

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

**COMPLETE COPY OF VALIDATION PACKAGE TO:**

Jeanette Duncan (2) H9-02

mjq 03/15/06  
INITIAL/DATE

**COMMENTS:**

SDG **K0185**

**SAF-RC-020**

**Waste Site: 100-B-26**

**RECEIVED**  
MAR 21 2006  
**EDMC**

Date: 13 March 2006  
To: Washington Closure Hanford Inc. (technical representative)  
From: TechLaw, Inc.  
Project: 100BC Burial Grounds – Soil Full Protocol - Waste Site 100-B-26  
Subject: PCB - Data Package No. K0185-LLI

## INTRODUCTION

This memo presents the results of data validation on Data Package No. K0185 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	Sample Date	Media	Validation	Date
J10V99	1/17/06	Soil	C	See note 1
J10VB1	1/17/06	Soil	C	See note 1
J10VB2	1/17/06	Soil	C	See note 1
J10VB3	1/17/06	Soil	C	See note 1

1 - PCBs by 8082.

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

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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.

All 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

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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.

All 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.

All precision results were acceptable.

##### Field Duplicate Samples

One set of field duplicates (J10VB1/J10VB2) 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. All analytes met the RQL.

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• **Completeness**

Data Package No. K0185 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-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

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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 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.
- UU - 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).

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**Appendix 2**  
**Summary of Data Qualification**

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PCB DATA QUALIFICATION SUMMARY\*

SDG: K0185	REVIEWER: Project 100-B-26	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.

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**Appendix 3**

**Qualified Data Summary and Annotated Laboratory Reports**

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<b>Project: WASHINGTON CLOSURE HANFORD</b>									
<b>Laboratory: LLI</b>		<b>SDG: K0185</b>							
<b>Sample Number</b>		J10V99	J10VB1	J10VB2	J10VB3				
<b>Remarks</b>		Duplicate							
<b>Sample Date</b>		1/17/06	1/17/06	1/17/06	1/17/06				
<b>Extraction Date</b>		1/19/06	1/19/06	1/19/06	1/19/06				
<b>Analysis Date</b>		1/21/06	1/21/06	1/21/06	1/21/06				
<b>PCB</b>	<b>RQL</b>	<b>Result</b>	<b>Q</b>	<b>Result</b>	<b>Q</b>	<b>Result</b>	<b>Q</b>	<b>Result</b>	<b>Q</b>
Aroclor-1016	100	15	U	15	U	16	U	15	U
Aroclor-1221	100	15	U	15	U	16	U	15	U
Aroclor-1232	100	15	U	15	U	16	U	15	U
Aroclor-1242	100	15	U	15	U	16	U	15	U
Aroclor-1248	100	15	U	15	U	16	U	15	U
Aroclor-1254	100	15	U	15	U	16	U	15	U
Aroclor-1260	100	15	U	15	U	16	U	15	U

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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.

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Sample Information	Cust ID:	J10V99	J10V99	J10V99	J10VB1	J10VB2	J10VB3
RFW#:	001	001 MS	001 MSD	003	004	005	
Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
D.F.:	1.00	1.00	1.00	1.00	1.00	1.00	
Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
Surrogate:	Tetrachloro-m-xylene	72 %	77 %	76 %	78 %	86 %	82 %
	Decachlorobiphenyl	72 %	76 %	76 %	79 %	85 %	82 %
-----fl-----fl-----fl-----fl-----fl-----fl-----fl-----							
Aroclor-1016		15 U	92 %	90 %	15 U	16 U	15 U
Aroclor-1221		15 U	15 U	15 U	15 U	16 U	15 U
Aroclor-1232		15 U	15 U	15 U	15 U	16 U	15 U
Aroclor-1242		15 U	15 U	15 U	15 U	16 U	15 U
Aroclor-1248		15 U	15 U	15 U	15 U	16 U	15 U
Aroclor-1254		15 U	15 U	15 U	15 U	16 U	15 U
Aroclor-1260		15 U	96 %	96 %	15 U	16 U	15 U

Cust ID: PBLKAG PBLKAG BS

Sample Information	RFW#:	06LE0048-MB1	06LE0048-MB1
Matrix:	SOIL	SOIL	
D.F.:	1.00	1.00	
Units:	UG/KG	UG/KG	

