0078707

SAF-RC-088
618-7 Burial Ground – Other Liquids
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Rick Kerkow	L6-06	KW 9/3/08 Initials/Date
Kathy Wendt	H4-21	KW 9/3/08 Initials/Date

COMMENTS:

SDG K1284 SAF-RC-088

Rad only Chem only X Rad & Chem

X Complete Partial

WASTE SITE: 618-7 Burial Ground (tank)

RECEIVED
SEP 0 8 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

July 29, 2008

RECEIVED
JUL 2008

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

Reference: **P.O. #S00W235A00**
Eberline Services R8-07-134-7852, SDG K1284

Dear Ms. Kessner:

Enclosed is the data report for one solid (other solid) samples designated under SAF No. RC-088 received at Eberline Services on July 23, 2008. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1284 was composed of one solid (other solid) sample designated under SAF No. RC-088 with a Project Designation of: 618-7 Burial Grounds-Other Solids.

Note: the samples were a mixture of oil and dirt, and were therefore treated as solids (other solids). Results are reported in pCi/g.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on July 29, 2008.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analysis.

2.2 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

07/29/08

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 K1284

SDG	7852
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. S00W235A00
Case no	SDG_K1284

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

Melissa Mannion
Reviewed by

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	07/29/08

SDG 7852
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

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 07/29/08

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 K1284

SDG 7852
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R807134-01	J177M0	618-7 BurialGround(tank)	SOLID		RC-088	RC-088-060	07/21/08 08:25
R807134-02	Lab Control Sample		SOLID		RC-088		
R807134-03	Method Blank		SOLID		RC-088		
R807134-04	Duplicate (R807134-01)	618-7 BurialGround(tank)	SOLID		RC-088		07/21/08 08:25

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

SDG 7852
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

: 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
!52	RC-088-060	J177M0	SOLID	100.0	323 g		07/23/08	2	R807134-01	7852-001
		Method Blank	SOLID						R807134-03	7852-003
		Lab Control Sample	SOLID						R807134-02	7852-002
		Duplicate (R807134-01)	SOLID	100.0	323 g		07/23/08	2	R807134-04	7852-004

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

SDG 7852
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Solids	6160-035	20.6	1			1	1	1/1		
93B	SOLID	Gross Beta in Solids	6160-035	11.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6160-035	7.0	1			1	1	1/1		

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

SDG 7852
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

LB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
807134-01	J177M0			7852-001	93A/93		07/25/08	07/28/08	BW	Gross Alpha in Solids
07/21/08	618-7 BurialGround(tank)		SOLID	7852-001	93B/93		07/25/08	07/28/08	BW	Gross Beta in Solids
07/23/08	RC-088-060	RC-088		7852-001	GAM		07/24/08	07/28/08	CSS	Gamma Scan
807134-02	Lab Control Sample			7852-002	93A/93		07/26/08	07/28/08	BW	Gross Alpha in Solids
			SOLID	7852-002	93B/93		07/26/08	07/28/08	BW	Gross Beta in Solids
		RC-088		7852-002	GAM		07/24/08	07/28/08	CSS	Gamma Scan
807134-03	Method Blank			7852-003	93A/93		07/26/08	07/28/08	BW	Gross Alpha in Solids
			SOLID	7852-003	93B/93		07/26/08	07/28/08	BW	Gross Beta in Solids
		RC-088		7852-003	GAM		07/25/08	07/28/08	CSS	Gamma Scan
807134-04	Duplicate (R807134-01)			7852-004	93A/93		07/26/08	07/28/08	BW	Gross Alpha in Solids
07/21/08	618-7 BurialGround(tank)		SOLID	7852-004	93B/93		07/26/08	07/28/08	BW	Gross Beta in Solids
07/23/08		RC-088		7852-004	GAM		07/25/08	07/28/08	CSS	Gamma Scan

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	RC-088	Gross Alpha in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	RC-088	Gross Beta in Solids	900.0_ALPHABETA_GPC	1			1	1	1	4
GAM	RC-088	Gamma Scan	GAMMA_GS	1			1	1	1	4
TOTALS				3			3	3	3	12

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

7852-003 Method Blank

METHOD BLANK

SDG	7852	Client/Case no	Hanford	SDG_K1284	
Contact	Melissa C. Mannion	Contract	No. S00W235A00		
Lab sample id	R807134-03	Client sample id	Method Blank		
Dept sample id	7852-003	Material/Matrix		SOLID	
		SAF No	RC-088		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.702	0.76	2.26	10.0	U	93A
Gross Beta	12587-47-2	-0.060	1.2	2.10	15.0	U	93B
Potassium 40	13966-00-2	U		0.821		U	GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	U		0.032	0.100	U	GAM
Radium 226	13982-63-3	U		0.071	0.100	U	GAM
Radium 228	15262-20-1	U		0.154	0.200	U	GAM
Europium 152	14683-23-9	U		0.096	0.100	U	GAM
Europium 154	15585-10-1	U		0.094	0.100	U	GAM
Europium 155	14391-16-3	U		0.078	0.100	U	GAM
Thorium 228	14274-82-9	U		0.063		U	GAM
Thorium 232	TH-232	U		0.154		U	GAM
Uranium 235	15117-96-1	U		0.150		U	GAM
Uranium 238	U-238	U		3.71		U	GAM
Americium 241	14596-10-2	U		0.075		U	GAM

618-7 Burial Ground-Other Solids

QC-BLANK #66579

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

7852-002

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7852

Contact Melissa C. Mannion

Client/Case no Hanford SDG K1284

Contract No. S00W235A00

Lab sample id R807134-02

Dept sample id 7852-002

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-088

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	40.9	5.9	1.54	10.0		93A	37.3	1.5	110	58-142	70-130
Gross Beta	39.5	2.7	1.81	15.0		93B	37.3	1.5	106	79-121	80-120
Cobalt 60	2.03	0.087	0.051	0.050		GAM	2.08	0.083	98	87-113	80-120
Cesium 137	2.52	0.079	0.058	0.100		GAM	2.35	0.094	107	86-114	80-120

618-7 Burial Ground-Other Solids

QC-LCS #66578

Lab id EBRLNE

Protocol Hanford1

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

7852-004 J177M0

DUPLICATE

SDG	7852			Client/Case no	Hanford SDG K1284
Contact	Melissa C. Mannion			Contract	No. S00W235A00
	DUPLICATE		ORIGINAL		
Lab sample id	R807134-04	Lab sample id	R807134-01	Client sample id	J177M0
Dept sample id	7852-004	Dept sample id	7852-001	Location/Matrix	618-7 BurialGround(tank) SOLID
		Received	07/23/08	Collected/Weight	07/21/08 08:25 323 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-088-060 RC-088

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	0.296	0.43	0.689	10.0	U	93A	0.072	0.52	1.00	U	-		0.7
Gross Beta	0.615	1.0	1.73	15.0	U	93B	0.607	1.2	1.92	U	-		0
Potassium 40	U		0.441		U	GAM	U		0.916	U	-		0.9
Cobalt 60	U		0.044	0.050	U	GAM	U		0.036	U	-		0.3
Cesium 137	U		0.034	0.100	U	GAM	U		0.043	U	-		0.3
Radium 226	U		0.069	0.100	U	GAM	U		0.082	U	-		0.2
Radium 228	U		0.158	0.200	U	GAM	U		0.162	U	-		0
Europium 152	U		0.099	0.100	U	GAM	U		0.108	U	-		0.1
Europium 154	U		0.087	0.100	U	GAM	U		0.104	U	-		0.2
Europium 155	U		0.064	0.100	U	GAM	U		0.090	U	-		0.5
Thorium 228	U		0.055		U	GAM	U		0.057	U	-		0.1
Thorium 232	U		0.158		U	GAM	U		0.162	U	-		0
Uranium 235	U		0.120		U	GAM	U		0.139	U	-		0.2
Uranium 238	U		4.40		U	GAM	U		4.19	U	-		0.1
Americium 241	U		0.036		U	GAM	U		0.152	U	-		1.5

618-7 Burial Ground-Other Solids

QC-DUP#1 66580

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

7852-001 J177M0

DATA SHEET

SDG	7852	Client/Case no	Hanford SDG_K1284
Contact	Melissa C. Mannion	Contract	No. S00W235A00
Lab sample id	R807134-01	Client sample id	J177M0
Dept sample id	7852-001	Location/Matrix	618-7 BurialGround(tank) SOLID
Received	07/23/08	Collected/Weight	07/21/08 08:25 323 g
% solids	100.0	Custody/SAF No	RC-088-060 RC-088

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.072	0.52	1.00	10.0	U	93A
Gross Beta	12587-47-2	0.607	1.2	1.92	15.0	U	93B
Potassium 40	13966-00-2	U		0.916		U	GAM
Cobalt 60	10198-40-0	U		0.036	0.050	U	GAM
Cesium 137	10045-97-3	U		0.043	0.100	U	GAM
Radium 226	13982-63-3	U		0.082	0.100	U	GAM
Radium 228	15262-20-1	U		0.162	0.200	U	GAM
Europium 152	14683-23-9	U		0.108	0.100	U	GAM
Europium 154	15585-10-1	U		0.104	0.100	U	GAM
Europium 155	14391-16-3	U		0.090	0.100	U	GAM
Thorium 228	14274-82-9	U		0.057		U	GAM
Thorium 232	TH-232	U		0.162		U	GAM
Uranium 235	15117-96-1	U		0.139		U	GAM
Uranium 238	U-238	U		4.19		U	GAM
Americium 241	14596-10-2	U		0.152		U	GAM

618-7 Burial Ground-Other Solids

Lab id	EBRLNE
Protocol	Hanford1
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

Test 93A Matrix SOLID
SDG 7852
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS ALPHA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1284

ESULTS

B MPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Gross Alpha
eparation batch 6160-035					
.07134-01	93		7852-001	J177M0	U
:07134-02	93		7852-002	Lab Control Sample	ok
:07134-03	93		7852-003	Method Blank	U
:07134-04	93		7852-004	Duplicate (R807134-01)	- U

ominal values and limits from method RDLs (pCi/g) 10.0
18-7 Burial Ground-Other Solids

ETHOD PERFORMANCE

AB MPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
reparation batch 6160-035 2σ prep error 20.6 % Reference Lab Notebook #6160, pg. 35																
807134-01	93		J177M0	1.00	0.300			2		100			4	07/25/08	07/25	GRB-115
807134-02	93		Lab Control Sample	1.54	0.300			60		100				07/25/08	07/26	GRB-109
807134-03	93		Method Blank	2.26	0.300			61		100				07/25/08	07/26	GRB-110
807134-04	93		Duplicate (R807134-01)	0.689	0.300			3		100			5	07/25/08	07/26	GRB-111
ominal values and limits from method				10.0	0.300			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	SPP-125	Gross Alpha and Gross Beta in Dissolved Solids, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 1.37 ± 1.38
RESIDUE 32 ± 67

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

Test 93B Matrix SOLID
SDG 7852
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS BETA IN SOLIDS
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. S00W235A00
Contract SDG K1284

ESULTS

.B MPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Gross Beta	
eparation batch 6160-035						
07134-01	93		7852-001	J177M0	U	
07134-02	93		7852-002	Lab Control Sample	ok	
07134-03	93		7852-003	Method Blank	U	
07134-04	93		7852-004	Duplicate (R807134-01)	-	U

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

ETHOD PERFORMANCE

.B MPLE ID	RAW TEST	SUF-FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
eparation batch 6160-035			2σ prep error 11.0 % Reference Lab Notebook #6160, pg. 35													
07134-01	93		J177M0	1.92	0.300			2		100			4	07/25/08	07/25	GRB-115
07134-02	93		Lab Control Sample	1.81	0.300			60		100				07/25/08	07/26	GRB-109
07134-03	93		Method Blank	2.10	0.300			61		100				07/25/08	07/26	GRB-110
07134-04	93		Duplicate (R807134-01)	1.73	0.300			3		100			5	07/25/08	07/26	GRB-111
minal values and limits from method				15.0	0.300			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	SPP-061	Determination of Moisture Content in Solid Samples rev 0
	SPP-071	Soil Dissolution, > 1.0g Aliquot, rev 5
	SPP-125	Gross Alpha and Gross Beta in Dissolved Solids, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 1.89 ± 0.320
RESIDUE 32 ± 67

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

Test GAM Matrix SOLID
SDG 7852
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. S00W235A00
Contract SDG K1284

ESULTS

.B MPLE ID	RAW TEST	SUF- FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137	
:eparation batch 6160-035								
07134-01			7852-001	J177M0	U		U	
07134-02			7852-002	Lab Control Sample	ok		ok	
.07134-03			7852-003	Method Blank	U		U	
.07134-04			7852-004	Duplicate (R807134-01)	-	U	-	U
minal values and limits from method				RDLs (pCi/g)	0.050		0.100	
.8-7 Burial Ground-Other Solids								

ETHOD PERFORMANCE

.B MPLE ID	RAW TEST	SUF- FIX	CLIENT SAMPLE ID	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL- YZED	DETECTOR
:eparation batch 6160-035			2σ prep error 7.0 % Reference Lab Notebook #6160, pg. 35													
807134-01			J177M0	9.83	119					996			3	07/23/08	07/24	JR,08,00
807134-02			Lab Control Sample	0.051	119					996				07/23/08	07/24	JR,04,00
807134-03			Method Blank	7.13	119					495				07/23/08	07/25	JR,02,00
807134-04			Duplicate (R807134-01)	10.3	119					495			4	07/23/08	07/25	JR,07,00
minal values and limits from method				0.050	119					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	6.83	±	9.46
	YIELD		±	

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 07/29/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1284

SDG 7852
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

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
Report date 07/29/08

SDG 7852
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/29/08

SDG 7852
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

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.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/29/08

SDG 7852
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1284

DATA SHEET

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

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

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

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
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Version 3.06
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DATA SHEET

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

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

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

The following values are underlined to indicate possible problems:

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

SDG 7852
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG_K1284

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/29/08

SDG 7852
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

LAB CONTROL SAMPLE

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

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

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

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

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

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

  2. The error of ADDED.

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

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/29/08

SDG 7852
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1284

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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Protocol Hanford1
Version Ver 1.0
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Version 3.06
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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 7852
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. S00W235A00
Case no SDG_K1284

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

Lab id EBRLNE
Protocol Hanford1
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 07/29/08

SDG 7852
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1284

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 07/29/08

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'

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-088-060	Page 1 of 1

Collector B. Lawrence / E. Harries	**Company Contact** Joan Kessner	**Telephone No.** 509-375-4688	**Project Coordinator** KESSNER, JH
Price Code ~~8F~~ 9F	**Data Turnaround** ~~15 Days~~ 7 ~~11~~ 2/21/08		
Project Designation 618-7 Burial Ground - Other Liquids	**Sampling Location** 618-7 Burial Ground (tank) K1284 (7852)		**SAF No.** RC-088
Ice Chest No. AFS-04-037	**Field Logbook No.** EL-1395-12	**COA** RG61878500	**Method of Shipment** FedEx
Shipped To EBERLINE SERVICES / LIONVILLE	**Offsite Property No.** A080321		**Bill of Lading/Air Bill No.** see ospc

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radioactive contamination, potential beryllium contamination

Special Handling and/or Storage

None

Preservation	Cool 4C	Cool 4C	None	None	None						
Type of Container	aG	aG	P	P	P						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	125mL	125mL	60mL	500mL						
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (1) in Special Instructions.	Ignitability - 1010	See item (2) in Special Instructions.						
Sample No. / Matrix * / Sample Date / Sample Time								RLF #			
[redacted]											
J177M0	OTHER ~~LIQUID~~ solid.	7-21-08	0825				X			J177K0	B12 3763

7-21-08

MCM 7/23/08

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: E. Harries / E. Harries — Date/Time 7/21/08 0945	Received By/Stored In: JR DeBrigne JR DeBrigne — Date/Time 0945 7-21-08	
Relinquished By/Removed From: JR DeBrigne JR DeBrigne — Date/Time 1020 7-21-08	Received By/Stored In: MS Ankovich MS Ankovich — Date/Time 1020 JUL 21 2008	
Relinquished By/Removed From: MS Ankovich MS Ankovich — Date/Time 1000 JUL 22 2008	Received By/Stored In: FedEx — Date/Time	
Relinquished By/Removed From: FED EX — Date/Time	Received By/Stored In: [signature] — Date/Time 07/23/08 09:00	
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	
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) Gross Alpha; Gross Beta; Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; ~~Isotopic Uranium; Isotopic Thorium; Americium-241; Isotopic Plutonium; Strontium 89,90 - Total Sr~~

MCM 7/23/08

chain split

Matrix *

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

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

WCH-EE-011

EBERLINE

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

JK 7/23/08

Client: W. C. HANFORD City RICHLAND State WA

Date/Time received 07/23/08 09:00 CoC No. RC-088-060

Container I.D. No. _____ Requested TAT (Days) 7 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [X] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [X] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [X] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [X] No [ ] N/A [ ]
5. Packing material is: Wet [ ] Dry [X]
6. Number of samples in shipping container: 1 Sample Matrix X SOLID
7. Number of containers per sample: 1 (Or see CoC _____)
8. Samples are in correct container Yes [X] No [ ]
9. Paperwork agrees with samples? Yes [X] No [X]
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: NOTE ACTUAL MATIX IS SOLID
14. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
15. Inspected by [signature] Date: 07/23/08 Time: 09:30

Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	Wipe	Customer Sample No.	Beta/Gamma cpm	Ion Chamber mR/hr	wipe
J177M0	<60						

Ion Chamber Ser. No. _____ Calibration date _____

Alpha Meter Ser. No. _____ Calibration date _____

Beta/Gamma Meter Ser. No. 99574 Calibration date 08 MAY 09

LIONVILLE LABORATORY INC.

29 August 2008

RECEIVED
AUG 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 #	0807L485
SDG #	K1284
SAF #	RC-088
Date Received	7/23/08
# Samples	1
Matrix	OTHER
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	X

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

Sincerely,
Lionville Laboratory Incorporated

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

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

RECEIVED
AUG 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD RC-088 K1284

DATE RECEIVED: 07/23/08 LVL LOT # :0807L485

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J177M0						
SILVER, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
SILVER, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
SILVER, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
ALUMINUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
ALUMINUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
ALUMINUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
ARSENIC, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
ARSENIC, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
ARSENIC, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
BARIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
BARIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
BARIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
BERYLLIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
BERYLLIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
BERYLLIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
CALCIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
CALCIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
CALCIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
CADMIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
CADMIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
CADMIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
COBALT, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
COBALT, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
COBALT, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
CHROMIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
CHROMIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
CHROMIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
COPPER, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
COPPER, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
COPPER, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
IRON, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
IRON, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
IRON, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
MERCURY, TOTAL	001	SO	08C0134	07/21/08	07/25/08	07/28/08
MERCURY, TOTAL	001 REP	SO	08C0134	07/21/08	07/25/08	07/28/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD RC-088

DATE RECEIVED: 07/23/08 LVL LOT # :0807L485

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 MS	SO	08C0134	07/21/08	07/25/08	07/28/08
POTASSIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/31/08
POTASSIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/31/08
POTASSIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/31/08
MAGNESIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
MAGNESIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
MAGNESIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
MANGANESE, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
MANGANESE, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
MANGANESE, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
SODIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/31/08
SODIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/31/08
SODIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/31/08
NICKEL, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
NICKEL, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
NICKEL, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
LEAD, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
LEAD, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
LEAD, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
ANTIMONY, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
ANTIMONY, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
ANTIMONY, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
SELENIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
SELENIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
SELENIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
TIN, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
TIN, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
TIN, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
THALLIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
THALLIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
THALLIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
VANADIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
VANADIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
VANADIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
ZINC, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08
ZINC, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
ZINC, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08
ZIRCONIUM, TOTAL	001	SO	08L0286	07/21/08	07/30/08	07/30/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD RC-088

DATE RECEIVED: 07/23/08 LVL LOT # :0807L485

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZIRCONIUM, TOTAL	001 REP	SO	08L0286	07/21/08	07/30/08	07/30/08
ZIRCONIUM, TOTAL	001 MS	SO	08L0286	07/21/08	07/30/08	07/30/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
SILVER, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
ALUMINUM LABORTORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
ALUMINUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
ARSENIC LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
ARSENIC, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
BARIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
BARIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
BERYLLIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
CALCIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
CALCIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
CADMIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
CADMIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
COBALT LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
COBALT, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
CHROMIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
CHROMIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
COPPER LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
COPPER, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
IRON LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
IRON, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
MERCURY LABORATORY	LC1 BS	S	08C0134	N/A	07/25/08	07/28/08
MERCURY, TOTAL	MB1	S	08C0134	N/A	07/25/08	07/28/08
POTASSIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/31/08
POTASSIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/31/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
MAGNESIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
MANGANESE LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
MANGANESE, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
SODIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/31/08
SODIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/31/08
NICKEL LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD RC-088

DATE RECEIVED: 07/23/08 LVL LOT # :0807L485

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
LEAD LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
LEAD, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
ANTIMONY LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
ANTIMONY, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
SELENIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
SELENIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
TIN LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
TIN, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
THALLIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
THALLIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
VANADIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
VANADIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
ZINC LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
ZINC, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08
ZIRCONIUM LABORATORY	LC1 BS	S	08L0286	N/A	07/30/08	07/30/08
ZIRCONIUM, TOTAL	MB1	S	08L0286	N/A	07/30/08	07/30/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-088
LVL#: 0807L485
SDG/SAF#: L1289/RC-088

W.O.#: 11343-606-001-9999-00
Date Received: 07-23-08

METALS CASE NARRATIVE

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

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

1. This narrative covers the analysis of 1 solid sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary. The sample result was reported on a wet weight "as received" basis.

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) with the exception of Sodium and Potassium in file TA0730A. The samples were reported for Sodium and Potassium from file PS0731A. All results contained in this report are surrounded by in control ICV and CCVs.

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

7. The preparation/method blank 08L0286 for 1 analyte was outside method criteria. {less than the Limit of Quantitation (3-10X the LOD), sample greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Sodium was greater than the Limit of Quantitation (LOQ) {3-10x the (LOD) Limit of Detection} and the sample 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 18 pages.

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

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

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

10. The matrix spike (MS) recovery for 1 analyte was 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
J177M0	Iron	2,000	108.5

12. The duplicate analyses for 8 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

8/5/08
Date

alm/m07-485

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within thi

Lot#: 08071485

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	✓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 [3]	✓__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

Other:_____ Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

3. Flame AA.

4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/31/08

CLIENT: TNU-HANFORD RC-088

LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J177M0	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	23.5	MG/KG	3.7	1.0
		Arsenic, Total	0.46 u	MG/KG	0.46	1.0
		Barium, Total	0.20	MG/KG	0.09	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	8.3	MG/KG	3.7	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.19 u	MG/KG	0.19	1.0
		Chromium, Total	0.19	MG/KG	0.19	1.0
		Copper, Total	0.19 u	MG/KG	0.19	1.0
		Iron, Total	334	MG/KG	4.2	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	45.6 u	MG/KG	45.6	1.0
		Magnesium, Total	14.1	MG/KG	2.3	1.0
		Manganese, Total	1.3	MG/KG	0.04	1.0
		Sodium, Total	19.2	MG/KG	1.9	1.0
		Nickel, Total	0.29	MG/KG	0.19	1.0
		Lead, Total	0.28 u	MG/KG	0.28	1.0
		Antimony, Total	0.28 u	MG/KG	0.28	1.0
		Selenium, Total	0.56 u	MG/KG	0.56	1.0
		Tin, Total	1.1	MG/KG	0.56	1.0
		Thallium, Total	0.56 u	MG/KG	0.56	1.0
		Vanadium, Total	0.13 u	MG/KG	0.13	1.0
		Zinc, Total	0.56 u	MG/KG	0.56	1.0
		Zirconium, Total	4.6 u	MG/KG	4.6	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/31/08

CLIENT: TNU-HANFORD RC-088

LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0286-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	4.0 u	MG/KG	4.0	1.0
		Arsenic, Total	0.50 u	MG/KG	0.50	1.0
		Barium, Total	0.10 u	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	9.4	MG/KG	4.0	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.20 u	MG/KG	0.20	1.0
		Copper, Total	0.20 u	MG/KG	0.20	1.0
		Iron, Total	8.4	MG/KG	4.5	1.0
		Potassium, Total	49.3 u	MG/KG	49.3	1.0
		Magnesium, Total	2.9	MG/KG	2.5	1.0
		Manganese, Total	0.04	MG/KG	0.04	1.0
		Sodium, Total	11.0	MG/KG	2.0	1.0
		Nickel, Total	0.20 u	MG/KG	0.20	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.30 u	MG/KG	0.30	1.0
		Selenium, Total	0.60 u	MG/KG	0.60	1.0
		Tin, Total	0.60 u	MG/KG	0.60	1.0
		Thallium, Total	0.60 u	MG/KG	0.60	1.0
		Vanadium, Total	0.14 u	MG/KG	0.14	1.0
		Zinc, Total	0.60 u	MG/KG	0.60	1.0
		Zirconium, Total	5.0 u	MG/KG	5.0	1.0
BLANK1	08C0134-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/31/08

CLIENT: TNU-HANFORD RC-088

LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J177M0	Silver, Total	4.4	0.09u	4.6	95.7	1.0
		Aluminum, Total	200	23.5	185	95.2	1.0
		Arsenic, Total	178	0.46u	185	96.2	1.0
		Barium, Total	180	0.20	185	97.4	1.0
		Beryllium, Total	4.6	0.05u	4.6	100	1.0
		Calcium, Total	2340	8.3	2320	100.5	1.0
		Cadmium, Total	4.6	0.05u	4.6	100	1.0
		Cobalt, Total	46.0	0.19u	46.3	99.4	1.0
		Chromium, Total	18.6	0.19	18.5	99.5	1.0
		Copper, Total	22.9	0.19u	23.1	99.1	1.0
		Iron, Total	286	334	92.6	-52.	1.0
		Mercury, Total	0.15	0.01u	0.16	95.7	1.0
		Potassium, Total	2210	45.6 u	2320	95.6	1.0
		Magnesium, Total	2260	14.1	2320	97.0	1.0
		Manganese, Total	47.2	1.3	46.3	99.1	1.0
		Sodium, Total	2300	19.2	2320	98.4	1.0
		Nickel, Total	45.6	0.29	46.3	97.9	1.0
		Lead, Total	45.4	0.28u	46.3	98.1	1.0
		Antimony, Total	44.5	0.28u	46.3	96.1	1.0
		Selenium, Total	154	0.56u	185	82.9	1.0
		Tin, Total	92.3	1.1	92.6	98.5	1.0
		Thallium, Total	181	0.56u	185	97.7	1.0
		Vanadium, Total	45.5	0.13u	46.3	98.3	1.0
		Zinc, Total	45.1	0.56u	46.3	97.4	1.0
		Zirconium, Total	456	4.6 u	463	98.6	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/31/08

CLIENT: TNU-HANFORD RC-088 LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J177M0	Silver, Total	0.09u	0.08u	NC	1.0
		Aluminum, Total	23.5	30.4	25.6	1.0
		Arsenic, Total	0.46u	0.49	NC	1.0
		Barium, Total	0.20	0.26	27.4	1.0
		Beryllium, Total	0.05u	0.04u	NC	1.0
		Calcium, Total	8.3	7.3	12.8	1.0
		Cadmium, Total	0.05u	0.04u	NC	1.0
		Cobalt, Total	0.19u	0.26	NC	1.0
		Chromium, Total	0.19	0.27	33.9	1.0
		Copper, Total	0.19u	0.23	NC	1.0
		Iron, Total	334	1480	126.6	1.0
		Mercury, Total	0.01u	0.00u	NC	1.0
		Potassium, Total	45.6 u	41.0 u	NC	1.0
		Magnesium, Total	14.1	10.8	26.5	1.0
		Manganese, Total	1.3	5.6	124.6	1.0
		Sodium, Total	19.2	14.9	25.2	1.0
		Nickel, Total	0.29	0.47	46.7	1.0
		Lead, Total	0.28u	0.25u	NC	1.0
		Antimony, Total	0.28u	0.25u	NC	1.0
		Selenium, Total	0.56u	0.50u	NC	1.0
		Tin, Total	1.1	1.3	16.7	1.0
		Thallium, Total	0.56u	0.50u	NC	1.0
		Vanadium, Total	0.13u	0.12u	NC	1.0
		Zinc, Total	0.56u	0.50u	NC	1.0
		Zirconium, Total	4.6 u	4.2 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/31/08

CLIENT: TNU-HANFORD RC-088

LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0286-LC1	Silver, LCS	48.0	50.0	MG/KG	96.0
		Aluminum, LCS	499	500	MG/KG	99.8
		Arsenic, LCS	936	1000	MG/KG	93.6
		Barium, LCS	485	500	MG/KG	97.0
		Beryllium, LCS	24.5	25.0	MG/KG	98.0
		Calcium, LCS	2470	2500	MG/KG	98.9
		Cadmium, LCS	24.1	25.0	MG/KG	96.4
		Cobalt, LCS	244	250	MG/KG	97.5
		Chromium, LCS	49.2	50.0	MG/KG	98.4
		Copper, LCS	124	125	MG/KG	98.9
		Iron, LCS	492	500	MG/KG	98.4
		Potassium, LCS	2340	2500	MG/KG	93.6
		Magnesium, LCS	2410	2500	MG/KG	96.3
		Manganese, LCS	73.7	75.0	MG/KG	98.3
		Sodium, LCS	2430	2500	MG/KG	97.2
		Nickel, LCS	195	200	MG/KG	97.5
		Lead, LCS	242	250	MG/KG	97.0
		Antimony, LCS	290	300	MG/KG	96.8
		Selenium, LCS	921	1000	MG/KG	92.1
		Tin, LCS	500	500	MG/KG	99.9
		Thallium, LCS	960	1000	MG/KG	96.0
		Vanadium, LCS	243	250	MG/KG	97.0
		Zinc, LCS	96.5	100	MG/KG	96.5
		Zirconium, LCS	476	500	MG/KG	95.3
LCS1	08C0134-LC1	Mercury, LCS	4.2	4.7	MG/KG	90.1

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0286
Date/Time Initiated: 7/30/08 1145
Date/Time Completed: 7/30/08
Analyst(s): MW
Matrix: (Soil) Water Other:
Instr. Type: AA (ICP)
Parameters: HSL + Sn, Zr

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

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

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

TW

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
0807L487-001		1.13 gr	100 ml	<2	TO	coarse	brown soil	roots	
001R		1.13 gr							
001S	1.0 ml *	1.15 gr							
002		1.26 gr						metal piece *	
003		1.27 gr				fine	light brown soil	roots	RBD
0807L485-001 (A)		1.08 gr				coarse	white crystalline	CT small	
001R		1.20 gr							
001S	1.0 ml *	1.08 gr							
0807L495-001		1.07 gr				coarse	brown soil + light	fibers / Partic	RBD
001R		1.30 gr							
001S	1.0 ml *	1.12 gr							
08L0286-MB1		1.0 gr					boiling chips		
LC1	1.0 ml *	1.0 gr							

MW 7/30/08

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

Reagent IDs:
HNO_3 G07057
HCL G15040
H_2O_2 G15A18
1:1 HNO_3 9789-081-03
1:1 HCL

File ID#: IC028601
LIMS Transfer: (Y) N
Data Review By/Date: Updated
PMP, 07/30/08

* also 0.5 ml 6072-076-05 (?)
* included a small metal piece
(A) reacted rather intensely with 1:1 HNO_3 (complete disso-

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 455

Analyst: TLB
Date 7/25/08
Start Time/Temp: 1320 / 92°
End Time/Temp: 1350 / 98°

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

Prep Batch: 08C0134
Worksheet: HG072801
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	886			10mL	50mL	
0.2 µg/L	A94	0.100				
1.0	JI	0.500				
2.0	JS	1.000				
5.0	ET	2.500				
10.0	41	5.000				
ICV	1C	0.125	2.5			
CCV	1721	0.250	5.0			
ICB/CCB	114					9.80L
MB1	Gd			0.30		PBS134 100.0
LCS1	522	*	*	0.31		LCSS134
0807L487-001	P1			0.32		
W1R	676			0.33		
W1S	3VG	0.500	1.0	0.32		
002	DX			0.33		R
003	C9			0.33		I
0807L485-001	27			0.31		
W1R	DR			0.35		
W1S	G7	0.500	1.0	0.31		
0807L495-001	8H			0.39		R
W1R	H3			0.34		I
W1S	95	0.500	1.0	0.40		

GA 7/25/08

Standard:	ID	Prep Date/Time
ICAL/MS	R1 6072-78-14B	7/25/08 1025
ICV/CCV/LCS	US 6072-78-15A	

Reviewed By/Date: 8/27/08

see book # 9368 for std traceability information

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

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

ME-HgCVAA-Prep1007

Page #:

000000015

nville Laboratory Use Only

807L485

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

000000016

nt TNU HANFORD SAFH RC-088

Final Proj. Sampling Date

ect# 11343-606-001-9999-00

ect Contact/Phone#

nville Laboratory Project Manager O. Johnson

SW846 Del STD TAT 7 Day

e Rec'd 7-23-08 Date Due 7-30-08

Refrigerator #															
#/Type Container	Liquid / Solid		1G												
Volume			250												
Preservatives															
ANALYSES REQUESTED →		ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb				INORG: TC Metal	INORG: Metal	INORG: CN	Reactivity			

RIX ES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only: Cancel	0625A	Cancel	OPCB	Cancel	VOC	TCLP	TIC	TCNTO	TSFO	Met①		IGN	Cancel	IPH			
	001	T177M0	✓	✓	~~Other Liquid~~ SOLID	7-24-08	0825		X		X							X		X					

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

ecial Instructions:
THER Liquid = SOLID
met① = HSL + ZR, Sn
IC(V) = CL, Br, FL, SO4, PO4, NO2, NO3

Special Instructions:
1. Cancel 0625A, OPCB, TIGN per Client. WO
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
JEE	[signature]	7/23/08	0957

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-088-060** | Page 1 of 1

Collector: B. Lawrence / E. Harries	Company Contact: Joan Kessner	Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH
Price Code: 8F	Data Turnaround: ~~15~~ 7 Days (7/21/08)		
Project Designation: 618-7 Burial Ground - Other Liquids	Sampling Location: 618-7 Burial Ground (tank)		SAF No.: RC-088
Chest No.: RCC-08-032	Field Logbook No.: EL-1395-12	COA: RG61878500	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A080308		Bill of Lading/Air Bill No.: see OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radioactive contamination, potential beryllium contamination

Special Handling and/or Storage

None

Preservation	Cool 4C	Cool 4C	None	None	None					
Type of Container	aG	aG	P	P	P					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	125mL	125mL	60mL	500mL					
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (1) in Special Instructions.	Ignitability - 1010	See item (2) in Special Instructions.					

Sample No.	Matrix *	Sample Date	Sample Time									
[redacted]												
77M0	OTHER LIQUID	7-21-08	0825	x	x	x	x				J177K0	B123763

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Harries / E. Harries	7/21/08 0945	JR DeBrigne	7-21-08 0945
DeBrigne	7-21-08 1020	M Stankovich	JUL 21 2008 1020
M Stankovich	JUL 22 2008 0930	FedEx	
FedEx	7/23/08 0959	[signature]	7-25-08 0959

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

talk w/ you before you start the analysis

Chain split

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, Vn=Vegetation, X=Other

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

H-EE-011

000000017

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD

Date: 7/23/08

Project/SAF/SOW/Release #: RC-088

LvLI Batch #: 0807L485

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 7989 8368 7637
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 4°	°C	Cooler # RCC-08-032
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	COC Indicates other Liquid Soil as SOLID
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☑ Yes	☐ No	☐ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☑ Yes	☐ No	☐ N/A
Person Contacted _____		Date _____	

LvLI LIONVILLE LABORATORY INC.

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-088 K1284

RECEIVED AUG 2008

DATE RECEIVED: 07/23/08 LVL LOT # :0807L485

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J177M0						
BROMIDE BY IC	001	SO	08LICT52	07/21/08	07/30/08	07/30/08
BROMIDE BY IC	001 REP	SO	08LICT52	07/21/08	07/30/08	07/30/08
BROMIDE BY IC	001 MS	SO	08LICT52	07/21/08	07/30/08	07/30/08
CHLORIDE BY IC	001	SO	08LICS52	07/21/08	07/30/08	07/30/08
CHLORIDE BY IC	001 REP	SO	08LICS52	07/21/08	07/30/08	07/30/08
CHLORIDE BY IC	001 MS	SO	08LICS52	07/21/08	07/30/08	07/30/08
FLUORIDE BY IC	001	SO	08LICS52	07/21/08	07/30/08	07/30/08
FLUORIDE BY IC	001 REP	SO	08LICS52	07/21/08	07/30/08	07/30/08
FLUORIDE BY IC	001 MS	SO	08LICS52	07/21/08	07/30/08	07/30/08
NITRITE BY IC	001	SO	08LICS52	07/21/08	07/30/08	07/30/08
NITRITE BY IC	001 REP	SO	08LICS52	07/21/08	07/30/08	07/30/08
NITRITE BY IC	001 MS	SO	08LICS52	07/21/08	07/30/08	07/30/08
NITRATE BY IC	001	SO	08LICS52	07/21/08	07/30/08	07/30/08
NITRATE BY IC	001 REP	SO	08LICS52	07/21/08	07/30/08	07/30/08
NITRATE BY IC	001 MS	SO	08LICS52	07/21/08	07/30/08	07/30/08
TOTAL CYANIDE	001	SO	08LC043	07/21/08	07/26/08	07/26/08
TOTAL CYANIDE	001 REP	SO	08LC043	07/21/08	07/26/08	07/26/08
TOTAL CYANIDE	001 MS	SO	08LC043	07/21/08	07/26/08	07/26/08
PHOSPHATE BY IC	001	SO	08LICS52	07/21/08	07/30/08	07/30/08
PHOSPHATE BY IC	001 REP	SO	08LICS52	07/21/08	07/30/08	07/30/08
PHOSPHATE BY IC	001 MS	SO	08LICS52	07/21/08	07/30/08	07/30/08
SULFATE BY IC	001	SO	08LICS52	07/21/08	07/30/08	07/30/08
SULFATE BY IC	001 REP	SO	08LICS52	07/21/08	07/30/08	07/30/08
SULFATE BY IC	001 MS	SO	08LICS52	07/21/08	07/30/08	07/30/08
AMMONIA	001	SO	08LAMA19	07/21/08	07/26/08	07/26/08
AMMONIA	001 REP	SO	08LAMA19	07/21/08	07/26/08	07/26/08
AMMONIA	001 MS	SO	08LAMA19	07/21/08	07/26/08	07/26/08
TOTAL ORGANIC CARBON	001	SO	08LTZA07	07/21/08	07/31/08	08/04/08
TOTAL ORGANIC CARBON	001 REP	SO	08LTZA07	07/21/08	07/31/08	08/04/08
TOTAL ORGANIC CARBON	001 MS	SO	08LTZA07	07/21/08	07/31/08	08/04/08
PH	001	SO	08LPH036	07/21/08	07/24/08	07/24/08
PH	001 REP	SO	08LPH036	07/21/08	07/24/08	07/24/08
SULFIDE	001	SO	08LSD048	07/21/08	07/28/08	07/28/08
SULFIDE	001 REP	SO	08LSD048	07/21/08	07/28/08	07/28/08
SULFIDE	001 MS	SO	08LSD048	07/21/08	07/28/08	07/28/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-088 K1284

DATE RECEIVED: 07/23/08 LVL LOT # :0807L485

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL INORGANIC CARB	001	SO	08LTZA07	07/21/08	07/31/08	08/04/08
TOTAL INORGANIC CARB	001 REP	SO	08LTZA07	07/21/08	07/31/08	08/04/08

LAB QC:

BROMIDE BY IC	MB1	S	08LICT52	N/A	07/29/08	07/30/08
BROMIDE BY IC	MB1 BS	S	08LICT52	N/A	07/29/08	07/29/08
CHLORIDE BY IC	MB1	S	08LICS52	N/A	07/29/08	07/30/08
CHLORIDE BY IC	MB1 BS	S	08LICS52	N/A	07/29/08	07/29/08
FLUORIDE BY IC	MB1	S	08LICS52	N/A	07/29/08	07/30/08
FLUORIDE BY IC	MB1 BS	S	08LICS52	N/A	07/29/08	07/29/08
NITRITE BY IC	MB1	S	08LICS52	N/A	07/29/08	07/30/08
NITRITE BY IC	MB1 BS	S	08LICS52	N/A	07/29/08	07/29/08
NITRATE BY IC	MB1	S	08LICS52	N/A	07/29/08	07/30/08
NITRATE BY IC	MB1 BS	S	08LICS52	N/A	07/29/08	07/29/08
TOTAL CYANIDE	LCS L	S	08LC043	N/A	07/26/08	07/26/08
TOTAL CYANIDE	LCS L	S	08LC043	N/A	07/26/08	07/26/08
TOTAL CYANIDE	MB1	S	08LC043	N/A	07/26/08	07/26/08
PHOSPHATE BY IC	MB1	S	08LICS52	N/A	07/29/08	07/30/08
PHOSPHATE BY IC	MB1 BS	S	08LICS52	N/A	07/29/08	07/29/08
SULFATE BY IC	MB1	S	08LICS52	N/A	07/29/08	07/30/08
SULFATE BY IC	MB1 BS	S	08LICS52	N/A	07/29/08	07/29/08
AMMONIA	MB1	S	08LAMA19	N/A	07/26/08	07/26/08
AMMONIA	MB1 BS	S	08LAMA19	N/A	07/26/08	07/26/08
AMMONIA	MB1 BSD	S	08LAMA19	N/A	07/26/08	07/26/08
TOTAL ORGANIC CARBON	MB1	S	08LTZA07	N/A	07/31/08	08/04/08
TOTAL ORGANIC CARBON	MB1 BS	S	08LTZA07	N/A	07/31/08	08/04/08
SULFIDE	MB1	S	08LSD048	N/A	07/28/08	07/28/08
SULFIDE	MB1 BS	S	08LSD048	N/A	07/28/08	07/28/08
SULFIDE	MB1 BSD	S	08LSD048	N/A	07/28/08	07/28/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-088 K1287
LVL#: 0807L485

W.O.#: 11343-606-001-9999-00
Date Received: 07-23-08

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 solid sample.

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

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

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

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Chloride that was above the control limits that may be attributed to matrix interference and Ammonia that was above the control limits that may be attributed to low spike level and high background concentration of the target analyte.

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

8. The replicate analyses were within the 20% RPD control limit with the exception of Total Organic Carbon that was outside the control limit that may be attributed to sample inhomogeneity.

9. Results for solid samples are reported on an "as-received" weight basis..

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

Alain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/27/08
Date

njp\i07-495

LVLI
LIONVILLE LABORATORY INC.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	__ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		__ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		✓ 9010B /9014	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic and Total Inorganic		✓ 9060 (mod)	✓ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045~~C~~D jp 8-14-08	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		✓ 9030B(mod)/9034	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

Other: Bromide, Chloride, Fluoride, **Method:** EPA 300.0

Other: Nitrite, Nitrate, Phosphate, Sulfate **Method** EPA 350.3 (mod.)

Ammonia

L-WI-034/B-01/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/14/08

CLIENT: TNUHANFORD RC-088 K1284

LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J177M0	Bromide by IC	107	u	MG/KG	107	20.0
		Chloride by IC	579		MG/KG	107	20.0
		Fluoride by IC	107	u	MG/KG	107	20.0
		Nitrite by IC	107	u	MG/KG	107	20.0
		Nitrate by IC	107	u	MG/KG	107	20.0
		Cyanide, Total	0.89		MG/KG	0.48	1.0
		Phosphate by IC	107	u	MG/KG	107	20.0
		Sulfate by IC	107	u	MG/KG	107	20.0
		Ammonia, as N	156000		MG/KG	5150	500
		Total Organic Carbon	2090		MG/KG	1070	1.0
		pH	8.3		SOIL PH	0.01	1.0
		Sulfide	20.3	u	MG/KG	20.3	1.0
		Total Inorganic Carbon	3920		MG/KG	1070	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/14/08

CLIENT: TNUHANFORD RC-088 K1284 LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LICT52-MB1	Bromide by IC	2.4	u	MG/KG	2.4	1.0
BLANK10	08LICS52-MB1	Chloride by IC	2.4	u	MG/KG	2.4	1.0
		Fluoride by IC	2.4	u	MG/KG	2.4	1.0
		Nitrite by IC	2.41	u	MG/KG	2.41	1.0
		Nitrate by IC	2.41	u	MG/KG	2.41	1.0
		Phosphate by IC	2.4	u	MG/KG	2.4	1.0
		Sulfate by IC	2.4	u	MG/KG	2.4	1.0
BLANK1	08LC043-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	08LAMA19-MB1	Ammonia, as N	9.6	u	MG/KG	9.6	1.0
BLANK10	08LTZA07-MB1	Total Organic Carbon	1000	u	MG/KG	1000	1.0
BLANK10	08LSD048-MB1	Sulfide	20.3	u	MG/KG	20.3	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 08/14/08

CLIENT: TNUHANFORD RC-088 K1284

LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J177M0	Bromide by IC	5140	0.0	4760	107.9	50.0
		Chloride by IC	6950	579	4760	133.8	50.0
		Fluoride by IC	4710	0.0	4760	98.8	50.0
		Nitrite by IC	5380	107 u	4760	113.0	50.0
		Nitrate by IC	4910	107 u	4760	103.1	50.0
		Cyanide, Total	5.50	0.89	4.76	96.7	1.0
		Phosphate by IC	4650	107 u	4760	97.7	50.0
		Sulfate by IC	4760	107 u	4760	99.9	50.0
		Ammonia, as N	167000	156000	499	2213 *	500
		Total Organic Carbon	7920	823	8470	83.7	1.0
		Sulfide	210	0.0	241	87.4	1.0
BLANK10	08LICT52-MB1	Bromide by IC	59.1	2.4 u	65.4	90.3	1.0
BLANK10	08LICS52-MB1	Chloride by IC	61.0	2.4 u	65.4	93.2	1.0
		Fluoride by IC	61.2	2.4 u	65.4	93.5	1.0
		Nitrite by IC	60.4	2.41u	65.4	92.3	1.0
		Nitrate by IC	59.7	2.41u	65.4	91.3	1.0
		Phosphate by IC	59.7	2.4 u	65.4	91.3	1.0
		Sulfate by IC	61.3	2.4 u	65.4	93.7	1.0
BLANK10	08LAMA19-MB1	Ammonia, as N	397	9.6 u	414	95.8	1.0
		Ammonia, as N MSD	465	9.6 u	446	104.2	1.0
BLANK10	08LTZA07-MB1	Total Organic Carbon	20300	1000 u	20000	101.6	1.0
BLANK10	08LSD048-MB1	Sulfide	232	20.3 u	241	96.0	1.0
		Sulfide MSD	230	20.3 u	235	97.7	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 08/14/08

CLIENT: TNUHANFORD RC-088 K1284

LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	08LAMA19-MB1	Ammonia, as N	95.8	104.2	8.5
BLANK10	08LSD048-MB1	Sulfide	96.0	97.7	1.8

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 08/14/08

CLIENT: TNUHANFORD RC-088 K1284

LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT		REPLICATE		RPD	DILUTION FACTOR(REP)
-001REP	J177M0	Bromide by IC	107	u	106	u	NC	20.0
		Chloride by IC	579		600		3.5	20.0
		Fluoride by IC	107	u	106	u	NC	20.0
		Nitrite by IC	107	u	106	u	NC	20.0
		Nitrate by IC	107	u	106	u	NC	20.0
		Cyanide, Total	0.89		0.82		8.9	1.0
		Phosphate by IC	107	u	106	u	NC	20.0
		Sulfate by IC	107	u	106	u	NC	20.0
		Ammonia, as N	156000		176000		12.2	500
		Total Organic Carbon	1070	u	1060	u	NC	1.0
		pH	0.01	u	8.3		NC	1.0
		Sulfide	20.3	u	21.1	u	NC	1.0
		Total Inorganic Carbon	3920		5190		27.9	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/14/08

CLIENT: TNUHANFORD RC-088 K1284

LVL LOT #: 0807L485

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	08LC043-LCS1	Cyanide, Total LCS	1.90	2.0	MG/KG	94.8
LCSS2	08LC043-LCS2	Cyanide, Total LCS	9.89	10.0	MG/KG	98.9

nville Laboratory Use Only

'807L485

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

000000013

int TNU HANFORD SAFH RC-098

Final Proj. Sampling Date

ject# 11343-606-001-9999-00

ject Contact/Phone#

nville Laboratory Project Manager O. Johnson

SW846 Del STD TAT 7 Day

e Rec'd 7-23-08 Date Due 7-30-08

Refrigerator #																
#/Type Container	Liquid / Solid		1G													
Volume			250													
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Rect/ PCB	Herb				TC Metal Hg	CN	Radioactivity					

RIX ES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only													
									Cancel 0625A	OPCB	Cancel Hg 7-23-08	IC(1) IBCT	ITIC ICNTO	ISFP EWH3N	Met(1)		IIGN	Cancel Hg 7-23-08	IPH		
Soil	001	T 177MO	✓	✓	Other Liquid SOLID	7-24-08	0825		X	X					X		X				
Sediment																					
Solid																					
Sludge																					
Water																					
Oil																					
Air																					
Drum Solids																					
Drum Liquids																					
EP/TCLP																					
Leachate																					
Wipe																					
Other																					
Fish																					

ecial Instructions:

OTHER Liquid = SOLID

Met(1) = HSL + ZR, Sn

ICP = CL, BR, FL, SO4, PO4, NO2, NO3

Special Instructions:

1. Cancel 0625A, OPCB, IIGN per Client. WO
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
JEE	[illegible]	7/23/08	0957

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-088-060	Page 1 of 1
Collector: B. Lawrence / E. Harries	Company Contact: Joan Kessner; Telephone No.: 509-375-4688	Project Coordinator: KESSNER, JH	Price Code: 8F; Data Turnaround: ~~15~~ 7 Days (7/21/08)
Project Designation: 618-7 Burial Ground - Other Liquids	Sampling Location: 618-7 Burial Ground (tank)	SAF No.: RC-088	
Ice Chest No.: RCC-08-032	Field Logbook No.: EL-1395-12; COA: RG61878500	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A080308	Bill of Lading/Air Bill No.: see OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential Radioactive contamination, potential beryllium contamination

Special Handling and/or Storage

None

Preservation	Cool 4C	Cool 4C	None	None	None					
Type of Container	aG	aG	P	P	P					
No. of Container(s)	1	1 / 0	1 / 0	1 / 0	1					
Volume	250mL	125mL	125mL	60mL	500mL					
SAMPLE ANALYSIS	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (1) in Special Instructions.	Ignitability - 1010	See item (2) in Special Instructions.					

JRD 7-21-08

Sample No.	Matrix *	Sample Date	Sample Time										
[redacted]													
77M0	OTHER LIQUID	7-21-08	0825	x	x	x	x				J177K0		B123763

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Harries / E. Harries, Date/Time 7/21/08 0945	Received By/Stored In: JR DeBrigne, Date/Time 0945 7-21-08	
Relinquished By/Removed From: DeBrigne, Date/Time 7-21-08 1020	Received By/Stored In: M Stankovich, Date/Time 1020 JUL 21 2008	
Relinquished By/Removed From: M Stankovich, Date/Time JUL 22 2008 0930	Received By/Stored In: Fed Ex, Date/Time	
Relinquished By/Removed From: Fed Ex, Date/Time 7/23/08 0957	Received By/Stored In: [signature], Date/Time 7-23-08 0957	
Relinquished By/Removed From: Date/Time	Received By/Stored In: Date/Time	
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) Gross Alpha; Gross Beta; Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Isotopic Uranium; Isotopic Thorium; Americium-241; Isotopic Plutonium; Strontium-89,90 -- Total Sr

talk w/ you before you start the analysis

chain split

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

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

CH-EE-011

000000014

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD

Date: 7/23/08

Project/SAF/SOW/Release #: RC-088

LvLI Batch #: 0807L485

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7989 8368 7637
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 4°	°C	Cooler # RCC-08-032
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	COC indicates other Liquid Soil as SOLID
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☑ Yes	☐ No	☐ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☑ Yes	☐ No	☐ N/A

Person Contacted _____ Date _____

LvLI LIONVILLE LABORATORY INC.