6148, pg. 40													
303069-01			J169C7	8.70	797					102			12	03/18/08	03/18	02,04,00
303069-02			LCS (QC ID=65090)	0.023	797					102				03/18/08	03/18	MB,05,00
303069-03			BLK (QC ID=65091)	2.33	797					102				03/18/08	03/18	MB,07,00
303069-04			Duplicate (R803069-01) (QC ID=65092)	8.21	797					117			12	03/18/08	03/18	02,04,00
ominal values and limits from method				0.050	797					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 4.82 ± 8.62
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

Test H Matrix SOLID
SDG 7782
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TRITIUM IN SOLIDS

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1148

ESULTS

B MPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Tritium	
eparation batch 6148-040						
03069-01			7782-001	J169C7	U	
03069-02			7782-002	LCS (QC ID=65090)	ok	
03069-03			7782-003	BLK (QC ID=65091)	U	
03069-04			7782-004	Duplicate (R803069-01)	-	U

minal values and limits from method RDLs (pCi/g) 400
8-7 Burial Ground - Soil

ETHOD PERFORMANCE

B MPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
eparation batch 6148-040			2σ prep error 10.0 % Reference Lab Notebook #6148, pg. 40													
03069-01			J169C7	3.37	0.496			100		50			14	03/20/08	03/20	LSC-004
03069-02			LCS (QC ID=65090)	3.12	0.500			100		50				03/20/08	03/20	LSC-004
03069-03			BLK (QC ID=65091)	3.34	0.500			100		50				03/20/08	03/20	LSC-004
03069-04			Duplicate (R803069-01) (QC ID=65092)	3.32	0.502			100		50			14	03/20/08	03/20	LSC-004
minal values and limits from method				400	0.500					25			180			

PROCEDURES REFERENCE TRITIUM_COX_LSC
CP-251 Tritium/Carbon-14 Oxidation, rev 8

AVERAGES ± 2 SD MDA 3.29 ± 0.227
FOR 4 SAMPLES YIELD 100 ± 0

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 03/28/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1148

SDG 7782
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/28/08

SDG 7782
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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 planchets 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 planchet 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 03/28/08

SDG 7782
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/28/08

SDG 7782
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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).

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
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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.

SDG 7782
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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 03/28/08

SDG 7782
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 03/28/08

SDG 7782
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1148

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
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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.

SDG 7782
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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SDG 7782
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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.

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
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SDG 7782
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1148

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'

Lab id EBRLNE
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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.

* Prepareation 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.

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

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.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-087-015	Page 1 of 1

Collector RB Kerkow / B Lawrence	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Project Designation 618-7 Burial Ground - Soil	Sampling Location 618-7 Stockpiles K1148 (7782)		SAF No. RC-087
Ice Chest No. AFS-04-037	Field Logbook No. EL-1359-12	COA RG61872600	Method of Shipment FedEx
Shipped To ~~EBERLINE SERVICES ALIONVILLE~~ EBERLINE SERVICES Mk 3/6/08	Offsite Property No. A080213		Bill of Lading/Air Bill No. See ospc

Price Code: 8G

Data Turnaround: 15 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radiological and Beryllium contamination

Special Handling and/or Storage

None

Preservation	None RK 1/24/08	None	None									
Type of Container	~~P~~ aG	P	P									
No. of Container(s)	1	1	1									
Volume	250mL	500mL	1000mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions DC 3/6/08	See item (2) in Special Instructions. RK 3/6/08	See item (3) in Special Instructions.									
Sample No.	Matrix *	Sample Date	Sample Time									
J169C7	SOIL	3/6/08	0950	X	X	X						B004

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From BLawrence	Date/Time 1130 3-6-08	Received By/Stored In RTCoffman/RTCoffman	Date/Time 1130 3/6/08
Relinquished By/Removed From RTCoffman/RTCoffman	Date/Time 1245 3/6/08	Received By/Stored In REFER #1A	Date/Time 1245 3/6/08
Relinquished By/Removed From 1060/1A	Date/Time 3/13/08 1030	Received By/Stored In MSTankovich	Date/Time 0930 3/13/08
Relinquished By/Removed From WCH MSTankovich	Date/Time 1500 3/13/08	Received By/Stored In FedEx	Date/Time
Relinquished By/Removed From FedEx	Date/Time	Received By/Stored In 03/14/08	Date/Time 09:10
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

None

(1) ICP Metals - 6010A (TAL) {Aluminum, Antimony, Barium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc, Zirconium}; ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium, Tin}; Mercury - 7471 - (CV)

(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470

(3) Gross Alpha; Gross Beta; Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Thorium; Americium-241; Isotopic Uranium; Isotopic Plutonium; Strontium-89,90 -- Total Sr

Matrix *

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

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

WCH-EE-011

EBERLINE SERVICES

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

JK 3/14/08

Client: W.C HANFORD City RICHLAND State WA

Date/Time received 03/14/08 09:10 CoC No. RC-087-015

Container I.D. No. AFS-04-037 Requested TAT (Days) 15 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: 1 (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 [signature] Date: 03/14/08 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
J169C7	<60						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 100482 Calibration date 09MAY07

Form SCP-02, 07-30-07

"over 55 years of quality nuclear services"

LIONVILLE LABORATORY INC.