Surrogate:	Tetrachloro-m-xylene	77 %	81 %
	Decachlorobiphenyl	78 %	80 %
-----fl-----fl-----fl-----fl-----fl-----fl-----fl-----			
Aroclor-1016		13 U	95 %
Aroclor-1221		13 U	13 U
Aroclor-1232		13 U	13 U
Aroclor-1242		13 U	13 U
Aroclor-1248		13 U	13 U
Aroclor-1254		13 U	13 U
Aroclor-1260		13 U	99 %

*R*  
3/13/06

*As 1/21/06*

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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**Appendix 4**

**Laboratory Narrative and Chain-of-Custody Documentation**

**000012**



Case Narrative

Client: TNU-HANFORD RC-020  
LVL #: 0601L109  
SDG/SAF # K0185 / RC-020

W.O. #: 11343-606-001-9999-00  
Date Received: 01-19-2006

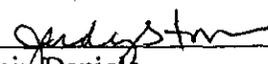
PCB

Four (4) soil samples were collected on 01-17-2006.

The samples and their associated QC samples were extracted on 01-19-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 01-21-2006. 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 a sample that met LVL's sample acceptance policy.
2. The samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
4. The method blank was below the reporting limits for all target compounds.
5. All obtainable 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. LVL 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

1/31/06  
Date

kim\\v:\group\data\pest\tnu hanford\0601-109.pcb

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.

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Washington Closure Hanford		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					RC-020-007		Page 1 of 1			
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 100-B-26 Spillway Waste Site		SAF No. RC-020		Air Quality <input type="checkbox"/>						
Ice Chest No. AFS-04-021		Field Logbook No. EFL-1173		COA C11BX4A000		Method of Shipment fed ex						
Shipped To EBERLINE SERVICES / LIONVILLE		Offsite Preserv. No. 117/06		A060215		Bill of Lading/Air Bill No.		See OSPC				
POSSIBLE SAMPLE HAZARDS/REMARKS none < POT Limits				Preservation	None	Cool 4C	Cool 4C	None	None			
Special Handling and/or Storage Cool 4 degrees centigrade				Type of Container	G/P	aG	aG	G/P	aG	aG		
				No. of Container(s)	1	1	1	1	1			
				Volume	250g	250mL	250mL	500mL	250mL	250mL		
SAMPLE ANALYSIS				See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	See item (2) in Special Instructions.	Carbon-14; Tritium - H3	Nickel-63; Strontium-90 - Total Sr			
Sample No.	Matrix *	Sample Date	Sample Time									
J10V99	SOIL	01/17/06	1315	1	1	1	-	-	-			
J10VB0	SOIL	01/17/06	1317	1	1/19	1/19	1/19	1/19	1/19			
J10VB1	SOIL	01/17/06	1335	1	1	1	-	-	-			
J10VB2	SOIL	01/17/06	1340	1	1	1	-	-	-			
J10VB3	SOIL	01/17/06	1400	1	1	1	-	-	-			
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) (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-156); Gamma Spec - Add on (Silver-108-metastable) Run gross alpha/gross beta off available material. Run TCLP upon request				S=Soil SE=Substrate SO=Solid SJ=Stage W=Water O=Oil A=Air DS=Dress Solids DL=Dress Liquids T=Trace W=Wipe L=Liquid V=Vegetation X=Other
C. Martinez		01/17/06 1720		3728 2B		01/17/06 1720						
3728 2B		1-18-06 1130		RZ Steffer R.Z. Steffer		1-18-06 1130						
RZ Steffer R.Z. Steffer		1-18-06 1300		Fed Ex								
Fed Ex		1/19/06 0920		[Signature]								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
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						

**Appendix 5**

**Data Validation Supporting Documentation**

**000015**

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	<u>C</u>	D	E
PROJECT:	100-B-24		DATA PACKAGE: K0185		
VALIDATOR:	TLE	LAB:	LLI	DATE: 3/17/02	
			SDG:	K0185	
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	<u>SW-846 8082</u>	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J10V99		J10VB1			
J10VB2		J10VB3			
					Soil

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 FB

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: no Pts

**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: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**9. SAMPLE CLEANUP (Levels D and E)**

Fluorilic ® (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: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_