0068714

SAF-RC-030
Remaining Sites Confirmation Sampling - Other Solid
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02 02/15/06 MJP
INITIAL/DATE

COMMENTS:

SDG K0138 **SAF-RC-030**

Waste Site: 100-D-50:7

RECEIVED
FEB 2 3 2006
EDMC

Date: 8 February 2006
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite 100-D-50:7
Subject: Pesticide/PCB - Data Package No. K0138-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0138 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10LF2	11/30/05	Solid	C	See note 1
J10LF3	11/30/05	Solid	C	See note 1

1 – PCBs by 8082 and Pesticides by 8081A

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

· Holding Times

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows

have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

Due to a surrogate recovery outside QC limits (28%), all pesticide results in sample J10LF2 were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J10LF2/J10LF3) were submitted for analysis. Field duplicates are assessed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. Toxaphene

results in all samples and all pesticide results in sample J10LF3 exceeded the RQL. Under the WCH statement of work, no qualification is required.
All other analytes met the RQL.

- **Completeness**

Data Package No. K0138 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J". Due to a surrogate recovery outside QC limits (28%), all pesticide results in sample J10LF2 were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Toxaphene results in all samples and all pesticide results in sample J10LF3 exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K0138	REVIEWER: TLI	Project: 100-D-50:7	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All pesticides	J	J10LF2	Surrogate recovery
Toxaphene	J	All	No MS, MSD or LCS analysis

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PESTICIDE/PCB ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD					
Laboratory: LLI	SDG: K0138				
Sample Number		J10LF2		J10LF3	
Remarks				Duplicate	
Sample Date		11/30/05		11/30/05	
Extraction Date		12/6/05		12/6/05	
Analysis Date		12/14/05		12/14/05	
PCB	RQL	Result	Q	Result	Q
Aroclor-1016	100	44	U	54	U
Aroclor-1221	100	44	U	54	U
Aroclor-1232	100	44	U	54	U
Aroclor-1242	100	44	U	54	U
Aroclor-1248	100	44	U	54	U
Aroclor-1254	100	44	U	54	U
Aroclor-1260	100	44	U	54	U
Sample Number		J10LF2		J10LF3	
Remarks				Duplicate	
Sample Date		11/30/05		11/30/05	
Extraction Date		12/6/05		12/6/05	
Analysis Date		12/9/05		12/9/05	
Pesticide	RQL	Result	Q	Result	Q
Alpha-BHC	5	4.4	UJ	5.4	U
Gamma-BHC (Lindane)	5	4.4	UJ	5.4	U
Beta-BHC	5	4.4	UJ	5.4	U
Heptachlor	5	4.4	UJ	5.4	U
Delta-BHC	5	4.4	UJ	5.4	U
Aldrin	5	4.4	UJ	5.4	U
Heptachlor Epoxide	5	4.4	UJ	5.4	U
Endosulfan I	5	4.4	UJ	5.4	U
Dieldrin	5	4.4	UJ	5.4	U
4,4'-DDE	5	4.4	UJ	5.4	U
Endrin	5	4.4	UJ	5.4	U
Endosulfan II	5	4.4	UJ	5.4	U
4,4'-DDD	5	4.4	UJ	5.4	U
Endosulfan Sulfate	5	4.4	UJ	5.4	U
4,4'-DDT	5	4.4	UJ	5.4	U
Methoxychlor	5	4.4	UJ	5.4	U
Endrin Ketone	5	4.4	UJ	5.4	U
Endrin Aldehyde	5	4.4	UJ	5.4	U
alpha-Chlordane	5	4.4	UJ	5.4	U
gamma-Chlordane	5	4.4	UJ	5.4	U
Toxaphene	5	44	UJ	54	UJ

000010

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 12/16/05 13:45

RFW Batch Number: 0512L855 Client: TNUHANFORD RC-030 K0138 Work Order: 11343606001 Page: 1

	Cust ID:	J10LF2	J10LF3	J10LF3	J10LF3	PBLKXU	PBLKXU BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	05LE0968-MB1	05LE0968-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	74 %	61 %	75 %	69 %	58 %	78 %
	Decachlorobiphenyl	73 %	59 %	75 %	70 %	58 %	67 %
Aroclor-1016		44 U	54 U	95 %	91 %	13 U	101 %
Aroclor-1221		44 U	54 U	54 U	54 U	13 U	13 U
Aroclor-1232		44 U	54 U	54 U	54 U	13 U	13 U
Aroclor-1242		44 U	54 U	54 U	54 U	13 U	13 U
Aroclor-1248		44 U	54 U	54 U	54 U	13 U	13 U
Aroclor-1254		44 U	54 U	54 U	54 U	13 U	13 U
Aroclor-1260		44 U	54 U	97 %	95 %	13 U	96 %

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

11/31/06

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Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 12/13/05 12:19

RFW Batch Number: 0512L855 Client: TNUHANFORD RC-030 K0138 Work Order: 11343606001 Page: 1

	Cust ID:	J10LF2	J10LF2	J10LF2	J10LF3	PBLKXU	PBLKXU BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	05LE0968-MB1	05LE0968-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	34 %	94 %	99 %	96 %	84 %	88 %
	Decachlorobiphenyl	28 * %	90 %	96 %	93 %	73 %	79 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		4.4 U J	89 %	95 %	5.4 U	0.33 U	112 %
gamma-BHC (Lindane)		4.4 U	92 %	99 %	5.4 U	0.33 U	114 %
Beta-BHC		4.4 U	113 %	120 %	5.4 U	0.33 U	115 %
Heptachlor		4.4 U	95 %	98 %	5.4 U	0.33 U	116 %
Delta-BHC		4.4 U	83 %	90 %	5.4 U	0.33 U	112 %
Aldrin		4.4 U	100 %	107 %	5.4 U	0.33 U	120 %
Heptachlor epoxide		4.4 U	103 %	111 %	5.4 U	0.33 U	118 %
gamma-Chlordane		4.4 U	105 %	112 %	5.4 U	0.33 U	118 %
Endosulfan I		4.4 U	103 %	110 %	5.4 U	0.33 U	117 %
alpha-Chlordane		4.4 U	109 %	116 %	5.4 U	0.33 U	120 %
4,4'-DDE		4.4 U	106 %	113 %	5.4 U	0.33 U	121 * %
Dieldrin		4.4 U	101 %	110 %	5.4 U	0.33 U	124 %
Endrin		4.4 U	89 %	94 %	5.4 U	0.33 U	100 %
4,4'-DDD		4.4 U	105 %	105 %	5.4 U	0.33 U	127 * %
Endosulfan II		4.4 U	103 %	110 %	5.4 U	0.33 U	119 %
4,4'-DDT		4.4 U	94 %	99 %	5.4 U	0.33 U	110 %
Endrin aldehyde		4.4 U	103 %	108 %	5.4 U	0.33 U	115 %
Endosulfan sulfate		4.4 U	103 %	110 %	5.4 U	0.33 U	118 %
Methoxychlor		4.4 U	98 %	102 %	5.4 U	0.33 U	100 %
Endrin ketone		4.4 U	112 %	122 %	5.4 U	0.33 U	122 %
Toxaphene		44 U	44 U	44 U	54 U J	3.3 U	3.3 U

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

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1/31/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0512L855
SDG/SAF # K0138/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 12-02-2005

PCB

Two (2) solid samples were collected on 11-30-2005.

The samples and their associated QC samples were extracted on 12-06-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 12-14-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. 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

12/19/05
Date

som\r:\group\data\pest\tnu hanford\0512-855.pcbs
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 7 pages.

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

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-030
LVL #: 0512L855
SDG/SAF # K0138/RC-030

W.O. #: 11343-606-001-9999-00
Date Received: 12-02-2005

CHLORINATED PESTICIDES

Two (2) solid samples were collected on 11-30-2005.

