0076485

SAF-RC-029
Remaining Sites Confirmation Sampling - Soil
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 2/28/08
INITIAL/DATE

COMMENTS:

SDG K1091 **SAF RC-029**

Rad only Chem only X Rad & Chem

X Complete Partial

Waste Site: 100-F-44:2

RECEIVED
MAR 18 2008
EDMC

EBERLINE
SERVICES

RECEIVED
JAN 2008

January 29, 2008

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

Reference: **P.O. #630**
Eberline Services R8-01-083-7749, SDG K1091

Dear Ms. Kessner:

Enclosed is a data report for two solid (soil) samples designated under SAF No. RC-029 received at Eberline Services on January 18, 2008. The samples were analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

MCM/njv

Enclosure: Data Package

Analytical Services
2030 Wright Avenue
P.O. Box 4040
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(510) 235-2633 Fax (510) 235-0438
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1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1091 was composed of two solid (soil) samples designated under SAF No. RC-029 with a Project Designation of: Remaining Sites Confirmation Sampling-Soil.

The samples were received as stated on the chain-of-custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on January 25, 2008.

2.0 ANALYSIS NOTES

2.1 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

01/29/08

Date

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP K1091

SDG	7749
Contact	Melissa C. Mannion

Client	Hanford
Contract	No. 630
Case no	SDG K1091

SUMMARY DATA SECTION

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-TOC
Version	3.06
Report date	01/25/08

SDG 7749
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_K1091

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/25/08

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 K1091

SDG 7749
Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG K1091

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R801083-01	J16358	100-F-44:2	SOLID		RC-029	RC-029-031	01/16/08 13:50
R801083-02	J16359	100-F-44:2	SOLID		RC-029	RC-029-031	01/16/08 13:52
R801083-03	Lab Control Sample		SOLID		RC-029		
R801083-04	Method Blank		SOLID		RC-029		
R801083-05	Duplicate (R801083-01)	100-F-44:2	SOLID		RC-029		01/16/08 13:50

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LS
Version 3.06
Report date 01/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1091

SDG 7749
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG K1091

QC 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
7749	RC-029-031	J16358	SOLID	98.8	1515 g		01/18/08	2	R801083-01	7749-001
		J16359	SOLID	98.8	1582 g		01/18/08	2	R801083-02	7749-002
		Method Blank	SOLID						R801083-04	7749-004
		Lab Control Sample	SOLID						R801083-03	7749-003
		Duplicate (R801083-01)	SOLID	98.8	1515 g		01/18/08	2	R801083-05	7749-005

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1091

SDG 7749
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG K1091

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6133-145	15.0	2			1	1	1/1		

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1091

SDG 7749
Contact Melissa C. Mannion

LAB WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG K1091

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
R801083-01	J16358			7749-001	GAM		01/23/08	01/24/08	CSS	Gamma Scan
01/16/08	100-F-44:2		SOLID							
01/18/08	RC-029-031	RC-029								
R801083-02	J16359			7749-002	GAM		01/23/08	01/24/08	CSS	Gamma Scan
01/16/08	100-F-44:2		SOLID							
01/18/08	RC-029-031	RC-029								
R801083-03	Lab Control Sample			7749-003	GAM		01/23/08	01/24/08	CSS	Gamma Scan
			SOLID							
		RC-029								
R801083-04	Method Blank			7749-004	GAM		01/23/08	01/24/08	CSS	Gamma Scan
			SOLID							
		RC-029								
R801083-05	Duplicate (R801083-01)			7749-005	GAM		01/23/08	01/24/08	CSS	Gamma Scan
01/16/08	100-F-44:2		SOLID							
01/18/08		RC-029								

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
GAM	RC-029	Gamma Scan	GAMMA_GS	2			1	1	1	5
TOTALS				2			1	1	1	5

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 01/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1091

7749-004 Method Blank

METHOD BLANK

SDG	7749	Client/Case no	Hanford	SDG K1091	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R801083-04	Client sample id	Method Blank		
Dept sample id	7749-004	Material/Matrix		SOLID	
		SAF No	RC-029		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	U		0.286		U	GAM
Cobalt 60	10198-40-0	U		0.012	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.100	U	GAM
Radium 226	13982-63-3	U		0.027	0.100	U	GAM
Radium 228	15262-20-1	U		0.055	0.200	U	GAM
Europium 152	14683-23-9	U		0.031	0.100	U	GAM
Europium 154	15585-10-1	U		0.034	0.100	U	GAM
Europium 155	14391-16-3	U		0.033	0.100	U	GAM
Thorium 228	14274-82-9	U		0.018		U	GAM
Thorium 232	TH-232	U		0.055		U	GAM
Uranium 235	15117-96-1	U		0.049		U	GAM
Uranium 238	U-238	U		1.31		U	GAM
Americium 241	14596-10-2	U		0.067		U	GAM

Remaining Sites Confirmation Smplg.

QC-BLANK 64432

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1091

7749-003

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7749

Contact Melissa C. Mannion

Client/Case no Hanford SDG K1091

Contract No. 630

Lab sample id R801083-03

Dept sample id 7749-003

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-029

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
Cobalt 60	0.500	0.037	0.021	0.050		GAM	0.514	0.021	97	75-125	80-120
Cesium 137	0.538	0.038	0.029	0.100		GAM	0.536	0.021	100	74-126	80-120

Remaining Sites Confirmation Smplg.

QC-LCS 64431

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 01/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1091

7749-005 J16358

DUPLICATE

SDG	7749			Client/Case no	Hanford SDG K1091
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R801083-05	Lab sample id	R801083-01	Client sample id	J16358
Dept sample id	7749-005	Dept sample id	7749-001	Location/Matrix	100-F-44:2 SOLID
		Received	01/18/08	Collected/Weight	01/16/08 13:50 1515 g
% solids	98.8	% solids	98.8	Custody/SAF No	RC-029-031 RC-029

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
Potassium 40	14.2	0.40	0.124			GAM	14.0	0.48	0.163		1	33	0.1
Cobalt 60	U		0.015	0.050	U	GAM	U		0.019	U	-		0.3
Cesium 137	U		0.014	0.100	U	GAM	U		0.017	U	-		0.3
Radium 226	0.392	0.033	0.030	0.100		GAM	0.368	0.035	0.034		6	37	0.5
Radium 228	0.626	0.065	0.057	0.200		GAM	0.680	0.082	0.074		8	40	0.6
Europium 152	U		0.045	0.100	U	GAM	U		0.055	U	-		0.3
Europium 154	U		0.048	0.100	U	GAM	U		0.055	U	-		0.2
Europium 155	U		0.057	0.100	U	GAM	U		0.068	U	-		0.2
Thorium 228	0.580	0.026	0.025			GAM	0.568	0.030	0.030		2	33	0.2
Thorium 232	0.626	0.065	0.057			GAM	0.680	0.082	0.074		8	40	0.6
Uranium 235	U		0.083		U	GAM	U		0.100	U	-		0.3
Uranium 238	U		1.82		U	GAM	U		2.34	U	-		0.3
Americium 241	U		0.072		U	GAM	U		0.090	U	-		0.3

Remaining Sites Confirmation Smplg.

QC-DUP#1 64433

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1091

7749-001 J16358

DATA SHEET

SDG	7749	Client/Case no	Hanford	SDG K1091	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R801083-01	Client sample id	J16358		
Dept sample id	7749-001	Location/Matrix	100-F-44:2	SOLID	
Received	01/18/08	Collected/Weight	01/16/08 13:50	1515 g	
% solids	98.8	Custody/SAF No	RC-029-031	RC-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	14.0	0.48	0.163			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.100	U	GAM
Radium 226	13982-63-3	0.368	0.035	0.034	0.100		GAM
Radium 228	15262-20-1	0.680	0.082	0.074	0.200		GAM
Europium 152	14683-23-9	U		0.055	0.100	U	GAM
Europium 154	15585-10-1	U		0.055	0.100	U	GAM
Europium 155	14391-16-3	U		0.068	0.100	U	GAM
Thorium 228	14274-82-9	0.568	0.030	0.030			GAM
Thorium 232	TH-232	0.680	0.082	0.074			GAM
Uranium 235	15117-96-1	U		0.100		U	GAM
Uranium 238	U-238	U		2.34		U	GAM
Americium 241	14596-10-2	U		0.090		U	GAM

Remaining Sites Confirmation Smplg.

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1091

7749-002 J16359

DATA SHEET

SDG	7749	Client/Case no	Hanford		SDG K1091
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R801083-02	Client sample id	J16359		
Dept sample id	7749-002	Location/Matrix	100-F-44:2		SOLID
Received	01/18/08	Collected/Weight	01/16/08 13:52	1582 g	
% solids	98.8	Custody/SAF No	RC-029-031	RC-029	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Potassium 40	13966-00-2	14.1	0.81	0.345			GAM
Cobalt 60	10198-40-0	U		0.036	0.050	U	GAM
Cesium 137	10045-97-3	U		0.029	0.100	U	GAM
Radium 226	13982-63-3	0.468	0.071	0.071	0.100		GAM
Radium 228	15262-20-1	0.638	.0.17	0.166	0.200		GAM
Europium 152	14683-23-9	U		0.084	0.100	U	GAM
Europium 154	15585-10-1	U		0.127	0.100	U	GAM
Europium 155	14391-16-3	U		0.104	0.100	U	GAM
Thorium 228	14274-82-9	0.730	0.066	0.063			GAM
Thorium 232	TH-232	0.638	0.17	0.166			GAM
Uranium 235	15117-96-1	U		0.154		U	GAM
Uranium 238	U-238	U		4.39		U	GAM
Americium 241	14596-10-2	U		0.274		U	GAM

Remaining Sites Confirmation Smplg.

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/25/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1091

Test GAM Matrix SOLID
SDG 7749
Contact Melissa C. Mannion

LAB METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG K1091

RESULTS

LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60		Cesium 137	
Preparation batch 6133-145								
R801083-01			7749-001	J16358	U		U	
R801083-02			7749-002	J16359	U		U	
R801083-03			7749-003	LCS (QC ID=64431)	ok		ok	
R801083-04			7749-004	BLK (QC ID=64432)	U		U	
R801083-05			7749-005	Duplicate (R801083-01)	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.100	

Remaining Sites Confirmation Smplg.

