0063512

SAF-B03-015
Remaining Sites Confirmation Sampling-Soil
FINAL VALIDATION PACKAGE

MAIL COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) BD 12/28
INITIAL/DATE

RECEIVED
JAN 26 2005
EDMC

SAF-B03-015 SDG H 2793

Sample Location/Waste Site: 1607-F1 Septic System

Date: 10 November 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 1607-F-1
Subject: Inorganic - Data Package No. H2793-LLI (SDG No. H2793)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2793-LLI 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	Waste Site	Analysis
J01XP1	10/7/04	Soil	C	1607-F-1	See note 1
J01XP2	10/7/04	Soil	C	1607-F-1	See note 1
J01XP3	10/7/04	Soil	C	1607-F-1	See note 1

1 - ICP metals; mercury by 7471A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

Due to preparation blank contamination, the chromium, magnesium and sodium results in samples J01XP1 were qualified as estimates and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J01XP1) was submitted for analysis. Aluminum, barium, beryllium, calcium, chromium, copper, iron, potassium, magnesium, manganese, sodium, lead, silicon, vanadium and zinc were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J".

Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a MS recovery outside QC limits (64%), all antimony results were qualified as estimates and flagged "J".

All other matrix spike recovery 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

No field duplicates were submitted for analysis.

- **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 methoxychlor and toxaphene results exceeded the RQL. Under the BHI statement of work, no qualification is required. All other reported results met the analyte specific RQL.

- **Completeness**

Data package No. H2793-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to preparation blank contamination, the chromium, magnesium and sodium results in samples J01XP1 were qualified as estimates and flagged "UJ". Due to a MS recovery outside QC limits (64%), all antimony results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All methoxychlor and toxaphene results exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: H2793	REVIEWER: TLI	DATE: 11/10/04	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chromium Magnesium Sodium	UJ	J01XP1	Blank contamination
Antimony	J	All	MS

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD															
Laboratory: LLI															
Case	SDG: H2793														
Sample Number		J01XP1		J01XP2		J01XP3									
Remarks		E. Blank													
Sample Date		10/7/04		10/7/04		10/7/04									
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.07	U	0.40		0.09	U								
Aluminum		48.5		4790		4360									
Arsenic		0.29	U	2.0		1.7									
Boron		0.41	U	0.69		0.80									
Barium	20	1.6		58.4		46.9									
Beryllium		0.03		0.18		0.19									
Calcium		23.4		2300		2360									
Cadmium	0.2	0.02	U	0.25		0.1									
Cobalt		0.06	U	3.9		4.8									
Chromium	1	0.16	UJ	9.0		7.6									
Copper		0.16		13.2		13.0									
Iron		1090		15300		13800									
Mercury	0.2	0.02	U	0.06		0.02	U								
Potassium		17.1		722		634									
Magnesium		7.5	UJ	3200		3100									
Manganese		18.7		147		224									
Molybdenum		0.10	U	0.37		0.42									
Sodium		7.3	UJ	105		84.9									
Nickel		0.1	U	7.0		8.3									
Lead	5	0.21		3.7		3.9									
Antimony		0.24	UJ	0.31	UJ	0.32	J								
Selenium	1	0.31	U	0.40	U	0.37	U								
Silicon		38.5		467		452									
Vanadium		0.15		35.2		31.6									
Zinc		2.0		100		44.6									

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 10/20/04

CLIENT: TNU-HANFORD B03-015 LVL LOT #: 0410L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J01XP1	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	48.5	MG/KG	0.65	1.0
		Arsenic, Total	0.29 u	MG/KG	0.29	1.0
		Boron, Total	0.41 u	MG/KG	0.41	1.0
		Barium, Total	1.6	MG/KG	0.02	1.0
		Beryllium, Total	0.03	MG/KG	0.008	1.0
		Calcium, Total	23.4	MG/KG	0.55	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Cobalt, Total	0.06 u	MG/KG	0.06	1.0
		Chromium, Total	0.16 UJ	MG/KG	0.05	1.0
		Copper, Total	0.16	MG/KG	0.04	1.0
		Iron, Total	1090	MG/KG	1.8	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	17.1	MG/KG	2.8	1.0
		Magnesium, Total	7.5 UJ	MG/KG	0.53	1.0
		Manganese, Total	18.7	MG/KG	0.008	1.0
		Molybdenum, Total	0.10 u	MG/KG	0.10	1.0
		Sodium, Total	7.3 UJ	MG/KG	0.18	1.0
		Nickel, Total	0.1 u	MG/KG	0.1	1.0
		Lead, Total	0.21	MG/KG	0.15	1.0
		Antimony, Total	0.24 u J	MG/KG	0.24	1.0
		Selenium, Total	0.31 u	MG/KG	0.31	1.0
		Silicon, Total	38.5	MG/KG	0.40	1.0
		Vanadium, Total	0.15	MG/KG	0.05	1.0
		Zinc, Total	2.0	MG/KG	0.03	1.0

11/8/04

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/20/04

CLIENT: TNU-HANFORD B03-015 LVL LOT #: 0410L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J01XP2	Silver, Total	0.40	MG/KG	0.09	1.0
		Aluminum, Total	4790	MG/KG	0.83	1.0
		Arsenic, Total	2.0	MG/KG	0.37	1.0
		Boron, Total	0.69	MG/KG	0.52	1.0
		Barium, Total	58.4	MG/KG	0.02	1.0
		Beryllium, Total	0.18	MG/KG	0.01	1.0
		Calcium, Total	2300	MG/KG	0.71	1.0
		Cadmium, Total	0.25	MG/KG	0.03	1.0
		Cobalt, Total	3.9	MG/KG	0.08	1.0
		Chromium, Total	9.0	MG/KG	0.06	1.0
		Copper, Total	13.2	MG/KG	0.05	1.0
		Iron, Total	15300	MG/KG	2.3	1.0
		Mercury, Total	0.06	MG/KG	0.01	1.0
		Potassium, Total	722	MG/KG	3.6	1.0
		Magnesium, Total	3200	MG/KG	0.68	1.0
		Manganese, Total	147	MG/KG	0.01	1.0
		Molybdenum, Total	0.37	MG/KG	0.13	1.0
		Sodium, Total	105	MG/KG	0.24	1.0
		Nickel, Total	7.0	MG/KG	0.12	1.0
		Lead, Total	3.7	MG/KG	0.19	1.0
		Antimony, Total	0.31 u J	MG/KG	0.31	1.0
		Selenium, Total	0.40 u	MG/KG	0.40	1.0
		Silicon, Total	467	MG/KG	0.51	1.0
		Vanadium, Total	35.2	MG/KG	0.06	1.0
		Zinc, Total	100	MG/KG	0.04	1.0

11/8/04

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/20/04

CLIENT: TNU-HANFORD B03-015

LVL LOT #: 0410L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J01XP3	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	4360	MG/KG	0.77	1.0
		Arsenic, Total	1.7	MG/KG	0.34	1.0
		Boron, Total	0.80	MG/KG	0.48	1.0
		Barium, Total	46.9	MG/KG	0.02	1.0
		Beryllium, Total	0.19	MG/KG	0.009	1.0
		Calcium, Total	2360	MG/KG	0.65	1.0
		Cadmium, Total	0.1	MG/KG	0.03	1.0
		Cobalt, Total	4.8	MG/KG	0.08	1.0
		Chromium, Total	7.6	MG/KG	0.06	1.0
		Copper, Total	13.0	MG/KG	0.05	1.0
		Iron, Total	13800	MG/KG	2.2	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	634	MG/KG	3.3	1.0
		Magnesium, Total	3100	MG/KG	0.63	1.0
		Manganese, Total	224	MG/KG	0.009	1.0
		Molybdenum, Total	0.42	MG/KG	0.12	1.0
		Sodium, Total	84.9	MG/KG	0.22	1.0
		Nickel, Total	8.3	MG/KG	0.11	1.0
		Lead, Total	3.9	MG/KG	0.18	1.0
		Antimony, Total	0.32 J	MG/KG	0.28	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Silicon, Total	452	MG/KG	0.47	1.0
		Vanadium, Total	31.6	MG/KG	0.06	1.0
		Zinc, Total	44.6	MG/KG	0.04	1.0

11/8/04

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B03-015
LVL#: 0410L863
SDG/SAF#: H /B03-015 H2793

W.O.#: 11343-606-001-9999-00
Date Received: 10-12-04

METALS CASE NARRATIVE

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

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

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

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

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

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

7. The preparation/method blanks for 2 analytes were outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB results for Calcium and Sodium were greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and sample J01XP1 read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 19 pages.

