

SAF-RC-040
300 Area D4 Waste Characterization
Sampling - Other Solid
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

No Distribution Required

KW 8/17/11
INITIAL/DATE

COMMENTS:

SDG K3493

SAF-RC-040

Rad only

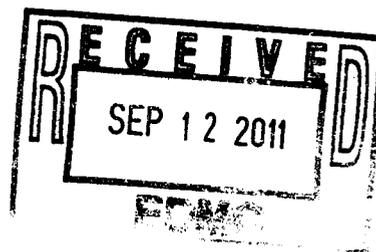
Chem only

Rad & Chem

Complete

Partial

Sample Location/Waste Site: 308 HEPAs





EBERLINE

SERVICES

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August 11, 2011

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

Reference: **P.O. #S00W235A01**
Eberline Analytical S1-07-115-7744, SDG K3493



Dear Ms. Kessner:

Enclosed is a data report for one solid (other solid) samples designated under SAF No. RC-040 received at Eberline Analytical on July 21, 2011. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

N. Joseph Verville
Client Services Manager

NJV/ljb
Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K3493 was composed of one solid (other solid) sample designated under SAF No. RC-040 with a Project Designation of: 300 Area D4 Waste Characterization Sampling – Other Solid.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist. The results without the isotopic thorium results were transmitted to WCH via e-mail on August 5, 2011. The final results were transmitted to WCH via e-mail on August 11, 2011

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Isotopic Thorium Analysis

The initial analysis of sample J1JWJ8 and its duplicate resulted in very low tracer yields. A rework was performed in an attempt to improve the yields but was not successful. The sample and duplicate were reanalyzed with new QC samples and results are reported herein.

2.3 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.4 Isotopic Plutonium Analysis

The final plating solution from the alpha Pu chemistry was split prior to electroplating; half the solution was plated for alpha counting and the other half was used to prepare the beta Pu-241 planchet. As a consequence of splitting the plating solution, the apparent tracer yields are low. No other problems were encountered during the course of the analyses.

2.5 Plutonium-241 Analysis

The final plating solution from the alpha Pu chemistry was split prior to electroplating; half the solution was plated for alpha counting and the other half was used to prepare the beta Pu-241 planchet. As a consequence of splitting the plating solution, the apparent tracer yields are low. No other problems were encountered during the course of the analyses.

2.6 Americium-241 and Curium-243/244 Analysis

No problems were encountered during the course of the analyses.

2.7 Gamma Spectroscopy

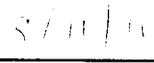
No problems were encountered during the course of the analyses.

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."



N. Joseph Verville
Client Services Manager



Date

EBRLINE ANALYTICAL / RICHMOND
SAMPLE DELIVERY GROUP K3493

SDG 7744
Contact N. Joseph Verville

Client Hanford
Contract No. S00W235A00
Case no SDG K3493

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

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Prepared by _____

Reviewed by _____

Lab id EBRLNE
Protocol RC-040
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 08/11/11

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

REPORT GUIDE

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

REPORT GUIDES

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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
Contact N. Joseph Verville

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K3493

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

REPORT GUIDES

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Form DVD-RG
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EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

LAB SAMPLE SUMMARY

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
S107115-01	J1JWJ8	308 HEPAs	SOLID		RC-040	RC-040-655	07/14/11 10:07
S107115-02	Lab Control Sample		SOLID		RC-040		
S107115-03	Method Blank		SOLID		RC-040		
S107115-04	Duplicate (S107115-01)	308 HEPAs	SOLID		RC-040		07/14/11 10:07
S107115-05	Lab Control Sample		SOLID		RC-040		
S107115-06	Method Blank		SOLID		RC-040		
S107115-07	Duplicate (S107115-01)	308 HEPAs	SOLID		RC-040		07/14/11 10:07

LAB SUMMARY

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Lab id EBRLNE
 Protocol RC-040
 Version Ver 1.0
 Form DVD-LS
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EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N.Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

QC SUMMARY

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7744	RC-040-655	J1JWJ8	SOLID	100.0	348.6 g		07/21/11	7	S107115-01	7744-001
		Method Blank	SOLID						S107115-03	7744-003
		Method Blank	SOLID						S107115-06	7744-006
		Lab Control Sample	SOLID						S107115-02	7744-002
		Lab Control Sample	SOLID						S107115-05	7744-005
		Duplicate (S107115-01)	SOLID	100.0	348.6 g		07/21/11	7	S107115-04	7744-004
		Duplicate (S107115-01)	SOLID		348.6 g		07/21/11	7	S107115-07	7744-007

QC SUMMARY

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EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N.Joseph Verville

PREP BATCH SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

TEST	MATRIX	METHOD	PREPARATION ERROR			PLANCHETS ANALYZED			QUALI- FTERS
			BATCH	2σ %	CLIENT MORE	RE BLANK	LCS	DUP/ORIG MS/ORIG	
Alpha Spectroscopy									
PU	SOLID	Plutonium, Isotopic in Solids	7296-173	8.0	1	1	1	1/1	
TH	SOLID	Thorium, Isotopic in Solids	7296-173	8.0	1	1	1	1/1	
TP	SOLID	Americium 241/Curium in Solids	7296-173	8.0	1	1	1	1/1	
U	SOLID	Uranium, Isotopic in Solids	7296-173	8.0	1	1	1	1/1	
Gas Proportional Counting									
93A	SOLID	Gross Alpha in Solids	7296-173	20.6	1	1	1	1/1	
93B	SOLID	Gross Beta in Solids	7296-173	20.6	1	1	1	1/1	
Gamma Spectroscopy									
GAM	SOLID	Gamma Scan	7296-173	7.0	1	1	1	1/1	
Liquid Scintillation Counting									
PU_L	SOLID	Plutonium 241 in Solids	7296-173	12.4	1	1	1	1/1	

Duplicates and Spikes are those with original sample in the QC Batch of some Client sample in this SDG.
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

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EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

LAB WORK SUMMARY

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

LAB SAMPLE	CLIENT SAMPLE ID									
COLLECTED	LOCATION		MATRIX			SUF-				
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
S107115-01	J1JWJ8									
07/14/11	308 HEPAs		SOLID	7744-001	93A/93	07/27/11	07/27/11	BW	Gross Alpha in Solids	
07/21/11	RC-040-655	RC-040		7744-001	93B/93	07/27/11	07/27/11	BW	Gross Beta in Solids	
				7744-001	GAM	07/25/11	07/27/11	MWT	Gamma Scan	
				7744-001	PU	08/02/11	08/05/11	BW	Plutonium, Isotopic in Solids	
				7744-001	PU_L	08/02/11	08/05/11	BW	Plutonium 241 in Solids	
				7744-001	TH	A1 08/11/11	08/11/11	BW	Thorium, Isotopic in Solids	
				7744-001	TP	08/03/11	08/03/11	BW	Americium 241/Curium in Solids	
				7744-001	U	07/28/11	07/28/11	BW	Uranium, Isotopic in Solids	
S107115-02	Lab Control Sample									
			SOLID	7744-002	93A/93	07/27/11	07/27/11	BW	Gross Alpha in Solids	
				7744-002	93B/93	07/27/11	07/27/11	BW	Gross Beta in Solids	
		RC-040		7744-002	GAM	07/25/11	07/27/11	MWT	Gamma Scan	
				7744-002	PU	08/05/11	08/05/11	BW	Plutonium, Isotopic in Solids	
				7744-002	PU_L	08/02/11	08/05/11	BW	Plutonium 241 in Solids	
				7744-002	TP	08/03/11	08/03/11	BW	Americium 241/Curium in Solids	
				7744-002	U	07/28/11	07/28/11	BW	Uranium, Isotopic in Solids	
S107115-03	Method Blank									
			SOLID	7744-003	93A/93	07/27/11	07/27/11	BW	Gross Alpha in Solids	
				7744-003	93B/93	07/27/11	07/27/11	BW	Gross Beta in Solids	
		RC-040		7744-003	GAM	07/25/11	07/27/11	MWT	Gamma Scan	
				7744-003	PU	08/02/11	08/05/11	BW	Plutonium, Isotopic in Solids	
				7744-003	PU_L	08/02/11	08/05/11	BW	Plutonium 241 in Solids	
				7744-003	TP	08/03/11	08/03/11	BW	Americium 241/Curium in Solids	
				7744-003	U	07/28/11	07/28/11	BW	Uranium, Isotopic in Solids	
S107115-04	Duplicate (S107115-01)									
07/14/11	308 HEPAs		SOLID	7744-004	93A/93	07/27/11	07/27/11	BW	Gross Alpha in Solids	
07/21/11		RC-040		7744-004	93B/93	07/27/11	07/27/11	BW	Gross Beta in Solids	
				7744-004	GAM	07/26/11	07/27/11	MWT	Gamma Scan	
				7744-004	PU	08/02/11	08/05/11	BW	Plutonium, Isotopic in Solids	
				7744-004	PU_L	08/02/11	08/05/11	BW	Plutonium 241 in Solids	
				7744-004	TP	08/03/11	08/03/11	BW	Americium 241/Curium in Solids	
				7744-004	U	07/28/11	07/28/11	BW	Uranium, Isotopic in Solids	
S107115-05	Lab Control Sample									
			SOLID	7744-005	TH	08/11/11	08/11/11	BW	Thorium, Isotopic in Solids	
		RC-040								

WORK SUMMARY

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EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

WORK SUMMARY, cont.

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

LAB SAMPLE	CLIENT SAMPLE ID									
COLLECTED	LOCATION	MATRIX	SUF-							
RECEIVED	CUSTODY	SAF No	PLANCHET	TEST	FIX	ANALYZED	REVIEWED	BY	METHOD	
S107115-06	Method Blank		7744-006	TH		08/11/11	08/11/11	BW	Thorium, Isotopic in Solids	
		SOLID								
		RC-040								
S107115-07	Duplicate (S107115-01)		7744-007	TH		08/11/11	08/11/11	BW	Thorium, Isotopic in Solids	
07/14/11	308 HEPAs	SOLID								
07/21/11		RC-040								

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	RC-040	Gross Alpha in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	RC-040	Gross Beta in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
GAM	RC-040	Gamma Scan	GAMMA_GS	1			1	1	1	4
PU	RC-040	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
PU_L	RC-040	Plutonium 241 in Solids	PU241_IE_LSC	1			1	1	1	4
TH	RC-040	Thorium, Isotopic in Solids	THISO_IE_PLATE_AEA	1			1	1	1	4
TP	RC-040	Americium 241/Curium in Solids	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
U	RC-040	Uranium, Isotopic in Solids	UIISO_PLATE_AEA	1			1	1	1	4
TOTALS				8			8	8	8	32

WORK SUMMARY

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EBERLINE ANALYTICAL / RICHMOND
SAMPLE DELIVERY GROUP K3493

7744-003

Method Blank

METHOD BLANK

SDG <u>7744</u>	Client/Case no <u>Hanford</u>	SDG <u>K3493</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>S107115-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7744-003</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>RC-040</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Gross Alpha	12587-46-1	-0.730	1.9	4.40	10.0	U	93A
Gross Beta	12587-47-2	-0.155	3.3	5.75	15.0	U	93B
Americium 241	14596-10-2	-0.039	0.040	0.189	1.00	U	TP
Curium 242	15510-73-3	0.020	0.039	0.151		U	TP
Curium 243/244	CM-243/244	0.020	0.039	0.151	1.00	U	TP
Uranium 233/234	U-233/234	0.029	0.058	0.221	1.00	U	U
Uranium 235	15117-96-1	0	0.070	0.268	1.00	U	U
Uranium 238	U-238	0	0.058	0.221	1.00	U	U
Plutonium 238	13981-16-3	0.127	0.13	0.487	1.00	U	PU
Plutonium 239/240	PU-239/240	0	0.13	0.487	1.00	U	PU
Plutonium 241	14119-32-5	2.15	7.8	13.0	15.0	U	PU_L
Potassium 40	13966-00-2	U		0.927		U	GAM
Cobalt 60	10198-40-0	U		<u>0.074</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		0.071	0.100	U	GAM
Radium 226	13982-63-3	U		<u>0.258</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>0.294</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>0.195</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>0.215</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>0.158</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		0.168		U	GAM
Thorium 232	TH-232	U		0.294		U	GAM
Uranium 235	15117-96-1	U		<u>0.361</u>	0.300	U	GAM
Uranium 238	U-238	U		8.32	10.0	U	GAM
Americium 241	14596-10-2	U		0.094	0.300	U	GAM
Antimony 125	14234-35-6	U		0.162		U	GAM
Barium 133	13981-41-4	U		0.071		U	GAM
Niobium 94	14681-63-1	U		0.063		U	GAM

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EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

7744-003

Method Blank

BLANK, cont.

SDG <u>7744</u>	Client/Case no <u>Hanford</u>	SDG <u>K3493</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>S107115-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7744-003</u>	Material/Matrix _____	<u>SOLID</u>
	SAF No <u>RC-040</u>	

QC-BLANK #79221

METHOD BLANKS

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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

7744-006

Method Blank

METHOD BLANK

SDG <u>7744</u>	Client/Case no <u>Hanford</u>	SDG <u>K3493</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>S107115-06</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7744-006</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>RC-040</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Thorium 228	14274-82-9	0	0.29	0.695	1.00	U	TH
Thorium 230	14269-63-7	-0.507	0.58	<u>1.38</u>	1.00	U	TH
Thorium 232	TH-232	0.072	0.15	0.554	1.00	U	TH

QC-BLANK #79420

Lab id <u>EBRLNE</u>
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EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

7744-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7744</u>	Client/Case no <u>Hanford</u> SDG <u>K3493</u>
Contact <u>N.Joseph Verville</u>	Contract <u>No. S00W235A00</u>
Lab sample id <u>S107115-02</u>	Client sample id <u>Lab Control Sample</u>
Dept sample id <u>7744-002</u>	Material/Matrix <u>SOLID</u>
	SAF No <u>RC-040</u>

ANALYTE	RESULT	2σ ERR	MDA	RDL	QUALI-	ADDED	2σ ERR	REC	3σ	LMTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS	TEST	pCi/g	pCi/g	%	(TOTAL)	LIMITS
Gross Alpha	104	12	3.57	10.0		93A	101	4.0	103	63-137	80-120
Gross Beta	85.4	7.1	5.90	15.0		93B	86.5	3.5	99	67-133	80-120
Americium 241	11.8	1.2	0.208	1.00		TP	12.1	0.48	98	80-120	80-120
Curium 243/244	10.0	1.0	0.180	1.00		TP	10.2	0.41	98	80-120	80-120
Uranium 233/234	11.2	1.3	0.251	1.00		U	10.7	0.43	105	77-123	80-120
Uranium 238	10.3	1.2	0.251	1.00		U	10.7	0.43	96	79-121	80-120
Plutonium 238	11.2	1.5	0.288	1.00		PU	13.7	0.55	82	80-120	80-120
Plutonium 239/240	13.0	1.6	0.288	1.00		PU	15.8	0.63	82	81-119	80-120
Plutonium 241	271	11	10.6	15.0		PU_L	312	12	87	82-118	80-120
Cobalt 60	3.15	0.23	<u>0.136</u>	0.050		GAM	3.50	0.14	90	85-115	80-120
Cesium 137	3.25	0.21	<u>0.143</u>	0.100		GAM	3.66	0.15	89	86-114	80-120

QC-LCS #79220

Lab id <u>EBRLNE</u>
Protocol <u>RC-040</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>08/11/11</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

7744-005

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7744</u>	Client/Case no <u>Hanford</u>	<u>SDG K3493</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>S107115-05</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7744-005</u>	Material/Matrix	<u>SOLID</u>
	SAF No	<u>RC-040</u>

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Thorium 230	42.5	5.6	<u>1.54</u>	1.00	TH	45.4	1.8	94	78-122	80-120

QC-LCS #79419

LAB CONTROL SAMPLES

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Lab id <u>EBRINE</u>
Protocol <u>RC-040</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>08/11/11</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

7744-004

J1JWJ8

DUPLICATE

SDG <u>7744</u>	Client/Case no <u>Hanford</u>	SDG <u>K3493</u>
Contact <u>N.Joseph Verville</u>	Contract No. <u>S00W235A00</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>S107115-04</u>	Lab sample id <u>S107115-01</u>	Client sample id <u>J1JWJ8</u>
Dept sample id <u>7744-004</u>	Dept sample id <u>7744-001</u>	Location/Matrix <u>308 HEPAs</u> <u>SOLID</u>
	Received <u>07/21/11</u>	Collected/Weight <u>07/14/11 10:07</u> <u>348.6 g</u>
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>RC-040-655</u> <u>RC-040</u>

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	DER	
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS		TEST	pCi/g	(COUNT)	pCi/g	FIERS	%	TOT
Gross Alpha	2.89	2.7	3.76	10.0	U	93A	3.25	2.9	3.82	U	-	0.2	
Gross Beta	15.7	5.0	7.15	15.0		93B	20.2	4.2	5.24		25	70	1.1
Americium 241	0.515	0.25	0.235	1.00		TP	0.290	0.16	0.214		56	112	1.5
Curium 242	0.027	0.053	0.204		U	TP	0	0.042	0.161	U	-		0.8
Curium 243/244	0.025	0.098	0.188	1.00	U	TP	0	0.077	0.185	U	-		0.4
Uranium 233/234	0.095	0.13	0.242	1.00	U	U	0.230	0.15	0.195		83	184	1.4
Uranium 235	0	0.076	0.292	1.00	U	U	0.031	0.062	0.236	U	-		0.6
Uranium 238	0.347	0.19	0.242	1.00		U	0.153	0.10	0.195	U	78	130	1.8
Plutonium 238	0.061	0.25	0.470	1.00	U	PU	0.058	0.23	0.445	U	-		0
Plutonium 239/240	0.369	0.37	0.470	1.00	U	PU	0.698	0.35	0.445		62	144	1.3
Plutonium 241	6.79	7.2	11.9	15.0	U	PU_L	5.91	8.0	13.2	U	-		0.2
Potassium 40	18.5	1.5	0.744			GAM	18.6	1.5	0.726		1	23	0.1
Cobalt 60	U		<u>0.071</u>	0.050	U	GAM	U		<u>0.074</u>	U	-		0.1
Cesium 137	0.113	0.080	0.088	0.100		GAM	0.101	0.097	0.100		11	177	0.2
Radium 226	U		<u>0.303</u>	0.100	U	GAM	U		<u>0.243</u>	U	-		0.3
Radium 228	U		<u>0.355</u>	0.200	U	GAM	U		<u>0.342</u>	U	-		0.1
Europium 152	U		<u>0.191</u>	0.100	U	GAM	U		<u>0.197</u>	U	-		0
Europium 154	U		<u>0.214</u>	0.100	U	GAM	U		<u>0.244</u>	U	-		0.2
Europium 155	U		<u>0.219</u>	0.100	U	GAM	U		<u>0.224</u>	U	-		0
Thorium 228	U		0.137		U	GAM	U		0.129	U	-		0.1
Thorium 232	U		0.355		U	GAM	U		0.342	U	-		0.1
Uranium 235	U		<u>0.442</u>	0.300	U	GAM	U		<u>0.359</u>	U	-		0.3
Uranium 238	U		8.60	10.0	U	GAM	U		8.30	U	-		0.1
Americium 241	0.890	0.18	0.240	0.300		GAM	0.472	0.38	<u>0.557</u>	U	61	94	2.0
Antimony 125	U		0.173		U	GAM	U		0.164	U	-		0.1
Barium 133	U		0.084		U	GAM	U		0.082	U	-		0
Niobium 94	U		0.061		U	GAM	U		0.072	U	-		0.2

DUPLICATES

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Lab id <u>EBRLNE</u>
Protocol <u>RC-040</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>08/11/11</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

7744-004

J1JWJ8

DUPLICATE, cont.

SDG <u>7744</u>		Client/Case no <u>Hanford</u>	<u>SDG K3493</u>
Contact <u>N. Joseph Verville</u>		Contract <u>No. S00W235A00</u>	
<u>DUPLICATE</u>	<u>ORIGINAL</u>		
Lab sample id <u>S107115-04</u>	Lab sample id <u>S107115-01</u>	Client sample id <u>J1JWJ8</u>	
Dept sample id <u>7744-004</u>	Dept sample id <u>7744-001</u>	Location/Matrix <u>308 HEPAs</u>	<u>SOLID</u>
	Received <u>07/21/11</u>	Collected/Weight <u>07/14/11 10:07</u>	<u>348.6 g</u>
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>RC-040-655</u>	<u>RC-040</u>

QC-DUP#1 79222

300 Area D4 Waste Characterization Sampling - Other
Solid

Lab id <u>EBRLNE</u>
Protocol <u>RC-040</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>08/11/11</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

7744-007

J1JWJ8

DUPLICATE

SDG <u>7744</u>	Client/Case no <u>Hanford</u>	SDG <u>K3493</u>
Contact <u>N.Joseph Verville</u>	Contract No. <u>S00W235A00</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>S107115-07</u>	Lab sample id <u>S107115-01</u>	Client sample id <u>J1JWJ8</u>
Dept sample id <u>7744-007</u>	Dept sample id <u>7744-001</u>	Location/Matrix <u>308 HEPAS</u> <u>SOLID</u>
	Received <u>07/21/11</u>	Collected/Weight <u>07/14/11 10:07</u> <u>348.6 g</u>
	% solids <u>100.0</u>	Custody/SAF No <u>RC-040-655</u> <u>RC-040</u>

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	0.180	0.36	0.665	1.00	U	TH	0.173	0.35	0.829	U	-	0	
Thorium 230	<u>-0.601</u>	0.48	<u>1.19</u>	1.00	U	TH	-0.519	0.52	<u>1.47</u>	U	-	0.2	
Thorium 232	0	0.12	0.460	1.00	U	TH	0	0.17	0.662	U	-	0	

QC-DUP#1 79421

300 Area D4 Waste Characterization Sampling - Other Solid

DUPLICATES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>RC-040</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>08/11/11</u>

EBERLINE ANALYTICAL / RICHMOND
SAMPLE DELIVERY GROUP K3493

7744-001

J1JWJ8

DATA SHEET

SDG <u>7744</u>	Client/Case no <u>Hanford</u>	SDG <u>K3493</u>
Contact <u>N.Joseph Verville</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>S107115-01</u>	Client sample id <u>J1JWJ8</u>	
Dept sample id <u>7744-001</u>	Location/Matrix <u>308 HEPAs</u>	<u>SOLID</u>
Received <u>07/21/11</u>	Collected/Weight <u>07/14/11 10:07</u>	<u>348.6 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-040-655</u>	<u>RC-040</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	3.25	2.9	3.82	10.0	U	93A
Gross Beta	12587-47-2	20.2	4.2	5.24	15.0		93B
Americium 241	14596-10-2	0.290	0.16	0.214	1.00		TP
Curium 242	15510-73-3	0	0.042	0.161		U	TP
Curium 243/244	CM-243/244	0	0.077	0.185	1.00	U	TP
Thorium 228	14274-82-9	0.173	0.35	0.829	1.00	U	TH
Thorium 230	14269-63-7	-0.519	0.52	<u>1.47</u>	1.00	U	TH
Thorium 232	TH-232	0	0.17	0.662	1.00	U	TH
Uranium 233/234	U-233/234	0.230	0.15	0.195	1.00		U
Uranium 235	15117-96-1	0.031	0.062	0.236	1.00	U	U
Uranium 238	U-238	0.153	0.10	0.195	1.00	U	U
Plutonium 238	13981-16-3	0.058	0.23	0.445	1.00	U	PU
Plutonium 239/240	PU-239/240	0.698	0.35	0.445	1.00		PU
Plutonium 241	14119-32-5	5.91	8.0	13.2	15.0	U	PU_L
Potassium 40	13966-00-2	18.6	1.5	0.726			GAM
Cobalt 60	10198-40-0	U		<u>0.074</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.101	0.097	0.100	0.100		GAM
Radium 226	13982-63-3	U		<u>0.243</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>0.342</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>0.197</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>0.244</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>0.224</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		0.129		U	GAM
Thorium 232	TH-232	U		0.342		U	GAM
Uranium 235	15117-96-1	U		<u>0.359</u>	0.300	U	GAM
Uranium 238	U-238	U		8.30	10.0	U	GAM
Americium 241	14596-10-2	0.472	0.38	<u>0.557</u>	0.300	U	GAM
Antimony 125	14234-35-6	U		0.164		U	GAM

Lab id	<u>EBRLNE</u>
Protocol	<u>RC-040</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-DS</u>
Version	<u>3.06</u>
Report date	<u>08/11/11</u>

EBERLINE ANALYTICAL / RICHMOND
 SAMPLE DELIVERY GROUP K3493

7744-001

J1JWJ8

DATA SHEET, cont

SDG <u>7744</u>	Client/Case no <u>Hanford</u>	SDG <u>K3493</u>
Contact <u>N. Joseph Verville</u>	Contract No. <u>S00W235A00</u>	
Lab sample id <u>S107115-01</u>	Client sample id <u>J1JWJ8</u>	
Dept sample id <u>7744-001</u>	Location/Matrix <u>308 HEPAs</u>	<u>SOLID</u>
Received <u>07/21/11</u>	Collected/Weight <u>07/14/11 10:07</u>	<u>348.6 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-040-655</u>	<u>RC-040</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Barium 133	13981-41-4	U		0.082		U	GAM
Niobium 94	14681-63-1	U		0.072		U	GAM

300 Area D4 Waste Characterization Sampling - Other
 Solid

Lab id <u>EBRLNE</u>
Protocol <u>RC-040</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>08/11/11</u>

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7744
Contact N.Joseph Verville

Client Hanford
Contract No. S00W235A00
Contract SDG K3493

RESULTS

LAB	RAW	SUF-		Plutonium	Plutonium	
SAMPLE ID	TEST	FIX	PLANCHET	CLIENT SAMPLE ID	238	239/240
Preparation batch 7296-173						
S107115-01			7744-001	J1JWJ8	U	0.698
S107115-02			7744-002	Lab Control Sample	ok	ok
S107115-03			7744-003	Method Blank	U	U
S107115-04			7744-004	Duplicate (S107115-01)	- U	ok U
Nominal values and limits from method						
				RDLs (pCi/g)	1.00	1.00

METHOD PERFORMANCE

LAB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST	FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7296-173 2σ prep error 8.0 % Reference Lab Notebook 7296 pg. 173																
S107115-01			J1JWJ8	0.445	0.500			40		108			19	08/01/11	08/02	SS-013
S107115-02			Lab Control Sample	0.288	0.500			41		146				08/01/11	08/05	SS-049
S107115-03			Method Blank	0.487	0.500			44		101				08/01/11	08/02	SS-031
S107115-04			Duplicate (S107115-01)	0.470	0.500			43		101			19	08/01/11	08/02	SS-032
Nominal values and limits from method																
				1.00	0.500			30-110		100	100			180		

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
SPP-060	Soil Preparation, rev 0	
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1	
CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 12	
CP-008	Heavy Element Electroplating, rev 13	

AVERAGES ± 2 SD	MDA	<u>0.422</u> ± <u>0.183</u>
FOR 4 SAMPLES	YIELD	<u>42</u> ± <u>4</u>

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol RC-040
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 08/11/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

Test TH Matrix SOLID
 SDG 7744
 Contact N. Joseph Verville

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOLIDS
 ALPHA SPECTROSCOPY

Client Hanford
 Contract No. S00W235A00
 Contract SDG K3493

RESULTS

LAB	RAW	SUF-				
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Thorium 228	Thorium 230	Thorium 232
Preparation batch 7296-173						
S107115-01	A1	7744-001	J1JWJ8	U	U	U
S107115-05		7744-005	Lab Control Sample		ok	
S107115-06		7744-006	Method Blank	U	U	U
S107115-07		7744-007	Duplicate (S107115-01)	- U	- U	- U
Nominal values and limits from method			RDLs (pCi/g)	1.00	1.00	1.00

METHOD PERFORMANCE

LAB	RAW	SUF-	MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7296-173			2σ prep error 8.0 %			Reference Lab Notebook 7296 pg. 173									
S107115-01	A1	J1JWJ8	<u>1.47</u>	0.125			72		183			28	08/10/11	08/11	SS-031
S107115-05		Lab Control Sample	<u>1.54</u>	0.125			67		183				08/10/11	08/11	SS-033
S107115-06		Method Blank	<u>1.38</u>	0.125			88		184				08/10/11	08/11	SS-034
S107115-07		Duplicate (S107115-01)	<u>1.19</u>	0.125			92		195			28	08/10/11	08/11	SS-035
Nominal values and limits from method			1.00	0.125			30-110		150			180			

PROCEDURES REFERENCE THISO_IE_PLATE_AEA
 SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 1
 CP-900 Thorium in Water and Dissolved Solid Samples by
 Extraction Chromatography, rev 5
 CP-008 Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD MDA 1.40 ± 0.303
 FOR 4 SAMPLES YIELD 80 ± 24

Lab id EBRLNE
 Protocol RC-040
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 08/11/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

LAB METHOD SUMMARY

AMERICIUM 241/CURIUM IN SOLIDS

ALPHA SPECTROSCOPY

Test TP Matrix SOLID
 SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Contract SDG K3493

RESULTS

LAB	RAW	SUF-		Americium	Curium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	241	243/244

Preparation batch 7296-173

S107115-01	7744-001	J1JWJ8		0.290	U
S107115-02	7744-002	Lab Control Sample		ok	ok
S107115-03	7744-003	Method Blank		U	U
S107115-04	7744-004	Duplicate (S107115-01)		ok	- U

Nominal values and limits from method	RDLs (pCi/g)	1.00	1.00
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METHOD PERFORMANCE

LAB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS		ANAL-	
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID		pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7296-173 2σ prep error 8.0 % Reference Lab Notebook 7296 pg. 173

S107115-01	J1JWJ8		0.214	0.500				88		129			20	08/02/11	08/03	SS-040
S107115-02	Lab Control Sample		0.208	0.500				94		129				08/02/11	08/03	SS-049
S107115-03	Method Blank		0.189	0.500				92		129				08/02/11	08/03	SS-050
S107115-04	Duplicate (S107115-01)		0.235	0.500				82		129			20	08/02/11	08/03	SS-051

Nominal values and limits from method	1.00	0.500	30-110	100	180
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PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1	
CP-963	Americium and Curium in Water and Dissolved Samples by Extraction Chromatography, rev 6	
CP-008	Heavy Element Electroplating, rev 13	

AVERAGES ± 2 SD	MDA	<u>0.212</u> ± <u>0.038</u>
FOR 4 SAMPLES	YIELD	<u>89</u> ± <u>11</u>

Lab id EBRLNE
 Protocol RC-040
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 08/11/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test U Matrix SOLID
 SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Contract SDG K3493

RESULTS

LAB	RAW	SUF-		Uranium		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	233/234	Uranium 235	Uranium 238
Preparation batch 7296-173						
S107115-01		7744-001	J1JWJ8	0.230	U	U
S107115-02		7744-002	Lab Control Sample	ok		ok
S107115-03		7744-003	Method Blank	U	U	U
S107115-04		7744-004	Duplicate (S107115-01)	ok U	- U	ok
Nominal values and limits from method				RDLs (pCi/g)	1.00	1.00
					1.00	1.00

METHOD PERFORMANCE

LAB	RAW	SUF-		MAX MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID		pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD PREPARED	YZED DETECTOR
Preparation batch 7296-173			2σ prep error 8.0 %	Reference Lab Notebook 7296 pg. 173										
S107115-01		J1JWJ8		0.236	0.500			84		115			14 07/27/11	07/28 SS-059
S107115-02		Lab Control Sample		0.251	0.500			90		115			07/27/11	07/28 SS-060
S107115-03		Method Blank		0.268	0.500			69		115			07/27/11	07/28 SS-061
S107115-04		Duplicate (S107115-01)		0.292	0.500			67		116			14 07/27/11	07/28 SS-062
Nominal values and limits from method				1.00	0.500			30-110		100	100		180	

PROCEDURES REFERENCE UIISO_PLATE_AEA
 SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 1
 CP-921 Uranium in Water and Dissolved Samples by
 Extraction Chromatography, rev 5
 CP-008 Heavy Element Electroplating, rev 13

AVERAGES ± 2 SD MDA 0.262 ± 0.048
 FOR 4 SAMPLES YIELD 78 ± 23

METHOD SUMMARIES

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Lab id EBRLNE
 Protocol RC-040
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 Version 3.06
 Report date 08/11/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

LAB METHOD SUMMARY

GROSS ALPHA IN SOLIDS
GAS PROPORTIONAL COUNTING

Test 93A Matrix SOLID
SDG 7744
Contact N. Joseph Verville

Client Hanford
Contract No. S00W235A00
Contract SDG K3493

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha
Preparation batch 7296-173				
S107115-01	93	7744-001	J1JWJ8	U
S107115-02	93	7744-002	Lab Control Sample	ok
S107115-03	93	7744-003	Method Blank	U
S107115-04	93	7744-004	Duplicate (S107115-01)	- U

Nominal values and limits from method RDLs (pCi/g) 10.0

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	RESID	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	mg	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR
Preparation batch 7296-173 2σ prep error 20.6 % Reference Lab Notebook 7296 pg. 173															
S107115-01	93	J1JWJ8	3.82	0.100			56		100			13	07/26/11	07/27	GRB-112
S107115-02	93	Lab Control Sample	3.57	0.100			64		100				07/26/11	07/27	GRB-216
S107115-03	93	Method Blank	4.40	0.100			65		100				07/26/11	07/27	GRB-105
S107115-04	93	Duplicate (S107115-01)	3.76	0.100			54		100			13	07/26/11	07/27	GRB-107

Nominal values and limits from method 10.0 0.100 0-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 1
SPP-125 Gross Alpha and Gross Beta in Dissolved Solids,
rev 3

AVERAGES ± 2 SD MDA 3.89 ± 0.716
FOR 4 SAMPLES RESIDUE 60 ± 11

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Protocol RC-040
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Version 3.06
Report date 08/11/11

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

LAB METHOD SUMMARY

GROSS BETA IN SOLIDS

GAS PROPORTIONAL COUNTING

Test 93B Matrix SOLID
 SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Contract SDG K3493

RESULTS

LAB	RAW	SUF-		
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta

Preparation batch 7296-173

S107115-01	93	7744-001	J1JWJ8	20.2
S107115-02	93	7744-002	Lab Control Sample	ok
S107115-03	93	7744-003	Method Blank	U
S107115-04	93	7744-004	Duplicate (S107115-01)	ok

Nominal values and limits from method RDLs (pCi/g) 15.0

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	RESID	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	mg	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7296-173 2σ prep error 20.6 % Reference Lab Notebook 7296 pg. 173

S107115-01	93	J1JWJ8	5.24	0.100			56	100				13	07/26/11	07/27	GRB-112
S107115-02	93	Lab Control Sample	5.90	0.100			64	100					07/26/11	07/27	GRB-216
S107115-03	93	Method Blank	5.75	0.100			65	100					07/26/11	07/27	GRB-105
S107115-04	93	Duplicate (S107115-01)	7.15	0.100			54	100				13	07/26/11	07/27	GRB-107

Nominal values and limits from method 15.0 0.100 0-250 100 180

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1
	SPP-125	Gross Alpha and Gross Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD	MDA	<u>6.01</u> ± <u>1.62</u>
FOR 4 SAMPLES	RESIDUE	<u>60</u> ± <u>11</u>

Lab id	<u>EBRLNE</u>
Protocol	<u>RC-040</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-LMS</u>
Version	<u>3.06</u>
Report date	<u>08/11/11</u>

METHOD SUMMARIES

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EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3493

LAB METHOD SUMMARY

PLUTONIUM 241 IN SOLIDS

LIQUID SCINTILLATION COUNTING

Test PU L Matrix SOLID
 SDG 7744
 Contact N.Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Contract SDG K3493

RESULTS

LAB	RAW	SUF-		Plutonium
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	241

Preparation batch 7296-173

S107115-01	7744-001	J1JWJ8		U
S107115-02	7744-002	Lab Control Sample		ok
S107115-03	7744-003	Method Blank		U
S107115-04	7744-004	Duplicate (S107115-01)		- U

Nominal values and limits from method RDLs (pCi/g) 15.0

METHOD PERFORMANCE

LAB	RAW	SUF-	MDA	ALIQ	PREP	DILU-	YIELD	EFF	COUNT	FWHM	DRIFT	DAYS	ANAL-		
SAMPLE ID	TEST FIX	CLIENT SAMPLE ID	pCi/g	g	FAC	TION	%	%	min	keV	KeV	HELD	PREPARED	YZED	DETECTOR

Preparation batch 7296-173 2σ prep error 12.4 % Reference Lab Notebook 7296 pg. 173

S107115-01	J1JWJ8		13.2	0.500			37	100				19	08/01/11	08/02	LSC-004
S107115-02	Lab Control Sample		10.6	0.500			46	100					08/01/11	08/02	LSC-004
S107115-03	Method Blank		13.0	0.500			38	100					08/01/11	08/02	LSC-004
S107115-04	Duplicate (S107115-01)		11.9	0.500			41	100				19	08/01/11	08/02	LSC-004

Nominal values and limits from method 15.0 0.500 30-110 50 180

PROCEDURES	REFERENCE	PU241_IE_LSC
SPP-060	Soil Preparation, rev 0	
SPP-070	Soil Dissolution, < 1.0g Aliquot, rev 1	
CP-941	Plutonium in Water and Dissolved Samples by Extraction Chromatography, rev 12	
RP-948	Plutonium-241 by Liquid Scintillation Counting, rev 4	

AVERAGES ± 2 SD	MDA	<u>12.2</u>	±	<u>2.39</u>
FOR 4 SAMPLES	YIELD	<u>40</u>	±	<u>8</u>

Lab id EBRLNE
 Protocol RC-040
 Version Ver 1.0
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 Version 3.06
 Report date 08/11/11

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N.Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG_K3493

REPORT GUIDE

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.

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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

REPORT GUIDE

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

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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SUMMARY DATA SECTION

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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

REPORT GUIDE

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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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

REPORT GUIDE

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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SUMMARY DATA SECTION

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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

GUIDE, cont.

DATA SHEET

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

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

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

The following values are underlined to indicate possible problems:

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

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N.Joseph Verville

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 Case no SDG K3493

GUIDE, cont.

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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SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

REPORT GUIDE

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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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

REPORT GUIDE

DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

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SAMPLE DELIVERY GROUP K3493

SDG 7744
Contact N. Joseph Verville

Client Hanford
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Case no SDG K3493

GUIDE , cont .

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.

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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N.Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

REPORT GUIDE

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

2. The error of ADDED.

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

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

REPORT GUIDES

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SAMPLE DELIVERY GROUP K3493

SDG 7744
Contact N. Joseph Verville

Client Hanford
Contract No. S00W235A00
Case no SDG_K3493

GUIDE, cont.

MATRIX SPIKE

for the recovery.

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

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

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SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

REPORT GUIDE

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'

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SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

GUIDE, cont.

METHOD SUMMARY

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

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

Lab id EBRLNE
 Protocol RC-040
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/11/11

REPORT GUIDES

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SUMMARY DATA SECTION

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EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

GUIDE, cont.

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

METHOD SUMMARY

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

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

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

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

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

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

Lab id EBRLNE
 Protocol RC-040
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/11/11

EBERLINE ANALYTICAL / RICHMOND

SAMPLE DELIVERY GROUP K3493

SDG 7744
 Contact N. Joseph Verville

Client Hanford
 Contract No. S00W235A00
 Case no SDG K3493

GUIDE , cont .

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.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 40

Lab id EBRLNE
 Protocol RC-040
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 08/11/11



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

Client: W. C. HANFORD City RICHMOND State WA
 Date/Time received 07/21/11 0930 CoC No. RC-040-655
 Container I.D. No. GWS-215 Requested TAT (Days) 15 P.D. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [] No [] N/A []
3. Custody seals on sample containers intact? Yes [] No [] N/A []
4. Custody seals on sample containers dated & signed? Yes [] No [] N/A []
5. Packing material is: Wet [] Dry []
6. Number of samples in shipping container: 1 Sample Matrix SOLID
7. Number of containers per sample: 1 (Or see CoC)
8. Samples are in correct container Yes [] No []
9. Paperwork agrees with samples? Yes [] No []
10. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
11. Samples are: In good condition [] Leaking [] Broken Container [] Missing []
12. Samples are: Preserved [] Not preserved [] pH N/A Preservative
13. Describe any anomalies:
14. Was P.M. notified of any anomalies? Yes [] No [] Date
15. Inspected by [Signature] Date: 07/21/11 Time: 1045

Customer Sample No.	Beta/Gamma com	Ion Chamber mR/hr	Wide	Customer Sample No.	Beta/Gamma com	Ion Chamber mR/hr	Wide
<u>J1JWJ8</u>	<u>250</u>						

Ion Chamber Ser. No. Calibration date
 Alpha Meter Ser. No. Calibration date
 Beta/Gamma Meter Ser. No. 100482 Calibration date 24 SEP 10



264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

9 August 2011

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

Subject: Analytical Data Package

Dear Ms. Kessner:

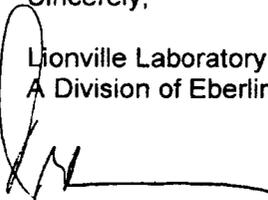
Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLI Batch #	1107105
SDG #	K3493
SAF #	RC-040
Date Received	07/21/11
# Samples	1
Matrix	OTHER SOLID
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	
Herbicides	
Metals	X
Inorganics	

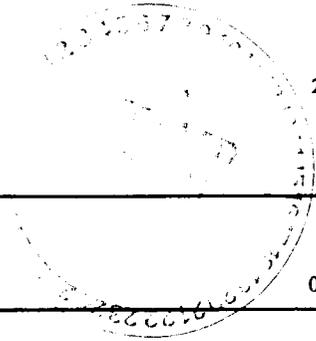
The electronic data deliverable (EDD) has been emailed. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,

Lionville Laboratory
A Division of Eberline Analytical Corporation


Orlette S. Johnson
Project Manager





264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-040 Project Number: K3493 Project Manager: Joan Kessner	Reported: 08/08/2011 17:06
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Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1JWJ8	1107105-01	Other Solid	07/14/2011 10:07	07/21/2011 10:00



264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-040
LVL#: 1107105
SDG/SAF#: K3493/RC-040

W.O.#: 60049-001-001-0001-00
Date Received: 07-21-11

METALS

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LVL) 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 solid sample and 1 TCLP leachate sample.
2. The samples were prepared and analyzed in accordance with methods listed on the data report forms. The solid sample was reported on a wet weight, 'as-received' basis.

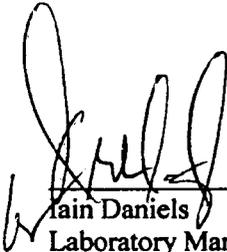
The TCLP leachate sample was analyzed with a 5-fold dilution for ICP metals due to sample matrix.

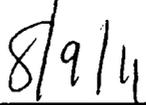
3. All analyses were performed within the required holding times.
4. Please refer to the Sample Receipt Check List for any sample discrepancies in LVL's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).
7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation, MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}.
8. All ICP Interference Check Standards were within control limits.
9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer. All laboratory control samples (LCS) were within the 80-120% control limits.
10. The soil matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits.

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:

<u>Sample ID</u>	<u>Element</u>	<u>PDS Concentration (ppb)</u>	<u>PDS % Recovery</u>
J1JWJ8	Barium	1,100	135.0
	Lead	100	128.1

12. The soil duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limit criteria. The $\pm 20\%$ RPD control limit applies to sample results greater than ten times the MDL. The sample result for Cadmium was less than ten times the MDL.
13. The TCLP leachate duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit criteria. The $\pm 20\%$ RPD control limit applies to sample results greater than ten times the MDL. The sample result for Chromium was less than ten times the MDL.
14. The TCLP extract from sample J1JWJ8 was selected for the matrix spike (MS) for this analytical batch.
15. The matrix spike for 2 analytes were below 50% recovery (Barium 17.5%, Silver 37.6%). The recoveries in the TCLP Leachate were 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. The TCLP matrix spike was analyzed and reported with a 5-fold dilution for all TCLP leachate analytes due to a high concentration of Barium in the sample
16. For the purposes of this report, the data have 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.
17. LvL 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.
18. 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.


 Brian Daniels
 Laboratory Manager
 Lionville Laboratory
 alm-jjw/07-105st%hg


 Date



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.
2620 Fermi Avenue
Richland WA, 99354

Project: RC-040
Project Number: K3493
Project Manager: Joan Kessner

Reported:
08/08/2011 17:06

Notes and Definitions

- U Analyte included in the analysis, but not detected
- J Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
- B Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag)
- * Value outside QC acceptance criteria
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- wet Sample results reported on a wet weight basis
- RPD Relative Percent Difference



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Reported:
 08/08/2011 17:06

J1JWJ8
1107105-01 (Other Solid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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Lionville Laboratory

Metals by SW846 6000/7000 series

Arsenic	1.00 U	1.00	mg/kg wet	1	L107264	07/26/2011	08/04/2011	6010B
Barium	822	0.500	mg/kg wet	1	L107264	07/26/2011	08/04/2011	6010B
Cadmium	0.372	0.200	mg/kg wet	1	L107264	07/26/2011	08/04/2011	6010B
Chromium	1.72	0.300	mg/kg wet	1	L107264	07/26/2011	08/04/2011	6010B
Lead	16.8	0.500	mg/kg wet	1	L107264	07/26/2011	08/04/2011	6010B
Selenium	0.350 B	1.00	mg/kg wet	1	L107264	07/26/2011	08/04/2011	6010B
Silver	0.200 U	0.200	mg/kg wet	1	L107264	07/26/2011	08/04/2011	6010B
Mercury	0.118	0.0281	mg/kg	1	L107259	07/25/2011	07/26/2011	7471A

TCLP Metals by SW846 1311 6000/7000 series

Arsenic	0.0750 U	0.0750	mg/L	5	L108042	08/03/2011	08/06/2011	6010
Barium	0.585	0.00500	mg/L	5	L108042	08/03/2011	08/06/2011	6010
Cadmium	0.0176	0.0150	mg/L	5	L108042	08/03/2011	08/06/2011	6010
Chromium	0.0264	0.0250	mg/L	5	L108042	08/03/2011	08/06/2011	6010
Lead	0.175	0.0500	mg/L	5	L108042	08/03/2011	08/06/2011	6010
Selenium	0.100 U	0.100	mg/L	5	L108042	08/03/2011	08/06/2011	6010
Silver	0.0300 U	0.0300	mg/L	5	L108042	08/03/2011	08/06/2011	6010
Mercury	0.000438	0.000200	mg/L	1	L108048	08/03/2011	08/03/2011	7470



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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-040 Project Number: K3493 Project Manager: Joan Kessner	Reported: 08/08/2011 17:06
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Metals by SW846 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L107259 - SW 7471A Prep									
Blank (L107259-BLK1)					Prepared: 07/25/2011 Analyzed: 07/26/2011				
Mercury	0.0300 U	0.0300	mg/kg						
Duplicate (L107259-DUP3)					Source: 1107105-01 Prepared: 07/25/2011 Analyzed: 07/26/2011				
Mercury	0.104	0.0257	mg/kg		0.118			12.6	20
Matrix Spike (L107259-MS3)					Source: 1107105-01 Prepared: 07/25/2011 Analyzed: 07/26/2011				
Mercury	0.224	0.0250	mg/kg	0.13889	0.118	75.9	75-125		20
Reference (L107259-SRM1)					Prepared: 07/25/2011 Analyzed: 07/26/2011				
Mercury	1.25	0.0290	mg/kg	1.2900		97.0	62.6-138		
Batch L107264 - SW 3050B									
Blank (L107264-BLK1)					Prepared: 07/26/2011 Analyzed: 08/04/2011				
Arsenic	0.714 U	0.714	mg/kg wet						
Barium	0.357 U	0.357	mg/kg wet						
Cadmium	0.143 U	0.143	mg/kg wet						
Chromium	0.214 U	0.214	mg/kg wet						
Lead	0.357 U	0.357	mg/kg wet						
Selenium	0.714 U	0.714	mg/kg wet						
Silver	0.143 U	0.143	mg/kg wet						
Duplicate (L107264-DUP1)					Source: 1107105-01 Prepared: 07/26/2011 Analyzed: 08/04/2011				
Arsenic	0.943 U	0.943	mg/kg wet		1.00 U				20
Barium	854	0.472	mg/kg wet		822			3.82	20
Cadmium	0.248	0.189	mg/kg wet		0.372			39.9*	20
Chromium	1.44	0.283	mg/kg wet		1.72			17.4	20
Lead	12.2	0.472	mg/kg wet		16.8			31.4*	20
Selenium	0.943 U	0.943	mg/kg wet		0.350				20
Silver	0.189 U	0.189	mg/kg wet		0.200 U				20



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Metals by SW846 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L107264 - SW 3050B									
Matrix Spike (L107264-MS1)		Source: 1107105-01		Prepared: 07/26/2011		Analyzed: 08/04/2011			
Arsenic	159	0.962	mg/kg wet	192.31	1.00 U	82.4	75-125		20
Barium	4070	0.481	mg/kg wet	192.31	822	1690*	75-125		20
Cadmium	4.68	0.192	mg/kg wet	4.8077	0.372	89.5	75-125		20
Chromium	16.4	0.288	mg/kg wet	19.231	1.72	76.1	75-125		20
Lead	52.0	0.481	mg/kg wet	48.077	16.8	73.1*	75-125		20
Selenium	156	0.962	mg/kg wet	192.31	0.350	80.8	75-125		20
Silver	4.77	0.192	mg/kg wet	4.8077	0.200 U	99.2	75-125		20
Reference (L107264-SRM1)				Prepared: 07/26/2011 Analyzed: 08/04/2011					
Arsenic	121	2.88	mg/kg wet	114.00		106	82.8-117.54		
Barium	316	1.44	mg/kg wet	307.00		103	79.8-120.2		
Cadmium	229	0.577	mg/kg wet	225.00		102	83.6-116.4		
Chromium	87.6	0.865	mg/kg wet	77.200		114	73.3-126.4		
Lead	197	1.44	mg/kg wet	190.00		103	81.6-118.4		
Selenium	189	2.88	mg/kg wet	187.00		101	75.9-124.6		
Silver	84.6	0.577	mg/kg wet	83.500		101	82.7-117.1		



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TCLP Metals by SW846 1311 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L108042 - SW 3010A										
Blank (L108042-BLK1)					Prepared: 08/03/2011 Analyzed: 08/05/2011					
Arsenic	0.0150	U	0.0150	mg/L						
Barium	0.00100	U	0.00100	mg/L						
Cadmium	0.00300	U	0.00300	mg/L						
Chromium	0.00500	U	0.00500	mg/L						
Lead	0.0100	U	0.0100	mg/L						
Selenium	0.0200	U	0.0200	mg/L						
Silver	0.00600	U	0.00600	mg/L						
Blank (L108042-BLK4)					Prepared: 08/03/2011 Analyzed: 08/05/2011					
Arsenic	0.0150	U	0.0150	mg/L						
Barium	0.00100	U	0.00100	mg/L						
Cadmium	0.00300	U	0.00300	mg/L						
Chromium	0.00500	U	0.00500	mg/L						
Lead	0.0100	U	0.0100	mg/L						
Selenium	0.0200	U	0.0200	mg/L						
Silver	0.00600	U	0.00600	mg/L						
LCS (L108042-BS1)					Prepared: 08/03/2011 Analyzed: 08/05/2011					
Arsenic	10.0		0.0150	mg/L	10.000		100	80-120		20
Barium	5.12		0.00100	mg/L	5.0000		102	80-120		20
Cadmium	0.253		0.00300	mg/L	0.25000		101	80-120		20
Chromium	0.523		0.00500	mg/L	0.50000		105	80-120		20
Lead	2.49		0.0100	mg/L	2.5000		99.7	80-120		20
Selenium	9.64		0.0200	mg/L	10.000		96.4	80-120		20
Silver	0.509		0.00600	mg/L	0.50000		102	80-120		20
Duplicate (L108042-DUP4)					Source: 1107105-01		Prepared: 08/03/2011 Analyzed: 08/06/2011			
Arsenic	0.0750	U	0.0750	mg/L		0.0750 U				20
Barium	0.556		0.00500	mg/L		0.585			5.08	20
Cadmium	0.0168		0.0150	mg/L		0.0176			4.67	20
Chromium	0.0196	B	0.0250	mg/L		0.0264			29.8*	20
Lead	0.164		0.0500	mg/L		0.175			6.59	20
Selenium	0.100	U	0.100	mg/L		0.100 U				20
Silver	0.0300	U	0.0300	mg/L		0.0300 U				20

0000000000



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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-040 Project Number: K3493 Project Manager: Joan Kessner	Reported: 08/08/2011 17:06
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TCLP Metals by SW846 1311 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L108042 - SW 3010A									
Matrix Spike (L108042-MS4)		Source: 1107105-01		Prepared: 08/03/2011		Analyzed: 08/06/2011			
Arsenic	5.22	0.0750	mg/L	5.0000	0.0750 U	104	50-1000		20
Barium	18.1	0.00500	mg/L	100.00	0.585	17.5*	50-1000		20
Cadmium	1.04	0.0150	mg/L	1.0000	0.0176	103	50-1000		20
Chromium	5.30	0.0250	mg/L	5.0000	0.0264	105	50-1000		20
Lead	4.34	0.0500	mg/L	5.0000	0.175	83.4	50-1000		20
Selenium	1.01	0.100	mg/L	1.0000	0.100 U	101	50-1000		20
Silver	1.88	0.0300	mg/L	5.0000	0.0300 U	37.6*	50-1000		20
Batch L108048 - SW 7470A Prep									
Blank (L108048-BLK1)				Prepared & Analyzed: 08/03/2011					
Mercury	0.000200 U	0.000200	mg/L						
Blank (L108048-BLK3)				Prepared & Analyzed: 08/03/2011					
Mercury	0.000200 U	0.000200	mg/L						
LCS (L108048-BS1)				Prepared & Analyzed: 08/03/2011					
Mercury	0.00477	0.000200	mg/L	0.0050606	94.3	80-120			20
Duplicate (L108048-DUP3)		Source: 1107105-01		Prepared & Analyzed: 08/03/2011					
Mercury	0.000435	0.000200	mg/L	0.000438	0.687				20
Matrix Spike (L108048-MS3)		Source: 1107105-01		Prepared & Analyzed: 08/03/2011					
Mercury	0.190	0.0100	mg/L	0.20212	0.000438	93.8	50-1000		20

SAMPLE DIGESTION RECORD

Digestion Batch #: L107264
 Date/Time Initiated: 7/26/11 1110
 Date/Time Completed: 7/26/11 1745
 Analyst: JJS
 Matrix (circle): Soil Water Other
 Method (circle one): 3005A 3010A 3050 200.7 (1994)
 pH/Turbidity: N/A for Solids.

Digested/ Undigested (circle one)
 Balance #: 1314
 Balance Cal Verification: Y NA
 Temp: 96
 BLOCK 1 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH	Type: To/Sol/TC	Texture T-6 7/26/11 305	Color / Appearance	Artifact	Turb
1107105-01		0.50	50		TO	X coarse	Hepa Filter, white	N/A	N/A
L107264-Dq		0.53	50						
MSI	0.5	0.52	50						
P/KI		0.70	50			coarse	Boiling chips		
9Am	<u>0.5</u>	0.52	50			fine	dusty pink sand		

JJS
7/26/11

Spiking IDs / Expiration Date:

MS#: 1101064

 LCS#: 1100103

Reagent IDs:

HNO₃ K14036
 HCl K19054
 H₂O₂ K03A11
 1:1 HNO₃ 037-041-05
 1:1 HCl _____

File ID#:

Data Review By/Date:

JJS 7/27/11

SAMPLE DIGESTION RECORD

Digestion Batch #: L108042
 Date/Time Initiated: 8/17/11 1140
 Date/Time Completed: 8/17/11 1235
 Analyst: JJS

Digested / Undigested (circle one)
 Balance #: ~~111~~
 Balance Cal Verification: Y (NA)
 Temp: 98
 BLOCK 1 (2) (circle one)

Matrix (circle one): Soil Water Other
 Method (circle one): 3005A 3010A 3050 200.7 (1994)
 pH/Turbidity: N/A for Solids.

NOTE: All temperatures are recorded as corrected temperatures

Clear/Colorless

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/TC	Texture	Color / Appearance	Artifact	Turb
110117-06		50	50		TC	N/A	CLC	N/A	N/A
L108042-01		50	50						
-m91	0.5	50	50						
1106042-01		50	50				clear/brown		
L108042-02		50	50						
-m92	0.5	50	50						
1106042-02		50	50				clear/brown		
1107074-02		50	50				clear/yellow		
L108042-03		50	50						
-m93	0.5	50	50						
1107105-01		50	50				CLC		
L108042-04		50	50						
-m94	0.5	50	50						
1107179-01		50	50				clear/yellow		
L108042-05		50	50						
-m95	0.5	50	50						
1107179-02		50	50				clear/yellow		
L108042-06		50	50				CLC		
-m96	0.5	50	50				CLC		
-m97		50	50				CLC		
-m98		50	50				CLC		
-m99		50	50				CLC		
-m100		50	50				CLC		

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JJS
8/17/11

Spiking IDs / Expiration Date:

MS#: 1100338
 100 217

LCS#: 1101020

Reagent IDs:

HNO₃ K14036
 HCl
 H₂O₂
 1:1 HNO₃
 1:1 HCl 637-047-02

File ID#:

Data Review By/Date:

Am 8/15/11

Lionville Laboratory

MERCURY PREPARATION

Logbook # 968

Analyst: ELB
 Date 7/25/11
 Start Time/Temp: 2255 / 93°
 End Time/Temp: 2325 / 95°

Instrument ID: 463-3
 Balance # 1329 /NA
 Pipette Calibration (Daily) Y

Prep Batch: L107259
 Worksheet: H1072603
 SOP No. ME-HgCVAA
 BLOCK 1 ② (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LVL Work Order#	pH <2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
Blank				10 mL	50	
0.2 µg/L		0.100		10 mL	50	
1.0		0.500		10 mL	50	
2.0		1.000		10 mL	50	
5.0		2.500		10 mL	50	
10.0		5.000		10 mL	50	
ICV		0.125	2.5	10 mL	50	
CCV		0.250	5.0	10 mL	50	
ICB/CCB				10 mL	50	
BLK1				0.30	50	
SRM1		*	*	0.31	50	
1107108-01				0.40	50	
01R				0.34	50	
01S		0.500	1.0	0.38	50	
02				0.31	50	
03				0.37	50	
04				0.33	50	
1107120-01				0.36	50	
01R				0.35	50	
01S		0.500	1.0	0.36	50	
02				0.34	50	
03				0.33	50	
04				0.38	50	
05				0.39	50	
06				0.30	50	
07				0.38	50	
08				0.36	50	

Standard:	ID	Prep Date/Time
ICAL/MS	R1 1001785A	7/25/11 1630
ICV/CCV/LCS	IV 1001791A	2

Reviewed By/Date: ELB 7/27/11
 se book # 9368 for std traceability information

Soil LCS True Value = 1.29 mg/Kg
 Standard # 1100103 *

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

Lionville Laboratory

MERCURY PREPARATION

Logbook # 992

Analyst: M. J. J.
 Date: 8/3/11
 Start Time/Temp: 1535/95°
 End Time/Temp: 1740/96°

Instrument ID: H63.3
 Balance #: NA
 Pipette Calibration (Daily) (Y)

Prep Batch: L108048
 Worksheet: H6080303
 SOP No. ME-HgCVAA
 BLOCK 1 (2) (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

LVL Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
Blank				33	33	Corrected initial
0.2 µg/L		0.0667		33	33	L108025, L108035, and
1.0 µg/L		0.3333		33	33	L108036 on 8/2/11
2.0 µg/L		0.667		33	33	
5.0 µg/L		1.667		33	33	
10.0 µg/L		3.333		33	33	
ICV		0.0835	2.5	33	33	
CCV		0.167	5.0	33	33	
ICV/CCB				33	33	
L108048-BLK1				33	33	
BS1		0.167	5.0	33	33	
BLK2				33	33	L108021
BLK3				33	33	L108026
L106042-01				33	33	
L108048-DUP1				33	33	
MS1		0.667	200*	33	33	
L106042-02				33	33	
L107074-02				33	33	
L108048-DUP2				33	33	
MS2		0.667	200*	33	33	
L107105-01				33	33	RAO
L108048-DUP3				33	33	↓
MS3		0.667	200*	33	33	
RAO 8/3/11						

Standard:	ID	Prep Date/Time
ICALMS	RI 1001785B	8/3/11 1425
ICV/CCV/LCS	I.V. 1001781A	↓
Soil LCS True Value =	N/A	mg/Kg
Standard #		

Reviewed By/Date: Colm 8/4/11

see book # 9368 for std traceability information

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

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TCLP EXTRACTION RECORD
(NON-VOLATILES)

LOGBOOK# 978

Start Date: <u>8-2-11</u>	End Date: <u>8-3-11</u>	Tumbler Speed: <u>30 RPM</u>
Start Time: <u>13:26</u>	End Time: <u>7:00</u>	Leachate Batch #: <u>L108026</u>
Analyst: <u>RA</u>	Analyst: <u>RA</u>	Leachate Page: <u>1</u> of <u>1</u>
SOP: <u>SPI-1311.1</u>	Method: <u>1311.1</u>	Room Temp. (°C): Start <u>21</u> / Finish <u>24</u>
Acceptance Criteria: 23°C ± 2°		

Lvl #: <u>1106042-01</u>	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
Client ID#: <u>JJJVM1</u>	
pH After 5 Min: <u>3.86</u>	
pH After Acid/Heat: <u>N/A</u>	
Extraction Fluid/pH: <u>#1 4.89</u>	
Sample Wt.(g): <u>50</u>	
Extract Fluid Vol.(mL): <u>1000</u>	
pH After Extraction: <u>4.93</u>	

Lvl #: <u>1106042-02</u>	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
Client ID#: <u>JJJVM2</u>	
pH After 5 Min: <u>4.47</u>	
pH After Acid/Heat: <u>N/A</u>	
Extraction Fluid/pH: <u>#1 4.89</u>	
Sample Wt.(g): <u>50</u>	
Extract Fluid Vol.(mL): <u>1000</u>	
pH After Extraction: <u>4.98</u>	

Lvl #: <u>1107105-01</u>	Initial Filtration Data and Comments: Solids: _____% / NA Initial Filtrate Added: _____
Client ID#: <u>JJJWJ8</u>	
pH After 5 Min: <u>5.67</u>	
pH After Acid/Heat: <u>1.59</u>	
Extraction Fluid/pH: <u>#1 4.89</u>	
Sample Wt.(g): <u>50</u>	
Extract Fluid Vol.(mL): <u>1000</u>	
pH After Extraction: <u>5.01</u>	

Lvl #: <u>L108026</u>	Initial Filtration Data and Comments: Solids: _____% / NA <u>BLANK</u> Initial Filtrate Added: _____
Client ID#: <u>N/A</u>	
pH After 5 Min: <u>I</u>	
pH After Acid/Heat: <u>I</u>	
Extraction Fluid/pH: <u>I</u>	
Sample Wt.(g): <u>I</u>	
Extract Fluid Vol.(mL): <u>500</u>	
pH After Extraction: <u>N/A</u>	

Standard	ID	Prep Date	Expir Date
MS			

Reviewed By/Date am 8/5/11

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST (continued)

C.O.C. No. RC-040-655
 Page 2 of 2

Relinquished By	Print	LD Mail CHPHC	Sign	Date/Time	Received By	Print	FEDEX	Sign	Date/Time
Relinquished By	Print	<i>A.D. Wall</i>	Sign	7/20/11 1400	Received By	Print	<i>FEDEX</i>	Sign	
Relinquished By	Print	<i>FED EX</i>	Sign	7-21-11 1000	Received By	Print	<i>Victor Hernandez</i>	Sign	7-21-11 1000
Relinquished By	Print		Sign		Received By	Print	<i>HERNANDEZ</i>	Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	
Relinquished By	Print		Sign		Received By	Print		Sign	

Lionville Laboratory
 SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford
 Project/SAE/30W/Release #: RC-040

Date: 7/21/11

LvL Batch #: 1107105

Sample Custodian: Steve Howard

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|--|---|---|
| 1. Samples Hand Delivered or Shipped? | Carrier <u>FD Ex</u> | Airbill # <u>794991682318</u> |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No <i>Comments:</i> |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5. Samples received cooled or ambient? | Temp <u>5-7</u> °C | Cooler # <u>GWS-235</u> |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR | <input type="checkbox"/> Temp. Blank <input type="checkbox"/> Other (Specify) |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No <input type="checkbox"/> No Seals |
| 7. COC (Client & LvL) signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 9. All samples on COC received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 12. Samples received within hold times? Short holds taken to wet lab? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes | <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes | <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | Date _____ | |

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