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SAF-B04-002
100 BC Burial Grounds – Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) mjp 9-27-05
INITIAL/DATE

SDG H3312 SAF-B04-002

Sample Location/Waste Site: 126-B-3

RECEIVED
OCT 27 2005
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Date: 15 September 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 BC Burial Grounds – Soil Full Protocol – Waste Site 126-B-3
Subject: Semivolatile - Data Package No. H3312-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3312-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	Date
J03WD8	8/9/05	Soil	C	See note 1
J03WD9	8/9/05	Soil	C	See note 1
J03WF0	8/9/05	Soil	C	See note 1
J03WF1	8/9/05	Soil	C	See note 1
J03WF2	8/9/05	Soil	C	See note 1
J03WF3	8/9/05	Soil	C	See note 1
J03WF4	8/9/05	Soil	C	See note 1
J03WF5	8/9/05	Soil	C	See note 1
J03WF6	8/9/05	Soil	C	See note 1
J03WF7	8/9/05	Soil	C	See note 1
J03WF8	8/9/05	Soil	C	See note 1
J03WJ0	8/9/05	Soil	C	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 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: 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, the bis(2-ethylhexyl)phthalate result in all samples were qualified as undetected, raised to the RDL and flagged "U".

All other method blank results were acceptable.

Field Blanks

One field blank (J03WJ0) was submitted for analysis. No analytes were detected in the field blank.

· **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 below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike recoveries outside QC limits, all undetected nitrobenzene, isophorone, 2-nitrophenol, 2,4-dimethylphenol, 1,2,4-trichlorobenzene, 4-chloro-3-methylphenol, 2-methylnaphthalene, 4-nitroanaline and carbazole results were qualified as estimates and flagged "J".

Due to matrix spike duplicate recoveries outside QC limits, all undetected nitrobenzene, 2,4-dimethylphenol, 1,2,4-trichlorobenzene, 2-methylnaphthalene and carbazole results were qualified as estimates and flagged "J".

Due to LCS recoveries outside QC limits, all undetected isopherone, 2-nitrophenol, 2,4-dimethylphenol, 2,4-dichlorophenol, 1,2,4-trichlorobenzene, 4-chloro-3-methylphenol, 2-methylnaphthalene, 4-nitroanaline, n-nitrosodiphenylamine and carbazole 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.

All precision 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. Ninety-six analytes exceeded the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package No. H3312-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

The following minor deficiencies were noted:

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

- Due to matrix spike recoveries outside QC limits, all undetected nitrobenzene, isophorone, 2-nitrophenol, 2,4-dimethylphenol, 1,2,4-trichlorobenzene, 4-chloro-3-methylphenol, 2-methylnaphthalene, 4-nitroanaline and carbazole results were qualified as estimates and flagged "J".

- Due to matrix spike duplicate recoveries outside QC limits, all undetected nitrobenzene, 2,4-dimethylphenol, 1,2,4-trichlorobenzene, 2-methylnaphthalene and carbazole results were qualified as estimates and flagged "J".

- Due to LCS recoveries outside QC limits, all undetected isopherone, 2-nitrophenol, 2,4-dimethylphenol, 2,4-dichlorophenol, 1,2,4-trichlorobenzene, 4-chloro-3-methylphenol, 2-methylnaphthalene, 4-nitroanaline, n-nitrosodiphenylamine and carbazole 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.

Ninety-six 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.

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

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI 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 DATA QUALIFICATION SUMMARY*

SDG: H3312	REVIEWER: TW	Project: 126-B-3	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
bis(2-ethylhexyl)phthalate	U at RQL	All	Blank contamination
nitrobenzene isophorone 2-nitrophenol 2,4-dimethylphenol 1,2,4-trichlorobenzene 4-chloro-3-methylphenol 2-methylnaphthalene 4-nitroanaline carbazole	J	All	MS recovery
nitrobenzene 2,4-dimethylphenol 1,2,4-trichlorobenzene 2-methylnaphthalene carbazole	J	All	MSD recovery
Isopherone 2-nitrophenol 2,4-dimethylphenol 2,4-dichlorophenol 1,2,4-trichlorobenzene 4-chloro-3-methylphenol 2-methylnaphthalene 4-nitroanaline n-nitrosodiphenylamine carbazole	J	All	LCS recovery

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																					
Laboratory: LLI	SDG: H3312																				
Sample Number		J03WD8		J03WD9		J03WF0		J03WF1		J03WF2		J03WF3		J03WF4		J03WF5		J03WF6		J03WF7	
Remarks				Duplicate																	
Sample Date		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05	
Extraction Date		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05	
Analysis Date		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
bis(2-Chloroethyl)ether	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
2-Chlorophenol	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
1,3-Dichlorobenzene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
1,4-Dichlorobenzene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
1,2-Dichlorobenzene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
2-Methylphenol	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
2,2'-oxybis(1-chloropropane)	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
3 and/or 4-Methylphenol	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
N-Nitroso-di-n-propylamine	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
Hexachloroethane	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
Nitrobenzene	660	330	UJ	330	UJ	340	UJ	340	UJ	340	UJ	340	UJ	330	UJ	340	UJ	340	UJ	670	UJ
Isophorone	660	330	UJ	330	UJ	340	UJ	340	UJ	340	UJ	340	UJ	330	UJ	340	UJ	340	UJ	670	UJ
2-Nitrophenol	660	330	UJ	330	UJ	340	UJ	340	UJ	340	UJ	340	UJ	330	UJ	340	UJ	340	UJ	670	UJ
2,4-Dimethylphenol	660	330	UJ	330	UJ	340	UJ	340	UJ	340	UJ	340	UJ	330	UJ	340	UJ	340	UJ	670	UJ
bis(2-Chloroethoxy)methane	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
2,4-Dichlorophenol	660	330	UJ	330	UJ	340	UJ	340	UJ	340	UJ	340	UJ	330	UJ	340	UJ	340	UJ	670	UJ
1,2,4-Trichlorobenzene	660	330	UJ	330	UJ	340	UJ	340	UJ	340	UJ	340	UJ	330	UJ	340	UJ	340	UJ	670	UJ
Naphthalene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	18		45	U	140	
4-Chloroaniline	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
Hexachlorobutadiene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
4-Chloro-3-methylphenol	660	330	UJ	330	UJ	340	UJ	340	UJ	340	UJ	340	UJ	330	UJ	340	UJ	340	UJ	670	UJ
2-Methylnaphthalene	660	330	UJ	330	UJ	340	UJ	31	J	340	UJ	340	UJ	330	UJ	24	J	140	UJ	230	J
Hexachlorocyclopentadiene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
2,4,6-Trichlorophenol	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
2,4,5-Trichlorophenol*	660	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	1700	U
2-Chloronaphthalene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
2-Nitroaniline*	660	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	1700	U
Dimethylphthalate	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
Acenaphthylene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U
2,6-Dinitrotoluene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	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.

* - RQL exceeded

000011

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																							
Laboratory: LLI	SDG: H3312																						
Sample Number		J03WD8		J03WD9		J03WF0		J03WF1		J03WF2		J03WF3		J03WF4		J03WF5		J03WF6		J03WF7			
Remarks																							
Sample Date		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05			
Extraction Date		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05			
Analysis Date		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05		8/15/05			
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
3-Nitroaniline*	660	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	1700	U		
Acenaphthene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U		
2,4-Dinitrophenol*	660	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	1700	U		
4-Nitrophenol*	660	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	1700	U		
Dibenzofuran	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	41		60			
2,4-Dinitrotoluene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U		
Diethylphthalate	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U		
4-Chlorophenyl-phenyl ether	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U		
Fluorene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	21		670	U		
4-Nitroaniline*	660	840	UJ	840	UJ	840	UJ	840	UJ	840	UJ	840	UJ	840	UJ	840	UJ	840	UJ	1700	UJ		
4,6-Dinitro-2-methylphenol*	660	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	1700	U		
N-Nitrosodiphenylamine	660	330	UJ	330	UJ	340	UJ	340	UJ	340	UJ	340	UJ	330	UJ	340	UJ	340	UJ	670	UJ		
4-Bromophenyl-phenyl ether	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U		
Hexachlorobenzene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U		
Pentachlorophenol*	660	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	840	U	1700	U		
Phenanthrene	660	19		28		340	U	32		340	U	340	U	330	U	340	U	220		170			
Anthracene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	42		670	U		
Carbazole	660	330	UJ	330	UJ	340	UJ	340	UJ	340	UJ	340	UJ	330	UJ	340	UJ	25	J	670	UJ		
Di-n-butylphthalate	660	25		41		32		33		37		22		27		25		43		670	U		
Fluoranthene	660	23		40		340	U	340	U	340	U	340	U	330	U	340	U	230		110			
Pyrene	660	25		36		340	U	340	U	340	U	340	U	330	U	340	U	290		150			
Butylbenzylphthalate	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U		
3,3'-Dichlorobenzidine	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U		
Benzo(a)anthracene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	120		57			
Chrysene	660	330	U	19		340	U	340	U	340	U	340	U	330	U	340	U	140		77			
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U		
Di-n-octylphthalate	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	340	U	670	U		
Benzo(b)fluoranthene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	76		42			
Benzo(k)fluoranthene	660	660	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	85		53			
Benzo(a)pyrene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	91		50			
Indeno(1,2,3-cd)pyrene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	42		670	U		
Dibenz(a,h)anthracene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	17		670	U		
Benzo(g,h,i)perylene	660	330	U	330	U	340	U	340	U	340	U	340	U	330	U	340	U	46		670	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.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																					
Laboratory: LLI	SDG: H3312																				
Sample Number		J03WF8		J03WJ0																	
Remarks				E. Blank																	
Sample Date		8/9/05		8/9/05																	
Extraction Date		8/12/05		8/12/05																	
Analysis Date		8/15/05		8/15/05																	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	340	U	330	U																
bis(2-Chloroethyl)ether	660	340	U	330	U																
2-Chlorophenol	660	340	U	330	U																
1,3-Dichlorobenzene	660	340	U	330	U																
1,4-Dichlorobenzene	660	340	U	330	U																
1,2-Dichlorobenzene	660	340	U	330	U																
2-Methylphenol	660	340	U	330	U																
2,2'-oxybis(1-chloropropane)	660	340	U	330	U																
3 and/or 4-Methylphenol	660	340	U	330	U																
N-Nitroso-di-n-propylamine	660	340	U	330	U																
Hexachloroethane	660	340	U	330	U																
Nitrobenzene	660	340	UJ	330	UJ																
Isophorone	660	340	UJ	330	UJ																
2-Nitrophenol	660	340	UJ	330	UJ																
2,4-Dimethylphenol	660	340	UJ	330	UJ																
bis(2-Chloroethoxy)methane	660	340	U	330	U																
2,4-Dichlorophenol	660	340	UJ	330	UJ																
1,2,4-Trichlorobenzene	660	340	UJ	330	UJ																
Naphthalene	660	35		330	U																
4-Chloroaniline	660	340	U	330	U																
Hexachlorobutadiene	660	340	U	330	U																
4-Chloro-3-methylphenol	660	340	UJ	330	UJ																
2-Methylnaphthalene	660	74	J	330	UJ																
Hexachlorocyclopentadiene	660	340	U	330	U																
2,4,6-Trichlorophenol	660	340	U	330	U																
2,4,5-Trichlorophenol*	660	840	U	830	U																
2-Chloronaphthalene	660	340	U	330	U																
2-Nitroaniline*	660	840	U	830	U																
Dimethylphthalate	660	340	U	330	U																
Acenaphthylene	660	340	U	330	U																
2,6-Dinitrotoluene	660	340	U	330	U																

000013

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.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: BECHTEL-HANFORD																					
Laboratory: LLI	SDG: H3312																				
Sample Number		J03WF8		J03WJ0																	
Remarks				E. Blank																	
Sample Date		8/9/05		8/9/05																	
Extraction Date		8/12/05		8/12/05																	
Analysis Date		8/15/05		8/15/05																	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	840	U	830	U																
Acenaphthene	660	340	U	330	U																
2,4-Dinitrophenol*	660	840	U	830	U																
4-Nitrophenol*	660	840	U	830	U																
Dibenzofuran	660	27		330	U																
2,4-Dinitrotoluene	660	340	U	330	U																
Diethylphthalate	660	340	U	330	U																
4-Chlorophenyl-phenyl ether	660	340	U	330	U																
Fluorene	660	340	U	330	U																
4-Nitroaniline*	660	840	UJ	830	UJ																
4,6-Dinitro-2-methylphenol*	660	840	U	830	U																
N-Nitrosodiphenylamine	660	340	UJ	330	UJ																
4-Bromophenyl-phenyl ether	660	340	U	330	U																
Hexachlorobenzene	660	340	U	330	U																
Pentachlorophenol*	660	840	U	830	U																
Phenanthrene	660	62		330	U																
Anthracene	660	340	U	330	U																
Carbazole	660	340	UJ	330	UJ																
Di-n-butylphthalate	660	21		330	U																
Fluoranthene	660	40		330	U																
Pyrene	660	42		330	U																
Butylbenzylphthalate	660	340	U	330	U																
3,3'-Dichlorobenzidine	660	340	U	330	U																
Benzo(a)anthracene	660	18		330	U																
Chrysene	660	24		330	U																
bis(2-Ethylhexyl)phthalate	660	660	U	660	U																
Di-n-octylphthalate	660	340	U	330	U																
Benzo(b)fluoranthene	660	340	U	330	U																
Benzo(k)fluoranthene	660	340	U	330	U																
Benzo(a)pyrene	660	340	U	330	U																
Indeno(1,2,3-cd)pyrene	660	340	U	330	U																
Dibenz(a,h)anthracene	660	340	U	330	U																
Benzo(g,h,i)perylene	660	340	U	330	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.

* - RQL exceeded

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

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Report Date: 08/17/05 13:14 Page: 1a

	Cust ID:	J03WD8	J03WD8	J03WD8	J03WD9	J03WF0	J03WF1
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	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	51 %	47 %	48 %	53 %	55 %	47 %
	2-Fluorobiphenyl	56 %	71 %	73 %	58 %	61 %	57 %
	Terphenyl-d14	79 %	77 %	76 %	80 %	91 %	78 %
	Phenol-d5	50 %	64 %	69 %	55 %	62 %	54 %
	2-Fluorophenol	54 %	64 %	69 %	57 %	64 %	54 %
	2,4,6-Tribromophenol	70 %	96 %	102 %	79 %	88 %	78 %
		fl	fl	fl	fl	fl	fl
Phenol		330 U	63 %	69 %	330 U	340 U	340 U
bis(2-Chloroethyl)ether		330 U	62 %	68 %	330 U	340 U	340 U
2-Chlorophenol		330 U	64 %	70 %	330 U	340 U	340 U
1,3-Dichlorobenzene		330 U	63 %	67 %	330 U	340 U	340 U
1,4-Dichlorobenzene		330 U	61 %	64 %	330 U	340 U	340 U
1,2-Dichlorobenzene		330 U	64 %	70 %	330 U	340 U	340 U
2-Methylphenol		330 U	67 %	72 %	330 U	340 U	340 U
2,2'-oxybis(1-Chloropropane)		330 U	63 %	70 %	330 U	340 U	340 U
4-Methylphenol		330 U	68 %	77 %	330 U	340 U	340 U
N-Nitroso-di-n-propylamine		330 U	70 %	79 %	330 U	340 U	340 U
Hexachloroethane		330 U	61 %	65 %	330 U	340 U	340 U
Nitrobenzene		330 UJ	48 * %	49 * %	330 UJ	340 UJ	340 UJ
Isophorone		330 UJ	59 * %	61 %	330 UJ	340 UJ	340 UJ
2-Nitrophenol		330 UJ	48 * %	50 %	330 UJ	340 UJ	340 UJ
2,4-Dimethylphenol		330 UJ	45 * %	49 * %	330 UJ	340 UJ	340 UJ
bis(2-Chloroethoxy)methane		330 U	46 %	50 %	330 U	340 U	340 U
2,4-Dichlorophenol		330 UJ	52 %	54 %	330 UJ	340 UJ	340 UJ
1,2,4-Trichlorobenzene		330 UJ	49 * %	53 * %	330 UJ	340 UJ	340 UJ
Naphthalene		330 U	50 %	54 %	330 U	340 U	340 U
4-Chloroaniline		330 U	59 %	63 %	330 U	340 U	340 U
Hexachlorobutadiene		330 U	57 %	60 %	330 U	340 U	340 U
4-Chloro-3-methylphenol		330 UJ	59 * %	64 %	330 UJ	340 UJ	340 UJ
2-Methylnaphthalene		330 UJ	52 * %	56 * %	330 UJ	340 UJ	31 J
Hexachlorocyclopentadiene		330 U	37 %	39 %	330 U	340 U	340 U
2,4,6-Trichlorophenol		330 U	82 %	85 %	330 U	340 U	340 U
2,4,5-Trichlorophenol		840 U	85 %	89 %	840 U	840 U	840 U

*= Outside of EPA CLP QC limits.

9/15/05

000015

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 1b

Cust ID:	J03WD8	J03WD8	J03WD8	J03WD9	J03WF0	J03WF1
RFW#:	001	001 MS	001 MSD	002	003	004
2-Chloronaphthalene	330 U	73 %	76 %	330 U	340 U	340 U
2-Nitroaniline	840 U	79 %	83 %	840 U	840 U	840 U
Dimethylphthalate	330 U	82 %	85 %	330 U	340 U	340 U
Acenaphthylene	330 U	71 %	74 %	330 U	340 U	340 U
2,6-Dinitrotoluene	330 U	79 %	84 %	330 U	340 U	340 U
3-Nitroaniline	840 U	86 %	86 %	840 U	840 U	840 U
Acenaphthene	330 U	78 %	83 %	330 U	340 U	340 U
2,4-Dinitrophenol	840 U	69 %	75 %	840 U	840 U	840 U
4-Nitrophenol	840 U	101 %	122 %	840 U	840 U	840 U
Dibenzofuran	330 U	80 %	82 %	330 U	340 U	340 U
2,4-Dinitrotoluene	330 U	83 %	88 %	330 U	340 U	340 U
Diethylphthalate	330 U	83 %	87 %	330 U	340 U	340 U
4-Chlorophenyl-phenylether	330 U	73 %	76 %	330 U	340 U	340 U
Fluorene	330 U	78 %	82 %	330 U	340 U	340 U
4-Nitroaniline	840 U J	43 * %	53 %	840 U J	840 U J	840 U J
4,6-Dinitro-2-methylphenol	840 U	79 %	91 %	840 U	840 U	840 U
N-Nitrosodiphenylamine (1)	330 U J	55 %	59 %	330 U J	340 U J	340 U J
4-Bromophenyl-phenylether	330 U	70 %	75 %	330 U	340 U	340 U
Hexachlorobenzene	330 U	88 %	93 %	330 U	340 U	340 U
Pentachlorophenol	840 U	110 %	110 %	840 U	840 U	840 U
Phenanthrene	19 J	115 %	121 %	28 J	340 U	32 J
Anthracene	330 U	86 %	91 %	330 U	340 U	340 U
Carbazole	330 U J	56 * %	51 * %	330 U J	340 U J	340 U J
Di-n-butylphthalate	25 J	75 %	79 %	41 J	32 J	33 J
Fluoranthene	23 J	103 %	111 %	40 J	340 U	340 U
Pyrene	25 J	103 %	105 %	36 J	340 U	340 U
Butylbenzylphthalate	330 U	83 %	84 %	330 U	340 U	340 U
3,3'-Dichlorobenzidine	330 U	50 %	60 %	330 U	340 U	340 U
Benzo(a)anthracene	330 U	80 %	83 %	330 U	340 U	340 U
Chrysene	330 U	87 %	89 %	19 J	340 U	340 U
bis(2-Ethylhexyl)phthalate	660 ~~100~~ JB U	79 %	81 %	660 ~~120~~ JB U	660 ~~120~~ JB U	660 ~~110~~ JB U
Di-n-octyl phthalate	330 U	84 %	87 %	330 U	340 U	340 U
Benzo(b)fluoranthene	330 U	89 %	90 %	330 U	340 U	340 U
Benzo(k)fluoranthene	330 U	94 %	80 %	330 U	340 U	340 U
Benzo(a)pyrene	330 U	92 %	95 %	330 U	340 U	340 U
Indeno(1,2,3-cd)pyrene	330 U	86 %	88 %	330 U	340 U	340 U
Dibenz(a,h)anthracene	330 U	83 %	86 %	330 U	340 U	340 U
Benzo(g,h,i)perylene	330 U	84 %	86 %	330 U	340 U	340 U

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

9/15/2

000016

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 08/17/05 13:14

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 2a

	Cust ID:	J03WF2		J03WF3		J03WF4		J03WF5		J03WF6		J03WF7	
Sample Information	RFW#:	005		006		007		008		009		010	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		2.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	46	%	45	%	52	%	43	%	58	%	54	%
	2-Fluorobiphenyl	55	%	52	%	62	%	52	%	64	%	62	%
	Terphenyl-d14	78	%	73	%	88	%	74	%	88	%	76	%
	Phenol-d5	54	%	55	%	62	%	52	%	68	%	60	%
	2-Fluorophenol	52	%	54	%	62	%	52	%	65	%	62	%
	2,4,6-Tribromophenol	79	%	70	%	89	%	76	%	87	%	71	%
			fl		fl		fl		fl		fl		fl
Phenol		340	U	340	U	330	U	340	U	340	U	670	U
bis(2-Chloroethyl)ether		340	U	340	U	330	U	340	U	340	U	670	U
2-Chlorophenol		340	U	340	U	330	U	340	U	340	U	670	U
1,3-Dichlorobenzene		340	U	340	U	330	U	340	U	340	U	670	U
1,4-Dichlorobenzene		340	U	340	U	330	U	340	U	340	U	670	U
1,2-Dichlorobenzene		340	U	340	U	330	U	340	U	340	U	670	U
2-Methylphenol		340	U	340	U	330	U	340	U	340	U	670	U
2,2'-oxybis(1-Chloropropane)		340	U	340	U	330	U	340	U	340	U	670	U
4-Methylphenol		340	U	340	U	330	U	340	U	340	U	670	U
N-Nitroso-di-n-propylamine		340	U	340	U	330	U	340	U	340	U	670	U
Hexachloroethane		340	U	340	U	330	U	340	U	340	U	670	U
Nitrobenzene		340	U J	340	U J	330	U J	340	U J	340	U J	670	U J
Isophorone		340	U J	340	U J	330	U J	340	U J	340	U J	670	U J
2-Nitrophenol		340	U J	340	U J	330	U J	340	U J	340	U J	670	U J
2,4-Dimethylphenol		340	U J	340	U J	330	U J	340	U J	340	U J	670	U J
bis(2-Chloroethoxy)methane		340	U	340	U	330	U	340	U	340	U	670	U
2,4-Dichlorophenol		340	U J	340	U J	330	U J	340	U J	340	U J	670	U J
1,2,4-Trichlorobenzene		340	U J	340	U J	330	U J	340	U J	340	U J	670	U J
Naphthalene		340	U	340	U	330	U	18	J	45	J	140	J
4-Chloroaniline		340	U	340	U	330	U	340	U	340	U	670	U
Hexachlorobutadiene		340	U	340	U	330	U	340	U	340	U	670	U
4-Chloro-3-methylphenol		340	U J	340	U J	330	U J	340	U J	340	U J	670	U J
2-Methylnaphthalene		340	U J	340	U J	330	U J	24	J	140	J	230	J
Hexachlorocyclopentadiene		340	U	340	U	330	U	340	U	340	U	670	U
2,4,6-Trichlorophenol		340	U	340	U	330	U	340	U	340	U	670	U
2,4,5-Trichlorophenol		840	U	840	U	840	U	840	U	840	U	1700	U

*= Outside of EPA CLP QC limits.

K 9/15/05

000017

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 2b

Cust ID:	J03WF2		J03WF3		J03WF4		J03WF5		J03WF6		J03WF7	
RFW#:	005		006		007		008		009		010	
2-Chloronaphthalene	340	U	340	U	330	U	340	U	340	U	670	U
2-Nitroaniline	840	U	840	U	840	U	840	U	840	U	1700	U
Dimethylphthalate	340	U	340	U	330	U	340	U	340	U	670	U
Acenaphthylene	340	U	340	U	330	U	340	U	340	U	670	U
2,6-Dinitrotoluene	340	U	340	U	330	U	340	U	340	U	670	U
3-Nitroaniline	840	U	840	U	840	U	840	U	840	U	1700	U
Acenaphthene	340	U	340	U	330	U	340	U	340	U	670	U
2,4-Dinitrophenol	840	U	840	U	840	U	840	U	840	U	1700	U
4-Nitrophenol	840	U	840	U	840	U	840	U	840	U	1700	U
Dibenzofuran	340	U	340	U	330	U	340	U	41	J	60	J
2,4-Dinitrotoluene	340	U	340	U	330	U	340	U	340	U	670	U
Diethylphthalate	340	U	340	U	330	U	340	U	340	U	670	U
4-Chlorophenyl-phenylether	340	U	340	U	330	U	340	U	340	U	670	U
Fluorene	340	U	340	U	330	U	340	U	21	J	670	U
4-Nitroaniline	840	UJ	840	UJ	840	UJ	840	UJ	840	UJ	1700	UJ
4,6-Dinitro-2-methylphenol	840	U	840	U	840	U	840	U	840	U	1700	U
N-Nitrosodiphenylamine (1)	340	UJ	340	UJ	330	UJ	340	UJ	340	UJ	670	UJ
4-Bromophenyl-phenylether	340	U	340	U	330	U	340	U	340	U	670	U
Hexachlorobenzene	340	U	340	U	330	U	340	U	340	U	670	U
Pentachlorophenol	840	U	840	U	840	U	840	U	840	U	1700	U
Phenanthrene	340	U	340	U	330	U	340	U	220	J	170	J
Anthracene	340	U	340	U	330	U	340	U	42	J	670	U
Carbazole	340	UJ	340	UJ	330	UJ	340	UJ	25	J	670	UJ
Di-n-butylphthalate	37	J	22	J	27	J	25	J	43	J	670	U
Fluoranthene	340	U	340	U	330	U	340	U	230	J	110	J
Pyrene	340	U	340	U	330	U	340	U	290	J	150	J
Butylbenzylphthalate	340	U	340	U	330	U	340	U	340	U	670	U
3,3'-Dichlorobenzidine	340	U	340	U	330	U	340	U	340	U	670	U
Benzo(a)anthracene	340	U	340	U	330	U	340	U	120	J	57	J
Chrysene	340	U	340	U	330	U	340	U	140	J	77	J
bis(2-Ethylhexyl)phthalate	660	~~70~~ JB U	660	~~170~~ JB U	660	~~89~~ JB U	660	~~86~~ JB U	660	~~79~~ JB U	660	~~85~~ JB U
Di-n-octyl phthalate	340	U	340	U	330	U	340	U	340	U	670	U
Benzo(b)fluoranthene	340	U	340	U	330	U	340	U	76	J	42	J
Benzo(k)fluoranthene	340	U	340	U	330	U	340	U	85	J	53	J
Benzo(a)pyrene	340	U	340	U	330	U	340	U	91	J	50	J
Indeno(1,2,3-cd)pyrene	340	U	340	U	330	U	340	U	42	J	670	U
Dibenz(a,h)anthracene	340	U	340	U	330	U	340	U	17	J	670	U
Benzo(g,h,i)perylene	340	U	340	U	330	U	340	U	46	J	670	U

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

9/15/05

000018

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Report Date: 08/17/05 13:14 Page: 3a

	Cust ID:	J03WF8	J03WJ0	SBLKNK	SBLKNK BS
Sample Information	RFW#:	011	012	05LE0675-MB1	05LE0675-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	46 %	44 %	52 %	50 %
	2-Fluorobiphenyl	53 %	50 %	59 %	69 %
	Terphenyl-d14	76 %	73 %	74 %	69 %
	Phenol-d5	54 %	51 %	50 %	62 %
	2-Fluorophenol	54 %	51 %	56 %	61 %
	2,4,6-Tribromophenol	78 %	64 %	70 %	87 %
		fl	fl	fl	fl

	J03WF8	J03WJ0	SBLKNK	SBLKNK BS
Phenol	340 U	330 U	330 U	61 %
bis(2-Chloroethyl)ether	340 U	330 U	330 U	65 %
2-Chlorophenol	340 U	330 U	330 U	63 %
1,3-Dichlorobenzene	340 U	330 U	330 U	65 %
1,4-Dichlorobenzene	340 U	330 U	330 U	62 %
1,2-Dichlorobenzene	340 U	330 U	330 U	66 %
2-Methylphenol	340 U	330 U	330 U	62 %
2,2'-oxybis(1-Chloropropane)	340 U	330 U	330 U	65 %
4-Methylphenol	340 U	330 U	330 U	63 %
N-Nitroso-di-n-propylamine	340 U	330 U	330 U	67 %
Hexachloroethane	340 U	330 U	330 U	61 %
Nitrobenzene	340 U J	330 U J	330 U	51 %
Isophorone	340 U J	330 U J	330 U	56 * %
2-Nitrophenol	340 U J	330 U J	330 U	47 * %
2,4-Dimethylphenol	340 U J	330 U J	330 U	43 * %
bis(2-Chloroethoxy)methane	340 U	330 U	330 U	46 %
2,4-Dichlorophenol	340 U J	330 U J	330 U	49 * %
1,2,4-Trichlorobenzene	340 U J	330 U J	330 U	52 * %
Naphthalene	35 J	330 U	330 U	51 %
4-Chloroaniline	340 U	330 U	330 U	62 %
Hexachlorobutadiene	340 U	330 U	330 U	59 %
4-Chloro-3-methylphenol	340 U J	330 U J	330 U	53 * %
2-Methylnaphthalene	74 J J	330 U J	330 U	51 * %
Hexachlorocyclopentadiene	340 U	330 U	330 U	59 %
2,4,6-Trichlorophenol	340 U	330 U	330 U	73 %
2,4,5-Trichlorophenol	840 U	830 U	830 U	74 %

*= Outside of EPA CLP QC limits.

000019

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 3b

Cust ID:	J03WF8		J03WJ0		SBLKNK		SBLKNK BS	
RFW#:	011		012		05LE0675-MB1		05LE0675-MB1	
2-Chloronaphthalene	340	U	330	U	330	U	70	%
2-Nitroaniline	840	U	830	U	830	U	71	%
Dimethylphthalate	340	U	330	U	330	U	76	%
Acenaphthylene	340	U	330	U	330	U	69	%
2,6-Dinitrotoluene	340	U	330	U	330	U	75	%
3-Nitroaniline	840	U	830	U	830	U	70	%
Acenaphthene	340	U	330	U	330	U	69	%
2,4-Dinitrophenol	840	U	830	U	830	U	40	%
4-Nitrophenol	840	U	830	U	830	U	85	%
Dibenzofuran	27	J	330	U	330	U	70	%
2,4-Dinitrotoluene	340	U	330	U	330	U	77	%
Diethylphthalate	340	U	330	U	330	U	77	%
4-Chlorophenyl-phenylether	340	U	330	U	330	U	67	%
Fluorene	340	U	330	U	330	U	68	%
4-Nitroaniline	840	UJ	830	UJ	830	U	42 *	%
4,6-Dinitro-2-methylphenol	840	U	830	U	830	U	77	%
N-Nitrosodiphenylamine (1)	340	UJ	330	UJ	330	U	48 *	%
4-Bromophenyl-phenylether	340	U	330	U	330	U	62	%
Hexachlorobenzene	340	U	330	U	330	U	79	%
Pentachlorophenol	840	U	830	U	830	U	91	%
Phenanthrene	62	J	330	U	330	U	72	%
Anthracene	340	U	330	U	330	U	72	%
Carbazole	340	UJ	330	UJ	330	U	38 *	%
Di-n-butylphthalate	21	J	150	J	330	U	75	%
Fluoranthene	40	J	330	U	330	U	77	%
Pyrene	42	J	330	U	330	U	74	%
Butylbenzylphthalate	340	U	330	U	330	U	77	%
3,3'-Dichlorobenzidine	340	U	330	U	330	U	52	%
Benzo(a)anthracene	18	J	330	U	330	U	68	%
Chrysene	24	J	330	U	330	U	71	%
bis(2-Ethylhexyl)phthalate	LG 110 JB	U	LG 66 JB	U	55	J	72	%
Di-n-octyl phthalate	340	U	330	U	330	U	72	%
Benzo(b)fluoranthene	340	U	330	U	330	U	67	%
Benzo(k)fluoranthene	340	U	330	U	330	U	82	%
Benzo(a)pyrene	340	U	330	U	330	U	73	%
Indeno(1,2,3-cd)pyrene	340	U	330	U	330	U	78	%
Dibenz(a,h)anthracene	340	U	330	U	330	U	77	%
Benzo(g,h,i)perylene	340	U	330	U	330	U	78	%

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

000020

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B04-002
LVL #: 0508L129
SDG/SAF # H 331 2/B04-002

W.O. #: 11343-606-001-9999-00
Date Received: 08-11-2005

SEMIVOLATILE

Twelve (12) soil samples were collected on 08-09-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 08-12-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 08-15-2005.

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. Sample J03WF7 required a 2-fold dilution due to the nature of the sample matrix.
5. All surrogate recoveries were within acceptance criteria.
6. Fourteen (14) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria.
7. Ten (10) of sixty-four (64) blank spike recoveries were outside acceptance criteria.
8. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
9. Internal standard area criteria were not met for sample J03WJ0. The sample was reanalyzed with similar results. The reanalysis results will be available upon request.
10. 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").
11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
12. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/22/05
Date

som\group\data\bna\tnu-hanford\0508-129.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 3 0 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		B04-002-042	Page 1 of 3
Collector: D Bowersw/C Martinez/J Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many — Data Turnaround: 7 day
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-1 @ 100 BC		SAF No.: B04-002	Air Quality:
Ice Chest No.: ERC-02-403, ERC-02-506 + ERC-96-030	Field Logbook No.: EL 1173-5	COA: R126B32000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A050347		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS: Non Rad

Special Handling and/or Storage: Cool 4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG D	aG E	aG B	aG A	aG C	aG
No. of Container(s)	1	1	1	1	1	1
Volume	250mL	120mL	250mL	250mL	250mL	250mL
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1

Sample No.	Matrix *	Sample Date	Sample Time	AJB 8-9-05					
J03WD8	SOIL	8-9-05	0842	X	X	X	X	X	X
J03WD9	SOIL		0846	X	X	X	X	X	X
J03WF0	SOIL		0856	X	X	X	X	X	X
J03WF1	SOIL		0905	X	X	X	X	X	X
J03WF2	SOIL		0918	X	X	X	X	X	X

000023

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: Doug Bowers Bowers	Date/Time: 8-9-05/1570	Received By/Stored In: RCF 2B 3728	Date/Time: 8-9-05/1570
Relinquished By/Removed From: 3728 RCF 2B	Date/Time: 8/10/05 0900	Received By/Stored In: DA ST. JOHN	Date/Time: 8/10/05 0900
Relinquished By/Removed From: DA ST JOHN ERC	Date/Time: 8/10/05 0900	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 8/11/05 1010	Received By/Stored In: [signature]	Date/Time: 8/11/05 1010
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS AJB 8-9-05

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}; Mercury - 7470 - (CV)

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-042	Page 2 of 3

Collector D Bowersw/C Martinez/J Kiesler	Company Contact Doug Bowers	Telephone No. 531-0701	Project Coordinator KESSNER, JH	Price Code Many	Data Turnaround
Project Designation 100 BC Burial Grounds - Soil Full Protocol	Sampling Location 126-B-3 @ 100 BC		SAF No. B04-002	Air Quality	7 day
Ice Chest No. ERC-02-403 ERC-02-506 & ERC-96-030	Field Logbook No. EL 1173-5	COA R126B32000	Method of Shipment Fed Ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A050347		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

Preservation			None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container			aG	aG	aG	aG	aG	aG				
No. of Container(s)			1	1	1	1	1	1				
Volume			250ml.	120ml.	250ml.	250ml.	250ml.	250ml.				
SAMPLE ANALYSIS			See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time									
J03WF3	SOIL	8-9-05	0911	X	X	X	X	X	X			
J03WF4	SOIL	↓	0942	X	X	X	X	X	X			
J03WF5	SOIL		0948	X	X	X	X	X	X			
J03WF6	SOIL		1000	X	X	X	X	X	X			
J03WF7	SOIL	↓	1018	X	X	X	X	X	X			

000024

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From Doug Doug Bowers	8-9-05/1730	Received By/Stored In Ref 2B 3728	8-9-05/1730
Relinquished By/Removed From 3728 Ref 2B	8/10/05 0900	Received By/Stored In BA St. John Exp Dave Sa	8/10/05 0900
Relinquished By/Removed From BA St John Exp Dave Sa	8/10/05 0900	Received By/Stored In FEP CX	
Relinquished By/Removed From FEP CX	8/11/05 1010	Received By/Stored In	8/11/05 1010
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS TB 8-8-05

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc], Mercury - 7470 - (CV)

Matrix *
S - Soil
SS - Subsoil
SD - 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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B04-002-042	Page 3 of 3
Collector D Bowersw/C Martinez/J Kiesler	Company Contact Doug Bowers	Telephone No. 531-0701	Project Coordinator KESSNER, JH	Price Code Many Data Turnaround
Project Designation 100 BC Burial Grounds - Soil Full Protocol	Sampling Location 126-B-3 @ 100 BC		SAF No. B04-002	Air Quality 7 day
Ice Chest No. ERC-02-403 ERC-02-503 + ERC-96-030	Field Logbook No. EL 1173-5	COA R126B32000	Method of Shipment Fed Ex	
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A050347		Bill of Lading/Air Bill No. SEE OSC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

Preservation			None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container			aG	aG	aG	aG	aG	aG				
No. of Container(s)			1	1	1	1	1	1				
Volume			250mL	120mL	250mL	250mL	250mL	250mL				
SAMPLE ANALYSIS			Sea item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time									
J03WF8	SOIL	8-9-05	1017	X	X	X	X	X	X			
J03WJ0	SOIL	8-9-05	0816	X		X	X		X			

000025

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From Doug Bowers Bowers	Date/Time 8-9-05/1530	Received By/Stored In R.F 2B 3728	Date/Time 8-9-05/1530
Relinquished By/Removed From 3728 RCF 2B	Date/Time 8/10/05 0900	Received By/Stored In PASP John Paul Sigan	Date/Time 8/10/05 0900
Relinquished By/Removed From PASP John Erc Paul Sigan	Date/Time 8/10/05 0900	Received By/Stored In FED EX	Date/Time
Relinquished By/Removed From FED EX	Date/Time 8/11/05 1010	Received By/Stored In [signature]	Date/Time 8/11/05 1010
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

DJB 8-9-05

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}, Mercury - 7470 - (CV)

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: 100BC 126-B-3			DATA PACKAGE: H3312		
VALIDATOR: TCI		LAB: LLI		DATE: 9/12/05	
			SDG: H3312		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J03WD8	J03WD9	J03WF0	J03WF1	J03WF2	
J03WF3	J03WF4	J03WF5	J03WF6	J03WP7	
J03WP8	J03WJ0				
					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: bis(2-ethylhexyl) phthalate in Blank - U at RQL

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 - 9 under - J all
MSD - 5 under - J all
LCS - 10 under - J all

NO pos

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: QC 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: 15 September 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 BC Burial Grounds – Soil Full Protocol – Waste Site 126-B-3
Subject: Inorganics - Data Package No. H3312-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3312-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	Sample Media	Validation	Data
J03WD8	8/9/05	Soil	C	See note 1
J03WD9	8/9/05	Soil	C	See note 1
J03WF0	8/9/05	Soil	C	See note 1
J03WF1	8/9/05	Soil	C	See note 1
J03WF2	8/9/05	Soil	C	See note 1
J03WF3	8/9/05	Soil	C	See note 1
J03WF4	8/9/05	Soil	C	See note 1
J03WF5	8/9/05	Soil	C	See note 1
J03WF6	8/9/05	Soil	C	See note 1
J03WF7	8/9/05	Soil	C	See note 1
J03WF8	8/9/05	Soil	C	See note 1
J03WJ0	8/9/05	Soil	C	See note 1

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

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

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

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are

as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

Due to method blank contamination, the copper result in sample J03WJ0 was qualified as an estimate and flagged "UJ".

Due to method blank contamination, all detected molybdenum results were qualified as estimates and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J03WJ0) was submitted for analysis. Boron, barium, beryllium, manganese 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.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicate samples (J03WD8/J03WD9) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All silver and selenium result (except J03WJ0) exceeded the RQL. Under the BHI statement

of work, no qualification is required.

- **Completeness**

Data package No. H3312-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, the copper result in sample J03WJ0 was qualified as an estimate and flagged "UJ". Due to method blank contamination, all detected molybdenum results were qualified as estimates and flagged "UJ". 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 silver and selenium result (except J03WJ0) 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.

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

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: H3312	REVIEWER: TLH	Project: 126-B-3	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Copper	UJ	J03WJ0	Method blank contamination
Molybdenum	UJ	All detects	Method 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

Project: BECHTEL-HANFORD

Laboratory: LLI | SDG: H3312

Sample Number		J03WD8		J03WD9		J03WF0		J03WF1		J03WF2		J03WF3		J03WF4		J03WF5		J03WF6		J03WF7	
Remarks				Duplicate																	
Sample Date		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	0.47	U
Arsenic	10	5.2		3.3		4.7		3.3		4.1		3.9		4.4		3.0		2.3	U	4.4	
Boron		2.4		1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.7	
Barium	2	64.1		60.6		62.9		56.9		51.5		67.5		55.1		65.2		64.7		75.3	
Beryllium		0.94		0.78		1.0		0.89		0.76		1.0		0.67		0.61		0.74		0.70	
Cadmium	0.2	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.16	U
Cobalt		6.9		6.0		7.8		6.7		5.5		7.4		4.9		5.2		5.9		5.7	
Chromium	1	9.4		8.0		8.7		7.5		8.9		7.1		8.3		7.6		6.5		9.0	
Copper		13.2		13.0		18.0		15.2		12.8		18.1		11.4		14.1		12.5		14.5	
Mercury	0.2	0.01	U	0.02	U	0.01	U	0.01	U	0.01	U	0.02	U	0.01	U	0.01	U	0.02		0.03	
Manganese		316		289		338		286		246		301		229		250		285		245	
Molybdenum		1.1	UJ	0.82	U	0.82	U	0.87	UJ	0.83	U	0.99	UJ	0.90	UJ	1.2	UJ	0.82	U	0.83	U
Nickel		10.0		9.1		11.9		9.2		10.0		10.9		9.1		8.3		8.3		10.4	
Lead	5	5.5		5.2		4.5		3.8		3.5		5.0		2.6		3.7		3.1		6.1	
Selenium	1	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Vanadium		41.6		33.2		41.1		35.4		31.1		38.2		27.4		24.5		27.6		25.2	
Zinc	1	37.8		33.4		40.1		39.7		32.9		35.9		28.9		31.3		33.4		40.8	

Sample Number		J03WF8		J03WJ0																	
Remarks				E. Blank																	
Sample Date		8/9/05		8/9/05																	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.46	U	0.08	U																
Arsenic	10	7.0		0.38	U																
Boron		3.4		0.41																	
Barium	2	90.5		0.82																	
Beryllium		1.1		0.009																	
Cadmium	0.2	0.15	U	0.03	U																
Cobalt		9.2		0.08	U																
Chromium	1	13.4		0.06	U																
Copper		21.7		0.23	UJ																
Mercury	0.2	0.02		0.02	U																
Manganese		358		2.0																	
Molybdenum		1.0	UJ	0.14	U																
Nickel		16.0		0.19	U																
Lead	5	5.9		0.21	U																
Selenium	1	2.5	U	0.42	U																
Vanadium		48.3		0.05	U																
Zinc	1	46.4		1.2																	

600009

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 08/17/05

CLIENT: TNU-HANFORD B04-002 LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J03WD8	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	5.2	MG/KG	2.3	6.0
		Boron, Total	2.4	MG/KG	1.2	6.0
		Barium, Total	64.1	MG/KG	0.10	6.0
		Beryllium, Total	0.94	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	6.9	MG/KG	0.46	6.0
		Chromium, Total	9.4	MG/KG	0.36	6.0
		Copper, Total	13.2	MG/KG	0.41	6.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	316	MG/KG	0.10	6.0
		Molybdenum, Total	1.1 UJ	MG/KG	0.82	6.0
		Nickel, Total	10.0	MG/KG	1.1	6.0
		Lead, Total	5.5	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	41.6	MG/KG	0.31	6.0
		Zinc, Total	37.8	MG/KG	0.26	6.0
-002	J03WD9	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	3.3	MG/KG	2.3	6.0
		Boron, Total	1.2 u	MG/KG	1.2	6.0
		Barium, Total	60.6	MG/KG	0.10	6.0
		Beryllium, Total	0.78	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	6.0	MG/KG	0.46	6.0
		Chromium, Total	8.0	MG/KG	0.36	6.0
		Copper, Total	13.0	MG/KG	0.41	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	289	MG/KG	0.10	6.0
		Molybdenum, Total	0.82 u	MG/KG	0.82	6.0
		Nickel, Total	9.1	MG/KG	1.1	6.0
		Lead, Total	5.2	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	33.2	MG/KG	0.31	6.0
		Zinc, Total	33.4	MG/KG	0.26	6.0

9/15/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/17/05

CLIENT: TNU-HANFORD B04-002 LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J03WF0	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	4.7	MG/KG	2.3	6.0
		Boron, Total	1.2 u	MG/KG	1.2	6.0
		Barium, Total	62.9	MG/KG	0.10	6.0
		Beryllium, Total	1.0	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	7.8	MG/KG	0.46	6.0
		Chromium, Total	8.7	MG/KG	0.36	6.0
		Copper, Total	18.0	MG/KG	0.41	6.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	338	MG/KG	0.10	6.0
		Molybdenum, Total	0.82 u	MG/KG	0.82	6.0
		Nickel, Total	11.9	MG/KG	1.1	6.0
		Lead, Total	4.5	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	41.1	MG/KG	0.31	6.0
		Zinc, Total	40.1	MG/KG	0.26	6.0
-004	J03WF1	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	3.3	MG/KG	2.3	6.0
		Boron, Total	1.2 u	MG/KG	1.2	6.0
		Barium, Total	56.9	MG/KG	0.10	6.0
		Beryllium, Total	0.89	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	6.7	MG/KG	0.46	6.0
		Chromium, Total	7.5	MG/KG	0.36	6.0
		Copper, Total	15.2	MG/KG	0.41	6.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	286	MG/KG	0.10	6.0
		Molybdenum, Total	0.87 UJ	MG/KG	0.82	6.0
		Nickel, Total	9.2	MG/KG	1.1	6.0
		Lead, Total	3.8	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	35.4	MG/KG	0.31	6.0
		Zinc, Total	39.7	MG/KG	0.26	6.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/17/05

CLIENT: TNU-HANFORD B04-002 LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J03WF2	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	4.1	MG/KG	2.3	6.0
		Boron, Total	1.2 u	MG/KG	1.2	6.0
		Barium, Total	51.5	MG/KG	0.10	6.0
		Beryllium, Total	0.76	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	5.5	MG/KG	0.46	6.0
		Chromium, Total	8.9	MG/KG	0.36	6.0
		Copper, Total	12.8	MG/KG	0.41	6.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	246	MG/KG	0.10	6.0
		Molybdenum, Total	0.83 u	MG/KG	0.83	6.0
		Nickel, Total	10.0	MG/KG	1.1	6.0
		Lead, Total	3.5	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	31.1	MG/KG	0.31	6.0
		Zinc, Total	32.9	MG/KG	0.26	6.0
-006	J03WF3	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	3.9	MG/KG	2.3	6.0
		Boron, Total	1.2 u	MG/KG	1.2	6.0
		Barium, Total	67.5	MG/KG	0.10	6.0
		Beryllium, Total	1.0	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	7.4	MG/KG	0.46	6.0
		Chromium, Total	7.1	MG/KG	0.36	6.0
		Copper, Total	18.1	MG/KG	0.41	6.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	301	MG/KG	0.10	6.0
		Molybdenum, Total	0.99 UJ	MG/KG	0.82	6.0
		Nickel, Total	10.9	MG/KG	1.1	6.0
		Lead, Total	5.0	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	38.2	MG/KG	0.31	6.0
		Zinc, Total	35.9	MG/KG	0.26	6.0

9/15/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/17/05

CLIENT: TNU-HANFORD B04-002 LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J03WF4	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	4.4	MG/KG	2.3	6.0
		Boron, Total	1.2 u	MG/KG	1.2	6.0
		Barium, Total	55.1	MG/KG	0.10	6.0
		Beryllium, Total	0.67	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	4.9	MG/KG	0.46	6.0
		Chromium, Total	8.3	MG/KG	0.36	6.0
		Copper, Total	11.4	MG/KG	0.41	6.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	229	MG/KG	0.10	6.0
		Molybdenum, Total	0.90 UJ	MG/KG	0.82	6.0
		Nickel, Total	9.1	MG/KG	1.1	6.0
		Lead, Total	2.6	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	27.4	MG/KG	0.31	6.0
		Zinc, Total	28.9	MG/KG	0.26	6.0
-008	J03WF5	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	3.0	MG/KG	2.3	6.0
		Boron, Total	1.2 u	MG/KG	1.2	6.0
		Barium, Total	65.2	MG/KG	0.10	6.0
		Beryllium, Total	0.61	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	5.2	MG/KG	0.46	6.0
		Chromium, Total	7.6	MG/KG	0.36	6.0
		Copper, Total	14.1	MG/KG	0.41	6.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	250	MG/KG	0.10	6.0
		Molybdenum, Total	1.2 UJ	MG/KG	0.83	6.0
		Nickel, Total	8.3	MG/KG	1.1	6.0
		Lead, Total	3.7	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	24.5	MG/KG	0.31	6.0
		Zinc, Total	31.3	MG/KG	0.26	6.0

9/15/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/17/05

CLIENT: TNU-HANFORD B04-002 LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J03WF6	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	2.3 u	MG/KG	2.3	6.0
		Boron, Total	1.2 u	MG/KG	1.2	6.0
		Barium, Total	64.7	MG/KG	0.10	6.0
		Beryllium, Total	0.74	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	5.9	MG/KG	0.46	6.0
		Chromium, Total	6.5	MG/KG	0.36	6.0
		Copper, Total	12.5	MG/KG	0.41	6.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Manganese, Total	285	MG/KG	0.10	6.0
		Molybdenum, Total	0.82 u	MG/KG	0.82	6.0
		Nickel, Total	8.3	MG/KG	1.1	6.0
		Lead, Total	3.1	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	27.6	MG/KG	0.31	6.0
		Zinc, Total	33.4	MG/KG	0.26	6.0
-010	J03WF7	Silver, Total	0.47 u	MG/KG	0.47	6.0
		Arsenic, Total	4.4	MG/KG	2.3	6.0
		Boron, Total	1.7	MG/KG	1.2	6.0
		Barium, Total	75.3	MG/KG	0.10	6.0
		Beryllium, Total	0.70	MG/KG	0.05	6.0
		Cadmium, Total	0.16 u	MG/KG	0.16	6.0
		Cobalt, Total	5.7	MG/KG	0.47	6.0
		Chromium, Total	9.0	MG/KG	0.36	6.0
		Copper, Total	14.5	MG/KG	0.41	6.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Manganese, Total	245	MG/KG	0.10	6.0
		Molybdenum, Total	0.83 u	MG/KG	0.83	6.0
		Nickel, Total	10.4	MG/KG	1.1	6.0
		Lead, Total	6.1	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	25.2	MG/KG	0.31	6.0
		Zinc, Total	40.8	MG/KG	0.26	6.0

9/15/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/17/05

CLIENT: TNU-HANFORD B04-002 LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J03WF8	Silver, Total	0.46 u	MG/KG	0.46	6.0
		Arsenic, Total	7.0	MG/KG	2.3	6.0
		Boron, Total	3.4	MG/KG	1.2	6.0
		Barium, Total	90.5	MG/KG	0.10	6.0
		Beryllium, Total	1.1	MG/KG	0.05	6.0
		Cadmium, Total	0.15 u	MG/KG	0.15	6.0
		Cobalt, Total	9.2	MG/KG	0.46	6.0
		Chromium, Total	13.4	MG/KG	0.36	6.0
		Copper, Total	21.7	MG/KG	0.41	6.0
		Mercury, Total	0.02	MG/KG	0.01	1.0
		Manganese, Total	358	MG/KG	0.10	6.0
		Molybdenum, Total	1.0 UJ	MG/KG	0.81	6.0
		Nickel, Total	16.0	MG/KG	1.1	6.0
		Lead, Total	5.9	MG/KG	1.3	6.0
		Selenium, Total	2.5 u	MG/KG	2.5	6.0
		Vanadium, Total	48.3	MG/KG	0.30	6.0
		Zinc, Total	46.4	MG/KG	0.25	6.0
-012	J03WJ0	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.38 u	MG/KG	0.38	1.0
		Boron, Total	0.41	MG/KG	0.19	1.0
		Barium, Total	0.82	MG/KG	0.02	1.0
		Beryllium, Total	0.009	MG/KG	0.008	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	0.06 u	MG/KG	0.06	1.0
		Copper, Total	0.23 UJ	MG/KG	0.07	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Manganese, Total	2.0	MG/KG	0.02	1.0
		Molybdenum, Total	0.14 u	MG/KG	0.14	1.0
		Nickel, Total	0.19 u	MG/KG	0.19	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
		Vanadium, Total	0.05 u	MG/KG	0.05	1.0
		Zinc, Total	1.2	MG/KG	0.04	1.0

9/15/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B04-002
LVL#: 0508L129
SDG/SAF#: H1428/B04-002
H3312 8/22/05

W.O.#: 11343-606-001-9999-00
Date Received: 08-11-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 12 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All samples, with the exception of sample J03WJ0, were analyzed with 6-fold dilutions for ICP metals due to sample matrix.

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

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

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

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

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Barium was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and sample J03WJ0 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. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the

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 28 pages.

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Inorganics Accuracy Report.

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

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

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/18/05
Date

jjw/m08-129

LVLI
LIONVILLE LABORATORY INC.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-042	Page 1 of 3

Collector: D Bowers w/C Martinez/J Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Price Code: Many	Data Turnaround: 7 day	Air Quality	
Project Designation: 100 HC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 HC		SAF No.: B04-002
Ice Chest No.: ERC-02-403, ERC-02-506 & ERC-96-030	Field Logbook No.: EL 1173-5	COA: R126B32000	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES/ LIONVILLE	Offsite Property No.: A0 50347		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG D	aG E	aG B	aG A	aG C	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250ml.	120ml.	250ml.	250ml.	250ml.	250ml.					
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1					
Sample No. / Matrix * / Sample Date / Sample Time											
J03WD8 / SOIL / 8-9-05 / 0842	X	X	X	X	X	X					
J03WD9 / SOIL / / 0846	X	X	X	X	X	X					
J03WF0 / SOIL / / 0956	X	X	X	X	X	X					
J03WF1 / SOIL / / 0905	X	X	X	X	X	X					
J03WF2 / SOIL / / 0918	X	X	X	X	X	X					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	8-9-05/1530	RCFAB 3728	8-9-05/1530
3728 RCFAB	8/10/05 0900	DAST. John Dunn Silva	8/10/05 0900
DAST John ERC Dunn Silva	8/10/05 0900	FED EX	
Fed Ex	8/11/05 1010	[illegible]	8/11/05 1010

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc]; Mercury - 7470 - (CV)

Matrix *: SO-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)

000019

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		1B04-002-042	Page 2 of 3
Collector: D Bowers w/C Martinez/J Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002	Data Turnaround: Air Quality 7 day
Ice Chest No.: ERC-02-403, ERC-02-506 & ERC-96-030	Field Logbook No.: EL 1173-5	COA: R126B32000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050347		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS: Non Rad

Special Handling and/or Storage: Cool 4°C

Preservation	None	Cool-4C	Cool-4C	Cool-4C	Cool-4C	Cool-4C					
Type of Container	aG	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250ml.	120ml.	250ml.	250ml.	250ml.	250ml.					
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1					
Sample No.	Matrix *	Sample Date	Sample Time								
J03WF3	SOIL	8-9-05	0911	X	X	X	X	X	X		
J03WF4	SOIL	↓	0942	X	X	X	X	X	X		
J03WF5	SOIL		0948	X	X	X	X	X	X		
J03WF6	SOIL		1000	X	X	X	X	X	X		
J03WF7	SOIL	↓	1010	X	X	X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	8-9-05/1730	Ref 2B 3728	8-9-05/1730
3728 Ref 2B	8/10/05 0500	BA St. John Bond St. John	8/10/05 0500
BA St. John Bond St. John	8/10/05 0500	Fed Ex	
Fed Ex	8/11/05 1010	[illegible]	8/11/05 1010

SPECIAL INSTRUCTIONS: TB 8-8-05

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc], Mercury - 7470 - (CV)

Matrix *: S - Soil; SL - Sediment; SO - Solid; SI - Sludge; W - Water; LI - 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)

000020

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B04-002-042	Page 3 of 3
Collector: D Bowersw/C Martinez/J Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, HI	Price Code: Many
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002	Air Quality: 7 day
Ice Chest No.: ERC-02-403, ERC-02-503 + ERC-96-030	Field Logbook No.: FL 1173-5	COA: R126B32000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050347		Bill of Lading/Air Bill No.: SEE OSC	

POSSIBLE SAMPLE HAZARDS/REMARKS: Non Rad

Special Handling and/or Storage: Cool 4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	120mL	250mL	250mL	250mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) 418.1				
Sample No. / Matrix * / Sample Date / Sample Time										
J03WF8 / SOIL / 8-9-05 / 1017	X	X	X	X	X	X				
J03WJ0 / SOIL / 8-9-05 / 0836	X		X	X		X				

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: Doug Bowers Date/Time: 8-9-05/1530	Received By/Stored In: R.F 2B 3728 Date/Time: 8-9-05/1530	(1) ICP Metals - 6010 (Client List) {~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}, Mercury - 7470 - (CV) DJB 8-9-05
Relinquished By/Removed From: 3728 RCF 2B Date/Time: 8/10/05 0900	Received By/Stored In: PASTJOHN Date/Time: 8/10/05 0900	
Relinquished By/Removed From: PASTJOHN ERC Date/Time: 8/10/05 0900	Received By/Stored In: FED EX Date/Time:	
Relinquished By/Removed From: FED EX Date/Time: 8/11/05 1010	Received By/Stored In: [signature] Date/Time: 8/11/05 1010	
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:	
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:	

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)

000021

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100BC 126-B-3			DATA PACKAGE: H3312		
VALIDATOR: TLI		LAB: LLI		DATE: 9/12/03	
			SDG: H3312		

ANALYSES PERFORMED

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

SAMPLES/MATRIX

J03WD8	J03WD9	J03WF0	~~J03WF0~~	J03WF1
J03WF2	J03WF3	J03WF4	J03WF5	J03WF6
J03WF7	J03WF8	J03WJ0		
				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: Cu - JO OJ

moly - all detect - UJ

FB - Boron, barium, beryllium, manganese, 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: 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: all silver over > all but J0
" selenium "

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/17/05

CLIENT: TNU-HANFORD B04-002 LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	05L0470-MB1	Silver, Total	0.14	MG/KG	0.09	1.0
		Arsenic, Total	0.49	MG/KG	0.45	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	0.09	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03	MG/KG	0.03	1.0
		Cobalt, Total	0.09 u	MG/KG	0.09	1.0
		Chromium, Total	0.10	MG/KG	0.07	1.0
		Copper, Total	0.21	MG/KG	0.08	1.0
		Manganese, Total	0.07	MG/KG	0.02	1.0
		Molybdenum, Total	0.24	MG/KG	0.16	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Lead, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.49 u	MG/KG	0.49	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	05C0206-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 08/17/05

CLIENT: TNU-HANFORD B04-002

LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J03WD8	Silver, Total	3.5	0.46u	4.3	81.4	6.0
		Arsenic, Total	169	5.2	172	95.6	6.0
		Boron, Total	77.7	2.4	85.8	87.8	6.0
		Barium, Total	234	64.1	172	99.3	6.0
		Beryllium, Total	5.3	0.94	4.3	101.5	6.0
		Cadmium, Total	4.2	0.15u	4.3	97.7	6.0
		Cobalt, Total	50.4	6.9	42.9	101.4	6.0
		Chromium, Total	26.3	9.4	17.2	98.3	6.0
		Copper, Total	34.1	13.2	21.4	97.7	6.0
		Mercury, Total	0.15	0.01u	0.14	104.2	1.0
		Manganese, Total	350	316	42.9	78.6*	6.0
		Molybdenum, Total	82.5	1.1	85.8	94.9	6.0
		Nickel, Total	53.7	10.0	42.9	101.9	6.0
		Lead, Total	48.7	5.5	42.9	100.7	6.0
		Selenium, Total	166	2.5 u	172	97.0	6.0
		Vanadium, Total	79.8	41.6	42.9	89.0	6.0
		Zinc, Total	80.2	37.8	42.9	98.8	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 08/17/05

CLIENT: TNU-HANFORD B04-002 LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J03WD8	Silver, Total	0.46u	0.46u	NC	6.0
		Arsenic, Total	5.2	3.1	50.6	6.0
		Boron, Total	2.4	1.2 u	~~NC~~ 200	6.0
		Barium, Total	64.1	59.9	6.8 MW 8/17/05	6.0
		Beryllium, Total	0.94	0.84	10.6	6.0
		Cadmium, Total	0.15u	0.15u	NC	6.0
		Cobalt, Total	6.9	6.7	2.9	6.0
		Chromium, Total	9.4	7.7	19.9	6.0
		Copper, Total	13.2	12.9	2.3	6.0
		Mercury, Total	0.01u	0.01u	NC	1.0
		Manganese, Total	316	309	2.3	6.0
		Molybdenum, Total	1.1	0.82u	~~NC~~ 200 MW 8/17/05	6.0
		Nickel, Total	10.0	9.9	1.0	6.0
		Lead, Total	5.5	4.4	22.2	6.0
		Selenium, Total	2.5 u	2.5 u	NC	6.0
		Vanadium, Total	41.6	35.0	17.2	6.0
		Zinc, Total	37.8	34.5	9.1	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/17/05

CLIENT: TNU-HANFORD B04-002

LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	05L0470-LC1	Silver, LCS	49.7	50.0	MG/KG	99.4
		Arsenic, LCS	945	1000	MG/KG	94.5
		Boron, LCS	483	500	MG/KG	96.6
		Barium, LCS	499	500	MG/KG	99.9
		Beryllium, LCS	24.7	25.0	MG/KG	98.8
		Cadmium, LCS	24.1	25.0	MG/KG	96.4
		Cobalt, LCS	247	250	MG/KG	98.9
		Chromium, LCS	49.9	50.0	MG/KG	99.8
		Copper, LCS	126	125	MG/KG	100.9
		Manganese, LCS	74.1	75.0	MG/KG	98.8
		Molybdenum, LCS	496	500	MG/KG	99.2
		Nickel, LCS	195	200	MG/KG	97.3
		Lead, LCS	241	250	MG/KG	96.5
		Selenium, LCS	942	1000	MG/KG	94.2
		Vanadium, LCS	249	250	MG/KG	99.5
		Zinc, LCS	96.9	100	MG/KG	96.9
LCS1	05C0206-LC1	Mercury, LCS	6.8	6.2	MG/KG	110.2

Date: 15 September 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 BC Burial Grounds – Soil Full Protocol – Waste Site 126-B-3
Subject: Wet Chemistry - Data Package No. H3312-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3312-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	Matrix	Validation	Notes
J03WD8	8/9/05	Soil	C	See note 1
J03WD9	8/9/05	Soil	C	See note 1
J03WF0	8/9/05	Soil	C	See note 1
J03WF1	8/9/05	Soil	C	See note 1
J03WF2	8/9/05	Soil	C	See note 1
J03WF3	8/9/05	Soil	C	See note 1
J03WF4	8/9/05	Soil	C	See note 1
J03WF5	8/9/05	Soil	C	See note 1
J03WF6	8/9/05	Soil	C	See note 1
J03WF7	8/9/05	Soil	C	See note 1
J03WF8	8/9/05	Soil	C	See note 1
J03WJ0	8/9/05	Soil	C	See note 1

1 - Total petroleum hydrocarbons (TPH) by 418.1 and chromium VI by 4197A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are

as follows: Soil samples must be analyzed within 30 days for chromium VI and 14 days for TPH.

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 acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed 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. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

One field blank (J03WJ0) was submitted for analysis. No analytes were detected in the field blank.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

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

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicate samples (J03WD8/J03WD9) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All TPH results exceeded the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H3312-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

All TPH 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.

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H3312	REVIEWER: TLI	Project: 126-B-3	PAGE 1 OF 1
Comments: No qualifiers assigned			

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Laboratory: LLI	SDG: H3312																				
Sample Number		J03WD8		J03WD9		J03WF0		J03WF1		J03WF2		J03WF3		J03WF4		J03WF5		J03WF6		J03WF7	
Remarks				Duplicate																	
Sample Date		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.5	0.20	U	0.29		0.26		0.21		0.23		0.31		0.22		0.43		8.5		2.0	
Total petroleum hydrocarbons	5	133	U	133	U	133	U	134	U	134	U	134	U	133	U	133	U	133	U	134	U
Sample Number		J03WF8		J03WJ0																	
Remarks				E. Blank																	
Sample Date		8/9/05		8/9/05																	
Wet Chemistry	RQL	Result	Q	Result	Q																
Chromium VI	0.5	2.1		NA																	
Total petroleum hydrocarbons	5	133	U	133	U																
NA = Not analyzed																					

000010

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/24/05

CLIENT: TNUHANFORD B04-002 H3312 LVL LOT #: 0508L129
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J03WD8	% Solids	99.6		%	0.01	1.0
		Chromium VI	0.20	u	MG/KG	0.20	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-002	J03WD9	% Solids	99.6		%	0.01	1.0
		Chromium VI	0.29		MG/KG	0.20	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-003	J03WF0	% Solids	99.3		%	0.01	1.0
		Chromium VI	0.26		MG/KG	0.20	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-004	J03WF1	% Solids	99.3		%	0.01	1.0
		Chromium VI	0.21		MG/KG	0.20	1.0
		Petroleum Hydrocarbons	134	u	MG/KG	134	1.0
-005	J03WF2	% Solids	99.4		%	0.01	1.0
		Chromium VI	0.23		MG/KG	0.20	1.0
		Petroleum Hydrocarbons	134	u	MG/KG	134	1.0
-006	J03WF3	% Solids	99.1		%	0.01	1.0
		Chromium VI	0.31		MG/KG	0.20	1.0
		Petroleum Hydrocarbons	134	u	MG/KG	134	1.0
-007	J03WF4	% Solids	99.7		%	0.01	1.0
		Chromium VI	0.22		MG/KG	0.20	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-008	J03WF5	% Solids	99.4		%	0.01	1.0
		Chromium VI	0.43		MG/KG	0.20	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-009	J03WF6	% Solids	99.5		%	0.01	1.0
		Chromium VI	8.5		MG/KG	2.0	10.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-010	J03WF7	% Solids	99.1		%	0.01	1.0
		Chromium VI	2.0	u	MG/KG	2.0	10.0
		Petroleum Hydrocarbons	134	u	MG/KG	134	1.0

9/15/05

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 08/24/05

CLIENT: TNUHANFORD B04-002 H3312 LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J03WF8	% Solids	99.3		%	0.01	1.0
		Chromium VI	2.1		MG/KG	2.0	10.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
-012	J03WJ0	% Solids	100		%	0.01	1.0
		Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

9/15/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFROD B04-002 H3312
LVL#: 0508L129

W.O.#: 11343-606-001-9999-00
Date Received: 08-11-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 12 soil samples.

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

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

3. Sample holding times as required by the method and/or contract were met.

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

7. The matrix spike recoveries for Petroleum Hydrocarbons (PHC) and Chromium VI were within the 75-125% control limits.

8. The replicate analyses for PHC, Chromium VI and Percent Solids were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry weight basis. a wet weight basis. Total Organic Carbon samples are dried prior to analysis.

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 package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/24/05
Date

njp\i08-129

The results presented in this report relate to the analytical testing and conditions of the samples upon 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 17 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		B04-002-042	Page 1 of 3
Collector: D Bowersw/C Martinez/J Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many — Data Turnaround: 7 day
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002	Air Quality:
Ice Chest No.: ERC-02-403, ERC-02-506 + ERC-96-030	Field Logbook No.: EL 1173-5	COA: R126B32000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A050347		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG D	aG E	aG B	aG A	aG C	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	120mL	250mL	250mL	250mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1				

Sample No.	Matrix *	Sample Date	Sample Time	DJB 8-9-05									
J03WD8	SOIL	8-9-05	0842	X	X	X	X	X	X				
J03WD9	SOIL		0846	X	X	X	X	X	X				
J03WF0	SOIL		0856	X	X	X	X	X	X				
J03WF1	SOIL		0905	X	X	X	X	X	X				
J03WF2	SOIL		0918	X	X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers Bowers	Date/Time: 8-9-05/1570	Received By/Stored In: RCF 2B 3728	Date/Time: 8-9-05/1570
Relinquished By/Removed From: 3728 RCF 2B	Date/Time: 8/10/05 0900	Received By/Stored In: DA ST. JOHN [signature]	Date/Time: 8/10/05 0900
Relinquished By/Removed From: DA ST JOHN ERC [signature]	Date/Time: 8/10/05 0900	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 8/11/05 1010	Received By/Stored In: [signature]	Date/Time: 8/11/05 1010
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS DJB 8-9-05

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc]; Mercury - 7470 - (CV)

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

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

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

000015

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-042	Page 2 of 3

Collector: D Bowersw/C Martinez/J Kiesler	Company Contact: Doug Bowers — Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many — Data Turnaround: 10
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC	SAF No.: B04-002	Air Quality: 7 day
Ice Chest No.: ERC-02-403, ERC-02-506 & ERC-96-030	Field Logbook No.: EL 1173-5 — COA: R126B32000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050347	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS: Non Rad

Special Handling and/or Storage: Cool 4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	120mL	250mL	250mL	250mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) 418.1				

Sample No.	Matrix *	Sample Date	Sample Time										
J03WF3	SOIL	8-9-05	0931	X	X	X	X	X	X				
J03WF4	SOIL		0942	X	X	X	X	X	X				
J03WF5	SOIL		0949	X	X	X	X	X	X				
J03WF6	SOIL		1000	X	X	X	X	X	X				
J03WF7	SOIL		1018	X	X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers Bowers — Date/Time: 8-9-05/1530	Received By/Stored In: Ref 2B 3728 — Date/Time: 8-9-05/1530		
Relinquished By/Removed From: 3728 REF 2B — Date/Time: 8/10/05 0900	Received By/Stored In: RA St. John David St. — Date/Time: 8/10/05 0900		
Relinquished By/Removed From: RA St John Erc David St. — Date/Time: 8/10/05 0900	Received By/Stored In: FED EX		
Relinquished By/Removed From: FED EX — Date/Time: 8/11/05 1010	Received By/Stored In: [signature] — Date/Time: 8/11/05 1010		
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:		
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:		

SPECIAL INSTRUCTIONS: TB 8-9-05

(1) ICP Metals - 6010 (Client List) [~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc], Mercury - 7470 - (CV)

Matrix *: S-Soil, Sc-Sediment, SO-Solid, St-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)

000016

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-042	Page 3 of 3

Collector: D Bowersw/C Martinez/J Kiesler	Company Contact: Doug Bowers — Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many — Data Turnaround: 7 day
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC	SAF No.: B04-002	Air Quality
Ice Chest No.: ERC-02-403, ERC-02-503 + ERC-96-030	Field Logbook No.: EL 1173-5 — COA: R126B32000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050347	Bill of Lading/Air Bill No.: SEE OSC	

POSSIBLE SAMPLE HAZARDS/REMARKS: Non Rad

Special Handling and/or Storage: Cool 4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	120mL	250mL	250mL	250mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1				

Sample No.	Matrix *	Sample Date	Sample Time										
J03WF8	SOIL	8-9-05	1017	X	X	X	X	X	X				
J03WJ0	SOIL	8-9-05	0836	X		X	X		X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers Bowers — Date/Time: 8-9-05/1530	Received By/Stored In: R.F 2B 3728 — Date/Time: 8-9-05/1530		
Relinquished By/Removed From: 3728 RCF 2B — Date/Time: 8/10/05 0900	Received By/Stored In: PAST JOHN [signature] — Date/Time: 8/10/05 0900		
Relinquished By/Removed From: PAST JOHN ERC [signature] — Date/Time: 8/10/05 0900	Received By/Stored In: FED EX — Date/Time:		
Relinquished By/Removed From: [signature] — Date/Time: 8/11/05 1010	Received By/Stored In: [signature] — Date/Time: 8/11/05 1010		
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:		
Relinquished By/Removed From: — Date/Time:	Received By/Stored In: — Date/Time:		

SPECIAL INSTRUCTIONS: DTD 8-9-05

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}, Mercury - 7470 - (CV)

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

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

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

000017

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100BC 126-B-3			DATA PACKAGE: H3312		
VALIDATOR: TLI		LAB: LLI		DATE: 9/10/05	
			SDG: H3312		

ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		

SAMPLES/MATRIX					
J03WD8	J03WD9	J03WF0	J03WF1	J03WF2	~~J03WF3~~
~~J03WF3~~	J03WF3	J03WF4	J03WF5	J03WF6	
J03WF7	J03WP8	J03WJ0			
					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)

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: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

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

Spike samples analyzed? ..... Yes No N/A

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

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

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

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

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

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

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

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

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

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

Comments: No PAS

GENERAL CHEMISTRY 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. HOLDING TIMES (all levels)

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?..... Yes No N/A

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

Samples properly prepared? (Levels D, E)..... Yes No N/A

Detection limits meet RDL?..... Yes No N/A

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

Comments: all TPH over

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/24/05

CLIENT: TNUHANFORD B04-002 H3312 LVL LOT #: 0508L129
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LVI051-MB1	Chromium VI	0.20	u	MG/KG	0.20	1.0
BLANK10	05LHC050-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 08/24/05

CLIENT: TNUHANFORD B04-002 H3312 LVL LOT #: 0508L129
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J03WD9	Petroleum Hydrocarbons	528	7.4	561	92.9	1.0
-003	J03WF0	Soluble Chromium VI	4.4	0.26	4.0	101.7	1.0
		Insoluble Chromium VI	1370	0.26	1280	107.4	100
BLANK10	05LVI051-MB1	Soluble Chromium VI	4.1	0.20u	4.0	102.2	1.0
		Insoluble Chromium VI	1230	0.20u	1180	104.3	100
BLANK10	05LHC050-MB1	Petroleum Hydrocarbons	491	133 u	560	87.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 08/24/05

CLIENT: TNUHANFORD B04-002 H3312

LVL LOT #: 0508L129

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	J03WD9	Petroleum Hydrocarbons	133 u	134 u	NC	1.0
-003REP	J03WF0	Chromium VI	0.26	0.22	18.1	1.0
-012REP	J03WJ0	% Solids	100	100	0.030	1.0

Date: 15 September 2005
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 BC Burial Grounds – Soil Full Protocol – Waste Site 126-B-3
Subject: Pesticide/PCB - Data Package No. H3312-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3312-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	Matrix	Validation	Notes
J03WD8	8/9/05	Soil	C	See note 1
J03WD9	8/9/05	Soil	C	See note 1
J03WF0	8/9/05	Soil	C	See note 1
J03WF1	8/9/05	Soil	C	See note 1
J03WF2	8/9/05	Soil	C	See note 1
J03WF3	8/9/05	Soil	C	See note 1
J03WF4	8/9/05	Soil	C	See note 1
J03WF5	8/9/05	Soil	C	See note 1
J03WF6	8/9/05	Soil	C	See note 1
J03WF7	8/9/05	Soil	C	See note 1
J03WF8	8/9/05	Soil	C	See note 1
J03WJ0	8/9/05	Soil	C	See note 2

1 – PCBs by 8082 and pesticides by 8081A.
2 – PCBs by 8082.

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

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

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

All holding times were acceptable.

- **Method Blank**

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

All method blank results were acceptable.

Field Blanks

One equipment blank (J03WJ0) 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 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

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

All other accuracy results were acceptable.

Surrogate Recovery

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

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 a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

Field Duplicate Samples

One set of field duplicate samples (J03WD8/J03WD9) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All toxaphene results exceeded the RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data Package No. H3312-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 LCS, matrix spike and matrix spike duplicate 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.

All 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.

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

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: H3312	REVIEWER: TLI	Project: 126-B-3	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No LCS/MS/MSD

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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

Project: BECHTEL-HANFORD																					
Laboratory: LLI	SDG: H3312																				
Sample Number		J03WD8		J03WD9		J03WF0		J03WF1		J03WF2		J03WF3		J03WF4		J03WF5		J03WF6		J03WF7	
Remarks				Duplicate																	
Sample Date		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05	
Extraction Date		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05	
Analysis Date		8/12/05		8/12/05		8/12/05		8/12/05		8/13/05		8/13/05		8/13/05		8/13/05		8/13/05		8/13/05	
PCB/Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1221	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1232	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1242	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1248	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1254	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Aroclor-1260	20	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U	53		23	
Sample Date		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05		8/9/05	
Extraction Date		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05		8/11/05	
Analysis Date		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05		8/12/05	
Alpha-BHC	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.4	U
Beta-BHC	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	2.5		9.0	
Delta-BHC	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.4	U
Gamma-BHC (Lindane)	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.4	U
Heptachlor	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.4	U
Aldrin	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.4	U
Heptachlor Epoxide	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.4	U
Endosulfan I	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.4	U
Dieldrin	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.4	U
4,4'-DDE	20	3.3	U	3.3	U	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.4	U	3.4	U	17	U
Endrin	20	3.3	U	3.3	U	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.4	U	3.4	U	17	U
Endosulfan II	20	3.3	U	3.3	U	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.4	U	3.4	U	17	U
4,4'-DDD	20	3.3	U	3.3	U	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.4	U	2.9		17	U
Endosulfan Sulfate	20	3.3	U	3.3	U	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.4	U	3.4	U	2.8	
4,4'-DDT	20	3.3	U	3.3	U	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.4	U	3.4	U	6.2	
Methoxychlor	20	17	U	17	U	17	U	17	U	17	U	17	U	17	U	17	U	17	U	84	U
Endrin Ketone	20	3.3	U	3.3	U	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.4	U	3.4	U	1.9	
Endrin Aldehyde	20	3.3	U	3.3	U	3.4	U	3.3	U	3.4	U	3.4	U	3.3	U	3.4	U	3.4	U	2.6	
alpha-Chlordane	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	8.4	U
gamma-Chlordane	20	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	2.4	
Toxaphene	20	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	170	UJ	840	UJ

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.

000011

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

Project: BECHTEL-HANFORD																							
Laboratory: Lionville Laboratory Inc.																							
Case:	SDG: H3312																						
Sample Number		J03WF8		J03WJ0																			
Remarks																							
Sample Date		8/9/05		8/9/05																			
Extraction Date		8/11/05		8/11/05																			
Analysis Date		8/12/05		8/12/05																			
PCB/Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	13	U	13	U																		
Aroclor-1221	20	13	U	13	U																		
Aroclor-1232	20	13	U	13	U																		
Aroclor-1242	20	13	U	13	U																		
Aroclor-1248	20	13	U	13	U																		
Aroclor-1254	20	13	U	13	U																		
Aroclor-1260	20	13	U	13	U																		
Sample Date		8/9/05																					
Extraction Date		8/11/05																					
Analysis Date		8/13/05																					
Alpha-BHC	20	1.7	U	NA																			
Beta-BHC	20	1.7	U	NA																			
Delta-BHC	20	1.7	U	NA																			
Gamma-BHC (Lindane)	20	1.7	U	NA																			
Heptachlor	20	1.7	U	NA																			
Aldrin	20	1.7	U	NA																			
Heptachlor Epoxide	20	1.7	U	NA																			
Endosulfan I	20	1.7	U	NA																			
Dieldrin	20	1.7	U	NA																			
4,4'-DDE	20	3.4	U	NA																			
Endrin	20	3.4	U	NA																			
Endosulfan II	20	3.4	U	NA																			
4,4'-DDD	20	3.4	U	NA																			
Endosulfan Sulfate	20	3.4	U	NA																			
4,4'-DDT	20	3.4	U	NA																			
Methoxychlor	20	17	U	NA																			
Endrin Ketone	20	3.4	U	NA																			
Endrin Aldehyde	20	3.4	U	NA																			
alpha-Chlordane	20	1.7	U	NA																			
gamma-Chlordane	20	1.7	U	NA																			
Toxaphene	20	170	UJ	NA																			

000012

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

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 08/15/05 13:00

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 1

	Cust ID:	J03WD8	J03WD8	J03WD8	J03WD9	J03WF0	J03WF1
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	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	82 %	94 %	85 %	79 %	84 %	84 %
	Decachlorobiphenyl	88 %	99 %	90 %	86 %	88 %	90 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	111 %	102 %	13 U	13 U	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	105 %	99 %	13 U	13 U	13 U

	Cust ID:	J03WF2	J03WF3	J03WF4	J03WF5	J03WF6	J03WF7
Sample Information	RFW#:	005	006	007	008	009	010
	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 %	89 %	82 %	83 %	78 %	76 %
	Decachlorobiphenyl	85 %	95 %	90 %	94 %	93 %	92 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1221		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U	13 U	13 U	13 U
Aroclor-1260		13 U	13 U	13 U	13 U	53	23

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

9/15/05

000013

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 08/15/05 13:00

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 2

	Cust ID:	J03WF8	J03WJ0	PBLKRK	PBLKRK BS
Sample Information	RFW#:	011	012	05LE0670-MB1	05LE0670-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	85 %	90 %	84 %	91 %
	Decachlorobiphenyl	92 %	95 %	89 %	97 %
Aroclor-1016		13 U	13 U	13 U	110 %
Aroclor-1221		13 U	13 U	13 U	13 U
Aroclor-1232		13 U	13 U	13 U	13 U
Aroclor-1242		13 U	13 U	13 U	13 U
Aroclor-1248		13 U	13 U	13 U	13 U
Aroclor-1254		13 U	13 U	13 U	13 U
Aroclor-1260		13 U	13 U	13 U	104 %

9/15/05

9/15/05

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

000014

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List

Report Date: 08/16/05 13:09

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 1

	Cust ID:	J03WD8	J03WD8	J03WD8	J03WD9	J03WF0	J03WF1
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	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:	Decachlorobiphenyl	84 %	89 %	88 %	89 %	86 %	82 %
	Tetrachloro-m-xylene	87 %	93 %	91 %	91 %	86 %	89 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	105 %	104 %	1.7 U	1.7 U	1.7 U
Beta-BHC		1.7 U	106 %	105 %	1.7 U	1.7 U	1.7 U
Delta-BHC		1.7 U	109 %	109 %	1.7 U	1.7 U	1.7 U
gamma-BHC (Lindane)		1.7 U	104 %	103 %	1.7 U	1.7 U	1.7 U
Heptachlor		1.7 U	91 %	91 %	1.7 U	1.7 U	1.7 U
Aldrin		1.7 U	100 %	100 %	1.7 U	1.7 U	1.7 U
Heptachlor epoxide		1.7 U	98 %	99 %	1.7 U	1.7 U	1.7 U
Endosulfan I		1.7 U	101 %	101 %	1.7 U	1.7 U	1.7 U
Dieldrin		1.7 U	102 %	102 %	1.7 U	1.7 U	1.7 U
4,4'-DDE		3.3 U	92 %	98 %	3.3 U	3.4 U	3.4 U
Endrin		3.3 U	103 %	103 %	3.3 U	3.4 U	3.4 U
Endosulfan II		3.3 U	139 * %	149 * %	3.3 U	3.4 U	3.4 U
4,4'-DDD		3.3 U	130 * %	140 * %	3.3 U	3.4 U	3.4 U
Endosulfan sulfate		3.3 U	101 %	103 %	3.3 U	3.4 U	3.4 U
4,4'-DDT		3.3 U	72 %	80 %	3.3 U	3.4 U	3.4 U
Methoxychlor		17 U	94 %	94 %	17 U	17 U	17 U
Endrin ketone		3.3 U	101 %	103 %	3.3 U	3.4 U	3.4 U
Endrin aldehyde		3.3 U	77 %	80 %	3.3 U	3.4 U	3.4 U
alpha-Chlordane		1.7 U	99 %	100 %	1.7 U	1.7 U	1.7 U
gamma-Chlordane		1.7 U	99 %	101 %	1.7 U	1.7 U	1.7 U
Toxaphene		170 U J	170 U	170 U	170 U J	170 U J	170 U J

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

9/15/05

000015

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 08/16/05 13:09

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 2

	Cust ID:	J03WF2	J03WF3	J03WF4	J03WF5	J03WF6	J03WF7
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	5.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	84 %	92 %	89 %	89 %	81 %	88 %
	Tetrachloro-m-xylene	84 %	93 %	86 %	88 %	86 %	104 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U
Beta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	2.5	9.0 .I
Delta-BHC		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U
gamma-BHC (Lindane)		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U
Heptachlor		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U
Aldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U
Heptachlor epoxide		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U
Endosulfan I		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U
Dieldrin		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U
4,4'-DDE		3.4 U	3.4 U	3.3 U	3.4 U	3.4 U	17 U
Endrin		3.4 U	3.4 U	3.3 U	3.4 U	3.4 U	17 U
Endosulfan II		3.4 U	3.4 U	3.3 U	3.4 U	3.4 U	17 U
4,4'-DDD		3.4 U	3.4 U	3.3 U	3.4 U	3.4 U	17 U
Endosulfan sulfate		3.4 U	3.4 U	3.3 U	3.4 U	2.9 J	2.8 J
4,4'-DDT		3.4 U	3.4 U	3.3 U	3.4 U	3.4 U	6.2 J
Methoxychlor		17 U	17 U	17 U	17 U	17 U	84 U
Endrin ketone		3.4 U	3.4 U	3.3 U	3.4 U	3.4 U	1.9 J
Endrin aldehyde		3.4 U	3.4 U	3.3 U	3.4 U	3.4 U	2.6 J
alpha-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.4 U
gamma-Chlordane		1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	2.4 .I
Toxaphene		170 U J	170 U J	170 U J	170 U J	170 U J	840 U J

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

9/15/05 K

000016

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List

Report Date: 08/16/05 13:09

RFW Batch Number: 0508L129 Client: TNU-HANFORD B04-002 Work Order: 11343606001 Page: 3

	Cust ID:	J03WF8	PBLKRK	PBLKRK BS
Sample Information	RFW#:	011	05LE0670-MB1	05LE0670-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG

Surrogate:	Decachlorobiphenyl	86	%			81	%			86	%																		
	Tetrachloro-m-xylene	95	%			89	%			92	%																		
Alpha-BHC		1.7	U			1.7	U			106	%																		
Beta-BHC		1.7	U			1.7	U			108	%																		
Delta-BHC		1.7	U			1.7	U			108	%																		
gamma-BHC (Lindane)		1.7	U			1.7	U			103	%																		
Heptachlor		1.7	U			1.7	U			84	%																		
Aldrin		1.7	U			1.7	U			100	%																		
Heptachlor epoxide		1.7	U			1.7	U			100	%																		
Endosulfan I		1.7	U			1.7	U			100	%																		
Dieldrin		1.7	U			1.7	U			101	%																		
4,4'-DDE		3.4	U			3.3	U			103	%																		
Endrin		3.4	U			3.3	U			95	%																		
Endosulfan II		3.4	U			3.3	U			142	* %																		
4,4'-DDD		3.4	U			3.3	U			135	* %																		
Endosulfan sulfate		3.4	U			3.3	U			100	%																		
4,4'-DDT		3.4	U			3.3	U			93	%																		
Methoxychlor		17	U			17	U			84	%																		
Endrin ketone		3.4	U			3.3	U			100	%																		
Endrin aldehyde		3.4	U			3.3	U			85	%																		
alpha-Chlordane		1.7	U			1.7	U			101	%																		
gamma-Chlordane		1.7	U			1.7	U			101	%																		
Toxaphene		170	U J			170	U			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

9/15/05

9/15/05

000017

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B04-002
LVL #: 0508L129
SDG/SAF # H3312 /B04-002

W.O. #: 11343-606-001-9999-00
Date Received: 08-11-2005

PCB

Twelve (12) soil samples were collected on 08-09-2005.

The samples and their associated QC samples were extracted on 08-11-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 08-12,13-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received 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. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. 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.
11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/19/05
Date

som\r:\group\data\pest\tnu hanford\0508-129.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 1 1 pages.

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

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD B04-002
LVL #: 0508L129
SDG/SAF # H3312 /B04-002

W.O. #: 11343-606-001-9999-00
Date Received: 08-11-2005

CHLORINATED PESTICIDES

Eleven (11) soil samples were collected on 08-09-2005.

The samples and their associated QC samples were extracted on 08-11-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 08-12,13-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. Two (2) of twenty (20) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. Four (4) forty (40) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. Sample J03WF7 required a 5-fold dilution due to the matrix interferences.
9. The initial calibrations associated with this data set were within acceptance criteria.
10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
12. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/19/05
Date

som\r:\group\data\pest\tnu hanford\0508-129.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 1 3 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR#: 0506 397

Initiator: M Metrally
Date: 8/16/05
Client: Tru Hanford

Batch: 0508L129
Samples: MS, MSD, DS
Method: SW846/MCAWW/CLP/

Parameter: 060814
Matrix: Soil
Prep Batch: 0525 0670

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

- MS HIGH for Recoveries of Endo II @ 139% (range: 50 - 120), and DDD @ 130% (range: 50 - 120),
- MSD HIGH for Recoveries of Endo II @ 149% and DDD @ 140%.
- DS HIGH for Recoveries of Endo II @ 142% and DDD @ 135%
- Blank was clean. No hits for Endo II or DDD in samples.

2. Known or Probable Causes(s)

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

Other Description:
Narrative

8/17/05

4. Project Manager Instructions...signature/date: _____
✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

8/18/05

5. Final Action...signature/date: _____
__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

000021

QA-105-A-0801

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B04-002-042	Page 1 of 3
Collector: D Bowers w/C Martinez/J Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many — Data Turnaround: Air Quality 7 day
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002	
Ice Chest No.: ERC-02-403, ERC-02-506 & ERC-96-030	Field Logbook No.: EL 1173-5	COA: R126B32000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A050347		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS: Non Rad

Special Handling and/or Storage: Cool 4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG D	aG E	aG B	aG A	aG C	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	120mL	250mL	250mL	250mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1				

Sample No.	Matrix *	Sample Date	Sample Time										
J03WD8	SOIL	8-9-05	0842	X	X	X	X	X	X				
J03WD9	SOIL		0846	X	X	X	X	X	X				
J03WF0	SOIL		0856	X	X	X	X	X	X				
J03WF1	SOIL		0905	X	X	X	X	X	X				
J03WF2	SOIL		0918	X	X	X	X	X	X				

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: Doug Bowers	Date/Time: 8-9-05/1570	Received By/Stored In: RCF 2B 3728	Date/Time: 8-9-05/1570
Relinquished By/Removed From: 3728 RCF 2B	Date/Time: 8/10/05 0900	Received By/Stored In: DA St. John	Date/Time: 8/10/05 0900
Relinquished By/Removed From: DA St John ERC	Date/Time: 8/10/05 0900	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 8/11/05 1010	Received By/Stored In: [signature]	Date/Time: 8/11/05 1010
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS: DJB 8-9-05

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}: Mercury - 7470 - (CV)

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)

000022

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B04-002-042	Page 2 of 3

Collector: D Bowers w/C Martinez/J Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH
Price Code: Many	Data Turnaround: Air Quality 7 day		
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002
Ice Chest No.: ERC-02-403, ERC-02-506 & ERC-96-030	Field Logbook No.: FL 1173-5	COA: R126B32000	Method of Shipment: Fed Ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050347		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS: Non Rad

Special Handling and/or Storage: Cool 4°C

Preservation	None	Cool-4C	Cool-4C	Cool-4C	Cool-4C	Cool-4C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	120mL	250mL	250mL	250mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) 418.1				
Sample No. / Matrix * / Sample Date / Sample Time										
J03WF3 / SOIL / 8-9-05 / 0911	X	X	X	X	X	X				
J03WF4 / SOIL /	X	X	X	X	X	X				
J03WF5 / SOIL /	X	X	X	X	X	X				
J03WF6 / SOIL /	X	X	X	X	X	X				
J03WF7 / SOIL /	X	X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: Doug Bowers	Doug Bowers	8-9-05 / 1730	Ref 2B 3728	8-9-05 / 1530
Relinquished By/Removed From: 3728 REF 2B		8/10/05 0500	RA Sit Joan / David Sa	8/10/05 0500
Relinquished By/Removed From: RA Sit Joan / David Sa		8/10/05 0500	Ref 2B	
Relinquished By/Removed From: Ref 2B		8/11/05 1010	[illegible]	8/11/05 1010
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS: DB 8-8-05

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}, Mercury - 7470 - (CV)

Matrix *: S-Soil; SL-Sediment; SO-Solid; SS-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)

000023

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B04-002-042	Page 1 of 3
Collector: D Bowersw/C Martinez/J Kiesler	Company Contact: Doug Bowers	Telephone No.: 531-0701	Project Coordinator: KESSNER, JH	Price Code: Many
Project Designation: 100 BC Burial Grounds - Soil Full Protocol	Sampling Location: 126-B-3 @ 100 BC		SAF No.: B04-002	Air Quality: 7 day
Ice Chest No.: ERC-02-403 ERC-02-503 + ERC-96-030	Field Logbook No.: EL 1173-5	COA: R126B32000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A050347		Bill of Lading/Air Bill No.: SEE OSC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Non Rad

Special Handling and/or Storage

Cool 4°C

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250mL	120mL	250mL	250mL	250mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	Pesticides - 8081	TPH (Total) - 418.1				

Sample No.	Matrix *	Sample Date	Sample Time										
J03WF8	SOIL	8-9-05	1017	X	X	X	X	X	X				
J03WJ0	SOIL	8-9-05	0816	X		X	X		X				

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: Doug Bowers Bowers	Date/Time: 8-9-05/1530	Received By/Stored In: R.F 2B 3728	Date/Time: 8-9-05/1530
Relinquished By/Removed From: 3728 RCF 2B	Date/Time: 8/10/05 0900	Received By/Stored In: PAST JOHN [signature]	Date/Time: 8/10/05 0900
Relinquished By/Removed From: PAST JOHN ERC [signature]	Date/Time: 8/10/05 0900	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: [signature]	Date/Time: 8/11/05 1010	Received By/Stored In: [signature]	Date/Time: 8/11/05 1010
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

DJB 8-9-05

(1) ICP Metals - 6010 (Client List) {~~Aluminum~~, ~~Antimony~~, Arsenic, Barium, Beryllium, Boron, Cadmium, ~~Calcium~~, Chromium, Cobalt, Copper, ~~Iron~~, Lead, ~~Magnesium~~, Manganese, Molybdenum, Nickel, ~~Potassium~~, Selenium, ~~Silicon~~, Silver, ~~Sodium~~, Vanadium, Zinc}, Mercury - 7470 - (CV)

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)

000024

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100Bc - 12L-B-3			DATA PACKAGE: H3312		
VALIDATOR: TLI		LAB: LCI		DATE: 9/11/05	
			SDG: H3312		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J03WD8	J03WD9	J03WF0	J03WF1	J03WF2	
J03WF3	J03WF4	J03WF5	J03WF6	J03WF7	
J03WF8	J03WJ0				
					50:1

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

Comments: _____

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

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

Surrogates analyzed? ..... Yes No N/A

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no RPS

no toxaphene MS/MSD/LCS – J all

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no toxaphene 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:

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: all toxaphene over

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: