0078940

SAF-RC-113
618-7 Burial Ground
Verification Sampling
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Rick Kerkow	L6-06	KW 10/20/08 Initials/Date
Kathy Wendt	H4-21	KW 10/20/08 Initials/Date

COMMENTS:

SDG K1332 **SAF-RC-113**

Rad only Chem only X Rad & Chem

X Complete Partial

WASTE SITE: 618-7 Burial Ground – Verification Sampling

RECEIVED
OCT 2 2 2008
EDMC

EBERLINE SERVICES

EBERLINE ANALYTICAL CORPORATION
2030 Wright Avenue
Richmond, California 94804-3849
Phone (510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

October 1, 2008

RECEIVED
OCT 2008

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

Reference: **P.O. #S00W235A00**
Eberline Services R8-09-128-7895, SDG K1332

Dear Ms. Kessner:

Enclosed is the data report for four solid (soil) samples designated under SAF No. RC-113 received at Eberline Services on September 16, 2008. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

FOR Melissa C. Mannion
Senior Program Manager

NJV/jag

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1332 was composed of four solid (soil) samples designated under SAF No. RC-113 with a Project Designation of: 618-7 Burial Ground – Verification Sampling.

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

2.0 ANALYSIS NOTES

2.1 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses.

2.2 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy

The DER for the duplicate Th-228 result was 3.1; no other 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."

FOR **Melissa C. Mannion**
Senior Program Manager

10/01/08
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 K1332

SDG	7895
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. S00W235A00
Case no	SDG_K1332

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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Prepared by

Reviewed by

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	10/01/08

SDG 7895
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1332

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 Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/01/08

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.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

SDG 7895
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1332

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R809128-01	J17J15	618-7 Burial Ground	SOLID		RC-113	RC-113-003	09/10/08 13:20
R809128-02	J17J16	618-7 Burial Ground	SOLID		RC-113	RC-113-003	09/10/08 13:35
R809128-03	J17J17	618-7 Burial Ground	SOLID		RC-113	RC-113-003	09/10/08 13:50
R809128-04	J17J18	618-7 Burial Ground	SOLID		RC-113	RC-113-003	09/10/08 14:00
R809128-05	Lab Control Sample		SOLID		RC-113		
R809128-06	Method Blank		SOLID		RC-113		
R809128-07	Duplicate (R809128-04)	618-7 Burial Ground	SOLID		RC-113		09/10/08 14:00

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

SDG 7895
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1332

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
95	RC-113-003	J17J15	SOLID	99.5	1681 g		09/16/08	6	R809128-01	7895-001
		J17J16	SOLID	99.4	1586 g		09/16/08	6	R809128-02	7895-002
		J17J17	SOLID	99.5	1796 g		09/16/08	6	R809128-03	7895-003
		J17J18	SOLID	99.3	1771 g		09/16/08	6	R809128-04	7895-004
		Method Blank	SOLID						R809128-06	7895-006
		Lab Control Sample	SOLID						R809128-05	7895-005
		Duplicate (R809128-04)	SOLID	99.3	1771 g		09/16/08	6	R809128-07	7895-007

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

SDG 7895
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1332

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
TH	SOLID	Thorium, Isotopic in Solids	6160-172	8.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Solids	6160-172	8.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6160-172	7.0	4			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 Hanford1
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

SDG 7895
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1332

B SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
09128-01	J17J15			7895-001	GAM		09/19/08	09/22/08	BW	Gamma Scan
09/10/08	618-7 Burial Ground		SOLID	7895-001	TH		09/28/08	09/29/08	BW	Thorium, Isotopic in Solids
09/16/08	RC-113-003	RC-113		7895-001	U		09/27/08	09/29/08	BW	Uranium, Isotopic in Solids
09128-02	J17J16			7895-002	GAM		09/19/08	09/22/08	BW	Gamma Scan
09/10/08	618-7 Burial Ground		SOLID	7895-002	TH		09/28/08	09/29/08	BW	Thorium, Isotopic in Solids
09/16/08	RC-113-003	RC-113		7895-002	U		09/27/08	09/29/08	BW	Uranium, Isotopic in Solids
09128-03	J17J17			7895-003	GAM		09/19/08	09/22/08	BW	Gamma Scan
09/10/08	618-7 Burial Ground		SOLID	7895-003	TH		09/28/08	09/29/08	BW	Thorium, Isotopic in Solids
09/16/08	RC-113-003	RC-113		7895-003	U		09/27/08	09/29/08	BW	Uranium, Isotopic in Solids
:09128-04	J17J18			7895-004	GAM		09/19/08	09/22/08	BW	Gamma Scan
09/10/08	618-7 Burial Ground		SOLID	7895-004	TH		09/28/08	09/29/08	BW	Thorium, Isotopic in Solids
09/16/08	RC-113-003	RC-113		7895-004	U		09/27/08	09/29/08	BW	Uranium, Isotopic in Solids
109128-05	Lab Control Sample			7895-005	GAM		09/19/08	09/22/08	BW	Gamma Scan
			SOLID	7895-005	TH		09/28/08	09/29/08	BW	Thorium, Isotopic in Solids
		RC-113		7895-005	U		09/27/08	09/29/08	BW	Uranium, Isotopic in Solids
309128-06	Method Blank			7895-006	GAM		09/19/08	09/22/08	BW	Gamma Scan
			SOLID	7895-006	TH		09/28/08	09/29/08	BW	Thorium, Isotopic in Solids
		RC-113		7895-006	U		09/27/08	09/29/08	BW	Uranium, Isotopic in Solids
309128-07	Duplicate (R809128-04)			7895-007	GAM		09/19/08	09/22/08	BW	Gamma Scan
09/10/08	618-7 Burial Ground		SOLID	7895-007	TH		09/28/08	09/29/08	BW	Thorium, Isotopic in Solids
09/16/08		RC-113		7895-007	U		09/27/08	09/29/08	BW	Uranium, Isotopic in Solids

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
GAM	RC-113	Gamma Scan	GAMMA_GS	4			1	1	1	7
TH	RC-113	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	4			1	1	1	7
U	RC-113	Uranium, Isotopic in Solids	UISO_PLATE_AEA	4			1	1	1	7
TOTALS				12			3	3	3	21

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

7895-006 Method Blank

METHOD BLANK

SDG	7895	Client/Case no	Hanford SDG K1332
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R809128-06	Client sample id	Method Blank
Dept sample id	7895-006	Material/Matrix	SOLID
		SAF No	RC-113

