

SAF-RC-020
100-BC Burial Grounds –
Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02

 njp 02/27/06
INITIAL DATE

COMMENTS:

SDG (K0167) SAF-RC-020

Waste Site: 118-B-6

RECEIVED
MAR 21 2006
EDMC

Date: 17 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-BC Burial Ground – Soil – Full Protocol – Waste Site 118-B-6
Subject: Radiochemistry - Data Package No. K0167-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0167 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	Analysis
J10VN2	1/9/06	Soil	C	Tritium
J10VN3	1/9/06	Soil	C	Tritium
J10VN4	1/9/06	Soil	C	Tritium
J10VN5	1/9/06	Soil	C	Tritium
J10VN6	1/9/06	Soil	C	Tritium
J10VN7	1/9/06	Soil	C	Tritium
J10VN8	1/9/06	Soil	C	Tritium
J10VN9	1/9/06	Soil	C	Tritium
J10VP0	1/9/06	Soil	C	Tritium
J10VP1	1/9/06	Soil	C	Tritium
J10VP2	1/9/06	Soil	C	Tritium
J10VP3	1/9/06	Soil	C	Tritium
J10VP4	1/9/06	Soil	C	Tritium
J10VP5	1/9/06	Soil	C	Tritium
J10VP6	1/9/06	Soil	C	Tritium
J10VP7	1/9/06	Soil	C	Tritium
J10VP8	1/9/06	Soil	C	Tritium
J10VP9	1/9/06	Soil	C	Tritium

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, December 2001).

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

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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

One field blank was submitted for analysis. No analytes were detected in the field blank.

· 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 65-135%. 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.

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

All other 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 35%, 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 (J10VN6/J10VN7) was submitted for analysis. Field duplicates are compared 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 remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

• **Completeness**

Data package No. K0167 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.

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MINOR DEFICIENCIES

Due to the lack of a matrix spike analysis, all tritium results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH 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.

REFERENCES

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

DOE/RL-2001-35, Rev. 0, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

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Appendix 1

Glossary of Data Reporting Qualifiers

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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.

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Appendix 2
Summary of Data Qualification

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RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0167		REVIEWER:	Project: J-18-B-6	PAGE 1 OF 1
COMMENTS:				
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON	
Tritium	J	All	No MS 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.

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: EB		SDG: K0167																	
Sample Number	J10VN2		J10VN3		J10VN4		J10VN5		J10VN6		J10VN7		J10VN8		J10VN9		J10VP0		
Remarks							E. Blank			Duplicate									
Sample Date	1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
Tritium	400	220	J	2780	J	165	J	-0.255	UJ	800	J	764	J	2.02	UJ	1.14	UJ	256	J
Sample Number	J10VP1		J10VP2		J10VP3		J10VP4		J10VP5		J10VP6		J10VP7		J10VP8		J10VP9		
Remarks																			
Sample Date	1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
Tritium	400	232	J	42.3	J	28.6	J	23.1	J	16.0	J	0.720	UJ	1.22	UJ	241	J	4.52	J

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* - 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 K0167

7705-001

J10VN2

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-01</u>	Client sample id <u>J10VN2</u>	
Dept sample id <u>7705-001</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 12:12</u>	<u>371.4 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	220	6.2	2.9	400	J	H

100-BC Burial Grounds - Soil

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DATA SHEETS

Page 1

SUMMARY DATA SECTION

Page 12

000010

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-002

J10VN3

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R601051-02</u>	Client sample id <u>J10VN3</u>	
Dept sample id <u>7705-002</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 12:16 445.3 g</u>	
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	2780	31	4.6	400	J	H

100-BC Burial Grounds - Soil

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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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-003

J10VN4

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R601051-03</u>	Client sample id <u>J10VN4</u>	
Dept sample id <u>7705-003</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 12:24 421.3 g</u>	
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	165	6.6	4.1	400	J	H

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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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-004

J10VN5

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R601051-04</u>	Client sample id <u>J10VN5</u>	
Dept sample id <u>7705-004</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 12:40</u>	<u>365.5 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.255	1.8	3.1	400	U J	H

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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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-005

J10VN6

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R601051-05</u>	Client sample id <u>J10VN6</u>	
Dept sample id <u>7705-005</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 12:42 386.1 g</u>	
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	800	12	3.2	400	J	H

100-BC Burial Grounds - Soil

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000014

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>01/19/06</u>

E B E R L I N E S E R V I C E S / R I C H M O N D
S A M P L E D E L I V E R Y G R O U P K 0 1 6 7

7705-006

J10VN7

D A T A S H E E T

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-06</u>	Client sample id <u>J10VN7</u>	
Dept sample id <u>7705-006</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 12:45</u>	<u>414.8 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	764	11	3.1	400	J	H

100-BC Burial Grounds - Soil

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2/14/06

000015

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-007

J10VN8

D A T A S H E E T

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R601051-07</u>	Client sample id <u>J10VN8</u>	
Dept sample id <u>7705-007</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 13:25</u>	<u>380.6 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	2.02	2.1	3.5	400	U J	H

100-BC Burial Grounds - Soil

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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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-008

J10VN9

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R601051-08</u>	Client sample id <u>J10VN9</u>	
Dept sample id <u>7705-008</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 13:40</u>	<u>355.9 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	1.14	1.8	3.0	400	UJ	H

100-BC Burial Grounds - Soil

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DATA SHEETS

Page 8

SUMMARY DATA SECTION

Page 19

000017

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-009

J10VP0

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-09</u>	Client sample id <u>J10VP0</u>	
Dept sample id <u>7705-009</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 13:55 377.4 g</u>	
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	256	6.9	3.2	400	J	H

100-BC Burial Grounds - Soil

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000018

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-010

J10VP1

D A T A S H E E T

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-10</u>	Client sample id <u>J10VP1</u>	
Dept sample id <u>7705-010</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 14:05</u>	<u>379.8 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	232	8.2	4.0	400	J	H

100-BC Burial Grounds - Soil

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2/14/06

000019

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-011

J10VP2

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-11</u>	Client sample id <u>J10VP2</u>	
Dept sample id <u>7705-011</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 13:35</u>	<u>380.1 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	42.3	3.6	3.7	400	J	H

100-BC Burial Grounds - Soil

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2/14/06

000020

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-012

J10VP3

D A T A S H E E T

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-12</u>	Client sample id <u>J10VP3</u>	
Dept sample id <u>7705-012</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 13:50</u>	<u>386.3 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	28.6	3.2	3.7	400	J	H

100-BC Burial Grounds - Soil

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2/14/06

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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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-013

J10VP4

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-13</u>	Client sample id <u>J10VP4</u>	
Dept sample id <u>7705-013</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 14:05 423.5 g</u>	
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	23.1	3.1	3.8	400	J	H

100-BC Burial Grounds - Soil

Handwritten signature
2/14/06

000022

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
 SAMPLE DELIVERY GROUP K0167

7705-014

J10VP5

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-14</u>	Client sample id <u>J10VP5</u>	
Dept sample id <u>7705-014</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 13:45</u>	<u>368.9 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	16.0	2.3	2.8	400	J	H

100-BC Burial Grounds - Soil

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2/14/06

000023

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-015

J10VP6

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-15</u>	Client sample id <u>J10VP6</u>	
Dept sample id <u>7705-015</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 14:35 364.9 g</u>	
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.720	1.8	3.1	400	U J	H

100-BC Burial Grounds - Soil

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✓
2/14/06

000024

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-016

J10VP7

D A T A S H E E T

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R601051-16</u>	Client sample id <u>J10VP7</u>	
Dept sample id <u>7705-016</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 14:46</u>	<u>387.1 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	1.22	1.8	3.0	400	UJ	H

100-BC Burial Grounds - Soil

V
2/14/06

000025

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-017

J10VP8

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-17</u>	Client sample id <u>J10VP8</u>	
Dept sample id <u>7705-017</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 14:35</u>	<u>365.2 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	241	8.6	4.1	400	J	H

100-BC Burial Grounds - Soil

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✓
2/14/06

000026

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>01/19/06</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-018

J10VP9

DATA SHEET

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-18</u>	Client sample id <u>J10VP9</u>	
Dept sample id <u>7705-018</u>	Location/Matrix <u>118-B-6 (100 B/C)</u>	<u>SOLID</u>
Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 14:50</u>	<u>382.1 g</u>
% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u>	<u>RC-020</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	4.52	2.0	3.1	400	<u>I</u>	H

100-BC Burial Grounds - Soil

V
2/14/06

000027

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>01/19/06</u>

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000028

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0167 was composed of eighteen solid (soil) samples designated under SAF No. RC-020 with a Project Designation of: 100-BC Burial Grounds – Soil Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on January 19, 2006.

2.0 ANALYSIS NOTES

2.1 Tritium Analysis

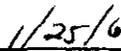
No problems were encountered during the course of the analyses.

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."



Melissa C. Mannion
Senior Program Manager



Date

000029

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-020-008	Page 1 of 1																																																																																				
Collector Doug Bowers/C. Martinez	Company Contact Doug Bowers	Telephone No. 509-531-0701	Project Coordinator KESSNER, III	Price Code	Data Turnaround																																																																																						
Project Designation 100-BC Burial Grounds - Soil Full Protocol	Sampling Location 118-B-6 (100 B/C) K0167 (7705)	SAF No. RC-020	Air Quality		7 days																																																																																						
Ice Chest No. SML-363	Field Logbook No. EFL-1173-87 0109106	COA 2000 R118B62600	Method of Shipment fed ex		Bill of Lading/Air Bill No. See ASPC																																																																																						
Shipped To FEDEX SERVICES / LIONVILLE	Offsite Property No. A060192																																																																																										
POSSIBLE SAMPLE HAZARDS/REMARKS <i>none < DOT limits</i>																																																																																											
Special Handling and/or Storage <i>Cool 4 degrees centigrade None 1-10-06</i>																																																																																											
<table border="1"> <thead> <tr> <th>Preservation</th> <th>None</th> <th>None</th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Type of Container</td> <td>GP</td> <td>aG</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>No. of Container(s)</td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Volume</td> <td>250g</td> <td>250ml</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>								Preservation	None	None						Type of Container	GP	aG						No. of Container(s)		1						Volume	250g	250ml																																																									
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Type of Container	GP	aG																																																																																									
No. of Container(s)		1																																																																																									
Volume	250g	250ml																																																																																									
SAMPLE ANALYSIS																																																																																											
<table border="1"> <thead> <tr> <th>Sample No.</th> <th>Matrix *</th> <th>Sample Date</th> <th>Sample Time</th> <th>See item (1) in Special Instructions</th> <th>Carbon-14 Tritium - 113</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>J10VN2</td> <td>SOIL</td> <td>0109106</td> <td>1212</td> <td></td> </tr> <tr> <td>J10VN3</td> <td>SOIL</td> <td>0109106</td> <td>1216</td> <td></td> </tr> <tr> <td>J10VN4</td> <td>SOIL</td> <td>0109106</td> <td>1224</td> <td></td> </tr> <tr> <td>J10VN5</td> <td>SOIL</td> <td>0109106</td> <td>1240</td> <td></td> </tr> <tr> <td>J10VN6</td> <td>SOIL</td> <td>0109106</td> <td>1242</td> <td></td> </tr> </tbody> </table>								Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions	Carbon-14 Tritium - 113									J10VN2	SOIL	0109106	1212											J10VN3	SOIL	0109106	1216											J10VN4	SOIL	0109106	1224											J10VN5	SOIL	0109106	1240											J10VN6	SOIL	0109106	1242										
Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions	Carbon-14 Tritium - 113																																																																																						
J10VN2	SOIL	0109106	1212																																																																																								
J10VN3	SOIL	0109106	1216																																																																																								
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J10VN5	SOIL	0109106	1240																																																																																								
J10VN6	SOIL	0109106	1242																																																																																								
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *																																																																																			
Relinquished By/Removed From <i>C. Martinez / C. Martinez</i>	Date/Time <i>1730</i>	Received By/Stored In <i>3728 3B</i>	Date/Time <i>0109106</i>	(+) ICP Metals - 6010 (Clean List) Aluminum, Antimony, Arsenic, Barium, Bismuth, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc, Mercury - 7170 (CV) <i>0109106</i>				S=Soil SE=Sediment SL=Soil SL-Stage W=Water G=Gas A=Air DS=Drum Solid DL=Drum Liquid L=Leak W=Wipe L=Liquid V=Vegetation S=Other																																																																																			
Relinquished By/Removed From <i>3728 3B</i>	Date/Time <i>1-10-06</i>	Received By/Stored In <i>RZ Steffler R.Z. Steffler</i>	Date/Time <i>1400</i>																																																																																								
Relinquished By/Removed From <i>RZ Steffler R.Z. Steffler</i>	Date/Time <i>1430</i>	Received By/Stored In <i>Fed Ex</i>	Date/Time																																																																																								
Relinquished By/Removed From <i>Fed Ex</i>	Date/Time	Received By/Stored In <i>MEW</i>	Date/Time <i>011106 9:15</i>																																																																																								
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time																																																																																								
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																																																																																					

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-020-008	Page 2 of 4	
Collector Doug Bowers/C. Martinez		Company Contact Doug Bowers		Telephone No. 509-531-0701		Project Coordinator KESSNER, JH	Price Code	Data Turnaround
Project Designation 100-BC Burial Grounds - Soil Full Protocol		Sampling Location 118-B-6 (100 B/C)		K0167 (7705)		SAF No. RC-020	Air Quality	7 days
Ice Chest No. SML-363		Field Logbook No. EFL-1173-7		COA R118B6300		Method of Shipment fed ex		
Shipped For EBERLINE SERVICES LIONVILLE		Offsite Property No. A060192		Bill of Lading/Air Bill No. See uspc				
POSSIBLE SAMPLE HAZARDS/REMARKS none < DOT limits		Preservation		None				
Special Handling and/or Storage Cool 4 degrees centigrade - None R25 1-10-06		Type of Container		GP				
		No. of Container(s)		1				
		Volume		250g		250ml		
				See item (1) in Special Instructions				
				Carbon-14 Tritium - 115				
000034		SAMPLE ANALYSIS						
Sample No.	Matrix *	Sample Date	Sample Time					
J10VN7	SOIL	01/09/06	1245					
J10VN8	SOIL	01/09/06	1325					
J10VN9	SOIL	01/09/06	1340					
J10VP0	SOIL	01/09/06	1355					
J10VP1	SOIL	01/09/06	1405					
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From C. Martinez / C. Martinez		Date/Time 1730		Received By/Stored In 3728 3B		Date/Time 01/09/06		(1) ICP Metals - 6010 (Chain List) Aluminum, Antimony, Arsenic, Barium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc; Mercury - 7170 (CV) Matrix * S - Soil SF - Sediment SW - Solid SL - Sludge W - Water O - Oil A - Air DS - Domo Solids DL - Domo Liquid L - Liquefied WA - Waste LI - Liquid V - Vegetation O - Other
Relinquished By/Removed From 3728 3B		Date/Time 1-10-06		Received By/Stored In RZ Steffler R.Z. Steffler		Date/Time 1400		
Relinquished By/Removed From R.Z. Steffler R.Z. Steffler		Date/Time 1430		Received By/Stored In Fed Ex		Date/Time		
Relinquished By/Removed From Fed Ex		Date/Time		Received By/Stored In Fed Ex		Date/Time 01/11/06 9:15		
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		
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		

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-020-008	Page 2 of 2
Collector Doug Bowers/C. Martinez	Company Contact Doug Bowers	Telephone No. 509-531-0701	Project Coordinator KESSNER, JI		Price Code	Data Turnaround	
Project Designation 100-BC Burial Grounds - Soil Full Protocol	Sampling Location 118-B-6 (100 B/C)	K0167 (7705)		SAF No. RC-020	Air Quality	7 days	
Ice Chest No. SML-363	Field Logbook No. EFL-1173-67	0109106	COA 2001	R118B62600	Method of Shipment Fed ex		
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060192	01105106		Bill of Lading/Air Bill No. See ASPC			
POSSIBLE SAMPLE HAZARDS/REMARKS none < DOT Limits		Preservation	None	None			
Special Handling and/or Storage Cool to degrees centigrade None R25 1-10-06		Type of Container	GP	aG			
		No. of Container(s)		1			
		Volume	250g	250ml	0109106		
SAMPLE ANALYSIS		See item (1) in Special Instructions	Carbon-14	Tritium - H3			
000032	Sample No.	Matrix *	Sample Date	Sample Time			
	J10VP2	SOIL	01/09/06	13:35			
	J10VP3	SOIL	01/09/06	13:50			
	J10VP4	SOIL	01/09/06	14:05			
	J10VP5	SOIL	01/09/06	13:45			
	J10VP6	SOIL	01/09/06	14:35			
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS			Matrix *
Relinquished By/Removed From C. Martinez/C. Martinez	Date/Time 01/09/06 1730	Received By/Stored In 3728 3B	Date/Time 01/09/06 1730	(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 - 7120 (C14)			S=Soil SE= Sediment SL= Solid SI= Sludge W= Water O= Oil A= Air DS= Dross Solids DL= Drums Liquid T= Gas W= Wap. L= Liquid V= Vegetation X= Other
Relinquished By/Removed From 3728 3B	Date/Time 1-10-06 1400	Received By/Stored In RZ Steffler R.Z. Steffler	Date/Time 1-10-06 1400				
Relinquished By/Removed From RZ Steffler R.Z. Steffler	Date/Time 1-10-06 1430	Received By/Stored In Fed Ex	Date/Time				
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In Fed Ex	Date/Time 01/11/06 9:15				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
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			

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-020-008	Page 1 of 1	
Collector Doug Bowers/C. Martinez		Company Contact Doug Bowers		Telephone No. 509-531-0701		Project Coordinator KESSNER, JII	Price Code	Data Turnaround
Project Designation 100-BC Burial Grounds - Soil Full Protocol		Sampling Location 118-B-6 (100 B/C)		K0167 (7705)		SAF No. RC-320	Air Quality	7 days
Ice Chest No. SML-363		Field Logbook No. EFL-1173-67		COA R118B62600 2000		Method of Shipment fed ex		
Shipped To EBERLINE SERVICES LIONVILLE		Offsite Property No. AUG0192		Bill of Lading/Air Bill No. See OSPL				
POSSIBLE SAMPLE HAZARDS/REMARKS none < DOT limits		Preservation		None				
Special Handling and/or Storage Cool 1 degreees centigrade RES 1-10-06 None		Type of Container		GP				
		No. of Container(s)		1				
		Volume		250g 250ml				
000033		See item (1) in Special Instructions		Carbon 14, Tritium - H3				
SAMPLE ANALYSIS								
Sample No.	Matrix *	Sample Date	Sample Time					
J10VP7	SOIL	01/09/06	1446					
J10VP8	soil	01/09/06	1435					
J10VP9	soil	01/09/06	1450					
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From cmartinez/c.martinez		Date/Time 1730 01/09/06		Received By/ Stored In 3728 3B		Date/Time 1730 01/09/06		(+) ICP Metals - 6010 (Clean 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 - 7170 - CV) S=Soil SF=Solid SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Solids DL=Dry Liquid T=Trace W=Wipe L=Liquid V=Vegetation A=Other
Relinquished By/Removed From 3728 3B		Date/Time 1400 1-10-06		Received By/ Stored In RZ Steffler RZ Steffler		Date/Time 1400 1-10-06		
Relinquished By/Removed From RZ Steffler RZ Steffler		Date/Time 1730 1-10-06		Received By/ Stored In Fed EX		Date/Time		
Relinquished By/Removed From Fed EX		Date/Time		Received By/ Stored In MFW		Date/Time 01/11/06 9:15		
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

Appendix 5
Data Validation Supporting Documentation

000034

**APPENDIX A
RADIOCHEMICAL DATA VALIDATION CHECKLIST**

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	119-B-6		DATA PACKAGE: K0167		
VALIDATOR:	TCT	LAB:	ES	DATE: 2/12/06	
			SDG: K0167		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			
SAMPLES/MATRIX					
J10VN2	J10VN3	J10VNY	J10VNS	J10VNL	J10VN7
J10VW8	J10VW9	J10VPO	J10VPI	J10VP2	J10VP3
J10UP4	J10UPS	J10UPL	J10VP7	J10UPP	J10UPS
					So.1

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: _____

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

000037

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: no ms - Tall

000038

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 FS or PAS

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: _____

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Appendix 6

Additional Documentation Requested by Client

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EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K0167

7705-020

Method Blank

METHOD BLANK

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	<u>SDG K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R601051-20</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7705-020</u>	Material/Matrix _____	<u>SOLID</u>
	SAF No <u>RC-020</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-1.12	2.6	4.5	400	U	H

100-BC Burial Grounds - Soil

QC-BLANK #55697

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>01/19/06</u>

000042

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0167

7705-019

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R601051-19</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7705-019</u>	Material/Matrix _____	<u>SOLID</u>
	SAF No <u>RC-020</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	875	29	9.2	400		H	933	37	94	84-116	80-120

100-BC Burial Grounds - Soil

QC-LCS #55696

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>01/19/06</u>

000043

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0167

7705-021

J10VP2

DUPLICATE

SDG <u>7705</u>	Client/Case no <u>Hanford</u>	SDG <u>K0167</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R601051-21</u>	Lab sample id <u>R601051-11</u>	Client sample id <u>J10VP2</u>
Dept sample id <u>7705-021</u>	Dept sample id <u>7705-011</u>	Location/Matrix <u>118-B-6 (100 B/C)</u> SOLID
	Received <u>01/11/06</u>	Collected/Weight <u>01/09/06 13:35</u> <u>380.1 g</u>
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>RC-020-008</u> <u>RC-020</u>

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	DER
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST		pCi/g	(COUNT)	pCi/g	FIERS	%	TOT
Tritium	40.4	3.5	3.6	400	H	42.3	3.6	3.7		5	28	0.5

100-BC Burial Grounds - Soil

QC-DUP#11 55698

DUPLICATES

Page 1

SUMMARY DATA SECTION

Page 11

000044

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>01/19/06</u>

Date: 17 February 2006
 To: Washington Closure Hanford Inc. (technical representative)
 From: TechLaw, Inc.
 Project: 100-BC Burial Ground – Soil – Full Protocol – Waste Site 118-B-6
 Subject: Inorganics - Data Package No. K0167-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0167 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
J10VN2	1/9/06	Soil	C	See note 1
J10VN3	1/9/06	Soil	C	See note 1
J10VN4	1/9/06	Soil	C	See note 1
J10VN5	1/9/06	Soil	C	See note 1
J10VN6	1/9/06	Soil	C	See note 1
J10VN7	1/9/06	Soil	C	See note 1
J10VN8	1/9/06	Soil	C	See note 1
J10VN9	1/9/06	Soil	C	See note 1
J10VPO	1/9/06	Soil	C	See note 1
J10VP1	1/9/06	Soil	C	See note 1
J10VP2	1/9/06	Soil	C	See note 1
J10VP3	1/9/06	Soil	C	See note 1
J10VP4	1/9/06	Soil	C	See note 1
J10VP5	1/9/06	Soil	C	See note 1
J10VP6	1/9/06	Soil	C	See note 1
J10VP7	1/9/06	Soil	C	See note 1
J10VP8	1/9/06	Soil	C	See note 1
J10VP9	1/9/06	Soil	C	See note 1

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

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (DOE/RL-2001-35, December 2001).

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

000001

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

One field blank was submitted for analysis. No analytes were detected in the field blank.

000002

· 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.

All 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 (J10VN6/J10VN7) was submitted for analysis. Field duplicates are compared 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 remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

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Completeness

Data package No. K0167 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

None found.

REFERENCES

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

DOE/RL-2001-35, Rev. 0, *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

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Appendix 1

Glossary of Data Reporting Qualifiers

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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).

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Appendix 2
Summary of Data Qualification

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METALS DATA QUALIFICATION SUMMARY*

SDG: K0167	REVIEWER: TLI	PROJECT: 118-B-6	PAGE <u>1</u> OF <u>1</u>
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.

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: WASHINGTON CLOSURE HANFORD																			
Lab: LLI		SDG: K0167																	
Sample Number		J10VN2		J10VN3		J10VN4		J10VN5		J10VN6		J10VN7		J10VN8		J10VN9		J10VP0	
Remarks		E. Blank Duplicate																	
Sample Date		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Mercury	0.2	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.03		0.02	U	0.02	
Lead	10	5.1		3.1		4.7		1.6	U	3.2		3.9		7.0		5.9		4.4	
Sample Number		J10VP1		J10VP2		J10VP3		J10VP4		J10VP5		J10VP6		J10VP7		J10VP8		J10VP9	
Remarks																			
Sample Date		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06		1/9/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Mercury	0.2	0.03		0.01	U	0.02	U	0.01	U	0.02	U	0.02	U	0.08		0.02	U	0.02	U
Lead	10	4.7		3.2		4.0		6.1		3.1		7.7		5.6		3.3		3.3	

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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 01/18/06

CLIENT: TNU-HANFORD RC-020

LVL LOT #: 0601L072

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J10VN2	Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	5.1	MG/KG	1.8	6.0
-002	J10VN3	Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	3.1	MG/KG	1.8	6.0
-003	J10VN4	Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	4.7	MG/KG	1.8	6.0
-004	J10VN5	Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	1.6	u MG/KG	1.6	6.0
-005	J10VN6	Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	3.2	MG/KG	1.7	6.0
-006	J10VN7	Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	3.9	MG/KG	1.7	6.0
-007	J10VN8	Mercury, Total	0.03	MG/KG	0.02	1.0
		Lead, Total	7.0	MG/KG	1.7	6.0
-008	J10VN9	Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	5.9	MG/KG	1.8	6.0
-009	J10VPO	Mercury, Total	0.02	MG/KG	0.01	1.0
		Lead, Total	4.4	MG/KG	1.8	6.0

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2/14/06

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/18/06

CLIENT: TNU-HANFORD RC-020

LVL LOT #: 0601L072

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	J10VP1	Mercury, Total	0.03	MG/KG	0.02	1.0
		Lead, Total	4.7	MG/KG	1.8	6.0
-011	J10VP2	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	3.2	MG/KG	1.7	6.0
-012	J10VP3	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.0	MG/KG	1.8	6.0
-013	J10VP4	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	6.1	MG/KG	1.7	6.0
-014	J10VP5	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.1	MG/KG	1.7	6.0
-015	J10VP6	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	7.7	MG/KG	1.8	6.0
-016	J10VP7	Mercury, Total	0.08	MG/KG	0.02	1.0
		Lead, Total	5.6	MG/KG	1.8	6.0
-017	J10VP8	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.3	MG/KG	1.7	6.0
-018	J10VP9	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.3	MG/KG	1.7	6.0

Handwritten signature and date:
2/14/06

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000013



Analytical Report

Client: TNU-HANFORD RC-020
LVL#: 0601L072
SDG/SAF#: K007RC-020

W.O.#: 11343-606-001-9999-00
Date Received: 01-11-06

METALS CASE NARRATIVE

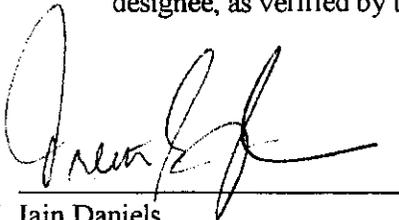
1. This narrative covers the analyses of 18 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples were reported with 6-fold dilutions for Lead due to sample matrix.
3. All analyses were performed within the required holding times.
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) with the exception of the ending CCV's for Lead in file TA0114A. Affected samples were rerun in file TA0117A.
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. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analysis for 1 analyte was 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 Instrument Detection Limit

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 70 pages.

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(IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

13. 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.
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.



bm
Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

jjwm01-072

1/20/06
Date



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00000000

Collector Doug Bowers/C. Martinez	Company Contact Doug Bowers	Telephone No. 509-531-0701	Project Coordinator KESSNER, JH	Price Code	Data Turnaround 7 days
Project Designation 100-BC Burial Grounds - Soil Full Protocol	Sampling Location 118-B-6 (100 B/C)	SAF No. RC-020	Air Quality		
Ice Chest No. ERC-96-002	Field Logbook No. EFL-1173	COA R118B62600	Method of Shipment fed cx		

Shipped To **EBERLINE SERVICES (LIONVILLE)** Offsite Property No. **01109106** **A060207** **01109106** Bill of Lading/Air Bill No. **See OSPC**

POSSIBLE SAMPLE HAZARDS/REMARKS
none < POT limits

Special Handling and/or Storage
Cool 4 degrees centigrade

Preservation	None	None							
Type of Container	G/P	G							
No. of Container(s)	1	1							
Volume	250g	250mL							

SAMPLE ANALYSIS	See item (1) in Special Instructions.	Carbon-14; Tritium - H3							

Sample No.	Matrix *	Sample Date	Sample Time						
J10VN2	SOIL	01/09/06	1212	1					
J10VN3	SOIL	01/09/06	1216	1					
J10VN4	SOIL	01/09/06	1224	1					
J10VN5	SOIL	01/09/06	1240	1					
J10VN6	SOIL	01/09/06	1242	1					

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Germanium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7470 - (CV)				S=Soil SO=Soil/rock SL=Sludge W=Water O=Oil A=Air DS=Dross Solids DL=Dross Liquid T=Tissue W=Wipe L=Liquid V=Vegetation O=Other
<i>c. martinez</i>	<i>01/09/06 1730</i>	<i>3728 3B</i>	<i>01/09/06 1730</i>					
<i>3728 3B</i>	<i>1-10-06 1330</i>	<i>R. Steffler R. J. Hill</i>	<i>1-10-06 1370</i>					
<i>R. Steffler R. J. Hill</i>	<i>1-10-06 1400</i>	<i>Fed Ex</i>						
<i>Fed Ex</i>	<i>1-10-06 0910</i>	<i>[Signature]</i>	<i>1-10-06 0910</i>					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Lead & mercury only				

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

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-020-008	Page 2 of 4
Collector Doug Bowers/C. Martinez		Company Contact Doug Bowers		Telephone No. 509-531-0701		Project Coordinator KESSNER, JH	Price Code
Project Designation 100-RC Burial Grounds - Soil Full Protocol		Sampling Location 118-B-6 (100 B/C)		SAF No. RC-020		Air Quality	Data Turnaround 7 days
Ice Chest No. ERC-96-002		Field Logbook No. EFL-1173-37		COA R118B62600-0105106		Method of Shipment fed ex	
Shipped To EBERLINE SERVICES / LIONVILLE		Offsite Property No. A060207		Bill of Lading/Air Bill No. See OSPC			
POSSIBLE SAMPLE HAZARDS/REMARKS none < DOT limits		Preservation		None	None		
Special Handling and/or Storage Cool 4 degrees centigrade		Type of Container		G/P	G		
		No. of Container(s)		1	1		
		Volume		250g	250mL		
		See item (1) in Special Instructions.		Carbon-14; Tritium - H3			
SAMPLE ANALYSIS						RCF 13851	
000017							
Sample No.	Matrix *	Sample Date	Sample Time				
J10VN7	SOIL	01/09/06	1245	✓			
J10VN8	SOIL	01/09/06	1325	✓			
J10VN9	SOIL	01/09/06	1340	✓			
J10VP0	SOIL	01/09/06	1355	✓			
J10VP1	SOIL	01/09/06	1405	✓			
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
S. Martinez		1/30		R. Stettin		1/30	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
3728 3B		1-10-06 1330		R. Stettin R. Stettin		1-10-06	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
R. Stettin R. Stettin		1-10-06		Fed Ex			
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
Fed Ex		1-10-06 0910		R. Stettin		1-10-06 0910	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time	
LABORATORY SECTION				SPECIAL INSTRUCTIONS			
Received By		Title		Date/Time		Matrix *	
						S-Soil SE-Soil/Incl SO-Solid SI-Sludge W-Water O-Oil A-Air DS-Drum Solids DL-Drum Liquid T-Tissue WI-Wipe L-Liquid V-Vegetation X-Other	
FINAL SAMPLE DISPOSITION				SPECIAL INSTRUCTIONS			
Disposal Method		Disposed By		Date/Time			

Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				RC-020-008	Page 3 of 4	
Collector Doug Bowers/C. Martinez	Company Contact Doug Bowers	Telephone No. 509-531-0701	Project Coordinator KESSNER, JH	Price Code	Data Turnaround			
Project Designation 100-BC Burial Grounds - Soil Full Protocol	Sampling Location 118-B-6 (100 B/C)	SAF No. RC-020	Air Quality		2 days			
Ice Chest No. ERC-96-002	Field Logbook No. EPL-117367	COA R118B62600 2000	Method of Shipment fed ex					
Shipped To EBERLINE SERVICES / LIONVILLE	Office Property No. 01109106 A060207	01105106	Bill of Lading/Air Bill No.		See OSPC			
POSSIBLE SAMPLE HAZARDS/REMARKS none < DOT limits		Preservation	None	None				
Special Handling and/or Storage Cool 4 degrees centigrade		Type of Container	GP	GP				
		No. of Container(s)	1					
		Volume	250g	250ml				
SAMPLE ANALYSIS		See item (1) in Special Instructions.	Carbon-14; Tritium - H3					
000018					REF			
Sample No.	Matrix *	Sample Date	Sample Time					
J10VP2	SOIL	01/09/06	1335	✓				
J10VP3	SOIL	01/09/06	1350	✓				
J10VP4	SOIL	01/09/06	1405	✓				
J10VP5	SOIL	01/09/06	1345	✓				
J10VP6	SOIL	01/09/06	1435	✓				
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	(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)				S=Soil SE=Softness SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry wt Solids DL=Dry wt Liquid T=Time W=Wipe L=Liquid V=Vegetation N=Other
Smart: neal e. mart	01/09/06 1730	J. J. 28	01/09/06 1730					
3728 3B	1-10-06 1330	R. Z. Staff	1-10-06 1330					
R. Z. Staff	1-10-06 1400	Fed Ex						
Fed Ex	1-10-06 0910	D. Newman	1-10-06 0910					
				Lead & mercury only				
LABORATORY SECTION	Received By	Title		Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By		Date/Time				

Appendix 5

Data Validation Supporting Documentation

000020

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	118-B-6		DATA PACKAGE: K0167		
VALIDATOR:	TLT	LAB: LLI	DATE: 2/12/06		
			SDG: K0167		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J10V02	J10V03	J10V04	J10V05	J10V06	
J10V07	J10V08	J10V09	J10V00	J10V01	
J10V02	J10V03	J10V04	J10V05	J10V06	
J10V07	J10V08	J10V09			
					Sul

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: _____

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: _____ 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: _____

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: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required?	Yes	No	N/A
Duplicate injection %RSD values acceptable?	Yes	No	N/A
Analytical spikes performed as required?	Yes	No	N/A
Analytical spike recoveries acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
MSA performed as required?	Yes	No	N/A
MSA results acceptable?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A

Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved?	<input checked="" type="radio"/> Yes	No	N/A
Sample holding times acceptable?	<input checked="" type="radio"/> Yes	No	N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

- 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: _____

Appendix 6

Additional Documentation Requested by Client

000026

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/18/06

CLIENT: TNU-HANFORD RC-020
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0601L072

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
BLANK1	06C0008-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BLANK1	06L0028-MB1	Lead, Total	0.31 u	MG/KG	0.31	1.0

000027

000000010

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/18/06

CLIENT: TNU-HANFORD RC-020

LVL LOT #: 0601L072

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (BPK)
-001	J10VN2	Lead, Total	46.7	5.1	47.7	87.2	6.0
-008	J10VN3	Mercury, Total	0.19	0.02u	0.17	114.9	1.0

000028

000000011

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/18/06

CLIENT: TNU-HANFORD RC-020

LVL LOT #: 0601L072

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	J10VN2	Lead, Total	5.1	3.3	42.9	6.0
-008REP	J10VN9	Mercury, Total	0.02u	0.02u	NC	1.0

000029

000000012

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/18/06

CLIENT: TNU-HANFORD RC-020

LVL LOT #: 0601L072

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

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	06C0008-LC1	Mercury, LCS	7.0	6.2	MG/KG	112.9
LCS1	06L0028-LC1	Lead, LCS	240	250	MG/KG	96.0

000030

000000013