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J01XP2	Aluminum	20,000	109.7
	Iron	20,000	98.3
	Antimony	100	102.4

12. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

14. 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

10/26/04
Date

gmb/m10-863

LVLI
LIONVILLE LABORATORY INC.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-258	Page 1 of 1

Collector: Stankovich/Rivera	Company Contact: M Stankovich	Telephone No.: 531-7620	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality: ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 1607-F1	SAF No.: B03-015	
Ice Chest No.: GRC 96 025	Field Logbook No.: EL 1578-3	COA: C607F16700	Method of Shipment: Fed Ex
Shipped To: LVLI ~~EDFRLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A050012		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Cool 4c

000017

SAMPLE ANALYSIS												
			Preservation									
			Type of Container	G/P	aG	aG	aG	G	G			
			No. of Container(s)	1	1	1	1	1	1			
			Volume	250mL	250mL	120mL	250mL	60mL	250mL			
				See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; ~~Chlor-Herbicides - 8040/4.4~~ CKA 10/7/04	Semi-VOA - 8270A (TCL)	PAHs - 8310 CKA 10/7/04	VOA - 8260A (TCL)	TPH (Total) - 418.1 CKA 10/7/04			
Sample No.	Matrix *	Sample Date	Sample Time									
J01XP1	SOIL	10/7/04	0820	X	X	X					EB for XP2	
J01XP2	SOIL	10/7/04	0830	X	X	X					Soil under tank	
J01XP3	SOIL	10/7/04	0900	X	X	X		X			Soil under pipe	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: M Stankovich	10-7-04 1430	3728/2B	10-7-04 1430
Relinquished By/Removed From: REF 2B 3728	101104 0900	S Goble	101104 0900
Relinquished By/Removed From: S Goble	101104 0900	FED EX	
Relinquished By/Removed From: Fed Ex	10.12.04 10955	D Smith	10.12.04 10955
Relinquished By/Removed From:		Received By/Stored In:	
Relinquished By/Removed From:		Received By/Stored In:	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (SW846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # 2B on 101 11 04

Matrix *

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

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

BHI-EE-011 (03/01/2002)

[redacted]

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

ALIDATION LEVEL:	A	B	C	D	E
PROJECT: RWS 1607-F-1			DATA PACKAGE: H2793		
VALIDATOR: TLI		LAB: LCI		DATE: 11/7/04	
			SDG: H2793		

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

SAMPLES/MATRIX
J01XP1 J01XP2 J01XP2
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 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: Chromium – ~~J~~ U P1 – MB contamination
magnesium " " " " "
Sodium – " " " "

FB – 15 detects al, barium, beryllium, calcium, CR, CU, FE, potassium, magnesium manganese, Na, Pb, silicon, vanadium, zinc

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: antimony 64% – J all – MS 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? ..... Yes No N/A

Sample holding times acceptable? ..... 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

Rresults 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

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/20/04

CLIENT: TNU-HANFORD B03-015

LVL LOT #: 0410L863

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	04L0634-MB1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	2.0	MG/KG	0.81	1.0
		Arsenic, Total	0.36 u	MG/KG	0.36	1.0
		Boron, Total	0.51 u	MG/KG	0.51	1.0
		Barium, Total	0.06	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	4.5	MG/KG	0.69	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.08 u	MG/KG	0.08	1.0
		Chromium, Total	0.15	MG/KG	0.06	1.0
		Copper, Total	0.05 u	MG/KG	0.05	1.0
		Iron, Total	2.3 u	MG/KG	2.3	1.0
		Potassium, Total	3.5 u	MG/KG	3.5	1.0
		Magnesium, Total	1.9	MG/KG	0.66	1.0
		Manganese, Total	0.01	MG/KG	0.01	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Sodium, Total	2.1	MG/KG	0.23	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.19 u	MG/KG	0.19	1.0
		Antimony, Total	0.30 u	MG/KG	0.30	1.0
		Selenium, Total	0.39 u	MG/KG	0.39	1.0
		Silicon, Total	0.50 u	MG/KG	0.50	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.05	MG/KG	0.04	1.0
BLANK1	04C0232-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/20/04

CLIENT: TNU-HANFORD B03-015 LVL LOT #: 0410L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J01XP2	Silver, Total	4.9	0.40	5.0	90.0	1.0
		Aluminum, Total	5320	4790	201	263.6*	1.0
		Arsenic, Total	180	2.0	201	88.6	1.0
		Boron, Total	88.5	0.69	100	87.5	1.0
		Barium, Total	235	58.4	201	87.9	1.0
		Beryllium, Total	4.8	0.18	5.0	92.4	1.0
		Calcium, Total	4650	2300	2510	93.9	1.0
		Cadmium, Total	4.8	0.25	5.0	90.9	1.0
		Cobalt, Total	49.2	3.9	50.2	90.2	1.0
		Chromium, Total	27.4	9.0	20.1	91.5	1.0
		Copper, Total	34.9	13.2	25.1	86.5	1.0
		Iron, Total	15500	15300	100	199.0*	1.0
		Mercury, Total	0.23	0.06	0.15	114.2	1.0
		Potassium, Total	2870	722	2510	85.6	1.0
		Magnesium, Total	5660	3200	2510	98.4	1.0
		Manganese, Total	189	147	50.2	83.9	1.0
		Molybdenum, Total	90.2	0.37	100	89.6	1.0
		Sodium, Total	2410	105	2510	91.7	1.0
		Nickel, Total	53.0	7.0	50.2	91.6	1.0
		Lead, Total	49.6	3.7	50.2	91.4	1.0
		Antimony, Total	32.4	0.31u	50.2	64.5	1.0
		Selenium, Total	176	0.40u	201	87.6	1.0
		Silicon, Total	546	467	100	78.8*	1.0
		Vanadium, Total	79.2	35.2	50.2	87.6	1.0
		Zinc, Total	142	100	50.2	83.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/20/04

CLIENT: TNU-HANFORD B03-015 LVL LOT #: 0410L863

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J01XP2	Silver, Total	0.40	0.35	13.6	1.0
		Aluminum, Total	4790	4720	1.5	1.0
		Arsenic, Total	2.0	1.9	5.1	1.0
		Boron, Total	0.69	0.61	12.9	1.0
		Barium, Total	58.4	55.6	4.9	1.0
		Beryllium, Total	0.18	0.18	2.0	1.0
		Calcium, Total	2300	2250	2.1	1.0
		Cadmium, Total	0.25	0.25	1.6	1.0
		Cobalt, Total	3.9	4.0	2.5	1.0
		Chromium, Total	9.0	10.4	14.4	1.0
		Copper, Total	13.2	13.0	1.5	1.0
		Iron, Total	15300	15500	1.4	1.0
		Mercury, Total	0.06	0.08	18.4	1.0
		Potassium, Total	722	618	15.5	1.0
		Magnesium, Total	3200	3220	0.68	1.0
		Manganese, Total	147	141	4.2	1.0
		Molybdenum, Total	0.37	0.23	45.8	1.0
		Sodium, Total	105	102	3.5	1.0
		Nickel, Total	7.0	8.0	13.3	1.0
		Lead, Total	3.7	3.8	2.7	1.0
		Antimony, Total	0.31u	0.29u	NC	1.0
		Selenium, Total	0.40u	0.38u	NC	1.0
		Silicon, Total	467	446	4.6	1.0
		Vanadium, Total	35.2	35.0	0.57	1.0
		Zinc, Total	100	102	2.3	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/20/04

CLIENT: TNU-HANFORD B03-015

LVL LOT #: 0410L863

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	04L0634-LC1	Silver, LCS	48.8	50.0	MG/KG	97.6
		Aluminum, LCS	498	500	MG/KG	99.5
		Arsenic, LCS	952	1000	MG/KG	95.2
		Boron, LCS	484	500	MG/KG	96.8
		Barium, LCS	503	500	MG/KG	100.6
		Beryllium, LCS	24.7	25.0	MG/KG	98.8
		Calcium, LCS	2520	2500	MG/KG	100.7
		Cadmium, LCS	24.5	25.0	MG/KG	98.0
		Cobalt, LCS	248	250	MG/KG	99.2
		Chromium, LCS	50.0	50.0	MG/KG	100
		Copper, LCS	122	125	MG/KG	97.4
		Iron, LCS	494	500	MG/KG	98.9
		Potassium, LCS	2430	2500	MG/KG	97.1
		Magnesium, LCS	2480	2500	MG/KG	99.0
		Manganese, LCS	76.4	75.0	MG/KG	101.9
		Molybdenum, LCS	498	500	MG/KG	99.6
		Sodium, LCS	2440	2500	MG/KG	97.5
		Nickel, LCS	199	200	MG/KG	99.4
		Lead, LCS	248	250	MG/KG	99.3
		Antimony, LCS	289	300	MG/KG	96.4
		Selenium, LCS	934	1000	MG/KG	93.4
		Silicon, LCS	497	500	MG/KG	99.3
		Vanadium, LCS	245	250	MG/KG	98.0
		Zinc, LCS	97.9	100	MG/KG	97.9
LCS1	04C0232-LC1	Mercury, LCS	6.5	6.2	MG/KG	104.2

Date: 10 November 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 1607-F-1
Subject: Semivolatile - Data Package No. H2793-LLI (SDG No. H2793)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2793-LLI 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	Waste Site	Analysis
J01XP1	10/7/04	Soil	C	1607-F-1	See note 1
J01XP2	10/7/04	Soil	C	1607-F-1	See note 1
J01XP3	10/7/04	Soil	C	1607-F-1	See note 1

1- Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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**

Analytical holding times 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, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J01XP1) was submitted for analysis. Diethylphthalate, di-n-butylphthalate and bis(2-ethylhexyl)hthalate were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five

times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to a MS (105%) and MSD (116%) recoveries outside QC limits, all detected diethylphthalate, di-n-bytylphthalate and bis(2-ethylhexyl)phthalate results were qualified as estimates and flagged "J".

Due to an MSD outside QC limits (14%), all pentachlorphenol, 2,4,6-trichlorophenol and 2,4,5-trichlorophenol results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample.

Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to an RPD outside QC limits (90%), all pentachlorophenol associated analytes (pentachlorphenol, 2,4,6-trichlorophenol and 2,4,5-trichlorophenol) were qualified as estimates and flagged "J".

All other MS/MSD RPD results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Twenty-four analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H2793-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a MS (105%) and MSD (116%) recoveries outside QC limits, all detected diethylphthalate, di-n-bytylphthalate and bis(2-ethylhexyl)phthalate results were qualified as estimates and flagged "J". Due to an MSD outside QC limits (14%), all pentachlorphenol, 2,4,6-trichlorophenol and 2,4,5-trichlorophenol results were qualified as estimates and flagged "J". Due to an RPD outside QC limits (90%), all pentachlorophenol associated analytes (pentachlorphenol, 2,4,6-trichlorophenol and 2,4,5-trichlorophenol) were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Twenty-four analytes exceeded the RQL in all samples. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the 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 same quantitation limit corrected for sample dilution and moisture content by the laboratory.

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

SEMIVOLATILE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: H2793	REVIEWER: TLI	DATE: 11/10/04	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
bis(2-ethylhexyl)phthalate	U	All	Blank Contamination
Diethylphthalate di-n-butylphthalate bis(2-ethylhexyl)phthalate	J	All detects	MS/MSD recovery
Pentachlorophenol 2,4,6-trichlorophenol 2,4,5-trichlorophenol	J	All	MS/MSD recovery
Pentachlorophenol 2,4,6-trichlorophenol 2,4,5-trichlorophenol	J	All	RPD

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE/PAH ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD											
Laboratory: LLI											
Case:											
Sample Number	SDG: H2793										
Remarks		J01XP1		J01XP2		J01XP3					
Sample Date		10/7/04		10/7/04		10/7/04					
Extraction Date		10/18/04		10/18/04		10/18/04					
Analysis Date		10/20/04		10/20/04		10/20/04					
Semivolatile (8270C)		Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	830	U	860	U	870	U				
Acenaphthene	660	330	U	340	U	350	U				
2,4-Dinitrophenol*	660	830	U	860	U	870	U				
4-Nitrophenol*	660	830	U	860	U	870	U				
Dibenzofuran	660	330	U	340	U	350	U				
2,4-Dinitrotoluene	660	330	U	340	U	350	U				
Diethylphthalate	660	30	J	340	U	350	U				
4-Chlorophenyl-phenyl ether	660	330	U	340	U	350	U				
Fluorene	660	330	U	340	U	350	U				
4-Nitroaniline*	660	830	U	860	U	870	U				
4,6-Dinitro-2-methylphenol*	660	830	U	860	U	870	U				
N-Nitrosodiphenylamine	660	330	U	340	U	350	U				
4-Bromophenyl-phenyl ether	660	330	U	340	U	350	U				
Hexachlorobenzene	660	330	U	340	U	350	U				
Pentachlorophenol*	660	830	UJ	860	UJ	870	UJ				
Phenanthrene	660	330	U	340	U	350	U				
Anthracene	660	330	U	340	U	350	U				
Carbazole	660	330	U	340	U	350	U				
Di-n-butylphthalate	660	36	J	340	U	22	J				
Fluoranthene	660	330	U	340	U	350	U				
Pyrene	660	330	U	340	U	350	U				
Butylbenzylphthalate	660	330	U	340	U	350	U				
3,3'-Dichlorobenzidine	660	330	U	340	U	350	U				
Benzo(a)anthracene	660	330	U	340	U	350	U				
Chrysene	660	330	U	340	U	350	U				
bis(2-Ethylhexyl)phthalate	660	660	UJ	660	UJ	660	UJ				
Di-n-octylphthalate	660	330	U	340	U	350	U				
Benzo(b)fluoranthene	660	330	U	340	U	350	U				
Benzo(k)fluoranthene	660	330	U	340	U	350	U				
Benzo(a)pyrene	660	330	U	340	U	350	U				
Indeno(1,2,3-cd)pyrene	660	330	U	340	U	350	U				
Dibenz(a,h)anthracene	660	330	U	340	U	350	U				
Benzo(g,h,i)perylene	660	330	U	340	U	350	U				

000011

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.

* - Undetected results exceeded RQL

SEMIVOLATILE/PAH ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD											
Laboratory: LLI											
Case:	SDG: H2793										
Sample Number		J01XP1		J01XP2		J01XP3					
Remarks		E. Blank									
Sample Date		10/7/04		10/7/04		10/7/04					
Extraction Date		10/18/04		10/18/04		10/18/04					
Analysis Date		10/20/04		10/20/04		10/20/04					
Semivolatile (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	330	U	340	U	350	U				
bis(2-Chloroethyl)ether	660	330	U	340	U	350	U				
2-Chlorophenol	660	330	U	340	U	350	U				
1,3-Dichlorobenzene	660	330	U	340	U	350	U				
1,4-Dichlorobenzene	660	330	U	340	U	350	U				
1,2-Dichlorobenzene	660	330	U	340	U	350	U				
2-methylphenol	660	330	U	340	U	350	U				
2,2'-oxybis(1-chloropropane)	660	330	U	340	U	350	U				
3 and/or 4-Methylphenol	660	330	U	340	U	350	U				
N-Nitroso-di-n-propylamine	660	330	U	340	U	350	U				
Hexachloroethane	660	330	U	340	U	350	U				
Nitrobenzene	660	330	U	340	U	350	U				
Isophorone	660	330	U	340	U	350	U				
2-Nitrophenol	660	330	U	340	U	350	U				
2,4-Dimethylphenol	660	330	U	340	U	350	U				
bis(2-Chloroethoxy)methane	660	330	U	340	U	350	U				
2,4-Dichlorophenol	660	330	U	340	U	350	U				
1,2,4-Trichlorobenzene	660	330	U	340	U	350	U				
Naphthalene	660	330	U	340	U	350	U				
4-Chloroaniline	660	330	U	340	U	350	U				
Hexachlorobutadiene	660	330	U	340	U	350	U				
4-Chloro-3-methylphenol	660	330	U	340	U	350	U				
2-Methylnaphthalene	660	330	U	340	U	350	U				
Hexachlorocyclopentadiene	660	330	U	340	U	350	U				
2,4,6-Trichlorophenol	660	330	UJ	340	UJ	350	UJ				
2,4,5-Trichlorophenol*	660	830	UJ	860	UJ	870	UJ				
2-Chloronaphthalene	660	330	U	340	U	350	U				
2-Nitroaniline*	660	830	U	860	U	870	U				
Dimethylphthalate	660	330	U	340	U	350	U				
Acenaphthylene	660	330	U	340	U	350	U				
2,6-Dinitrotoluene	660	330	U	340	U	350	U				

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.

* - Undetected results exceeded RQL

000012

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List — Report Date: 10/21/04 20:22

RFW Batch Number: **0410L863** — Client: **TNU-HANFORD B03-015** — Work Order: **11343606001** — Page: 1a

	Cust ID:	J01XP1	J01XP2	J01XP2	J01XP2	J01XP3	SBLKYX
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	04LE1282-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	79 %	70 %	75 %	80 %	65 %	71 %
	2-Fluorobiphenyl	78 %	72 %	78 %	77 %	64 %	74 %
	Terphenyl-d14	101 %	92 %	91 %	86 %	79 %	94 %
	Phenol-d5	108 %	102 %	110 %	116 * %	92 %	92 %
	2-Fluorophenol	113 %	104 %	109 %	116 %	98 %	100 %
	2,4,6-Tribromophenol	24 %	97 %	108 %	85 %	36 %	43 %
		fl	fl	fl	fl	fl	fl
Phenol		330 U	340 U	105 * %	116 * %	350 U	330 U
bis(2-Chloroethyl)ether		330 U	340 U	340 U	340 U	350 U	330 U
2-Chlorophenol		330 U	340 U	93 %	108 * %	350 U	330 U
1,3-Dichlorobenzene		330 U	340 U	340 U	340 U	350 U	330 U
1,4-Dichlorobenzene		330 U	340 U	62 %	74 %	350 U	330 U
1,2-Dichlorobenzene		330 U	340 U	340 U	340 U	350 U	330 U
2-Methylphenol		330 U	340 U	340 U	340 U	350 U	330 U
2,2'-oxybis(1-Chloropropane)		330 U	340 U	340 U	340 U	350 U	330 U
4-Methylphenol		330 U	340 U	340 U	340 U	350 U	330 U
N-Nitroso-di-n-propylamine		330 U	340 U	67 %	79 %	350 U	330 U
Hexachloroethane		330 U	340 U	340 U	340 U	350 U	330 U
Nitrobenzene		330 U	340 U	340 U	340 U	350 U	330 U
Isophorone		330 U	340 U	340 U	340 U	350 U	330 U
2-Nitrophenol		330 U	340 U	340 U	340 U	350 U	330 U
2,4-Dimethylphenol		330 U	340 U	340 U	340 U	350 U	330 U
bis(2-Chloroethoxy)methane		330 U	340 U	340 U	340 U	350 U	330 U
2,4-Dichlorophenol		330 U	340 U	340 U	340 U	350 U	330 U
1,2,4-Trichlorobenzene		330 U	340 U	67 %	74 %	350 U	330 U
Naphthalene		330 U	340 U	340 U	340 U	350 U	330 U
4-Chloroaniline		330 U	340 U	340 U	340 U	350 U	330 U
Hexachlorobutadiene		330 U	340 U	340 U	340 U	350 U	330 U
4-Chloro-3-methylphenol		330 U	340 U	106 * %	105 * %	350 U	330 U
2-Methylnaphthalene		330 U	340 U	340 U	340 U	350 U	330 U
Hexachlorocyclopentadiene		330 U	340 U	340 U	340 U	350 U	330 U
2,4,6-Trichlorophenol		330 U J	340 U J	340 U	340 U	350 U J	330 U
2,4,5-Trichlorophenol		830 U J	860 U J	860 U	860 U	870 U J	830 U

*= Outside of EPA CLP QC limits.

VA 11/8/04

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RFW Batch Number: 0410L863 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 1b

Cust ID:	J01XP1		J01XP2		J01XP2		J01XP2		J01XP3		SBLKYX	
RFW#:	001		002		002 MS		002 MSD		003		04LE1282-MB1	
2-Chloronaphthalene	330	U	340	U	340	U	340	U	350	U	330	U
2-Nitroaniline	830	U	860	U	860	U	860	U	870	U	830	U
Dimethylphthalate	330	U	340	U	340	U	340	U	350	U	330	U
Acenaphthylene	330	U	340	U	340	U	340	U	350	U	330	U
2,6-Dinitrotoluene	330	U	340	U	340	U	340	U	350	U	330	U
3-Nitroaniline	830	U	860	U	860	U	860	U	870	U	830	U
Acenaphthene	330	U	340	U	72	%	79	%	350	U	330	U
2,4-Dinitrophenol	830	U	860	U	860	U	860	U	870	U	830	U
4-Nitrophenol	830	U	860	U	64	%	58	%	870	U	830	U
Dibenzofuran	330	U	340	U	340	U	340	U	350	U	330	U
2,4-Dinitrotoluene	330	U	340	U	71	%	68	%	350	U	330	U
Diethylphthalate	30	~~U~~ J	340	U	340	U	340	U	350	U	330	U
4-Chlorophenyl-phenylether	330	U	340	U	340	U	340	U	350	U	330	U
Fluorene	330	U	340	U	340	U	340	U	350	U	330	U
4-Nitroaniline	830	U	860	U	860	U	860	U	870	U	830	U
4,6-Dinitro-2-methylphenol	830	U	860	U	860	U	860	U	870	U	830	U
N-Nitrosodiphenylamine (1)	330	U	340	U	340	U	340	U	350	U	330	U
4-Bromophenyl-phenylether	330	U	340	U	340	U	340	U	350	U	330	U
Hexachlorobenzene	330	U	340	U	340	U	340	U	350	U	330	U
Pentachlorophenol	830	U	860	U	37	%	14 *	%	870	U	830	U
Phenanthrene	330	U	340	U	340	U	340	U	350	U	330	U
Anthracene	330	U	340	U	340	U	340	U	350	U	330	U
Carbazole	330	U	340	U	340	U	340	U	350	U	330	U
Di-n-butylphthalate	36	~~U~~ J	340	U	18	J	340	U	22	~~U~~ J	330	U
Fluoranthene	330	U	340	U	340	U	340	U	350	U	330	U
Pyrene	330	U	340	U	85	%	86	%	350	U	330	U
Butylbenzylphthalate	330	U	340	U	340	U	340	U	350	U	330	U
3,3'-Dichlorobenzidine	330	U	340	U	340	U	340	U	350	U	330	U
Benzo(a)anthracene	330	U	340	U	340	U	340	U	350	U	330	U
Chrysene	330	U	340	U	340	U	340	U	350	U	330	U
bis(2-Ethylhexyl)phthalate	660	~~43 U JB~~ J	660	~~18 U JB~~ J	41	JB	29	JB	660	~~29 U JB~~ J	46	J
Di-n-octyl phthalate	330	U	340	U	340	U	340	U	350	U	330	U
Benzo(b)fluoranthene	330	U	340	U	340	U	340	U	350	U	330	U
Benzo(k)fluoranthene	330	U	340	U	340	U	340	U	350	U	330	U
Benzo(a)pyrene	330	U	340	U	340	U	340	U	350	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	340	U	340	U	340	U	350	U	330	U
Dibenz(a,h)anthracene	330	U	340	U	340	U	340	U	350	U	330	U
Benzo(g,h,i)perylene	330	U	340	U	340	U	340	U	350	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

11/8/04

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Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 10/21/04 20:22

RFW Batch Number: 0410L863 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 2a

Cust ID: **SBLKYX BS**

Sample Information	RFW#:	04LE1282-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG

Surrogate Recovery	Nitrobenzene-d5	76	%
	2-Fluorobiphenyl	78	%
	Terphenyl-d14	107	%
	Phenol-d5	101	%
	2-Fluorophenol	100	%
	2,4,6-Tribromophenol	58	%

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Phenol	100 *	%
bis(2-Chloroethyl)ether	330	U
2-Chlorophenol	95	%
1,3-Dichlorobenzene	330	U
1,4-Dichlorobenzene	76	%
1,2-Dichlorobenzene	330	U
2-Methylphenol	330	U
2,2'-oxybis(1-Chloropropane)	330	U
4-Methylphenol	330	U
N-Nitroso-di-n-propylamine	78	%
Hexachloroethane	330	U
Nitrobenzene	330	U
Isophorone	330	U
2-Nitrophenol	330	U
2,4-Dimethylphenol	330	U
bis(2-Chloroethoxy)methane	330	U
2,4-Dichlorophenol	330	U
1,2,4-Trichlorobenzene	73	%
Naphthalene	330	U
4-Chloroaniline	330	U
Hexachlorobutadiene	330	U
4-Chloro-3-methylphenol	97	%
2-Methylnaphthalene	330	U
Hexachlorocyclopentadiene	330	U
2,4,6-Trichlorophenol	330	U
2,4,5-Trichlorophenol	830	U

*= Outside of EPA CLP QC limits.

K 11/8/04

000015

Cust ID: SBLKYX BS

RFW#: 04LE1282-MB1

2-Chloronaphthalene	330	U
2-Nitroaniline	830	U
Dimethylphthalate	330	U
Acenaphthylene	330	U
2,6-Dinitrotoluene	330	U
3-Nitroaniline	830	U
Acenaphthene	75	%
2,4-Dinitrophenol	830	U
4-Nitrophenol	64	%
Dibenzofuran	330	U
2,4-Dinitrotoluene	64	%
Diethylphthalate	330	U
4-Chlorophenyl-phenylether	330	U
Fluorene	330	U
4-Nitroaniline	830	U
4,6-Dinitro-2-methylphenol	830	U
N-Nitrosodiphenylamine (1)	330	U
4-Bromophenyl-phenylether	330	U
Hexachlorobenzene	330	U
Pentachlorophenol	63	%
Phenanthrene	330	U
Anthracene	330	U
Carbazole	330	U
Di-n-butylphthalate	330	U
Fluoranthene	330	U
Pyrene	94	%
Butylbenzylphthalate	330	U
3,3'-Dichlorobenzidine	330	U
Benzo(a)anthracene	330	U
Chrysene	330	U
bis(2-Ethylhexyl)phthalate	330	U
Di-n-octyl phthalate	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(a)pyrene	330	U
Indeno(1,2,3-cd)pyrene	330	U
Dibenz(a,h)anthracene	330	U
Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

11/9/04

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Client: TNU HANFORD B03-015
LVL#: 0410L863 10/27/04
SDG/SAF#: H2797/B03-0150
H2793

W.O.#: 11343-606-001-9999-00
Date Received: 10-12-2004

SEMIVOLATILE

Three (3) soil samples were collected on 10-07-2004.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on method 3540C on 10-18-2004 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 10-20-2004.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. One (1) of forty-two (42) surrogate recoveries was outside acceptance criteria. However, CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
5. Six (6) of twenty-two (22) matrix spike recoveries were outside acceptance criteria. The spike recoveries were biased high and there was no significant impact on the data.
6. One (1) of eleven (11) blank spike recoveries was outside acceptance criteria.
7. The method blank contained the common laboratory contaminant Bis (2-Ethyhexyl) phthalate at a level less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. 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.

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

10/27/04
Date

som\gorup\data\bna\tnu-hanford\0410-863.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-258	Page 1 of 1

Collector: Stankovich/Rivera	Company Contact: M Stankovich	Telephone No.: 531-7620	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality: ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 1607-F1	SAF No.: B03-015	
Ice Chest No.: ERC 96 025	Field Logbook No.: EL 1578-3	COA: C607F16700	Method of Shipment: Fed Ex
Shipped To: LVL ~~EDFIRLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A050 012		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Cool 4c

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SAMPLE ANALYSIS												
			Preservation									
			Type of Container	G/P	aG	aG	aG	G	G			
			No. of Container(s)	1	1	1	1	1	1			
			Volume	250mL	250mL	120mL	250mL	60mL	250mL			
				See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; ~~Chlorinated Herbicides - 8151A~~ CKA 10/7/04	Semi-VOA - 8270A (TCL)	PAHs - 8310 CKA 10/7/04	VOA - 8260A (TCL)	TPH (Total) - 418.1 CKA 10/7/04			
Sample No.	Matrix *	Sample Date	Sample Time									
J01XP1	SOIL	10/7/04	0820	X	X	X					EB for XP2	
J01XP2	SOIL	10/7/04	0830	X	X	X					Soil under tank	
J01XP3	SOIL	10/7/04	0900	X	X	X		X			Soil under pipe	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: M Stankovich	10-7-04 1730	Received By/Stored In: 3728/ZB	10-7-04 1430
Relinquished By/Removed From: REF ZB 3728	10/11/04 0900	Received By/Stored In: S J Gale	10/11/04 0900
Relinquished By/Removed From: S J Gale	10/11/04 0900	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	10.12.04 0955	Received By/Stored In: D Minish	10.12.04 0955
Relinquished By/Removed From:		Received By/Stored In:	
Relinquished By/Removed From:		Received By/Stored In:	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (SW846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # ZB on 10/11/04

Matrix *

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

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

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RWS 1607-F-1			DATA PACKAGE: H2783		
VALIDATOR: HLI		LAB: LLI		DATE: 11/7/04	
			SDG: H2793		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J01XP1 J01XP2 J01XP3					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No (N/A)

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)

Comments:

GC/MS ORGANIC 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: LB - bis(2ethylhexyl) phthalate - Raise to RPL + U

FB - diethylphthalate, di-n-butyl phthalate + bis(2ethylhexyl) phthalate

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

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound 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? (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: MS - J diethylphthalate, di-n-butylphthalate + bis(2ethylhexyl)phthalate - P1
J bis(2ethylhexyl)phthalate in P2
J di-n-butylphthalate + bis(2-ethylhexyl)phthalate - P3
J - all pentachlorophenol 2,4,5 + 2,4,6 trichlorophenol
no PAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

MS/MSD RPD values 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: pentachlorophenol - 90% RPD - J all associate

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Iinternal standard areas acceptable? ..... Yes No N/A

Internal standard retention times 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:

7. HOLDING TIMES (all levels)

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

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

Comments:

GC/MS ORGANIC 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

Laboratory properly identified and coded all TIC? (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: 24 over

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments:

Date: 10 November 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 1607-F-1
Subject: Volatile - Data Package No. H2793-LLI (SDG No. H2793)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2793-LLI 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	Waste Site	Analysis
J01XP3	10/7/04	Soil	C	1607-F-1	See note 1

1- Volatiles by 8260B.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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**

Analytical holding times 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, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the

limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all methylene chloride results were raised to the RDL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected 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 analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample.

Samples results must be within RPD limits of +/-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 MS/MSD RPD results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria.

Eight analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H2793-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to method blank contamination, all methylene chloride results were raised to the RDL, qualified as undetected and flagged "U".

Eight analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the 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 same quantitation limit corrected for sample dilution and moisture content by the laboratory.

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

VOLATILE ORGANIC DATA QUALIFICATION SUMMARY*

SDG: H2793	REVIEWER: TLI	DATE: 11/10/04	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U	All	Blank contamination

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

VOLATILE ORGANIC ANALYSIS, SOIL MATRIX (ug/Kg)

Project: BECHTEL-HANFORD									
Laboratory: LLI									
Case:	SDG: H2793								
Sample Number		J01XP3							
Remarks									
Sample Date		10/07/04							
Analysis Date		10/14/04							
VOA/Alcohols/Formaldehyde	RDL	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	11	U						
Bromomethane	10	11	U						
Vinyl Chloride	10	11	U						
Chloroethane	10	11	U						
Methylene Chloride	10	10	U						
Acetone	10	11	U						
Carbon Disulfide	10	6	U						
1,1-Dichloroethene	10	6	U						
1,1-Dichloroethane	10	6	U						
1,2-Dichloroethene (total)	10	6	U						
Chloroform	10	6	U						
1,2-Dichloroethane	10	6	U						
2-Butanone	10	11	U						
1,1,1-Trichloroethane	10	6	U						
Carbon Tetrachloride	10	6	U						
Bromodichloromethane	10	6	U						
1,2-Dichloropropane	10	6	U						
cis-1,3-Dichloropropene	10	6	U						
Trichloroethene	10	6	U						
Dibromochloromethane	10	6	U						
1,1,2-Trichloroethane	10	6	U						
Benzene	10	6	U						
trans-1,3-Dichloropropene	10	6	U						
Bromoform	10	6	U						
4-Methyl-2-pentanone	10	11	U						
2-Hexanone	10	11	U						
Tetrachloroethene	10	6	U						
1,1,2,2-Tetrachloroethane	10	6	U						
Toluene	10	6	U						
Chlorobenzene	10	6	U						
Ethylbenzene	10	6	U						
Styrene	10	6	U						
Xylene	10	6	U						

000010

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

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List

Report Date: 10/19/04 10:39

RFW Batch Number: 0410L863 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 1a

	Cust ID:	J01XP3	J01XP3	J01XP3	VBLKYJ	VBLKYJ BS
Sample Information	RFW#:	003	003 MS	003 MSD	04LVX294-MB1	04LVX294-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.04	1.09	1.04	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	93 %	95 %	95 %	93 %	95 %
	Bromofluorobenzene	91 %	92 %	96 %	96 %	100 %
	1,2-Dichloroethane-d4	85 %	84 %	84 %	83 %	84 %
Chloromethane		11 U	11 U	11 U	10 U	10 U
Bromomethane		11 U	11 U	11 U	10 U	10 U
Vinyl Chloride		11 U	11 U	11 U	10 U	10 U
Chloroethane		11 U	11 U	11 U	10 U	10 U
Methylene Chloride		10 ~~5~~ 11/12 JB U	6 JB	5 JB	6	6 B
Acetone		11 U	11 U	11 U	10 U	10 U
Carbon Disulfide		6 U	6 U	6 U	5 U	5 U
1,1-Dichloroethene		6 U	93 %	93 %	5 U	92 %
1,1-Dichloroethane		6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethene (total)		6 U	6 U	6 U	5 U	5 U
Chloroform		6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethane		6 U	6 U	6 U	5 U	5 U
2-Butanone		11 U	11 U	11 U	10 U	10 U
1,1,1-Trichloroethane		6 U	6 U	6 U	5 U	5 U
Carbon Tetrachloride		6 U	6 U	6 U	5 U	5 U
Bromodichloromethane		6 U	6 U	6 U	5 U	5 U
1,2-Dichloropropane		6 U	6 U	6 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U
Trichloroethene		6 U	99 %	99 %	5 U	101 %
Dibromochloromethane		6 U	6 U	6 U	5 U	5 U
1,1,2-Trichloroethane		6 U	6 U	6 U	5 U	5 U
Benzene		6 U	96 %	99 %	5 U	99 %
Trans-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U
Bromoform		6 U	6 U	6 U	5 U	5 U
4-Methyl-2-pentanone		11 U	11 U	11 U	10 U	10 U
2-Hexanone		11 U	11 U	11 U	10 U	10 U
Tetrachloroethene		6 U	6 U	6 U	5 U	3 J
1,1,2,2-Tetrachloroethane		6 U	6 U	6 U	5 U	5 U
Toluene		6 U	93 %	93 %	5 U	91 %

*= Outside of EPA CLP QC limits.

11/8/04

000011

RFW Batch Number: 0410L863 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 1b

Cust ID:	J01XP3	J01XP3	J01XP3	VBLKYJ	VBLKYJ BS
RFW#:	003	003 MS	003 MSD	04LVX294-MB1	04LVX294-MB1
Chlorobenzene	6 U	98 %	99 %	5 U	98 %
Ethylbenzene	6 U	6 U	6 U	5 U	5 U
Styrene	6 U	6 U	6 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

K
11/8/04

000012

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Client: TNU HANFORD B03-015
LVL#: 0410L863 65 10/27/04
SDG/SAF#: H~~2797~~/B03-015
42793

W.O.#: 11343-606-001-9999-00
Date Received: 10-12-2004

GC/MS VOLATILE

One (1) soil sample was collected on 10-07-2004.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 10-14-2004.

The following is a summary of the QC results accompanying these 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 LvLI's sample acceptance policy.

2. The sample was analyzed within required holding time.

3. Non-target compounds were detected in the sample.

4. All surrogate recoveries were within acceptance criteria.

5. All matrix spike recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than 2x the CRQL.

8. Internal standard area and retention time criteria were met.

9. "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."

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

10/27/04
Date

som\group\data\voa\tnu-hanford\0410-863.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B03-015-258	Page 1 of 1

Collector: Stankovich/Rivera	Company Contact: M Stankovich	Telephone No.: 531-7620	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Days	Air Quality ☐	
Project Designation: Remaining Sites Confirmation Sampling-Soil	Sampling Location: 1607-F1	SAF No.: B03-015	
Ice Chest No.: ERC 96 025	Field Logbook No.: EL 1578-3	COA: C607F16700	Method of Shipment: Fed Ex
Shipped To: LVLI ~~EBERLINE SERVICES (Formerly TMA)~~	Offsite Property No.: A050012		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Cool 4c

Preservation											
Type of Container	G/P	aG	aG	aG	G	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	250mL	250mL	120mL	250mL	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; ~~Chlorinated Herbicides - 8151A~~ CKA 10/7/04	Semi-VOA - 8270A (TCL)	PAHs - 8310 CKA 10/7/04	VOA - 8260A (TCL)	TPH (Total) - 418.1 CKA 10/7/04					

000015

Sample No.	Matrix *	Sample Date	Sample Time										
J01XP1	SOIL	10/7/04	0820	X	X	X						EB for	XP2
J01XP2	SOIL	10/7/04	0830	X	X	X						Soil under	tank
J01XP3	SOIL	10/7/04	0900	X	X	X		X				Soil under	pipe

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: M Stankovich	10-7-04 1830	Received By/Stored In: 3728/2B	10-7-04 1430
Relinquished By/Removed From: REF 2B 3728	10/10/04 0900	Received By/Stored In: S J Gale	10/10/04 0900
Relinquished By/Removed From: S J Gale	10/10/04 0900	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	10-12-04 1095	Received By/Stored In: [illegible]	10-12-04 1095
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (SW846) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc]: Mercury - 7471 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # 2B on 10/11/04

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

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

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RWS 1607-F-1			DATA PACKAGE: H2793		
VALIDATOR: TLI		LAB: LLF		DATE: 11/7/04	
			SDG: H2793		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J01XP3					
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No N/A

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

Comments:

GC/MS ORGANIC 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: methylene chloride in mb - raise to RPL + U

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

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound 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? (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

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

MS/MSD RPD values 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)

Internal standards analyzed? ..... Yes No N/A

Iinternal standard areas acceptable? ..... Yes No N/A

Internal standard retention times 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: _____

7. HOLDING TIMES (all levels)

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

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

Comments: _____

GC/MS ORGANIC 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

Laboratory properly identified and coded all TIC? (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: 8 over

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments:

Date: 10 November 2004
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: Remaining Sites Confirmation Sampling - Soil - Waste Site 1607-F-1
Subject: PCB/Pesticides - Data Package No. H2793-LLI (SDG No. H2793)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2793-LLI prepared by Lionville Laboratory Incorporated (LLI). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Waste Site	Analysis
J01XP1	10/7/04	Soil	C	1607-F-1	See note 1
J01XP2	10/7/04	Soil	C	1607-F-1	See note 1
J01XP3	10/7/04	Soil	C	1607-F-1	See note 1

1 - PCBs by 8082 and pesticides by 8081A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

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

All holding times were acceptable.

- **Method Blank**

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

All method blank target compound results were acceptable.

Field Blanks

One equipment blank (J01XP1) was submitted for analysis. No analytes were detected in the equipment blank.

- **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 50% to 150% (laboratory CLP limits for chlorinated pesticides). If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of an MS, MSD or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy spike results were acceptable.

Surrogate Recovery

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

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.

Due to the lack of an MS or MSD analysis, all toxaphene results were qualified as estimates and flagged "J".

All other matrix spike/matrix spike duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **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.

Toxaphene and methoxychlor were reported above the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data Package No. H2793-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of an MS, MSD or LCS analysis, all toxaphene results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Toxaphene and methoxychlor were reported above the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: H2793	REVIEWER: TLI	DATE: 11/10/04	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PEST/PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD											
Laboratory: Lionville Laboratory Inc.											
Case:	SDG: H2793										
Sample Number		J01XP1		J01XP2		J01XP3					
Remarks		E. Blank									
Sample Date		10/7/04		10/7/04		10/7/04					
Extraction Date		10/15/04		10/15/04		10/15/04					
Analysis Date		10/19/04		10/19/04		10/19/04					
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	13	U	14	U	14	U				
Aroclor-1221	20	13	U	14	U	14	U				
Aroclor-1232	20	13	U	14	U	14	U				
Aroclor-1242	20	13	U	14	U	14	U				
Aroclor-1248	20	13	U	14	U	14	U				
Aroclor-1254	20	13	U	14	U	14	U				
Aroclor-1260	20	13	U	14	U	14	U				
Sample Date		10/7/04		10/7/04		10/7/04					
Extraction Date		10/15/04		10/15/04		10/15/04					
Analysis Date		10/18/04		10/18/04		10/18/04					
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.7	U	1.7	U	1.7	U				
Beta-BHC	5	1.7	U	1.7	U	1.7	U				
Delta-BHC	5	1.7	U	1.7	U	1.7	U				
Gamma-BHC (Lindane)	5	1.7	U	1.7	U	1.7	U				
Heptachlor	5	1.7	U	1.7	U	1.7	U				
Aldrin	5	1.7	U	1.7	U	1.7	U				
Heptachlor Epoxide	5	1.7	U	1.7	U	1.7	U				
Endosulfan I	5	1.7	U	1.7	U	1.7	U				
Dieldrin	5	3.3	U	3.3	U	3.3	U				
4,4'-DDE	5	3.3	U	3.3	U	3.3	U				
Endrin	5	3.3	U	3.3	U	3.3	U				
Endosulfan II	5	3.3	U	3.3	U	3.3	U				
4,4'-DDD	5	3.3	U	3.3	U	1.9					
Endosulfan Sulfate	5	3.3	U	3.3	U	3.3	U				
4,4'-DDT	5	3.3	U	3.3	U	3.3	U				
Methoxychlor	5	17	U	17	U	17	U				
Endrin Ketone	5	3.3	U	3.3	U	3.3	U				
Endrin Aldehyde	5	3.3	U	3.3	U	3.3	U				
alpha-Chlordane	5	1.7	U	1.7	U	1.7	U				
gamma-Chlordane	5	1.7	U	1.7	U	1.7	U				
Toxaphene	5	170	UJ	170	UJ	170	UJ				

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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.

Pesticide/PCBs by GC, CLP List

Report Date: 10/19/04 10:36

RFW Batch Number: **0410L863** Client: **TNU-HANFORD B03-015** Work Order: 11343606001 Page: 1

	Cust ID:	J01XP1	J01XP2	J01XP2	J01XP2	J01XP3	PBLKYK
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	04LE1279-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	79 %	84 %	80 %	81 %	75 %	79 %
	Decachlorobiphenyl	83 %	84 %	85 %	82 %	75 %	82 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	1.7 U	88 %	87 %	1.7 U	1.7 U
Beta-BHC		1.7 U	1.7 U	98 %	94 %	1.7 U	1.7 U
Delta-BHC		1.7 U	1.7 U	86 %	84 %	1.7 U	1.7 U
gamma-BHC (Lindane)		1.7 U	1.7 U	92 %	90 %	1.7 U	1.7 U
Heptachlor		1.7 U	1.7 U	91 %	90 %	1.7 U	1.7 U
Aldrin		1.7 U	1.7 U	90 %	94 %	1.7 U	1.7 U
Heptachlor epoxide		1.7 U	1.7 U	92 %	91 %	1.7 U	1.7 U
Endosulfan I		1.7 U	1.7 U	102 %	100 %	1.7 U	1.7 U
Dieldrin		3.3 U	3.3 U	110 %	106 %	3.3 U	3.3 U
4,4'-DDE		3.3 U	3.3 U	104 %	100 %	3.3 U	3.3 U
Endrin		3.3 U	3.3 U	108 %	103 %	3.3 U	3.3 U
Endosulfan II		3.3 U	3.3 U	76 %	69 %	3.3 U	3.3 U
4,4'-DDD		3.3 U	3.3 U	87 %	80 %	1.9 J	3.3 U
Endosulfan sulfate		3.3 U	3.3 U	90 %	87 %	3.3 U	3.3 U
4,4'-DDT		3.3 U	3.3 U	104 %	96 %	3.3 U	3.3 U
Methoxychlor		17 U	17 U	100 %	96 %	17 U	17 U
Endrin ketone		3.3 U	3.3 U	92 %	87 %	3.3 U	3.3 U
Endrin aldehyde		3.3 U	3.3 U	87 %	80 %	3.3 U	3.3 U
alpha-Chlordane		1.7 U	1.7 U	103 %	98 %	1.7 U	1.7 U
gamma-Chlordane		1.7 U	1.7 U	99 %	96 %	1.7 U	1.7 U
Toxaphene		170 UJ	170 UJ	170 U	170 U	170 UJ	170 U

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

11/8/04

000011

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 10/19/04 10:36

RFW Batch Number: 0410L863 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 2

Cust ID: **PBLKYK BS**

Sample Information

RFW#: **04LE1279-MB1**
Matrix: SOIL
D.F.: 1.00
Units: UG/KG

Surrogate:	Tetrachloro-m-xylene	75	%
	Decachlorobiphenyl	77	%

==========fl==========fl==========fl==========fl==========fl==========fl

Alpha-BHC	86	%
Beta-BHC	90	%
Delta-BHC	82	%
gamma-BHC (Lindane)	89	%
Heptachlor	87	%
Aldrin	86	%
Heptachlor epoxide	87	%
Endosulfan I	94	%
Dieldrin	88	%
4,4'-DDE	92	%
Endrin	96	%
Endosulfan II	74	%
4,4'-DDD	82	%
Endosulfan sulfate	86	%
4,4'-DDT	88	%
Methoxychlor	92	%
Endrin ketone	88	%
Endrin aldehyde	82	%
alpha-Chlordane	92	%
gamma-Chlordane	88	%
Toxaphene	170	U

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

11/8/04 10/26/04

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Lionville Laboratory, Inc.

PCBs by GC

Report Date: 10/19/04 12:40

RFW Batch Number: 0410L863 Client: TNU-HANFORD B03-015 Work Order: 11343606001 Page: 1

	Cust ID:	J01XP1	J01XP2	J01XP2	J01XP2	J01XP3	PBLKYK
Sample Information	RFW#:	001	002	002 MS	002 MSD	003	04LE1279-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	83 %	78 %	78 %	74 %	72 %	77 %
	Decachlorobiphenyl	86 %	85 %	85 %	81 %	80 %	84 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	14 U	97 %	93 %	14 U	13 U
Aroclor-1221		13 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1232		13 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1242		13 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1248		13 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1254		13 U	14 U	14 U	14 U	14 U	13 U
Aroclor-1260		13 U	14 U	96 %	92 %	14 U	13 U

	Cust ID:	PBLKYK BS
Sample Information	RFW#:	04LE1279-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG
Surrogate:	Tetrachloro-m-xylene	72 %
	Decachlorobiphenyl	79 %
		fl
Aroclor-1016		94 %
Aroclor-1221		13 U
Aroclor-1232		13 U
Aroclor-1242		13 U
Aroclor-1248		13 U
Aroclor-1254		13 U
Aroclor-1260		93 %

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

11/8/04

000013

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B03-015
LVL#: 0410L863
SDG/SAF#: H 2793 /B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 10-12-2004

CHLORINATED PESTICIDES

Three (3) soil samples were collected on 10-07-2004.

The samples and their associated QC samples were extracted on 10-15-2004 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 10-18-2004. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within the holding time.
3. Samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

10/27/04
Date

som\r:\group\data\pest\tnu hanford\0410-863.pes

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

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

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B03-015
LVL#: 0410L863
SDG/SAF#: H2793 /B03-015

W.O.#: 11343-606-001-9999-00
Date Received: 10-12-2004

PCB

Three (3) soil samples were collected on 10-07-2004.

The samples and their associated QC samples were extracted on 10-15-2004 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 10-18,19-2004. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received 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 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. Confirmation was not required because target compounds were not detected in the samples.
9. All initial calibrations associated with this data set were within acceptance criteria.
10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
11. 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

10/27/04
Date

som\r:\group\data\pest\tnu hanford\0410-863.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.

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B03-015-258	Page 1 of 1
Collector Stankovich/Rivera	Company Contact M Stankovich	Telephone No. 531-7620	Project Coordinator KESSNER, JH	Price Code 8B Air Quality ☐	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 1607-F1		SAF No. B03-015	
Ice Chest No. ERC 96 025	Field Logbook No. EL 1578-3	COA C607F16700	Method of Shipment Fed Ex	
Shipped To LVLI ~~EDERLINE SERVICES (Formerly TMA)~~	Offsite Property No. A050012		Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Cool 4c

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Preservation											
Type of Container	G/P	aG	aG	aG	G	G					
No. of Container(s)	1	1	1	1	1	1					
Volume	250mL	250mL	120mL	250mL	60mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; ~~Chlorp. Herbicides - 8040/15A~~ CKA 10/7/04	Semi-VOA - 8270A (TCL)	PAHs - 8310 CKA 10/7/04	VOA - 8260A (TCL)	TPH (total) - 418.1 CKA 10/7/04					
Sample No.	Matrix *	Sample Date	Sample Time								
J01XP1	SOIL	10/7/04	0820	X	X	X				EB for	XP2
J01XP2	SOIL	10/7/04	0830	X	X	X				Soil under	tank
J01XP3	SOIL	10/7/04	0900	X	X	X		X		Soil under	pipe

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From M Stankovich	10-7-04 1430	Received By/Stored In 3728/2B	10-7-04 1430
Relinquished By/Removed From REF 2B 3728	101104 0900	Received By/Stored In S Gale	101104 0900
Relinquished By/Removed From S Gale	101104 0900	Received By/Stored In FED EX	
Relinquished By/Removed From Fed Ex	10-12-04 10955	Received By/Stored In N Smith	10-12-04 10955
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (SW846) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV)

Personnel not available to Relinquish samples from 3728 Ref # 2B on 101104

Matrix *

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

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

BHI-EE-011 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RWS 1607-F-1			DATA PACKAGE: H2793		
VALIDATOR: TLJ		LAB: LLI		DATE: 11/7/04	
			SDG: H2793		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J01XP1	J01XP2	J01XP3			
					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:

PESTICIDE/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:

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: toxaphene - no MS or LCS - J all

PESTICIDE/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: toxaphen – no MS/MSD – J all

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:

PESTICIDE/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: ~~PCB - all out~~ 11/7/04
Pest - methoxychlor - toxaphene only

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A

Lot check performed? ..... Yes No N/A

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

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments: