

SAF-B01-054
100 B/C Area Effluent Pipeline & Proximity Site
Remediation Activities - Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jill Thompson

BT 5/13
INITIAL/DATE

Jeanette Duncan

BT 5/13
INITIAL/DATE

H2135

Waste Site/Sample Location: 1607-B-8 Septic System

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JUL 14 2003

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Date: 25 April 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-BC Area Effluent Pipeline & Proximity Site Remediation Activities - Full Protocol - Waste Site 1607-B8
Subject: Semivolatile - Data Package No. H2135-LLI (SDG No. H2135)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2135-LLI prepared by Lionville Laboratory Incorporated (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	Analysis
J00K35	3/31/03	Soil	C	See note 1
J00K36	3/31/03	Soil	C	See note 1
J00K37	3/31/03	Soil	C	See note 1
J00K38	3/31/03	Soil	C	See note 1
J00K39	3/31/03	Soil	C	See note 1
J00K40	3/31/03	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 December 2001) and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 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

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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: Water samples must be extracted within 7 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".

All method blank results were acceptable.

Field Blanks

One equipment blank (J00K40) was submitted for analysis. All field blank results were acceptable.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All matrix spike/matrix spike duplicate results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates

and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to an RPD outside QC limits (47%), all n-nitroso-di-n-propylamine related compounds (4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline and 3,3-dichlorobenzidine) were qualified as estimates and flagged "J".

All other MS/MSD RPD results were acceptable.

Field Duplicate Samples

One set of field duplicate samples (JOOK37/JOOK38) were submitted for analysis. Field duplicate results 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 detection limits (RDL's) to ensure that laboratory detection levels meet the required criteria. All undetected sample results (except 57 analytes in sample JOOK40) exceeded the RDL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data package No. H2135-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 an RPD outside QC limits (47%), all n-nitroso-di-n-propylamine related compounds (4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline and 3,3-dichlorobenzidine) were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the BHI validation SOW, 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 undetected sample results (except 57 analytes in sample J00K40) exceeded the RDL. Under the BHI statement of work, no qualification is required.

REFERENCES

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

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

DOE/RL-96-22, Rev. 3, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

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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).

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Appendix 2
Summary of Data Qualification

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DATA QUALIFICATION SUMMARY

SDG: H2135	REVIEWER: TLI	DATE: 4/25/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
n-nitroso-di-n-propylamine, 4-chloroaniline, 2-nitroaniline, 3-nitroaniline, 4-nitroaniline, 3,3-dichlorobenzidine	J	All	RPD

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Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: BECHTEL-HANFORD
 Laboratory: LI
 Case: SDG: H2135

Sample Number	J00K35		J00K36		J00K37		J00K38		J00K39		J00K40	
	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
bis(2-Chloroethyl)ether	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2-Chlorophenol	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
1,3-Dichlorobenzene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
1,4-Dichlorobenzene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
1,2-Dichlorobenzene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2-Methylphenol	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2,2'-oxybis(1-chloropropane)	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
3 and/or 4-Methylphenol	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
N-Nitroso-di-n-propylamine	660	3500 UJ	1800 UJ	1800 UJ	3500 UJ	3500 UJ	1700 UJ	1700 UJ	3500 UJ	3500 UJ	330 UJ	330 UJ
Hexachloroethane	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
Nitrobenzene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
Isophorone	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2-Nitrophenol	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2,4-Dimethylphenol	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
bis(2-Chloroethoxy)methane	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2,4-Dichlorophenol	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
1,2,4-Trichlorobenzene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
Naphthalene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
4-Chloroaniline	660	3500 UJ	1800 UJ	1800 UJ	3500 UJ	3500 UJ	1700 UJ	1700 UJ	3500 UJ	3500 UJ	330 UJ	330 UJ
Hexachlorobutadiene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
4-Chloro-3-methylphenol	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2-Methylnaphthalene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
Hexachlorocyclopentadiene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2,4,6-Trichlorophenol	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2,4,5-Trichlorophenol	660	8700 U	4400 U	4400 U	8600 U	8600 U	4300 U	4300 U	8700 U	8700 U	840 U	840 U
2-Chloronaphthalene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2-Nitroaniline	660	8700 UJ	4400 UJ	4400 UJ	8600 UJ	8600 UJ	4300 UJ	4300 UJ	8700 UJ	8700 UJ	840 UJ	840 UJ
Dimethylphthalate	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
Acenaphthylene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U
2,6-Dinitrotoluene	660	3500 U	1800 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U

000011

SEMIVOLATILE/PAH ANALYSIS, WATER MATRIX, (UG/L)

Project: BECHTEL-HANFORD		J00K35		J00K36		J00K37		J00K38		J00K39		J00K40	
Laboratory: LLI		SDG: H2135						Duplicate				E. Blank	
Sample Number	Remarks	3/31/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03
Extraction Date		4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03	4/3/03
Analysis Date		4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03
Semivolatiles (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	660	8700 UJ	4400 UJ	8600 UJ	8600 UJ	4300 UJ	4300 UJ	8700 UJ	8700 UJ	840 UJ	840 UJ		
Acenaphthene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
2,4-Dinitrophenol	660	8700 U	4400 U	8600 U	8600 U	4300 U	4300 U	8700 U	8700 U	840 U	840 U		
4-Nitrophenol	660	8700 U	4400 U	8600 U	8600 U	4300 U	4300 U	8700 U	8700 U	840 U	840 U		
Dibenzofuran	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
2,4-Dinitrotoluene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Diethylphthalate	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
4-Chlorophenyl-phenyl ether	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Fluorene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
4-Nitroaniline	660	8700 UJ	4400 UJ	8600 UJ	8600 UJ	4300 UJ	4300 UJ	8700 UJ	8700 UJ	840 UJ	840 UJ		
4,6-Dinitro-2-methylphenol	660	8700 U	4400 U	8600 U	8600 U	4300 U	4300 U	8700 U	8700 U	840 U	840 U		
N-Nitrosodiphenylamine	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
4-Bromophenyl-phenyl ether	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Hexachlorobenzene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Pentachlorophenol	660	8700 U	4400 U	8600 U	8600 U	4300 U	4300 U	8700 U	8700 U	840 U	840 U		
Phenanthrene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Anthracene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Carbazole	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Di-n-butylphthalate	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Fluoranthene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Pyrene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Butylbenzylphthalate	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
3,3'-Dichlorobenzidine	660	3500 UJ	1800 UJ	3500 UJ	3500 UJ	1700 UJ	1700 UJ	3500 UJ	3500 UJ	330 UJ	330 UJ		
Benzo(a)anthracene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Chrysene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
bis(2-Ethylhexyl)phthalate	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Di-n-octylphthalate	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Benzo(b)fluoranthene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Benzo(k)fluoranthene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Benzo(a)pyrene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Indeno(1,2,3-cd)pyrene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Dibenz(a,h)anthracene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 U	330 U		
Benzo(g,h,i)perylene	660	3500 U	1800 U	3500 U	3500 U	1700 U	1700 U	3500 U	3500 U	330 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.

Cust ID: J00K35 J00K35 J00K35 J00K36 J00K37 J00K38
 RFW#: 001 001 MS 001 MSD 002 003 004
 Matrix: SOIL SOIL SOIL SOIL SOIL SOIL
 D.F.: 10.0 10.0 10.0 5.00 10.0 5.00
 Units: ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg

Sample Information	J00K35	J00K35	J00K35	J00K36	J00K37	J00K38
Nitrobenzene-d5	71 %	80 %	68 %	63 %	71 %	90 %
2-Fluorobiphenyl	81 %	97 %	80 %	86 %	83 %	100 %
Terphenyl-d14	88 %	93 %	79 %	102 %	90 %	107 %
Phenol-d5	79 %	90 %	77 %	71 %	74 %	88 %
2-Fluorophenol	75 %	85 %	75 %	61 %	72 %	87 %
2,4,6-Tribromophenol	70 %	87 %	74 %	94 %	74 %	95 %
Phenol	3500 U	87 %	77 %	1800 U	3500 U	1700 U
bis(2-Chloroethyl) ether	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2-Chlorophenol	3500 U	84 %	76 %	1800 U	3500 U	1700 U
1,3-Dichlorobenzene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
1,4-Dichlorobenzene	3500 U	74 %	68 %	1800 U	3500 U	1700 U
1,2-Dichlorobenzene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2-Methylphenol	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2,2'-oxybis(1-Chloropropane)	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
3- and/or 4-Methylphenol	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
N-Nitroso-di-n-propylamine	3500 U	79 %	49 %	1800 U	3500 U	1700 U
Hexachloroethane	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Nitrobenzene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Isophorone	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2-Nitrophenol	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2,4-Dimethylphenol	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
bis(2-Chloroethoxy)methane	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2,4-Dichlorophenol	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
1,2,4-Trichlorobenzene	3500 U	79 %	70 %	1800 U	3500 U	1700 U
Naphthalene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
4-Chloroaniline	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Hexachlorobutadiene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
4-Chloro-3-methylphenol	3500 U	85 %	69 %	1800 U	3500 U	1700 U
2-Methylnaphthalene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Hexachlorocyclopentadiene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2,4,6-Trichlorophenol	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2,4,5-Trichlorophenol	8700 U	8700 U	8700 U	4400 U	8600 U	4300 U

4/25/03

* = Outside of EPA CLP QC limits.

RFW#:	001	001 MS	001 MSD	002	003	004
2-Chloronaphthalene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2-Nitroaniline	8700 U	8700 U	8700 U	4400 U	8600 U	4300 U
Dimethylphthalate	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Acenaphthylene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2,6-Dinitrotoluene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
3-Nitroaniline	8700 U	8700 U	8700 U	4400 U	8600 U	4300 U
Acenaphthene	3500 U	93 %	81 %	1800 U	3500 U	1700 U
2,4-Dinitrophenol	8700 U	8700 U	8700 U	4400 U	8600 U	4300 U
4-Nitrophenol	8700 U	67 %	59 %	4400 U	8600 U	4300 U
Dibenzofuran	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
2,4-Dinitrotoluene	3500 U	84 %	71 %	1800 U	3500 U	1700 U
Diethylphthalate	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
4-Chlorophenyl-phenylether	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Fluorene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
4-Nitroaniline	8700 U	8700 U	8700 U	4400 U	8600 U	4300 U
4,6-Dinitro-2-methylphenol	8700 U	8700 U	8700 U	4400 U	8600 U	4300 U
N-Nitrosodiphenylamine (1)	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
4-Bromophenyl-phenylether	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Hexachlorobenzene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Pentachlorophenol	8700 U	90 %	71 %	4400 U	8600 U	4300 U
Phenanthrene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Anthracene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Carbazole	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Di-n-butylphthalate	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Fluoranthene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Pyrene	3500 U	90 %	74 %	1800 U	3500 U	1700 U
Butylbenzylphthalate	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
3,3'-Dichlorobenzidine	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Benzo(a)anthracene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Chrysene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
bis(2-Ethylhexyl)phthalate	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Di-n-octyl phthalate	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Benzo(b)fluoranthene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Benzo(k)fluoranthene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Benzo(a)pyrene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Indeno(1,2,3-cd)pyrene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Dibenz(a,h)anthracene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U
Benzo(g,h,i)perylene	3500 U	3500 U	3500 U	1800 U	3500 U	1700 U

Handwritten signature and date: 4/25/03

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

6

Cust ID: J00K39 J00K40 SBLKQR SBLKQR BS

Sample Information

RFW#: 005 SOIL SOIL SOIL SOIL

Matrix: SOIL SOIL SOIL SOIL

D.F.: 10.0 1.00 1.00 1.00

Units: ug/Kg ug/Kg ug/Kg ug/Kg

03LE0394-MB1 03LE0394-MB1 03LE0394-MB1

Surrogate	67 %	76 %	97 %	88 %
Nitrobenzene-d5	3500 U	330 U	330 U	0 * %
2-Fluorobiphenyl	3500 U	330 U	330 U	330 U
Terphenyl-d14	3500 U	330 U	330 U	0 * %
Phenol-d5	3500 U	330 U	330 U	330 U
2-Fluorophenol	3500 U	330 U	330 U	0 * %
2,4,6-Tribromophenol	3500 U	330 U	330 U	330 U
Phenol	3500 U	330 U	330 U	0 * %
bis(2-Chloroethyl) ether	3500 U	330 U	330 U	330 U
2-Chlorophenol	3500 U	330 U	330 U	0 * %
1,3-Dichlorobenzene	3500 U	330 U	330 U	330 U
1,4-Dichlorobenzene	3500 U	330 U	330 U	0 * %
1,2-Dichlorobenzene	3500 U	330 U	330 U	330 U
2-Methylphenol	3500 U	330 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)	3500 U	330 U	330 U	330 U
3- and/or 4-Methylphenol	3500 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	3500 U	330 U	330 U	330 U
Hexachloroethane	3500 U	330 U	330 U	0 * %
Nitrobenzene	3500 U	330 U	330 U	330 U
Isophorone	3500 U	330 U	330 U	330 U
2-Nitrophenol	3500 U	330 U	330 U	330 U
2,4-Dimethylphenol	3500 U	330 U	330 U	330 U
bis(2-Chloroethoxy)methane	3500 U	330 U	330 U	330 U
2,4-Dichlorophenol	3500 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	3500 U	330 U	330 U	0 * %
Naphthalene	3500 U	330 U	330 U	330 U
4-Chloroaniline	3500 U	330 U	330 U	330 U
Hexachlorobutadiene	3500 U	330 U	330 U	330 U
4-Chloro-3-methylphenol	3500 U	330 U	330 U	0 * %
2-Methylnaphthalene	3500 U	330 U	330 U	330 U
Hexachlorocyclopentadiene	3500 U	330 U	330 U	330 U
2,4,6-Trichlorophenol	3500 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	8700 U	840 U	840 U	330 U

Handwritten signature and date: 4/25/03

000015

* = Outside of EPA CLP QC limits.

01

R
4/25/63

Cust ID:

RFW#:

J00K39 005 006 03LE0394-MB1 03LE0394-MB1

Chemical Name	3500	8700	840	330	U	330	U	330	U	330	U	
2-Chloronaphthalene	3500	U	330	U	330	U	330	U	330	U	330	U
2-Nitroaniline	8700	UJ	840	UJ	840	U	840	U	840	U	840	U
Dimethylphthalate	3500	U	330	U	330	U	330	U	330	U	330	U
Acenaphthylene	3500	U	330	U	330	U	330	U	330	U	330	U
2,6-Dinitrotoluene	3500	U	330	U	330	U	330	U	330	U	330	U
3-Nitroaniline	8700	UJ	840	UJ	840	U	840	U	840	U	840	U
Acenaphthene	3500	U	330	U	330	U	330	U	330	U	0 *	%
2,4-Dinitrophenol	8700	U	840	U	840	U	840	U	840	U	840	U
4-Nitrophenol	8700	U	840	U	840	U	840	U	840	U	0 *	%
Dibenzofuran	3500	U	330	U	330	U	330	U	330	U	330	U
2,4-Dinitrotoluene	3500	U	330	U	330	U	330	U	330	U	0 *	%
Diethylphthalate	3500	U	330	U	330	U	330	U	330	U	330	U
4-Chlorophenyl-phenylether	3500	U	330	U	330	U	330	U	330	U	330	U
Fluorene	3500	U	330	U	330	U	330	U	330	U	330	U
4-Nitroaniline	8700	UJ	840	UJ	840	U	840	U	840	U	840	U
4,6-Dinitro-2-methylphenol	8700	U	840	U	840	U	840	U	840	U	840	U
N-Nitrosodiphenylamine (1)	3500	U	330	U	330	U	330	U	330	U	330	U
4-Bromophenyl-phenylether	3500	U	330	U	330	U	330	U	330	U	330	U
Hexachlorobenzene	3500	U	330	U	330	U	330	U	330	U	330	U
Pentachlorophenol	8700	U	840	U	840	U	840	U	840	U	0 *	%
Phenanthrene	3500	U	330	U	330	U	330	U	330	U	330	U
Anthracene	3500	U	330	U	330	U	330	U	330	U	330	U
Carbazole	3500	U	330	U	330	U	330	U	330	U	330	U
Di-n-butylphthalate	3500	U	20	J	330	U	330	U	330	U	330	U
Fluoranthene	3500	U	330	U	330	U	330	U	330	U	330	U
Pyrene	3500	U	330	U	330	U	330	U	330	U	0 *	%
Butylbenzylphthalate	3500	U	330	U	330	U	330	U	330	U	330	U
3,3'-Dichlorobenzidine	3500	UJ	330	UJ	330	U	330	U	330	U	330	U
Benzo(a)anthracene	3500	U	330	U	330	U	330	U	330	U	330	U
Chrysene	3500	U	330	U	330	U	330	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	3500	U	330	U	330	U	330	U	330	U	330	U
Di-n-octyl phthalate	3500	U	330	U	330	U	330	U	330	U	330	U
Benzo(b)fluoranthene	3500	U	330	U	330	U	330	U	330	U	330	U
Benzo(k)fluoranthene	3500	U	330	U	330	U	330	U	330	U	330	U
Benzo(a)pyrene	3500	U	330	U	330	U	330	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	3500	U	330	U	330	U	330	U	330	U	330	U
Dibenz(a,h)anthracene	3500	U	330	U	330	U	330	U	330	U	330	U
Benzo(g,h,i)perylene	3500	U	330	U	330	U	330	U	330	U	330	U

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

000016

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000017



Client: TNU-HANFORD B01-054
LVL #: 0304L090
SDG/SAF # H2135/B01-054

W.O. #: 11343-606-001-9999-00
Date Received: 04-02-2003

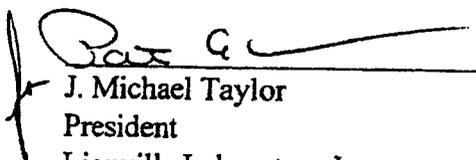
SEMIVOLATILE

Six (6) soil samples were collected on 03-31-2003.

The samples and their associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 04-03-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 04-07,08-2003.

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. All samples required 5 to 10-fold dilution due to the nature of the sample matrix.
5. All surrogate recoveries were within EPA QC limits.
6. All matrix spike recoveries were within EPA QC limits.
7. All blank spike recoveries were outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. Internal standard area criteria were not met for sample J00K35 MSD. The analysis of associated matrix spike sample fulfills the reanalysis requirement.
9. Manual integrations are performed according to OP 21-06A-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



J. Michael Taylor
President
Lionville Laboratory Incorporated

04-11-03
Date

son\group\data\bra\tnu-hanford-0304-090.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 21 pages.

000018

Bechtel Hanford Inc.
 Company Contact: D. Shea
 Telephone No.: 521-6014
 Project Designation: 100 B/C Area Effluent Pipeline & Proximity Site Remediation
 Sampling Location: 100 BC, 1607-B-8 Septic system
 Field Logbook No.: EL-1573
 COA: R607B82F00

Bechtel Hanford Inc.
 Project Coordinator: KESSNER, JH
 Price Code: 8L
 Data Turnaround: 7 X Days
 Air Quality: 11
 Date: 3/31/03

Offsite Property No.: A030175
 Method of Shipment: FED EX
 Bill of Lading/Air Bill No.: SEE OPRC

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Cool 4C	None	None					
J00K35	SOIL	3/31/03	1058		120mL	G/P	120mL	250g	60mL	120g	60mL	500mL
J00K36	SOIL		1122		120mL	G/P	120mL	250g	60mL	120g	60mL	500mL
J00K37	SOIL		1155		120mL	G/P	120mL	250g	60mL	120g	60mL	500mL
J00K38	SOIL		1155		120mL	G/P	120mL	250g	60mL	120g	60mL	500mL
J00K39	SOIL		1241		120mL	G/P	120mL	250g	60mL	120g	60mL	500mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	ICP Metals - 6010A (Add-on)	Chromium Hex - 7196	Sem-VOA - 8270A (TCL)	Pesticides - 8081	See item (2) in Special Instructions.	See item (1) in Special Instructions.
J00K35	SOIL	3/31/03	1058	✓	✓	✓	✓	✓	✓
J00K36	SOIL		1122	✓	✓	✓	✓	✓	✓
J00K37	SOIL		1155	✓	✓	✓	✓	✓	✓
J00K38	SOIL		1155	✓	✓	✓	✓	✓	✓
J00K39	SOIL		1241	✓	✓	✓	✓	✓	✓

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DWS, L. Dwyer	3/31/03 1817	Fedex BA	3/31/03 1807
REF BA	4103 0800	SJG, L. Dwyer	4103 0800
SJG, L. Dwyer	4103 0800	FED EX	
SJG, L. Dwyer	4103 0800	SJG, L. Dwyer	4203/0800
SJG, L. Dwyer	4203/08:50	SJG, L. Dwyer	4203/08:50

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Selenium, Silver)
 (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-106-metastable, Uranium-238)

Personnel not available to relinquish samples from the 3728 Ref # BA on 4/1/03

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

Collector: D. Shea
 Project Designation: 100 B/C Area Effluent Pipeline & Proximity Site Remediation
 Company Contact: D. Shea
 Telephone No.: 521-6014
 Price Code: 8L
 Data Turnaround: 7 Days 3/31/03
 Air Quality: 7 Days 3/31/03

Ice Chest No.: ERC 02 504
 Project Coordinator: KESSNER, JH
 SAF No.: B01-054
 Method of Shipment: FED EX
 COA: R607B82F00

Shipped To: TM/RECRA
 POSSIBLE SAMPLE HAZARDS/REMARKS
 Offsite Property No.: A030175
 Bill of Lading/Air Bill No.: SEE O5PC

SPECIAL HANDLING AND/OR STORAGE

000020

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Prescription	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None
J00K40	SOIL	3/31/03	1033	Type of Container	G/P	G/P	G/P	G/P	G/P	G/P	G/P	G/P	G/P
				No. of Container(s)	1	1	1	1	1	1	1	1	1
				Volume	120mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL	60mL
					ICP Metals - 6010A (Add-on)	Chromium Hex - 7196	Semi-VOA - 8270A (TCL)	Pesticides - 8081	PCBs - 8082	See item (2) in Special Instructions	Gross Alpha; Gross Beta		

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Sign/Print Names	Date/Time
D. Shea	3/31/03 0800	F. D. Shea	3/31/03 1807		
REF 3A	4103 0800	S. G. A. A. A.	4103 0800		
S. G. A. A. A.	4103 0800	FED EX			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time		
	4-2-03/0930	D. Shea	4-2-03/0950		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time		

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Selenium, Silver)
 (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108, Uranium-238)

Personnel not available to relinquish samples from the 3728 Ref # 3A on 4/1/03

LABORATORY SECTION

Received By

FINAL SAMPLE DISPOSITION

Disposal Method

Disposed By

Date/Time

Date/Time

Appendix 5

Data Validation Supporting Documentation

000021

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100BC	1607-B8	DATA PACKAGE: H2135		
VALIDATOR:	TLI	LAB: LLI	DATE: 4/25/03		
CASE:			SDG: H2135		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J00K35 J00K36 J00K37 J00K38					
J00K39 J00K40					
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: di-n-butyl phthalate in FB

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

Surrogates/system monitoring compounds analyzed? Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? Yes No N/A
Surrogates traceable? (Levels D, E) Yes No N/A
Surrogates expired? (Levels D, E) Yes No N/A
MS/MSD samples analyzed? Yes No N/A
MS/MSD results acceptable? Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) Yes No N/A
MS/MSD standards? (Levels D, E) Yes No N/A
LCS/BSS samples analyzed? Yes No N/A
LCS/BSS results acceptable? Yes No N/A
Standards traceable? (Levels D, E) Yes No N/A
Standards expired? (Levels D, E) Yes No N/A
Transcription/calculation errors? (Levels D, E) Yes No N/A
Performance audit sample(s) analyzed? Yes No N/A
Performance audit sample results acceptable? Yes No N/A
Comments: NO PAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

MS/MSD samples analyzed? Yes No N/A
MS/MSD RPD values acceptable? Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) Yes No N/A
MS/MSD standards expired? (Levels D, E) Yes No N/A
Field duplicate RPD values acceptable? Yes No N/A
Field split RPD values acceptable? Yes No N/A
Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: N-nitro-di-n-propylamine - 4790 RPD Fall
(4-chloroaniline, 2-nitroaniline, 3-nitroaniline,
4-nitroaniline, 3,3-dichlorobenzidine)

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? Yes No N/A
Internal 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: for all but 55 in 40 over
5/1/05
all over but 57 in 40

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: 25 April 2003
 To: Bechtel Hanford Inc. (technical representative)
 From: TechLaw, Inc.
 Project: 100-BC Area Effluent Pipeline & Proximity Site Remediation Activities - Full Protocol - Waste Site 1607-B8
 Subject: Inorganics - Data Package No. H2135-LLI (SDG No. H2135)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2135-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	Analysis
J00KF5	3/31/03	Soil	C	See note 1
J00KF6	3/31/03	Soil	C	See note 1
J00KF7	3/31/03	Soil	C	See note 1
J00KF8	3/31/03	Soil	C	See note 1
J00KF9	3/31/03	Soil	C	See note 1
J00K40	3/31/03	Soil	C	See note 1

1 - Chromium VI by 7196A; ICP metals by 6010B; mercury by 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 December 2001) and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 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, 6 months for ICP metals and 28 days for mercury.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

All preparation blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J00K40) was submitted for analysis. Barium, chromium(total) and lead were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the target detection limits (TDLs) to ensure that laboratory detection levels meet the required criteria. All chromium VI results exceeded the TDL. Under the BHI statement of work, no qualification is required. All other reported results met the analyte specific TDL.

- **Completeness**

Data package No. H2136-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike recovery of -48%, all lead results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the BHI validation SOW, 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 chromium VI results exceeded the TDL. Under the BHI statement of work, no qualification is required.

REFERENCES

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

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

DOE/RL-96-22, Rev. 3, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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).

000006

Appendix 2
Summary of Data Qualification

000007

DATA QUALIFICATION SUMMARY

SDG: H2135	REVIEWER: TLI	DATE: 4/25/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Lead	J	All	MS recovery

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/09/03

CLIENT: TNUHANFORD B01-054 H2135
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L090

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00K35	Silver, Total	0.08	u MG/KG	0.08	1.0
		Arsenic, Total	4.0	MG/KG	0.35	1.0
		Barium, Total	62.3	MG/KG	0.01	1.0
		Cadmium, Total	0.09	MG/KG	0.04	1.0
		Chromium, Total	10.0	MG/KG	0.06	1.0
		Mercury, Total	0.04	MG/KG	0.01	1.0
		Lead, Total	166	J MG/KG	0.26	1.0
		Selenium, Total	0.36	u MG/KG	0.36	1.0
-002	J00K36	Silver, Total	0.08	u MG/KG	0.08	1.0
		Arsenic, Total	3.9	MG/KG	0.36	1.0
		Barium, Total	65.8	MG/KG	0.01	1.0
		Cadmium, Total	0.06	MG/KG	0.04	1.0
		Chromium, Total	11.9	MG/KG	0.06	1.0
		Mercury, Total	0.10	MG/KG	0.02	1.0
		Lead, Total	12.4	J MG/KG	0.27	1.0
		Selenium, Total	0.37	u MG/KG	0.37	1.0
-003	J00K37	Silver, Total	0.08	u MG/KG	0.08	1.0
		Arsenic, Total	3.6	MG/KG	0.36	1.0
		Barium, Total	66.9	MG/KG	0.01	1.0
		Cadmium, Total	0.10	MG/KG	0.04	1.0
		Chromium, Total	10.5	MG/KG	0.06	1.0
		Mercury, Total	0.05	MG/KG	0.02	1.0
		Lead, Total	36.8	J MG/KG	0.27	1.0
		Selenium, Total	0.37	u MG/KG	0.37	1.0

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 4/25/03

000011

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/09/03

CLIENT: TNUHANFORD B01-054 H2135
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L090

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J00K38	Silver, Total	0.08	u MG/KG	0.08	1.0
		Arsenic, Total	3.6	MG/KG	0.36	1.0
		Barium, Total	60.4	MG/KG	0.01	1.0
		Cadmium, Total	0.04	MG/KG	0.04	1.0
		Chromium, Total	12.1	MG/KG	0.06	1.0
		Mercury, Total	0.06	MG/KG	0.02	1.0
		Lead, Total	35.6	J MG/KG	0.27	1.0
		Selenium, Total	0.37	u MG/KG	0.37	1.0
-005	J00K39	Silver, Total	0.08	u MG/KG	0.08	1.0
		Arsenic, Total	4.1	MG/KG	0.36	1.0
		Barium, Total	67.3	MG/KG	0.01	1.0
		Cadmium, Total	0.08	MG/KG	0.04	1.0
		Chromium, Total	12.5	MG/KG	0.06	1.0
		Mercury, Total	0.08	MG/KG	0.02	1.0
		Lead, Total	19.7	J MG/KG	0.27	1.0
		Selenium, Total	0.37	u MG/KG	0.37	1.0
-006	J00K40	Silver, Total	0.08	u MG/KG	0.08	1.0
		Arsenic, Total	0.35	u MG/KG	0.35	1.0
		Barium, Total	1.4	MG/KG	0.01	1.0
		Cadmium, Total	0.04	u MG/KG	0.04	1.0
		Chromium, Total	0.15	MG/KG	0.06	1.0
		Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	0.51	J MG/KG	0.26	1.0
		Selenium, Total	0.36	u MG/KG	0.36	1.0

jr
 4/25/03

000012

jr

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/08/03

CLIENT: TNUHANFORD B01-054 H2135
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L090

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00K35	% Solids Chromium VI	95.9 0.42 u	% MG/KG	0.01 0.42	1.0 1.0
-002	J00K36	% Solids Chromium VI	93.8 0.43 u	% MG/KG	0.01 0.43	1.0 1.0
-003	J00K37	% Solids Chromium VI	96.6 0.41 u	% MG/KG	0.01 0.41	1.0 1.0
-004	J00K38	% Solids Chromium VI	96.2 0.42 u	% MG/KG	0.01 0.42	1.0 1.0
-005	J00K39	% Solids Chromium VI	96.0 0.42 u	% MG/KG	0.01 0.42	1.0 1.0
-006	J00K40	% Solids Chromium VI	100 0.40 u	% MG/KG	0.01 0.40	1.0 1.0

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 4/25/03

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000014



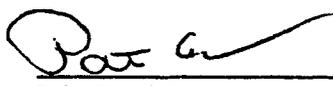
Analytical Report

Client: TNU-HANFORD B01-054 H2135
LVL#: 0304L090

W.O.#: 11343-606-001-9999-00
Date Received: 04-02-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 6 soil samples.
2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.
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 blank for Chromium VI was within the method criteria.
6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.
7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.
8. The replicate analyses for Percent Solids and Chromium VI were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.
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

njp04-090

04-08-03
Date

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 13 pages.

000015



Analytical Report

Client: TNU-HANFORD B01-054
LVL#: 0304L090
SDG/SAF#: H2135/B01-054

W.O.#: 11343-606-001-9999-00
Date Received: 04-02-03

METALS CASE NARRATIVE

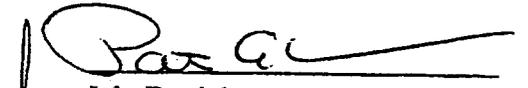
1. This narrative covers the analyses of 6 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of the ending CCVs for Lead and Cadmium in file TA0407C. All samples were surrounded by CCVs in control.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

000016

<u>Sample ID</u>	<u>Element</u>	<u>PDS</u> <u>Concentration (ppb)</u>	<u>PDS</u> <u>% Recovery</u>
J00K35	Cadmium	100	105.0
	Lead	1100	102.0

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


 Iain Daniels
 Laboratory Manager
 Lionville Laboratory Incorporated
 gmb/m04-090

04-11-03
 Date



000017

[Handwritten mark]

Bechtel Hanford Inc.
Collector D. Shea
Project Designation
100 B/C Area Effluent Pipeline & Proximity Site Remediation
Ice Chest No. EPC 02 504

Company Contact
D. Shea
Telephone No.
521-6014
Sampling Location
100 BC, 1607-B-8 Septic system
Field Logbook No.
EL-1573

Project Coordinator
KESSNER, JH
Price Code 8L
Date Turnaround
7 M Days
Air Quality
7/5/10
7/5/10

Method of Shipment
FED EX
Bill of Lading/Air Bill No.
SEE OJPC

Offsite Property No. A030175
COA R607B82F00

Special Handling and/or Storage

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Cool 4C	None	None						
J00K35	SOIL	3/31/03	1058	G/P	120mL	G/P	60mL	250g	120g	60mL	500mL	None	None
J00K36	SOIL		1122	G/P	120mL	G/P	60mL	250g	120g	60mL	500mL	None	None
J00K37	SOIL		1155	G/P	120mL	G/P	60mL	250g	120g	60mL	500mL	None	None
J00K38	SOIL		1155	G/P	120mL	G/P	60mL	250g	120g	60mL	500mL	None	None
J00K39	SOIL		1241	G/P	120mL	G/P	60mL	250g	120g	60mL	500mL	None	None

Special Handling and/or Storage

000018

SAMPLE ANALYSIS

SPECIAL INSTRUCTIONS

Sign/Print Names	Date/Time
Received By/Stored In Fidex SA 3/31/03	1807
Received By/Stored In SUGALE J. J. 4/10/03	0800
Received By/Stored In FED EX	
Received By/Stored In SUGALE J. J. 4/20/03	0800
Received By/Stored In SUGALE J. J. 4/20/03	0800
Received By/Stored In	
Received By/Stored In	

Matrix

S-Soil
SR-Soil
SD-Soil
SL-Soil
W-Water
O-Other
A-Air
D-Dust
DL-Dust
T-Tissue
W-Water
L-Liquid
V-Vapor
X-Other

CHAIN OF POSSESSION

Relinquished By/Removed From
DWSHA DWSHA 3/31/03 0800

Relinquished By/Removed From
REF SA 4/10/03 0800

Relinquished By/Removed From
SUGALE J. J. 4/10/03 0800

Relinquished By/Removed From
SUGALE J. J. 4/20/03 0800

Relinquished By/Removed From

Relinquished By/Removed From

LABORATORY SECTION

Received By

Disposal Method

Disposed By

Date/Time

Personnel not available to relinquish samples from the 3728 Ref # SA on 4/11/03

Appendix 5

Data Validation Supporting Documentation

000620

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

ALIDATION LEVEL:	A	B	C	D	E
PROJECT:	1003C WS 1607-08		DATA PACKAGE: H 2135		
VALIDATOR:	TLI	LAB:	LLI	DATE:	4/25/03
CASE:			SDG:	H2135	
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide	CR VI	
SAMPLES/MATRIX	J00K35	J00K36	J00K37	J00K38	
	J00K39	J00K40			
					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: Barium, chromium (total), lead - in FB

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

- MS/MSD samples analyzed?..... Yes No N/A
- MS/MSD results acceptable?..... Yes No N/A
- MS/MSD standards NIST traceable? (Levels D, E)..... Yes No N/A
- MS/MSD standards expired? (Levels D, E)..... Yes No N/A
- LCS/BSS samples analyzed?..... Yes No N/A
- LCS/BSS results acceptable?..... Yes No N/A
- Standards traceable? (Levels D, E)..... Yes No N/A
- Standards expired? (Levels D, E)..... Yes No N/A
- Transcription/calculation errors? (Levels D, E)..... Yes No N/A
- Performance audit sample(s) analyzed?..... Yes No N/A
- Performance audit sample results acceptable?..... Yes No N/A

Comments: NO PAS
Lead 4870 MS - J all

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: NO FS

6. ICP QUALITY CONTROL (Levels D and E)

- ICP serial dilution samples analyzed? Yes No N/A
- ICP serial dilution %D values acceptable? Yes No N/A
- ICP post digestion spike required? Yes No N/A
- ICP post digestion spike values acceptable? Yes No N/A
- Standards traceable? Yes No N/A
- Standards expired? Yes No N/A
- Transcription/calculation errors? Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

Comments: _____

8. HOLDING TIMES (all levels)

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

Comments: all CRT over

Appendix 6

Additional Documentation Requested by Client

000026

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/09/03

CLIENT: TNUHANFORD B01-054 H2135
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L090

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK1	03L0182-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.35 u	MG/KG	0.35	1.0
		Barium, Total	0.03	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.21	MG/KG	0.06	1.0
		Lead, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
BLANK1	03C0074-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

000027

10

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/09/03

CLIENT: TNUHANFORD B01-054 H2135
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L090

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J00K35	Silver, Total	4.8	0.08u	4.9	98.0	1.0
		Arsenic, Total	191	4.0	196	95.6	1.0
		Barium, Total	266	62.3	196	103.8	1.0
		Cadmium, Total	6.4	0.09	4.9	128.7	1.0
		Chromium, Total	29.4	10.0	19.6	99.0	1.0
		Mercury, Total	0.18	0.04	0.14	96.6	1.0
		Lead, Total	143	166	49.0	-48.	1.0
		Selenium, Total	184	0.36u	196	93.7	1.0

000028

11

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/09/03

CLIENT: TNUHANFORD B01-054 H2135

LVL LOT #: 0304L090

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

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE RPD		
-001REP	J00K35	Silver, Total	0.08u	0.08u	NC	1.0
		Arsenic, Total	4.0	3.8	5.1	1.0
		Barium, Total	62.3	61.5	1.3	1.0
		Cadmium, Total	0.09	0.1	6.3	1.0
		Chromium, Total	10.0	11.5	14.0	1.0
		Mercury, Total	0.04	0.05	16.7	1.0
		Lead, Total	166	139	18.1	1.0
		Selenium, Total	0.36u	0.35u	NC	1.0

000029

12

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/08/03

CLIENT: TNUHANFORD B01-054 H2135
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L090

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LVI019-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

000030

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/08/03

CLIENT: TNUHANFORD B01-054 H2135
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L090

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-006	J00K40	Soluble Chromium VI	4.1	0.40u	4.0	101.7	1.0
		Insoluble Chromium VI	1490	0.40u	1570	95.0	100
BLANK10	03LVI019-MB1	Soluble Chromium VI	3.9	0.40u	4.0	97.7	1.0
		Insoluble Chromium VI	1330	0.40u	1370	97.1	100

000031

01

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/08/03

CLIENT: TNUHANFORD B01-054 H2135
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0304L090

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD		DILUTION FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-005REP	J00K39	‡ Solids	96.0	95.8	0.26	1.0
-006REP	J00K40	Chromium VI	0.40u	0.40u	NC	1.0

000032

Date: 25 April 2003
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-BC Area Effluent Pipeline & Proximity Site Remediation Activities -
Full Protocol - Waste Site 1607-B8
Subject: PCB/Pesticide - Data Package No. H2135-LLI (SDG No. H2135)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2135-LLI prepared by Lionville Laboratory Incorporated (LLI). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J00K35	3/31/03	Soil	C	See note 1
J00K36	3/31/03	Soil	C	See note 1
J00K37	3/31/03	Soil	C	See note 1
J00K38	3/31/03	Soil	C	See note 1
J00K39	3/31/03	Soil	C	See note 1
J00K40	3/31/03	Soil	C	See note 1

1 - PCBs by 8082; pesticides by 8081A.

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 December 2001) and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 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

000001

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 detection limit (RDL). 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 RDL, the result is qualified as undetected and elevated to the RDL.

All method blank target compound results were acceptable.

Field Blanks

One equipment blank (J00K40) was submitted for analysis. No analytes were detected in the field blank.

- **Accuracy**

Matrix Spike

Matrix spike 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 analyses are performed in duplicate and must be

within control limits 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 interference with the matrix spike and matrix spike duplicate analysis, all aroclor results except aroclor 1016 were qualified as estimates and flagged "J".

All other matrix spike results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

Due to interference with the matrix spike and matrix spike duplicate analysis, all aroclor results except aroclor 1016 were qualified as estimates and flagged "J".

000003

Due to an RPD of 80%, all 4,4-DDT results were qualified as estimates and flagged "J".

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

Field Duplicate Samples

One set of field duplicate samples (J00K37/J00K38) were submitted for analysis. Field duplicate results 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 Detection Limits RDLs to ensure that laboratory detection levels meet the required criteria. All reported toxaphene and methoxychlor results exceeded the RDL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data Package No. H2135-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 an RPD of 80%, all 4,4-DDT results were qualified as estimates and flagged "J". Due to interference with the matrix spike and matrix spike duplicate analysis, all aroclor results except aroclor 1016 were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the BHI validation SOW, 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 reported toxaphene and methoxychlor results exceeded the RDL. Under the BHI statement of work, no qualification is required.

REFERENCES

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

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

DOE/RL-96-22, Rev. 3, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

000006

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).

000007

Appendix 2
Summary of Data Qualification

000008

DATA QUALIFICATION SUMMARY

SDG: H2135	REVIEWER: TLI	DATE: 4/25/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
4,4-DDT	J	All	RPD
All aroclor except 1016	J	All	MS/MSD recovery

000009

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD		J00K35		J00K36		J00K37		J00K38		J00K39		J00K40	
Laboratory: Lionville Laboratory Inc.		SDG: H2135						Duplicate				E. Blank	
Case:													
Sample Number	Remarks	TDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
		16.5	170 U	U	36 U	U	35 U	U	35 U	U	35 U	U	33 U
Aroclor-1016													
Aroclor-1221		16.5	350 UJ	UJ	71 UJ	UJ	69 UJ	UJ	69 UJ	UJ	69 UJ	UJ	67 UJ
Aroclor-1232		16.5	170 UJ	UJ	36 UJ	UJ	35 UJ	UJ	35 UJ	UJ	35 UJ	UJ	33 UJ
Aroclor-1242		16.5	170 UJ	UJ	36 UJ	UJ	35 UJ	UJ	35 UJ	UJ	35 UJ	UJ	33 UJ
Aroclor-1248		16.5	170 UJ	UJ	36 UJ	UJ	35 UJ	UJ	35 UJ	UJ	35 UJ	UJ	33 UJ
Aroclor-1254		16.5	380 J	J	36 UJ	UJ	62 J	J	84 J	J	84 J	J	33 UJ
Aroclor-1260		16.5	170 UJ	UJ	36 UJ	UJ	35 UJ	UJ	35 UJ	UJ	35 UJ	UJ	33 UJ
Sample Number	Remarks	TDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
J00K35													
J00K36													
J00K37													
J00K38													
J00K39													
J00K40													
Sample Date	Extraction Date	Analysis Date	Sample Date	Extraction Date	Analysis Date	Sample Date	Extraction Date	Analysis Date	Sample Date	Extraction Date	Analysis Date	Sample Date	Extraction Date
3/31/03	3/31/03	4/8/03	3/31/03	3/31/03	4/8/03	3/31/03	3/31/03	4/8/03	3/31/03	3/31/03	4/8/03	3/31/03	3/31/03
4/3/03	4/3/03	4/8/03	4/3/03	4/3/03	4/8/03	4/3/03	4/3/03	4/8/03	4/3/03	4/3/03	4/8/03	4/3/03	4/3/03
4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03	4/8/03
Pesticides	TDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
Beta-BHC	5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
Delta-BHC	5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
Gamma-BHC (Lindane)	5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
Heptachlor	5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
Aldrin	5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
Heptachlor Epoxide	5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
Endosulfan I	5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
Dieldrin	5	3.5 U	U	3.6 U	U	3.5 U	U	3.5 U	U	3.5 U	U	3.3 U	U
4,4'-DDE	5	3.5 U	U	3.6 U	U	3.5 U	U	3.5 U	U	3.5 U	U	3.3 U	U
Endrin	5	3.5 U	U	3.6 U	U	3.5 U	U	3.5 U	U	3.5 U	U	3.3 U	U
Endosulfan II	5	3.5 U	U	3.6 U	U	3.5 U	U	3.5 U	U	3.5 U	U	3.3 U	U
4,4'-DDD	5	3.5 U	U	3.6 U	U	3.5 U	U	3.5 U	U	3.5 U	U	3.3 U	U
Endosulfan Sulfate	5	3.5 U	U	3.6 U	U	3.5 U	U	3.5 U	U	3.5 U	U	3.3 U	U
4,4'-DDT	5	27 J	J	3.6 UJ	J	5.2 J	J	6.9 J	J	5.2 J	J	3.3 UJ	J
Methoxychlor	5	17 U	U	18 U	U	17 U	U	17 U	U	17 U	U	17 U	U
Endrin Ketone	5	3.5 U	U	3.6 U	U	3.5 U	U	3.5 U	U	3.5 U	U	3.3 U	U
Endrin Aldehyde	5	3.5 U	U	3.6 U	U	3.5 U	U	3.5 U	U	3.5 U	U	3.3 U	U
alpha-Chlordane	16.5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
gamma-Chlordane	16.5	1.7 U	U	1.8 U	U	1.7 U	U	1.7 U	U	1.7 U	U	1.7 U	U
Toxaphene	5	170 U	U	180 U	U	170 U	U	170 U	U	170 U	U	170 U	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.

000011

Cust ID: J00K35 J00K35 J00K35 J00K35 J00K35 J00K36 J00K37 J00K38

Sample Information: RFW#: 001 001 MS 001 MSD 002 003 004
 Matrix: SOIL SOIL SOIL SOIL SOIL SOIL SOIL SOIL
 D.F.: 1.00 1.00 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 UG/KG UG/KG

Surrogate:	80 %	85 %	70 %	110 %	100 %	105 %
Tetrachloro-m-xylene	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Decachlorobiphenyl	100 %	105 %	75 %	125 %	120 %	115 %
Alpha-BHC	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Beta-BHC	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Delta-BHC	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
gamma-BHC (Lindane)	1.7 U	68 %	56 %	1.8 U	1.7 U	1.7 U
Heptachlor	1.7 U	88 %	68 %	1.8 U	1.7 U	1.7 U
Aldrin	1.7 U	84 %	64 %	1.8 U	1.7 U	1.7 U
Heptachlor epoxide	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Endosulfan I	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Dieldrin	3.5 U	90 %	72 %	3.6 U	3.5 U	3.5 U
4,4'-DDE	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	3.5 U
Endrin	3.5 U	135 %	100 %	3.6 U	3.5 U	3.5 U
Endosulfan II	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	3.5 U
4,4'-DDD	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	3.5 U
Endosulfan sulfate	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	3.5 U
4,4'-DDT	27 J	115 %	49 %	3.6 U	5.2 J	6.9 J
Methoxychlor	17 U	17 U	17 U	18 U	17 U	17 U
Endrin ketone	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	3.5 U
Endrin aldehyde	3.5 U	3.5 U	3.5 U	3.6 U	3.5 U	3.5 U
alpha-Chlordane	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
gamma-Chlordane	1.7 U	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
Toxaphene	170 U	170 U	170 U	180 U	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

Handwritten: 4/25/03
Handwritten signature: [Signature]
Handwritten: 4/25/03

000012

Cust ID: J00K35 J00K35 J00K35 J00K36 J00K37 J00K38

Sample Information

Surrogate: Tetrachloro-m-xylene

Decachlorobiphenyl

Aroclor-1016

Aroclor-1221

Aroclor-1232

Aroclor-1242

Aroclor-1248

Aroclor-1254

Aroclor-1260

RFW#	Matrix	D.F.	Units	J00K35	J00K35	J00K35	J00K36	J00K37	J00K38
001	SOIL	5.00	UG/KG	90	65	85	95	95	95
001 MS	SOIL	5.00	UG/KG	75	75	95	110	100	95
001 MSD	SOIL	5.00	UG/KG	121	121	36	36	35	35
				350	350	71	71	69	69
				170	170	36	36	35	35
				170	170	36	36	35	35
				170	170	36	36	35	35
				380	I	I	36	62	84
				170	I	I	36	35	35

Cust ID: J00K39 J00K40 PBLKQB BS

Sample Information

Surrogate: Tetrachloro-m-xylene

Decachlorobiphenyl

Aroclor-1016

Aroclor-1221

Aroclor-1232

Aroclor-1242

Aroclor-1248

Aroclor-1254

Aroclor-1260

RFW#	Matrix	D.F.	Units	J00K39	J00K40	PBLKQB	PBLKQB BS
005	SOIL	1.00	UG/KG	105	100	95	100
006	SOIL	1.00	UG/KG	110	100	105	110
				35	33	33	111
				69	67	67	67
				35	33	33	33
				35	33	33	33
				35	33	33	33
				84	33	33	33
				35	33	33	119

Handwritten: 4/25/03

Handwritten: 4/25/03

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

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD B01-054
LVL #: 0304L090
SDG/SAF #: H2135/B01-054

W.O. #: 11343-606-001-9999-00
Date Received: 04-02-03

PESTICIDE

The set of samples consisted of six (6) soil samples collected on 03-31-03.

The samples and their associated QC samples were extracted on 04-03-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 04-07,08-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8081A.

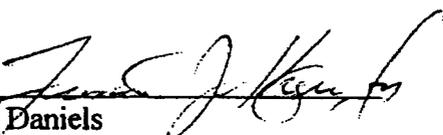
The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All samples and their associated QC samples received a Florisil and a Sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. Two (2) of twenty (20) surrogate recoveries were outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
6. All blank spike recoveries were within acceptance criteria.
7. One (1) of twelve (12) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
8. All initial calibrations associated with this data set were within acceptance criteria .
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria, with the exception of the target compounds analyzed on 04-07,08-03 and 04-08-03 on the RTX-CLP2 column. The data reflected an increase in instrument response, so the ability to identify these compounds was not impaired. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

000016

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


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/16/03
Date

pefr:\group\data\pest\lno\lanford04L-090.pcs



000017



Analytical Report

Client: TNU-HANFORD B01-054
LVL #: 0304L090
SDG/SAF #: H2135/B01-054

W.O. #: 11343-606-001-9999-00
Date Received: 04-02-03

PCB

The set of samples consisted of six (6) soil samples collected on 03-31-03.

The samples and their associated QC samples were extracted on 04-03-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 04-08,09-03. The extraction procedure was based on method 3540 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. All required holding times for extraction and analysis have been met.
3. All samples and their associated QC samples received a Sulfuric Acid and a Sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. All obtainable matrix spike recoveries were within acceptance criteria.

Matrix spike recoveries for Aroclor 1260 were unobtainable due to the high concentration of target analytes.

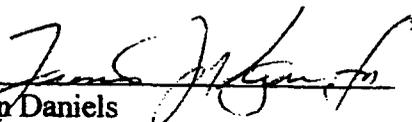
The target compound Aroclor 1254 was incalculable due to coelution with the spike compound Aroclor 1260 in the matrix spike and matrix spike duplicate and is flagged with "I".

8. Sample J00K35 and its matrix QC required 5-fold instrument dilutions due the high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

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 10 pages.

000018

9. All initial calibrations associated with this data set were within acceptance criteria .
10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 11 I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated


Date

pefvr:\group\data\pest\lmu hanford\04L-090.pcb

Bechtel Hanford Inc.
 Director
 D. Shea
 Project Designation
 100 B/C Area Effluent Pipeline & Proximity Site Remediation
 Company Contact
 D. Shea
 Telephone No.
 521-6014
 Price Code
 8L
 Data Turnaround
 7-21 Days
 Air Quality
 11
 0WS 3/10/03

Project Coordinator
 KESSNER, JH
 SAF No.
 B01-054
 Method of Shipment
 FED EX
 Bill of Lading/Air Bill No.
 SEE 03PC
 COA
 R607B82F00
 Offsite Property No.
 A030175

Sampling Location
 100 BC, 1607-B-8 Septic system
 Field Logbook No.
 EL-1573
 TMA/RECR
 POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

000020

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Cool 4C	None	None						
100K35	SOIL	3/31/03	1058	G/P	120mL	G/P	60mL	G/P	120g	60mL	500mL	None	None
100K36	SOIL		1122	G/P	120mL	G/P	60mL	G/P	120g	60mL	500mL	G/P	G/P
100K37	SOIL		1155	G/P	120mL	G/P	60mL	G/P	120g	60mL	500mL	G/P	G/P
100K38	SOIL		1153	G/P	120mL	G/P	60mL	G/P	120g	60mL	500mL	G/P	G/P
100K39	SOIL		1241	G/P	120mL	G/P	60mL	G/P	120g	60mL	500mL	G/P	G/P

See item (1) in Special Instructions.
 ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)
 Chromium Hex - 7196
 Semi-VOA - 8370A (TCL)
 Pesticides - 8081
 PCBs - 8082
 See item (3) in Special Instructions.
 Gross Alpha, Gross Beta

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Selenium, Silver)
 (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-109, measurable, Uranium-238)

Personnel not available to relinquish samples from the 1728 Ref # SA on 4/1/03

0WS 3/31/03

Received By/Removed From	Date/Time	Received By/Removed From	Date/Time
DWShea	3/10/03 0800	Fidex SA	3/31/03 1800
REE SA	4/10/03 0800	SJGALS	4/10/03 0800
SJGALS	4/10/03 0800	FED EX	
SJGALS	4/10/03 0800	Received By/Removed From	Date/Time
SJGALS	4/10/03 0800	Received By/Removed From	Date/Time
SJGALS	4/10/03 0800	Received By/Removed From	Date/Time
SJGALS	4/10/03 0800	Received By/Removed From	Date/Time

LABORATORY SECTION
 Received By
 Disposal Method

FINAL SAMPLE DISPOSITION
 Disposed By
 Date/Time

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

D.Shea 521-6014 Price Code 8L Data Turnaround
 Project Designation 100 B/C Area Effluent Pipeline & Proximity Site Remediation Sampling Location 100 BC, 1607-B-8 Septic system
 Ice Chest No. ERC 02 504 Field Logbook No. EL-1573 COA R607B82F00
 Method of Shipment FED EX
 Air Quality 7 Days 3/31/03
 SAF No. B01-054
 Bill of Lading/Air Bill No. SEE OSPC

Shipped To TM/RECRA
 POSSIBLE SAMPLE HAZARDS/REMARKS
 Offsite Property No. A030175
 Special Handling and/or Storage

Sample No.	Matrix *	Sample Date	Sample Time	Preservation		Cool 4C		Cool 4C	Cool 4C	Cool 4C	Cool 4C	Name	None
				Type of Container	No. of Container(s)	Volume	See item (1) in Special Instructions						
00002	SOIL	3/31/03	1033	GIP	1	120mL	GIP	120mL	120g	60mL	60mL	500mL	60mL
J00K40	SOIL	3/31/03	1033	GIP	1	120mL	GIP	120mL	120g	60mL	60mL	500mL	60mL

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Dwshu Dwshe	3/31/03	Frdse 3A	3/31/03 1807
REF 3A	4103	SIGAL/Dwshu	4103 0800
SKALE/MLK	4103	FED EX	4103 0800
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	4203/0930	Dwshu	4203/0950
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS
 (1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Selenium, Silver)
 (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108, Uranium-238)
 DWS 3/31/03
 Personnel not available to relinquish samples from the 3728 Ref # 3A on 4/1/03

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

Appendix 5

Data Validation Supporting Documentation

000022

PESTICIDE/PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	1605C	1607- 08	DATA PACKAGE: H 2135		
VALIDATOR:	TLI	LAB:	LLI	DATE: 4/25/03	
CASE:			SDG:	H 2135	
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)	8082	
SAMPLES/MATRIX					
J00k35 J00k36 J00k37 J00k38 J00k39					
J00k40					
So.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: _____

AS

PESTICIDE/PCB DATA VALIDATION CHECKLIST

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

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

Comments: _____

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

Surrogates analyzed? Yes No N/A
Surrogate recoveries acceptable? Yes No N/A
Surrogates traceable? (Levels D, E) Yes No N/A
Surrogates expired? (Levels D, E) Yes No N/A
MS/MSD samples analyzed? Yes No N/A
MS/MSD results acceptable? Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) Yes No N/A
MS/MSD standards expired? (Levels D, E) Yes No N/A
LCS/BSS samples analyzed? Yes No N/A
LCS/BSS results acceptable? Yes No N/A
Standards traceable? (Levels D, E) Yes No N/A
Standards expired? (Levels D, E) Yes No N/A
Transcription/calculation errors? (Levels D, E) Yes No N/A
Performance audit sample(s) analyzed? Yes No N/A
Performance audit sample results acceptable? Yes No N/A

Comments: Arceclor 1260 - I I all but 1014
44 DDT - 8/26/04
NO PAS

PESTICIDE/PCB DATA VALIDATION CHECKLIST

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

- Duplicate RPD values acceptable? Yes No N/A
- Duplicate results acceptable? Yes No N/A
- MS/MSD standards NIST traceable? (Levels D, E) Yes No N/A
- MS/MSD standards expired? (Levels D, E) Yes No N/A
- Field duplicate RPD values acceptable? Yes No N/A
- Field split RPD values acceptable? Yes No N/A
- Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: 4,4-DDT - zero T all

NO FS

6. SYSTEM PERFORMANCE (Levels D and E)

- Chromatographic performance acceptable? Yes No N/A
- Positive results resolved acceptably? Yes No N/A

Comments: _____

7. HOLDING TIMES (all levels)

- Samples properly preserved? Yes No N/A
- Sample holding times acceptable? Yes No N/A

Comments: _____

PESTICIDE/PCB DATA VALIDATION CHECKLIST

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

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

Comments: all can but 12 analytes (in all samples) \$/1/01
toxic + methoxychlor are

9. SAMPLE CLEANUP (Levels D and E)

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

Comments: _____

Date: 25 April 2003
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-BC Area Effluent Pipeline & Proximity Site Remediation Activities - Full Protocol - Waste Site 1607-B8
Subject: Radiochemistry - Data Package No. H2135-EB (SDG No. H2135)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2135-EB which was prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the requested analytes is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
J00K35	3/31/03	Soil	C	See note 1
J00K36	3/31/03	Soil	C	See note 1
J00K37	3/31/03	Soil	C	See note 1
J00K38	3/31/03	Soil	C	See note 1
J00K39	3/31/03	Soil	C	See note 1
J00K40	3/31/03	Soil	C	See note 1

1- Gamma spectroscopy, gross alpha & beta.

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 December 2001) and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). Appendices 1 through 6 provide the following information as indicated below:

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

000001

DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

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

All blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J00K40) was submitted for analysis. Potassium-40, radium-226 and thorium-228 were detected in the equipment blank. Under the BHI statement of work, no qualification is required.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is either 70-130% or ± 3 sigma. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% or ± 3 sigma.

000002

All accuracy results were acceptable.

- **Laboratory Duplicates**

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

All duplicate results were acceptable.

Field Duplicate

One set of field duplicate samples (J00K37/J00K38) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the target detection limits (TDLs) to ensure that laboratory detection levels meet the required criteria. Thirty-five analytes were reported above their TDL. Under the BHI statement of work, no qualification is required. All other reported results met the analyte specific TDL.

- **Completeness**

Data package No. H2135 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.

000003

MINOR DEFICIENCIES

Thirty-five analytes were reported above their TDL. Under the BHI statement of work, no qualification is required.

REFERENCES

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

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

DOE/RL-96-22, Rev. 3, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, December 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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

- U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2
Summary of Data Qualification

000007

DATA QUALIFICATION SUMMARY

SDG: H2135	REVIEWER: TLI	DATE: 4/25/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned			

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2135

7475-001

J00K35

DATA SHEET

SDG <u>7475</u>	Client/Case no <u>Hanford</u>	<u>SDG H2135</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R304016-01</u>	Client sample id <u>J00K35</u>	
Dept sample id <u>7475-001</u>	Location/Matrix <u>100 BC, 1607-B-8 Septic SOLID</u>	
Received <u>04/02/03</u>	Collected/Weight <u>03/31/03 10:58 762.3 g</u>	
% solids <u>95.0</u>	Custody/SAF No <u>B01-054-019</u>	<u>B01-054</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	0.735	3.0	5.1	10	U	93A
Gross Beta	12587-47-2	17.3	4.5	6.1	15		93B
Potassium 40	13966-00-2	9.80	1.3	0.63			GAM
Cobalt 60	10198-40-0	U		<u>0.083</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		0.074	0.10	U	GAM
Radium 226	13982-63-3	0.533	0.15	0.16			GAM
Radium 228	15262-20-1	0.681	0.31	0.35			GAM
Europium 152	14683-23-9	U		<u>0.19</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.24</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.20</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.811	0.096	0.10			GAM
Thorium 232	TH-232	0.681	0.31	0.35			GAM
Uranium 235	15117-96-1	U		0.32		U	GAM
Uranium 238	U-238	U		9.5		U	GAM
Americium 241	14596-10-2	U		0.43		U	GAM

100 B/C Area Effluent Pipe. & Prox.

Handwritten signature
 4/25/03

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/09/03</u>

000011

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2135

7475-002

J00K36

DATA SHEET

SDG <u>7475</u>	Client/Case no <u>Hanford</u>	SDG <u>H2135</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R304016-02</u>	Client sample id <u>J00K36</u>	
Dept sample id <u>7475-002</u>	Location/Matrix <u>100 BC, 1607-B-8 Septic SOLID</u>	
Received <u>04/02/03</u>	Collected/Weight <u>03/31/03 11:22 845.8 g</u>	
% solids <u>94.8</u>	Custody/SAF No <u>B01-054-019 B01-054</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	2.93	3.3	4.2	10	U	93A
Gross Beta	12587-47-2	17.0	4.3	5.4	15		93B
Potassium 40	13966-00-2	7.67	2.8	0.57			GAM
Cobalt 60	10198-40-0	U		0.087	0.050	U	GAM
Cesium 137	10045-97-3	U		0.068	0.10	U	GAM
Radium 226	13982-63-3	0.319	0.17	0.15			GAM
Radium 228	15262-20-1	0.656	0.41	0.39			GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.26	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.558	0.13	0.14			GAM
Thorium 232	TH-232	0.656	0.41	0.39			GAM
Uranium 235	15117-96-1	U		0.27		U	GAM
Uranium 238	U-238	U		9.8		U	GAM
Americium 241	14596-10-2	U		0.074		U	GAM

100 B/C Area Effluent Pipe. & Prox.

Handwritten: JCM
4/25/03

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/09/03</u>

000012

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2135

7475-003

J00K37

DATA SHEET

SDG <u>7475</u>	Client/Case no <u>Hanford</u>	<u>SDG H2135</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R304016-03</u>	Client sample id <u>J00K37</u>	
Dept sample id <u>7475-003</u>	Location/Matrix <u>100 BC, 1607-B-8 Septic</u>	<u>SOLID</u>
Received <u>04/02/03</u>	Collected/Weight <u>03/31/03 11:55</u>	<u>976.6 g</u>
% solids <u>95.3</u>	Custody/SAF No <u>B01-054-019</u>	<u>B01-054</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	5.82	4.0	4.1	10		93A
Gross Beta	12587-47-2	17.4	4.4	5.7	15		93B
Potassium 40	13966-00-2	10.7	2.4	0.70			GAM
Cobalt 60	10198-40-0	U		<u>0.13</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>0.14</u>	0.10	U	GAM
Radium 226	13982-63-3	0.330	0.18	0.14			GAM
Radium 228	15262-20-1	0.412	0.27	0.31			GAM
Europium 152	14683-23-9	U		<u>0.14</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.20</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.18</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.539	0.10	0.096			GAM
Thorium 232	TH-232	0.412	0.27	0.31			GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		7.2		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

100 B/C Area Effluent Pipe. & Prox.

JM
4/25/03

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/09/03</u>

000013

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2135

7475-004

J00K38

DATA SHEET

SDG <u>7475</u>	Client/Case no <u>Hanford</u>	SDG <u>H2135</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R304016-04</u>	Client sample id <u>J00K38</u>	
Dept sample id <u>7475-004</u>	Location/Matrix <u>100 BC, 1607-B-8 Septic SOLID</u>	
Received <u>04/02/03</u>	Collected/Weight <u>03/31/03 11:55 983.0 g</u>	
% solids <u>96.6</u>	Custody/SAF No <u>B01-054-019 B01-054</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	3.78	4.1	5.6	10	U	93A
Gross Beta	12587-47-2	15.6	4.9	6.8	15		93B
Potassium 40	13966-00-2	9.97	0.86	0.35			GAM
Cobalt 60	10198-40-0	U		<u>0.052</u>	0.050	U	GAM
Cesium 137	10045-97-3	0.072	0.044	0.049	0.10		GAM
Radium 226	13982-63-3	0.383	0.079	0.076			GAM
Radium 228	15262-20-1	0.596	0.16	0.16			GAM
Europium 152	14683-23-9	U		<u>0.11</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.16</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.11</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.583	0.076	0.074			GAM
Thorium 232	TH-232	0.596	0.16	0.16			GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		6.3		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

100 B/C Area Effluent Pipe. & Prox.

4/25/03

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/09/03</u>

000014

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2135

7475-005

J00K39

DATA SHEET

SDG <u>7475</u>	Client/Case no <u>Hanford</u>	SDG <u>H2135</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R304016-05</u>	Client sample id <u>J00K39</u>	
Dept sample id <u>7475-005</u>	Location/Matrix <u>100 BC, 1607-B-8 Septic</u>	<u>SOLID</u>
Received <u>04/02/03</u>	Collected/Weight <u>03/31/03 12:41</u>	<u>889.6 g</u>
% solids <u>96.1</u>	Custody/SAF No <u>B01-054-019</u>	<u>B01-054</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	3.17	4.0	5.6	10	U	93A
Gross Beta	12587-47-2	13.3	4.2	5.8	15		93B
Potassium 40	13966-00-2	10.6	1.4	0.86			GAM
Cobalt 60	10198-40-0	U		<u>0.082</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		0.086	0.10	U	GAM
Radium 226	13982-63-3	0.470	0.14	0.13			GAM
Radium 228	15262-20-1	0.403	0.29	0.32			GAM
Europium 152	14683-23-9	U		<u>0.17</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.24</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.20</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.504	0.083	0.093			GAM
Thorium 232	TH-232	0.403	0.29	0.32			GAM
Uranium 235	15117-96-1	U		0.28		U	GAM
Uranium 238	U-238	U		9.0		U	GAM
Americium 241	14596-10-2	U		0.38		U	GAM

100 B/C Area Effluent Pipe. & Prox.

pc
4/25/03

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/09/03</u>

000015

**EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2135**

7475-006

J00K40

DATA SHEET

SDG <u>7475</u>	Client/Case no <u>Hanford</u>	SDG <u>H2135</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R304016-06</u>	Client sample id <u>J00K40</u>	
Dept sample id <u>7475-006</u>	Location/Matrix <u>100 BC, 1607-B-8 Septic SOLID</u>	
Received <u>04/02/03</u>	Collected/Weight <u>03/31/03 10:33 759.1 g</u>	
% solids <u>99.9</u>	Custody/SAF No <u>B01-054-019 B01-054</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.715	2.9	5.6	10	U	93A
Gross Beta	12587-47-2	4.87	4.4	7.1	15	U	93B
Potassium 40	13966-00-2	4.28	2.5	0.63			GAM
Cobalt 60	10198-40-0	U		<u>0.073</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		<u>0.059</u>	0.10	U	GAM
Radium 226	13982-63-3	0.159	0.12	<u>0.099</u>			GAM
Radium 228	15262-20-1	U		0.48		U	GAM
Europium 152	14683-23-9	U		<u>0.15</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.19</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.12</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.180	0.099	0.11			GAM
Thorium 232	TH-232	U		0.48		U	GAM
Uranium 235	15117-96-1	U		0.21		U	GAM
Uranium 238	U-238	U		7.4		U	GAM
Americium 241	14596-10-2	U		0.060		U	GAM

100 B/C Area Effluent Pipe. & Prox.

je
4/25/03

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/09/03</u>

000016

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000017

Eberline Services
W.O. No. R3-04-016-7475

Bechtel Hanford Inc.
SDG H2135

Case Narrative

Page 1 of 1

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2135 was composed of six solid (soil) samples designated under SAF No. B01-054 with a Project Designation of: 100 B/C Area Effluent Pipeline & Proximity Site Remediation, 1607-B-8 Septic System.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on April 9, 2003. The electronic data deliverable (EDD) was transmitted to BHI via e-mail on April 9, 2003.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

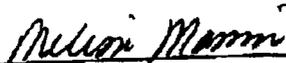
No problems were encountered during the course of the analyses.

2.2 Gamma Spectroscopy Analyses

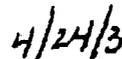
The RPD between sample J00K35 and its sample duplicate for Th-228 was 71%, greater than the 3σ limit of 48%. No other problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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



Melissa C. Mannion
Program Manager



Date

000018

Collector D. Shea Telephone No. 521-6014 Price Code 8L Data Turnaround 7 Days
 Project Designation 100 BC Area Effluent Pipeline & Proximity Site Remediation Sampling Location 100 BC, 1607-B-8 Septic system H2135 (7475) Air Quality
 Ice Chest No. ERC 02 101 Field Logbook No. EL-1573 COA R607B82F00 Method of Shipment FED EX
 Shipped To TMA/RECRA Offsite Property No. A030190 Bill of Lading/Air Bill No. SEE OPRC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Sample No.	Matrix *	Sample Date	Sample Time	Preservation	Cool 4C	None	None						
000019	SOIL	3/31/03	1058		G/P	G/P	G/P	aG	aG	60mL	500mL	60mL	
J00K35	SOIL		1122		G/P	G/P	G/P	aG	aG	60mL	500mL	60mL	
J00K36	SOIL		1155		G/P	G/P	G/P	aG	aG	60mL	500mL	60mL	
J00K37	SOIL		1155		G/P	G/P	G/P	aG	aG	60mL	500mL	60mL	
J00K38	SOIL		1241		G/P	G/P	G/P	aG	aG	60mL	500mL	60mL	
J00K39	SOIL				G/P	G/P	G/P	aG	aG	60mL	500mL	60mL	

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions	Chromium Hex - 7196	Semi-VOA - 8276A (TCL)	Pesticides - 8081	PCBs - 8082	See item (2) in Special Instructions	Gross Alpha	Gross Beta
J00K35	SOIL	3/31/03	1058	ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)	✓	✓	✓	✓	✓	✓	✓
J00K36	SOIL		1122		✓	✓	✓	✓	✓	✓	✓
J00K37	SOIL		1155		✓	✓	✓	✓	✓	✓	✓
J00K38	SOIL		1155		✓	✓	✓	✓	✓	✓	✓
J00K39	SOIL		1241		✓	✓	✓	✓	✓	✓	✓

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DWS/KA Dasher	3/31/03 1807	FED EX	3/31/03 1807
REF 3A	4103 0800	SJG/MS/D/ML	4103 0800
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
W/SCALE/D/ML	4103 0800	FED EX	4-2-03 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED EX		REF 3A	4-2-03 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Selenium, Silver)
 (2) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Silver-108/mercurate, Uranium-238)

Personnel not available to relinquish samples from the 3728 Ref # 3A on 4/1/03

LABORATORY SECTION Received By Title

FINAL SAMPLE DISPOSITION Disposal Method Disposed By Date/Time

Appendix 5

Data Validation Supporting Documentation

000021

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100BC 1607-B8		DATA PACKAGE: H2135		
VALIDATOR:	TLI	LAB:	EB	DATE:	4/25/03
CASE:			SDG:	H2135 H2135	
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			
SAMPLES/MATRIX					
J00K35			J00K36		J00K37
J00K38			J00K39		J00K40

1. Completeness N/A

Technical verification forms present? Yes No N/A

Comments: _____

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

Instruments/detectors calibrated? Yes No N/A

Initial calibration acceptable? Yes No N/A

Standards NIST traceable? Yes No N/A

Appendix A – Radiochemical Data Validation Checklist

Standards Expired?Yes No N/A

Calculation check acceptable?Yes No N/A

Comments: _____

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

Calibration checked within required frequency?Yes No N/A

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

Calibration check standards traceable?Yes No N/A

Calibration check standards expired?Yes No N/A

Calculation check acceptable?Yes No N/A

Comments: _____

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

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

Background Counts acceptable?Yes No N/A

Calculation check acceptable?Yes No N/A

Comments: _____

Appendix A – Radiochemical Data Validation Checklist

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

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

Comments: _____

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

Tracer added? Yes No N/A

Tracer recovery acceptable? Yes No N/A

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

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

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

Comments: _____

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

Matrix spike analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

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

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

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

Comments: _____

Appendix A – Radiochemical Data Validation Checklist

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

Duplicates Analyzed at required frequency? Yes No N/A

RPD Values Acceptable? Yes No N/A

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

Comments: _____

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

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

Field duplicate RPD values acceptable? Yes No N/A

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

Field split RPD values acceptable? Yes No N/A

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

Performance audit sample results acceptable? Yes No N/A

Comments: NO FS OR PAS _____

12. Holding Times (All levels)

Are sample holding times acceptable? Yes No N/A

Comments: _____

Appendix A – Radiochemical Data Validation Checklist

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

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

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

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

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

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

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

Comments: 35 over
1/5/03

000027

Appendix 6

Additional Documentation Requested by Client

000028

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H2135

7475-008

Method Blank

METHOD BLANK

SDG <u>7475</u>	Client/Case no <u>Hanford</u>	SDG <u>H2135</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R304016-08</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7475-008</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B01-054</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.502	1.1	2.6	10	U	93A
Gross Beta	12587-47-2	-0.735	3.0	5.2	15	U	93B
Potassium 40	13966-00-2	U		1.0		U	GAM
Cobalt 60	10198-40-0	U		<u>0.053</u>	0.050	U	GAM
Cesium 137	10045-97-3	U		0.052	0.10	U	GAM
Radium 226	13982-63-3	U		0.095		U	GAM
Radium 228	15262-20-1	U		0.21		U	GAM
Europium 152	14683-23-9	U		<u>0.11</u>	0.10	U	GAM
Europium 154	15585-10-1	U		<u>0.16</u>	0.10	U	GAM
Europium 155	14391-16-3	U		<u>0.12</u>	0.10	U	GAM
Thorium 228	14274-82-9	U		0.072		U	GAM
Thorium 232	TH-232	U		0.21		U	GAM
Uranium 235	15117-96-1	U		0.20		U	GAM
Uranium 238	U-238	U		6.7		U	GAM
Americium 241	14596-10-2	U		0.23		U	GAM

100 B/C Area Effluent Pipe. & Prox.

QC-BLANK 44298

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/09/03</u>

000029

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2135

7475-007

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7475</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R304016-07</u> Dept sample id <u>7475-007</u>	Client/Case no <u>Hanford</u> SDG <u>H2135</u> Contract No. <u>630</u> Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>B01-054</u>
---	--

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LNTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	181	14	3.1	10	93A	200	8.0	90	70-130	70-130
Gross Beta	188	11	7.9	15	93B	211	8.4	89	78-122	70-130
Cobalt 60	4.45	0.21	<u>0.096</u>	0.050	GAM	4.73	0.19	94	77-123	80-120
Cesium 137	4.36	0.17	0.10	0.10	GAM	4.54	0.18	96	77-123	80-120

100 B/C Area Effluent Pipe. & Prox.

QC-LCS 44297

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>04/09/03</u>

000030

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP N2135

7475-009

J00K35

DUPLICATE

SDG <u>7475</u>		Client/Case no <u>Hanford</u>	SDG <u>H2135</u>
Contact <u>Melissa C. Mannion</u>		Contract No. <u>630</u>	
DUPLICATE	ORIGINAL		
Lab sample id <u>R304016-09</u>	Lab sample id <u>R304016-01</u>	Client sample id <u>J00K35</u>	
Dept sample id <u>7475-009</u>	Dept sample id <u>7475-001</u>	Location/Matrix <u>100 BC, 1607-B-8 Septic SOLID</u>	
	Received <u>04/02/03</u>	Collected/Weight <u>03/31/03 10:58 762.3 g</u>	
% solids <u>95.0</u>	% solids <u>95.0</u>	Custody/SAF No <u>B01-054-019</u>	<u>B01-054</u>

ANALYTE	DUPLICATE		MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT	PROT LIMIT
	pCi/g	2σ ERR (COUNT)					pCi/g	2σ ERR (COUNT)					
Gross Alpha	5.67	4.4	4.8	10		93A	0.735	3.0	5.1	U	154	255	
Gross Beta	17.5	4.5	5.8	15		93B	17.3	4.5	6.1		1	63	
Potassium 40	10.0	1.5	0.87			GAM	9.80	1.3	0.63		2	44	
Cobalt 60	U		<u>0.081</u>	0.050	U	GAM	U		<u>0.083</u>	U	-		
Cesium 137	U		<u>0.16</u>	0.10	U	GAM	U		0.074	U	-		
Radium 226	0.358	0.14	0.14			GAM	0.533	0.15	0.16		39	76	
Radium 228	0.697	0.34	0.32			GAM	0.681	0.31	0.35		2	105	
Europium 152	U		<u>0.19</u>	0.10	U	GAM	U		<u>0.19</u>	U	-		
Europium 154	U		<u>0.25</u>	0.10	U	GAM	U		<u>0.24</u>	U	-		
Europium 155	U		<u>0.17</u>	0.10	U	GAM	U		<u>0.20</u>	U	-		
Thorium 228	0.384	0.094	0.12			GAM	0.811	0.096	0.10		<u>71</u>	48	
Thorium 232	0.697	0.34	0.32			GAM	0.681	0.31	0.35		2	105	
Uranium 235	U		0.28		U	GAM	U		0.32	U	-		
Uranium 238	U		9.6		U	GAM	U		9.5	U	-		
Americium 241	U		0.19		U	GAM	U		0.43	U	-		

100 B/C Area Effluent Pipe. & Prox.

QC-DUP#1 44299

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 04/09/03

000031