

0076413

**SAF-RC-034**  
**100-F Remaining Sites Burial Grounds -**  
**Other Liquid Quick Turn**  
**FINAL DATA PACKAGE**

**COMPLETE COPY OF DATA PACKAGE TO:**

Randy Coffman X9-07 KW 2/13/08  
INITIAL/DATE

Kathy Wendt H4-21 KW 2/13/08  
INITIAL/DATE

**COMMENTS:**

**SDG K1096 SAF-RC-034**

Rad only Chem only  Rad & Chem

Complete Partial

**Waste Site: 118-F-2 / Anomaly #4 / 55 Gal Drum**

**RECEIVED**  
MAR 03 2008

**EDMC**



# EBERLINE SERVICES



February 7, 2008

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

Reference: **P.O. #630**  
**Eberline Services R8-01-147-7754, SDG K1096**

Dear Ms. Kessner:

Enclosed is a data report for one liquid (other liquid) sample designated under SAF No. RC-034 received at Eberline Services on January 25, 2008. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion  
Senior Program Manager

MCM/njv

Enclosure: *Data Package*

Analytical Services  
2030 Wright Avenue  
P.O. Box 4040  
Richmond, California 94804-0040  
(510) 235-2633 Fax (510) 235-0438  
Toll Free (800) 841-5487  
[www.eberlineservices.com](http://www.eberlineservices.com)

**1.0 GENERAL**

Washington Closure Hanford (WCH) Sample Delivery Group K1096 was composed of one liquid (other liquid) sample designated under SAF No. RC-034 with a Project Designation of: 100-F Remaining Sites – Other Liquid Quick Turn.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on February 6, 2008.

**2.0 ANALYSIS NOTES**

**2.1 Gamma Spectroscopy**

No problems were encountered during the course of the analysis.

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

02/07/08  
Date

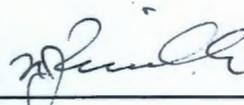
EBRLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

Client Hanford  
Contract No. 630  
Case no SDG\_K1096

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

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Prepared by

Melissa Mannion  
Reviewed by

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-TOC  
Version 3.06  
Report date 02/05/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG K1096

ABOUT THE DATA SUMMARY SECTION

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

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

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

PREPARATION BATCH SUMMARY

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

WORK SUMMARY

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

METHOD BLANKS

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

LAB CONTROL SAMPLES

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

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/05/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. 630  
Case no SDG K1096

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

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

MATRIX SPIKES

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

DATA SHEETS

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

METHOD SUMMARIES

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

REPORT GUIDES

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

REPORT GUIDES

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SUMMARY DATA SECTION

Page 2

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/05/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1096

SDG 7754  
 Contact Melissa C. Mannion

**LAB SAMPLE SUMMARY**

Client Hanford  
 Contract No. 630  
 Case no SDG K1096

LAB SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R801147-01	J168T2	118F2Anomaly#4/55 GalDrum	LIQUID		RC-034	RC-034-007	01/16/08 13:30
R801147-02	Lab Control Sample		LIQUID		RC-034		
R801147-03	Method Blank		LIQUID		RC-034		
R801147-04	Duplicate (R801147-01)	118F2Anomaly#4/55 GalDrum	LIQUID		RC-034		01/16/08 13:30

LAB SUMMARY

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LABORATORY DATA SECTION

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Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-LS  
 Version 3.06  
 Report date 02/05/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1096

SDG 7754  
 Contact Melissa C. Mannion

**QC SUMMARY**

Client Hanford  
 Contract No. 630  
 Case no SDG K1096

BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
54	RC-034-007	J168T2	LIQUID		192 mL		01/25/08 9	R801147-01		7754-001
		Method Blank	LIQUID					R801147-03		7754-003
		Lab Control Sample	LIQUID					R801147-02		7754-002
		Duplicate (R801147-01)	LIQUID		192 mL		01/25/08 9	R801147-04		7754-004

QC SUMMARY

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UMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-QS  
 Version 3.06  
 Report date 02/05/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford  
Contract No. 630  
Case no SDG K1096

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG
Gamma Spectroscopy										
GAM	LIQUID	Gamma Scan in Liquid	6133-157	10.0	1			1	1	1/1

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

Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-PBS  
Version 3.06  
Report date 02/05/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1096

SDG 7754

Contact Melissa C. Mannion

Client Hanford

Contract No. 630

Case no SDG K1096

**LAB WORK SUMMARY**

B SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
01147-01 01/16/08 01/25/08	J168T2 118F2Anomly#4/55 GalDrum RC-034-007	RC-034	LIQUID	7754-001	GAM	01/29/08	02/01/08	CSS	Gamma Scan in Liquid
01147-02	Lab Control Sample RC-034		LIQUID	7754-002	GAM	01/30/08	02/01/08	CSS	Gamma Scan in Liquid
01147-03	Method Blank RC-034		LIQUID	7754-003	GAM	01/30/08	02/01/08	CSS	Gamma Scan in Liquid
01147-04 01/16/08 01/25/08	Duplicate (R801147-01) 118F2Anomly#4/55 GalDrum RC-034		LIQUID	7754-004	GAM	01/30/08	02/01/08	CSS	Gamma Scan in Liquid

**COUNTS OF TESTS BY SAMPLE TYPE**

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
GAM	RC-034	Gamma Scan in Liquid	GAMMA_GS	1			1	1	1		4
<b>TOTALS</b>				1			1	1	1		4

WORK SUMMARY

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PRIMARY DATA SECTION

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LWS</u>
Version <u>3.06</u>
Report date <u>02/05/08</u>

EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP K1096

7754-003

Method Blank

METHOD BLANK

SDG <u>7754</u>	Client/Case no <u>Hanford</u>	SDG <u>K1096</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R801147-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7754-003</u>	Material/Matrix <u>LIQUID</u>	
	SAF No <u>RC-034</u>	

ANALYTE	CAS NO	RESULT pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI- FIERS	TEST
Potassium 40	13966-00-2	U		2.15		U	GAM
Cobalt 60	10198-40-0	U		<u>0.074</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>0.077</u>	0.050	U	GAM
Radium 226	13982-63-3	U		<u>0.175</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>0.692</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>0.198</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>0.220</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>0.165</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		0.127		U	GAM
Thorium 232	TH-232	U		0.692		U	GAM
Uranium 235	15117-96-1	U		0.304		U	GAM
Uranium 238	U-238	U		8.78		U	GAM
Americium 241	14596-10-2	U		0.066		U	GAM
Silver 108m	14391-65-2	U		0.058		U	GAM

100F Remaining Sites-Other Liquid QT

QC-BLANK #64509
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**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1096

7754-002

Lab Control Sample

**LAB CONTROL SAMPLE**

SDG <u>7754</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> <u>SDG K1096</u> Contract No. <u>630</u>
Lab sample id <u>R801147-02</u> Dept sample id <u>7754-002</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix <u>LIQUID</u> SAF No <u>RC-034</u>

ANALYTE	RESULT pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI- FIERS TEST	ADDED pCi/mL	2σ ERR pCi/mL	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Cobalt 60	2.29	0.11	<u>0.051</u>	0.050	GAM	2.28	0.091	100	82-118	80-120
Cesium 137	2.54	0.11	<u>0.079</u>	0.050	GAM	2.38	0.095	107	82-118	80-120

100F Remaining Sites-Other Liquid QT

QC-LCS #64508

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-LCS  
 Version 3.06  
 Report date 02/05/08

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1096

7754-004

J168T2

**DUPLICATE**

SDG 7754

Client/Case no Hanford SDG K1096

Contact Melissa C. Mannion

Contract No. 630

**DUPLICATE**

**ORIGINAL**

Lab sample id R801147-04

Lab sample id R801147-01

Client sample id J168T2

Dept sample id 7754-004

Dept sample id 7754-001

Location/Matrix 118F2Anomly#4/55 GalDrum LIQUID

Received 01/25/08

Collected/Volume 01/16/08 13:30 192 mL

Custody/SAP No RC-034-007 RC-034

ANALYTE	DUPLICATE		MDA pCi/mL	RDL pCi/mL	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/mL	QUALI- FIERS	RPD %	3σ TOT	DER σ
	pCi/mL	2σ ERR (COUNT)					pCi/mL	2σ ERR (COUNT)					
Potassium 40	U		1.30		U	GAM	U		1.40	U	-	0.1	
Cobalt 60	U		<u>0.053</u>	0.050	U	GAM	U		<u>0.053</u>	U	-	0	
Cesium 137	U		<u>0.055</u>	0.050	U	GAM	U		<u>0.056</u>	U	-	0	
Radium 226	U		<u>0.109</u>	0.100	U	GAM	U		<u>0.114</u>	U	-	0.1	
Radium 228	U		<u>0.233</u>	0.200	U	GAM	U		<u>0.241</u>	U	-	0	
Europium 152	U		<u>0.144</u>	0.100	U	GAM	U		<u>0.144</u>	U	-	0	
Europium 154	U		<u>0.136</u>	0.100	U	GAM	U		<u>0.153</u>	U	-	0.2	
Europium 155	U		<u>0.115</u>	0.100	U	GAM	U		<u>0.114</u>	U	-	0	
Thorium 228	U		0.166		U	GAM	U		0.077	U	-	1.0	
Thorium 232	U		0.233		U	GAM	U		0.241	U	-	0	
Uranium 235	U		0.221		U	GAM	U		0.223	U	-	0	
Uranium 238	U		5.61		U	GAM	U		5.97	U	-	0.1	
Americium 241	U		0.200		U	GAM	U		0.201	U	-	0	
Silver 108m	U		0.039		U	GAM	U		0.039	U	-	0	

100F Remaining Sites-Other Liquid QT

QC-DUP#1 64510

DUPLICATES

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SUMMARY DATA SECTION

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Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>02/05/08</u>

EBERLINE SERVICES / RICHMOND  
SAMPLE DELIVERY GROUP K1096

7754-001

J168T2

DATA SHEET

SDG <u>7754</u>	Client/Case no <u>Hanford</u>	<u>SDG K1096</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R801147-01</u>	Client sample id <u>J168T2</u>	
Dept sample id <u>7754-001</u>	Location/Matrix <u>118F2Anomly#4/55 GalDrum LIQUID</u>	
Received <u>01/25/08</u>	Collected/Volume <u>01/16/08 13:30</u> <u>192 mL</u>	
	Custody/SAF No <u>RC-034-007</u> <u>RC-034</u>	

ANALYTE	CAS NO	RESULT pCi/mL	2σ ERR (COUNT)	MDA pCi/mL	RDL pCi/mL	QUALI- FIERS	TEST
Potassium 40	13966-00-2	U		1.40		U	GAM
Cobalt 60	10198-40-0	U		<u>0.053</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>0.056</u>	0.050	U	GAM
Radium 226	13982-63-3	U		<u>0.114</u>	0.100	U	GAM
Radium 228	15262-20-1	U		<u>0.241</u>	0.200	U	GAM
Europium 152	14683-23-9	U		<u>0.144</u>	0.100	U	GAM
Europium 154	15585-10-1	U		<u>0.153</u>	0.100	U	GAM
Europium 155	14391-16-3	U		<u>0.114</u>	0.100	U	GAM
Thorium 228	14274-82-9	U		0.077		U	GAM
Thorium 232	TH-232	U		0.241		U	GAM
Uranium 235	15117-96-1	U		0.223		U	GAM
Uranium 238	U-238	U		5.97		U	GAM
Americium 241	14596-10-2	U		0.201		U	GAM
Silver 108m	14391-65-2	U		0.039		U	GAM

100F Remaining Sites-Other Liquid QT

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>02/05/08</u>

**EBERLINE SERVICES/RICHMOND**

SAMPLE DELIVERY GROUP K1096

Test GAM Matrix LIQUID  
 SDG 7754  
 Contact Melissa C. Mannion

Client Hanford  
 Contract No. 630  
 Contract SDG K1096

**LAB METHOD SUMMARY**

GAMMA SCAN IN LIQUID  
 GAMMA SPECTROSCOPY

**RESULTS**

MPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	Cobalt 60	Cesium 137
Preparation batch 6133-157					
01147-01		7754-001	J168T2	U	U
01147-02		7754-002	Lab Control Sample	ok	ok
01147-03		7754-003	Method Blank	U	U
01147-04		7754-004	Duplicate (R801147-01)	- U	- U
Minimal values and limits from method					
RDLs (pCi/mL)			0.050	0.050	
OF Remaining Sites-Other Liquid QT					

**METHOD PERFORMANCE**

MPLE ID	TEST FIX	CLIENT SAMPLE ID	MAX MDA pCi/mL	ALIQ mL	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 6133-157      2σ prep error 10.0 %      Reference Lab Notebook #6133, pg. 157														
01147-01		J168T2	<u>0.056</u>	99.9					818			13	01/28/08	01/29 JR,08,00
01147-02		Lab Control Sample	<u>0.079</u>	99.0					790				01/28/08	01/30 JR,05,00
01147-03		Method Blank	<u>0.077</u>	99.0					790				01/28/08	01/30 JR,06,00
01147-04		Duplicate (R801147-01)	<u>0.055</u>	99.9					790			14	01/28/08	01/30 JR,08,00
Minimal values and limits from method														
			0.050	99.0					100					180

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

AVERAGES ± 2 SD      MDA 0.067 ± 0.026  
 FOR 4 SAMPLES      YIELD \_\_\_\_\_ ± \_\_\_\_\_

Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-LMS  
 Version 3.06  
 Report date 02/05/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG\_K1096

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG K1096

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

- \* The preparation batches are shown in the same order as the Method Summary Reports are printed.
- \* Only analyses of planchets relevant to the SDG are included.
- \* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- \* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

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

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Protocol Hanford  
Version Ver 1.0  
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG K1096

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.

REPORT GUIDES

Page 3

SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/05/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG K1096

DATA SHEET

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

The following notes apply to this report:

- \* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- \* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

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

- \* ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- \* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- \* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

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

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/05/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
 Contract No. 630  
 Case no SDG K1096

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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 Protocol Hanford  
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. 630  
Case no SDG\_K1096

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE  
Protocol Hanford  
Version Ver 1.0  
Form DVD-RG  
Version 3.06  
Report date 02/05/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG\_K1096

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.

REPORT GUIDES

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SUMMARY DATA SECTION

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Protocol Hanford  
Version Ver 1.0  
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Version 3.06  
Report date 02/05/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
 Contract No. 630  
 Case no SDG\_K1096

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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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
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Case no SDG\_K1096

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.

REPORT GUIDES

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SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG K1096

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

2. The error of ADDED.

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

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

REPORT GUIDES

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UMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
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MATRIX SPIKE

for the recovery.

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

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

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SUMMARY DATA SECTION

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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford  
Contract No. 630  
Case no SDG K1096

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- \* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- \* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- \* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- \* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- \* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP K1096

SDG 7754  
 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
 Contract No. 630  
 Case no SDG K1096

METHOD SUMMARY

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

- \* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
  - \* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.
- MDAs are underlined if greater than the printed RDL.
- \* Aliquots are underlined if less than the nominal value specified for the method.
  - \* Preparation factors are underlined if greater than the nominal value specified for the method.
  - \* Dilution factors are underlined if greater than the nominal value specified for the method.
  - \* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
  - \* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
  - \* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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SUMMARY DATA SECTION

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Lab id EBRLNE  
 Protocol Hanford  
 Version Ver 1.0  
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SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. 630  
Case no SDG K1096

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

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SUMMARY DATA SECTION

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SAMPLE DELIVERY GROUP K1096

SDG 7754  
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford  
Contract No. 630  
Case no SDG K1096

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.

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SUMMARY DATA SECTION

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Lab id EBRLNE  
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Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					RC-034-007		Page 1 of 1			
Collector T. Etherington		Company Contact RT Coffman		Telephone No. 5286409		Project Coordinator KESSNER, JH		Price Code 96		Data Turnaround 15 Day		
Project Designation 100-F Remaining Sites - Other Liquid Quick Turn		Sampling Location 118-F-2/Anomaly #4/55 Gal Drum			K1096 (754)		SAF No. RC-034					
Ice Chest No. EBC-02-404		Field Logbook No. EFL-1174-4		COA R118F22000		Method of Shipment Fed Ex						
Shipped To EBERLINE SERVICES / LIONVILLE		Offsite Property No. A 080159			Bill of Lading/Air Bill No. See OSPC							
POSSIBLE SAMPLE HAZARDS/REMARKS NA				Preservation		None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Special Handling and/or Storage NA				Type of Container		aG	aG	aG	aG	aG	aG	
				No. of Container(s)		1	0	1	0	0	1	
				Volume		250mL	250mL	250mL	40mL	250mL	250mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.		PCBs - 8082	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH-Diesel Range - WTPH-D	See item (2) in Special Instructions.		
							RTC					
							1/16/08					
Sample No.	Matrix *	Sample Date	Sample Time									
J168T2	OTHER LIQUID	1/16/08	1330							X		
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From T. Etherington		Date/Time 1-21-08 1150		Received By/Stored In RT COFFMAN / RT Coffman		Date/Time 1/21/08 1150		(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7470 - (CV) {Mercury} (2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Silver-108 metastable}  samples from 3728 Ref # 2B. 3728 Custodian removed samples for shipping on 1/24/08.				S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From RT COFFMAN / RT Coffman		Date/Time 1/22/08 1430		Received By/Stored In REFER # 2B, 3728		Date/Time 1/22/08 1430						
Relinquished By/Removed From Re Fer # 2B, 3728		Date/Time 1-24-08 1125		Received By/Stored In KMSingleton		Date/Time 1-24-08 1125						
Relinquished By/Removed From KMSingleton		Date/Time 1-24-08 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 01/25/08 09:30						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
LABORATORY SECTION	Received By		Title		Date Time							
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By						Date Time			



# RICHMOND, CA LABORATORY

## SAMPLE RECEIPT CHECKLIST

Client: W.C. HANFORD City: MCHLAND State: WA  
 Date/Time received: 01/25/08 09:30 Lab No: RC-034-007  
 Container No: ERC-02-404 Requested TAT (Days): 15 F.C. Received: Yes  No

### INSPECTION

- 1 Custody seals on shipping container intact? Yes:  No:  N/A:
- 2 Custody seals on shipping container dated & signed? Yes:  No:  N/A:
- 3 Custody seals on sample container intact? Yes:  No:  N/A:
- 4 Custody seals on sample container dated & signed? Yes:  No:  N/A:
- 5 Packing material is: Wet  Dry
- 6 Number of samples in shipping container: 1 Sample Matrix:  LIQUID
- 7 Number of containers per sample: 1 (Or see 6.6)
- 8 Samples are in correct container? Yes:  No:
- 9 Paperwork agrees with samples? Yes:  No:
- 10 Samples have: Tapes  Hazard labels  Rad labels  Appropriate sample labels
- 11 Samples are: In good condition  Leaking  Broken Container  Missing
- 12 Samples are: Preserved  Not preserved  or Preservative: \_\_\_\_\_
- 13 Describe any anomalies: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
- 14 Was P.M. notified of any anomalies? Yes:  No:  Date: \_\_\_\_\_
- 15 Inspected by: MFJ Date: 01/25/08 Time: 10:50

Customer Sample No.	Beta/Gamma con	Ion Chamber mR/hr	Width	Customer Sample No.	Beta/Gamma con	Ion Chamber mR/hr	Width
J168T2	<60						

Ion Chamber Ser: No \_\_\_\_\_ Calibration date: \_\_\_\_\_  
 Alpha Meter Ser: No \_\_\_\_\_ Calibration date: \_\_\_\_\_  
 Beta/Gamma Meter Ser: No 100482 Calibration date: 09 MAY 07



11 February 2008



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

**Subject:** Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	0801L499
SDG #	K1096
SAF #	RC-034
Date Received	1/25/08
# Samples	1
Matrix	OTHER LIQUID
Volatiles	X
Semivolatiles	X
Pest/PCB	X
Glycols	
DRO/KRO/GRO	X
GC Alcohols	
Herbicides	
Metals	X
Inorganics	

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

Sincerely,  
Lionville Laboratory Incorporated

Orlette S. Johnson  
Project Manager

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

Lionville Laboratory, Inc.  
 VOA ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-034 K1096



DATE RECEIVED: 01/25/08

LVL LOT # : 08011435

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J168T2	001	M1	OI 08LVG018	01/16/08	N/A	01/30/08
J168T2	001 MS	M1	OI 08LVG018	01/16/08	N/A	01/30/08
J168T2	001 MSD	M1	OI 08LVG018	01/16/08	N/A	01/30/08

LAB QC:

VBLKST	MB1	S	08LVG018	N/A	N/A	01/30/08
VBLKST	MB1 BS	S	08LVG018	N/A	N/A	01/30/08



## Case Narrative

Client: TNU-HANFORD RC-034  
LVL #: 0801L499  
SDG/SAF # K1096/RC-034

W.O. #: 11343-606-001-9999-00  
Date Received: 01-25-2008

### GC/MS VOLATILE

One (1) oil sample was collected on 01-16-2008.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 01-30-2008.

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

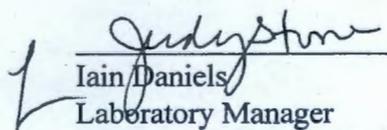
1. The sample was analyzed within required holding time.
2. Non-target compounds were detected in the samples.
3. Samples J168T2, J168T2 MS, J168T2 MSD required a medium level dilution and an additional 4-fold dilution due to the samples matrix.
4. All surrogate recoveries were within acceptance criteria.
5. All matrix spike recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. The method blank was below the reporting limit for all target compounds.
8. All internal standard area and retention time criteria were met.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

r:\group\data\2008\voa\tnu\0801-499kw1.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 13 pages.



10. 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.
  
11. "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

2/5/08  
Date

## GLOSSARY

### DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection 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. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.

## GLOSSARY

### ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike 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** = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP, Z** = Indicates Spiked Compound.

## TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following 'flags' are used to indicate the technical reasons for quan modifications:

- MP - **Missed Peak:** Manually added peak not found by automatic quan program.
- PA - **Peak Assignment:** Quan report was changed to reflect correct peak assignment.
- RI - **Routine Integration:** Routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the Dichlorobenzene isomers on the VOA packed column and Benzo (b) fluoranthene /Benzo (k) fluoranthene which are poorly resolve on the BNA column.
- SP - **Split Peak:** The automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - **Co-elution/ Background:** Peak was manually integrated to eliminate contribution from co-eluting compounds, background signal, or other interference.
- PI - **Proper Integration:** A peak with poor or inconsistent integration (i.e., excessive tail) was properly integrated manually.



Cust ID:	J168T2	J168T2	J168T2	VBLKST	VBLKST BS
RFW#:	001	001 MS	001 MSD	08LVG018-MB1	08LVG018-MB1
Level:	MED	MED	MED	MED	MED

Chlorobenzene	2500 U	102 ‡	104 ‡	620 U	105 ‡
Ethylbenzene	2500 U	109 ‡	108 ‡	620 U	112 ‡
Styrene	2500 U	113 ‡	115 ‡	620 U	114 ‡
Xylenes (total)	2500 U	111 ‡	112 ‡	620 U	112 ‡
cis-1,2-dichloroethene	2500 U	99 ‡	100 ‡	620 U	95 ‡
trans-1,2-dichloroethene	2500 U	105 ‡	104 ‡	620 U	104 ‡

\*= Outside of EPA CLP QC limits.

000000008

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

J168T2

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) OIL Lab Sample ID: 0801L499-001

Sample wt/vol: 1.00 (g/mL) G Lab File ID: G013005

Level: (low/med) MED Date Received: 01/25/08

% Moisture: not dec. 0 Date Analyzed: 01/30/08

Column: (pack/cap) CAP Dilution Factor: 4.00

Number TICs found: 9 CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	18.110	3000	J
2.	UNKNOWN	18.999	5000	J
3.	CYCLOALKANE	19.053	4000	J
4.	UNKNOWN	19.680	4000	J
5.	UNKNOWN	19.820	4000	J
6.	ALKANE	19.905	20000	J
7.	C3 ALKYL BENZENE	20.039	5000	J
8.	C3 ALKYL BENZENE	20.495	6000	J
9.	UNKNOWN	20.690	5000	J

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKST

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: \_\_\_\_\_

SAS No.: \_\_\_\_\_ SDG No.: \_\_\_\_\_

Matrix: (soil/water) SOIL

Lab Sample ID: 08LVG018-MB1

Sample wt/vol: 4.00 (g/mL) G

Lab File ID: G013004

Level: (low/med) MED

Date Received: 01/30/08

% Moisture: not dec. 0

Date Analyzed: 01/30/08

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				



Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-034-007

000000012

Collector T. Etherington	Company Contact RT Coffman	Telephone No. 5286409	Project Coordinator KESSNER, JH	Price Code 96	Data Turnaround 15 DAY
Project Designation 100-F Remaining Sites - Other Liquid Quick Turn	Sampling Location 118-F-2/Anomaly #4/55 Gal Drum	SAF No. RC-034			
Case Chest No. AFS-06-004	Field Logbook No. EFL1174-4	COA R118F22000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A080178	Bill of Lading/Air Bill No. See OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS NA	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	0	0	0	0	1
	Volume	250ml.	250mL	250mL	40mL	250mL	250mL

SPECIAL HANDLING AND/OR STORAGE NA	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH-Diesel Range - WTPH-D	See item (2) in Special Instructions.

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time					
J168T2	OTHER LIQUID	1/16/08	1330	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From <i>[Signature]</i> 1-21-08 1151	Received By/Stored In RT COFFMAN / RT Coffman 1/21/08	(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) (Mercury) (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Silver-108 metastable)  samples from 3728 Ref # 2B. 3728 Custodian removed samples for shipping on 1/24/08. Sampler unavailable to relinquish.	S=Soil SE=Sediment SO=Solid SI=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wl=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From RT COFFMAN / RT Coffman 1/22/08 1430	Received By/Stored In REFER #2B, 3728 1/22/08		
Relinquished By/Removed From REFER #2B 1-24-08 1135	Received By/Stored In HM Singleby 1/24/08 1135		
Relinquished By/Removed From <i>[Signature]</i> 1-24-08 1500	Received By/Stored In FEDEX		
Relinquished By/Removed From FEDEX 1-25-08 0930	Received By/Stored In <i>[Signature]</i> 1-25-08 0930		

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

**Lionville Laboratory Incorporated  
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU HANFORD  
Project/SOP/SOW/Release #: RC-034

Date: 1-25-08

LvLI Batch #: 0801L499

Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or <u>Shipped?</u>	Carrier <u>Fed Ex</u>	Airbill # <u>7924 9375 2174</u>
2. Custody Seals on coolers or shipping containers intact, signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
3. Outside of coolers or shipping containers are free from damage?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Samples received cooled or ambient?	Temp <u>2.2</u> °C	Cooler # <u>AFS-06-004</u>
How was the temperature taken?	<input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank	<input type="checkbox"/> Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
6. Custody seals on sample containers intact, signed and dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
7. COC (Client & LvLI) signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
8. Sample containers are intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
9. All samples on COC received? All samples received on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
10. All sample label information matches COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
11. Samples properly preserved? (If #5 is no, then this is no.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
12. Samples received within hold times? Short holds taken to wet lab?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
13. VOA, TOC, TOX free of headspace?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
14. QC stickers placed on bottles designated by client?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
16. Project Manager contacted concerning any discrepancies? Person Contacted _____	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
	Date _____	





Lionville Laboratory, Inc.  
PCB ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD RC-034 K1096

DATE RECEIVED: 01/25/08

LVL LOT # :08011499

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J168T2	001	OI	08LE0054	01/16/08	01/30/08	02/02/08
J168T2	001 MS	OI	08LE0054	01/16/08	01/30/08	02/02/08
J168T2	001 MSD	OI	08LE0054	01/16/08	01/30/08	02/02/08
LAB QC:						
PBLKMI	MB1	S	08LE0054	N/A	01/30/08	02/02/08
PBLKMI	MB1 BS	S	08LE0054	N/A	01/30/08	02/02/08



Case Narrative

Client: TNU-HANFORD RC-034  
LVL #: 0801L499  
SDG/SAF # K1096 / RC-034

W.O. #: 11343-606-001-9999-00  
Date Received: 01-25-2008

PCB

One (1) oil sample was collected on 01-16-2008.

The sample and its associated QC samples was extracted on 01-30-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 02-02-2008. 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:

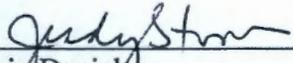
1. The sample was extracted and analyzed within required holding time
2. The sample and its associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
3. The method blank was below the reporting limits for all target compounds.
4. Two (2) of ten (10) surrogate recoveries were outside acceptance criteria. However, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
5. The blank spike recoveries were within acceptance criteria.
6. Two (2) of four (4) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
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\0801-499oil1.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.



9. The results for oil samples were reported on an 'as-received basis' as required by the project.
10. 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.
11. 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.

1   
Iain Daniels  
Laboratory Manager  
Lionville Laboratory Incorporated

2/7/08  
Date





## 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.

Sample Information	Cust ID:	J168T2	J168T2	J168T2	PBLKMI	PBLKMI BS
	RFW#:	001	001 MS	001 MSD	08LE0054-MB1	08LE0054-MB1
	Matrix:	OIL	OIL	OIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	73 %	69 %	70 %	109 %	110 %
	Decachlorobiphenyl	39 * %	46 %	35 * %	106 %	108 %
		-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----
Aroclor-1016		400 U	63 %	64 %	400 U	95 %
Aroclor-1221		400 U				
Aroclor-1232		400 U				
Aroclor-1242		400 U				
Aroclor-1248		400 U				
Aroclor-1254		400 U				
Aroclor-1260		400 U	49 * %	49 * %	400 U	97 %

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

000000006

Extract. Date: 01/30/08

Extraction Batch No: 08LE0054

Analyst: MF

Method: \*\*\*\* *WD 3580*

Test: OPCB

Cleanup Date: 01/31/08

Analyst: MF

Client: TNUHANFORD RC-034 K1096

LIMS Report Date: 01/31/08

Solvent: HEXANE

Adsorbent: H2SO4

Sample No:	Client Name Client ID	pH	Initial Surr. WT/VOL	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solids	C/D FACTOR
0801L499-	TNUHANFORD RC-034 K1096									
001	J168T2	1.0	1.0		10		1.0	N	0.0	10000
001 -S	J168T2	1.0	1.0	1.0	10		1.0	N	0.0	10000
001 -T	J168T2	1.0	1.0	1.0	10		1.0	N	0.0	10000
08LE0054-MB1	PBLKMI	1.0	1.0		10		1.0	N	100.00	10000
08LE0054-MB1 -S	PBLKMI	1.0	1.0	1.0	10		1.0	N	100.00	10000

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
<i>all</i>	<i>WA</i>	<i>1/31/08 15:00</i>	<i>sz</i>	<i>1/31/08 15:05</i>	<i>cc</i>

000000007



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

801L 499

Client TNU HANFORD SAF# RC-034  
 Final Proj. Sampling Date \_\_\_\_\_  
 Project # 11343-606-001-9999-00  
 Project Contact/Phone# \_\_\_\_\_  
 Lionville Laboratory Project Manager O. JOHNSON  
SW846 Del STO YAT 15 days

Refrigerator #	<u>A</u>										
#/Type Container	Liquid										
	Solid	<u>16</u>									
Volume	<u>250</u>										
Preservatives											
ANALYSES REQUESTED →	ORGANIC					TPH Diesel	INORG				
	VOA	BVA	PCB	Herb	Metals		HC	NC			

Lab Rec'd 1-25-08 Date Due 2-09-08

TRIX DES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only													
			MS	MSD				VOA	BVA	PCB	Herb	TPH	Diesel	Metals	HC	NC					
Soil Sediment Solid Sludge Water Oil Air Drum Solids Drum Liquids EP/TCLP Leachate Wipe Other Fish	<u>001</u>	<u>T168T2</u>	✓	✓	<u>Oil</u>	<u>1-16-08</u>	<u>1330</u>	<u>X</u>	<u>X</u>	<u>X</u>			<u>X</u>		<u>Metals</u>						

Special Instructions:  
Metals = HSL+B, mg, S:  
(NOTL)

- Special Instructions:
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>1-25-08</u>	<u>0930</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
<u>Original</u>	<u>[Signature]</u>		
<b>REWRITTEN</b>		<b>COMPOSITE WASTE</b>	

0000000008

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-034-007

0000000009

Collector T. Etherington	Company Contact RT Coffman	Telephone No. 5286409	Project Coordinator KESSNER, JH	Price Code 96	Data Turnaround 15 DAY
Project Designation 100-F Remaining Sites - Other Liquid Quick Turn	Sampling Location 118-F-2/Anomaly #4/55 Gal Drum	Field Logbook No. EFL-1174-4	SAF No. RC-034		
Ice Chest No. AFS-06-004	Field Logbook No. EFL-1174-4	COA RI18F22000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A080178	Bill of Lading/Air Bill No. see OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS NA	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None			
	Type of Container	aG	aG	aG RTG Vialox	aG	aG	aG			
	No. of Container(s)	1	0	0	0	0	1			
	Volume	250mL	250mL	250mL	40mL	250mL	250mL			

SPECIAL HANDLING and/or Storage NA	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH-Diesel Range - WTPH-D	See item (2) in Special Instructions. RTG 1/16/08				
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SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time							
J168T2	OTHER LIQUID	1/16/08	1330	X	X	X	X	X		

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From T. Etherington	Date/Time 1-21-08 1157	Received By/Stored In RT Coffman	Date/Time 1/21/08	(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7470 - (CV) {Mercury} (2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Silver-108 metastable}  samples from 3728 Ref # 2B. 3728 Custodian removed samples for shipping on 1/24/08. Sampler unavailable to relinquish				S=Soil SE=Soilman 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
Relinquished By/Removed From RT Coffman	Date/Time 1/22/08	Received By/Stored In REFER #2B, 3728	Date/Time 1/22/08					
Relinquished By/Removed From Refer #2B	Date/Time 1-24-08 1135	Received By/Stored In FED EX	Date/Time 1-24-08 1135					
Relinquished By/Removed From Hillman	Date/Time 1-24-08 1500	Received By/Stored In FED EX	Date/Time 1-24-08 1500					
Relinquished By/Removed From FED EX	Date/Time 1-25-08 0930	Received By/Stored In T. Etherington	Date/Time 1-25-08 0930					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

**Lionville Laboratory Incorporated**  
**SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU HANFORD  
 Project SRF/SOW/Release #: RC-034

Date: 1-25-08

LvLI Batch #: 0801L499

Sample Custodian: *Victor Hernandez*

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or <u>Shipped?</u>	Carrier <i>Fed Ex</i>	Airbill # <i>7924 9375 2174</i>
2. Custody Seals on coolers or shipping containers intact, signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
3. Outside of coolers or shipping containers are free from damage?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Samples received cooled or ambient?	Temp <i>2.2</i> °C	Cooler # <i>AFS-06-004</i>
How was the temperature taken?	<input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank	<input type="checkbox"/> Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
6. Custody seals on sample containers intact, signed and dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
7. COC (Client & LvLI) signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
8. Sample containers are intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
9. All samples on COC received?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
All samples received on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
10. All sample label information matches COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
11. Samples properly preserved? (If #5 is no, then this is no.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
12. Samples received within hold times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Short holds taken to wet lab?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
13. VOA, TOC, TOX free of headspace?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
14. QC stickers placed on bottles designated by client?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
16. Project Manager contacted concerning any discrepancies?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Person Contacted _____	Date _____	



Lionville Laboratory, Inc.  
 DRO ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-034 K1096



DATE RECEIVED: 01/25/08

LVL LOT # :0801L499

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J168T2	001	OI	08LE0053	01/16/08	01/31/08	01/31/08
J168T2	001 MS	OI	08LE0053	01/16/08	01/31/08	01/31/08
J168T2	001 MSD	OI	08LE0053	01/16/08	01/31/08	01/31/08

LAB QC:

BLK	MB1	S	08LE0053	N/A	01/31/08	01/31/08
BLK	MB1 BS	S	08LE0053	N/A	01/31/08	01/31/08



## Case Narrative

**Client:** TNU-HANFORD RC-034  
**LVL #:** 0801L499  
**SDG/SAF #** K1096 / RC-034

**W.O. #:** 11343-606-001-9999-00  
**Date Received:** 01-25-2008

### DIESEL RANGE ORGANICS

One (1) oil sample was collected on 01-16-2008.

The sample and its associated QC samples were extracted on 01-31-2008 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 01-31-2008. The extraction procedure was based on method 3580A (waste dilution 1g into 10 mLs DCM) and the extracts were analyzed based on method 8015B.

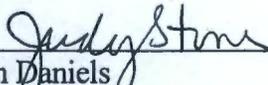
The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. All required holding times for extraction and analysis have been met.
2. The method blank was below the reporting limits for all target compounds.
3. All surrogate recoveries were within acceptance criteria.
4. The blank spike recoveries were within acceptance criteria.
5. The matrix spike recoveries were unobtainable due matrix interferences.
6. Samples J168T2, J168T2 MS, J168T2 MSD required a 20-fold instrument dilution due to high concentrations of target analytes.
7. All 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.
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.

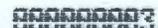
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.  
r:\group\data\2008\dro\tnu\0801-499koil1.doc



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

2/8/08  
Date





## 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.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 02/07/08 10:51

Batch Number: 0801L499

Client: TNUHANFORD RC-034 K1096

Work Order: 11343606001 Page: 1

	Cust ID:	J168T2	J168T2	J168T2	BLK	BLK BS
Sample	RFW#:	001	001 MS	001 MSD	08LE0053-MB1	08LE0053-MB1
Information	Matrix:	OIL	OIL	OIL	SOIL	SOIL
	D.F.:	20.0	20.0	20.0	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

	p-Terphenyl	D	%	D	%	D	%	106	%	85	%
Diesel Range Organics		0.20E+08	U	I	%	I	%	1000000	U	117	%
Motor Oil Range Organics		0.11E+10		NS		NS		3000000	U	NS	

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

000000005

Extract. Date: 01/31/08

Extraction Batch No: 08LE0053

Analyst: MF

Method: \*\*\*\*

Test: ODRO

Cleanup Date:

Analyst:

Client: TNUHANFORD RC-034 K1096

LIMS Report Date: 02/01/08

Solvent: HEXANE

Adsorbent:

000000006

Sample No:	Client Name Client ID	pH	Initial WT/VOL	Surr. Mult.	Spike Mult.	Final VOL	Final VOL	Split Mult.	GPC Y/N	% Solid	C/D FACTOR
0801L499-	TNUHANFORD RC-034 K1096										
001	J168T2	1.0	10.0			10		1.0	N	0.00	10000
001 -S	J168T2	1.0	10.0	6.66		10		1.0	N	0.00	10000
001 -T	J168T2	1.0	10.0	6.66		10		1.0	N	0.00	10000
08LE0053-MB1		1.0	10.0			10		1.0	N	100.00	10000
08LE0053-MB1 -S		1.0	10.0	6.66		10		1.0	N	100.00	10000

Comments:

Surrogate: 1.0 ML ODRO D&S SURR 90534009

Spike: 1.0 ML ODRO D&S SPIKE 90534011

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
			CAC	02/01/08	REVISION

Extract. Date: 01/31/08

Extraction Batch No: 08LE0053

Analyst: MF

Method: \*\*\*\* *WD3580*

Test: ODRO

Cleanup Date:

Analyst:

Client: TNUHANFORD RC-034 K1096

LIMS Report Date: 01/31/08

Solvent: 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
0801L499-	TNUHANFORD RC-034 K1096										
001	J168T2		1.0	1.0		10		1.0	N	0.0	10000
001 -S	J168T2		1.0	1.0	1.0	10		1.0	N	0.0	10000
001 -T	J168T2		1.0	1.0	1.0	10		1.0	N	0.0	10000
08LE0053-MB1	BLK		1.0	1.0		10		1.0	N	100.00	10000
08LE0053-MB1 -S	BLK		1.0	1.0	1.0	10		1.0	N	100.00	10000

## Comments:

Surrogate: 1.0 ML ODRO D&amp;S SURR 90534009

Spike: 1.0 ML ODRO D&amp;S SPIKE 90534011

Extracts Transferred	Relinquished By	Date Time	Received By	Date Time	Reason for Transfer
<i>all</i>	<i>[Signature]</i>	<i>1/31/08 1435</i>	<i>LC</i>	<i>1-31-08</i>	<i>Analysis</i>



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

8016499

Site: TNU HANFORD SAF# RC-034  
 Final Proj. Sampling Date \_\_\_\_\_  
 Project#: 11343-606-001-9999-00  
 Project Contact/Phone# \_\_\_\_\_  
 Lionville Laboratory Project Manager: O. JOHNSON  
SW846 Del. STO TAT 15 days

Refrigerator #	<u>A</u>				
#/Type Container	Liquid				
	Solid	<u>16</u>			
Volume	<u>250</u>				
Preservatives					
ANALYSES REQUESTED →	ORGANIC				
	VOA	BNA	PAH/PCB	Herb	TPH Diesel
					INORG
					Metal

Sample Rec'd 1-25-08 Date Due 2-09-08

MATRIX DES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only														
			MS	MSD				0624H	0625H	0PCB												
Sol	<u>001</u>	<u>T168T2</u>	✓	✓	<u>Oil</u>	<u>1-16-08</u>	<u>1330</u>	X	X	X			X	X								
Sediment																						
Solid																						
Sludge																						
Water																						
Oil																						
Air																						
Drum																						
Solids																						
Drum																						
Liquids																						
EP/TCLP																						
Leachate																						
Wipe																						
Other																						
Flah																						

Special Instructions:  
Met Q = HSL+B, mg, S;  
(NOTL)

- Special Instructions:
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>1-25-08</u>	<u>0930</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>		

**COMPOSITE WASTE**

0000000000

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

RC-034-001

Collector T. Etherington	Company Contact RT Coffman	Telephone No. 5286409	Project Coordinator KESSNER, JH	Price Code 96	Data Turnaround 15 DAY
Project Designation 100-F Remaining Sites - Other Liquid Quick Turn	Sampling Location 118-F-2/Anomaly #4/55 Gal Drum	SAF No. RC-034			
Ice Chest No. AFS-06-004	Field Logbook No. EFL-1174-4	COA R118F22000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A080178	Bill of Lading/Air Bill No. See OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS  
NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	0	0	0	0	1
Volume	250ml.	250ml.	250ml.	40ml.	250ml.	250ml.

Special Handling and/or Storage  
NA

**SAMPLE ANALYSIS**

See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH-Diesel Range - WTPH-D	See item (2) in Special Instructions.
---------------------------------------	-------------	------------------------	-------------------	---------------------------	---------------------------------------

Sample No.	Matrix *	Sample Date	Sample Time						
J168T2	OTHER LIQUID	1/16/08	1330	X	X	X	X	X	

<b>CHAIN OF POSSESSION</b>		<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b>		<b>Matrix *</b>
Relinquished By/Removed From T. Etherington	Date/Time 1-21-08 1151	Received By/Stored In RT Coffman/RT Coffman	Date/Time 1/21/08	(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7470 - (CV) {Mercury} (2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Silver-108 metastable}		S=Soil SE=Soil/soil SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From RT Coffman/RT Coffman	Date/Time 1/22/08 1430	Received By/Stored In REFER #2B, 3728	Date/Time 1/22/08			
Relinquished By/Removed From REFER #2B	Date/Time 1-24-08 1155	Received By/Stored In KIM Simpson	Date/Time 1-24-08 1135			
Relinquished By/Removed From KIM Simpson	Date/Time 1-24-08 1500	Received By/Stored In FED EX	Date/Time			
Relinquished By/Removed From FED EX	Date/Time 1-25-08 0930	Received By/Stored In TOD Nussbaum	Date/Time 1-25-08 0930			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			

samples from 3728 Ref # 2B.  
3728 Custodian removed samples for shipping on 1/24/08.  
Sampler unavailable to relinquish

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

000000009

**Lionville Laboratory Incorporated**  
**SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU HANFORD  
 Project # / SOW / Release #: RC-034

Date: 1-25-08

LvLI Batch #: 0801L499

Sample Custodian: *Victor Hernandez*

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or <u>Shipped?</u>	Carrier <i>Fed Ex</i>	Airbill # <i>7924 9375 2174</i>
2. Custody Seals on coolers or shipping containers intact, signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
3. Outside of coolers or shipping containers are free from damage?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Samples received cooled or ambient?	Temp <i>2.2</i> °C	Cooler # <i>AFS-06-004</i>
How was the temperature taken?	<input type="checkbox"/> IR <input type="checkbox"/> Temp. Blank	<input type="checkbox"/> Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
6. Custody seals on sample containers intact, signed and dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
7. COC (Client & LvLI) signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
8. Sample containers are intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
9. All samples on COC received?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
All samples received on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
10. All sample label information matches COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
11. Samples properly preserved? (If #5 is no, then this is no.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
12. Samples received within hold times?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Short holds taken to wet lab?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
13. VOA, TOC, TOX free of headspace?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
14. QC stickers placed on bottles designated by client?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
16. Project Manager contacted concerning any discrepancies?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Person Contacted _____	Date _____	



Lionville Laboratory, Inc.  
 BNA ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-034 K1096



DATE RECEIVED: 01/25/08

LVL LOT # 08011499

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J168T2	001	OI	08LE0052	01/16/08	01/30/08	01/31/08
J168T2	001 MS	OI	08LE0052	01/16/08	01/30/08	02/04/08
J168T2	001 MSD	OI	08LE0052	01/16/08	01/30/08	02/01/08

LAB QC:

SBLKRZ	MB1	S	08LE0052	N/A	01/30/08	01/31/08
SBLKRZ	MB1 BS	S	08LE0052	N/A	01/30/08	01/31/08



## Case Narrative

**Client:** TNU-HANFORD RC-034  
**LVL #:** 0801L499  
**SDG/SAF #** K1096/RC-034

**W.O. #:** 11343-606-001-9999-00  
**Date Received:** 01-25-2008

### SEMIVOLATILE

One (1) oil sample was collected on 01-16-2008.

The sample and its associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3580A (Waste Dilution Protocol, 1g into 10mL DCM) on 01-30-2008 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 01-31-2008 and 02-01,04-2008.

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 QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

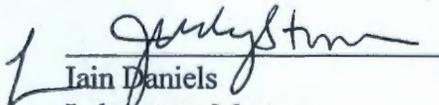
1. The sample was extracted and analyzed within holding times.
2. Non-target compounds were detected in these samples.
3. One (1) of thirty (30) surrogate recoveries was outside acceptance criteria. However, surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
4. Sixteen (16) of one hundred and twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. Four (4) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. The method blank was below the reporting limits for all target compounds.
7. Internal standard area and retention time criteria were met.
8. All calibrations met criteria.

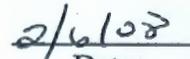
r:\group\data\2008\bna\tnu\0801-499koi1.doc

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 **13** pages.



9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. 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.
11. 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

  
Date

# Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08ms006

Initiator: Sham Sytan  
 Date: 2-6-08  
 Client: Thy BC034

Batch: 0709L499  
 Samples: ms, msd, BS  
 Method: SVB45/MCAWWW/CLPI

Parameter: 8270  
 Matrix: - Soil  
 Prep Batch: 08LEW02

**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)**

- ① low recovery of n-nitrosodimethylamine in the ms but msd + BS are ok
- ② low recovery of 3-nitroaniline in the msd + BS but ms is ok
- ③ low recovery of 4-nitroaniline + 3,3'-dichlorobenzidine in the BS but ms + msd are ok

**2. Known or Probable Causes(s)**

**3. Discussion and Proposed Action**

Other Description: nanute

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

*[Signature]* 2/6/08

**4. Project Manager Instructions...signature/date:**

- 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:** MS 2-6-08

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**

- Initiator
- Lab General Manager: M. Taylor
- Project Mgr. Stone/Johnson
- Data Management: Stilwell
- Sample Prep: Beegle/Kiger

- Metals: Beegle
- Inorganic: Perrone
- GC/LC: Kiger
- MS: Rychlak/Daley
- Log-in: Perry
- Admin: \_\_\_\_\_
- Other: \_\_\_\_\_

## GLOSSARY

### DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection 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. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

## GLOSSARY

### ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike 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 = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP, Z = Indicates Spiked Compound.

## TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP - Missed Peak: manually added peak not found by automatic quan program.
- PA - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.



1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J168T2

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-034 K1096

Matrix: (soil/water) OIL

Lab Sample ID: 0801L499-001

Sample wt/vol: 1.00 (g/mL) G

Lab File ID: D013112

Level: (low/med) LOW

Date Received: 01/25/08

% Moisture: 100 decanted: (Y/N) \_\_

Date Extracted: 01/30/08

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 01/31/08

Injection Volume: 2.0 (uL)

Dilution Factor: 21.0

GPC Cleanup: (Y/N) N

pH: \_\_\_\_\_

CONCENTRATION UNITS:

Number TICs found: 5

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	23.184	1000000	J
2.	ALKANE	23.347	1000000	J
3.	ALKANE	23.558	1000000	J
4.	ALKANE	24.546	1000000	J
5.	ALKANE	25.035	2000000	J

1F  
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKRZ

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-034 K1096

Matrix: (soil/water) SOIL

Lab Sample ID: 08LE0052-MB1

Sample wt/vol: 1.00 (g/mL) G

Lab File ID: D013111

Level: (low/med) LOW

Date Received: 01/30/08

% Moisture: \_\_\_\_\_ decanted: (Y/N) \_\_\_\_\_

Date Extracted: 01/30/08

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 01/31/08

Injection Volume: 2.0 (uL)

Dilution Factor: 21.0

GPC Cleanup: (Y/N) N

pH: \_\_\_\_\_

CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/Kg

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

000000011

3016499

Client: TNU HANFORD SAF# RC-034

Final Proj. Sampling Date: \_\_\_\_\_

sect# 11343-606-001-9999-00

sect Contact/Phone# \_\_\_\_\_

ville Laboratory Project Manager O. JOHNSON

SW846 Del STO TAT 15 days

Refrigerator #	<u>A</u>											
#/Type Container	Liquid											
	Solid	<u>16</u>										
Volume	<u>250</u>											
Preservatives												
ANALYSES REQUESTED →	ORGANIC					TPH Diesel	INORG					
	VOA	BNA	PAH/PCB	Herb			Metal	Hg	CN			

Rec'd 1-25-08 Date Due 2-09-08

RDC ES: Soil Sediment Solid Sludge Water Oil Air Drum Solids Drum Liquids EP/TCLP Leachate Wipe Other Fish	Lab ID	Client ID/Description	Matrix GC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only														
			MS	MSD				0624H	0625H	0PCB												
	<u>001</u>	<u>T168T2</u>	✓	✓	<u>oil</u>	<u>1-16-08</u>	<u>1330</u>	X	X	X			X	X								

social instructions:  
mat@ = HSL+B, mg, S;  
(NOTL)

- Special Instructions:
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>1-25-08</u>	<u>0930</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>		

**REWRITTEN** **COMPOSITE WASTE**

<b>Washington Closure Memo</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>			
Collector T. Etherington	Company Contact RT Coffman	Telephone No. 5286409	Project Coordinator KESSNER, JH	Price Code 96	Data Turnaround 15 DAY
Project Designation 100-F Remaining Sites - Other Liquid Quick Turn	Sampling Location 118-F-2/Anomaly #4/55 Gal Drum		SAF No. RC-034		
Ice Chest No. AFS-06-004	Field Logbook No. EFL-1174-4	COA RI18F22000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES / <u>LIONVILLE</u>		Offsite Property No. A080178	Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS  Special Handling and/or Storage NA	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG PTE Vial 108	aG	aG	aG
	No. of Container(s)	1	0	0 ✓	0	0	1
	Volume	250mL	250mL	250mL	40mL	250mL	250mL

SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH-Diesel Range - WTPH-D	See item (2) in Special Instructions. PTE Vial 108
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Sample No.	Matrix *	Sample Date	Sample Time						
J168T2	OTHER LIQUID	1/16/08	1330	X	X	X	X	X	

<b>CHAIN OF POSSESSION</b>		<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b>			<b>Matrix *</b>
Relinquished By/Removed From <i>[Signature]</i>	Date/Time 1-21-08 1151	Received By/Stored In RT Coffman / RT Coffman	Date/Time 1/21/08	(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) (Mercury) (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Silver-108 metastable)  samples from 3728 Ref # 2B. 3728 Custodian removed samples for shipping on 1/24/08. Sampler unavailable to relinquish.			S=Soil
Relinquished By/Removed From RT Coffman / RT Coffman	Date/Time 1/22/08	Received By/Stored In REFER # 2B, 3728	Date/Time 1/22/08				SE=Sediment
Relinquished By/Removed From Refer # 2B	Date/Time 1-24-08 1135	Received By/Stored In MMS Sample	Date/Time 1-24-08 1135				SO=Solid
Relinquished By/Removed From MMS Sample	Date/Time 1-24-08 1500	Received By/Stored In FED EX	Date/Time				SL=Sludge
Relinquished By/Removed From FED EX	Date/Time 1-25-08 0930	Received By/Stored In MMS Sample	Date/Time 1-25-08 0930				W=Water
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				O=Oil

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

00000012

**Lionville Laboratory Incorporated  
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU HANFORD  
Project SRF/SOW/Release #: RC-034

Date: 1-25-08

LvLI Batch #: 0801L499

Sample Custodian: Vito Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or <u>Shipped?</u>	Carrier <u>Fed Ex</u>	Airbill # <u>7924 9375 2174</u>
2. Custody Seals on coolers or shipping containers intact, signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
3. Outside of coolers or shipping containers are free from damage?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Samples received cooled or ambient?	Temp <u>2-2</u> °C	Cooler # <u>AFS-06-004</u>
How was the temperature taken?	<input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank	<input type="checkbox"/> Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
6. Custody seals on sample containers intact, signed and dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
7. COC (Client & LvLI) signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
8. Sample containers are intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
9. All samples on COC received? All samples received on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
10. All sample label information matches COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
11. Samples properly preserved? (If #5 is no, then this is no.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
12. Samples received within hold times? Short holds taken to wet lab?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
13. VOA, TOC, TOX free of headspace?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
14. QC stickers placed on bottles designated by client?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
16. Project Manager contacted concerning any discrepancies? Person Contacted _____	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
	Date _____	



Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-034 K1096



DATE RECEIVED: 01/25/08

LVL LOT # : 0801E499

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J168T2						
SILVER, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
SILVER, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
SILVER, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
ALUMINUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
ALUMINUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
ALUMINUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
ARSENIC, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
ARSENIC, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
ARSENIC, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
BORON, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
BORON, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
BORON, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
BARIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
BARIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
BARIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
BERYLLIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
BERYLLIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
BERYLLIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
CALCIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
CALCIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
CALCIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
CADMIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
CADMIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
CADMIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
COBALT, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
COBALT, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
COBALT, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
CHROMIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
CHROMIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
CHROMIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
COPPER, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
COPPER, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
COPPER, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
IRON, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
IRON, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08

Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-034 K1096

DATE RECEIVED: 01/25/08

LVL LOT # :0801L499

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
MERCURY, TOTAL	001	OI	08C0019	01/16/08	01/31/08	01/31/08
MERCURY, TOTAL	001 REP	OI	08C0019	01/16/08	01/31/08	01/31/08
MERCURY, TOTAL	001 MS	OI	08C0019	01/16/08	01/31/08	01/31/08
POTASSIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
POTASSIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
POTASSIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
MAGNESIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
MAGNESIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
MAGNESIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
MANGANESE, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
MANGANESE, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
MANGANESE, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
MOLYBDENUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
MOLYBDENUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
MOLYBDENUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
SODIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
SODIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
SODIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
NICKEL, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
NICKEL, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
NICKEL, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
LEAD, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
LEAD, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
LEAD, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
ANTIMONY, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
ANTIMONY, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
ANTIMONY, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
SELENIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
SELENIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
SELENIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
SILICON, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
SILICON, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
SILICON, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
VANADIUM, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08
VANADIUM, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
VANADIUM, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08
ZINC, TOTAL	001	OI	08L0039	01/16/08	01/29/08	01/29/08

Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD RC-034 K1096

DATE RECEIVED: 01/25/08

LVL LOT # :0801L499

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	001 REP	OI	08L0039	01/16/08	01/29/08	01/29/08
ZINC, TOTAL	001 MS	OI	08L0039	01/16/08	01/29/08	01/29/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
SILVER, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
ALUMINUM LABORTORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
ALUMINUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
ARSENIC LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
ARSENIC, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
BORON LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
BORON, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
BARIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
BARIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
BERYLLIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
CALCIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
CALCIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
CADMIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
CADMIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
COBALT LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
COBALT, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
CHROMIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
CHROMIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
COPPER LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
COPPER, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
IRON LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
IRON, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
MERCURY LABORATORY	LC1 BS	S	08C0019	N/A	01/31/08	01/31/08
MERCURY, TOTAL	MB1	S	08C0019	N/A	01/31/08	01/31/08
POTASSIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
POTASSIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
MAGNESIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
MANGANESE LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
MANGANESE, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
MOLYBDENUM LABORATOR	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08

Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD RC-034 K1096

DATE RECEIVED: 01/25/08

LVL LOT # :0801L499

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MOLYBDENUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
SODIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
SODIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
NICKEL LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
NICKEL, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
LEAD LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
LEAD, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
ANTIMONY LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
ANTIMONY, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
SELENIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
SELENIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
SILICON LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
SILICON, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
VANADIUM LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
VANADIUM, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08
ZINC LABORATORY	LC1 BS	S	08L0039	N/A	01/29/08	01/29/08
ZINC, TOTAL	MB1	S	08L0039	N/A	01/29/08	01/29/08



## Analytical Report

Client: TNU-HANFORD RC-034  
LVL#: 0801L499  
SDG/SAF#: K1096/RC-034

W.O.#: 11343-606-001-9999-00  
Date Received: 01-25-08

### METALS CASE NARRATIVE

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

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

1. This narrative covers the analysis of 1 oil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary. The sample is reported on a wet weight, 'as-received' basis.

The sample was reported with a 5-fold dilution for Mercury due to sample matrix.

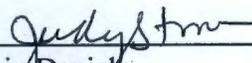
3. All analyses were performed within the required holding times.
4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).
6. 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.

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 19 pages.

8. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
9. The matrix spike (MS) recovery for 1 analyte was 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:

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
J168T2	Silicon	2,100	96.3

11. The duplicate analyses for 12 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  
 jjw/m01-499

2/5/08  
 \_\_\_\_\_  
 Date



# METALS METHOD GLOSSARY

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

Lot#: 08012499

Leaching Procedure:   1310     1311     1312     Other:  

CLP Metals    Digestion and    Analysis Methods:   ILM03.0     ILM04.0  

Metals Digestion Methods:   3005A     3010A     3015     3020A      3050B     3051     200.7     SS17    
  Other:  

## Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<input checked="" type="checkbox"/> 6010B	200.7			99
Antimony	<input checked="" type="checkbox"/> 6010B 7041 <sup>s</sup>	200.7	204.2		99
Arsenic	<input checked="" type="checkbox"/> 6010B 7060A <sup>s</sup>	200.7	206.2	3113B	99
Barium	<input checked="" type="checkbox"/> 6010B	200.7			99
Beryllium	<input checked="" type="checkbox"/> 6010B	200.7			99
Bismuth	6010B <sup>1</sup>	200.7 <sup>1</sup>		1620	99
Boron	<input checked="" type="checkbox"/> 6010B	200.7			99
Cadmium	<input checked="" type="checkbox"/> 6010B 7131A <sup>s</sup>	200.7	213.2		99
Calcium	<input checked="" type="checkbox"/> 6010B	200.7			99
Chromium	<input checked="" type="checkbox"/> 6010B 7191 <sup>s</sup>	200.7	218.2		SS17
Cobalt	<input checked="" type="checkbox"/> 6010B	200.7			99
Copper	<input checked="" type="checkbox"/> 6010B 7211 <sup>s</sup>	200.7	220.2		99
Iron	<input checked="" type="checkbox"/> 6010B	200.7			99
Lead	<input checked="" type="checkbox"/> 6010B 7421 <sup>s</sup>	200.7	239.2	3113B	99
Lithium	6010B 7430 <sup>4</sup>	200.7		1620	99
Magnesium	<input checked="" type="checkbox"/> 6010B	200.7			99
Manganese	<input checked="" type="checkbox"/> 6010B	200.7			99
Mercury	7470A <sup>3</sup> <input checked="" type="checkbox"/> 7471A <sup>3</sup>	245.1 <sup>3</sup>	245.5 <sup>3</sup>		99
Molybdenum	<input checked="" type="checkbox"/> 6010B	200.7			99
Nickel	<input checked="" type="checkbox"/> 6010B	200.7			99
Potassium	<input checked="" type="checkbox"/> 6010B 7610 <sup>4</sup>	200.7	258.1 <sup>4</sup>		99
Rare Earths	6010B <sup>1</sup>	200.7 <sup>1</sup>		1620	99
Selenium	<input checked="" type="checkbox"/> 6010B 7740 <sup>5</sup>	200.7	270.2	3113B	99
Silicon	<input checked="" type="checkbox"/> 6010B <sup>1</sup>	200.7		1620	99
Silica	6010B	200.7		1620	99
Silver	<input checked="" type="checkbox"/> 6010B 7761 <sup>5</sup>	200.7	272.2		99
Sodium	<input checked="" type="checkbox"/> 6010B 7770 <sup>4</sup>	200.7	273.1 <sup>4</sup>		99
Strontium	6010B	200.7			99
Thallium	6010B 7841 <sup>5</sup>	200.7	279.2	200.9	99
Tin	6010B	200.7			99
Titanium	6010B	200.7			99
Uranium	6010B <sup>1</sup>	200.7 <sup>1</sup>		1620	99
Vanadium	<input checked="" type="checkbox"/> 6010B	200.7			99
Zinc	<input checked="" type="checkbox"/> 6010B	200.7			99
Zirconium	6010B <sup>1</sup>	200.7 <sup>1</sup>		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 02/04/08

CLIENT: TNUHANFORD RC-034 K1096  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 08011499

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	J168T2	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	6.9	MG/KG	3.4	1.0
		Arsenic, Total	0.43	MG/KG	0.42	1.0
		Boron, Total	0.42 u	MG/KG	0.42	1.0
		Barium, Total	0.30	MG/KG	0.08	1.0
		Beryllium, Total	0.04 u	MG/KG	0.04	1.0
		Calcium, Total	33.1	MG/KG	3.4	1.0
		Cadmium, Total	0.89	MG/KG	0.04	1.0
		Cobalt, Total	0.62	MG/KG	0.17	1.0
		Chromium, Total	0.19	MG/KG	0.17	1.0
		Copper, Total	4.7	MG/KG	0.17	1.0
		Iron, Total	140	MG/KG	3.8	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	5.0
		Potassium, Total	5.4	MG/KG	3.4	1.0
		Magnesium, Total	5.4	MG/KG	2.1	1.0
		Manganese, Total	0.51	MG/KG	0.03	1.0
		Molybdenum, Total	0.25 u	MG/KG	0.25	1.0
		Sodium, Total	13.5	MG/KG	1.7	1.0
		Nickel, Total	0.17 u	MG/KG	0.17	1.0
		Lead, Total	5.3	MG/KG	0.25	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.51 u	MG/KG	0.51	1.0
		Silicon, Total	42.6	MG/KG	3.4	1.0
		Vanadium, Total	0.12 u	MG/KG	0.12	1.0
		Zinc, Total	4.3	MG/KG	0.51	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/04/08

CLIENT: TNUHANFORD RC-034 K1096  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0801L499

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0039-MB1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	3.7 u	MG/KG	3.7	1.0
		Arsenic, Total	0.47 u	MG/KG	0.47	1.0
		Boron, Total	0.47 u	MG/KG	0.47	1.0
		Barium, Total	0.1	MG/KG	0.09	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	9.4	MG/KG	3.7	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.19 u	MG/KG	0.19	1.0
		Chromium, Total	0.19 u	MG/KG	0.19	1.0
		Copper, Total	0.19 u	MG/KG	0.19	1.0
		Iron, Total	5.1	MG/KG	4.2	1.0
		Potassium, Total	3.7 u	MG/KG	3.7	1.0
		Magnesium, Total	2.3 u	MG/KG	2.3	1.0
		Manganese, Total	0.04 u	MG/KG	0.04	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	12.0	MG/KG	1.9	1.0
		Nickel, Total	0.19 u	MG/KG	0.19	1.0
		Lead, Total	0.28 u	MG/KG	0.28	1.0
		Antimony, Total	0.28 u	MG/KG	0.28	1.0
		Selenium, Total	0.56 u	MG/KG	0.56	1.0
		Silicon, Total	7.7	MG/KG	3.7	1.0
		Vanadium, Total	0.13 u	MG/KG	0.13	1.0
		Zinc, Total	0.56 u	MG/KG	0.56	1.0
BLANK1	08C0019-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/04/08

CLIENT: TNUHANFORD RC-034 K1096  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0801L499

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J168T2	Silver, Total	3.9	0.08u	4.2	92.9	1.0
		Aluminum, Total	164	6.9	169	92.4	1.0
		Arsenic, Total	152	0.43	169	89.4	1.0
		Boron, Total	79.1	0.42u	84.7	93.4	1.0
		Barium, Total	160	0.30	169	94.2	1.0
		Beryllium, Total	4.0	0.04u	4.2	95.2	1.0
		Calcium, Total	2050	33.1	2120	95.4	1.0
		Cadmium, Total	4.8	0.89	4.2	93.0	1.0
		Cobalt, Total	39.6	0.62	42.3	92.1	1.0
		Chromium, Total	16.0	0.19	16.9	93.5	1.0
		Copper, Total	25.0	4.7	21.2	95.8	1.0
		Iron, Total	224	140	84.7	99.3	1.0
		Mercury, Total	1.5	0.05u	1.5	100.8	5.0
		Potassium, Total	1910	5.4	2120	89.9	1.0
		Magnesium, Total	2000	5.4	2120	94.2	1.0
		Manganese, Total	41.0	0.51	42.3	95.7	1.0
		Molybdenum, Total	76.5	0.25u	84.7	90.3	1.0
		Sodium, Total	1950	13.5	2120	91.3	1.0
		Nickel, Total	39.4	0.17u	42.3	93.1	1.0
		Lead, Total	44.6	5.3	42.3	92.9	1.0
		Antimony, Total	38.8	0.25u	42.3	91.7	1.0
		Selenium, Total	130	0.51u	169	77.0	1.0
		Silicon, Total	98.9	42.6	84.7	66.5	1.0
		Vanadium, Total	39.4	0.12u	42.3	93.1	1.0
		Zinc, Total	42.9	4.3	42.3	91.3	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/04/08

CLIENT: TNUHANFORD RC-034 K1096  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0801L499

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD		DILUTION FACTOR (REP)
-001REP	J168T2	Silver, Total	0.08u	0.08u	NC	1.0
		Aluminum, Total	6.9	6.9	0.00	1.0
		Arsenic, Total	0.43	0.42u	<del>NC</del> <i>200</i>	1.0
		Boron, Total	0.42u	0.42u	NC	1.0
		Barium, Total	0.30	0.15	64.4	1.0
		Beryllium, Total	0.04u	0.04u	NC	1.0
		Calcium, Total	33.1	30.4	8.5	1.0
		Cadmium, Total	0.89	0.69	25.0	1.0
		Cobalt, Total	0.62	0.17u	NC <i>200</i>	1.0
		Chromium, Total	0.19	0.17u	<del>NC</del> <i>200</i>	1.0
		Copper, Total	4.7	2.3	68.6	1.0
		Iron, Total	140	108	25.5	1.0
		Mercury, Total	0.05u	0.04u	NC	5.0
		Potassium, Total	5.4	4.2	25.0	1.0
		Magnesium, Total	5.4	3.7	37.4	1.0
		Manganese, Total	0.51	0.38	28.6	1.0
		Molybdenum, Total	0.25u	0.25u	NC	1.0
		Sodium, Total	13.5	15.9	16.3	1.0
		Nickel, Total	0.17u	0.17u	NC	1.0
		Lead, Total	5.3	4.1	25.5	1.0
		Antimony, Total	0.25u	0.25u	NC	1.0
		Selenium, Total	0.51u	0.51u	NC	1.0
		Silicon, Total	42.6	31.4	30.3	1.0
		Vanadium, Total	0.12u	0.12u	NC	1.0
		Zinc, Total	4.3	4.0	7.2	1.0

*\* corrected values  
 PW 2/4/08*

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/04/08

CLIENT: TNUHANFORD RC-034 K1096  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0801L499

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	08L0039-LC1	Silver, LCS	46.1	50.0	MG/KG	92.2
		Aluminum, LCS	502	500	MG/KG	100.5
		Arsenic, LCS	895	1000	MG/KG	89.5
		Boron, LCS	457	500	MG/KG	91.5
		Barium, LCS	473	500	MG/KG	94.6
		Beryllium, LCS	23.6	25.0	MG/KG	94.4
		Calcium, LCS	2400	2500	MG/KG	96.1
		Cadmium, LCS	23.2	25.0	MG/KG	92.8
		Cobalt, LCS	236	250	MG/KG	94.4
		Chromium, LCS	47.0	50.0	MG/KG	94.0
		Copper, LCS	120	125	MG/KG	96.0
		Iron, LCS	478	500	MG/KG	95.5
		Potassium, LCS	2280	2500	MG/KG	91.2
		Magnesium, LCS	2340	2500	MG/KG	93.7
		Manganese, LCS	71.9	75.0	MG/KG	95.9
		Molybdenum, LCS	456	500	MG/KG	91.2
		Sodium, LCS	2290	2500	MG/KG	91.5
		Nickel, LCS	187	200	MG/KG	93.6
		Lead, LCS	235	250	MG/KG	93.8
		Antimony, LCS	273	300	MG/KG	90.9
		Selenium, LCS	860	1000	MG/KG	86.0
		Silicon, LCS	498	500	MG/KG	99.5
		Vanadium, LCS	235	250	MG/KG	94.1
		Zinc, LCS	93.6	100	MG/KG	93.6
LCS1	08C0019-LC1	Mercury, LCS	4.7	4.7	MG/KG	100.3

# MERCURY PREPARATION

Logbook # 0324

Analyst: AB  
11/31/08  
 Time/Temp: 1545 / 97°  
 Time/Temp: 1445 / 97°

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

Prep Batch: 08C0019  
 Worksheet: HG013101/09/HG020101  
 OP 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 Initial/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	HR			10mL	50mL	
0.2 µg/L	NB	0.100				
1.0	508	0.500				
2.0	WN	1.000				
5.0	74	2.500				
10.0	IV	5.000				
ICV	CT	0.125	2.5			
CCV	205	0.250	5.0			
ICB/ICB	28					% SOL
MB1	G12			0.30		PBS119 100.00
LCL	H5	*	*	0.30		LCS119 ↓
0801L497-001	3C			0.31		100.00
002	154			0.39		98.34
003	401			0.32		97.44
003R	NR			0.36		↓
003S	AB	0.500	1.0	0.32		↓
0801L498-002	A94			0.33		100.00
003	ZI			0.35		R
003R	IC			0.31		
003S	CM	0.500	1.0	0.35		
004	P18			0.34		
005	532			0.37		
006	522			0.31		
007	55			0.33		
008	84			0.33		
009	X8			0.34		
010	500			0.32		

Standard:	ID	Prep Date/Time
ALMS	R16072-75-07B	11/31/08 1130
WCCV/LCS	US 6072-75-08A	↓

Reviewed By/Date: Mitchell 11/24/08

see book # 9368 for std traceability information

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

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

# MERCURY PREPARATION

Logbook # 0324

Inst: CEA  
11/31/08  
 Time/Temp: see page 187  
 Time/Temp: see page 187

Instrument ID UG3.1  
 Balance #: B29 /NA  
 Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0019  
 Worksheet: HGD13101/09 /HGD20101  
 OP 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 Initial/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.
0801L498-011	H			0.36	50mL	R 100.00
0801L499-001	AH			0.33		
001R	R			0.36		
001S	AP	0.050	10.0	0.33		
0801L504-001	P3			0.31		R 97.58
001R	OLN			0.35		
001S	814	0.500	1.0	0.31		
0801L505-001	H3			0.35		96.03
001R	PT			0.32		
001S	KX	0.500	1.0	0.35		
0801L506-001	L53			0.35		100.00
001R	A901			0.41		
001S	A4	0.500	1.0	0.35		
002	* 478297			* 0.33035		see table above
003	C48			0.33		
004	CB2			0.35		

CEA 11/31/08

Standard:	ID	Prep Date/Time
ALMS		
WCCV/LCS	<u>see page 187</u>	

Reviewed By/Date: Mitchell 2/4/08  
 see book # 9328 for std traceability information

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

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

### SAMPLE DIGESTION RECORD

Digestion Batch #: 08L0039 Method: SW 3005A DW 200.7 (1994)  
 Date/Time Initiated: 11/26/08 10:00 AM (circle) 3010A 200.9  
 Date/Time Completed: 11/26/08 12:30 PM 3015 3113B  
 Analyst(s): MWH/mc 3020A  
 Matrix: Soil Water Other: Oil 7060A (As/Se) MCAWW 200.7 (1982)  
 Instr. Type: AA ICP 7760A (Ag) 200 (AA)  
 Parameters: See Backlog 3050B 206.2 (As/Se)  
 Digested / Undigested (circle one) 3051 SM 3030C (NC)  
 Balance #: 1320 CLP ILMO3.0 Other Teflon  
 Balance Cal Verif: Y NA 99° ILMO4.0  
 Hot Plate Temp: 99° TLM

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
<u>08L0039-001</u>		<u>1.18g</u>	<u>100 mL</u>	<u>N/A</u>	<u>TO</u>	<u>N/A</u>	<u>orange-yellow soil</u>	<u>N/A</u>	<u>N/A</u>
<u>-001B</u>		<u>1.18g</u>							
<u>-001C</u>	<u>10 mL</u>	<u>1.18g</u>							
<u>08L0039-001B</u>		<u>1.02g</u>					<u>Boiling chips</u>		
<u>-001</u>	<u>10 mL</u>	<u>1g</u>							

Spiking IDs: SK004-01  
 MS #: 02  
03  
04  
05  
 LCS #: 02  
03  
04  
05

Reagent IDs:  
 HNO<sub>3</sub> E22071  
 HCL E40020  
 H<sub>2</sub>O<sub>2</sub> E29403  
 1:1 HNO<sub>3</sub> 9584-070-06  
 1:1 HCL

File ID#: IC003901  
 LIMS Transfer: YN Update  
 Data Review By/Date: RMP, 01/30/08



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

201L 499

at TNU HANFORD SAFR RC-034

Final Proj. Sampling Date \_\_\_\_\_

act# 11343-606-001-9999-00

act Contact/Phone# \_\_\_\_\_

ville Laboratory Project Manager O. JOHNSON

SW846 Del STO TAT 15 days

Refrigerator # A

#/Type Container Liquid \_\_\_\_\_ Solid 16

Volume 250

Preservatives \_\_\_\_\_

ANALYSES REQUESTED →

ORGANIC					TPH Dioxin	INORG	
VOA	BNA	Pest/PCB	Herb	Metal		Hg	CN

Rec'd 1-25-08 Date Due 2-09-08

Matrix	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only													
			MS	MSD				VOA	BNA	Pest/PCB	Herb	TPH	Dioxin	Metal	Hg	CN					
Oil	001	T168T2	✓	✓	Oil	1-16-08	1330	X	X	X			X		X						

Special Instructions:

matQ = HSL+B,mg,S;  
(NOTL)

- Special Instructions:
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

Relinquished by	Received by	Date	Time
<u>W.E.</u>	<u>Reynolds</u>	<u>1-25-08</u>	<u>0930</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
<u>ORIG</u>	<u>COMPOSITE WASTE</u>		
<u>REWRITTEN</u>			

000000017

Collector T. Etherington	Company Contact RT Coffman	Telephone No. 5286409	Project Coordinator KESSNER, JH	Price Code 96	Data Turnaround 15 DAY
Project Designation 100-F Remaining Sites - Other Liquid Quick Turn	Sampling Location 118-F-2/Anomaly #4/55 Gal Drum	Field Logbook No. EFL-1174-4	SAF No. RC-034		
Case Chest No. AFS-06-004	COA RI18F22000	Method of Shipment: Fed Ex			
Shipped To WEBERLINE SERVICES / LIONVILLE	Offsite Property No. A080178	Bill of Lading/Air Bill No. See OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS

VA

Special Handling and/or Storage

VA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	0	0	0	0	1
Volume	250mL	250mL	250mL	40mL	250mL	250mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions	PCHs - 8082	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH-Diesel Range - WTPH-D	See item (2) in Special Instructions
168T2	OTHER LIQUID	1/16/08	1330	X	X	X	X	X	

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

Matrix \*

Relinquished By/Removed From <i>[Signature]</i>	Date/Time 1-21-08 1151	Received By/Stored In RT Coffman / RT Coffman	Date/Time 1/21/08 1151
Relinquished By/Removed From RT Coffman / RT Coffman	Date/Time 1/21/08 1430	Received By/Stored In REFER #2B, 3728	Date/Time 1/22/08 1430
Relinquished By/Removed From REFER #2B	Date/Time 1-24-08 1135	Received By/Stored In KMS Singley	Date/Time 1-24-08 1135
Relinquished By/Removed From <i>[Signature]</i>	Date/Time 1-24-08 1500	Received By/Stored In FED EX	Date/Time
Relinquished By/Removed From FED EX	Date/Time 1-25-08 0930	Received By/Stored In <i>[Signature]</i>	Date/Time 1-25-08 0930

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV) (Mercury)  
 (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Silver-108 metastable)

samples from 3728 Ref # 2B.  
 3728 Custodian removed samples for shipping on 1/24/08.  
 Sampler unavailable to relinquish

- 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

000000018

**Lionville Laboratory Incorporated**  
**SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU HANFORD  
 Project SAF/SOW/Release #: RC-034

Date: 1-25-08

LvLI Batch #: 0801L499

Sample Custodian: *Victor Hernandez*

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or <u>Shipped?</u>	Carrier <i>Fed Ex</i>	Airbill # <i>7924 9375 2174</i>
2. Custody Seals on coolers or shipping containers intact, signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
3. Outside of coolers or shipping containers are free from damage?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5. Samples received cooled or ambient?	Temp <i>2.2</i> °C	Cooler # <i>AFS-06-004</i>
How was the temperature taken?	<input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp: Blank	<input type="checkbox"/> Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
6. Custody seals on sample containers intact, signed and dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> No Seals
7. COC (Client & LvLI) signed & dated?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
8. Sample containers are intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
9. All samples on COC received?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
All samples received on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
10. All sample label information matches COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
11. Samples properly preserved? (If #5 is no, then this is no.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
12. Samples received within hold times? Short holds taken to wet lab?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
13. VOA, TOC, TOX free of headspace?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
14. QC stickers placed on bottles designated by client?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> N/A
15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
16. Project Manager contacted concerning any discrepancies?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Person Contacted _____	Date _____	