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	-0.028	0.23	0.432	1.00	U	TH
Thorium 230	14269-63-7	-0.028	0.17	0.311	1.00	U	TH
Thorium 232	TH-232	0	0.11	0.269	1.00	U	TH
Uranium 233/234	U-233/234	0	0.026	0.101	1.00	U	U
Uranium 235	15117-96-1	0.016	0.032	0.123	1.00	U	U
Uranium 238	U-238	0.013	0.026	0.101	1.00	U	U
Potassium 40	13966-00-2	U		0.138		U	GAM
Cobalt 60	10198-40-0	U		0.006	0.050	U	GAM
Cesium 137	10045-97-3	U		0.007	0.100	U	GAM
Radium 226	13982-63-3	U		0.015	0.100	U	GAM
Radium 228	15262-20-1	U		0.029	0.200	U	GAM
Europium 152	14683-23-9	U		0.021	0.100	U	GAM
Europium 154	15585-10-1	U		0.017	0.100	U	GAM
Europium 155	14391-16-3	U		0.021	0.100	U	GAM
Thorium 228	14274-82-9	U		0.012		U	GAM
Thorium 232	TH-232	U		0.029		U	GAM
Uranium 235	15117-96-1	U		0.031		U	GAM
Uranium 238	U-238	U		0.695		U	GAM
Americium 241	14596-10-2	U		0.023		U	GAM

618-7 Burial Ground Verif. Sampling

QC-BLANK 67310

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

7895-005

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7895

Contact Melissa C. Mannion

Client/Case no Hanford SDG K1332

Contract No. S00W235A00

Lab sample id R809128-05

Dept sample id 7895-005

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-113

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
Thorium 230	33.6	2.9	0.182	1.00		TH	37.8	1.5	89	83-117	80-120
Uranium 233/234	18.0	1.8	0.831	1.00		U	18.6	0.74	97	80-120	80-120
Uranium 235	15.9	1.6	0.176	1.00		U	15.1	0.60	105	79-121	80-120
Uranium 238	20.0	1.9	0.790	1.00		U	20.2	0.81	99	81-119	80-120
Cobalt 60	0.478	0.028	0.013	0.050		GAM	0.478	0.019	100	85-115	80-120
Cesium 137	0.566	0.026	0.016	0.100		GAM	0.534	0.021	106	85-115	80-120

618-7 Burial Ground Verif. Sampling

QC-LCS 67309

Lab id EBRLNE

Protocol Hanford1

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

7895-007 J17J18

DUPLICATE

SDG	7895			Client/Case no	Hanford SDG K1332
Contact	Melissa C. Mannion			Contract	No. S00W235A00
DUPLICATE		ORIGINAL			
Lab sample id	R809128-07	Lab sample id	R809128-04	Client sample id	J17J18
Dept sample id	7895-007	Dept sample id	7895-004	Location/Matrix	618-7 Burial Ground SOLID
		Received	09/16/08	Collected/Weight	09/10/08 14:00 1771 g
% solids	99.3	% solids	99.3	Custody/SAF No	RC-113-003 RC-113

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
Thorium 228	0.484	0.31	0.367	1.00		TH	0.392	0.25	0.353		21	138	0.5
Thorium 230	0.508	0.26	0.244	1.00		TH	0.294	0.20	0.187		53	124	1.3
Thorium 232	0.432	0.21	0.194	1.00		TH	0.782	0.30	0.187		58	92	1.9
Uranium 233/234	2.00	0.25	0.066	1.00		U	2.17	0.44	0.144		8	40	0.6
Uranium 235	0.166	0.083	0.063	1.00		U	0.229	0.14	0.175		32	125	0.8
Uranium 238	1.56	0.22	0.066	1.00		U	1.70	0.40	0.144		9	45	0.6
Potassium 40	10.0	0.41	0.156			GAM	9.72	0.51	0.145		3	18	0.5
Cobalt 60	U		0.015	0.050	U	GAM	U		0.016	U	-		0.1
Cesium 137	U		0.015	0.100	U	GAM	U		0.014	U	-		0.1
Radium 226	0.314	0.034	0.033	0.100		GAM	0.297	0.030	0.027		6	27	0.6
Radium 228	0.482	0.065	0.060	0.200		GAM	0.485	0.072	0.068		1	34	0.1
Europium 152	U		0.044	0.100	U	GAM	U		0.038	U	-		0.2
Europium 154	U		0.051	0.100	U	GAM	U		0.049	U	-		0.1
Europium 155	U		0.078	0.100	U	GAM	U		0.049	U	-		0.6
Thorium 228	0.527	0.040	0.039			GAM	0.425	0.024	0.020		21	21	3.1
Thorium 232	0.482	0.065	0.060			GAM	0.485	0.072	0.068		1	34	0.1
Uranium 235	U		0.083		U	GAM	U		0.072	U	-		0.2
Uranium 238	U		3.32		U	GAM	U		1.88	U	-		0.8
Americium 241	U		0.071		U	GAM	U		0.092	U	-		0.4

618-7 Burial Ground Verif. Sampling

QC-DUP#4 67311

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

7895-001 J17J15

DATA SHEET

SDG	7895	Client/Case no	Hanford SDG K1332
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R809128-01	Client sample id	J17J15
Dept sample id	7895-001	Location/Matrix	618-7 Burial Ground SOLID
Received	09/16/08	Collected/Weight	09/10/08 13:20 1681 g
% solids	99.5	Custody/SAF No	RC-113-003 RC-113

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	0.773	0.31	0.296	1.00		TH
Thorium 230	14269-63-7	0.397	0.22	0.169	1.00		TH
Thorium 232	TH-232	0.684	0.27	0.169	1.00		TH
Uranium 233/234	U-233/234	0.870	0.24	0.126	1.00		U
Uranium 235	15117-96-1	0.060	0.080	0.152	1.00	U	U
Uranium 238	U-238	0.854	0.24	0.126	1.00		U
Potassium 40	13966-00-2	11.8	0.59	0.166			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	U		0.019	0.100	U	GAM
Radium 226	13982-63-3	0.322	0.042	0.040	0.100		GAM
Radium 228	15262-20-1	0.692	0.090	0.079	0.200		GAM
Europium 152	14683-23-9	U		0.048	0.100	U	GAM
Europium 154	15585-10-1	U		0.074	0.100	U	GAM
Europium 155	14391-16-3	U		0.107	0.100	U	GAM
Thorium 228	14274-82-9	0.532	0.027	0.023			GAM
Thorium 232	TH-232	0.692	0.090	0.079			GAM
Uranium 235	15117-96-1	U		0.073		U	GAM
Uranium 238	U-238	U		2.59		U	GAM
Americium 241	14596-10-2	U		0.070		U	GAM