METHOD PERFORMANCE

LAB SAMPLE 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
Preparation batch 6133-145			2σ prep error 15.0 % Reference Lab Notebook #6133, pg. 145													
R801083-01			J16358	4.32	881					102			7	01/23/08	01/23	02,02,00
R801083-02			J16359	6.38	886					102			7	01/23/08	01/23	MB,05,00
R801083-03			LCS (QC ID=64431)	0.021	881					102				01/23/08	01/23	MB,06,00
R801083-04			BLK (QC ID=64432)	3.14	881					102				01/23/08	01/23	MB,08,00
R801083-05			Duplicate (R801083-01) (QC ID=64433)	3.55	881					148			7	01/23/08	01/23	02,02,00
Nominal values and limits from method				0.050	881					100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 3.48 ± 4.60
YIELD ____ ± ____

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LMS
Version 3.06
Report date 01/25/08

SDG 7749
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG K1091

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/25/08

SDG	7749
Contact	Melissa C. Mannion

REPORT GUIDE

Client	Hanford
Contract	No. 630
Case no	SDG K1091

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-RG
Version	3.06
Report date	01/25/08

SDG 7749
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG K1091

WORK SUMMARY

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

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
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SDG 7749
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REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG K1091

DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/25/08

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 7749
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
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DATA SHEET

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

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
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Report date 01/25/08

SDG 7749
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_K1091

LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

Lab id EBRLNE
Protocol Hanford
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Form DVD-RG
Version 3.06
Report date 01/25/08

SDG 7749
Contact Melissa C. Mannion

REPORT GUIDE

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

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DUPLICATE

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

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

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

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

SDG 7749
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
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Case no SDG K1091

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/25/08

SDG 7749
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG K1091

MATRIX SPIKE

for the recovery.

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

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

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 01/25/08

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-029-031	Page 1 of 1

Collector Welch-Koelling	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location ~~100-F-46~~ 100-F-44:2 K1091 (7749) BH 1/16/08		SAF No. RC-029
Ice Chest No. EBC-04-023	Field Logbook No. EL-1601-2	COA C00F44A000 ~~C00F46A000~~ BH 1/16/08	Method of Shipment FedEx
Shipped To EBERLINE SERVICES / ~~LIONVILLE~~ BH 1/16/08	Offsite Property No. A080157		Bill of Lading/Air Bill No. See OSRC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	P	G/P	G	G/P	aG	aG	G			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	1000mL	60mL	60mL	120mL	250mL	250mL	250mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Carbon-14; Tritium - H3	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	PAHs - 8310	TPH (Total) - 418.1			

BH 1/16/08

Sample No.	Matrix *	Sample Date	Sample Time									
~~J16355~~	~~SOIL~~											
~~J16356~~	~~SOIL~~											
~~J16357~~	~~SOIL~~											
J16358	SOIL	1/16/08	1350	X								
J16359	SOIL	1/16/08	1352	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From TUCKER WELCH	Date/Time 1/16/08 1430	Received By/Stored In BHUDSON BHudson	Date/Time 1/16/08 1430
Relinquished By/Removed From BHUDSON BHudson	Date/Time 1/16/08 1515	Received By/Stored In 3728 #2C	Date/Time 1/16/08 1515
Relinquished By/Removed From 3728 #2C	Date/Time 1-17-08 0830	Received By/Stored In MMSingleton	Date/Time 1-17-08 0830
Relinquished By/Removed From MMSingleton	Date/Time 1-17-08 1500	Received By/Stored In FED EX	Date/Time
Relinquished By/Removed From FED EX	Date/Time	Received By/Stored In Fed Ex	Date/Time 01/18/08 09:30
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; ~~Gamma Spec - Add-on {Americium-241}; Americium-241, Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 - Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium~~ BH 1/16/08
(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 1/17/08.
Sampler unavailable to relinquish

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

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

WCH-EE-011

EBERLINE

RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

AK 1/18/08

Client: N.C. HANFORD City: RICHLAND State: W

Date/Time received: 01/18/08 09:20 CoC No: RC-029-031

Container I.D. No: ERC-04-023 Requested TAT (Days): 15 P.O. Received Yes [ ] No [ ]

INSPECTION

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

2 Custody seals on shipping container dated & signed? Yes [X] No [ ] N/A [ ]

3 Custody seals on sample containers intact? Yes [X] No [ ] N/A [ ]

4 Custody seals on sample containers dated & signed? Yes [X] No [ ] N/A [ ]

5 Packing material is Wet [ ] Dry [X]

6 Number of samples in shipping container: 2 Sample Matrix: S

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

8 Samples are in correct container Yes [X] No [ ]

9 Paperwork agrees with samples? Yes [X] No [ ]

10 Samples have Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [X]

11 Samples are In good condition [X] Leaking [ ] Broken Container [ ] Missing [ ]

12 Samples are Preserved [ ] Not preserved [ ] pH _____ Preservative _____

13 Describe any anomalies

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

15 Inspected by: MFW Date: 01/18/08 Time: 10:45

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

Ion Chamber Ser. No _____ Calibration date _____

Alpha Meter Ser. No _____ Calibration date _____

Beta/Gamma Meter Ser. No 100482 Calibration date 09 MAY 07

RECEIVED
FEB 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-029 K1091

DATE RECEIVED: 02/13/08 LVL LOT # :08021582

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16375						
SILVER, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
ALUMINUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
ARSENIC, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
BORON, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
BARIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
BERYLLIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
CALCIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
CADMIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
COBALT, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
CHROMIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
COPPER, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
IRON, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
MERCURY, TOTAL	001	S	08C0036	01/16/08	02/25/08	02/25/08
POTASSIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
MAGNESIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
MANGANESE, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
MOLYBDENUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
SODIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/20/08
NICKEL, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
LEAD, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
ANTIMONY, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
SELENIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
SILICON, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
VANADIUM, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
ZINC, TOTAL	001	S	08L0067	01/16/08	02/13/08	02/19/08
J16358						
SILVER, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
ALUMINUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
ARSENIC, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
BORON, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
BARIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
BERYLLIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
CALCIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-029 K1091

DATE RECEIVED: 02/13/08 LVL LOT # :0802L582

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
COBALT, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
CHROMIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
COPPER, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
IRON, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
MERCURY, TOTAL	002	S	08C0036	01/16/08	02/25/08	02/25/08
MERCURY, TOTAL	002 REP	S	08C0036	01/16/08	02/25/08	02/25/08
MERCURY, TOTAL	002 MS	S	08C0036	01/16/08	02/25/08	02/25/08
POTASSIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
MAGNESIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
MANGANESE, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
MOLYBDENUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
SODIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/20/08
NICKEL, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
LEAD, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
ANTIMONY, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
SELENIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
SILICON, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
VANADIUM, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
ZINC, TOTAL	002	S	08L0067	01/16/08	02/13/08	02/19/08
J16359						
SILVER, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
SILVER, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
SILVER, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
ALUMINUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
ALUMINUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
ALUMINUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
ARSENIC, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
ARSENIC, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
ARSENIC, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
BORON, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
BORON, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
BORON, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
BARIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
BARIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
BARIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-029 K1091

DATE RECEIVED: 02/13/08 LVL LOT # :0802L582

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BERYLLIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
BERYLLIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
BERYLLIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
CALCIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
CALCIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
CALCIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
CADMIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
CADMIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
CADMIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
COBALT, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
COBALT, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
COBALT, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
CHROMIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
CHROMIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
CHROMIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
COPPER, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
COPPER, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
COPPER, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
IRON, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
IRON, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
IRON, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
MERCURY, TOTAL	003	S	08C0036	01/16/08	02/25/08	02/25/08
POTASSIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
POTASSIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
POTASSIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
MAGNESIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
MAGNESIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
MAGNESIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
MANGANESE, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
MANGANESE, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
MANGANESE, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
MOLYBDENUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
MOLYBDENUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
MOLYBDENUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
SODIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/20/08
SODIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/20/08
SODIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/20/08
NICKEL, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-029 K1091

DATE RECEIVED: 02/13/08 LVL LOT # :0802L582

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
NICKEL, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
LEAD, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
LEAD, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
LEAD, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
ANTIMONY, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
ANTIMONY, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
ANTIMONY, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
SELENIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
SELENIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
SELENIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
SILICON, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
SILICON, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
SILICON, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
VANADIUM, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
VANADIUM, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
VANADIUM, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08
ZINC, TOTAL	003	S	08L0067	01/16/08	02/13/08	02/19/08
ZINC, TOTAL	003 REP	S	08L0067	01/16/08	02/13/08	02/19/08
ZINC, TOTAL	003 MS	S	08L0067	01/16/08	02/13/08	02/19/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
SILVER, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
ALUMINUM LABORTORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
ALUMINUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
ARSENIC LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
ARSENIC, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
BORON LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
BORON, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
BARIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
BARIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
BERYLLIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
CALCIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
CALCIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
CADMIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-029 K1091

DATE RECEIVED: 02/13/08 LVL LOT # :0802L582

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
COBALT LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
COBALT, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
CHROMIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
CHROMIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
COPPER LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
COPPER, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
IRON LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
IRON, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
MERCURY LABORATORY	LC1 BS	S	08C0036	N/A	02/25/08	02/25/08
MERCURY, TOTAL	MB1	S	08C0036	N/A	02/25/08	02/25/08
POTASSIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
POTASSIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
MAGNESIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
MANGANESE LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
MANGANESE, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
MOLYBDENUM LABORATOR	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
MOLYBDENUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
SODIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/20/08
SODIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/20/08
NICKEL LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
NICKEL, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
LEAD LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
LEAD, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
ANTIMONY LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
ANTIMONY, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
SELENIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
SELENIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
SILICON LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
SILICON, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
VANADIUM LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
VANADIUM, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08
ZINC LABORATORY	LC1 BS	S	08L0067	N/A	02/13/08	02/19/08
ZINC, TOTAL	MB1	S	08L0067	N/A	02/13/08	02/19/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-029
LVL#: 0802L582
SDG/SAF#: K1091/RC-092

W.O.#: 11343-606-001-9999-00
Date Relogged: 02-13-08

METALS CASE NARRATIVE

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

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

1. This narrative covers the analyses of 3 soil samples.

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

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

4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury) with the exception of the ICV, CCV1, and CCV2 for Sodium. The samples were rerun in file PS0220A.

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

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

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

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

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

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 23 pages.

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9. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J168X4	Aluminum	22,000	102.6
	Iron	22,000	89.9
	Selenium	100	103.5
	Silicon	7,800	82.5

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

12. For the purposes of this report, the data has been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.

13. LvLI is NELAP accredited by the state of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/27/03
Date

jjw/m08-582

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#: 08074582

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A X3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	X6010B		__200.7				__99
Antimony	X6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X6010B		__200.7				__99
Beryllium	X6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	X6010B		__200.7				__99
Cadmium	X6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	X6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	X6010B		__200.7				__99
Copper	X6010B	__7211 [5]	__200.7	__220.2			__99
Iron	X6010B		__200.7				__99
Lead	X6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	X6010B		__200.7				__99
Manganese	X6010B		__200.7				__99
Mercury	__7470A [3]	X7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	X6010B		__200.7				__99
Nickel	X6010B		__200.7				__99
Potassium	X6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	X6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	X6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	X6010B	__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	X6010B		__200.7				__99
Zinc	X6010B		__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 02/25/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0802L582

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J16375	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Aluminum, Total	35.4	MG/KG	3.8	1.0
		Arsenic, Total	0.56	MG/KG	0.48	1.0
		Boron, Total	0.48 u	MG/KG	0.48	1.0
		Barium, Total	1.1	MG/KG	0.1	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	25.8	MG/KG	3.8	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 u	MG/KG	0.19	1.0
		Copper, Total	0.39	MG/KG	0.19	1.0
		Iron, Total	82.2	MG/KG	4.3	1.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Potassium, Total	19.1	MG/KG	3.8	1.0
		Magnesium, Total	8.6	MG/KG	2.4	1.0
		Manganese, Total	2.6	MG/KG	0.04	1.0
		Molybdenum, Total	0.29 u	MG/KG	0.29	1.0
		Sodium, Total	16.7	MG/KG	1.9	1.0
		Nickel, Total	0.19 u	MG/KG	0.19	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.29 u	MG/KG	0.29	1.0
		Selenium, Total	0.58 u	MG/KG	0.58	1.0
		Silicon, Total	53.8	MG/KG	3.8	1.0
		Vanadium, Total	0.13 u	MG/KG	0.13	1.0
		Zinc, Total	2.0	MG/KG	0.58	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/25/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0802L582

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J16358	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	5190	MG/KG	3.5	1.0
		Arsenic, Total	2.1	MG/KG	0.44	1.0
		Boron, Total	1.8	MG/KG	0.44	1.0
		Barium, Total	51.8	MG/KG	0.09	1.0
		Beryllium, Total	0.14	MG/KG	0.04	1.0
		Calcium, Total	3590	MG/KG	3.5	1.0
		Cadmium, Total	0.05	MG/KG	0.04	1.0
		Cobalt, Total	4.8	MG/KG	0.18	1.0
		Chromium, Total	9.2	MG/KG	0.18	1.0
		Copper, Total	14.8	MG/KG	0.18	1.0
		Iron, Total	13000	MG/KG	4.0	1.0
		Mercury, Total	0.02	MG/KG	0.009	1.0
		Potassium, Total	614	MG/KG	3.5	1.0
		Magnesium, Total	3630	MG/KG	2.2	1.0
		Manganese, Total	235	MG/KG	0.04	1.0
		Molybdenum, Total	0.27 u	MG/KG	0.27	1.0
		Sodium, Total	141	MG/KG	1.8	1.0
		Nickel, Total	10.6	MG/KG	0.18	1.0
		Lead, Total	3.2	MG/KG	0.27	1.0
		Antimony, Total	0.27 u	MG/KG	0.27	1.0
		Selenium, Total	0.53 u	MG/KG	0.53	1.0
		Silicon, Total	2050	MG/KG	3.5	1.0
		Vanadium, Total	31.6	MG/KG	0.12	1.0
		Zinc, Total	90.7	MG/KG	0.53	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/25/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0802L582

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J16359	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Aluminum, Total	4170	MG/KG	3.8	1.0
		Arsenic, Total	2.2	MG/KG	0.48	1.0
		Boron, Total	1.4	MG/KG	0.48	1.0
		Barium, Total	32.9	MG/KG	0.1	1.0
		Beryllium, Total	0.13	MG/KG	0.05	1.0
		Calcium, Total	2990	MG/KG	3.8	1.0
		Cadmium, Total	0.07	MG/KG	0.05	1.0
		Cobalt, Total	4.1	MG/KG	0.19	1.0
		Chromium, Total	7.0	MG/KG	0.19	1.0
		Copper, Total	14.4	MG/KG	0.19	1.0
		Iron, Total	9920	MG/KG	4.3	1.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Potassium, Total	520	MG/KG	3.8	1.0
		Magnesium, Total	2940	MG/KG	2.4	1.0
		Manganese, Total	188	MG/KG	0.04	1.0
		Molybdenum, Total	0.29 u	MG/KG	0.29	1.0
		Sodium, Total	149	MG/KG	1.9	1.0
		Nickel, Total	9.3	MG/KG	0.19	1.0
		Lead, Total	3.1	MG/KG	0.29	1.0
		Antimony, Total	0.29 u	MG/KG	0.29	1.0
		Selenium, Total	0.57 u	MG/KG	0.57	1.0
		Silicon, Total	2900	MG/KG	3.8	1.0
		Vanadium, Total	22.0	MG/KG	0.13	1.0
		Zinc, Total	81.6	MG/KG	0.57	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/25/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0802L582

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0067-MB1	Silver, Total	0.1	u	MG/KG	0.1	1.0
		Aluminum, Total	3.9	u	MG/KG	3.9	1.0
		Arsenic, Total	0.49	u	MG/KG	0.49	1.0
		Boron, Total	0.49	u	MG/KG	0.49	1.0
		Barium, Total	0.1	u	MG/KG	0.1	1.0
		Beryllium, Total	0.05	u	MG/KG	0.05	1.0
		Calcium, Total	10.8		MG/KG	3.9	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	u	MG/KG	0.19	1.0
		Copper, Total	0.20		MG/KG	0.19	1.0
		Iron, Total	4.4	u	MG/KG	4.4	1.0
		Potassium, Total	3.9	u	MG/KG	3.9	1.0
		Magnesium, Total	2.4	u	MG/KG	2.4	1.0
		Manganese, Total	0.04	u	MG/KG	0.04	1.0
		Molybdenum, Total	0.29	u	MG/KG	0.29	1.0
		Sodium, Total	12.1		MG/KG	1.9	1.0
		Nickel, Total	0.19	u	MG/KG	0.19	1.0
		Lead, Total	0.34		MG/KG	0.29	1.0
		Antimony, Total	0.29	u	MG/KG	0.29	1.0
		Selenium, Total	0.58	u	MG/KG	0.58	1.0
		Silicon, Total	3.9	u	MG/KG	3.9	1.0
		Vanadium, Total	0.14	u	MG/KG	0.14	1.0
		Zinc, Total	1.7		MG/KG	0.58	1.0
BLANK1	08C0036-MB1	Mercury, Total	0.01	u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/25/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0802L582

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J16358	Mercury, Total	0.17	0.02	0.15	104.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/25/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0802L582

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	J16359	Silver, Total	4.2	0.1 u	4.8	87.5	1.0
		Aluminum, Total	4860	4170	191	356.7*	1.0
		Arsenic, Total	164	2.2	191	85.1	1.0
		Boron, Total	85.2	1.4	95.4	87.8	1.0
		Barium, Total	206	32.9	191	90.6	1.0
		Beryllium, Total	4.4	0.13	4.8	88.9	1.0
		Calcium, Total	5420	2990	2380	102.1	1.0
		Cadmium, Total	4.2	0.07	4.8	86.1	1.0
		Cobalt, Total	46.6	4.1	47.7	89.1	1.0
		Chromium, Total	25.0	7.0	19.1	94.2	1.0
		Copper, Total	35.8	14.4	23.8	89.9	1.0
		Iron, Total	10600	9920	95.4	696.3*	1.0
		Potassium, Total	2570	520	2380	86.0	1.0
		Magnesium, Total	5430	2940	2380	104.6	1.0
		Manganese, Total	243	188	47.7	113.8	1.0
		Molybdenum, Total	82.1	0.29u	95.4	86.1	1.0
		Sodium, Total	2110	149	2380	82.2	1.0
		Nickel, Total	52.0	9.3	47.7	89.5	1.0
		Lead, Total	44.7	3.1	47.7	87.2	1.0
		Antimony, Total	37.2	0.29u	47.7	78.0	1.0
		Selenium, Total	140	0.57u	191	73.5	1.0
		Silicon, Total	2800	2900	95.4	-100. *	1.0
		Vanadium, Total	65.5	22.0	47.7	91.2	1.0
		Zinc, Total	124	81.6	47.7	88.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/25/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0802L582

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J16358	Mercury, Total	0.02	0.00u	~~NC~~ 200	1.0

PW 2/26/08

corrected value

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/25/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0802L582

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	J16359	Silver, Total	0.1 u	0.1 u	NC	1.0
		Aluminum, Total	4170	4660	10.9	1.0
		Arsenic, Total	2.2	1.9	14.6	1.0
		Boron, Total	1.4	1.3	7.4	1.0
		Barium, Total	32.9	34.6	5.0	1.0
		Beryllium, Total	0.13	0.14	5.5	1.0
		Calcium, Total	2990	3080	3.0	1.0
		Cadmium, Total	0.07	0.06	8.8	1.0
		Cobalt, Total	4.1	4.3	4.8	1.0
		Chromium, Total	7.0	7.8	10.8	1.0
		Copper, Total	14.4	14.3	0.70	1.0
		Iron, Total	9920	10800	8.4	1.0
		Potassium, Total	520	673	25.7	1.0
		Magnesium, Total	2940	3290	11.4	1.0
		Manganese, Total	188	219	15.1	1.0
		Molybdenum, Total	0.29u	0.41	~~NC~~ 200	1.0
		Sodium, Total	149	138	7.9 corrected value	1.0
		Nickel, Total	9.3	9.4	1.1	1.0
		Lead, Total	3.1	3.0	3.3	1.0
		Antimony, Total	0.29u	0.29u	NC	1.0
		Selenium, Total	0.57u	0.57u	NC	1.0
		Silicon, Total	2900	2420	18.0	1.0
		Vanadium, Total	22.0	24.4	10.3	1.0
		Zinc, Total	81.6	88.0	7.5	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/25/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0802L582

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0067-LC1	Silver, LCS	46.4	50.0	MG/KG	92.8
		Aluminum, LCS	469	500	MG/KG	93.9
		Arsenic, LCS	891	1000	MG/KG	89.1
		Boron, LCS	455	500	MG/KG	91.0
		Barium, LCS	466	500	MG/KG	93.3
		Beryllium, LCS	23.3	25.0	MG/KG	93.2
		Calcium, LCS	2350	2500	MG/KG	94.0
		Cadmium, LCS	23.0	25.0	MG/KG	92.0
		Cobalt, LCS	234	250	MG/KG	93.6
		Chromium, LCS	46.8	50.0	MG/KG	93.6
		Copper, LCS	120	125	MG/KG	95.6
		Iron, LCS	468	500	MG/KG	93.6
		Potassium, LCS	2200	2500	MG/KG	87.9
		Magnesium, LCS	2290	2500	MG/KG	91.7
		Manganese, LCS	71.1	75.0	MG/KG	94.8
		Molybdenum, LCS	450	500	MG/KG	90.0
		Sodium, LCS	2280	2500	MG/KG	91.1
		Nickel, LCS	186	200	MG/KG	92.9
		Lead, LCS	234	250	MG/KG	93.6
		Antimony, LCS	273	300	MG/KG	91.0
		Selenium, LCS	862	1000	MG/KG	86.2
		Silicon, LCS	437	500	MG/KG	87.4
		Vanadium, LCS	233	250	MG/KG	93.1
		Zinc, LCS	92.3	100	MG/KG	92.3
LCS1	08C0036-LC1	Mercury, LCS	5.1	4.7	MG/KG	107.8

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 422

Analyst: CLB
Date 2/25/08
Start Time/Temp: 1240 | 93°
End Time/Temp: 1315 | 95°

Instrument ID HG3.1/3.2
Balance #: B29 / NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0036
Worksheet: HG022501/02
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	500			10mL	50mL	
0.2 µg/L	114	0.100				
1.0	71L	0.500				
2.0	AP	1.000				
5.0	CGR	2.500				
10.0	27	5.000				
ICV	WN	0.125	2.5			
CCV	OLN	0.250	5.0			
ICB/CCB	CYD					% SOL
MB1	PO			0.30		PBS136 100.00
LCI	WO	*	*	0.31		LCSS136
08021582-001	SPRT			0.32		99.99
002 ~~001R~~ TECHNICAL REPLICATE	PF			0.34		98.88
002R ~~001S~~	P3			0.35		
002S	CB2	0.500	1.0	0.34		
003	194			0.35		98.87
08021628-001	297			0.34		99.42
002 ~~001R~~	JB			0.32		96.06
002R ~~001S~~	290			0.33		
002S	8	0.500	1.0	0.32		
003	B32			0.36		96.66
004	WK			0.35		94.09
005	997			0.36		89.71
006	AHA			0.41		93.98
007	GD			0.34		92.56
008	RU			0.32		99.46
009	222			0.37		92.31

Standard:	ID	Prep Date/Time
ICAL/MS	R1 6072-75-07B	2/25/08 1030
ICV/CCV/LCS	US 6072-75-08A	

Reviewed By/Date: [signature] 2/27/08

see book # 936Y for std traceability information

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

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

ME-HgCVAA-Prep1007

Page #:

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~~000000021~~

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 422

Analyst: GB
Date 2/25/08
Start Time/Temp: see page 021
End Time/Temp:

Instrument ID HG3.1/3.2
Balance #: B29 /NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0036
Worksheet: HG022501/02
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.
0802L628-010	CITR			0.35	50mL	92.60
011	NJ			0.38	↓	85.58
012	818			0.36	↓	85.45

GB 2/25/08

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	See page 021	

Reviewed By/Date: [illegible] 2/27/08

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 #:

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Lionville Laboratory Incorporated

Logbook #: 340

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0067
Date/Time Initiated: 2/13/08 10:00AM
Date/Time Completed: 2/13/08 12:15PM
Analyst(s): MW/WW
Matrix: Soil Water Other:
Instr. Type: AA ICP
Parameters: See Prep Log

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

DW 200.7 (1994)
200.9
3113B

MCAWW 200.7 (1982)
200 (AA)
206.2 (As/Se)

SM 3030C (NC)

Digested / Undigested (circle one)
Balance #: 82
Balance Cal Verif: Y NA
Hot Plate Temp: 97°

CLP ILMO3.0
ILMO4.0

Other TCLP

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
08CQL82-001		1.04g	100m	NA	TO	Mixture	Stones	Stones	NA
-002		1.14g					Soil/Sand		
-003		1.00g							
-003R		1.00g							
-003S	1.0mL	1.00g							
08L0067-MB1		1.03g				NA	Balls/chips		
-LC1	1.0mL	1g							

2/13/08

MW

Spiking IDs: 8100-04-01
MS #: -02
-03
(TCLP-077) -01
LCS #: -02
-03
-04
-05

Reagent IDs:
HNO_3 E22071
HCL E48100
H_2O_2 E48106
1:1 HNO_3 4789-070-08
1:1 HCL

File ID#: IC006701
LIMS Transfer: Y N updated
Data Review By/Date: PMP, 02/15/08

REVISION

Lionville Laboratory Use Only
0802L 582

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

0000000022

Client: TNU HANFORD SAF# RC: 029

Est. Final Proj. Sampling Date:

Project#: 11343-606-001-9999-00

Project Contact/Phone#:

Lionville Laboratory Project Manager: O. JOHNSON

QC: SW846 Del: STD TAT: 7Day

Date Rec'd: 2-13-08 Date Due: 2-20-08

Refrigerator #									C							
#/Type Container	Liquid								A							
	Solid								1G							
Volume																
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		Lionville Laboratory Use Only														
									Metals							

MATRIX CODES:
S- Soil
SE- Sediment
SO- Solid
SL- Sludge
W- Water
O- Oil
A- Air
DS- Drum Solids
DL- Drum Liquids
L- EP/TCLP Leachate
WI- Wipe
X- Other
F- Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
001	J16375			Soil	1-16-08	1330								X					
002	J16358				1-16-08	1350								X					
003	J16359				1-16-08	1352								X					

Special Instructions: TOTAL RCRA METALS (Al, b, be, Ca, Co, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Sb, Si, V, ZN) Met ①

Special Instructions:
1. 0801L 468-001-002-003C Per Client.
2. Add As, Ba, Cd, Cr, Pb, Se, Ag, Hg, To all samples per O.J. 2-21-08
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
LF	[signature]	2-13-08	

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-029-031

Collector: Welch-Koelling	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: ~~100-F-46~~ 100-F-44:2 BH 1/16/08		SAF No.: RC-029
Ice Chest No.: ERC-02-505	Field Logbook No.: EL-1601-2	COA C00F44A000 ~~C00F46A000~~ BH 1/16/08	Method of Shipment: FedEx
Shipped To: BH 1/16/08 ~~EBERLINE SERVICES~~ (LIONVILLE)	Offsite Property No.: A080176		Bill of Lading/Air Bill No.: See DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
Type of Container	P	G/P	G	G/P	aG	aG	G	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	60mL	60mL	120mL	250mL	250mL	250mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Carbon-14; Tritium - H3	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	PAHs - 8310	TPH (Total) - 418.1	See item (2)		

Sample No.	Matrix *	Sample Date	Sample Time									
6355 BH 1/16/08	SOIL											
6356	SOIL											
6357 J16375	SOIL	1/16/08	1330								X	
6358	SOIL	1/16/08	1330			X	X	X		X		
6359	SOIL	1/16/08	1352			X	X	X		X		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: [signature] Date/Time: 1/16/08 1430	Received By/Stored In: BHudson BHudson Date/Time: 1/16/08 1430	
Relinquished By/Removed From: BHudson BHudson Date/Time: 1/16/08 1515	Received By/Stored In: 3728 #2C Date/Time: 1/16/08 1515	
Relinquished By/Removed From: 3728 #2C 1-17-08 Date/Time: 1-17-08 0830	Received By/Stored In: HJSingleton Date/Time: 1-17-08 0830	
Relinquished By/Removed From: HJSingleton 1-17-08 Date/Time: 1-17-08 1500	Received By/Stored In: FED EX Date/Time:	
Relinquished By/Removed From: FED EX Date/Time: 1-18-09 0950	Received By/Stored In: [signature] Date/Time: 1-18-09 0950	
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 1/17/08.
Sampler unavailable to relinquish

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

H-EE-011

000000023

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD

Project/SAF/SOW/Release #: RC-029

Date: 1-18-08

LvLI Batch #: 08011468

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 7909 1898 8989
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 2.8°	°C	Cooler # ERC-02-505
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A

Person Contacted _____ Date _____

LVLI LIONVILLE LABORATORY INC.

SR-002-B.doc

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD RC-029 K1091

RECEIVED FEB 2008

DATE RECEIVED: 01/18/08 LVL LOT # :08011468

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16358	002	S	08LE0031	01/16/08	01/22/08	01/24/08
J16358	002 MS	S	08LE0031	01/16/08	01/22/08	01/24/08
J16358	002 MSD	S	08LE0031	01/16/08	01/22/08	01/24/08
J16359	003	S	08LE0031	01/16/08	01/22/08	01/24/08

LAB QC:

PBLKLU	MB1	S	08LE0031	N/A	01/22/08	01/23/08
PBLKLU	MB1 BS	S	08LE0031	N/A	01/22/08	01/23/08

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-029
LVL #: 0801L468
SDG/SAF # K1080 / RC-029

W.O. #: 11343-606-001-9999-00
Date Received: 01-18-2008

PCB

Two (2) soil samples were collected on 01-16-2008.

The samples and their associated QC samples were extracted on 01-22-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 01-23,24-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

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

r:\group\data\2008\pest\tnu\0801-468ks2 pcb.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

LIONVILLE LABORATORY INC.

9. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

1/30/08
Date

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

GLOSSARY OF DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
J	=	Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
I	=	Interference.
.I	=	Indicates an interference on one analytical column only. Result is reported from remaining analytical column.

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
NS	=	Not Spiked.
SP	=	Indicates Spiked Compound.
P	=	This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.
NPM	=	No pattern match for multi-component target analytes.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 01/25/08 12:51

RFW Batch Number: 0801L468 Client: TNU-HANFORD RC-029 Work Order: 11343606001 Page: 1

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	Cust ID:	J16358		J16358		J16358		J16359		PBLKLU		PBLKLU BS	
Sample Information	RFW#:	002		002 MS		002 MSD		003		08LE0031-MB1		08LE0031-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate:	Tetrachloro-m-xylene	112	%	120	%	112	%	118	%	98	%	97	%
	Decachlorobiphenyl	136	%	140	%	132	%	140	%	106	%	104	%
			fl		fl		fl		fl		fl		fl
Aroclor-1016		13	U	102	%	99	%	13	U	13	U	88	%
Aroclor-1221		13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1232		13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1242		13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1248		13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1254		13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1260		13	U	113	%	110	%	13	U	13	U	100	%

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory, Inc.

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 01/22/08 Extraction Batch No: 08LE0031 Analyst: MF Method: ****5083540

Test: OPCB Cleanup Date: 01/23/08 Analyst: MF Client: TNU-HANFORD RC-029

LIMS Report Date: 01/23/08 Solvent: DCM/ACETONE,HEXANE Adsorbent: H2SO4

Sample No:	Client Name Client ID	pH	Initial WT/VOL	Surr. Mult.	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solids	C/D FACTOR
0801L468-	TNU-HANFORD RC-029										
002	J16358		30.0	1.0		10		1.0	N	98.88	337.1
002 -S	J16358		30.0	1.0	1.0	10		1.0	N	98.88	337.1
002 -T	J16358		30.0	1.0	1.0	10		1.0	N	98.88	337.1
003	J16359		30.0	1.0		10		1.0	N	98.87	337.1
0801L476-	TNU-HANFORD RC-029										
001	J163L8		30.0	1.0		10		1.0	N	0.0	333.3
001 -S	J163L8		30.0	1.0	1.0	10		1.0	N	0.0	333.3
001 -T	J163L8		30.0	1.0	1.0	10		1.0	N	0.0	333.3
002	J163L9		30.0	1.0		10		1.0	N	0.0	333.3
08LE0031-MB1	PBLKLU		30.0	1.0		10		1.0	N	100.00	333.3
08LE0031-MB1 -S	PBLKLU		30.0	1.0	1.0	10		1.0	N	100.00	333.3

Comments:
Surrogate: 250 UL OLM PSURR 89916403
Spike: 250 UL AR1660 89916602

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
all	[illegible]	01/23/08 1430	SZ	1/23 08 14:35	GC

000000000

Lionville Laboratory Use Only

0801C468

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client TNU-HANFORD SAF# KC-029

est. Final Proj. Sampling Date

Project# 11343-606-001-9999-0.0

Project Contact/Phone#

Lionville Laboratory Project Manager O. JOHNSON

QC SW846 Dal STD TAT 15DAY

Date Rec'd 1-18-08 Date Due 2-2-08

	A	B	C	D
Refrigerator #	2	2	2	2
#/Type Container (Liquid / Solid)	1G	1G	1G	1P
Volume	250	250	250 mL	125
Preservatives	—	—	—	—
ANALYSES REQUESTED	ORGANIC: 8260B, 8081A/8082A	TOTAL TPH	INORG: TCLP Metal Hg	INORG: CN

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260B 8081A/8082A	TPHC	TCLP	ICRG	RCRA
001	J 163 75			SOIL	1-16-08	1330			X		
002	J 163 58					1350	X	X	X	X	
003	J 163 59					1352	X	X	X	X	
004	75 TCLP OF 001										X
005	58 002										X
006	59 003										X

MATRIX CODES:
- Soil
- Sediment
- Solid
- Sludge
- Water
- Oil
- Air
- Drum Solids
- Drum Liquids
- EP/TCLP Leachate
- Wipe
- Other
- Fish

Special Instructions: Run matrix QC

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

* See Lab Chron

Relinquished by	Received by	Date	Time
Fed Ex	V. Nemanich	1-18-08	0950

Relinquished by	Received by	Date	Time

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

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-031	Page 1 of 1

Collector: Welch-Koelling	Company Contact: Matt Perrott — Telephone No.: 372-9088	Project Coordinator: KESSNER, JH	Price Code: 8C — Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: ~~100-F-46~~ 100-F-44:2	SAF No.: RC-029	
Ice Chest No.: ERC-02-505	Field Logbook No.: EL-1601-2 — COA C00F44A000 ~~C00F46A000~~	Method of Shipment: FedEx	
Shipped To: ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No.: A080176	Bill of Lading/Air Bill No.: See BSAC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
Type of Container	P	G/P	G	G/P	aG	aG	G	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	60mL	60mL	120mL	250mL	250mL	250mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Carbon-14; Tritium - H3	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	PAH - 8310	TPH (Total) - 418.1	See item (2)		

Sample No.	Matrix *	Sample Date	Sample Time										
~~J16355~~	SOIL												
~~J16356~~	SOIL												
~~J16357~~ J16375	SOIL	1/16/08	1330								X		
J16358	SOIL	1/16/08	1350			X	X	X		X			
J16359	SOIL	1/16/08	1352			X	X	X		X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Eberline	1/16/08 1430	BHudson BHudson	1/16/08 1430
BHudson BHudson	1/16/08 1515	3728 #2C	1/16/08 1515
3728 #2C	1-17-08 0830	HWSingleton	1-17-08 0830
HWSingleton	1-17-08 1500	FED EX	
FED EX	1-18-09 0950		1-18-09 0950

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 1/17/08
Sampler unavailable to relinquish

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

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

WCH-EE-011

000000008

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD

Project/SAF/SOW/Release #: RC-029

Date: 1-18-08

LvLI Batch #: 08011468

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 7909 1898 8989
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 2.8°	°C	Cooler # ERC-02-505
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A

Person Contacted _____ Date _____

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RECEIVED
FEB 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-029 K1091

DATE RECEIVED: 01/18/08 LVL LOT # :08011468

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16375						
TCLP	001	S	08LTO010	01/16/08	01/23/08	01/24/08
J16358						
TCLP	002	S	08LTO010	01/16/08	01/23/08	01/24/08
J16359						
TCLP	003	S	08LTO010	01/16/08	01/23/08	01/24/08
J16375						
SILVER, TCLP LEACHAT	004	W	08L0035	01/24/08	01/28/08	01/28/08
SILVER, TCLP LEACHAT	004 REP	W	08L0035	01/24/08	01/28/08	01/28/08
SILVER, TCLP LEACHAT	004 MS	W	08L0035	01/24/08	01/28/08	01/28/08
ARSENIC, TCLP LEACHA	004	W	08L0035	01/24/08	01/28/08	01/28/08
ARSENIC, TCLP LEACHA	004 REP	W	08L0035	01/24/08	01/28/08	01/28/08
ARSENIC, TCLP LEACHA	004 MS	W	08L0035	01/24/08	01/28/08	01/28/08
BARIUM, TCLP LEACHAT	004	W	08L0035	01/24/08	01/28/08	01/28/08
BARIUM, TCLP LEACHAT	004 REP	W	08L0035	01/24/08	01/28/08	01/28/08
BARIUM, TCLP LEACHAT	004 MS	W	08L0035	01/24/08	01/28/08	01/28/08
CADMIUM, TCLP LEACHA	004	W	08L0035	01/24/08	01/28/08	01/28/08
CADMIUM, TCLP LEACHA	004 REP	W	08L0035	01/24/08	01/28/08	01/28/08
CADMIUM, TCLP LEACHA	004 MS	W	08L0035	01/24/08	01/28/08	01/28/08
CHROMIUM, TCLP LEACH	004	W	08L0035	01/24/08	01/28/08	01/28/08
CHROMIUM, TCLP LEACH	004 REP	W	08L0035	01/24/08	01/28/08	01/28/08
CHROMIUM, TCLP LEACH	004 MS	W	08L0035	01/24/08	01/28/08	01/28/08
MERCURY, TCLP LEACHA	004	W	08C0017	01/24/08	01/29/08	01/30/08
MERCURY, TCLP LEACHA	004 REP	W	08C0017	01/24/08	01/29/08	01/30/08
MERCURY, TCLP LEACHA	004 MS	W	08C0017	01/24/08	01/29/08	01/30/08
LEAD, TCLP LEACHATE	004	W	08L0035	01/24/08	01/28/08	01/28/08
LEAD, TCLP LEACHATE	004 REP	W	08L0035	01/24/08	01/28/08	01/28/08
LEAD, TCLP LEACHATE	004 MS	W	08L0035	01/24/08	01/28/08	01/28/08
SELENIUM, TCLP LEACH	004	W	08L0035	01/24/08	01/28/08	01/28/08
SELENIUM, TCLP LEACH	004 REP	W	08L0035	01/24/08	01/28/08	01/28/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-029 K1091

DATE RECEIVED: 01/18/08 LVL LOT # :0801L468

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TCLP LEACH	004 MS	W	08L0035	01/24/08	01/28/08	01/28/08
J16358						
SILVER, TCLP LEACHAT	005	W	08L0035	01/24/08	01/28/08	01/28/08
ARSENIC, TCLP LEACHA	005	W	08L0035	01/24/08	01/28/08	01/28/08
BARIUM, TCLP LEACHAT	005	W	08L0035	01/24/08	01/28/08	01/28/08
CADMIUM, TCLP LEACHA	005	W	08L0035	01/24/08	01/28/08	01/28/08
CHROMIUM, TCLP LEACH	005	W	08L0035	01/24/08	01/28/08	01/28/08
MERCURY, TCLP LEACHA	005	W	08C0017	01/24/08	01/29/08	01/30/08
LEAD, TCLP LEACHATE	005	W	08L0035	01/24/08	01/28/08	01/28/08
SELENIUM, TCLP LEACH	005	W	08L0035	01/24/08	01/28/08	01/28/08
J16359						
SILVER, TCLP LEACHAT	006	W	08L0035	01/24/08	01/28/08	01/28/08
ARSENIC, TCLP LEACHA	006	W	08L0035	01/24/08	01/28/08	01/28/08
BARIUM, TCLP LEACHAT	006	W	08L0035	01/24/08	01/28/08	01/28/08
CADMIUM, TCLP LEACHA	006	W	08L0035	01/24/08	01/28/08	01/28/08
CHROMIUM, TCLP LEACH	006	W	08L0035	01/24/08	01/28/08	01/28/08
MERCURY, TCLP LEACHA	006	W	08C0017	01/24/08	01/29/08	01/30/08
LEAD, TCLP LEACHATE	006	W	08L0035	01/24/08	01/28/08	01/28/08
SELENIUM, TCLP LEACH	006	W	08L0035	01/24/08	01/28/08	01/28/08

LAB QC:

SILVER LABORATORY	LC1 BS	W	08L0035	N/A	01/28/08	01/28/08
SILVER, TCLP LEACHAT	MB1	W	08L0035	N/A	01/28/08	01/28/08
SILVER, TCLP LEACHAT	MB2	W	08L0035	N/A	01/28/08	01/28/08
ARSENIC LABORATORY	LC1 BS	W	08L0035	N/A	01/28/08	01/28/08
ARSENIC, TCLP LEACHA	MB1	W	08L0035	N/A	01/28/08	01/28/08
ARSENIC, TCLP LEACHA	MB2	W	08L0035	N/A	01/28/08	01/28/08
BARIUM LABORATORY	LC1 BS	W	08L0035	N/A	01/28/08	01/28/08
BARIUM, TCLP LEACHAT	MB1	W	08L0035	N/A	01/28/08	01/28/08
BARIUM, TCLP LEACHAT	MB2	W	08L0035	N/A	01/28/08	01/28/08
CADMIUM LABORATORY	LC1 BS	W	08L0035	N/A	01/28/08	01/28/08
CADMIUM, TCLP LEACHA	MB1	W	08L0035	N/A	01/28/08	01/28/08
CADMIUM, TCLP LEACHA	MB2	W	08L0035	N/A	01/28/08	01/28/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-029 K1091

DATE RECEIVED: 01/18/08 LVL LOT # :0801L468

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM LABORATORY	LC1 BS	W	08L0035	N/A	01/28/08	01/28/08
CHROMIUM, TCLP LEACH	MB1	W	08L0035	N/A	01/28/08	01/28/08
CHROMIUM, TCLP LEACH	MB2	W	08L0035	N/A	01/28/08	01/28/08
MERCURY LABORATORY	LC1 BS	W	08C0017	N/A	01/29/08	01/30/08
MERCURY, TOTAL	MB1	W	08C0017	N/A	01/29/08	01/30/08
MERCURY, TCLP LEACHA	MB2	W	08C0017	N/A	01/29/08	01/30/08
LEAD LABORATORY	LC1 BS	W	08L0035	N/A	01/28/08	01/28/08
LEAD, TCLP LEACHATE	MB1	W	08L0035	N/A	01/28/08	01/28/08
LEAD, TCLP LEACHATE	MB2	W	08L0035	N/A	01/28/08	01/28/08
SELENIUM LABORATORY	LC1 BS	W	08L0035	N/A	01/28/08	01/28/08
SELENIUM, TCLP LEACH	MB1	W	08L0035	N/A	01/28/08	01/28/08
SELENIUM, TCLP LEACH	MB2	W	08L0035	N/A	01/28/08	01/28/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-029
LVL#: 0801L468
SDG/SAF#: K1091/RC-029

W.O.#: 11343-606-001-9999-00
Date Received: 01-18-08

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.

1. This narrative covers the analyses of 3 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples were reported with 6-fold dilutions for ICP metals due to sample matrix.

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

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

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

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

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

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

9. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

10. The TCLP extract from sample J16375 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

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

11. 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.

12. LvLI is NELAP accredited by the state of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

1/30/08
Date

jjw/m01-468

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#: 0801L468

Leaching Procedure: __1310 X 1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A X 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	X 6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X 6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	X 6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	X 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	X 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	X 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	X 6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X 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 01/30/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0801L468

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J16375	Silver, TCLP Leachate	6.0	u	UG/L	6.0	6.0
		Arsenic, TCLP Leachate	30.0	u	UG/L	30.0	6.0
		Barium, TCLP Leachate	46.2		UG/L	6.0	6.0
		Cadmium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Chromium, TCLP Leachate	12.0	u	UG/L	12.0	6.0
		Mercury, TCLP Leachate	0.06	u	UG/L	0.06	1.0
		Lead, TCLP Leachate	18.0	u	UG/L	18.0	6.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	6.0
-005	J16358	Silver, TCLP Leachate	6.0	u	UG/L	6.0	6.0
		Arsenic, TCLP Leachate	30.0	u	UG/L	30.0	6.0
		Barium, TCLP Leachate	155		UG/L	6.0	6.0
		Cadmium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Chromium, TCLP Leachate	12.0	u	UG/L	12.0	6.0
		Mercury, TCLP Leachate	0.11		UG/L	0.06	1.0
		Lead, TCLP Leachate	28.1		UG/L	18.0	6.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	6.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/30/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0801L468

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J16359	Silver, TCLP Leachate	6.0	u	UG/L	6.0	6.0
		Arsenic, TCLP Leachate	30.0	u	UG/L	30.0	6.0
		Barium, TCLP Leachate	131		UG/L	6.0	6.0
		Cadmium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Chromium, TCLP Leachate	12.0	u	UG/L	12.0	6.0
		Mercury, TCLP Leachate	0.06	u	UG/L	0.06	1.0
		Lead, TCLP Leachate	19.7		UG/L	18.0	6.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	6.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/30/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0801L468

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0035-MB1	Silver, TCLP Leachate	1.0	u	UG/L	1.0	1.0
		Arsenic, TCLP Leachate	5.0	u	UG/L	5.0	1.0
		Barium, TCLP Leachate	1.0	u	UG/L	1.0	1.0
		Cadmium, TCLP Leachate	0.50	u	UG/L	0.50	1.0
		Chromium, TCLP Leachate	2.0	u	UG/L	2.0	1.0
		Lead, TCLP Leachate	3.2		UG/L	3.0	1.0
		Selenium, TCLP Leachate	6.0	u	UG/L	6.0	1.0
BLANK2	08L0035-MB2	Silver, TCLP Leachate	6.7		UG/L	6.0	6.0
		Arsenic, TCLP Leachate	30.0	u	UG/L	30.0	6.0
		Barium, TCLP Leachate	6.0	u	UG/L	6.0	6.0
		Cadmium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Chromium, TCLP Leachate	12.0	u	UG/L	12.0	6.0
		Lead, TCLP Leachate	20.0		UG/L	18.0	6.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	6.0
BLANK1	08C0017-MB1	Mercury, Total	0.06	u	UG/L	0.06	1.0
BLANK2	08C0017-MB2	Mercury, TCLP Leachate	0.12		UG/L	0.06	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/30/08

CLIENT: TNUHANFORD RC-029 X1091 LVL LOT #: 0801L468

WORK ORDER: 11243-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	J16375	Silver, TCLP Leachate	4400	6.0 u	5000	87.9	6.0
		Arsenic, TCLP Leachate	4730	30.0 u	5000	94.5	6.0
		Barium, TCLP Leachate	91400	46.2	100000	91.3	6.0
		Cadmium, TCLP Leachate	975	3.0 u	1000	97.5	6.0
		Chromium, TCLP Leachat	4860	12.0 u	5000	97.2	6.0
		Mercury, TCLP Leachate	198	0.06u	200	98.9	50.0
		Lead, TCLP Leachate	4910	18.0 u	5000	98.3	6.0
		Selenium, TCLP Leachat	927	36.0 u	1000	92.7	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/30/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0801L468

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	J16375	Silver, TCLP Leachate	6.0 u	6.8	* ~~NC~~ 200	6.0
		Arsenic, TCLP Leachate	30.0 u	30.0 u	NC	6.0
		Barium, TCLP Leachate	46.2	41.2	11.4	6.0
		Cadmium, TCLP Leachate	3.0 u	3.0 u	NC	6.0
		Chromium, TCLP Leachate	12.0 u	12.0 u	NC	6.0
		Mercury, TCLP Leachate	0.06u	0.06u	NC	1.0
		Lead, TCLP Leachate	18.0 u	31.4	* ~~NC~~ 200	6.0
		Selenium, TCLP Leachate	36.0 u	36.0 u	NC	6.0

* corrected values
MW 1/30/08

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/30/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0801L468

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0035-LC1	Silver, LCS	482	500	UG/L	96.3
		Arsenic, LCS	9540	10000	UG/L	95.4
		Barium, LCS	4760	5000	UG/L	95.1
		Cadmium, LCS	250	250	UG/L	99.9
		Chromium, LCS	495	500	UG/L	99.0
		Lead, LCS	2500	2500	UG/L	99.9
		Selenium, LCS	9210	10000	UG/L	92.1
LCS1	08C0017-LC1	Mercury, LCS	5.0	5.0	UG/L	100.7

nville Laboratory
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MERCURY PREPARATION

yst: CB
1/29/08
Time/Temp: 1415 / 98°
Time/Temp: 1615 / 93°

Instrument ID HG3.2 corrected entry pw 1/30/08
Balance #: NA
Pipette Calibration (Daily) Y ✓

Logbook # 0326
Prep Batch: 08C0017 corrected entry pw 1/30/08
Worksheet: ~~HG012902~~ HG013001
OP No. ME-HgCVAA, Rev. 02

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

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

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
Blank	AB			33mL	33mL	
0.2 µg/L	LZ	0.0667				
1.0	11A	0.334				
2.0	JS	0.667				
5.0	XD	1.667				
10.0	MH	3.334				
ICV	B6	0.0834	2.5			
CCV	P5	0.167	5.0			
ICB/CCB	A94					
MB1	111E					PBW117
LC1	PT	0.167	5.0			LCSW117
0801L485-004	ET					
004R	Gd					
004S	114	0.334	1.0			
0801L488-007	40					
007R	NT					
007S	71L	0.334	1.0			
0801L468-004	P1					
004R	222					
004S	SE	0.667	200			
005	Z					
006	K35					
08LT0010-LB1	3H					
STD	H5					
STD	1V					
STD	205					
STD	WN176					

dard:	ID	Prep Date/Time
MS	R16072-75-07B	1/29/08 1150
CCV/LCS	US 6072-75-08A	

Reviewed By/Date: [signature] 1/30/08

see book # 9368 for std traceability information

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

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

Lionville Laboratory Incorporated Logbook #: 341

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0035
Date/Time Initiated: 1128/08 10:00AM
Date/Time Completed: 1128/08 1:15PM
Analyst(s): W/KMC
Matrix: Soil Water Other: concrete
Instr. Type: AA ICP
Parameters: See backlog

Digested / Undigested (circle one)
Balance #: B70
Balance Cal Verif: Y NA 920
Hot Plate Temp: TWU

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 GKS

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
CR01L463-004		100mL	100mL	LO	TC	N/A	Colorless	N/A	N/A
-004R									
-004S	1.0mL								
-005							tan to brown		
-006							clear colorless		
CRLTCON-CB1									
CRL0035-MB1									
-LCS	1.0mL								

KMC 1128/08

Spiking IDs:
MS #: 0072-073-03 -04 -05
LCS spike

LCS #: 0072-077-02 -03 -04 -05

Reagent IDs:
HNO_3 E22071
HCL
H_2O_2
1:1 HNO_3
1:1 HCL 0072-079-03

File ID#: IC003501
LIMS Transfer: Y N updated
Data Review By/Date: PMP, 01/29/08

~~AMSBLC1 were both spiked with MS spikes~~
KMC 1128/08
wrong page

L-SPI-3020-A-0601

Page #: 036
000000015

See SRC

Lionville Laboratory Use Only

0801L468

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

000000016

Client TNU-HANFORD SAF# KC-029

Est. Final Proj. Sampling Date

Project# 11343-606-001-9REP-00

Project Contact/Phone#

Lionville Laboratory Project Manager O. JOHNSON

QC SW846 Del STD TAT 15DAY

Date Rec'd 1-18-08 Date Due 2-2-08

		A			B		C		D					
Refrigerator #		2			2		2		2					
#/Type Container	Liquid / Solid	1G			1G		1G		1P					
Volume		250			250		250/60		120					
Preservatives		—			—		—		—					
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb		TOTAL TPH		INORG: TCLP Metal Hg	CN	9056			TCLP HAZ	
	Lionville Laboratory Use Only		8260B OPCB			IPHC		ITCLP		ICRG			RCRA	

MATRIX CODES:
S- Soil
SS- Sediment
SO- Solid
SL- Sludge
W- Water
O- Oil
A- Air
DS- Drum Solids
DL- Drum Liquids
L- EP/TCLP Leachate
WI- Wipe
X- Other
F- Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
001	J 163 75			Soil	1-16-08	1330							X							
002	J 163 58					1350			X			X	X		X					
003	J 163 59					1352			X			X	X		X					
004	75 TCLP of 001																X			
005	58 002																X			
006	59 003																X			

Special Instructions: Run matrix QC

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

* See Lab chron

Relinquished by	Received by	Date	Time
Fed Ex	V. Hernandez	1-18-08	0950

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-029-031	Page 1 of 1

Collector Welch-Koelling	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location ~~100-F-46~~ 100-F-44-2 BH 1/16/08		SAF No. RC-029
Ice Chest No. ERC-02-505	Field Logbook No. EL-1601-2	COA C00F44A000 ~~C00F46A000~~ BH 1/16/08	Method of Shipment FedEx
Shipped To BH 1/16/08 ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No. A080176		Bill of Lading/Air Bill No. See BSPC

000000017

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	P	G/P	G	G/P	aG	aG	G	aG			
No. of Container(s)	1	1	1	1	1	1	1	1			
Volume	1000mL	60mL	60mL	120mL	250mL	250mL	250mL	250mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Carbon-14; Tritium - H3	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	PAHs - 8310	TPH (Total) - 418.1	See item (2)			

Sample No.	Matrix *	Sample Date	Sample Time										
~~J16355~~ BH 1/16/08	SOIL												
J16356	SOIL												
~~J16357~~ J16375	SOIL	1/16/08	1330								X		
J16358	SOIL	1/16/08	1350			X	X	X		X			
J16359	SOIL	1/16/08	1352			X	X	X		X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	1/16/08 1A-30	BHudson BHudson	1/16/08 1430
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BHudson BHudson	1/16/08 1515	3728 #2C	1/16/08 1515
Relinquished By/Removed From	Date/Time 1-17-08	Received By/Stored In	Date/Time 1-17-08
3728 #2C 1-17-08	0830	MJSingleton	1-17-08 0830
Relinquished By/Removed From	Date/Time WCH	Received By/Stored In	Date/Time
MJSingleton 1-17-08	1-17-08 1500	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED EX	1-18-08 0950	[signature]	1-18-08 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 1/17/08.
Sampler unavailable to relinquish

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

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD

Project/SAF/SOW/Release #: RC-029

Date: 1-18-08

LvLI Batch #: 08011468

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 7909 1898 8989
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 2.8°	°C	Cooler # ERC-02-505
How was the temperature taken?	☑ IR	☐ Temp Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A

Person Contacted _____ Date _____

LvLI LIONVILLE LABORATORY INC.

RECEIVED FEB 2008

Lionville Laboratory, Inc.
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD RC-029 K1091

DATE RECEIVED: 01/18/08 LVL LOT # :08011468

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16358	002	S	08LE0031	01/16/08	01/22/08	01/23/08
J16358	002 MS	S	08LE0031	01/16/08	01/22/08	01/23/08
J16358	002 MSD	S	08LE0031	01/16/08	01/22/08	01/23/08
J16359	003	S	08LE0031	01/16/08	01/22/08	01/23/08

LAB QC:

PBLKLU	MB1	S	08LE0031	N/A	01/22/08	01/23/08
PBLKLU	MB1 BS	S	08LE0031	N/A	01/22/08	01/23/08

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-029
LVL #: 0801L468
SDG/SAF # K1080 / RC-029

W.O. #: 11343-606-001-9999-00
Date Received: 01-18-2008

CHLORINATED PESTICIEDES

Two (2) soil samples were collected on 01-16-2008.

The samples and their associated QC samples were extracted on 01-22-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 01-23-2008. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. The samples were extracted and analyzed within required holding time.
2. The method blank was below the reporting limits for all target compounds.
3. All surrogate recoveries were within acceptance criteria.
4. One (1) of twenty (20) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. Two (2) of forty (40) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. All samples required a 4-fold instrument dilution due to the matrix.
7. The initial calibrations associated with this data set were within acceptance criteria.
8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

r:\group\data\2008\pest\tnu\0801-468ks2.pest.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data Therefore, this report should only be reproduced in its entirety of 10 pages.

LvLI
LIONVILLE LABORATORY INC.

9. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

1/30/02
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08QC010

Initiator: CAC
Date: 01-25-08
Client: TNU

Batch: 0801L468
Samples: 002MS/MSD BS
Method: SW846/MCAWW/CLP/

Parameter: Pest
Matrix: SOIL
Prep Batch: 08LE0031

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Delta-BHC recovery low in MS/MSD
Endrin Ketone recovery low in BS

2. Known or Probable Causes(s) Delta BHC is prone to degredation.

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:

δ-BHC OK in BS.
Endrin Ketone @ 82% recovery will not bias data.
Narrate 2D.

4. Project Manager Instructions...signature/date: gh 1/31/08

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: MRA 1-30-08

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

GLOSSARY OF DATA

DATA QUALIFIERS

U	=	Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
J	=	Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
I	=	Interference.
.I	=	Indicates an interference on one analytical column only. Result is reported from remaining analytical column.

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
NS	=	Not Spiked.
SP	=	Indicates Spiked Compound.
P	=	This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.
NPM	=	No pattern match for multi-component target analytes.

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 01/25/08 13:20

RFW Batch Number: 0801L468 Client: TNU-HANFORD RC-029 Work Order: 11343606001 Page: 1

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	Cust ID:	J16358	J16358	J16358	J16359	PBLKLU	PBLKLU BS
Sample Information	RFW#:	002	002 MS	002 MSD	003	08LE0031-MB1	08LE0031-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	74 %	83 %	81 %	85 %	76 %	78 %
	Decachlorobiphenyl	70 %	77 %	78 %	81 %	71 %	70 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.3 U	76 %	73 %	1.3 U	0.33 U	86 %
gamma-BHC (Lindane)		1.3 U	82 %	79 %	1.3 U	0.33 U	86 %
Beta-BHC		1.3 U	92 %	89 %	1.3 U	0.33 U	86 %
Heptachlor		1.3 U	92 %	91 %	1.3 U	0.33 U	84 %
Delta-BHC		1.3 U	49 * %	46 * %	1.3 U	0.33 U	58 %
Aldrin		1.3 U	85 %	83 %	1.3 U	0.33 U	87 %
Heptachlor epoxide		1.3 U	94 %	92 %	1.3 U	0.33 U	87 %
gamma-Chlordane		1.3 U	94 %	92 %	1.3 U	0.33 U	88 %
Endosulfan I		1.3 U	100 %	98 %	1.3 U	0.33 U	90 %
alpha-Chlordane		1.3 U	95 %	93 %	1.3 U	0.33 U	88 %
4,4'-DDE		1.3 U	102 %	98 %	1.3 U	0.33 U	96 %
Dieldrin		1.3 U	92 %	90 %	1.3 U	0.33 U	90 %
Endrin		1.3 U	98 %	95 %	1.3 U	0.33 U	89 %
4,4'-DDD		1.3 U	92 %	88 %	1.3 U	0.33 U	91 %
Endosulfan II		1.3 U	98 %	95 %	1.3 U	0.33 U	89 %
4,4'-DDT		1.3 U	89 %	86 %	1.3 U	0.33 U	89 %
Endrin aldehyde		1.3 U	98 %	95 %	1.3 U	0.33 U	83 %
Endosulfan sulfate		1.3 U	90 %	88 %	1.3 U	0.33 U	79 %
Methoxychlor		1.3 U	95 %	94 %	1.3 U	0.33 U	80 %
Endrin ketone		1.3 U	96 %	93 %	1.3 U	0.33 U	82 * %
Toxaphene		13 U	13 U	13 U	13 U	3.3 U	3.3 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory, Inc.

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 01/22/08 Extraction Batch No: 08LE0031 Analyst: MF Method: **** 5030/3540

Test: O608 Cleanup Date: Analyst: Client: TNU-HANFORD RC-029

LIMS Report Date: 01/23/08 Solvent: DCM/ACETONE,HEXANE Adsorbent:

Sample No:	Client Name / Client ID	pH	Initial WT/VOL	Surr. Mult.	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solids	C/D FACTOR
0801L468-	TNU-HANFORD RC-029										
002 H	J16358		30.0	1.0		10		1.0	Y	98.88	337.1
002 HS	J16358		30.0	1.0	1.0	10		1.0	Y	98.88	337.1
002 HT	J16358		30.0	1.0	1.0	10		1.0	Y	98.88	337.1
003 H	J16359		30.0	1.0		10		1.0	Y	98.87	337.1
08LE0031-MB1 H	PBLKLU		30.0	1.0		10		1.0	Y	100.00	333.3
08LE0031-MB1 HS	PBLKLU		30.0	1.0	1.0	10		1.0	Y	100.00	333.3

Comments:
Surrogate: 250 UL OLM PSURR 89916403
Spike: 250 UL FULL LIST PEST SPIKE 89915508

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
[illegible]	[illegible]	01/23/08 1430	SZ	1/23/08 14:35	GC

000000007

onville Laboratory Use Only

08016468

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

ent TNU-HANFORD SAF# KC-029

L. Final Proj. Sampling Date

ject# 11343-606-001-9988-0.0

ject Contact/Phone#

nville Laboratory Project Manager O. JOHNSON

SW846 Del STD TAT 15Day

te Rec'd 1-18-08 Date Due 2-2-08

Refrigerator #				A 2			B 2		C 2		D 2					
#/Type Container	Liquid															
	Solid			16			16		16		1P					
Volume				250			250		250		120					
Preservatives				—			—		—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb		TOTAL TPH		TCLP Metal Hg	CN	SB46		TCLP HAZ			
				Lionville Laboratory Use Only												
				0608H OPC8			IPHC		ITCLP		ICRG		RCRA			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0608H OPC8	IPHC	ITCLP	ICRG	RCRA
001	J 163 75			Soil	1-16-08	1330			X		
002	J 163 58			↓	↓	1350	X	X	X	X	
003	J 163 59			↓	↓	1352	X	X	X	X	
004	↓ 75 TCLP of 001			↓	↓						X
005	↓ 58 ↓ 002			↓	↓						X
006	↓ 59 ↓ 003			↓	↓						X

pecial Instructions: Run matrix QC

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

* See Lab Chron

Relinquished by	Received by	Date	Time
[signature]	V. Hernandez	1-18-08	0950

Relinquished by	Received by	Date	Time

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

000000008

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-031	Page 1 of 1

Collector: Welch-Koelling	Company Contact: Matt Perrott	Telephone No.: 372-9088	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil	Sampling Location: ~~100-F-46~~ 100-F-44:2 BH 1/16/08		SAF No.: RC-029
Ice Chest No.: ERC-02-505	Field Logbook No.: EL-1601-2	COA CO6F44A000 ~~C06F46A000~~ BH 1/16/08	Method of Shipment: FedEx
Shipped To: BH 1/16/08 ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No.: A080176		Bill of Lading/Air Bill No.: See BSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	P	G/P	G	G/P	aG	aG	G	aG			
No. of Container(s)	1	1	1	1	1	1	1	1			
Volume	1000mL	60mL	60mL	120mL	250mL	250mL	250mL	250mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Carbon-14; Tritium - H3	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	PAHs - 8310	TPH (Total) - 418.1	See item (2)			

Sample No.	Matrix *	Sample Date	Sample Time										
~~J16355~~ BH 1/16/08	SOIL												
J16356	SOIL												
~~J16357~~ J16375	SOIL	1/16/08	1330								X		
J16358	SOIL	1/16/08	1350			X	X	X		X			
J16359	SOIL	1/16/08	1352			X	X	X		X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	1/16/08 1430	BHudson [signature]	1/16/08 1430
BHudson [signature]	1/16/08 1515	3728 #2C	1/16/08 1515
3728 #2C	1-17-08 0830	KMSingleton [signature]	1-17-08 0830
KMSingleton [signature]	1-17-08 1500	FED EX	
Fed Ex	1-18-09 0950	[signature]	1-18-09 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470

samples from 3728 Ref# 2C
3728 Custodian removed samples for shipping on 1/17/08.
Sampler unavailable to relinquish

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

000000009

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD

Project/SAF/SOW/Release #: RC-029

Date: 1-18-08

LvLI Batch #: 08011468

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 7909 1898 8989
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 2.8°	°C	Cooler # ERC-02-505
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A
Person Contacted _____		Date _____	

LvLI LIONVILLE LABORATORY INC

SR-002-B.doc

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-029 K1091

RECEIVED FEB 2008

DATE RECEIVED: 01/18/08 LVL LOT # :08[illegible]L468

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16375						
TCLP	001	S	08LTO010	01/16/08	01/23/08	01/24/08
J16358						
% SOLIDS	002	S	08L%S008	01/16/08	01/21/08	01/22/08
CHROMIUM VI	002	S	08LVI007	01/16/08	01/22/08	01/22/08
CHROMIUM VI	002 REP	S	08LVI007	01/16/08	01/22/08	01/22/08
CHROMIUM VI	002 MS	S	08LVI007	01/16/08	01/22/08	01/22/08
CHROMIUM VI	002 MSD	S	08LVI007	01/16/08	01/22/08	01/22/08
PETROLEUM HYDROCARBO	002	S	08LHC002	01/16/08	02/04/08	02/08/08
TCLP	002	S	08LTO010	01/16/08	01/23/08	01/24/08
J16359						
% SOLIDS	003	S	08L%S008	01/16/08	01/21/08	01/22/08
% SOLIDS	003 REP	S	08L%S008	01/16/08	01/21/08	01/22/08
CHROMIUM VI	003	S	08LVI007	01/16/08	01/22/08	01/22/08
PETROLEUM HYDROCARBO	003	S	08LHC002	01/16/08	02/04/08	02/08/08
PETROLEUM HYDROCARBO	003 REP	S	08LHC002	01/16/08	02/04/08	02/08/08
PETROLEUM HYDROCARBO	003 MS	S	08LHC002	01/16/08	02/04/08	02/08/08
TCLP	003	S	08LTO010	01/16/08	01/23/08	01/24/08

LAB QC:

CHROMIUM VI	MB1	S	08LVI007	N/A	01/22/08	01/22/08
CHROMIUM VI	MB1 BS	S	08LVI007	N/A	01/22/08	01/22/08
CHROMIUM VI	MB1 BSD	S	08LVI007	N/A	01/22/08	01/22/08
PETROLEUM HYDROCARBO	MB1	S	08LHC002	N/A	02/04/08	02/08/08
PETROLEUM HYDROCARBO	MB1 BS	S	08LHC002	N/A	02/04/08	02/08/08
PETROLEUM HYDROCARBO	MB1 BSD	S	08LHC002	N/A	02/04/08	02/08/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-029 K1091
LVL#: 0801L468

W.O.#: 11343-606-001-9999-00
Date Received: 01-18-08

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked 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 for Petroleum Hydrocarbon (PHC) was within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries for Chromium VI and PHC were within the 75-125% control limits.

8. The replicate analyses for Chromium VI, Percent Solids and PHC were within the 20% RPD control limit.

9. Results for soil samples are reported on a dry weight basis.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/13/08
Date

njp\01-468
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 12 pages.

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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	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		✓ 9071 (mod.)	✓ EPA 418.1 (mod.)
pH, Soil		__ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	
Other:	**Method:**		
Other:	**Method**		

L-WI-034/B-01/01

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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.

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INORGANICS DATA SUMMARY REPORT 02/08/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0801L468

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J16358	% Solids	98.9	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
		Petroleum Hydrocarbons	134 u	MG/KG	134	1.0
-003	J16359	% Solids	98.9	%	0.01	1 0
		Chromium VI	0.28	MG/KG	0.20	1.0
		Petroleum Hydrocarbons	134 u	MG/KG	134	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/08/08

CLIENT: TNUHANFORD RC-029 K1091

LVL LOT #: 08011468

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	08LVI007-MB1	Chromium VI	0.20	u	MG/KG	0.20	1.0
BLANK10	08LHC002-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

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INORGANICS ACCURACY REPORT 02/08/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0801L468

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J16358	Soluble Chromium VI	4.1	0.20u	4.0	97 7	1.0
		Insoluble Chromium VI	1240	0.20u	1110	111.3	100
-003	J16359	Petroleum Hydrocarbons	556	0.0	565	98.4	1.0
BLANK10	08LVI007-MB1	Soluble Chromium VI	4.0	0.20u	4.0	100.5	1.0
		Insoluble Chromium VI	1110	0.20u	1080	103.2	100
BLANK10	08LHC002-MB1	Petroleum Hydrocarbons	567	133 u	560	101.3	1.0
		Petroleum Hydrocarbons	562	133 u	559	100.6	1.0

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INORGANICS DUPLICATE SPIKE REPORT 02/08/08

CLIENT: TNUHANFORD RC-029 K1091 LVL LOT #: 0801L468

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	08LHC002-MB1	Petroleum Hydrocarbons	101.3	100.6	0.70

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INORGANICS PRECISION REPORT 02/08/08

CLIENT: TNUHANFORD RC-029 K1091

LVL LOT #: 0801L468

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J16358	Chromium VI	0.20u	0.20u	NC	1.0
-003REP	J16359	% Solids	98.9	98.8	0.091	1.0
		Petroleum Hydrocarbons	134 u	135 u	NC	1.0

ionville Laboratory Use Only

08010468

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

lient TNU-HANFORD SAF# KC-029

rt. Final Proj. Sampling Date

roject# 11343-606-001-9989-0.0

roject Contact/Phone#

onville Laboratory Project Manager O. JOHNSON

: SW846 Del STD TAT 15DAY

ate Rec'd 1-18-08 Date Due 2-2-08

	A	B	C	D
Refrigerator #	2	2	2	2
#/Type Container (Liquid / Solid)	16	16	16	1P
Volume	250	250	250/60	120
Preservatives	—	—	—	—
ANALYSES REQUESTED (ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: CN)		TOTAL TPH	TCLP Metal Hg	9056 LEACHATE
Lionville Laboratory Use Only	0608H OPCB	I PHC	ITCLP	ICRG RCRA

MATRIX CODES: S- Soil; Sd- Sediment; Sl- Solid; Sg- Sludge; W- Water; O- Oil; A- Air; D- Drum Solids; L- Drum Liquids; E- EP/TCLP Leachate; Wi- Wipe; O- Other; F- Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0608H OPCB	I PHC	ITCLP	ICRG	RCRA
001	J 16375			Soil	1-16-08	1330			X		
002	J 16358					1350	X	X	X	X	
003	J 16359					1352	X	X	X	X	
004	75 TCLP of 001										X
005	58 002										X
006	59 003										X

Special Instructions: Run matrix QC

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

* See Lab Chron

Relinquished by	Received by	Date	Time
Fed Ex	V. Hernandez	1-18-08	0950

Relinquished by	Received by	Date	Time

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

000000010

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-031	Page 1 of 1

Collector Welch-Koelling	Company Contact Matt Perrott	Telephone No. 372-9088	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil	Sampling Location ~~100-F-46~~ 100-F-44:2 BH 1/16/08		SAF No. RC-029
Ice Chest No. ERC-02-505	Field Logbook No. EL-1601-2	COA CCCF44A000 ~~C00F46A000~~ BH 1/16/08	Method of Shipment FedEx
Shipped To BH 1/16/08 ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No. A030176		Bill of Lading/Air Bill No. See BSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
Type of Container	P	~~G/P~~	G	G/P	aG	aG	G	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	1000mL	60mL	60mL	120mL	250mL	250mL	250mL	250mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Carbon-14; Tritium - H3	See item (2) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082; Pesticides - 8081	PAHs - 8310	TPH (Total) - 418.1	See item (2)		

Sample No.	Matrix *	Sample Date	Sample Time									
~~J16355~~ BH 1/16/08	SOIL											
~~J16356~~	SOIL											
~~J16357~~ J16375	SOIL	1/16/08	1330								X	
J16358	SOIL	1/16/08	1350			X	X	X		X		
J16359	SOIL	1/16/08	1352			X	X	X		X		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T Welch Koelling	1/16/08 1430	BHudson BHudson	1/16/08 1430
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BHudson BHudson	1/16/08 1515	3728 #2C	1/16/08 1515
Relinquished By/Removed From	Date/Time 1-17-08	Received By/Stored In	Date/Time 1-17-08
3728 #2C 1-17-08	0830	KMSingleton	1-17-08 0830
Relinquished By/Removed From	Date/Time WCH	Received By/Stored In	Date/Time
KMSingleton 1-17-08	1708 1500	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	1-18-09 0950	[illegible]	1-18-09 0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Americium-241; Gross Alpha & Gross Beta; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Total Uranium
(2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury (TCLP) - 1311/7470

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 1/17/08
Sampler unavailable to relinquish

Matrix *
S=Soil
SS=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

000000011

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU HANFORD
Project/SAF/SOW/Release #: RC-029

Date: 1-18-08

LvLI Batch #: 08011468

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FED EX		Airbill # 7909 1898 8989
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 2.8°	°C	Cooler # ERC-02.505
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received?	☑ Yes	☐ No	
All samples received on COC?	☑ Yes	☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A
14. QC stickers placed on bottles designated by client?	☐ Yes	☐ No	☑ N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A
Person Contacted _____		Date _____	

LvLI LIONVILLE LABORATORY INC

SR-002-B.doc