4 April 2008

RECEIVED APR 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 #	0803L756
SDG #	K1148
SAF #	RC-087
Date Received	3/14/08
# Samples	2
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	

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

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager

r:\group\pm\orlette\tnu-hanford\data\b_ltrs.doc

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

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-087 K1148

RECEIVED
APR 2008

DATE RECEIVED: 03/14/08 LVL LOT # :08[illegible]756

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16DC3						
TCLP	001	S	08LTO022	03/06/08	03/18/08	03/19/08
J169C7						
TCLP	002	S	08LTO022	03/06/08	03/18/08	03/19/08
SILVER, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
SILVER, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
SILVER, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
ALUMINUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/24/08
ALUMINUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/24/08
ALUMINUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
ARSENIC, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
ARSENIC, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
ARSENIC, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
BARIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
BARIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
BARIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
BERYLLIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
BERYLLIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
BERYLLIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
CALCIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/24/08
CALCIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/24/08
CALCIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
CADMIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
CADMIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
CADMIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
COBALT, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
COBALT, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
COBALT, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
CHROMIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
CHROMIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
CHROMIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
COPPER, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
COPPER, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
COPPER, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08

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TNUHANFORD RC-087 K1148

DATE RECEIVED: 03/14/08 LVL LOT # :0803L756

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/24/08
IRON, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/24/08
IRON, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
MERCURY, TOTAL	002	S	08C0050	03/06/08	03/21/08	03/24/08
MERCURY, TOTAL	002 REP	S	08C0050	03/06/08	03/21/08	03/24/08
MERCURY, TOTAL	002 MS	S	08C0050	03/06/08	03/21/08	03/24/08
POTASSIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/24/08
POTASSIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/24/08
POTASSIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
MAGNESIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/24/08
MAGNESIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/24/08
MAGNESIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
MANGANESE, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
MANGANESE, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
MANGANESE, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
SODIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/24/08
SODIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/24/08
SODIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
NICKEL, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
NICKEL, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
NICKEL, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
LEAD, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
LEAD, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
LEAD, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
ANTIMONY, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
ANTIMONY, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
ANTIMONY, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
SELENIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
SELENIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
SELENIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
TIN, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
TIN, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
TIN, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
THALLIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
THALLIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
THALLIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
VANADIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
VANADIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08

Lionville Laboratory, Inc.
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TNUHANFORD RC-087 K1148

DATE RECEIVED: 03/14/08 LVL LOT # :0803L756

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
ZINC, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/21/08
ZINC, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/21/08
ZINC, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
ZIRCONIUM, TOTAL	002	S	08L0105	03/06/08	03/18/08	03/24/08
ZIRCONIUM, TOTAL	002 REP	S	08L0105	03/06/08	03/18/08	03/24/08
ZIRCONIUM, TOTAL	002 MS	S	08L0105	03/06/08	03/18/08	03/24/08
J16DC3						
SILVER, TCLP LEACHAT	003	W	08L0115	03/19/08	03/26/08	03/27/08
ARSENIC, TCLP LEACHA	003	W	08L0115	03/19/08	03/26/08	03/27/08
BARIUM, TCLP LEACHAT	003	W	08L0115	03/19/08	03/26/08	03/27/08
CADMIUM, TCLP LEACHA	003	W	08L0115	03/19/08	03/26/08	03/27/08
CHROMIUM, TCLP LEACH	003	W	08L0115	03/19/08	03/26/08	03/27/08
MERCURY, TCLP LEACHA	003	W	08C0052	03/19/08	03/25/08	03/26/08
MERCURY, TCLP LEACHA	003 REP	W	08C0052	03/19/08	03/25/08	03/26/08
LEAD, TCLP LEACHATE	003	W	08L0115	03/19/08	03/26/08	03/27/08
SELENIUM, TCLP LEACH	003	W	08L0115	03/19/08	03/26/08	03/27/08
J169C7						
SILVER, TCLP LEACHAT	004	W	08L0115	03/19/08	03/26/08	03/27/08
SILVER, TCLP LEACHAT	004 REP	W	08L0115	03/19/08	03/26/08	03/27/08
SILVER, TCLP LEACHAT	004 MS	W	08L0115	03/19/08	03/26/08	03/27/08
ARSENIC, TCLP LEACHA	004	W	08L0115	03/19/08	03/26/08	03/27/08
ARSENIC, TCLP LEACHA	004 REP	W	08L0115	03/19/08	03/26/08	03/27/08
ARSENIC, TCLP LEACHA	004 MS	W	08L0115	03/19/08	03/26/08	03/27/08
BARIUM, TCLP LEACHAT	004	W	08L0115	03/19/08	03/26/08	03/27/08
BARIUM, TCLP LEACHAT	004 REP	W	08L0115	03/19/08	03/26/08	03/27/08
BARIUM, TCLP LEACHAT	004 MS	W	08L0115	03/19/08	03/26/08	03/27/08
CADMIUM, TCLP LEACHA	004	W	08L0115	03/19/08	03/26/08	03/27/08
CADMIUM, TCLP LEACHA	004 REP	W	08L0115	03/19/08	03/26/08	03/27/08
CADMIUM, TCLP LEACHA	004 MS	W	08L0115	03/19/08	03/26/08	03/27/08
CHROMIUM, TCLP LEACH	004	W	08L0115	03/19/08	03/26/08	03/27/08
CHROMIUM, TCLP LEACH	004 REP	W	08L0115	03/19/08	03/26/08	03/27/08
CHROMIUM, TCLP LEACH	004 MS	W	08L0115	03/19/08	03/26/08	03/27/08
MERCURY, TCLP LEACHA	004	W	08C0052	03/19/08	03/25/08	03/26/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-087 K1148

DATE RECEIVED: 03/14/08 LVL LOT # :0803L756

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TCLP LEACHA	004 MS	W	08C0052	03/19/08	03/25/08	03/26/08
LEAD, TCLP LEACHATE	004	W	08L0115	03/19/08	03/26/08	03/27/08
LEAD, TCLP LEACHATE	004 REP	W	08L0115	03/19/08	03/26/08	03/27/08
LEAD, TCLP LEACHATE	004 MS	W	08L0115	03/19/08	03/26/08	03/27/08
SELENIUM, TCLP LEACH	004	W	08L0115	03/19/08	03/26/08	03/27/08
SELENIUM, TCLP LEACH	004 REP	W	08L0115	03/19/08	03/26/08	03/27/08
SELENIUM, TCLP LEACH	004 MS	W	08L0115	03/19/08	03/26/08	03/27/08

AB QC:

SILVER LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
SILVER, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
ALUMINUM LABORTORY	LC1 BS	S	08L0105	N/A	03/18/08	03/24/08
ALUMINUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/24/08
ARSENIC LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
ARSENIC, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
BARIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
BARIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
BERYLLIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
CALCIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/24/08
CALCIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/24/08
CADMIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
CADMIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
COBALT LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
COBALT, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
CHROMIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
CHROMIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
COPPER LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
COPPER, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
IRON LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/24/08
IRON, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/24/08
MERCURY LABORATORY	LC1 BS	S	08C0050	N/A	03/21/08	03/24/08
MERCURY, TOTAL	MB1	S	08C0050	N/A	03/21/08	03/24/08
POTASSIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/24/08
POTASSIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/24/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/24/08
MAGNESIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/24/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-087 K1148

DATE RECEIVED: 03/14/08 LVL LOT # :0803L756

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MANGANESE LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
MANGANESE, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
SODIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/24/08
SODIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/24/08
NICKEL LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
NICKEL, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
LEAD LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
LEAD, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
ANTIMONY LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
ANTIMONY, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
SELENIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
SELENIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
TIN LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
TIN, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
THALLIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
THALLIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
VANADIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
VANADIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
ZINC LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/21/08
ZINC, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/21/08
ZIRCONIUM LABORATORY	LC1 BS	S	08L0105	N/A	03/18/08	03/24/08
ZIRCONIUM, TOTAL	MB1	S	08L0105	N/A	03/18/08	03/24/08
SILVER LABORATORY	LC1 BS	W	08L0115	N/A	03/26/08	03/27/08
SILVER, TCLP LEACHAT	MB1	W	08L0115	N/A	03/26/08	03/27/08
SILVER, TCLP LEACHAT	MB2	W	08L0115	N/A	03/26/08	03/27/08
ARSENIC LABORATORY	LC1 BS	W	08L0115	N/A	03/26/08	03/27/08
ARSENIC, TCLP LEACHA	MB1	W	08L0115	N/A	03/26/08	03/27/08
ARSENIC, TCLP LEACHA	MB2	W	08L0115	N/A	03/26/08	03/27/08
BARIUM LABORATORY	LC1 BS	W	08L0115	N/A	03/26/08	03/27/08
BARIUM, TCLP LEACHAT	MB1	W	08L0115	N/A	03/26/08	03/27/08
BARIUM, TCLP LEACHAT	MB2	W	08L0115	N/A	03/26/08	03/27/08
CADMIUM LABORATORY	LC1 BS	W	08L0115	N/A	03/26/08	03/27/08
CADMIUM, TCLP LEACHA	MB1	W	08L0115	N/A	03/26/08	03/27/08
CADMIUM, TCLP LEACHA	MB2	W	08L0115	N/A	03/26/08	03/27/08
CHROMIUM LABORATORY	LC1 BS	W	08L0115	N/A	03/26/08	03/27/08
CHROMIUM, TCLP LEACH	MB1	W	08L0115	N/A	03/26/08	03/27/08
CHROMIUM, TCLP LEACH	MB2	W	08L0115	N/A	03/26/08	03/27/08
MERCURY LABORATORY	LC1 BS	W	08C0052	N/A	03/25/08	03/26/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-087 K1148

DATE RECEIVED: 03/14/08 LVL LOT # :0803L756

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	MB1	W	08C0052	N/A	03/25/08	03/26/08
MERCURY, TCLP LEACHA	MB2	W	08C0052	N/A	03/25/08	03/26/08
MERCURY, TCLP LEACHA	MB3	W	08C0052	N/A	03/25/08	03/26/08
LEAD LABORATORY	LC1 BS	W	08L0115	N/A	03/26/08	03/27/08
LEAD, TCLP LEACHATE	MB1	W	08L0115	N/A	03/26/08	03/27/08
LEAD, TCLP LEACHATE	MB2	W	08L0115	N/A	03/26/08	03/27/08
SELENIUM LABORATORY	LC1 BS	W	08L0115	N/A	03/26/08	03/27/08
SELENIUM, TCLP LEACH	MB1	W	08L0115	N/A	03/26/08	03/27/08
SELENIUM, TCLP LEACH	MB2	W	08L0115	N/A	03/26/08	03/27/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-087
LVL#: 0803L756
SDG/SAF#: K1148/RC-087

W.O.#: 11343-606-001-9999-00
Date Received: 03-14-08

METALS CASE NARRATIVE

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

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analyses of 1 soil sample and 2 TCLP leachate samples.

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

   The soil sample was reported with a 3-fold dilution, and the TCLP leachate samples with 6-fold dilutions, all for ICP metals, due to sample matrix. The soil sample was rerun on a different instrument, with a 3-fold dilution, for Aluminum, Calcium, Iron, Potassium, Sodium, Magnesium, and Zirconium, 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 ending CCV for various analytes in file TA0321B. The associated samples (the Matrix Spike and PDS of sample J169C7) were rerun in file TA0324A. The ending CCV in file TA0324A was out for Cadmium and Lead. All sample results contained in this report were surrounded by QC within control.

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

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

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 32 pages.

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

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

9. The matrix spike (MS) recoveries for 8 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 serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J169C7	Aluminum	120,000	103.4
	Calcium	120,000	91.1
	Iron	120,000	84.0
	Nickel	300	98.3
	Lead	3,300	97.5
	Antimony	300	100.3
	Zinc	3,300	101.3

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

12. The duplicate analyses for 12 soil analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from sample J169C7 was selected for the matrix spike (MS) for this analytical batch.

13. The matrix spike for Silver was below 50% recovery (33.9%). The recovery in the TCLP Leachate was below 80-120% of the action level so standard addition was not required per Federal Register, Vol.57, No.227, Nov. 24, 1992, page 55117.

14. 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.

15. 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.

16. 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

4/1/08
Date

jjw/m03-756

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

he following methods are used as reference for the digestion and analysis of samples contained within th
ot#: 0803L756

eaching Procedure: __1310 X 1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A X 3010A __3015 __3020A X 3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
luminum	X 6010B		__200.7				__99
ntimony	X 6010B	__7041 [5]	__200.7	__204.2			__99
rsenic	X 6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
arium	X 6010B		__200.7				__99
eryllium	X 6010B		__200.7				__99
ismuth	__6010B [1]		__200.7 [1]			__1620	__99
oron	__6010B		__200.7				__99
admium	X 6010B	__7131A [5]	__200.7	__213.2			__99
alcium	X 6010B		__200.7				__99
hromium	X 6010B	__7191 [5]	__200.7	__218.2			__SS17
obalt	X 6010B		__200.7				__99
opper	X 6010B	__7211 [5]	__200.7	__220.2			__99
ron	X 6010B		__200.7				__99
ead	X 6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
ithium	__6010B	__7430 [4]	__200.7			__1620	__99
agnesium	X 6010B		__200.7				__99
anganese	X 6010B		__200.7				__99
ercury	X 7470A [3]	X 7471A [3]	__245.1 [2]	__245.5 [2]			__99
olybdenum	__6010B		__200.7				__99
ickel	X 6010B		__200.7				__99
otassium	X 6010B	__7610 [4]	__200.7	__258.1 [4]			__99
are Earths	__6010B [1]		__200.7 [1]			__1620	__99
elenium	X 6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
ilicon	__6010B [1]		__200.7			__1620	__99
ilica	__6010B		__200.7			__1620	__99
ilver	X 6010B	__7761 [5]	__200.7	__272.2			__99
odium	X 6010B	__7770 [4]	__200.7	__273.1 [4]			__99
trontium	__6010B		__200.7				__99
hallium	X 6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
in	X 6010B		__200.7				__99
itanium	__6010B		__200.7				__99
ranium	__6010B [1]		__200.7 [1]			__1620	__99
anadium	X 6010B		__200.7				__99
inc	X 6010B		__200.7				__99
irconium	X 6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-W1-033/M-03/01

000000010

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

3. Flame AA.

4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J169C7	Silver, Total	0.73		MG/KG	0.31	3.0
		Aluminum, Total	16800		MG/KG	12.6	3.0
		Arsenic, Total	2.2		MG/KG	1.6	3.0
		Barium, Total	103		MG/KG	0.31	3.0
		Beryllium, Total	0.80		MG/KG	0.16	3.0
		Calcium, Total	7820		MG/KG	12.6	3.0
		Cadmium, Total	0.75		MG/KG	0.16	3.0
		Cobalt, Total	8.4		MG/KG	0.63	3.0
		Chromium, Total	25.4		MG/KG	0.63	3.0
		Copper, Total	27.1		MG/KG	0.63	3.0
		Iron, Total	23200		MG/KG	14.1	3.0
		Mercury, Total	0.46		MG/KG	0.01	1.0
		Potassium, Total	934		MG/KG	155	3.0
		Magnesium, Total	3850		MG/KG	11.6	3.0
		Manganese, Total	326		MG/KG	0.13	3.0
		Sodium, Total	204		MG/KG	6.3	3.0
		Nickel, Total	137		MG/KG	0.63	3.0
		Lead, Total	1020		MG/KG	0.94	3.0
		Antimony, Total	1.2		MG/KG	0.94	3.0
		Selenium, Total	1.9	u	MG/KG	1.9	3.0
		Tin, Total	2.4		MG/KG	1.9	3.0
		Thallium, Total	1.9	u	MG/KG	1.9	3.0
		Vanadium, Total	58.8		MG/KG	0.44	3.0
		Zinc, Total	266		MG/KG	1.9	3.0
		Zirconium, Total	26.7		MG/KG	15.7	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J16DC3	Silver, TCLP Leachate	6.0	u	UG/L	6.0	6.0
		Arsenic, TCLP Leachate	30.0	u	UG/L	30.0	6.0
		Barium, TCLP Leachate	1820		UG/L	6.0	6.0
		Cadmium, TCLP Leachate	10.1		UG/L	3.0	6.0
		Chromium, TCLP Leachate	12.0	u	UG/L	12.0	6.0
		Mercury, TCLP Leachate	0.06	u	UG/L	0.06	1.0
		Lead, TCLP Leachate	14500		UG/L	18.0	6.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	6.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J169C7	Silver, TCLP Leachate	6.0	u	UG/L	6.0	6.0
		Arsenic, TCLP Leachate	30.0	u	UG/L	30.0	6.0
		Barium, TCLP Leachate	1690		UG/L	6.0	6.0
		Cadmium, TCLP Leachate	9.2		UG/L	3.0	6.0
		Chromium, TCLP Leachate	13.6		UG/L	12.0	6.0
		Mercury, TCLP Leachate	0.06	u	UG/L	0.06	1.0
		Lead, TCLP Leachate	27000		UG/L	18.0	6.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0105-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
		Barium, Total	0.10	u	MG/KG	0.10	1.0
		Beryllium, Total	0.05	u	MG/KG	0.05	1.0
		Calcium, Total	8.6		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	0.43		MG/KG	0.20	1.0
		Copper, Total	0.20	u	MG/KG	0.20	1.0
		Iron, Total	11.9		MG/KG	4.5	1.0
		Potassium, Total	49.3	u	MG/KG	49.3	1.0
		Magnesium, Total	3.7	u	MG/KG	3.7	1.0
		Manganese, Total	0.08		MG/KG	0.04	1.0
		Sodium, Total	8.8		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
		Tin, Total	0.95		MG/KG	0.60	1.0
		Thallium, Total	0.60	u	MG/KG	0.60	1.0
		Vanadium, Total	0.14	u	MG/KG	0.14	1.0
		Zinc, Total	0.60	u	MG/KG	0.60	1.0
		Zirconium, Total	5.0	u	MG/KG	5.0	1.0
BLANK1	08C0050-MB1	Mercury, Total	0.01	u	MG/KG	0.01	1.0
BLANK1	08L0115-MB1	Silver, TCLP Leachate	1.0	u	UG/L	1.0	1.0
		Arsenic, TCLP Leachate	5.0	u	UG/L	5.0	1.0
		Barium, TCLP Leachate	1.0	u	UG/L	1.0	1.0
		Cadmium, TCLP Leachate	0.50	u	UG/L	0.50	1.0
		Chromium, TCLP Leachate	2.0	u	UG/L	2.0	1.0
		Lead, TCLP Leachate	3.0	u	UG/L	3.0	1.0
		Selenium, TCLP Leachate	6.0	u	UG/L	6.0	1.0
BLANK2	08L0115-MB2	Silver, TCLP Leachate	7.7		UG/L	6.0	6.0
		Arsenic, TCLP Leachate	30.0	u	UG/L	30.0	6.0
		Barium, TCLP Leachate	6.0	u	UG/L	6.0	6.0
		Cadmium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Chromium, TCLP Leachate	12.0	u	UG/L	12.0	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK2	08L0115-MB2	Lead, TCLP Leachate	18.0 u	UG/L	18.0	6.0
		Selenium, TCLP Leachate	36.0 u	UG/L	36.0	6.0
BLANK1	08C0052-MB1	Mercury, Total	0.06 u	UG/L	0.06	1.0
BLANK2	08C0052-MB2	Mercury, TCLP Leachate	0.06 u	UG/L	0.06	1.0
BLANK3	08C0052-MB3	Mercury, TCLP Leachate	0.06 u	UG/L	0.06	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J169C7	Silver, Total	5.0	0.73	5.2	82.1	3.0
		Aluminum, Total	16500	16800	210	-120. *	3.0
		Arsenic, Total	204	2.2	210	96.1	3.0
		Barium, Total	294	103	210	91.2	3.0
		Beryllium, Total	6.3	0.80	5.2	105.9	3.0
		Calcium, Total	9330	7820	2620	57.9	3.0
		Cadmium, Total	5.4	0.75	5.2	89.5	3.0
		Cobalt, Total	58.9	8.4	52.4	96.4	3.0
		Chromium, Total	43.6	25.4	21.0	86.7	3.0
		Copper, Total	49.6	27.1	26.2	85.9	3.0
		Iron, Total	27000	23200	105	3636 *	3.0
		Mercury, Total	0.58	0.46	0.17	66.7	1.0
		Potassium, Total	3310	934	2620	90.9	3.0
		Magnesium, Total	6480	3850	2620	100.3	3.0
		Manganese, Total	367	326	52.4	78.6*	3.0
		Sodium, Total	2780	204	2620	98.3	3.0
		Nickel, Total	132	137	52.4	-8.8	3.0
		Lead, Total	764	1020	52.4	-500. *	3.0
		Antimony, Total	32.2	1.2	52.4	59.2	3.0
		Selenium, Total	174	1.9 u	210	83.0	3.0
		Tin, Total	103	2.4	105	96.0	3.0
		Thallium, Total	198	1.9 u	210	94.3	3.0
		Vanadium, Total	108	58.8	52.4	93.3	3.0
		Zinc, Total	693	266	52.4	813.4*	3.0
		Zirconium, Total	269	26.7	262	92.3	3.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	J169C7	Silver, TCLP Leachate	1700	6.0 u	5000	33.9	6.0
		Arsenic, TCLP Leachate	4380	30.0 u	5000	87.6	6.0
		Barium, TCLP Leachate	90500	1690	100000	88.8	6.0
		Cadmium, TCLP Leachate	912	9.2	1000	90.2	6.0
		Chromium, TCLP Leachat	4500	13.6	5000	89.8	6.0
		Mercury, TCLP Leachate	192	0.06u	200	96.0	50.0
		Lead, TCLP Leachate	30600	27000	5000	72.5*	6.0
		Selenium, TCLP Leachat	865	36.0 u	1000	86.5	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J169C7	Silver, Total	0.73	0.79	7.2	3.0
		Aluminum, Total	16800	17200	2.6	3.0
		Arsenic, Total	2.2	3.2	37.0	3.0
		Barium, Total	103	139	30.3	3.0
		Beryllium, Total	0.80	1.1	32.1	3.0
		Calcium, Total	7820	6960	11.6	3.0
		Cadmium, Total	0.75	0.34	74.0	3.0
		Cobalt, Total	8.4	10.1	18.4	3.0
		Chromium, Total	25.4	31.2	20.5	3.0
		Copper, Total	27.1	33.9	22.3	3.0
		Iron, Total	23200	24000	3.4	3.0
		Mercury, Total	0.46	0.49	7.1	1.0
		Potassium, Total	934	932	0.23	3.0
		Magnesium, Total	3850	3840	0.19	3.0
		Manganese, Total	326	370	12.5	3.0
		Sodium, Total	204	219	7.3	3.0
		Nickel, Total	137	93.2	37.8	3.0
		Lead, Total	1020	316	105.6	3.0
		Antimony, Total	1.2	0.93u	~~NC~~ 200	3.0
		Selenium, Total	1.9 u	1.9 u	NC	3.0
		Tin, Total	2.4	3.9	47.6	3.0
		Thallium, Total	1.9 u	1.9 u	NC	3.0
		Vanadium, Total	58.8	60.2	2.4	3.0
		Zinc, Total	266	139	63.1	3.0
		Zirconium, Total	26.7	35.1	27.2	3.0

corrected value pw 3/31/08

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	J16DC3	Mercury, TCLP Leachate	0.06u	0.06u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	J169C7	Silver, TCLP Leachate	6.0 u	6.0 u	NC	6.0
		Arsenic, TCLP Leachate	30.0 u	30.0 u	NC	6.0
		Barium, TCLP Leachate	1690	1640	2.9	6.0
		Cadmium, TCLP Leachate	9.2	9.8	6.3	6.0
		Chromium, TCLP Leachate	13.6	14.5	6.4	6.0
		Lead, TCLP Leachate	27000	26100	3.6	6.0
		Selenium, TCLP Leachate	36.0 u	36.0 u	NC	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/31/08

CLIENT: TNUHANFORD RC-087 K1148

LVL LOT #: 0803L756

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0105-LC1	Silver, LCS	46.6	50.0	MG/KG	93.2
		Aluminum, LCS	468	500	MG/KG	93.7
		Arsenic, LCS	933	1000	MG/KG	93.3
		Barium, LCS	458	500	MG/KG	91.6
		Beryllium, LCS	24.5	25.0	MG/KG	98.0
		Calcium, LCS	2250	2500	MG/KG	89.8
		Cadmium, LCS	24.7	25.0	MG/KG	98.8
		Cobalt, LCS	244	250	MG/KG	97.5
		Chromium, LCS	48.7	50.0	MG/KG	97.4
		Copper, LCS	117	125	MG/KG	93.9
		Iron, LCS	498	500	MG/KG	99.6
		Potassium, LCS	2290	2500	MG/KG	91.8
		Magnesium, LCS	2250	2500	MG/KG	90.1
		Manganese, LCS	74.6	75.0	MG/KG	99.5
		Sodium, LCS	2350	2500	MG/KG	94.2
		Nickel, LCS	195	200	MG/KG	97.4
		Lead, LCS	248	250	MG/KG	99.4
		Antimony, LCS	278	300	MG/KG	92.7
		Selenium, LCS	878	1000	MG/KG	87.8
		Tin, LCS	491	500	MG/KG	98.2
		Thallium, LCS	938	1000	MG/KG	93.8
		Vanadium, LCS	237	250	MG/KG	94.8
		Zinc, LCS	96.2	100	MG/KG	96.2
		Zirconium, LCS	218	250	MG/KG	87.0
LCS1	08C0050-LC1	Mercury, LCS	4.9	4.7	MG/KG	105.3
LCS1	08L0115-LC1	Silver, LCS	502	500	UG/L	100.3
		Arsenic, LCS	9650	10000	UG/L	96.5
		Barium, LCS	5020	5000	UG/L	100.4
		Cadmium, LCS	246	250	UG/L	98.3
		Chromium, LCS	497	500	UG/L	99.3
		Lead, LCS	2580	2500	UG/L	103.1
		Selenium, LCS	9340	10000	UG/L	93.4
LCS1	08C0052-LC1	Mercury, LCS	5.1	5.0	UG/L	102.6

Lionville Laboratory
Incorporated

MERCURY PREPARATION

Logbook # 422

Analyst: CB
Date 3/21/08
Start Time/Temp: 1445 | 92°
End Time/Temp: 1515 | 97°

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

Prep Batch: 08C0050
Worksheet: HG032401
SOP No. ME-HgCVAA, Rev. 02

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

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

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
				10mL	50mL	
Blank	205					
0.2 µg/L	92	0.100				
1.0	I94	0.500				
2.0	AN	1.000				
5.0	A901	2.500				
10.0	AB	5.000				
ICV	11A	0.125				
CCV	JC	0.250				
ICB/CCB	N60					90.50L
MB1	P18	*	*	0.30		PBS/50 100.00
LCI	8			0.31		LCSS/50 ⊥
0803L785-001	PA			0.35		100.00
002	LIS			0.38		97.65
002R	C9			0.36		⊥
002S	871	0.500	1.0	0.38		
003	LV			0.32		94.70
004	880			0.32		98.02
005	PT			0.31		99.07
006	N2			0.37		94.94
007	NB			0.33		97.38
008	HW			0.41		98.73
009	503			0.36		92.92
010	SPRT			0.37		96.98
011	S			0.32		92.6
012	154			0.31		93.11
0803L718-001	N4			0.37		96.17
001R	P5			0.33		

Standard:	ID	Prep Date/Time
ICAL/MS	R16072-75-07B	3/21/08 1025
ICV/CCV/LCS	US 6072-75-08A	⊥

Reviewed By/Date: [signature] 3/21/08

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

Page #:

ME-HgCVAA-Prep1007

000000023

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 422

Analyst: TEB
Date 3/21/08
Start Time/Temp: see page
End Time/Temp: 042

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

Prep Batch: 08L0050
Worksheet: HG032401
SOP No. ME-HgCVAA, Rev. 02

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

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

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
0803L718-001S	X3	0.500	1.0	0.37	50mL	R 96.17
0803L756-002	2I			0.32		90.04
002R	HH			0.37		
002S	CYD	0.500	1.0	0.32		
0803L753-001	A27			0.30		100.0
001R	F8			0.30		
001S	UT	0.050	10.0	0.30		
002	H5			0.30		
003	95			0.31		
004	R2			0.30		
005	OF			0.30		
006	111E			0.30		

TEB 3/21/08

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

Reviewed By/Date: [signature] 3/26

see book # 9368 for std traceability information

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

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

ME-HgCVAA-Prep1007

Page #:

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 422

Analyst: TCB
Date 3/25/08
Start Time/Temp: 1655 | 99°
End Time/Temp: 1855 | 96°

Instrument ID: HG-3.1
Balance #: (N/A)
Pipette Calibration (Daily) Y ✓

Prep Batch: 08L0052
Worksheet: HG032601
SOP No. ME-HgCVAA, Rev. 02

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

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

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
Blank	WK			33mL	33mL	
0.2 µg/L	CT	0.0667				
1.0	B2	0.334				
2.0	K17	0.667				
5.0	297	1.667				
10.0	PC	3.334				
ICV	P18	0.0834	2.5			
CCV	522	0.167	5.0			
ICB/CCB	CM					
MB1	X0					PBW152
LC1	P0	0.167	5.0			LCSW152
0803L717-004	A4					
W4R	A1					
W4S	194	0.667	200			
0803L723-019	P3					
019S	E	0.667	200			
019T	TR	0.667	200			
020	AHA					
021	5D0					
0803L756-003	G12					R
003R	5T					
~~TCB 3/25/08~~ 004 ~~003S~~	3P					
004S	PF	0.667	200			
0803L761-019	222					
019S	1C	0.667	200			
019T	857	0.667	200			
020	X5					

Standard:	ID	Prep Date/Time
ICAL/MS	P1 6072-75-07B	3/25/08 1115
ICV/CCV/LCS	4S 6072-75-08A	

Reviewed By/Date: [signature] 3/31/08

see book # 9368 for std traceability information

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

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

ME-HgCVAA-Prep1007

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Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 422

Analyst: TEB
Date 3/25/08
Start Time/Temp: ____
End Time/Temp: See page 46

Instrument ID Hg3.1
Balance #: ____ (NA)
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0052
Worksheet: HG032601
SOP No. ME-HgCVAA, Rev. 02

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

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

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
0803L761-021	PT			33mL	33mL	
0803L783-004	8T					R
TEB 3/25/08 004R	CGR					
005 ~~004S~~	5H					
005S	7T	0.667	200			
006	CB2					
0803L718-002	HR					
002R	27					
002S	DX	0.667	200			
08LT0022-LB1	WN					
08LT0023-LB1	JB					
0803L717-005	SE					

TEB 3/25/08

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	See page 46	

Reviewed By/Date: [signature] 3/31/08

see book # 9368 for std traceability information

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

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

ME-HgCVAA-Prep1007

Page #:

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Lionville Laboratory Incorporated Logbook #: 440

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L-0105
Date/Time Initiated: 3/18/08 1715
Date/Time Completed: 3/18/08 2200
Analyst(s): pm
Matrix: (Soil) Water Other: and oil
Instr. Type: AA (ICP)
Parameters: see backlog

(Digested) Undigested (circle one)
Balance #: B-20
Balance Cal Verif: (Y) NA
Hot Plate Temp: 91°C

TMW

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

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

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
0803L718-001		1.11 gm	100 ml	<2	TO	fine	brown/rocks	N/A	RADI
001R		1.08 gm							
001S	1.0 ml	1.13 gm							
0803L756-002		1.06 gm							
002R		1.08 gm							
(*) 002S	1.0 ml	1.06 gm					amber		
0803L753-001		1.13 gm				oil	~~amber~~ liquid *	N/A	
001R		1.03 gm							
001S	1.0 ml	1.14 gm							
002		1.15 gm							
003		1.02 gm					brown		
004		1.06 gm							
005		1.03 gm							
006		1.02 gm							
08L0105-MB1		1.0 gm				coarse	boiling chips		
(*) LCS	1.0 ml	1.0 gm							

pm 3/18/08

* W.E. pm 3/18/08

Spiking IDs:
MS #: 8100-04-01
02
03
6072-078-07
LCS #: 08
09
10
11

Reagent IDs:
HNO_3 E22071
HCL E45047
H_2O_2 E44A06
1:1 HNO_3 9789-070-06
1:1 HCL

File ID#: IC010501
IC010502
IC010503

LIMS Transfer: (Y) N

Data Review By/Date: PMP, 03/19/08

Updated

Lionville Laboratory Incorporated Logbook #: 470

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0115
Date/Time Initiated: 3/26/08 1100
Date/Time Completed: 1440
Analyst(s): MW
Matrix: Soil Water Other: leachates
Instr. Type: AA ICP
Parameters: * HSL + B, Bi, Li, Mo, P, Si, Sr, Sn, U-
** RERA
Digested / Undigested (circle one)
Balance #: N/A
Balance Cal Verif: Y NA
Hot Plate Temp: 920

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

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

TMW

COC Batch # (not analyzed but listed above)	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
08032717-004 *		100 ml	100 ml	<2	TC	N/A	clear/colorless	N/A	N/A
005									
005R									
005S	1.0 ml (*)								
08032756-003 **									
004									
004R									
004S	1.0 ml **								
08032783-004									
005									
005R									
005S	1.0 ml **								
006									
08LT0023-LB1 *									
08L0115-MB1									
LC1	1.0 ml (*)								

MW 3/26/08

Spiking IDs:
MS #: 8100-04-01
02
03
6072-078-07
LCS #: 08
09
10
11

Reagent IDs:
HNO_3: E46025 W.E. ~~E45049~~ MW 3/26/08
HCL
H_2O_2
1:1 HNO_3
1:1 HCL
6072-069-03

File ID#: IC011501 IC011502
LIMS Transfer: Y N Updated
Data Review By/Date: PMP, 03/28/08

(*) also 0.25 ml 6072-076-06 (Bi)
0.25 ml 6072-076-07 (P-)
0.25 ml 6072-078-01 (U-)

** spiked with: (only)
6072-73-03
6072-73-05 } 1 ml each

L-SPI-3020-A-0601

nville Laboratory Use Only
803L 756

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

000000029

nt TNU HANFORD RC-087
Final Proj. Sampling Date
ject# 11343-606-001-9999-00
ject Contact/Phone#
nville Laboratory Project Manager O. JOHNSON
SW846 Del STD TAT 15 Day
te Rec'd 3-14-08 Date Due 3-29-08

Refrigerator #									A 3		B 3					
#/Type Container	Liquid / Solid								1G		1P					
Volume									250		500					
Preservatives											—					
ANALYSES REQUESTED →		ORGANIC							INORG		TCLP Met					
		VOA	BNA	Pest/PCB	Herb				Metal Hg	CN						
		Lionville Laboratory Use Only														
									Met ①		ITCLP		RCRAtot			

TRIX DES: Soil, Sediment, Solid, Sludge, Water, Oil, Air, Drum Solids, Drum Liquids, EP/TCLP Leachate, Wipe, Other, Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Met ①	ITCLP	RCRAtot
001	J16DC3			SOIL	3-6-08	0930		X	
002	J169C7			〃	〃	〃	X	X	
003	J16DC3 TCLP of 001			〃	〃				X
004	J169C7 〃 002			〃	〃				X

ecial Instructions: Run Matrix QC
Met ① = HSL + Sn, Zr

Special Instructions:
1.
2.
3.
4.
5.
6.

* See Lab chron

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	3/14/08	1000

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN	"COMPOSITE WASTE"		

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-087-033 | Page 1 of 1

Collector: B Lawrence	Company Contact: Joan Kessner	Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH
Price Code: 8G	Data Turnaround: 15 Days		
Project Designation: 618-7 Burial Ground - Soil	Sampling Location: 618-7 Burial Ground/Stockpiles		SAF No.: RC-087
Ice Chest No.: E RC-96-001	Field Logbook No.: EL-1359-12	COA: RG61878500	Method of Shipment: Fed Ex
Shipped To: RL 3/6/08 ~~EBERLINE SERVICES~~ / LIONVILLE	Offsite Property No.: A080198		Bill of Lading/Air Bill No.: see OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radiological and Beryllium contamination

Special Handling and/or Storage

None

Preservation	None										
Type of Container	P										
No. of Container(s)	1										
Volume	500mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
J16DC3	SOIL	3/6/08	0950	X								B004	4
~~J16DC4~~	~~SOIL~~				RL 3/6/08								
~~J16DC5~~	~~SOIL~~				RL 3/6/08								
~~J16DC6~~	~~SOIL~~				RL 3/6/08								
~~J16DC7~~	~~SOIL~~				RL 3/6/08								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: B Lawrence	1130 3-6-08	Received By/Stored In: RT Coffman / RT Coffman	1130 3/6/08
Relinquished By/Removed From: RT Coffman / RT Coffman	1245 3/6/08	Received By/Stored In: REFER #1A	1245 3/6/08
Relinquished By/Removed From: 1060 / 1A	3/13/08 1000	Received By/Stored In: MS Tankovich	1000 3/13/08
Relinquished By/Removed From: MS Tankovich	1500 3/13/08	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	3-14-08 1000	Received By/Stored In: [illegible]	3-14-08 1000
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

None

(1) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470

Matrix *

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

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

WCH-EE-011

000000030

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-087-015 | Page 1 of 1

Collector: RB Kerkow / B Lawrence	Company Contact: Joan Kessner	Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH
Project Designation: 618-7 Burial Ground - Soil	Sampling Location: 618-7 Stockpiles		SAF No.: RC-087
Ice Chest No.: ERC-96-001	Field Logbook No.: EL-1359-12	COA: RG61872600	Method of Shipment: Fed Ex
Shipped To: ~~EDERLINE SERVICES~~ LIONVILLE	Offsite Property No.: A080198		Bill of Lading/Air Bill No.: See ospc

Price Code: 8G

Data Turnaround: 15 Days

000000031

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radiological and Beryllium contamination

Special Handling and/or Storage

None

Preservation	None	None	None								
Type of Container	aG	P	P								
No. of Container(s)	1	1	1								
Volume	250mL	500mL	1000mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.								

Sample No.	Matrix *	Sample Date	Sample Time											
J169C7	SOIL	3/6/08	0950	X	X	X								B004

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Lawrence	3-6-08 1130	RTCOFFMAN/RTCoffman	3/6/08 1130
RTCOFFMAN/RTCoffman	3/6/08 1245	REFER #1A	3/6/08 1245
1060/1A	3/13/08 1000	MSTankovich	3/13/08 1000
MSTankovich	3/13/08 1500	Fed Ex	
Fed Ex	3-14-08 1000	Nienardy	3-14-08 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

None

(1) ICP Metals - 6010A (TAL) {Aluminum, Antimony, Barium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc, Zirconium}; ICP Metals - 6010A (Add-on) {Arsenic, Beryllium, Lead, Selenium, Thallium, Tin}; Mercury - 7471 - (CV)

(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470

(3) Gross Alpha; Gross Beta; Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Thorium; Americium-241; Isotopic Uranium; Isotopic Plutonium; Strontium-89,90 -- Total Sr

Matrix *

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

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

WCH-EE-011

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD

Date: 3-14-08

Project/SAF/SOW/Release #: RC-087

LvLI Batch #: 08031756

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7992 8900 1950
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 14.1	°C.	Cooler # ERC-96-006
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A

Person Contacted _____ Date _____

LVLI LIONVILLE LABORATORY INC.

SR-002-B.doc