618-7 Burial Ground Verif. Sampling

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

7895-002 J17J16

DATA SHEET

SDG	7895	Client/Case no	Hanford	SDG K1332	
Contact	Melissa C. Mannion	Contract	No. S00W235A00		
Lab sample id	R809128-02	Client sample id	J17J16		
Dept sample id	7895-002	Location/Matrix	618-7 Burial Ground	SOLID	
Received	09/16/08	Collected/Weight	09/10/08 13:35	1586 g	
% solids	99.4	Custody/SAF No	RC-113-003	RC-113	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	0.574	0.30	0.334	1.00		TH
Thorium 230	14269-63-7	0.448	0.25	0.190	1.00		TH
Thorium 232	TH-232	0.523	0.25	0.190	1.00		TH
Uranium 233/234	U-233/234	35.4	2.2	0.325	1.00		U
Uranium 235	15117-96-1	4.34	0.52	0.094	1.00		U
Uranium 238	U-238	24.8	1.6	0.310	1.00		U
Potassium 40	13966-00-2	10.7	0.64	0.272			GAM
Cobalt 60	10198-40-0	U		0.024	0.050	U	GAM
Cesium 137	10045-97-3	U		0.029	0.100	U	GAM
Radium 226	13982-63-3	0.330	0.054	0.054	0.100		GAM
Radium 228	15262-20-1	0.474	0.12	0.126	0.200		GAM
Europium 152	14683-23-9	U		0.068	0.100	U	GAM
Europium 154	15585-10-1	U		0.105	0.100	U	GAM
Europium 155	14391-16-3	U		0.109	0.100	U	GAM
Thorium 228	14274-82-9	0.488	0.036	0.038			GAM
Thorium 232	TH-232	0.474	0.12	0.126			GAM
Uranium 235	15117-96-1	0.707	0.13	0.170			GAM
Uranium 238	U-238	11.9	3.6	4.00			GAM
Americium 241	14596-10-2	U		0.308		U	GAM

618-7 Burial Ground Verif. Sampling

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

7895-003 J17J17

DATA SHEET

SDG	7895	Client/Case no	Hanford	SDG K1332	
Contact	Melissa C. Mannion	Contract	No. S00W235A00		
Lab sample id	R809128-03	Client sample id	J17J17		
Dept sample id	7895-003	Location/Matrix	618-7 Burial Ground	SOLID	
Received	09/16/08	Collected/Weight	09/10/08 13:50	1796 g	
% solids	99.5	Custody/SAF No	RC-113-003	RC-113	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	0.868	0.33	0.334	1.00		TH
Thorium 230	14269-63-7	0.542	0.27	0.207	1.00		TH
Thorium 232	TH-232	1.00	0.33	0.207	1.00		TH
Uranium 233/234	U-233/234	1.13	0.31	0.144	1.00		U
Uranium 235	15117-96-1	0.182	0.14	0.174	1.00		U
Uranium 238	U-238	1.03	0.31	0.144	1.00		U
Potassium 40	13966-00-2	10.7	0.40	0.157			GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.015	0.100	U	GAM
Radium 226	13982-63-3	0.315	0.031	0.028	0.100		GAM
Radium 228	15262-20-1	0.466	0.084	0.075	0.200		GAM
Europium 152	14683-23-9	U		0.042	0.100	U	GAM
Europium 154	15585-10-1	U		0.058	0.100	U	GAM
Europium 155	14391-16-3	U		0.051	0.100	U	GAM
Thorium 228	14274-82-9	0.490	0.023	0.021			GAM
Thorium 232	TH-232	0.466	0.084	0.075			GAM
Uranium 235	15117-96-1	U		0.095		U	GAM
Uranium 238	U-238	U		2.09		U	GAM
Americium 241	14596-10-2	U		0.025		U	GAM

618-7 Burial Ground Verif. Sampling

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

7895-004 J17J18

DATA SHEET

SDG	7895	Client/Case no	Hanford	SDG K1332	
Contact	Melissa C. Mannion	Contract	No. S00W235A00		
Lab sample id	R809128-04	Client sample id	J17J18		
Dept sample id	7895-004	Location/Matrix	618-7 Burial Ground	SOLID	
Received	09/16/08	Collected/Weight	09/10/08 14:00	1771 g	
% solids	99.3	Custody/SAF No	RC-113-003	RC-113	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Thorium 228	14274-82-9	0.392	0.25	0.353	1.00		TH
Thorium 230	14269-63-7	0.294	0.20	0.187	1.00		TH
Thorium 232	TH-232	0.782	0.30	0.187	1.00		TH
Uranium 233/234	U-233/234	2.17	0.44	0.144	1.00		U
Uranium 235	15117-96-1	0.229	0.14	0.175	1.00		U
Uranium 238	U-238	1.70	0.40	0.144	1.00		U
Potassium 40	13966-00-2	9.72	0.51	0.145			GAM
Cobalt 60	10198-40-0	U		0.016	0.050	U	GAM
Cesium 137	10045-97-3	U		0.014	0.100	U	GAM
Radium 226	13982-63-3	0.297	0.030	0.027	0.100		GAM
Radium 228	15262-20-1	0.485	0.072	0.068	0.200		GAM
Europium 152	14683-23-9	U		0.038	0.100	U	GAM
Europium 154	15585-10-1	U		0.049	0.100	U	GAM
Europium 155	14391-16-3	U		0.049	0.100	U	GAM
Thorium 228	14274-82-9	0.425	0.024	0.020			GAM
Thorium 232	TH-232	0.485	0.072	0.068			GAM
Uranium 235	15117-96-1	U		0.072		U	GAM
Uranium 238	U-238	U		1.88		U	GAM
Americium 241	14596-10-2	U		0.092		U	GAM

618-7 Burial Ground Verif. Sampling

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

Test TH Matrix SOLID
SDG 7895
Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1332

ESULTS

B MPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 230
eparation batch 6160-172					
09128-01			7895-001	J17J15	0.397
09128-02			7895-002	J17J16	0.448
09128-03			7895-003	J17J17	0.542
09128-04			7895-004	J17J18	0.294
09128-05			7895-005	Lab Control Sample	ok
09128-06			7895-006	Method Blank	U
09128-07			7895-007	Duplicate (R809128-04)	ok
minal values and limits from method				RDLs (pCi/g)	1.00
8-7 Burial Ground Verif. Sampling					

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
reparation batch 6160-172			2σ prep error 8.0 %	Reference Lab Notebook #6160, pg. 172												
809128-01			J17J15	0.296	0.250			105		187			18	09/27/08	09/28	SS-061
809128-02			J17J16	0.334	0.250			98		186			18	09/27/08	09/28	SS-063
809128-03			J17J17	0.334	0.250			88		187			18	09/27/08	09/28	SS-064
809128-04			J17J18	0.353	0.250			98		189			18	09/27/08	09/28	SS-063
809128-05			Lab Control Sample	0.182	0.250			98		189				09/27/08	09/28	SS-064
809128-06			Method Blank	0.432	0.250			101		189				09/27/08	09/28	SS-032
809128-07			Duplicate (R809128-04)	0.367	0.250			96		189			18	09/27/08	09/28	SS-033
ominal values and limits from method				1.00	0.250			20-105		150			180			

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 7
	CP-900	Thorium in Water and Dissolved Solid Samples by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 12

AVERAGES ± 2 SD FOR 7 SAMPLES				
MDA	0.328	±	0.154
YIELD	98	±	10

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

Test U Matrix SOLID
SDG 7895
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1332

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 6160-172											
09128-01			7895-001	J17J15	0.870	U	0.854	102	40	7	10
09128-02			7895-002	J17J16	35.4	4.34	24.8	143	13	18	2
09128-03			7895-003	J17J17	1.13	0.182	1.03	110	45	18	15
09128-04			7895-004	J17J18	2.17	0.229	1.70	128	40	13	9
09128-05			7895-005	Lab Control Sample	ok	ok	ok				
09128-06			7895-006	Method Blank	U	U	U				
09128-07			7895-007	Duplicate (R809128-04)	ok	ok	ok	128	24	11	6
minal values and limits from method				RDLs (pCi/g)	1.00	1.00	1.00	100		4	
.8-7 Burial Ground Verif. Sampling							Averages	122		13	

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 6160-172			2σ prep error 8.0 %	Reference Lab Notebook #6160, pg. 172												
09128-01			J17J15	0.152	0.500			76		225			17	09/27/08	09/27	SS-034
09128-02			J17J16	0.325	0.500			95		225			17	09/27/08	09/27	SS-038
09128-03			J17J17	0.174	0.500			92		139			17	09/27/08	09/27	SS-040
09128-04			J17J18	0.175	0.500			82		138			17	09/27/08	09/27	SS-051
09128-05			Lab Control Sample	0.831	0.500			92		138				09/27/08	09/27	SS-052
09128-06			Method Blank	0.123	0.500			87		188				09/27/08	09/27	SS-058
09128-07			Duplicate (R809128-04)	0.066	0.500			92		368			17	09/27/08	09/27	SS-065
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 12

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.264 ± 0.525
YIELD 88 ± 14

Lab id EBRLNE
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Version 3.06
Report date 10/01/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1332

Test GAM Matrix SOLID
SDG 7895
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1332

ESULTS

B MPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137	
eparation batch 6160-172								
09128-01			7895-001	J17J15	U		U	
09128-02			7895-002	J17J16	U		U	
09128-03			7895-003	J17J17	U		U	
09128-04			7895-004	J17J18	U		U	
09128-05			7895-005	Lab Control Sample	ok		ok	
09128-06			7895-006	Method Blank	U		U	
09128-07			7895-007	Duplicate (R809128-04)	-	U	-	U
minal values and limits from method				RDLs (pCi/g)	0.050		0.100	
.8-7 Burial Ground Verif. Sampling								

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 6160-172			2σ prep error 7.0 %	Reference Lab Notebook #6160, pg. 172												
809128-01			J17J15	4.08	919					190			9	09/18/08	09/19	02,04,00
809128-02			J17J16	4.97	870					144			9	09/18/08	09/19	MB,05,00
809128-03			J17J17	2.54	875					191			9	09/18/08	09/19	MB,07,00
809128-04			J17J18	3.24	874					191			9	09/18/08	09/19	MB,08,00
809128-05			Lab Control Sample	0.013	870					145				09/18/08	09/19	MB,01,00
809128-06			Method Blank	1.37	870					145				09/18/08	09/19	MB,02,00
809128-07			Duplicate (R809128-04)	2.72	874					105			9	09/18/08	09/19	MB,02,00
ominal values and limits from method				0.050	100					100			180			

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

AVERAGES ± 2 SD MDA 2.70 ± 3.30
FOR 7 SAMPLES YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford1
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Form DVD-LMS
Version 3.06
Report date 10/01/08

SDG 7895
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1332

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 Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
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SDG 7895
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1332

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.

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REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1332

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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Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1332

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).

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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.

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GUIDE, cont.

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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.

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Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1332

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.

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SDG 7895
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1332

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.

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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 7895
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
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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

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GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1332

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 Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/01/08

SDG 7895
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1332

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
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/01/08

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-113-003	Page 1 of 1

Collector S. Deeter	**Company Contact** Joan Kessner	**Telephone No.** 509-375-4655	**Project Coordinator** KESSNER, JH
Project Designation 618-7 Burial Ground Verification Sampling	**Sampling Location** 618-7 Burial Ground - Verif. Sampling K1332 (7895)		**SAF No.** RC-113
Price Code 8C	**Data Turnaround** 15 Days		
Ice Chest No. AFS-04-011	**Field Logbook No.** EL-1395-13	**COA** RG61872600	**Method of Shipment** FED EX
Shipped To EBERLINE SERVICES / LIONVILLE	**Offsite Property No.** A080340		**Bill of Lading/Air Bill No.** SEE OSPB

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radiological and Beryllium contamination.

Special Handling and/or Storage

None

Preservation	None	None									
Type of Container	P	P									
No. of Container(s)	1	1									
Volume	250mL	1000mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions. 9/10	See item (2) in Special Instructions.								REF #	

Sample No.	Matrix *	Sample Date	Sample Time										
J17J15	SOIL	9/10/08	1320		X							J17HY7	D-6
J17J16	SOIL	9/10/08	1335		X							J17HY8	D-5
J17J17	SOIL	9/10/08	1350		X							J17HY9	D-4
J17J18	SOIL	9/10/08	1400		X							J17J00	G-10

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
SDEETER	9-10-08 1530	JR DeBruigne JRDeBruigne	9/10/08 1530
JR DeBruigne JRDeBruigne	9/10/08 1630	1060 IB	9/10/08 1630
1060 IB / J.E. Bernhard	9-15-08 1200	J.E. Bernhard	9-15-08 1200
J.E. Bernhard	9-15-08 1210	FED EX	
FED EX		FED EX	04/16/08 04:15

SPECIAL INSTRUCTIONS

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

(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Thorium; Isotopic Uranium

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
Ve=Vegetation
X=Other

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

WCH-EE-011

EBERLINE

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

JK 9/16/08

Client: W.C. HANFORD City RICHLAND State WA

Date/Time received 09/16/08 09:15 CoC No. RC-113-003

Container I.D. No. AFS-04-011 Requested TAT (Days) 15 P.O. Received Yes [ ] No [ ]

INSPECTION

1 Custody seals on shipping container intact? Yes [Y] No [ ] N/A [ ]

2 Custody seals on shipping container dated & signed? Yes [Y] 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 4 Sample Matrix S

7 Number of containers per sample 1 (Or see CoC)

8 Samples are in correct container Yes [Y] 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 09/16/08 Time 10:30

Customer Sample No	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe
ALL SAMPLES	<60						

Ion Chamber Ser. No _____ Calibration date _____

Alpha Meter Ser. No _____ Calibration date _____

Beta/Gamma Meter Ser. No. 100487 Calibration date 10 JUL 08

LIONVILLE LABORATORY INC.

15 October 2008

RECEIVED OCT 2008

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H9-03
Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	0809L106
SDG #	K1332
SAF #	RC-113
Date Received	9/16/08
# Samples	4
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
d:\b_ltrs.doc

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1332

RECEIVED OCT 2008

DATE RECEIVED: 09/16/08 LVL LOT # :0809L106

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17J15						
SILVER, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
SILVER, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
SILVER, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
ALUMINUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
ALUMINUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
ALUMINUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
ARSENIC, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
ARSENIC, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
ARSENIC, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
BARIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
BARIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
BARIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
BERYLLIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
BERYLLIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
BERYLLIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
CALCIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
CALCIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
CALCIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
CADMIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
CADMIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
CADMIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
COBALT, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
COBALT, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
COBALT, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
CHROMIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
CHROMIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
CHROMIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
COPPER, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
COPPER, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
COPPER, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
IRON, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
IRON, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
IRON, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
MERCURY, TOTAL	001	S	08C0171	09/10/08	09/25/08	09/26/08
MERCURY, TOTAL	001 REP	S	08C0171	09/10/08	09/25/08	09/26/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1332

DATE RECEIVED: 09/16/08 LVL LOT # :0809L106

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 MS	S	08C0171	09/10/08	09/25/08	09/26/08
POTASSIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
POTASSIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
POTASSIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
MAGNESIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
MAGNESIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
MAGNESIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
MANGANESE, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
MANGANESE, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
MANGANESE, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
SODIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
SODIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
SODIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
NICKEL, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
NICKEL, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
NICKEL, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
LEAD, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
LEAD, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
LEAD, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
ANTIMONY, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
ANTIMONY, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
ANTIMONY, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
SELENIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
SELENIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
SELENIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
TIN, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
TIN, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
TIN, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
THALLIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
THALLIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
THALLIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
VANADIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
VANADIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
VANADIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
ZINC, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08
ZINC, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
ZINC, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
ZIRCONIUM, TOTAL	001	S	08L0355	09/10/08	09/29/08	10/10/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1332

DATE RECEIVED: 09/16/08 LVL LOT # :0809L106

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZIRCONIUM, TOTAL	001 REP	S	08L0355	09/10/08	09/29/08	10/10/08
ZIRCONIUM, TOTAL	001 MS	S	08L0355	09/10/08	09/29/08	10/10/08
J17J16						
SILVER, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
ALUMINUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
ARSENIC, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
BARIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
BERYLLIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
CALCIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
CADMIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
COBALT, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
CHROMIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
COPPER, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
IRON, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
MERCURY, TOTAL	002	S	08C0171	09/10/08	09/25/08	09/26/08
POTASSIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
MAGNESIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
MANGANESE, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
SODIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
NICKEL, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
LEAD, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
ANTIMONY, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
SELENIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
TIN, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
THALLIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
VANADIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
ZINC, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
ZIRCONIUM, TOTAL	002	S	08L0355	09/10/08	09/29/08	10/10/08
J17J17						
SILVER, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
ALUMINUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
ARSENIC, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
BARIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
BERYLLIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1332

DATE RECEIVED: 09/16/08 LVL LOT # :0809L106

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CALCIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
CADMIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
COBALT, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
CHROMIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
COPPER, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
IRON, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
MERCURY, TOTAL	003	S	08C0171	09/10/08	09/25/08	09/26/08
POTASSIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
MAGNESIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
MANGANESE, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
SODIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
NICKEL, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
LEAD, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
ANTIMONY, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
SELENIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
TIN, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
THALLIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
VANADIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
ZINC, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
ZIRCONIUM, TOTAL	003	S	08L0355	09/10/08	09/29/08	10/10/08
J17J18						
SILVER, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
ALUMINUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
ARSENIC, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
BARIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
BERYLLIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
CALCIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
CADMIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
COBALT, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
CHROMIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
COPPER, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
IRON, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
MERCURY, TOTAL	004	S	08C0171	09/10/08	09/25/08	09/26/08
POTASSIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
MAGNESIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
MANGANESE, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1332

DATE RECEIVED: 09/16/08 LVL LOT # :0809L106

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SODIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
NICKEL, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
LEAD, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
ANTIMONY, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
SELENIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
TIN, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
THALLIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
VANADIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
ZINC, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08
ZIRCONIUM, TOTAL	004	S	08L0355	09/10/08	09/29/08	10/10/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
SILVER, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
ALUMINUM LABORTORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
ALUMINUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
ARSENIC LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
ARSENIC, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
BARIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
BARIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
BERYLLIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
CALCIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
CALCIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
CADMIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
CADMIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
COBALT LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
COBALT, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
CHROMIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
CHROMIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
COPPER LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
COPPER, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
IRON LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
IRON, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
MERCURY LABORATORY	LC1 BS	S	08C0171	N/A	09/25/08	09/26/08
MERCURY, TOTAL	MB1	S	08C0171	N/A	09/25/08	09/26/08
POTASSIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-113 K1332

DATE RECEIVED: 09/16/08 LVL LOT # :0809L106

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
MAGNESIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
MANGANESE LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
MANGANESE, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
SODIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
SODIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
NICKEL LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
NICKEL, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
LEAD LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
LEAD, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
ANTIMONY LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
ANTIMONY, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
SELENIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
SELENIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
TIN LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
TIN, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
THALLIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
THALLIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
VANADIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
VANADIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
ZINC LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
ZINC, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
ZIRCONIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
ZIRCONIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: WC-HANFORD RC-113
LVL#: 0809L106
SDG/SAF#: K1332/RC-113

W.O.#: 60049-001-001-0001-00
Date Received: 09-16-08

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 4 soil samples.

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

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

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

4. Please refer to the Sample Receipt Check List for sample discrepancies in LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

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

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Limit of Quantitation (3-10X the LOD), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 24 pages.

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

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

10. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J17J15	Antimony	300	98.6
	Aluminum	66,000	95.7
	Iron	66,000	91.3

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

13. 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.

14. 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.

15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this 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
alm/m09-106

10/15/05
Date

LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

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

ot#: 0809L106

eaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

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

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

3. Flame AA.

4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/13/08

CLIENT: WC-HANFORD RC-113 K1332 LVL LOT #: 0809L106

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17J15	Silver, Total	0.23 u	MG/KG	0.23	3.0
		Aluminum, Total	5170	MG/KG	9.1	3.0
		Arsenic, Total	2.8	MG/KG	1.1	3.0
		Barium, Total	60.8	MG/KG	0.23	3.0
		Beryllium, Total	0.11 u	MG/KG	0.11	3.0
		Calcium, Total	5100	MG/KG	9.1	3.0
		Cadmium, Total	0.11 u	MG/KG	0.11	3.0
		Cobalt, Total	8.0	MG/KG	0.45	3.0
		Chromium, Total	8.6	MG/KG	0.45	3.0
		Copper, Total	12.8	MG/KG	0.45	3.0
		Iron, Total	23200	MG/KG	10.2	3.0
		Mercury, Total	0.16	MG/KG	0.009	1.0
		Potassium, Total	828	MG/KG	9.1	3.0
		Magnesium, Total	4370	MG/KG	5.7	3.0
		Manganese, Total	310	MG/KG	0.09	3.0
		Sodium, Total	172	MG/KG	4.5	3.0
		Nickel, Total	70.4	MG/KG	0.45	3.0
		Lead, Total	2.9	MG/KG	0.68	3.0
		Antimony, Total	0.68 u	MG/KG	0.68	3.0
		Selenium, Total	1.4 u	MG/KG	1.4	3.0
		Tin, Total	1.4 u	MG/KG	1.4	3.0
		Thallium, Total	1.4 u	MG/KG	1.4	3.0
		Vanadium, Total	64.1	MG/KG	0.32	3.0
		Zinc, Total	43.0	MG/KG	1.4	3.0
		Zirconium, Total	18.3	MG/KG	11.4	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/13/08

CLIENT: WC-HANFORD RC-113 K1332 LVL LOT #: 0809L106

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J17J16	Silver, Total	0.21 u	MG/KG	0.21	3.0
		Aluminum, Total	4920	MG/KG	8.3	3.0
		Arsenic, Total	1.1	MG/KG	1.0	3.0
		Barium, Total	59.2	MG/KG	0.21	3.0
		Beryllium, Total	0.10 u	MG/KG	0.10	3.0
		Calcium, Total	5080	MG/KG	8.3	3.0
		Cadmium, Total	0.10 u	MG/KG	0.10	3.0
		Cobalt, Total	8.4	MG/KG	0.41	3.0
		Chromium, Total	6.5	MG/KG	0.41	3.0
		Copper, Total	12.9	MG/KG	0.41	3.0
		Iron, Total	24900	MG/KG	9.3	3.0
		Mercury, Total	0.01	MG/KG	0.009	1.0
		Potassium, Total	814	MG/KG	8.3	3.0
		Magnesium, Total	4060	MG/KG	5.2	3.0
		Manganese, Total	319	MG/KG	0.08	3.0
		Sodium, Total	196	MG/KG	4.1	3.0
		Nickel, Total	8.8	MG/KG	0.41	3.0
		Lead, Total	2.1	MG/KG	0.62	3.0
		Antimony, Total	0.62 u	MG/KG	0.62	3.0
		Selenium, Total	1.2 u	MG/KG	1.2	3.0
		Tin, Total	1.7	MG/KG	1.2	3.0
		Thallium, Total	1.2 u	MG/KG	1.2	3.0
		Vanadium, Total	68.6	MG/KG	0.29	3.0
		Zinc, Total	43.6	MG/KG	1.2	3.0
		Zirconium, Total	21.3	MG/KG	10.4	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/13/08

CLIENT: WC-HANFORD RC-113 K1332 LVL LOT #: 0809L106

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J17J17	Silver, Total	0.20 u	MG/KG	0.20	3.0
		Aluminum, Total	4200	MG/KG	8.0	3.0
		Arsenic, Total	1.3	MG/KG	1.0	3.0
		Barium, Total	55.2	MG/KG	0.20	3.0
		Beryllium, Total	0.10 u	MG/KG	0.10	3.0
		Calcium, Total	5740	MG/KG	8.0	3.0
		Cadmium, Total	0.10 u	MG/KG	0.10	3.0
		Cobalt, Total	9.4	MG/KG	0.40	3.0
		Chromium, Total	7.1	MG/KG	0.40	3.0
		Copper, Total	13.5	MG/KG	0.40	3.0
		Iron, Total	26800	MG/KG	9.0	3.0
		Mercury, Total	0.008u	MG/KG	0.008	1.0
		Potassium, Total	1180	MG/KG	8.0	3.0
		Magnesium, Total	4310	MG/KG	5.0	3.0
		Manganese, Total	310	MG/KG	0.08	3.0
		Sodium, Total	222	MG/KG	4.0	3.0
		Nickel, Total	10.2	MG/KG	0.40	3.0
		Lead, Total	1.7	MG/KG	0.60	3.0
		Antimony, Total	0.83	MG/KG	0.60	3.0
		Selenium, Total	1.2 u	MG/KG	1.2	3.0
		Tin, Total	1.2 u	MG/KG	1.2	3.0
		Thallium, Total	1.2 u	MG/KG	1.2	3.0
		Vanadium, Total	77.1	MG/KG	0.28	3.0
		Zinc, Total	46.4	MG/KG	1.2	3.0
		Zirconium, Total	20.6	MG/KG	10.0	3.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/13/08

CLIENT: WC-HANFORD RC-113 K1332 LVL LOT #: 0809L106

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J17J18	Silver, Total	0.21 u	MG/KG	0.21	3.0
		Aluminum, Total	5390	MG/KG	8.3	3.0
		Arsenic, Total	1.1	MG/KG	1.0	3.0
		Barium, Total	67.7	MG/KG	0.21	3.0
		Beryllium, Total	0.10 u	MG/KG	0.10	3.0
		Calcium, Total	5510	MG/KG	8.3	3.0
		Cadmium, Total	0.10 u	MG/KG	0.10	3.0
		Cobalt, Total	9.8	MG/KG	0.42	3.0
		Chromium, Total	7.7	MG/KG	0.42	3.0
		Copper, Total	16.8	MG/KG	0.42	3.0
		Iron, Total	27300	MG/KG	9.4	3.0
		Mercury, Total	0.03	MG/KG	0.009	1.0
		Potassium, Total	900	MG/KG	8.3	3.0
		Magnesium, Total	4600	MG/KG	5.2	3.0
		Manganese, Total	328	MG/KG	0.08	3.0
		Sodium, Total	233	MG/KG	4.2	3.0
		Nickel, Total	11.0	MG/KG	0.42	3.0
		Lead, Total	30.8	MG/KG	0.63	3.0
		Antimony, Total	0.63 u	MG/KG	0.63	3.0
		Selenium, Total	1.3 u	MG/KG	1.3	3.0
		Tin, Total	1.5	MG/KG	1.3	3.0
		Thallium, Total	1.3 u	MG/KG	1.3	3.0
		Vanadium, Total	76.6	MG/KG	0.29	3.0
		Zinc, Total	48.7	MG/KG	1.3	3.0
		Zirconium, Total	25.3	MG/KG	10.4	3.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/13/08

CLIENT: WC-HANFORD RC-113 K1332 LVL LOT #: 0809L106

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0355-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	0.24	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	13.1	MG/KG	4.0	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.20 u	MG/KG	0.20	1.0
		Copper, Total	0.59	MG/KG	0.20	1.0
		Iron, Total	9.3	MG/KG	4.5	1.0
		Potassium, Total	4.0 u	MG/KG	4.0	1.0
		Magnesium, Total	3.4	MG/KG	2.5	1.0
		Manganese, Total	0.04 u	MG/KG	0.04	1.0
		Sodium, Total	15.2	MG/KG	2.0	1.0
		Nickel, Total	0.35	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	0.84	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	0.94	MG/KG	0.60	1.0
		Zirconium, Total	5.0 u	MG/KG	5.0	1.0
BLANK1	08C0171-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/13/08

CLIENT: WC-HANFORD RC-113 K1332 LVL LOT #: 0809L106

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J17J15	Silver, Total	3.8	0.23u	3.8	100	3.0
		Aluminum, Total	5820	5170	150	428.9*	3.0
		Arsenic, Total	142	2.8	150	92.6	3.0
		Barium, Total	202	60.8	150	94.1	3.0
		Beryllium, Total	3.5	0.11u	3.8	92.1	3.0
		Calcium, Total	7300	5100	1880	116.9	3.0
		Cadmium, Total	3.6	0.11u	3.8	94.7	3.0
		Cobalt, Total	44.5	8.0	37.6	97.1	3.0
		Chromium, Total	22.1	8.6	15.0	90.0	3.0
		Copper, Total	29.6	12.8	18.8	89.4	3.0
		Iron, Total	23800	23200	75.2	740.7*	3.0
		Mercury, Total	0.30	0.16	0.14	100	1.0
		Potassium, Total	2560	828	1880	92.4	3.0
		Magnesium, Total	6110	4370	1880	92.4	3.0
		Manganese, Total	353	310	37.6	112.0*	3.0
		Sodium, Total	1990	172	1880	96.7	3.0
		Nickel, Total	103	70.4	37.6	87.2	3.0
		Lead, Total	38.2	2.9	37.6	93.9	3.0
		Antimony, Total	25.7	0.68u	37.6	68.4	3.0
		Selenium, Total	123	1.4 u	150	82.0	3.0
		Tin, Total	71.3	1.4 u	75.2	94.8	3.0
		Thallium, Total	144	1.4 u	150	95.5	3.0
		Vanadium, Total	99.0	64.1	37.6	92.8	3.0
		Zinc, Total	79.1	43.0	37.6	96.0	3.0
		Zirconium, Total	360	18.3	376	90.8	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/13/08

CLIENT: WC-HANFORD RC-113 K1332 LVL LOT #: 0809L106

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J17J15	Silver, Total	0.23u	0.22u	NC	3.0
		Aluminum, Total	5170	5260	1.7	3.0
		Arsenic, Total	2.8	1.6	54.5	3.0
		Barium, Total	60.8	62.7	3.1	3.0
		Beryllium, Total	0.11u	0.11u	NC	3.0
		Calcium, Total	5100	5350	4.8	3.0
		Cadmium, Total	0.11u	0.11u	NC	3.0
		Cobalt, Total	8.0	7.6	5.1	3.0
		Chromium, Total	8.6	7.6	12.3	3.0
		Copper, Total	12.8	11.5	10.7	3.0
		Iron, Total	23200	23300	0.15	3.0
		Mercury, Total	0.16	0.20	24.9	1.0
		Potassium, Total	828	841	1.6	3.0
		Magnesium, Total	4370	3930	10.6	3.0
		Manganese, Total	310	312	0.48	3.0
		Sodium, Total	172	184	6.6	3.0
		Nickel, Total	70.4	68.3	3.0	3.0
		Lead, Total	2.9	2.7	7.1	3.0
		Antimony, Total	0.68u	0.67u	NC	3.0
		Selenium, Total	1.4 u	1.3 u	NC	3.0
		Tin, Total	1.4 u	1.5	~~NC~~ 200	3.0
		Thallium, Total	1.4 u	1.3 u	NC	3.0
		Vanadium, Total	64.1	60.7	5.4	3.0
		Zinc, Total	43.0	43.0	0.00	3.0
		Zirconium, Total	18.3	18.2	0.55	3.0

Corrected RPD
aem 10/13/08

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/13/08

CLIENT: WC-HANFORD RC-113 K1332 LVL LOT #: 0809L106

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0355-LC1	Silver, LCS	50.0	50.0	MG/KG	100
		Aluminum, LCS	501	500	MG/KG	100.1
		Arsenic, LCS	944	1000	MG/KG	94.4
		Barium, LCS	495	500	MG/KG	99.0
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Calcium, LCS	2510	2500	MG/KG	100.6
		Cadmium, LCS	24.0	25.0	MG/KG	96.0
		Cobalt, LCS	245	250	MG/KG	98.1
		Chromium, LCS	49.6	50.0	MG/KG	99.2
		Copper, LCS	124	125	MG/KG	99.1
		Iron, LCS	503	500	MG/KG	100.6
		Potassium, LCS	2400	2500	MG/KG	96.0
		Magnesium, LCS	2480	2500	MG/KG	99.2
		Manganese, LCS	74.8	75.0	MG/KG	99.7
		Sodium, LCS	2390	2500	MG/KG	95.6
		Nickel, LCS	197	200	MG/KG	98.4
		Lead, LCS	242	250	MG/KG	96.9
		Antimony, LCS	283	300	MG/KG	94.3
		Selenium, LCS	923	1000	MG/KG	92.3
		Tin, LCS	487	500	MG/KG	97.5
		Thallium, LCS	980	1000	MG/KG	98.0
		Vanadium, LCS	250	250	MG/KG	99.8
		Zinc, LCS	99.6	100	MG/KG	99.6
		Zirconium, LCS	476	500	MG/KG	95.3
LCS1	08C0171-LC1	Mercury, LCS	5.1	4.7	MG/KG	109.0

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0355
Date/Time Initiated: 9/29/08 1645
Date/Time Completed: 9/29/08 2030
Analyst(s): MW
Matrix: (Soil) Water Other: _____
Instr. Type: AA (ICP)
Parameters: lee Lochloy

(Digested) / Undigested (circle one)
Balance #: B20
Balance Cal Verif: (Y) NA
Hot Plate Temp: 95°

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

TNV

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
0809L106-001		1.32gm	100ml	<2	TO	coarse	light brown soil	rocks	RAD
001R		1.35gm							
001S	1.0ml *	1.33gm							
002		1.45gm							
003		1.50gm							
004		1.44gm							RAD
0809L172-001		1.41gm				fine	brown soil		
001R		1.38gm							
001S	1.0ml	1.42gm							
002		1.32gm					tan soil		
003		1.41gm							
004		1.35gm					brown soil		
005		1.38gm				coarse	amber/black-sandy	vegetation	
006		1.36gm				fine	grayish brown soil	rocks	
007		1.38gm					brown soil		
008		1.33gm							
0809L173-001 (*)		1.42gm				coarse	dark gray rocks	N/A	
001R		1.33gm							
001S	1.0ml	1.49gm							
0809L173-001		1.39gm				fine	brown soil	N/A	
001R		1.34gm							
001S	1.0ml	1.40gm							
08L0355-MB1		1.0gm				coarse	boiling chips		
LC1	1.0ml *	1.0gm							

— end of data MW 9/29/08 —

Spiking IDs:
MS #: 8100-04-01
02
03
6012-78-07
LCS #: 08
09
10
11

Reagent IDs:
HNO_3 G11022
HCL G26054
H_2O_2 G15A18
1:1 HNO_3 9789-083-08
1:1 HCL

File ID#: IC035501 IC035 IC035502 IC035

LIMS Transfer: (Y) N updated

Data Review By/Date: 10/7/08

(*) rocks broken up into smaller pieces prior to digestion.

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: UB
Date: 9/25/08
Start Time/Temp: 1435 / 95°
End Time/Temp: 1505 / 95°

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

Prep Batch: 08C0171
Worksheet: HG-092601
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.
Blank	297			10mL	50mL	
0.2 µg/L	C15	0.100				
1.0	857	0.500				
2.0	I4	1.000				
5.0	WN	2.500				
10.0	KX	5.000				
ICV	R	0.125	2.5			
CCV	2I	0.250	5.0			
ICB/CCB	B6					90.50L
MB1	CB2			0.30		PBS171 100.0
LC1	OF	*	*	0.30		LCSS171
0809L106-001	C9			0.35		R 99.98
001R	3			0.31		
001S	UT	0.500	1.0	0.35		
002	L53			0.33		99.90
003	95			0.38		99.91
004	X0			0.33		R 99.87
0809L122-001	92			0.34		95.21
001R	1721			0.37		
001S	2B	0.500	1.0	0.33		
002	G12			0.37		98.67
003	886			0.35		98.14
004	35			0.38		92.05
005	X5			0.31		95.86
006	500			0.36		99.55
007	LV			0.38		96.57
008	C8			0.33		94.82

Standard:	ID	Prep Date/Time
ICS/MS	RI 6072-78-14B	9/25/08 0950
ICV/CCV/LCS	US 6072-78-15A	

Reviewed By/Date: [signature] 10/8/08

see book # 9368 for std traceability information

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

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

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: EB
Date: 9/25/08
Start Time/Temp: See page 040
End Time/Temp:

Instrument ID: HG-3.1
Balance #: B29 / NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0171
Worksheet: HG092601
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.
0809L123-001	401			0.34	50mL	
001R	H3			0.32		
001S	F2	0.500	1.0	0.34		
0809L141-021	JS			0.36		R 85.98
022	HR			0.35		L 87.48
~~0809L154-001~~	~~RU~~					
~~Sample 001R~~	~~AH~~					
~~duplicate analysis 001S~~	~~40~~					

TEA 9/25/08

Standard:	ID	Prep Date/Time
LFM/MS		
CCV/LCS	See page 040	

Reviewed By/Date: [signature] 10/8

see book # 9368 for std traceability information

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

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

HgCVAA-Prep1007

Page #:

000000021

onville Laboratory Use Only

08091 106

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

000000022

ent W.C. Hanford RC-113

t. Final Proj. Sampling Date

oject# 60049-00-001-0001

oject Contact/Phone#

nville Laboratory Project Manager O. Johnson

8W846 Del SHL TAT 15 days

te Rec'd 9/16/08 Date Due 10-1-08

Refrigerator #								A							
#/Type Container	Liquid / Solid							1P							
Volume								500							
Preservatives								—							
ANALYSES REQUESTED →		ORGANIC						INORG							
		VOA	BNA	Pest/PCB	Herb			RCP Metal Hg	CN						
		Lionville Laboratory Use Only													
								MEI							

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														
001	J17J15			Soil	9-10-08	1320								X						
002	J17J16					1335								X						
003	J17J17					1350								X						
004	J17J18					1400								X						

ecial Instructions:

S1 = HSL + ~~Zn, Sr~~ Sn, Zr

Special Instructions:

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

Relinquished by	Received by	Date	Time
		9/16/08	0930

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-113-003 | Page 1 of 1

Collector: S. Deeter	Company Contact: Joan Kessner	Telephone No.: 509-375-4655	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: 618-7 Burial Ground Verification Sampling	Sampling Location: 618-7 Burial Ground - Verif. Sampling		SAF No.: RC-113
Ice Chest No.: ERC-01-032	Field Logbook No.: EL-1395-13	COA: RG61872600	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080350		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	None									
Type of Container	P	P									
No. of Container(s)	1 RC 9/10/08	1									
Volume	~~250mL~~ 500	1000mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions. 9/10/08								RCF #	Sample
Sample No. / Matrix * / Sample Date / Sample Time											
17J15 / SOIL / 9/10/08 / 1320	X									J17HY7	D-6
17J16 / SOIL / 9/10/08 / 1335	X									J17HY8	D-5
17J17 / SOIL / 9/10/08 / 1350	X									J17HY9	D-4
17J18 / SOIL / 9/10/08 / 1400	X									J17J00	C-10

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1530 9-10-08	Received By/Stored In: JR DeBruin	Date/Time 1530 9/10/08
Relinquished By/Removed From: R DeBruin	Date/Time 1630 9/10/08	Received By/Stored In: 1060 IB	Date/Time 1630 9/10/08
Relinquished By/Removed From: 1060 IB / J.E. Bernhard	Date/Time 1210 9-15-08	Received By/Stored In: J.E. Bernhard	Date/Time 1210 9-15-08
Relinquished By/Removed From: J.E. Bernhard	Date/Time 1215 9-15-08	Received By/Stored In: FED EX	Date/Time
Relinquished By/Removed From: Fed Ex	Date/Time 9-16-08 0930	Received By/Stored In: Victor Hernandez	Date/Time 9-16-08 0930
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

(2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Thorium; Isotopic Uranium

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
Ve=Vegetation
X=Other

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

CH-EE-011

00000023

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C. Hanford

Project/SAF/SOW/Release #: RC-113

Date: 9-16-08

LvLI Batch #: 0809L106

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 791137028599
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 20°	°C	Cooler #
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 O-Johnson

Date 9-16-08

LVLI