The samples and their associated QC samples were extracted on 12-06-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 12-09-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
4. The method blank was below the reporting limits for all target compounds.
5. One (1) of twelve (12) surrogate recoveries was outside acceptance criteria. However, the surrogate recovery criteria were met (i.e., no more than one outlier per sample).
6. Two (2) of twenty (20) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. All matrix spike recoveries were within acceptance criteria.
8. Both samples required a 4-dilution (also 10mL initial sample volume was used) due to the nature of the sample matrix. The reporting limits were adjusted to reflect the necessary dilution.
9. The initial calibrations associated with this data set were within acceptance criteria.
10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
12. 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

12/15/05
Date

som\r:\group\data\pest\tnu hanford\0511-855.pst
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 8 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 056C593

Initiator: DZ
Date: 12/13/05
Client: INU

Batch: 05LL855
Samples:
Method: SW846/MCAWW/CLP/

Parameter: 0608HT
Matrix: SOIL
Prep Batch: 05LE0368

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) BS recoveries out slightly high for DDE and DDD. No targets identified in samples MS/MSD recoveries acceptable

narrate?

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

narrate

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

4. Project Manager Instructions...signature/date: 12/13/05

✓ 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: _____ Other Explanation:

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

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

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

QA-105-A-0805

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-030-036	Page 1 of 2

Collector STANKOVICH/HUDSON	Company Contact Mike Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH
Project Designation Remaining Sites Confirmation Sampling - Other Solid	Sampling Location 100-D-50:7		SAF No. RC-030
Ice Chest No. AFS-04-050, 122, 124	Field Logbook No. EL-1578	COA C10DR16700	Method of Shipment FedEx
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060128		Bill of Lading/Air Bill No. SEE OSPC

Price Code 9C

Air Quality ☐

Data Turnaround 15 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

< DOT limits

Special Handling and/or Storage

Cool 4°C

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	aG	G	aG	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	500mL	250mL	60mL	60mL	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - [redacted]	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1					

Sample No.	Matrix *	Sample Date	Sample Time										
[redacted]	[redacted]												
[redacted]	[redacted]												
[redacted]	[redacted]												
J10LF2	OTHER SOLID	11/30/05	0730		X	X							
J10LF3	OTHER SOLID	11/30/05	0730		X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature] instrumentation	1200 11/30/05	3728/2C	11/30/05 1200
3728/2C	12-1-05 1030	RZ Steffler [signature]	12-1-05 1030
RZ Steffler [signature] WCH	1030 12-1-05	Fed Ex	
Fed Ex	12-2-05 0900	[signature]	12-2-05 0900

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - ~~add-on (Americium-241)~~; ~~Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium; Strontium-89,90~~; Total Sr; ~~Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238)~~; Total Uranium

(2) ICP Metals - 6010A (SW-846) (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 - 7471 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 12/1/05

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-5017			DATA PACKAGE: K0138		
VALIDATOR: TLI		LAB: LLI		DATE: 1/28/00	
			SDG: K0138		

ANALYSES PERFORMED

SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		

SAMPLES/MATRIX

J10LF2 J10LF3

Solid

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

DDT and endrin breakdowns acceptable? ..... Yes No N/A

Comments:

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no MB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... Yes No N/A
Surrogate recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments: pest – Surr low J all (L2) no par

no toxaphene MS, MSD or LCS – J all

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A

Positive results resolved acceptably? ..... Yes No N/A

Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: _____

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A
Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A
Results reported for all requested analyses? ..... Yes No N/A
Results supported in the raw data? (Levels D, E) ..... Yes No N/A
Samples properly prepared? (Levels D, E) ..... Yes No N/A
Detection limits meet RDL? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: toxaphene over
L3 pesticides

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries acceptable? ..... Yes No N/A
GPC cleanup performed? ..... Yes No N/A
GPC check performed? ..... Yes No N/A
GPC check recoveries acceptable? ..... Yes No N/A
GPC calibration performed? ..... Yes No N/A
GPC calibration check performed? ..... Yes No N/A
GPC calibration check retention times acceptable? ..... Yes No N/A
Check/calibration materials traceable? ..... Yes No N/A
Check/calibration materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A

Comments:

Date: 8 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite 100-D-50:7
Subject: Radiochemistry - Data Package No. K0138-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0138 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10LF2	11/30/05	Solid	C	See note 1
J10LF3	11/30/05	Solid	C	See note 1

1 – Gross alpha/beta, total uranium, gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If

either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J10LF2/J10LF3) were submitted for analysis. Field duplicates are assessed using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. Ten analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0138 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Ten analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0138	REVIEWER: TLI	PROJECT: 100-D-50:7	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD					
Laboratory: EB	SDG: K0138				
Sample Number		J10LF2		J10LF3	
Remarks				Duplicate	
Sample Date		11/30/05		11/30/05	
Radiochemistry	RQL	Result	Q	Result	Q
Gross Alpha		4.25		6.90	
Gross Beta		12.6		16.5	
Total uranium (ug/g)		0.762		0.669	
Potassium-40		U	U	U	U
Cobalt 60	0.05	U	U*	U	U*
Cesium 137	0.05	U	U*	U	U*
Radium-226		U	U	U	U
Radium-228		U	U	U	U
Europium 152	0.1	U	U*	U	U*
Europium 154	0.1	U	U*	U	U*
Europium 155	0.1	U	U*	U	U*
Thorium-228		U	U	U	U
Thorium-232		U	U	U	U
Uranium-235(gea)		U	U	U	U
Uranium-238(gea)		U	U	U	U
Americium-241(gea)		U	U	U	U

000010

* - RQL exceeded
Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0138

7785-001 J10LF2

DATA SHEET

SDG	7785	Client/Case no	Hanford	SDG_K0138	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R512024-01	Client sample id	J10LF2		
Dept sample id	7785-001	Location/Matrix	100-D-50:7	SOLID	
Received	12/02/05	Collected/Weight	11/30/05 07:30	332.9 g	
% solids	100.0	Custody/SAF No	RC-030-036	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.25	3.2	4.1	10		93A
Gross Beta	12587-47-2	12.6	4.0	5.4	15		93B
Total Uranium (ug/g)	7440-61-1	0.762	0.094	0.014	1.0		U_T
Potassium 40	13966-00-2	U		3.9		U	GAM
Cobalt 60	10198-40-0	U		0.39	0.050	U	GAM
Cesium 137	10045-97-3	U		0.20	0.10	U	GAM
Radium 226	13982-63-3	U		0.39	0.10	U	GAM
Radium 228	15262-20-1	U		0.62	0.20	U	GAM
Europium 152	14683-23-9	U		0.30	0.10	U	GAM
Europium 154	15585-10-1	U		0.43	0.10	U	GAM
Europium 155	14391-16-3	U		0.33	0.10	U	GAM
Thorium 228	14274-82-9	U		0.41		U	GAM
Thorium 232	TH-232	U		0.62		U	GAM
Uranium 235	15117-96-1	U		0.46		U	GAM
Uranium 238	U-238	U		14		U	GAM
Americium 241	14596-10-2	U		0.46		U	GAM

Remaining Sites Confirmation Smplg.

1/31/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/20/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0138

7785-002 J10LF3

DATA SHEET

SDG	7785	Client/Case no	Hanford	SDG K0138	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R512024-02	Client sample id	J10LF3		
Dept sample id	7785-002	Location/Matrix	100-D-50:7	SOLID	
Received	12/02/05	Collected/Weight	11/30/05 07:30	314.1 g	
% solids	100.0	Custody/SAF No	RC-030-036	RC-030	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.90	3.4	3.2	10		93A
Gross Beta	12587-47-2	16.5	4.7	6.5	15		93B
Total Uranium (ug/g)	7440-61-1	0.669	0.084	0.014	1.0		U_T
Potassium 40	13966-00-2	U		2.2		U	GAM
Cobalt 60	10198-40-0	U		0.14	0.050	U	GAM
Cesium 137	10045-97-3	U		0.19	0.10	U	GAM
Radium 226	13982-63-3	U		0.25	0.10	U	GAM
Radium 228	15262-20-1	U		0.54	0.20	U	GAM
Europium 152	14683-23-9	U		0.34	0.10	U	GAM
Europium 154	15585-10-1	U		0.46	0.10	U	GAM
Europium 155	14391-16-3	U		0.21	0.10	U	GAM
Thorium 228	14274-82-9	U		0.37		U	GAM
Thorium 232	TH-232	U		0.54		U	GAM
Uranium 235	15117-96-1	U		0.34		U	GAM
Uranium 238	U-238	U		15		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

Remaining Sites Confirmation Smplg.

1/31/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/20/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0138 was composed of two other solid samples designated under SAF No. RC-030 with a Project Designation of: Remaining Sites Confirmation Sampling – Other Solid. The Sampling Location was 100-D-50:7.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on December 20, 2005.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Total Uranium Analysis

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

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."

Mel Mann

Melissa C. Mannion
Senior Program Manager

12/27/5

Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-030-036	Page 1 of 2

Collector: STANKOVICH/HUDSON	Company Contact: Mike Stankovich	Telephone No.: 531-7620	Project Coordinator: KESSNER, JH
Price Code: 9C	Data Turnaround: 15 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-D-50:7 K0138 (7785)	SAF No.: RC-030	
Ice Chest No.: ERC-02-009	Field Logbook No.: EL-1578	COA: C10DR16700	Method of Shipment: FedEx
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A060144	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

< DOT limits

Special Handling and/or Storage

None

000015

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	aG	G	aG	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	500mL	~~120mL~~ 250 mL	60mL	~~60mL~~	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	VOA - 8260A (TCL)	Semi-VOA - 8270 (TCL)	TPH (Total) - 418.1					

Sample No.	Matrix *	Sample Date	Sample Time									
[redacted]	[redacted]											
[redacted]	[redacted]											
[redacted]	[redacted]											
J10LF2	OTHER SOLID	11/30/05	0730	X								
J10LF3	OTHER SOLID	11/30/05	0730	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1200	Received By/Stored In	Date/Time
MK mstankovich	11/30/05	3728/2C	11/30/05 1200
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time 0930
3728/2C	12-1-05 0930	RZ Steffler R.Z. Steffler	12-1-05
Relinquished By/Removed From	Date/Time 0930	Received By/Stored In	Date/Time
RZ Steffler R.Z. Steffler	WCH 12-1-05	Fed Ex.	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	12/02/05	[illegible]	12/02/05 9:00
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - ~~add on {Americium-241}; Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Technetium-99; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}~~; Total Uranium

(2) ICP Metals - 6010A (SW-846) {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 - 7471 - (CV)

Personnel not available to relinquish samples from 3728 Ref # 2C on 12/1/05

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-50.7		DATA PACKAGE:	K0138	
VALIDATOR:	TCF	LAB: EB		DATE: 1/24/06	
			SDG:	K0138	

ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			

SAMPLES/MATRIX
J10LF2 J10LF3
soil

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes No N/A

Comments: _____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A

Method blank results acceptable? ..... Yes No N/A

Analytes detected in method blank? ..... Yes No N/A

Field blank(s) analyzed? ..... Yes No N/A

Field blank results acceptable? ..... Yes No N/A

Analytes detected in field blank(s)? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A

LCS/BSS recoveries acceptable? ..... Yes No N/A

LCS/BSS traceable? (Levels D,E) ..... Yes No N/A

LCS/BSS expired? (Levels D,E) ..... Yes No N/A

LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments:

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

Chemical carrier traceable? (Levels D, E) ..... Yes No N/A

Chemical carrier expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

8. Tracer Recovery (Levels C, D, E) ..... ☒ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

Tracer traceable? (Levels D, E) ..... Yes No N/A

Tracer expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

9. Matrix Spikes (Levels C, D, E) ..... ☒ N/A

Matrix spike analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Spike source traceable? (Levels D, E) ..... Yes No N/A

Spike source expired? Levels D, E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... Yes No N/A

RPD Values Acceptable? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments:

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split sample(s) analyzed? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: no TAS or FS

12. Holding Times (All levels)

Are sample holding times acceptable? ..... Yes No N/A

Comments:

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses? Yes No N/A

Results supported in raw data?(Levels D, E) Yes No N/A

Results Acceptable? (Levels D, E) Yes No N/A

Transcription/Calculation errors? (Levels D, E) Yes No N/A

MDA's meet required detection limits? Yes No N/A

Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: 10 only

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0138

7785-004

Method Blank

METHOD BLANK

SDG	7785	Client/Case no	Hanford	SDG K0138	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R512024-04	Client sample id	Method Blank		
Dept sample id	7785-004	Material/Matrix		SOLID	
		SAF No	RC-030		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.292	2.0	4.0	10	U	93A
Gross Beta	12587-47-2	0.646	3.2	5.5	15	U	93B
Total Uranium (ug/g)	7440-61-1	0	0.006	0.014	1.0	U	U_T
Potassium 40	13966-00-2	U		1.5		U	GAM
Cobalt 60	10198-40-0	U		0.099	0.050	U	GAM
Cesium 137	10045-97-3	U		0.13	0.10	U	GAM
Radium 226	13982-63-3	U		0.20	0.10	U	GAM
Radium 228	15262-20-1	U		0.37	0.20	U	GAM
Europium 152	14683-23-9	U		0.34	0.10	U	GAM
Europium 154	15585-10-1	U		0.45	0.10	U	GAM
Europium 155	14391-16-3	U		0.20	0.10	U	GAM
Thorium 228	14274-82-9	U		0.14		U	GAM
Thorium 232	TH-232	U		0.37		U	GAM
Uranium 235	15117-96-1	U		0.34		U	GAM
Uranium 238	U-238	U		14		U	GAM
Americium 241	14596-10-2	U		0.20		U	GAM

Remaining Sites Confirmation Smplg.

QC-BLANK #55322

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/20/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0138

7785-003

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7785

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0138

Contract No. 630

Lab sample id R512024-03

Dept sample id 7785-003

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-030

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	162	15	3.4	10		93A	230	9.2	70	76-124	70-130
Gross Beta	209	10	5.4	15		93B	218	8.7	96	77-123	70-130
Total Uranium (ug/g)	35.6	4.6	0.14	1.0		U_T	36.2	1.4	98	76-124	80-120
Cobalt 60	2.17	0.30	0.13	0.050		GAM	2.14	0.086	101	68-132	80-120
Cesium 137	2.21	0.25	0.18	0.10		GAM	2.20	0.088	100	71-129	80-120

Remaining Sites Confirmation Smplg.

QC-LCS #55321

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 12/20/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0138

7785-005

J10LF2

DUPLICATE

SDG	7785			Client/Case no	Hanford SDG K0138
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R512024-05	Lab sample id	R512024-01	Client sample id	J10LF2
Dept sample id	7785-005	Dept sample id	7785-001	Location/Matrix	100-D-50:7 SOLID
		Received	12/02/05	Collected/Weight	11/30/05 07:30 332.9 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-030-036 RC-030

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	4.84	3.1	3.6	10		93A	4.25	3.2	4.1		13	153	0.3
Gross Beta	14.8	5.3	7.8	15		93B	12.6	4.0	5.4		16	79	0.6
Total Uranium (ug/g)	0.752	0.095	0.014	1.0		U_T	0.762	0.094	0.014		1	33	0.1
Potassium 40	U		2.2		U	GAM	U		3.9	U	-		0.8
Cobalt 60	U		0.11	0.050	U	GAM	U		0.39	U	-		1.4
Cesium 137	U		0.14	0.10	U	GAM	U		0.20	U	-		0.5
Radium 226	U		0.24	0.10	U	GAM	U		0.39	U	-		0.6
Radium 228	U		0.52	0.20	U	GAM	U		0.62	U	-		0.2
Europium 152	U		0.33	0.10	U	GAM	U		0.30	U	-		0.1
Europium 154	U		0.44	0.10	U	GAM	U		0.43	U	-		0
Europium 155	U		0.21	0.10	U	GAM	U		0.33	U	-		0.6
Thorium 228	U		0.28		U	GAM	U		0.41	U	-		0.5
Thorium 232	U		0.52		U	GAM	U		0.62	U	-		0.2
Uranium 235	U		0.35		U	GAM	U		0.46	U	-		0.4
Uranium 238	U		16		U	GAM	U		14	U	-		0.2
Americium 241	U		0.21		U	GAM	U		0.46	U	-		1.0

Remaining Sites Confirmation Smplg.

QC-DUP#1 55323

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/20/05

Date: 8 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling – Other Solid – Waste Subsite 100-D-50:7
Subject: Inorganics - Data Package No. K0138-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0138 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J10LF2	11/30/05	Solid	C	See note 1
J10LF3	11/30/05	Solid	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to an LCS recovery outside QC limits (-2.4%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J10LF2/J10LF3) were submitted for analysis. Field duplicates are assessed using the same criteria as for laboratory duplicates. The RPD for aluminum (81%), calcium (40%), magnesium (77%), manganese (77%), nickel (72%) and silicon (71%) were outside QC limits. Under the WCH statement of work, no qualification is required.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. Five analytes exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. K0138 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to an LCS recovery outside QC limits (-2.4%), all silicon results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Five analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0138	REVIEWER: TLI	Project: 100-D-50:7	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silicon	J	All	LCS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD							
Lab: LLI	SDG: K0138						
Sample Number		J10LF2		J10LF3			
Remarks				Duplicate			
Sample Date		11/30/05		11/30/05			
Inorganics	RQL	Result	Q	Result	Q	Result	Q
Silver	0.2	0.87	U	1.1	U		
Aluminum		31400		13300			
Arsenic	10	5.1		9.6			
Boron		3.0		4.4			
Barium	2	35.7		55.2			
Beryllium		0.50		0.70			
Calcium		17600		26600			
Cadmium	0.2	0.43	U	0.53	U		
Cobalt		18.9		8.4			
Chromium	1	17.6		14.5			
Copper		21.3		22.8			
Iron		46900		55600			
Mercury	0.2	0.02	U	0.02	U		
Potassium		4000		4060			
Magnesium		13500		6140			
Manganese		888		392			
Molybdenum		0.80	U	0.98	U		
Sodium		14000		12600			
Nickel		16.6		7.8			
Lead	5	1.9	U	4.5			
Antimony		2.5	U	3.0	U		
Selenium	1	2.2	U	2.7	U		
Silicon		115	J	242	J		
Vanadium		58.0		78.2			
Zinc	1	134		85.2			

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 12/16/05

CLIENT: TNUHANFORD RC-030 K0138

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

LVL LOT #: 0512L855

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J10LF2	Silver, Total	0.87 u	MG/KG	0.87	6.0
		Aluminum, Total	31400	MG/KG	11.3	6.0
		Arsenic, Total	5.1	MG/KG	2.1	6.0
		Boron, Total	3.0	MG/KG	1.7	6.0
		Barium, Total	35.7	MG/KG	0.12	6.0
		Beryllium, Total	0.50	MG/KG	0.06	6.0
		Calcium, Total	17600	MG/KG	7.4	6.0
		Cadmium, Total	0.43 u	MG/KG	0.43	6.0
		Cobalt, Total	18.9	MG/KG	0.74	6.0
		Chromium, Total	17.6	MG/KG	0.99	6.0
		Copper, Total	21.3	MG/KG	0.74	6.0
		Iron, Total	46900	MG/KG	19.9	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	4000	MG/KG	34.3	6.0
		Magnesium, Total	13500	MG/KG	8.4	6.0
		Manganese, Total	888	MG/KG	0.12	6.0
		Molybdenum, Total	0.80 u	MG/KG	0.80	6.0
		Sodium, Total	14000	MG/KG	1.1	6.0
		Nickel, Total	16.6	MG/KG	0.80	6.0
		Lead, Total	1.9 u	MG/KG	1.9	6.0
		Antimony, Total	2.5 u	MG/KG	2.5	6.0
		Selenium, Total	2.2 u	MG/KG	2.2	6.0
		Silicon, Total	115 J	MG/KG	5.1	6.0
		Vanadium, Total	58.0	MG/KG	0.56	6.0
		Zinc, Total	134	MG/KG	0.31	6.0

1/31/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 12/16/05

CLIENT: TNUHANFORD RC-030 K0138 LVL LOT #: 0512L855

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J10LF3	Silver, Total	1.1 u	MG/KG	1.1	6.0
		Aluminum, Total	13300	MG/KG	13.8	6.0
		Arsenic, Total	9.6	MG/KG	2.6	6.0
		Boron, Total	4.4	MG/KG	2.0	6.0
		Barium, Total	55.2	MG/KG	0.15	6.0
		Beryllium, Total	0.70	MG/KG	0.08	6.0
		Calcium, Total	26600	MG/KG	9.0	6.0
		Cadmium, Total	0.53 u	MG/KG	0.53	6.0
		Cobalt, Total	8.4	MG/KG	0.91	6.0
		Chromium, Total	14.5	MG/KG	1.2	6.0
		Copper, Total	22.8	MG/KG	0.91	6.0
		Iron, Total	55600	MG/KG	24.3	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	4060	MG/KG	41.9	6.0
		Magnesium, Total	6140	MG/KG	10.2	6.0
		Manganese, Total	392	MG/KG	0.15	6.0
		Molybdenum, Total	0.98 u	MG/KG	0.98	6.0
		Sodium, Total	12600	MG/KG	1.3	6.0
		Nickel, Total	7.8	MG/KG	0.98	6.0
		Lead, Total	4.5	MG/KG	2.3	6.0
		Antimony, Total	3.0 u	MG/KG	3.0	6.0
		Selenium, Total	2.7 u	MG/KG	2.7	6.0
		Silicon, Total	242 J	MG/KG	6.2	6.0
		Vanadium, Total	78.2	MG/KG	0.68	6.0
		Zinc, Total	85.2	MG/KG	0.38	6.0

1/31/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-030
LVL#: 0512L855
SDG/SAF#: K0138/RC-030

W.O.#: 11343-606-001-9999-00
Date Received: 12-02-05

METALS CASE NARRATIVE

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

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

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

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

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at -2.4%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

10. The matrix spike (MS) recoveries for 7 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

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 20 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J10LF2	Aluminum	120,000	99.6
	Calcium	120,000	95.7
	Iron	120,000	101.2
	Magnesium	120,000	100.9
	Manganese	12,000	93.9
	Sodium	12,000	112.3
	Silicon	12,000	101.5

12. The duplicate analyses for 4 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

12/23/05
Date

jjw/m12-855

LvLI
LIONVILLE LABORATORY INC.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-036	Page 1 of 2
Collector: STANKOVICH/HUDSON	Company Contact: Mike Stankovich	Telephone No.: 531-7620	Project Coordinator: KESSNER, JH	Price Code: 9C; Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-D-50:7		SAF No.: RC-030	Air Quality ☐
Ice Chest No.: AFS-04-050, 122, 124	Field Logbook No.: EL-1578	COA: C10DR16700	Method of Shipment: FedEx	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060128		Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

< DOT limits

Special Handling and/or Storage

Cool 4°C

Preservation	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	aG	G	aG	G				
No. of Container(s)	1	1	1	1	1	1				
Volume	500mL	~~120mL~~ 250mL	60mL	60mL	60mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	PCBs - 8082; Pesticides - [redacted]	VOA - 8260A (TCL)	Semi-VOA - 8270A (TCL)	TPH (Total) - 418.1				

Sample No.	Matrix *	Sample Date	Sample Time									
[redacted]	[redacted]											
[redacted]	[redacted]											
[redacted]	[redacted]											
J10LF2	OTHER SOLID	11/30/05	0730		X	X						
J10LF3	OTHER SOLID	11/30/05	0730		X	X						

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature] mstankovich	1200 11/30/05	3728/2C	11/30/05 1200
3728/2C	12-1-05 1030	R2 Steffler R.Z. Steffler	1030 12-1-05
R2 Steffler R.Z. Steffler WCH	1030 12-1-05	Fed Ex	
Fed Ex	12-2-05 0920	[signature]	12-2-05 0920

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - ~~Add on (Americium-241); Americium-241~~; Gross Alpha & Gross Beta; ~~Nickel-63; Isotopic Plutonium; Strontium-89,90 - Total Sr; Technetium-99; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238)~~; Total Uranium

(2) ICP Metals - 6010A (SW-846) {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 - 7471 - (CV)

Personnel not available to relinquish samples from 3728
Ref # 2C on 12/1/05

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solid
DL=Drum Liquid
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

BHI-EE-011 (08/29/2005)

000016

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-50:7			DATA PACKAGE: K0138		
VALIDATOR: TCJ		LAB: LLI		DATE: 1/24/02	
			SDG: K0138		

ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		

SAMPLES/MATRIX
J10LF2 J10LF3
solid

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: LCS silicon – J all

no PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

aluminum, calcium, magnesium, manganese, nickel, silicon

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments: