0070862

SAF-RC-047
100 & 300 Area Component of the RCBRA Sediment and Tissues
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan **(2 copies)** H9-02 JE 08/23/06
INITIAL/DATE

COMMENTS:

SDG K0358A SAF-RC-047

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Date: 11 August 2006
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 Area and 300 Area Component of the RCBRA Sediment & Tissue
Subject: Semivolatile - Data Package No. K0358A-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0358A prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11X50	5/12/06	Solid	C	See note 1
J11X51	5/12/06	Solid	C	See note 1
J11X60	5/10/06	Solid	C	See note 1
J11X61	5/10/06	Solid	C	See note 1
J11X64	5/12/06	Solid	C	See note 1
J11X65	5/12/06	Solid	C	See note 1
J11X72	5/12/06	Solid	C	See note 1
J11X73	5/12/06	Solid	C	See note 1
J11X74	5/10/06	Solid	C	See note 1
J11X75	5/10/06	Solid	C	See note 1
J11X76	5/12/06	Solid	C	See note 1
J11X78	5/12/06	Solid	C	See note 1
J11X84	5/12/06	Solid	C	See note 1
J11X85	5/12/06	Solid	C	See note 1
J11X88	5/12/06	Solid	C	See note 1
J11X89	5/12/06	Solid	C	See note 1

1- Semivolatiles by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area and 300 Area Component of the RCBRA Sampling and Analysis Plan (DOE/RL-2005-42, Rev. 0, October 2005). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times & Sample Preservation**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction for semivolatile analytes and analyzed within 14 days for DRO and GRO.

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".

Due to the holding time being exceeded by less that twice the limit, all results were qualified as estimates and flagged "J".

- **Method Blanks**

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

Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all detected samples (except J11Y61) were qualified as undetected and flagged "U".

Due to method blank contamination, the bis(2-ethylhexyl)phthalate result sample J11Y61 was qualified as undetected, raised to the RQL and flagged "U".

All other method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike duplicate recovery outside QC limits (16%), all 4-chloroanaline results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (41%), all 3-nitroanaline results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (18%), all 3,3'-dichlorobenzidine results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (58%), all 4-methylphenol results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (37%), all 2,4-dimethylphenol results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated

sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-20%. 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 (86%), all 4-chloroanaline results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (44%), all 3-nitroanaline results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (53%), all 3,3'-dichlorobenzidine results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. No RQLs were specified.

- **Completeness**

Data package No. K0358A was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to the holding time being exceeded by less that twice the limit, all results were qualified as estimates and flagged "J".
- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all detected samples (except J11Y61) were qualified as undetected and flagged "U".
- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result sample J11Y61 was qualified as undetected, raised to the RQL and flagged "U".
- Due to a matrix spike duplicate recovery outside QC limits (16%), all 4-chloroanaline results were qualified as estimates and flagged "J".
- Due to a matrix spike duplicate recovery outside QC limits (41%), all 3-nitroanaline results were qualified as estimates and flagged "J".
- Due to a matrix spike duplicate recovery outside QC limits (18%), all 3,3'-dichlorobenzidine results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (58%), all 4-methylphenol results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits (37%), all 2,4-dimethylphenol results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (86%), all 4-chloroanaline results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (44%), all 3-nitroanaline results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (53%), all 3,3'-dichlorobenzidine results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

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

DOE/RL-2005-42, Rev. 0, October 2005, *100 Area and 300 Area Component of the RCBRA Sampling and Analysis Plan*.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

SEMVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K0358A	REVIEWER: TLI	Project: RCBRA	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	All	Holding time
Bis(2-ethylhexylphthalate	U at RQL	J11Y61	Method blank
Bis(2-ethylhexylphthalate	U	All except J11Y61	Method blank
4-Chloroanaline 3-Nitroanaline 3,3-Dichlorobenzidine	J	All	MSD recovery
4-Methylphenol 2,4-Dimethylphenol	J	All	LCS recovery
4-Chloroanaline 3-Nitroanaline 3,3'-Dichlorobenzidine	J	All	RPD

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD
Laboratory: LLI SDG: K0358-A

Sample Number		J11X50		J11X51		J11X60		J11X61		J11X64		J11X65		J11X72		J11X73		J11X74		J11X75	
Remarks																					
Sample Date		5/12/06		5/12/06		5/10/06		5/10/06		5/12/06		5/12/06		5/12/06		5/12/06		5/10/06		5/10/06	
Extraction Date		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06	
Analysis Date		7/3/06		7/3/06		7/3/06		7/3/06		7/3/06		7/14/06		7/14/06		7/8/06		7/8/06		7/8/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	650	J	18000	UJ	6900	UJ	7700	UJ	7600	UJ
bis(2-Chloroethyl)ether		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2-Chlorophenol		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
1,3-Dichlorobenzene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
1,4-Dichlorobenzene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
1,2-Dichlorobenzene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2-Methylphenol		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2,2'-oxybis(1-chloropropane)		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
3 and/or 4-Methylphenol		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
N-Nitroso-di-n-propylamine		2000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
Hexachloroethane		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
Nitrobenzene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
Isophorone		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2-Nitrophenol		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2,4-Dimethylphenol		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
bis(2-Chloroethoxy)methane		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2,4-Dichlorophenol		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
1,2,4-Trichlorobenzene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
Naphthalene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
4-Chloroaniline		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
Hexachlorobutadiene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
4-Chloro-3-methylphenol		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2-Methylnaphthalene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
Hexachlorocyclopentadiene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2,4,6-Trichlorophenol		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2,4,5-Trichlorophenol		20000	UJ	19000	UJ	19000	UJ	9500	UJ	19000	UJ	19000	UJ	46000	UJ	17000	UJ	19000	UJ	19000	UJ
2-Chloronaphthalene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2-Nitroaniline		20000	UJ	19000	UJ	19000	UJ	9500	UJ	19000	UJ	19000	UJ	46000	UJ	17000	UJ	19000	UJ	19000	UJ
Dimethylphthalate		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
Acenaphthylene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ
2,6-Dinitrotoluene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	UJ

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: LLI	SDG: K0358-A																				
Sample Number		J11X50		J11X51		J11X60		J11X61		J11X64		J11X65		J11X72		J11X73		J11X74		J11X75	
Remarks																					
Sample Date		5/12/06		5/12/06		5/10/06		5/10/06		5/12/06		5/12/06		5/12/06		5/12/06		5/10/06		5/10/06	
Extraction Date		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06	
Analysis Date		7/3/06		7/3/06		7/3/06		7/3/06		7/3/06		7/14/06		7/14/06		7/8/06		7/8/06		7/8/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline		20000	UJ	19000	UJ	19000	UJ	9500	UJ	19000	UJ	19000	UJ	46000	UJ	17000	UJ	19000	UJ	19000	U
Acenaphthene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
2,4-Dinitrophenol		20000	UJ	19000	UJ	19000	UJ	9500	UJ	19000	UJ	19000	UJ	46000	UJ	17000	UJ	19000	UJ	19000	U
4-Nitrophenol		20000	UJ	19000	UJ	19000	UJ	9500	UJ	19000	UJ	19000	UJ	46000	UJ	17000	UJ	19000	UJ	19000	U
Dibenzofuran		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
2,4-Dinitrotoluene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Diethylphthalate		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
4-Chlorophenyl-phenyl ether		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Fluorene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
4-Nitroaniline		20000	UJ	19000	UJ	19000	UJ	9500	UJ	19000	UJ	19000	UJ	46000	UJ	17000	UJ	19000	UJ	19000	U
4,6-Dinitro-2-methylphenol		20000	UJ	19000	UJ	19000	UJ	9500	UJ	19000	UJ	19000	UJ	46000	UJ	17000	UJ	19000	UJ	19000	U
N-Nitrosodiphenylamine		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
4-Bromophenyl-phenyl ether		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Hexachlorobenzene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Pentachlorophenol		20000	UJ	19000	UJ	19000	UJ	9500	UJ	19000	UJ	19000	UJ	46000	UJ	17000	UJ	19000	UJ	19000	U
Phenanthrene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Anthracene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Carbazole		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Di-n-butylphthalate		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Fluoranthene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Pyrene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Butylbenzylphthalate		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
3,3'-Dichlorobenzidine		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Benzo(a)anthracene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Chrysene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
bis(2-Ethylhexyl)phthalate		410	UJ	2900	UJ	7800	UJ	330	UJ	7800	UJ	550	UJ	5800	UJ	6900	UJ	580	UJ	1400	
Di-n-octylphthalate		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Benzo(b)fluoranthene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Benzo(k)fluoranthene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Benzo(a)pyrene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Indeno(1,2,3-cd)pyrene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Dibenz(a,h)anthracene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U
Benzo(g,h,i)perylene		8000	UJ	7500	UJ	7800	UJ	3800	UJ	7800	UJ	7600	UJ	18000	UJ	6900	UJ	7700	UJ	7600	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD
Laboratory: LLI SDG: K0358-A

Sample Number		J11X76		J11X77		J11X84		J11X85		J11X88		J11X89									
Remarks																					
Sample Date		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06									
Extraction Date		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06									
Analysis Date		7/11/06		7/11/06		7/11/06		7/11/06		7/11/06		7/11/06									
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
bis(2-Chloroethyl)ether		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2-Chlorophenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
1,3-Dichlorobenzene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
1,4-Dichlorobenzene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
1,2-Dichlorobenzene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2-Methylphenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2,2'-oxybis(1-chloropropane)		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
3 and/or 4-Methylphenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
N-Nitroso-di-n-propylamine		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Hexachloroethane		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Nitrobenzene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Isophorone		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2-Nitrophenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2,4-Dimethylphenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
bis(2-Chloroethoxy)methane		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2,4-Dichlorophenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
1,2,4-Trichlorobenzene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Naphthalene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
4-Chloroaniline		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Hexachlorobutadiene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
4-Chloro-3-methylphenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2-Methylnaphthalene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Hexachlorocyclopentadiene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2,4,6-Trichlorophenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2,4,5-Trichlorophenol		38000	UJ	38000	UJ	39000	UJ	9700	UJ	40000	UJ	38000	UJ								
2-Chloronaphthalene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2-Nitroaniline		38000	UJ	38000	UJ	39000	UJ	9700	UJ	40000	UJ	38000	UJ								
Dimethylphthalate		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Acenaphthylene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2,6-Dinitrotoluene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								

000014

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOLID MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD
Laboratory: LLI SDG: K0358-A

Sample Number		J11X76		J11X77		J11X84		J11X85		J11X88		J11X89									
Remarks																					
Sample Date		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06									
Extraction Date		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06		6/6/06									
Analysis Date		7/11/06		7/11/06		7/11/06		7/11/06		7/11/06		7/11/06									
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline		38000	UJ	38000	UJ	39000	UJ	9700	UJ	40000	UJ	38000	UJ								
Acenaphthene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
2,4-Dinitrophenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
4-Nitrophenol		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Dibenzofuran		38000	UJ	38000	UJ	39000	UJ	9700	UJ	40000	UJ	38000	UJ								
2,4-Dinitrotoluene		38000	UJ	38000	UJ	39000	UJ	9700	UJ	40000	UJ	38000	UJ								
Diethylphthalate		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
4-Chlorophenyl-phenyl ether		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Fluorene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
4-Nitroaniline		38000	UJ	38000	UJ	39000	UJ	9700	UJ	40000	UJ	38000	UJ								
4,6-Dinitro-2-methylphenol		38000	UJ	38000	UJ	39000	UJ	9700	UJ	40000	UJ	38000	UJ								
N-Nitrosodiphenylamine		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
4-Bromophenyl-phenyl ether		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Hexachlorobenzene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Pentachlorophenol		38000	UJ	38000	UJ	39000	UJ	9700	UJ	40000	UJ	38000	UJ								
Phenanthrene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Anthracene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Carbazole		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Di-n-butylphthalate		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Fluoranthene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Pyrene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Butylbenzylphthalate		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
3,3'-Dichlorobenzidine		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Benzo(a)anthracene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Chrysene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
bis(2-Ethylhexyl)phthalate		15000	UJ	3600	UJ	2600	UJ	470	UJ	3500	UJ	2500	UJ								
Di-n-octylphthalate		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Benzo(b)fluoranthene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Benzo(k)fluoranthene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Benzo(a)pyrene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Indeno(1,2,3-cd)pyrene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Dibenz(a,h)anthracene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								
Benzo(g,h,i)perylene		15000	UJ	15000	UJ	16000	UJ	3900	UJ	16000	UJ	15000	UJ								

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 07/24/06 09:29

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 1a

	Cust ID:	J11X50		J11X50		J11X50		J11X51		J11X60		J11X61	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
	D.F.:	4.00		4.00		4.00		4.00		4.00		2.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	77	%	70	%	71	%	71	%	74	%	77	%
	2-Fluorobiphenyl	69	%	76	%	78	%	67	%	56	%	73	%
	Terphenyl-d14	85	%	73	%	70	%	78	%	81	%	72	%
	Phenol-d5	93	%	87	%	84	%	83	%	78	%	73	%
	2-Fluorophenol	89	%	81	%	80	%	82	%	75	%	75	%
	2,4,6-Tribromophenol	88	%	84	%	84	%	78	%	79	%	82	%
			fl		fl		fl		fl		fl		fl
Phenol		8000	U J	88	%	93	%	7500	U J	7800	U J	3800	U J
bis(2-Chloroethyl)ether		8000	U	88	%	97	%	7500	U	7800	U	3800	U
2-Chlorophenol		8000	U	82	%	84	%	7500	U	7800	U	3800	U
1,3-Dichlorobenzene		8000	U	66	%	73	%	7500	U	7800	U	3800	U
1,4-Dichlorobenzene		8000	U	66	%	72	%	7500	U	7800	U	3800	U
1,2-Dichlorobenzene		8000	U	71	%	77	%	7500	U	7800	U	3800	U
2-Methylphenol		8000	U	91	%	96	%	7500	U	7800	U	3800	U
2,2'-oxybis(1-Chloropropane)		8000	U	84	%	90	%	7500	U	7800	U	3800	U
4-Methylphenol		8000	U	94	%	94	%	7500	U	7800	U	3800	U
N-Nitroso-di-n-propylamine		8000	U	89	%	93	%	7500	U	7800	U	3800	U
Hexachloroethane		8000	U	61	%	67	%	7500	U	7800	U	3800	U
Nitrobenzene		8000	U	71	%	78	%	7500	U	7800	U	3800	U
Isophorone		8000	U	83	%	84	%	7500	U	7800	U	3800	U
2-Nitrophenol		8000	U	69	%	78	%	7500	U	7800	U	3800	U
2,4-Dimethylphenol		8000	U	78	%	81	%	7500	U	7800	U	3800	U
bis(2-Chloroethoxy)methane		8000	U	78	%	82	%	7500	U	7800	U	3800	U
2,4-Dichlorophenol		8000	U	76	%	77	%	7500	U	7800	U	3800	U
1,2,4-Trichlorobenzene		8000	U	63	%	68	%	7500	U	7800	U	3800	U
Naphthalene		8000	U	69	%	75	%	7500	U	7800	U	3800	U
4-Chloroaniline		8000	U	40	%	16 *	%	7500	U	7800	U	3800	U
Hexachlorobutadiene		8000	U	64	%	68	%	7500	U	7800	U	3800	U
4-Chloro-3-methylphenol		8000	U	82	%	75	%	7500	U	7800	U	3800	U
2-Methylnaphthalene		8000	U	77	%	77	%	7500	U	7800	U	3800	U
Hexachlorocyclopentadiene		8000	U	24	%	26	%	7500	U	7800	U	3800	U
2,4,6-Trichlorophenol		8000	U	83	%	87	%	7500	U	7800	U	3800	U
2,4,5-Trichlorophenol		20000	U	87	%	88	%	19000	U	19000	U	9500	U

*= Outside of EPA CLP QC limits.

000016

000000009

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 1b

Cust ID:	J11X50		J11X50		J11X50		J11X51		J11X60		J11X61	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	8000	U	77	%	85	%	7500	U	7800	U	3800	U
2-Nitroaniline	20000	U	93	%	97	%	19000	U	19000	U	9500	U
Dimethylphthalate	8000	U	85	%	81	%	7500	U	7800	U	3800	U
Acenaphthylene	8000	U	84	%	89	%	7500	U	7800	U	3800	U
2,6-Dinitrotoluene	8000	U	84	%	83	%	7500	U	7800	U	3800	U
3-Nitroaniline	20000	U	64	%	41 *	%	19000	U	19000	U	9500	U
Acenaphthene	8000	U	80	%	82	%	7500	U	7800	U	3800	U
2,4-Dinitrophenol	20000	U	87	%	90	%	19000	U	19000	U	9500	U
4-Nitrophenol	20000	U	94	%	83	%	19000	U	19000	U	9500	U
Dibenzofuran	8000	U	81	%	81	%	7500	U	7800	U	3800	U
2,4-Dinitrotoluene	8000	U	90	%	82	%	7500	U	7800	U	3800	U
Diethylphthalate	8000	U	88	%	77	%	7500	U	7800	U	3800	U
4-Chlorophenyl-phenylether	8000	U	79	%	73	%	7500	U	7800	U	3800	U
Fluorene	8000	U	82	%	76	%	7500	U	7800	U	3800	U
4-Nitroaniline	20000	U	67	%	51	%	19000	U	19000	U	9500	U
4,6-Dinitro-2-methylphenol	20000	U	75	%	86	%	19000	U	19000	U	9500	U
N-Nitrosodiphenylamine (1)	8000	U	65	%	70	%	7500	U	7800	U	3800	U
4-Bromophenyl-phenylether	8000	U	66	%	71	%	7500	U	7800	U	3800	U
Hexachlorobenzene	8000	U	75	%	82	%	7500	U	7800	U	3800	U
Pentachlorophenol	20000	U	128	%	134 *	%	19000	U	19000	U	9500	U
Phenanthrene	8000	U	81	%	84	%	7500	U	7800	U	3800	U
Anthracene	8000	U	80	%	83	%	7500	U	7800	U	3800	U
Carbazole	8000	U	87	%	85	%	7500	U	7800	U	3800	U
Di-n-butylphthalate	8000	U	77	%	76	%	7500	U	7800	U	3800	U
Fluoranthene	8000	U	97	%	93	%	7500	U	7800	U	3800	U
Pyrene	8000	U	79	%	80	%	7500	U	7800	U	3800	U
Butylbenzylphthalate	8000	U	88	%	87	%	7500	U	7800	U	3800	U
3,3'-Dichlorobenzidine	8000	U	31	%	18 *	%	7500	U	7800	U	3800	U
Benzo(a)anthracene	8000	U	84	%	86	%	7500	U	7800	U	3800	U
Chrysene	8000	U	84	%	86	%	7500	U	7800	U	3800	U
bis(2-Ethylhexyl)phthalate	410	~~JB~~ U	92	%	90	%	2900	~~JB~~ U	7800	U	330 ~~260~~	~~JB~~ U
Di-n-octyl phthalate	8000	U	85	%	84	%	7500	U	7800	U	3800	U
Benzo(b)fluoranthene	8000	U	78	%	79	%	7500	U	7800	U	3800	U
Benzo(k)fluoranthene	8000	U	81	%	82	%	7500	U	7800	U	3800	U
Benzo(a)pyrene	8000	U	83	%	85	%	7500	U	7800	U	3800	U
Indeno(1,2,3-cd)pyrene	8000	U	76	%	83	%	7500	U	7800	U	3800	U
Dibenz(a,h)anthracene	8000	U	77	%	83	%	7500	U	7800	U	3800	U
Benzo(g,h,i)perylene	8000	U	77	%	84	%	7500	U	7800	U	3800	U

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

8/8/06

000000017

000000010

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 07/24/06 09:29

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 2a

	Cust ID:	J11X64		J11X65		J11X72		J11X73		J11X74		J11X75	
Sample Information	RFW#:	005		006		007		008		009		010	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
	D.F.:	4.00		4.00		4.00		4.00		4.00		4.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	72	%	86	%	75	%	75	%	70	%	68	%
	2-Fluorobiphenyl	69	%	62	%	51	%	76	%	68	%	73	%
	Terphenyl-d14	66	%	112	%	102	%	72	%	75	%	67	%
	Phenol-d5	78	%	70	%	78	%	80	%	75	%	0	%
	2-Fluorophenol	77	%	61	%	68	%	71	%	74	%	68	%
	2,4,6-Tribromophenol	75	%	82	%	77	%	79	%	77	%	74	%
		fl		fl		fl		fl		fl		fl	
Phenol		7800	U J	650	U J	18000	U J	6900	U J	7700	U J	7600	U J
bis(2-Chloroethyl)ether		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2-Chlorophenol		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
1,3-Dichlorobenzene		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
1,4-Dichlorobenzene		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
1,2-Dichlorobenzene		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2-Methylphenol		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2,2'-oxybis(1-Chloropropane)		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
4-Methylphenol		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
N-Nitroso-di-n-propylamine		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Hexachloroethane		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Nitrobenzene		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Isophorone		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2-Nitrophenol		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2,4-Dimethylphenol		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
bis(2-Chloroethoxy)methane		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2,4-Dichlorophenol		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
1,2,4-Trichlorobenzene		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Naphthalene		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
4-Chloroaniline		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Hexachlorobutadiene		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
4-Chloro-3-methylphenol		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2-Methylnaphthalene		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Hexachlorocyclopentadiene		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2,4,6-Trichlorophenol		7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2,4,5-Trichlorophenol		19000	U	19000	U	46000	U	17000	U	19000	U	19000	U

*= Outside of EPA CLP QC limits.

8/8/06

000000011

000018

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606C01 Page: 2b

Cust ID:	J11X64		J11X65		J11X72		J11X73		J11X74		J11X75	
RFW#:	005		006		007		008		009		010	
2-Chloronaphthalene	7800	U J	7600	U J	18000	U J	6900	U J	7700	U J	7600	U J
2-Nitroaniline	19000	U	19000	U	46000	U	17000	U	19000	U	19000	U
Dimethylphthalate	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Acenaphthylene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2,6-Dinitrotoluene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
3-Nitroaniline	19000	U	19000	U	46000	U	17000	U	19000	U	19000	U
Acenaphthene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2,4-Dinitrophenol	19000	U	19000	U	46000	U	17000	U	19000	U	19000	U
4-Nitrophenol	19000	U	19000	U	46000	U	17000	U	19000	U	19000	U
Dibenzofuran	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
2,4-Dinitrotoluene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Diethylphthalate	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
4-Chlorophenyl-phenylether	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Fluorene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
4-Nitroaniline	19000	U	19000	U	46000	U	17000	U	19000	U	19000	U
4,6-Dinitro-2-methylphenol	19000	U	19000	U	46000	U	17000	U	19000	U	19000	U
N-Nitrosodiphenylamine (1)	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
4-Bromophenyl-phenylether	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Hexachlorobenzene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Pentachlorophenol	19000	U	19000	U	46000	U	17000	U	19000	U	19000	U
Phenanthrene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Anthracene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Carbazole	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Di-n-butylphthalate	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Fluoranthene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Pyrene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Butylbenzylphthalate	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
3,3'-Dichlorobenzidine	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Benzo(a)anthracene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Chrysene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
bis(2-Ethylhexyl)phthalate	7800	U	550	JBU	5800	JBU	6900	U	580	JBU	1400	JBU
Di-n-octyl phthalate	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Benzo(b)fluoranthene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Benzo(k)fluoranthene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Benzo(a)pyrene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Indeno(1,2,3-cd)pyrene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Dibenz(a,h)anthracene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U
Benzo(g,h,i)perylene	7800	U	7600	U	18000	U	6900	U	7700	U	7600	U

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

8/8/06

000019

000000012

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 07/24/06 09:29

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 3a

000000013

	Cust ID:	J11X76		J11X77		J11X84		J11X85		J11X88		J11X89	
Sample Information	RFW#:	011		012		013		014		015		016	
	Matrix:	SOLID		SOLID		SOLID		SOLID		SOLID		SOLID	
	D.F.:	8.00		8.00		8.00		2.00		8.00		8.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	76	%	64	%	59	%	72	%	76	%	64	%
	2-Fluorobiphenyl	69	%	67	%	63	%	71	%	67	%	65	%
	Terphenyl-d14	105	%	100	%	99	%	102	%	110	%	89	%
	Phenol-d5	87	%	80	%	77	%	76	%	81	%	79	%
	2-Fluorophenol	78	%	61	%	65	%	76	%	74	%	76	%
	2,4,6-Tribromophenol	70	%	74	%	70	%	84	%	69	%	69	%
			fl		fl		fl		fl		fl		fl
Phenol		15000	U J	15000	U J	16000	U J	3900	U J	16000	U J	15000	U J
bis(2-Chloroethyl)ether		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2-Chlorophenol		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
1,3-Dichlorobenzene		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
1,4-Dichlorobenzene		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
1,2-Dichlorobenzene		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2-Methylphenol		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2,2'-oxybis(1-Chloropropane)		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
4-Methylphenol		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
N-Nitroso-di-n-propylamine		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Hexachloroethane		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Nitrobenzene		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Isophorone		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2-Nitrophenol		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2,4-Dimethylphenol		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
bis(2-Chloroethoxy)methane		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2,4-Dichlorophenol		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
1,2,4-Trichlorobenzene		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Naphthalene		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
4-Chloroaniline		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Hexachlorobutadiene		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
4-Chloro-3-methylphenol		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2-Methylnaphthalene		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Hexachlorocyclopentadiene		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2,4,6-Trichlorophenol		15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2,4,5-Trichlorophenol		38000	U	38000	U	39000	U	9700	U	40000	U	38000	U

*= Outside of EPA CLP QC limits.

K 8/8/06

000020

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 3b

Cust ID:	J11X76		J11X77		J11X84		J11X85		J11X88		J11X89	
RFW#:	011		012		013		014		015		016	
2-Chloronaphthalene	15000	U J	15000	U J	16000	U J	3900	U J	16000	U J	15000	U J
2-Nitroaniline	38000	U	38000	U	39000	U	9700	U	40000	U	38000	U
Dimethylphthalate	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Acenaphthylene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2,6-Dinitrotoluene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
3-Nitroaniline	38000	U	38000	U	39000	U	9700	U	40000	U	38000	U
Acenaphthene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2,4-Dinitrophenol	38000	U	38000	U	39000	U	9700	U	40000	U	38000	U
4-Nitrophenol	38000	U	38000	U	39000	U	9700	U	40000	U	38000	U
Dibenzofuran	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
2,4-Dinitrotoluene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Diethylphthalate	18000		14000	J	8200	J	1300	J	3300	J	1900	J
4-Chlorophenyl-phenylether	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Fluorene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
4-Nitroaniline	38000	U	38000	U	39000	U	9700	U	40000	U	38000	U
4,6-Dinitro-2-methylphenol	38000	U	38000	U	39000	U	9700	U	40000	U	38000	U
N-Nitrosodiphenylamine (1)	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
4-Bromophenyl-phenylether	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Hexachlorobenzene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Pentachlorophenol	38000	U	38000	U	39000	U	9700	U	40000	U	38000	U
Phenanthrene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Anthracene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Carbazole	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Di-n-butylphthalate	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Fluoranthene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Pyrene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Butylbenzylphthalate	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
3,3'-Dichlorobenzidine	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Benzo(a)anthracene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Chrysene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
bis(2-Ethylhexyl)phthalate	15000	U	3600	~~JB~~ U	2600	~~JB~~ U	470	~~JB~~ U	3500	~~JB~~ U	2500	~~JB~~ U
Di-n-octyl phthalate	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Benzo(b)fluoranthene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Benzo(k)fluoranthene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Benzo(a)pyrene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Indeno(1,2,3-cd)pyrene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Dibenz(a,h)anthracene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U
Benzo(g,h,i)perylene	15000	U	15000	U	16000	U	3900	U	16000	U	15000	U

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

8/8/06

0000014

0000021

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

Report Date: 07/24/06 09:29

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 4a

	Cust ID:	SBLKYO	SBLKYO BS
Sample Information	RFW#:	06LE0463-MB1	06LE0463-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	ug/Kg	ug/Kg

Surrogate Recovery	Nitrobenzene-d5	66	%	72	%
	2-Fluorobiphenyl	58	%	60	%
	Terphenyl-d14	70	%	69	%
	Phenol-d5	55	%	50	%
	2-Fluorophenol	57	%	55	%
	2,4,6-Tribromophenol	68	%	104	%

Phenol	330	U	52		%
bis(2-Chloroethyl)ether	330	U	53		%
2-Chlorophenol	330	U	54		%
1,3-Dichlorobenzene	330	U	64		%
1,4-Dichlorobenzene	330	U	65		%
1,2-Dichlorobenzene	330	U	70		%
2-Methylphenol	330	U	63		%
2,2'-oxybis(1-Chloropropane)	330	U	68		%
4-Methylphenol	330	U	58	*	%
N-Nitroso-di-n-propylamine	330	U	69		%
Hexachloroethane	330	U	67		%
Nitrobenzene	330	U	76		%
Isophorone	330	U	86		%
2-Nitrophenol	330	U	76		%
2,4-Dimethylphenol	330	U	37	*	%
bis(2-Chloroethoxy)methane	330	U	74		%
2,4-Dichlorophenol	330	U	68		%
1,2,4-Trichlorobenzene	330	U	66		%
Naphthalene	330	U	64		%
4-Chloroaniline	330	U	67		%
Hexachlorobutadiene	330	U	76		%
4-Chloro-3-methylphenol	330	U	79		%
2-Methylnaphthalene	330	U	83		%
Hexachlorocyclopentadiene	330	U	67		%
2,4,6-Trichlorophenol	330	U	64		%
2,4,5-Trichlorophenol	830	U	68		%

*= Outside of EPA CLP QC limits.

8/8/06

0000022

0000000015

	Cust ID: SBLKYO		SBLKYO BS	
	RFW#: 06LE0463-MB1		06LE0463-MB1	
2-Chloronaphthalene	330	U	65	%
2-Nitroaniline	830	U	79	%
Dimethylphthalate	330	U	69	%
Acenaphthylene	330	U	62	%
2,6-Dinitrotoluene	330	U	67	%
3-Nitroaniline	830	U	72	%
Acenaphthene	330	U	66	%
2,4-Dinitrophenol	830	U	71	%
4-Nitrophenol	830	U	85	%
Dibenzofuran	330	U	72	%
2,4-Dinitrotoluene	330	U	80	%
Diethylphthalate	330	U	73	%
4-Chlorophenyl-phenylether	330	U	73	%
Fluorene	330	U	69	%
4-Nitroaniline	830	U	60	%
4,6-Dinitro-2-methylphenol	830	U	101	%
N-Nitrosodiphenylamine (1)	330	U	68	%
4-Bromophenyl-phenylether	330	U	67	%
Hexachlorobenzene	330	U	89	%
Pentachlorophenol	830	U	90	%
Phenanthrene	330	U	73	%
Anthracene	330	U	75	%
Carbazole	330	U	63	%
Di-n-butylphthalate	330	U	75	%
Fluoranthene	330	U	75	%
Pyrene	330	U	71	%
Butylbenzylphthalate	330	U	72	%
3,3'-Dichlorobenzidine	330	U	77	%
Benzo(a)anthracene	330	U	66	%
Chrysene	330	U	65	%
bis(2-Ethylhexyl)phthalate	600		51	%
Di-n-octyl phthalate	330	U	70	%
Benzo(b)fluoranthene	330	U	73	%
Benzo(k)fluoranthene	330	U	68	%
Benzo(a)pyrene	330	U	67	%
Indeno(1,2,3-cd)pyrene	330	U	76	%
Dibenz(a,h)anthracene	330	U	75	%
Benzo(g,h,i)perylene	330	U	78	%

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

8/8/06

000000016

000023

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-047
LVL #: 0605L042
SDG/SAF # K0358/RC-047

W.O. #: 11343-606-001-9999-00
Date Received: 05-17-2006

SEMIVOLATILE

Sixteen (16) solid samples were collected on 05-10,12-2006.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 06-06-2006 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 06-15-2006 and 07-03,08,11,14-2006.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were extracted outside the required holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

2. Non-target compounds were detected in the samples.

3. All soil sample results were reported on a wet-weight basis.

4. Several samples required dilution due to dark and viscous nature of the sample matrix. Due to the nature of the sample matrix, elevated final volume for the analysis and reduced initial volume for the extraction was used resulting in higher sample results. A copy of the Sample Extraction Record has been enclosed for detail information.

5. All surrogate recoveries were within acceptance criteria.

6. Four (4) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

7. Two (2) of sixty-four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

8. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than 2x the CRQL.

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 4 6 pages.

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

LIONVILLE LABORATORY INC.

9. Internal standard area criteria were not met for sample J11X72. The GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly and all surrogate recoveries were within QC limits; consequently, the sample was not reanalyzed.

10. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

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

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

Judy Stum

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

7/26/02
Date

som\gorup\data\bna\tnu-hanford\0605-042.doc

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Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06PM002

Initiator: Orlette Johnson
Date: 6/21/06
Client: TNU Hanford Recov

Batch: 06SL02
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: 8275H
Matrix: Solid
Prep Batch: 06E0463

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Sample(s) was/were extracted 11/13 days beyond the hold time

2. Known or Probable Causes(s) due to a temporary glassware shortage created by a malfunctioning drying kiln i.e, much of our glassware was lost when one of the kilns overheated. We made every effort to replace glassware as soon as possible but our needs exceeded on-the-shelf vendor stocks of certain critical items. This problem was exacerbated by an unusually high number of samples received during this period of time for organics extraction.

3. Discussion and Proposed Action

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

Other Description:

We have replenished glassware stocks to higher levels than those in-house before the kiln malfunction. We have also replaced the kiln.

4. Project Manager Instructions...signature/date: 6/21/06

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
X Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 07/25/06

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Welsh
	X Lab General Manager: I. Daniels	__	__ Inorganic: Perrone
T	X Project Mgr: Stone/Johnson		__ GC/LC: Kiger
__	X Data Management: Stilwell	T	Z MS: Schneider/Garden
__	__ Sample Prep: Kiger	__	__ Log-In: Perry
		__	__ Admin: _____
		__	__ Other: _____

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06MS24X5

Initiator: Robert Carter
Date: 7/25/06
Client: TNW Hartford Clean

Batch: 06US24
Samples: MSD / BS
Method: SW8270MCAWW/CLP/

Parameter: 6257H
Matrix: Solid
Prep Batch: 06CE0463

1. Reason for SDR

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

b. General Discrepancy

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

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

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

4chloroaniline outside QC spike criteria in ~~QC~~ MSD 16% (20-120%) acin ~~PROD~~ MS/BS
3nitroaniline 41% (50-140%) acin MS/BS
3,3'dichlorobenzidine 19% (20-130%) acin MS/BS

2. Known or Probable Causes(s) 4methylphenol / 2,4 dimethylphenol outside QC spike criteria in BS

These compounds exhibit erratic chromatographic behavior especially if GC system contaminated with high boiling analytes. Confirmed

3. Discussion and Proposed Action Other Description: Alternate

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

4. Project Manager Instructions...signature/date: 7/25/06

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 07/25/06 Other Explanation:

✓ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson		__ GC/LC: Kiger
__	__ Data Management: Stilwell	2	X MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

RECEIVED
JUL 2006

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-047 K0358

DATE RECEIVED: 05/17/06 LVL LOT # :06[illegible]

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J11X50	001	SO	06LE0463	05/12/06	06/06/06	07/03/06
J11X50	001 MS	SO	06LE0463	05/12/06	06/06/06	07/03/06
J11X50	001 MSD	SO	06LE0463	05/12/06	06/06/06	07/03/06
J11X51	002	SO	06LE0463	05/12/06	06/06/06	07/03/06
J11X60	003	SO	06LE0463	05/10/06	06/06/06	07/03/06
J11X61	004	SO	06LE0463	05/10/06	06/06/06	07/03/06
J11X64	005	SO	06LE0463	05/12/06	06/06/06	07/03/06
J11X65	006	SO	06LE0463	05/12/06	06/06/06	07/14/06
J11X72	007	SO	06LE0463	05/12/06	06/06/06	07/14/06
J11X73	008	SO	06LE0463	05/12/06	06/06/06	07/08/06
J11X74	009	SO	06LE0463	05/10/06	06/06/06	07/08/06
J11X75	010	SO	06LE0463	05/10/06	06/06/06	07/08/06
J11X76	011	SO	06LE0463	05/12/06	06/06/06	07/11/06
J11X77	012	SO	06LE0463	05/12/06	06/06/06	07/11/06
J11X84	013	SO	06LE0463	05/12/06	06/06/06	07/11/06
J11X85	014	SO	06LE0463	05/12/06	06/06/06	07/11/06
J11X88	015	SO	06LE0463	05/12/06	06/06/06	07/11/06
J11X89	016	SO	06LE0463	05/12/06	06/06/06	07/11/06

LAB QC:

SBLKYO	MB1	S	06LE0463	N/A	06/06/06	06/15/06
SBLKYO	MB1 BS	S	06LE0463	N/A	06/06/06	06/15/06

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-375	Page 1 of 1

Collector: TILLER, B TR KLINCKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300-44/618-4	SAF No.: RC-047	
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: 1406469	Bill of Lading/Air Bill No.: SEE OSPC	

0000014

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

0000030

SAMPLE ANALYSIS													
Preservation				None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C			
Type of Container				G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)				1	1	1	1	1	1	1			
Volume				750g	5g	5g	15g	50g	50g	50g			
Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA			
J11X50	OTHER SOLID	5-12-06	1215				X	X	X	X			
J11X51	OTHER SOLID	5-12-06	1230				X	X	X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	5-12-06 1245	EAS LOCKED STORAGE	5-12-06 1245
EAS LOCKED STORAGE	MAY 15 2006 0730	LR Edmondson	5-15-06 0730
LR Edmondson	5-16-06 1500	Fed Ex	
Fed Ex	5-17-06 0925	W J Smith	5-17-06 0925
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) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-380	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 100-F-2		SAF No. RC-047
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC

Price Code 9N

Air Quality ☐

Data Turnaround 45 Days

000000015

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000031

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	750g	5g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI - VOA 8270A				
Sample No.	Matrix *	Sample Date	Sample Time								
J11X60	OTHER SOLID	5-10-06	9:20				X	X	X	X	
J11X61	OTHER SOLID	5-10-06	9:30				X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From TR KLINCKMAN	Date/Time 5-10-06 9:45	Received By/Stored In EAS LOCKED STORAGE	Date/Time 5-10-06 9:45
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0730 MAY 15 2006	Received By/Stored In [illegible] 5-15-06	Date/Time 0730
Relinquished By/Removed From [illegible] 5-15-06	Date/Time 1500	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 5-17-06 / 0925	Received By/Stored In [illegible] 5-17-06	Date/Time / 0925
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) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-382	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location BORROW PIT 9	SAF No. RC-047	
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060469	Bill of Lading/Air Bill No. SEE OSPC	

000000016

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000032

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X64	OTHER SOLID	5-12-06	1400				X	X	X	X	
J11X65	OTHER SOLID	5-12-06	1415				X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From TR KLINCKMAN	Date/Time 1430 5-12-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 1430 5-12-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0730 MAY 15 2006	Received By/Stored In TR Klinckman	Date/Time 5-15-06/0730
Relinquished By/Removed From TR Klinckman 5-16-06	Date/Time 1500	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex 5.17.06	Date/Time 0925	Received By/Stored In D. Smith	Date/Time 5.17.06/0925
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) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-386	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-23		SAF No. RC-047	Air Quality ☐	
Ice Chest No. TRK 5-16-06 ERC-00 ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC		

000000017

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000033

SAMPLE ANALYSIS													
Preservation				None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container				G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)				1	1	1	1	1	1	1			
Volume				750g	5g	5g	15g	50g	50g	50g			
				See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time										
J11X72	OTHER SOLID	5-12-06	1315				X	X	X	X			
J11X73	OTHER SOLID	5-12-06	1330				X	X	X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	5-12-06 1345	EAS LOCKED STORAGE	5-12-06 1345
EAS LOCKED STORAGE	MAY 15 2006 0730	TR Klinckman	5-15-06 0730
TR Klinckman	5-16-06 1500	Fed Ex	
Fed Ex	5-17-06 10925	D. Smith	5-17-06/0925

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-387	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: JA JONES-1	SAF No.: RC-047	
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A060469	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

00000034

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C				
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	750g	5g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A				
Sample No.	Matrix *	Sample Date	Sample Time								
J11X74	OTHER SOLID	5-10-06	12:30				X	X	X	X	
J11X75	OTHER SOLID	5-10-06	12:45				X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: TR KLINCKMAN		MAY 10 2006 1700
Received By/Stored In: EAS LOCKED STORAGE		MAY 10 2006 1300
Relinquished By/Removed From: EAS LOCKED STORAGE		MAY 1[illegible] 2006 0730
Received By/Stored In:	TR Klinckman	5-15-06 0730
Relinquished By/Removed From: WCH	TR Klinckman	5-16-06 1500
Received By/Stored In: Fed Ex		
Relinquished By/Removed From: Fed Ex		5-17-06 1092[illegible]
Received By/Stored In:		5-17-06 1092[illegible]
Relinquished By/Removed From		
Received By/Stored In		
Relinquished By/Removed From		
Received By/Stored In		

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) (Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238)

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-388	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-132/600-190	SAF No. RC-047	
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES/LIONVILLE	Offsite Property No. A060469	Bill of Lading/Air Bill No. SEE OSPC	

00000019

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

00000035

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X76	OTHER SOLID	MAY 12 2006	0710				X	X	X	X	
J11X77	OTHER SOLID	MAY 12 2006	0725				X	X	X	X	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN 0730	MAY 12 2006	EAS LOCKED STORAGE	0730 MAY 12 2006
EAS LOCKED STORAGE	0730 MAY 15 2006		5-15-06 0730
T.R. Klinckman WCH J.R. Edmundson 5-15-06	1530	Fed Ex	
	5-17-06 1025		5-17-06 1025
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) Gamma Spec - (Full List) (Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238)

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-392	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-131		SAF No. RC-047
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC

0000036

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X84	OTHER SOLID	MAY 12 2006	0920				X	X	X	X	
J11X85	OTHER SOLID	MAY 12 2006	0930				X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From TR KLINCKMAN Date/Time 0945 5-12-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 0945 5-12-06
Relinquished By/Removed From EAS LOCKED STORAGE MAY 15 2006 Date/Time 0730	Received By/Stored In Date/Time 5-15-06 0730
Relinquished By/Removed From Date/Time 5-15-06 1500	Received By/Stored In Fed Ex Date/Time
Relinquished By/Removed From Fed Ex Date/Time 5-17-06 10925	Received By/Stored In Date/Time 5-17-06 10925
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) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-394	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 628-1	SAF No.: RC-047	
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060469		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A			
Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			

Sample No.	Matrix *	Sample Date	Sample Time										
J11X88	OTHER SOLID	MAY 12 2006	0810				X	X	X	X			
J11X89	OTHER SOLID	MAY 12 2006	0830				X	X	X	X			

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: TR KLINCKMAN	0545 5-12-06	Received By/Stored In: EAS LOCKED STORAGE	0545 5-12-06
Relinquished By/Removed From: EAS LOCKED STORAGE	0830 MAY 15 2006	Received By/Stored In: TR Edmundson	5-15-06 0730
Relinquished By/Removed From: TR Edmundson	5-16-06 1500	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	5-17-06/0955	Received By/Stored In:	5-17-06/0925
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	RCBRA		DATA PACKAGE:	K0358A	
VALIDATOR:	TLI	LAB: LLI		DATE: 8/6/06	
			SDG:	K0358A	
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J11X50	J11X51	J11X60	J11X61	J11X64	J11X65
J11X72	J11X73	J11X74	J11X75	J11X76	J11X77
J11X84	J11X85	J11X88	J11X89		
					solid

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: bis(2-ethylhexyl) phthalate - 61, → U at RQL (330)
" " - U → 50, 51, 65, 66, 74, 75, 77, 84, 85, 88, 89

no 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: MSD - 4 chloroaniline (16%) - J all no PAS
3 nitroaniline (41%) - J all
3,3, dichlorobenzidine (18%) - J all
LCS - 4-methyl phenol - (58%) - J all
2,4 dimethyl phenol (37%) - J all

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: 4 chloroaniline - 86% - J
3-nitroaniline - 44% - J
3,3-dichlorobenzidine - 53% - J

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Internal standard retention times acceptable? ..... Yes No N/A

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

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

Transcription/calculation errors? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments: all <2x HT - J all

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: no RQL's specified

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: 11 August 2006
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 Area and 300 Area Component of the RCBRA Sediment & Tissue
Subject: Inorganic - Data Package No. K0358A-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0358A prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11X50	5/12/06	Solid	C	See note 1
J11X51	5/12/06	Solid	C	See note 1
J11X60	5/10/06	Solid	C	See note 1
J11X61	5/10/06	Solid	C	See note 1
J11X64	5/12/06	Solid	C	See note 1
J11X65	5/12/06	Solid	C	See note 1
J11X72	5/12/06	Solid	C	See note 1
J11X73	5/12/06	Solid	C	See note 1
J11X74	5/10/06	Solid	C	See note 1
J11X75	5/10/06	Solid	C	See note 1
J11X76	5/12/06	Solid	C	See note 1
J11X78	5/12/06	Solid	C	See note 1
J11X84	5/12/06	Solid	C	See note 1
J11X85	5/12/06	Solid	C	See note 1
J11X88	5/12/06	Solid	C	See note 1
J11X89	5/12/06	Solid	C	See note 1

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

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area and 300 Area Component of the RCBRA Sampling & Analysis Plan (DOE/RL-2005-42, Rev. 0, October 2005). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

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

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 80% to 120%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 79% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 120% or less than 80% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 120% and a sample result less than the IDL, no qualification is required.

Due to an LCS recovery outside QC limits (45.9%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 20%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 and 300 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. K0358A 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 LCS recovery outside QC limits (45.9%), all silicon results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

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

DOE/RL-2005-42, Rev. 0, October 2005, *100 Area and 300 Area Component of the RCBRA Sampling & Analysis Plan.*

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0358A	REVIEWER: TLI	Project: RCBRA	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Silicon	J	All	LCS recovery

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD
Laboratory: LLI SDG: K0358-A

Sample Number		J11X50		J11X51		J11X60		J11X61		J11X64		J11X65		J11X72		J11X73		J11X74		J11X75	
Remarks																					
Sample Date		5/12/06		5/12/06		5/10/06		5/10/06		5/12/06		5/12/06		5/12/06		5/12/06		5/10/06		5/10/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	1	0.06	U	0.07	U	0.07	U	0.07		0.07	U	0.07	U	0.07	U	0.09		0.07	U	0.09	
Aluminum	5	7.2		16.2		12.8		5.4		6.8		22.5		39.3		82.3		23.5		51.3	
Arsenic	10	0.56	U	0.58	U	0.57	U	0.58	U	0.57	U	0.58	U	0.58	U	0.58	U	0.58	U	0.83	
Boron		4.9		3.5		3.3		2.5		3.5		14.9		10.6		2.80		2.4		18.0	
Barium	2	4.6		7.1		1.2		5.1		6.3		1.3		2.0		8.5		6.7		2.7	
Beryllium	0.5	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Bismuth		0.47	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U
Calcium		2950		756		3440		762		1030		1730		2280		1700		1260		2520	
Cadmium	1	0.06	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U
Cobalt		0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
Chromium	1	0.22		0.38		0.12	U	0.18		0.22		0.19		0.16		0.40		0.39		1.3	
Copper	6	1.1		1.7		0.98		2.0		1.2		2.6		2.2		2.0		1.4		3.1	
Iron	5	25.0		48.6		38.4		26.5		25.7		65.1		108		196		71.7		164	
Mercury	0.2	0.02	U	0.02	U	0.02	U	0.02	U	0.01	U	0.01	U	0.01	U	0.02	U	0.02	U	0.01	U
Potassium	400	3960		4960		5720		5600		5030		7490		5560		5040		6020		5380	
Lithium		0.08	U	0.05		0.06		0.08		0.05		0.07		0.09		0.12		0.06		0.13	
Magnesium		536		406		666		377		409		574		597		327		289		537	
Manganese	5	10.1		9.4		8.4		10.0		7.5		11.1		13.0		14.0		7.2		11.9	
Molybdenum		0.43		0.27	U	0.30		0.74		0.44		0.27	U	0.93		4.4		1.4		0.27	U
Sodium		9.8		10.5		21.7		15.6		7.8		9.7		10.5		20.9		7.9		13.8	
Nickel	4	0.24		0.61		0.22	U	0.30		0.53		0.65		0.37		0.81		0.44		0.83	
Phosphorous	5	777		968		713		880		832		972		669		768		807		616	
Lead	5	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.41		0.29	U	0.29	U
Antimony	6	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U
Selenium		0.44	U	0.44	U	0.44	U	0.46		0.44	U	0.45		0.45		0.56		0.44	U	0.46	
Silicon		27.0	J	250	J	31.0	J	135	J	244	J	47.3	J	73.0	J	281	J	141	J	92.5	J
Tin	10	0.99	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Strontium		8.7		2.3		14.9		4.5		3.4		4.4		8.0		5.9		4.2		10.4	
Titanium		1.0		2.2		1.3		0.74		0.92		3.5		6.0		11.2		4.0		9.0	
Thallium		0.65	U	0.66	U	0.65	U	0.66	U	0.65	U	0.66	U	0.66	U	0.66	U	0.66	U	0.65	U
Uranium	30	0.81	U	0.83	U	0.82	U	0.83	U	0.82	U	0.83	U	0.83	U	0.83	U	0.83	U	0.82	U
Vanadium	2.5	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.14		0.37		0.10		0.26	
Zinc	1	5.4		4.5		4.7		4.3		4.4		11.2		10.9		13.3		10.6		9.6	
Zirconium		0.98	U	1.0	U	0.99	U	1.0	U	0.99	U	1.0	U	1.0	U	1.0	U	1.0	U	0.99	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.

000010

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: LLI SDG: K0358-A																					
Sample Number		J11X76		J11X77		J11X84		J11X85		J11X88		J11X89									
Remarks																					
Sample Date		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06									
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	1	0.07	U	0.06	U	0.08		0.08		0.08		0.07	U								
Aluminum	5	11.6		10.9		8.8		14.5		14.4		18.4									
Arsenic	10	0.58	U	0.56	U	0.57	U	0.57	U	0.57	U	0.57	U								
Boron		4.7		19.6		7.2		4.9		3.7		5.4									
Barium	2	2.8		4.1		4.5		2.4		1.7		4.6									
Beryllium	0.5	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U								
Bismuth		0.48	U	0.47	U	0.48	U	0.48	U	0.48	U	0.48	U								
Calcium		4310		730		1020		4500		2160		866									
Cadmium	1	0.07	U	0.06	U	0.07	U	0.07	U	0.07	U	0.07	U								
Cobalt		0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U								
Chromium	1	0.12	U	0.16		0.22		0.19		0.19		0.27									
Copper	6	0.37		1.6		1.4		0.42		1.2		1.9									
Iron	5	38.7		38.3		34.8		44.7		47.3		54.0									
Mercury	0.2	0.01	U	0.01	U	0.02	U	0.01	U	0.01	U	0.01	U								
Potassium	400	3230		4270		4080		2390		3770		4160									
Lithium		0.07		0.03		0.04		0.08		0.05		0.04									
Magnesium		556		407		420		729		510		360									
Manganese	5	7.3		7.3		10.6		4.1		5.6		7.2									
Molybdenum		0.37		0.50		0.43		0.33		0.43		0.67									
Sodium		9.1		17.9		14.1		11.3		15.1		10.8									
Nickel	4	0.23	U	0.59		0.40		0.22	U	0.43		0.37									
Phosphorous	5	622		866		740		503		1020		613									
Lead	5	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U	0.29	U								
Antimony	6	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U								
Selenium		0.44	U	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U								
Silicon		37.6	J	210	J	162	J	34.7	J	32.2	J	225	J								
Tin	10	1.0	U	0.99	U	1.0	U	1.0	U	1.0	U	1.0	U								
Strontium		16.4		3.7		5.0		18.6		6.8		4.3									
Titanium		1.8		1.5		1.3		1.9		1.9		2.4									
Thallium		0.66	U	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U								
Uranium	30	0.83	U	0.81	U	0.82	U	0.82	U	0.82	U	0.82	U								
Vanadium	2.5	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U	0.08	U								
Zinc	1	3.1		5.0		5.5		3.0		6.6		3.7									
Zirconium		1.0	U	0.98	U	0.99	U	0.99	U	0.99	U	0.99	U								

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J11X50	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Aluminum, Total	7.2	MG/KG	2.2	1.0
		Arsenic, Total	0.56 u	MG/KG	0.56	1.0
		Boron, Total	4.9	MG/KG	0.22	1.0
		Barium, Total	4.6	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.47 u	MG/KG	0.47	1.0
		Calcium, Total	2950	MG/KG	2.3	1.0
		Cadmium, Total	0.06 u	MG/KG	0.06	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.22	MG/KG	0.12	1.0
		Copper, Total	1.1	MG/KG	0.20	1.0
		Iron, Total	25.0	MG/KG	3.2	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	3960	MG/KG	71.4	1.0
		Lithium, Total	0.08	MG/KG	0.03	1.0
		Magnesium, Total	536	MG/KG	0.90	1.0
		Manganese, Total	10.1	MG/KG	0.03	1.0
		Molybdenum, Total	0.43	MG/KG	0.27	1.0
		Sodium, Total	9.8	MG/KG	0.70	1.0
		Nickel, Total	0.24	MG/KG	0.22	1.0
		Phosphorus, Total	777	MG/KG	0.83	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	27.0 J	MG/KG	2.1	1.0
		Tin, Total	0.99 u	MG/KG	0.99	1.0
		Strontium, Total	8.7	MG/KG	0.009	1.0
		Titanium, Total	1.0	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.81 u	MG/KG	0.81	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	5.4	MG/KG	0.15	1.0
		Zirconium, Total	0.98 u	MG/KG	0.98	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J11X51	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	16.2	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	3.5	MG/KG	0.23	1.0
		Barium, Total	7.1	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	756	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.38	MG/KG	0.12	1.0
		Copper, Total	1.7	MG/KG	0.21	1.0
		Iron, Total	48.6	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	4960	MG/KG	72.7	1.0
		Lithium, Total	0.05	MG/KG	0.03	1.0
		Magnesium, Total	406	MG/KG	0.91	1.0
		Manganese, Total	9.4	MG/KG	0.03	1.0
		Molybdenum, Total	0.27 u	MG/KG	0.27	1.0
		Sodium, Total	10.5	MG/KG	0.72	1.0
		Nickel, Total	0.61	MG/KG	0.23	1.0
		Phosphorus, Total	968	MG/KG	0.85	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	250 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	2.3	MG/KG	0.009	1.0
		Titanium, Total	2.2	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	4.5	MG/KG	0.15	1.0
		Zirconium, Total	1.0 u	MG/KG	1.0	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J11X60	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	12.8	MG/KG	2.2	1.0
		Arsenic, Total	0.57 u	MG/KG	0.57	1.0
		Boron, Total	3.3	MG/KG	0.22	1.0
		Barium, Total	1.2	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	3440	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.12 u	MG/KG	0.12	1.0
		Copper, Total	0.98	MG/KG	0.21	1.0
		Iron, Total	38.4	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	5720	MG/KG	72.1	1.0
		Lithium, Total	0.06	MG/KG	0.03	1.0
		Magnesium, Total	666	MG/KG	0.91	1.0
		Manganese, Total	8.4	MG/KG	0.03	1.0
		Molybdenum, Total	0.30	MG/KG	0.27	1.0
		Sodium, Total	21.7	MG/KG	0.71	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Phosphorus, Total	713	MG/KG	0.84	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	31.0 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	14.9	MG/KG	0.009	1.0
		Titanium, Total	1.3	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	4.7	MG/KG	0.15	1.0
		Zirconium, Total	0.99 u	MG/KG	0.99	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J11X61	Silver, Total	0.07	MG/KG	0.07	1.0
		Aluminum, Total	5.4	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	2.5	MG/KG	0.23	1.0
		Barium, Total	5.1	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	762	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.18	MG/KG	0.12	1.0
		Copper, Total	2.0	MG/KG	0.21	1.0
		Iron, Total	26.5	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	5600	MG/KG	72.7	1.0
		Lithium, Total	0.08	MG/KG	0.03	1.0
		Magnesium, Total	377	MG/KG	0.91	1.0
		Manganese, Total	10.0	MG/KG	0.03	1.0
		Molybdenum, Total	0.74	MG/KG	0.27	1.0
		Sodium, Total	15.6	MG/KG	0.72	1.0
		Nickel, Total	0.20	MG/KG	0.23	1.0
		Phosphorus, Total	880	MG/KG	0.85	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.46	MG/KG	0.44	1.0
		Silicon, Total	135 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	4.5	MG/KG	0.009	1.0
		Titanium, Total	0.74	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	4.3	MG/KG	0.15	1.0
		Zirconium, Total	1.0 u	MG/KG	1.0	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J11X64	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	6.8	MG/KG	2.2	1.0
		Arsenic, Total	0.57 u	MG/KG	0.57	1.0
		Boron, Total	3.5	MG/KG	0.22	1.0
		Barium, Total	6.3	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	1030	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.22	MG/KG	0.12	1.0
		Copper, Total	1.2	MG/KG	0.21	1.0
		Iron, Total	25.7	MG/KG	3.3	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	5030	MG/KG	72.1	1.0
		Lithium, Total	0.05	MG/KG	0.03	1.0
		Magnesium, Total	409	MG/KG	0.91	1.0
		Manganese, Total	7.5	MG/KG	0.03	1.0
		Molybdenum, Total	0.44	MG/KG	0.27	1.0
		Sodium, Total	7.8	MG/KG	0.71	1.0
		Nickel, Total	0.53	MG/KG	0.22	1.0
		Phosphorus, Total	832	MG/KG	0.84	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	244 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	3.4	MG/KG	0.009	1.0
		Titanium, Total	0.92	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	4.4	MG/KG	0.15	1.0
		Zirconium, Total	0.99 u	MG/KG	0.99	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J11X65	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	22.5	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	14.9	MG/KG	0.23	1.0
		Barium, Total	1.3	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	1730	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.19	MG/KG	0.12	1.0
		Copper, Total	2.6	MG/KG	0.21	1.0
		Iron, Total	65.1	MG/KG	3.3	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	7490	MG/KG	72.7	1.0
		Lithium, Total	0.07	MG/KG	0.03	1.0
		Magnesium, Total	574	MG/KG	0.91	1.0
		Manganese, Total	11.1	MG/KG	0.03	1.0
		Molybdenum, Total	0.27 u	MG/KG	0.27	1.0
		Sodium, Total	9.7	MG/KG	0.72	1.0
		Nickel, Total	0.65	MG/KG	0.23	1.0
		Phosphorus, Total	972	MG/KG	0.85	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.45	MG/KG	0.44	1.0
		Silicon, Total	47.3 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	4.4	MG/KG	0.009	1.0
		Titanium, Total	3.5	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	11.2	MG/KG	0.15	1.0
		Zirconium, Total	1.0 u	MG/KG	1.0	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J11X72	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	39.3	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	10.6	MG/KG	0.23	1.0
		Barium, Total	2.0	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	2280	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.16	MG/KG	0.12	1.0
		Copper, Total	2.2	MG/KG	0.21	1.0
		Iron, Total	108	MG/KG	3.3	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	5560	MG/KG	72.7	1.0
		Lithium, Total	0.09	MG/KG	0.03	1.0
		Magnesium, Total	597	MG/KG	0.91	1.0
		Manganese, Total	13.0	MG/KG	0.03	1.0
		Molybdenum, Total	0.93	MG/KG	0.27	1.0
		Sodium, Total	10.5	MG/KG	0.72	1.0
		Nickel, Total	0.37	MG/KG	0.23	1.0
		Phosphorus, Total	669	MG/KG	0.85	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.45	MG/KG	0.44	1.0
		Silicon, Total	73.0 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	8.0	MG/KG	0.009	1.0
		Titanium, Total	6.0	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.14	MG/KG	0.08	1.0
		Zinc, Total	10.9	MG/KG	0.15	1.0
		Zirconium, Total	1.0 u	MG/KG	1.0	1.0

8/8/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	J11X73	Silver, Total	0.09	MG/KG	0.07	1.0
		Aluminum, Total	82.3	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	2.8	MG/KG	0.23	1.0
		Barium, Total	8.5	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	1700	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.40	MG/KG	0.12	1.0
		Copper, Total	2.0	MG/KG	0.21	1.0
		Iron, Total	196	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	5040	MG/KG	72.7	1.0
		Lithium, Total	0.12	MG/KG	0.03	1.0
		Magnesium, Total	327	MG/KG	0.91	1.0
		Manganese, Total	14.0	MG/KG	0.03	1.0
		Molybdenum, Total	4.4	MG/KG	0.27	1.0
		Sodium, Total	20.9	MG/KG	0.72	1.0
		Nickel, Total	0.81	MG/KG	0.23	1.0
		Phosphorus, Total	768	MG/KG	0.85	1.0
		Lead, Total	0.41	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.56	MG/KG	0.44	1.0
		Silicon, Total	281 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	5.9	MG/KG	0.009	1.0
		Titanium, Total	11.2	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.27	MG/KG	0.08	1.0
		Zinc, Total	13.3	MG/KG	0.15	1.0
		Zirconium, Total	1.0 u	MG/KG	1.0	1.0

6/8/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J11X74	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	23.5	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	2.4	MG/KG	0.23	1.0
		Barium, Total	6.7	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	1260	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.39	MG/KG	0.12	1.0
		Copper, Total	1.4	MG/KG	0.21	1.0
		Iron, Total	71.7	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	6020	MG/KG	72.7	1.0
		Lithium, Total	0.06	MG/KG	0.03	1.0
		Magnesium, Total	289	MG/KG	0.91	1.0
		Manganese, Total	7.2	MG/KG	0.03	1.0
		Molybdenum, Total	1.4	MG/KG	0.27	1.0
		Sodium, Total	7.9	MG/KG	0.72	1.0
		Nickel, Total	0.44	MG/KG	0.23	1.0
		Phosphorus, Total	807	MG/KG	0.85	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	141 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	4.2	MG/KG	0.009	1.0
		Titanium, Total	4.0	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.10	MG/KG	0.08	1.0
		Zinc, Total	10.6	MG/KG	0.15	1.0
		Zirconium, Total	1.0 u	MG/KG	1.0	1.0

8/8/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	J11X75	Silver, Total	0.09	MG/KG	0.07	1.0
		Aluminum, Total	51.3	MG/KG	2.2	1.0
		Arsenic, Total	0.83	MG/KG	0.57	1.0
		Boron, Total	18.0	MG/KG	0.22	1.0
		Barium, Total	2.7	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	2520	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	1.3	MG/KG	0.12	1.0
		Copper, Total	3.1	MG/KG	0.21	1.0
		Iron, Total	164	MG/KG	3.3	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	5380	MG/KG	72.1	1.0
		Lithium, Total	0.13	MG/KG	0.03	1.0
		Magnesium, Total	537	MG/KG	0.91	1.0
		Manganese, Total	11.9	MG/KG	0.03	1.0
		Molybdenum, Total	0.27 u	MG/KG	0.27	1.0
		Sodium, Total	13.8	MG/KG	0.71	1.0
		Nickel, Total	0.83	MG/KG	0.22	1.0
		Phosphorus, Total	616	MG/KG	0.84	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.46	MG/KG	0.44	1.0
		Silicon, Total	92.5 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	10.4	MG/KG	0.009	1.0
		Titanium, Total	9.0	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.26	MG/KG	0.08	1.0
		Zinc, Total	9.6	MG/KG	0.15	1.0
		Zirconium, Total	0.99 u	MG/KG	0.99	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J11X76	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	11.6	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	4.7	MG/KG	0.23	1.0
		Barium, Total	2.8	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	4310	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.12 u	MG/KG	0.12	1.0
		Copper, Total	0.37	MG/KG	0.21	1.0
		Iron, Total	38.7	MG/KG	3.3	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	3230	MG/KG	72.7	1.0
		Lithium, Total	0.07	MG/KG	0.03	1.0
		Magnesium, Total	556	MG/KG	0.91	1.0
		Manganese, Total	7.3	MG/KG	0.03	1.0
		Molybdenum, Total	0.37	MG/KG	0.27	1.0
		Sodium, Total	9.1	MG/KG	0.72	1.0
		Nickel, Total	0.23 u	MG/KG	0.23	1.0
		Phosphorus, Total	622	MG/KG	0.85	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	37.6 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	16.4	MG/KG	0.009	1.0
		Titanium, Total	1.8	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	3.1	MG/KG	0.15	1.0
		Zirconium, Total	1.0 u	MG/KG	1.0	1.0

JR 8/8/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-012	J11X77	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Aluminum, Total	10.9	MG/KG	2.2	1.0
		Arsenic, Total	0.56 u	MG/KG	0.56	1.0
		Boron, Total	19.6	MG/KG	0.22	1.0
		Barium, Total	4.1	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.47 u	MG/KG	0.47	1.0
		Calcium, Total	730	MG/KG	2.3	1.0
		Cadmium, Total	0.06 u	MG/KG	0.06	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.16	MG/KG	0.12	1.0
		Copper, Total	1.6	MG/KG	0.20	1.0
		Iron, Total	38.3	MG/KG	3.2	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	4270	MG/KG	71.4	1.0
		Lithium, Total	0.03	MG/KG	0.03	1.0
		Magnesium, Total	407	MG/KG	0.90	1.0
		Manganese, Total	7.3	MG/KG	0.03	1.0
		Molybdenum, Total	0.50	MG/KG	0.27	1.0
		Sodium, Total	17.9	MG/KG	0.70	1.0
		Nickel, Total	0.59	MG/KG	0.22	1.0
		Phosphorus, Total	866	MG/KG	0.83	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	210 J	MG/KG	2.1	1.0
		Tin, Total	0.99 u	MG/KG	0.99	1.0
		Strontium, Total	3.7	MG/KG	0.009	1.0
		Titanium, Total	1.5	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.81 u	MG/KG	0.81	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	5.0	MG/KG	0.15	1.0
		Zirconium, Total	0.98 u	MG/KG	0.98	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	J11X84	Silver, Total	0.08	MG/KG	0.07	1.0
		Aluminum, Total	8.8	MG/KG	2.2	1.0
		Arsenic, Total	0.57 u	MG/KG	0.57	1.0
		Boron, Total	7.2	MG/KG	0.22	1.0
		Barium, Total	4.5	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	1020	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.22	MG/KG	0.12	1.0
		Copper, Total	1.4	MG/KG	0.21	1.0
		Iron, Total	34.8	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	4080	MG/KG	72.1	1.0
		Lithium, Total	0.04	MG/KG	0.03	1.0
		Magnesium, Total	420	MG/KG	0.91	1.0
		Manganese, Total	10.6	MG/KG	0.03	1.0
		Molybdenum, Total	0.43	MG/KG	0.27	1.0
		Sodium, Total	14.1	MG/KG	0.71	1.0
		Nickel, Total	0.40	MG/KG	0.22	1.0
		Phosphorus, Total	740	MG/KG	0.84	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	162 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	5.0	MG/KG	0.009	1.0
		Titanium, Total	1.3	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	5.5	MG/KG	0.15	1.0
		Zirconium, Total	0.99 u	MG/KG	0.99	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 X0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-014	J11X85	Silver, Total	0.08	MG/KG	0.07	1.0
		Aluminum, Total	14.5	MG/KG	2.2	1.0
		Arsenic, Total	0.57 u	MG/KG	0.57	1.0
		Boron, Total	4.9	MG/KG	0.22	1.0
		Barium, Total	2.4	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	4500	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.19	MG/KG	0.12	1.0
		Copper, Total	0.42	MG/KG	0.21	1.0
		Iron, Total	44.7	MG/KG	3.3	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	2390	MG/KG	72.1	1.0
		Lithium, Total	0.08	MG/KG	0.03	1.0
		Magnesium, Total	729	MG/KG	0.91	1.0
		Manganese, Total	4.1	MG/KG	0.03	1.0
		Molybdenum, Total	0.33	MG/KG	0.27	1.0
		Sodium, Total	11.3	MG/KG	0.71	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Phosphorus, Total	503	MG/KG	0.84	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	34.7 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	18.6	MG/KG	0.009	1.0
		Titanium, Total	1.9	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	3.0	MG/KG	0.15	1.0
		Zirconium, Total	0.99 u	MG/KG	0.99	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-015	J11X88	Silver, Total	0.08	MG/KG	0.07	1.0
		Aluminum, Total	14.4	MG/KG	2.2	1.0
		Arsenic, Total	0.57 u	MG/KG	0.57	1.0
		Boron, Total	3.7	MG/KG	0.22	1.0
		Barium, Total	1.7	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	2160	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.19	MG/KG	0.12	1.0
		Copper, Total	1.2	MG/KG	0.21	1.0
		Iron, Total	47.3	MG/KG	3.3	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	3770	MG/KG	72.1	1.0
		Lithium, Total	0.05	MG/KG	0.03	1.0
		Magnesium, Total	510	MG/KG	0.91	1.0
		Manganese, Total	5.6	MG/KG	0.03	1.0
		Molybdenum, Total	0.43	MG/KG	0.27	1.0
		Sodium, Total	15.1	MG/KG	0.71	1.0
		Nickel, Total	0.43	MG/KG	0.22	1.0
		Phosphorus, Total	1020	MG/KG	0.84	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	32.2 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	6.8	MG/KG	0.009	1.0
		Titanium, Total	1.9	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	6.6	MG/KG	0.15	1.0
		Zirconium, Total	0.99 u	MG/KG	0.99	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-016	J11X89	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	18.4	MG/KG	2.2	1.0
		Arsenic, Total	0.57 u	MG/KG	0.57	1.0
		Boron, Total	5.4	MG/KG	0.22	1.0
		Barium, Total	4.6	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	866	MG/KG	2.3	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.27	MG/KG	0.12	1.0
		Copper, Total	1.9	MG/KG	0.21	1.0
		Iron, Total	54.0	MG/KG	3.3	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	4160	MG/KG	72.1	1.0
		Lithium, Total	0.04	MG/KG	0.03	1.0
		Magnesium, Total	360	MG/KG	0.91	1.0
		Manganese, Total	7.2	MG/KG	0.03	1.0
		Molybdenum, Total	0.67	MG/KG	0.27	1.0
		Sodium, Total	10.8	MG/KG	0.71	1.0
		Nickel, Total	0.37	MG/KG	0.22	1.0
		Phosphorus, Total	613	MG/KG	0.84	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	225 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	4.3	MG/KG	0.009	1.0
		Titanium, Total	2.4	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	3.7	MG/KG	0.15	1.0
		Zirconium, Total	0.99 u	MG/KG	0.99	1.0

M 6/6/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-047
LVL#: 0605L042
SDG/SAF#: K0358/RC-047

W.O.#: 11343-606-001-9999-00
Date Received: 05-17-06

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analyses of 16 solid samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples are reported on a wet weight, 'as-received' basis.

   Sample results for Aluminum, Beryllium, Calcium, Copper, Potassium, and Zirconium, were reported from the Phosphorous run, due to sample matrix.

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

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

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

6. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

7. All ICP Interference Check Standards were within control limits.

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 45.9%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

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 58 pages.

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

9. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J11X50	Potassium	20,000	97.3

11. The duplicate analyses for 6 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

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

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

6/28/06
Date

jjw/m05-042

LvLI
LIONVILLE LABORATORY INC.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-375	Page 1 of 1

Collector: TILLER, B TR KLINGKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N	Data Turnaround: 45 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300-44/618-4		SAF No.: RC-047	Air Quality ☐	
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX		
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: 1406469		Bill of Lading/Air Bill No.: SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See Item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA			
J11X50	OTHER SOLID	5-12-06	1215				X	X	X	X			
J11X51	OTHER SOLID	5-12-06	1230				X	X	X	X			

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINGKMAN	5-12-06 1245	EAS LOCKED STORAGE	5-12-06 1245
EAS LOCKED STORAGE	MAY 15 2006 0730	LR Edmundson	5-15-06 0730
LR Edmundson	5-15-06 1500	Fed Ex	
Fed Ex	5-17-06 0925	W Smith	5-17-06 0925

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) (Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238)

Matrix *

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

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

0000031

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-380	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 100-F-2		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES/ LIONVILLE	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI - VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time							
J11X60	OTHER SOLID	5-10-06	9:20				X	X	X	X
J11X61	OTHER SOLID	5-10-06	9:30				X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	5-10-06 9:45	EAS LOCKED STORAGE	5-10-06 9:45
EAS LOCKED STORAGE	0730 MAY 15 2006		5-15-06 0730
	5-15-06 1500	Fed Ex	
	5.17.06 / 0925		5-17-06 / 0925

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *
SoSoil
SEnSediment
SOnSolid
SlnSludge
W = Water
O=Oil
AnAir
DSnDrum Solid
DLnDrum Liquid
TnTissue
WlnWipe
LnLiquid
VnVegetation
XnOther

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

BHLEF 011 (08/22/2005)

000032

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-382	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: BORROW PIT 9	SAF No.: RC-047	
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060469	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X64	OTHER SOLID	5-12-06	1400				X	X	X	X	
J11X65	OTHER SOLID	5-12-06	1415				X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	5-12-06 1430	EAS LOCKED STORAGE	5-12-06 1430
EAS LOCKED STORAGE	MAY 14 2006	TR Klinckman	5-15-06 0730
TR Klinckman	5-16-06 1500	Fed Ex	
Fed Ex	5-17-06 0925	D. Smith	5-17-06 0925

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

0000033

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RULES 011 (08/09/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-386	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 600-23	SAF No.: RC-047	
Ice Chest No.: TRE 5-16-06 ERC-00 ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES/ LIONVILLE	Offsite Property No.: A060469		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X72	OTHER SOLID	5-12-06	1315				X	X	X	X	
J11X73	OTHER SOLID	5-12-06	1330				X	X	X	X	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	5-12-06 1345	EAS LOCKED STORAGE	5-12-06 1345
EAS LOCKED STORAGE	MAY 15 2006 0730	TR Klinckman	5-15-06 0730
TR Klinckman	5-15-06 1500	Fed Ex	
Fed Ex	5.17.06 0925	D. Smith	5.17.06/0925

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) (Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238)

Matrix *

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

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

BHI-FF-011 (08/29/2005)

0000034

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-387	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: JA JONES 1	SAF No.: RC-047	
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060469	Bill of Lading/Air Bill No.: SEB OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000035

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C				
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	750g	5g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A				
Sample No.	Matrix *	Sample Date	Sample Time								
J11X74	OTHER SOLID	5-10-06	12:30				X	X	X	X	
J11X75	OTHER SOLID	5-10-06	12:45				X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: TR KLINCKMAN /		MAY 10 2006 1700
Received By/Stored In: EAS LOCKED STORAGE		MAY 10 2006 1300
Relinquished By/Removed From: EAS LOCKED STORAGE		MAY 1 2006 0730
Received By/Stored In: Lionville	JR Elmendorf	5-15-06 0730
Relinquished By/Removed From: Lionville	JR Elmendorf	5-16-06 1500
Received By/Stored In: Fed Ex		
Relinquished By/Removed From: Fed Ex		5-17-06 1092S
Received By/Stored In:		5-17-06 1092S
Relinquished By/Removed From		
Received By/Stored In		
Relinquished By/Removed From		
Received By/Stored In		

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solid
DL=Drum Liquid
Te=Tissue
Wi=Wipe
Li=Liquid
Ve=Vegetation
X=Other

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

BHI-EE-011 (08/28/2005)

000000054

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-388	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-132/600-190		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000036

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	30g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time									
J11X76	OTHER SOLID	MAY 12 2006	0710				X	X	X	X		
J11X77	OTHER SOLID	MAY 12 2006	0725				X	X	X	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN 0730	MAY 12 2006	EAS LOCKED STORAGE	0730 MAY 12 2006
EAS LOCKED STORAGE	0730 MAY 15 2006	[signature]	5-15-06 0730
[signature] 5-15-06	1530	Fed Ex	
[signature]	5-17-06 / 0925	[signature]	5-17-06 / 0925

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) (Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238)

Matrix *

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

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

0000055

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-392	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-131		SAF No. RC-047	Air Quality ☐
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX	
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC	

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X84	OTHER SOLID	MAY 12 2006	0920				X	X	X	X	
J11X85	OTHER SOLID	MAY 12 2006	0930				X	X	X	X	

000037.0000

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	5-12-06 0945	EAS LOCKED STORAGE	5-12-06 0945
EAS LOCKED STORAGE	MAY 15 2006 0730	[illegible]	5-15-06 0730
[illegible]	5-15-06 1500	Fed Ex	
Fed Ex	5-17-06 1025	[illegible]	5-17-06 1025

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) (Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238)

Matrix *

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

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

BHI-EE-011 (08/29/2005)

000000056

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-394	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 628-1	SAF No.: RC-047	
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060469		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	Strontium-89,90 -- Total Sr: Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A			

000038

Sample No.	Matrix *	Sample Date	Sample Time										
J11X88	OTHER SOLID	MAY 12 2006	0810				X	X	X	X			
J11X89	OTHER SOLID	MAY 12 2006	0830				X	X	X	X			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	5-12-06 0545	EAS LOCKED STORAGE	5-12-06 0545
EAS LOCKED STORAGE	MAY 15 2006 0730	TR Edmundson	5-15-06 0730
TR Edmundson	5-16-06 1500	Fed Ex	
Fed Ex	5-17-06 0955	WMCH	5-17-06 0955

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHLEE-011 (08/29/2005)

000000057

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	RCBRA		DATA PACKAGE:	K0358A	
VALIDATOR:	TLI	LAB: LLI		DATE: 8/6/00	
			SDG: K0358A		

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

SAMPLES/MATRIX						
J11X51	J11X52	J11X60	J11X61	J11X64	J11X65	J11X72
J11X73	J11X74	J11X75	J11X76	J11X77	J11X84	J11X85
J11X88	J11X89					
						solid

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: no 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

LCS - Silica - 45.99% - 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: _____

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

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

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

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

Duplicate injections performed as required? ..... Yes No N/A

Duplicate injection %RSD values acceptable? ..... Yes No N/A

Analytical spikes performed as required? ..... Yes No N/A

Analytical spike recoveries acceptable? ..... Yes No N/A

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

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

MSA performed as required? ..... Yes No N/A

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

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

8. HOLDING TIMES (all levels)

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	06L0359-MB1	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	2.4 u	MG/KG	2.4	1.0
		Arsenic, Total	0.61 u	MG/KG	0.61	1.0
		Boron, Total	0.24 u	MG/KG	0.24	1.0
		Barium, Total	0.04	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.51 u	MG/KG	0.51	1.0
		Calcium, Total	6.0	MG/KG	2.5	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.14 u	MG/KG	0.14	1.0
		Chromium, Total	0.13 u	MG/KG	0.13	1.0
		Copper, Total	0.22 u	MG/KG	0.22	1.0
		Iron, Total	3.5 u	MG/KG	3.5	1.0
		Potassium, Total	77.1 u	MG/KG	77.1	1.0
		Lithium, Total	0.03 u	MG/KG	0.03	1.0
		Magnesium, Total	1.8	MG/KG	0.97	1.0
		Manganese, Total	0.03 u	MG/KG	0.03	1.0
		Molybdenum, Total	0.29 u	MG/KG	0.29	1.0
		Sodium, Total	0.85	MG/KG	0.76	1.0
		Nickel, Total	0.24 u	MG/KG	0.24	1.0
		Phosphorus, Total	0.90 u	MG/KG	0.90	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.44 u	MG/KG	0.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	2.3 u	MG/KG	2.3	1.0
		Tin, Total	1.1	MG/KG	1.1	1.0
		Strontium, Total	0.04	MG/KG	0.01	1.0
		Titanium, Total	0.03 u	MG/KG	0.03	1.0
		Thallium, Total	0.70 u	MG/KG	0.70	1.0
		Uranium, Total	0.88 u	MG/KG	0.88	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.25	MG/KG	0.16	1.0
		Zirconium, Total	1.1 u	MG/KG	1.1	1.0
BLANK1	06C0104-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J11X50	Silver, Total	4.2	0.06u	4.6	91.3	1.0
		Aluminum, Total	169	7.2	185	87.4	1.0
		Arsenic, Total	159	0.56u	185	86.1	1.0
		Boron, Total	85.1	4.9	92.6	86.6	1.0
		Barium, Total	173	4.6	185	91.1	1.0
		Beryllium, Total	4.1	0.02u	4.6	89.1	1.0
		Bismuth, Total	414	0.47u	463	89.3	1.0
		Calcium, Total	4820	2950	2320	80.8	1.0
		Cadmium, Total	4.1	0.06u	4.6	89.1	1.0
		Cobalt, Total	42.0	0.13u	46.3	90.7	1.0
		Chromium, Total	17.3	0.22	18.5	92.3	1.0
		Copper, Total	21.2	1.1	23.1	87.0	1.0
		Iron, Total	123	25.0	92.6	106.2	1.0
		Mercury, Total	0.15	0.02u	0.15	103.4	1.0
		Potassium, Total	5640	3960	2320	72.4	1.0
		Lithium, Total	93.7	0.08	92.6	101.1	1.0
		Magnesium, Total	2550	536	2320	87.2	1.0
		Manganese, Total	54.9	10.1	46.3	96.8	1.0
		Molybdenum, Total	84.9	0.43	92.6	91.2	1.0
		Sodium, Total	2120	9.8	2320	91.3	1.0
		Nickel, Total	41.0	0.24	46.3	88.0	1.0
		Phosphorus, Total	1180	777	463	88.1	1.0
		Lead, Total	40.8	0.29u	46.3	88.1	1.0
		Antimony, Total	39.9	0.41u	46.3	86.2	1.0
		Selenium, Total	151	0.44u	185	81.4	1.0
		Silicon, Total	138	27.0	92.6	119.7	1.0
		Tin, Total	85.1	0.99u	92.6	91.9	1.0
		Strontium, Total	94.2	8.7	92.6	92.3	1.0
		Titanium, Total	84.9	1.0	92.6	90.6	1.0
		Thallium, Total	166	0.65u	185	89.6	1.0
		Uranium, Total	218	0.81u	23 ~~103~~	~~47.1~~ 94.3	1.0
		Vanadium, Total	43.2	0.08u	46.3	93.3	1.0
		Zinc, Total	45.1	5.4	46.3	85.7	1.0
		Zirconium, Total	388	0.98u	463	83.8	1.0

corrected value AW 6/28/06

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K035B LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J11X50	Silver, Total	0.06u	0.06u	NC	1.0
		Aluminum, Total	7.2	9.6	28.6	1.0
		Arsenic, Total	0.56u	0.56u	NC	1.0
		Boron, Total	4.9	4.7	4.2	1.0
		Barium, Total	4.6	3.7	21.7	1.0
		Beryllium, Total	0.02u	0.02u	NC	1.0
		Bismuth, Total	0.47u	0.47u	NC	1.0
		Calcium, Total	2950	2520	15.7	1.0
		Cadmium, Total	0.06u	0.06u	NC	1.0
		Cobalt, Total	0.13u	0.13u	NC	1.0
		Chromium, Total	0.22	0.25	11.0	1.0
		Copper, Total	1.1	1.2	8.7	1.0
		Iron, Total	25.0	31.9	24.3	1.0
		Mercury, Total	0.02u	0.01u	NC	1.0
		Potassium, Total	3960	3770	4.9	1.0
		Lithium, Total	0.08	0.06	25.9	1.0
		Magnesium, Total	536	568	5.6	1.0
		Manganese, Total	10.1	10.1	0.00	1.0
		Molybdenum, Total	0.43	0.35	20.1	1.0
		Sodium, Total	9.6	9.2	6.3	1.0
		Nickel, Total	0.24	0.40	48.8	1.0
		Phosphorus, Total	777	845	8.4	1.0
		Lead, Total	0.29u	0.29u	NC	1.0
		Antimony, Total	0.41u	0.41u	NC	1.0
		Selenium, Total	0.44u	0.44u	NC	1.0
		Silicon, Total	27.0	30.4	11.8	1.0
		Tin, Total	0.99u	0.99u	NC	1.0
		Strontium, Total	8.7	7.3	17.5	1.0
		Titanium, Total	1.0	1.2	18.2	1.0
		Thallium, Total	0.65u	0.65u	NC	1.0
		Uranium, Total	0.81u	0.81u	NC	1.0
		Vanadium, Total	0.08u	0.08u	NC	1.0
		Zinc, Total	5.4	5.7	5.4	1.0
		Zirconium, Total	0.98u	0.98u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/27/06

CLIENT: TNUHANFORD RC-047 K0358 LVL LOT #: 0605L042

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	06L0359-LC1	Silver, LCS	47.8	50.0	MG/KG	95.6
		Aluminum, LCS	448	500	MG/KG	89.6
		Arsenic, LCS	882	1000	MG/KG	88.2
		Boron, LCS	449	500	MG/KG	89.9
		Barium, LCS	475	500	MG/KG	95.0
		Beryllium, LCS	23.4	25.0	MG/KG	93.6
		Bismuth, LCS	460	500	MG/KG	92.0
		Calcium, LCS	2160	2500	MG/KG	86.4
		Cadmium, LCS	23.1	25.0	MG/KG	92.4
		Cobalt, LCS	240	250	MG/KG	95.8
		Chromium, LCS	48.0	50.0	MG/KG	96.0
		Copper, LCS	114	125	MG/KG	91.5
		Iron, LCS	495	500	MG/KG	99.0
		Potassium, LCS	2200	2500	MG/KG	88.1
		Lithium, LCS	493	500	MG/KG	98.6
		Magnesium, LCS	2320	2500	MG/KG	92.7
		Manganese, LCS	72.9	75.0	MG/KG	97.2
		Molybdenum, LCS	478	500	MG/KG	95.6
		Sodium, LCS	2300	2500	MG/KG	92.1
		Nickel, LCS	186	200	MG/KG	93.2
		Phosphorus, LCS	470	500	MG/KG	93.9
		Lead, LCS	232	250	MG/KG	92.8
		Antimony, LCS	273	300	MG/KG	91.1
		Selenium, LCS	839	1000	MG/KG	83.9
		Silicon, LCS	230	500	MG/KG	45.9
		Tin, LCS	482	500	MG/KG	96.3
		Strontium, LCS	480	500	MG/KG	96.0
		Titanium, LCS	466	500	MG/KG	93.1
		Thallium, LCS	938	1000	MG/KG	93.8
		Uranium, LCS	241	250 ~~500~~ *	MG/KG	* ~~10.1~~ 96.4
		Vanadium, LCS	244	250	MG/KG	97.6
		Zinc, LCS	91.7	100	MG/KG	91.7
		Zirconium, LCS	466	500	MG/KG	93.1
LCS1	06C0104-LC1	Mercury, LCS	6.6	6.2	MG/KG	105.7

* corrected values [illegible] 6/28/06

Date: 11 August 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 Area and 300 Area Component of the RCBRA Sediment & Tissues
Subject: Radiochemistry - Data Package No. K0358A-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0358A prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11X50	5/12/06	Solid	C	See note 1
J11X51	5/12/06	Solid	C	See note 1
J11X60	5/10/06	Solid	C	See note 1
J11X61	5/10/06	Solid	C	See note 1
J11X64	5/12/06	Solid	C	See note 1
J11X65	5/12/06	Solid	C	See note 1
J11X72	5/12/06	Solid	C	See note 1
J11X73	5/12/06	Solid	C	See note 1
J11X74	5/10/06	Solid	C	See note 1
J11X75	5/10/06	Solid	C	See note 1
J11X76	5/12/06	Solid	C	See note 1
J11X78	5/12/06	Solid	C	See note 1
J11X84	5/12/06	Solid	C	See note 1
J11X85	5/12/06	Solid	C	See note 1
J11X88	5/12/06	Solid	C	See note 1
J11X89	5/12/06	Solid	C	See note 1

1 – Total strontium, isotopic thorium, isotopic uranium, isotopic plutonium, gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area and 300 Area Component of the RCBRA Water Sampling Plan (DOE/RL-2005, Rev. 0, October 2005). Appendices 1 through 6 provide the following information as indicated below:

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

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

No field blanks were submitted for analysis.

- **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 80-120%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

Due to the lack of an LCS analysis, all thorium-228 and thorium-232 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 20%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

No field duplicates were submitted for analysis.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the 100 & 300 Area RQLs to ensure that laboratory detection levels meet the required criteria. Three analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0358A was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of an LCS analysis, all thorium-228 and thorium-232 results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Three analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

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

DOE/RL-2005, Rev. 0, October 2005, *100 Area and 300 Area Component of the RCBRA Water Sampling Plan*.

Appendix 1

Glossary of Data Reporting Qualifiers

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

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0358A	REVIEWER: TLI	Project: RCBRA	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Thorium-228 Thorium-232	J	All	No LCS

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: EB																					
Case	SDG: K0358-A																				
Sample Number		J11X50		J11X51		J11X60		J11X61		J11X64		J11X65		J11X72		J11X73		J11X74		J11X75	
Remarks																					
Sample Date		5/12/06		5/12/06		5/10/06		5/10/06		5/12/06		5/12/06		5/12/06		5/12/06		5/10/06		5/10/06	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Strontium	1	-0.028	U	-0.016	U	0.029	U	0.078	U	15.8		0.476		-0.040	U	-0.015	U	-0.001	U	0.044	U
Thorium-228		0	UJ	-0.076	UJ	0.102	UJ	0	UJ	0.057	UJ	-0.077	UJ	0	UJ	0	UJ	-0.033	UJ	0.023	UJ
Thorium-230		0.084	U	-0.152	U	-0.102	U	-0.091	U	0.200	U	0.153	U	0.034	U	0.086	U	0.100	U	0.046	U
Thorium-232		0	UJ	-0.038	UJ	0	UJ	0	UJ	0.057	UJ	0	UJ	0	UJ	0	UJ	0.067	UJ	0	UJ
Uranium-233/234	1	-0.006	U	0.006	U	-0.009	U	-0.025	U	0.012	U	-0.003	U	0.003	U	0.006	U	0.003	U	0	U
Uranium-235	1	-0.008	U	0	U	0.008	U	0.008	U	0	U	-0.003	U	0.003	U	0	U	0.004	U	0	U
Uranium-238	1	-0.003	U	-0.003	U	0.009	U	0	U	-0.003	U	0.003	U	-0.006	U	0	U	-0.003	U	0	U
Plutonium-238		-0.021	U	0	U	0	U	0	U	-0.031	U	0	U	0.035	U	0.034	U	-0.030	U	0	U
Plutonium-239/240		0	U	0	U	-0.026	U	0	U	0	U	0.043	U	0	U	0	U	0.030	U	0	U
Potassium-40		3.85		4.18		5.47		7.40		7.80		6.21		4.69		3.53		9.94		6.10	
Cobalt 60	0.05	U	U	U	U*	U	U	U	U	U	U*	U	U	U	U	U	U*	U	U	U	U
Cesium 137	0.1	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Radium-226		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Radium-228		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Europium 152		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Europium 154		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Europium 155		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Thorium-228		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Thorium-232		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Beryllium-7		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Ruthenium-106		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Antimony-125		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Cesium-134		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

000010

* - RQL exceeded

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

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: EB																					
Case	SDG: K0358-A																				
Sample Number		J11X76		J11X77		J11X84		J11X85		J11X88		J11X89									
Remarks																					
Sample Date		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06									
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Strontium	1	-0.008	U	0.042	U	-0.009	U	0.058	U	0.006	U	0.034	U								
Thorium-228		0.026	UJ	0.038	UJ	0.016	UJ	0.041	UJ	0.013	UJ	0	UJ								
Thorium-230		0.150	U	0.038	U	0.016	U	0.202	U	0.006	U	0.068	U								
Thorium-232		0.005	UJ	0.011	UJ	0.005	UJ	0	UJ	0.013	UJ	0.034	UJ								
Uranium-233/234	1	0	U	0	U	0	U	0.047	U	0	U	0.012	U								
Uranium-235	1	0	U	0	U	0	U	0	U	0	U	-0.004	U								
Uranium-238	1	0	U	0	U	0	U	0	U	0	U	-0.003	U								
Plutonium-238		0	U	0	U	0	U	-0.039	U	-0.032	U	-0.062	U								
Plutonium-239/240		0	U	0	U	0	U	0	U	0.032	U	0	U								
Potassium-40		2.97		4.27		5.79		2.76		4.14		5.16									
Cobalt 60	0.05	U	U	U	U	U	U	U	U	U	U	U	U								
Cesium 137	0.1	U	U	U	U	U	U	U	U	U	U	U	U								
Radium-226		U	U	U	U	U	U	U	U	U	U	U	U								
Radium-228		U	U	U	U	U	U	U	U	U	U	U	U								
Europium 152		U	U	U	U	U	U	U	U	U	U	U	U								
Europium 154		U	U	U	U	U	U	U	U	U	U	U	U								
Europium 155		U	U	U	U	U	U	U	U	U	U	U	U								
Thorium-228		U	U	U	U	U	U	U	U	U	U	U	U								
Thorium-232		U	U	U	U	U	U	U	U	U	U	U	U								
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U								
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U								
Americium-241(gea)		U	U	U	U	U	U	U	U	U	U	U	U								
Ruthenium-106		U	U	U	U	U	U	U	U	U	U	U	U								
Antimony-125		U	U	U	U	U	U	U	U	U	U	U	U								
Beryllium-7		U	U	U	U	U	U	U	U	U	U	U	U								
Cesium-134		U	U	U	U	U	U	U	U	U	U	U	U								

000011

* - RQL exceeded

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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605146-09 J11X50

DATA SHEET

SDG	7450	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605146-09	Client sample id	J11X50		
Dept sample id	7450-009	Location/Matrix	300-44/618-4	SOLID	
Received	05/17/06	Collected/Weight	05/12/06 12:15	781 g	
% solids	100.0	Custody/SAF No	RC-047-375	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.028	0.11	0.20	1.0	U	SR
Thorium 228	14274-82-9	0	0.17	0.40	1.0	U J	TH
Thorium 230	14269-63-7	0.084	0.25	0.32	1.0	U	TH
Thorium 232	TH-232	0	0.084	0.32	1.0	U J	TH
Uranium 233/234	U-233/234	-0.006	0.013	0.024	1.0	U	U
Uranium 235	15117-96-1	-0.008	0.008	0.029	1.0	U	U
Uranium 238	U-238	-0.003	0.006	0.024	1.0	U	U
Plutonium 238	13981-16-3	-0.021	0.041	0.16	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.041	0.16	1.0	U	PU
Potassium 40	13966-00-2	3.85	0.74	0.58			GAM
Cobalt 60	10198-40-0	U		0.043	0.050	U	GAM
Cesium 137	10045-97-3	U		0.030	0.10	U	GAM
Radium 226	13982-63-3	U		0.065	0.10	U	GAM
Radium 228	15262-20-1	U		0.13	0.20	U	GAM
Europium 152	14683-23-9	U		0.083	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.056	0.10	U	GAM
Thorium 228	14274-82-9	U		0.045		U	GAM
Thorium 232	TH-232	U		0.13		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		4.1		U	GAM
Americium 241	14596-10-2	U		0.032		U	GAM
Beryllium 7	13966-02-4	U		0.43		U	GAM
Ruthenium 106	13967-48-1	U		0.28		U	GAM
Antimony 125	14234-35-6	U		0.078		U	GAM
Cesium 134	13967-70-9	U		0.045		U	GAM

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8/8/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605146-10 J11X51

DATA SHEET

SDG	7450	Client/Case no	Hanford		SDG K0358
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605146-10	Client sample id	J11X51		
Dept sample id	7450-010	Location/Matrix	300-44/618-4		SOLID
Received	05/17/06	Collected/Weight	05/12/06 12:30	841 g	
% solids	100.0	Custody/SAF No	RC-047-375	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.016	0.086	0.18	1.0	U	SR
Thorium 228	14274-82-9	-0.076	0.15	0.36	1.0	U J	TH
Thorium 230	14269-63-7	-0.152	0.077	0.29	1.0	U	TH
Thorium 232	TH-232	-0.038	0.076	0.29	1.0	U J	TH
Uranium 233/234	U-233/234	0.006	0.019	0.025	1.0	U	U
Uranium 235	15117-96-1	0	0.016	0.037	1.0	U	U
Uranium 238	U-238	-0.003	0.006	0.025	1.0	U	U
Plutonium 238	13981-16-3	0	0.055	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.055	0.21	1.0	U	PU
Potassium 40	13966-00-2	4.18	2.4	0.60			GAM
Cobalt 60	10198-40-0	U		0.15	0.050	U	GAM
Cesium 137	10045-97-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	U		0.13	0.10	U	GAM
Radium 228	15262-20-1	U		0.32	0.20	U	GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Europium 155	14391-16-3	U		0.20	0.10	U	GAM
Thorium 228	14274-82-9	U		0.10		U	GAM
Thorium 232	TH-232	U		0.32		U	GAM
Uranium 235	15117-96-1	U		0.26		U	GAM
Uranium 238	U-238	U		7.4		U	GAM
Americium 241	14596-10-2	U		0.34		U	GAM
Beryllium 7	13966-02-4	U		0.96		U	GAM
Ruthenium 106	13967-48-1	U		0.61		U	GAM
Antimony 125	14234-35-6	U		0.15		U	GAM
Cesium 134	13967-70-9	U		0.093		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

8/8/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605146-11 J11X60

DATA SHEET

SDG	7450	Client/Case no	Hanford		SDG K0358
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605146-11	Client sample id	J11X60		
Dept sample id	7450-011	Location/Matrix	100-F-2		SOLID
Received	05/17/06	Collected/Weight	05/10/06 09:20	979 g	
% solids	100.0	Custody/SAF No	RC-047-380	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.029	0.058	0.11	1.0	U	SR
Thorium 228	14274-82-9	0.102	0.20	0.39	1.0	U J	TH
Thorium 230	14269-63-7	-0.102	0.10	0.39	1.0	U	TH
Thorium 232	TH-232	0	0.10	0.39	1.0	U J	TH
Uranium 233/234	U-233/234	-0.009	0.013	0.030	1.0	U	U
Uranium 235	15117-96-1	0.008	0.015	0.029	1.0	U	U
Uranium 238	U-238	0.009	0.013	0.024	1.0	U	U
Plutonium 238	13981-16-3	0	0.052	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.026	0.052	0.20	1.0	U	PU
Potassium 40	13966-00-2	5.47	0.57	0.31			GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Radium 226	13982-63-3	U		0.041	0.10	U	GAM
Radium 228	15262-20-1	U		0.11	0.20	U	GAM
Europium 152	14683-23-9	U		0.052	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM
Thorium 228	14274-82-9	U		0.028		U	GAM
Thorium 232	TH-232	U		0.11		U	GAM
Uranium 235	15117-96-1	U		0.078		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Americium 241	14596-10-2	U		0.13		U	GAM
Beryllium 7	13966-02-4	U		0.34		U	GAM
Ruthenium 106	13967-48-1	U		0.18		U	GAM
Antimony 125	14234-35-6	U		0.046		U	GAM
Cesium 134	13967-70-9	U		0.026		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

6/8/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605146-12 J11X61

DATA SHEET

SDG	7450	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605146-12	Client sample id	J11X61		
Dept sample id	7450-012	Location/Matrix	100-F-2	SOLID	
Received	05/17/06	Collected/Weight	05/10/06 09:30	965 g	
% solids	100.0	Custody/SAF No	RC-047-380	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.078	0.067	0.12	1.0	U	SR
Thorium 228	14274-82-9	0	0.18	0.34	1.0	U J	TH
Thorium 230	14269-63-7	-0.091	0.12	0.23	1.0	U	TH
Thorium 232	TH-232	0	0.061	0.23	1.0	U J	TH
Uranium 233/234	U-233/234	-0.025	0.019	0.048	1.0	U	U
Uranium 235	15117-96-1	0.008	0.015	0.029	1.0	U	U
Uranium 238	U-238	0	0.013	0.024	1.0	U	U
Plutonium 238	13981-16-3	0	0.061	0.15	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.030	0.12	1.0	U	PU
Potassium 40	13966-00-2	7.40	0.92	0.51			GAM
Cobalt 60	10198-40-0	U		0.047	0.050	U	GAM
Cesium 137	10045-97-3	U		0.035	0.10	U	GAM
Radium 226	13982-63-3	U		0.068	0.10	U	GAM
Radium 228	15262-20-1	U		0.16	0.20	U	GAM
Europium 152	14683-23-9	U		0.091	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.061	0.10	U	GAM
Thorium 228	14274-82-9	U		0.050		U	GAM
Thorium 232	TH-232	U		0.16		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		5.7		U	GAM
Americium 241	14596-10-2	U		0.037		U	GAM
Beryllium 7	13966-02-4	U		0.50		U	GAM
Ruthenium 106	13967-48-1	U		0.29		U	GAM
Antimony 125	14234-35-6	U		0.086		U	GAM
Cesium 134	13967-70-9	U		0.050		U	GAM

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4/8/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-01 J11X64

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-01	Client sample id	J11X64		
Dept sample id	7451-001	Location/Matrix	BORROW PIT 9	SOLID	
Received	05/17/06	Collected/Weight	05/12/06 14:00	705 g	
% solids	100.0	Custody/SAF No	RC-047-382	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Total Strontium	SR-RAD	15.8	0.84	0.27	1.0		SR
Thorium 228	14274-82-9	0.057	0.11	0.22	1.0	U J	TH
Thorium 230	14269-63-7	0.200	0.23	0.22	1.0	U	TH
Thorium 232	TH-232	0.057	0.057	0.22	1.0	U J	TH
Uranium 233/234	U-233/234	0.012	0.018	0.023	1.0	U	U
Uranium 235	15117-96-1	0	0.014	0.027	1.0	U	U
Uranium 238	U-238	-0.003	0.006	0.023	1.0	U	U
Plutonium 238	13981-16-3	-0.031	0.062	0.24	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.062	0.24	1.0	U	PU
Potassium 40	13966-00-2	7.80	2.8	0.72			GAM
Cobalt 60	10198-40-0	U		0.087	0.050	U	GAM
Cesium 137	10045-97-3	U		0.073	0.10	U	GAM
Radium 226	13982-63-3	U		0.17	0.10	U	GAM
Radium 228	15262-20-1	U		0.36	0.20	U	GAM
Europium 152	14683-23-9	U		0.19	0.10	U	GAM
Europium 154	15585-10-1	U		0.24	0.10	U	GAM
Europium 155	14391-16-3	U		0.24	0.10	U	GAM
Thorium 228	14274-82-9	U		0.12		U	GAM
Thorium 232	TH-232	U		0.36		U	GAM
Uranium 235	15117-96-1	U		0.31		U	GAM
Uranium 238	U-238	U		9.0		U	GAM
Americium 241	14596-10-2	U		0.57		U	GAM
Beryllium 7	13966-02-4	U		1.0		U	GAM
Ruthenium 106	13967-48-1	U		0.65		U	GAM
Antimony 125	14234-35-6	U		0.16		U	GAM
Cesium 134	13967-70-9	U		0.083		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-02 J11X65

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-02	Client sample id	J11X65		
Dept sample id	7451-002	Location/Matrix	BORROW PIT 9	SOLID	
Received	05/17/06	Collected/Weight	05/12/06 14:15	917 g	
% solids	100.0	Custody/SAF No	RC-047-382	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.476	0.13	0.18	1.0		SR
Thorium 228	14274-82-9	-0.077	0.15	0.59	1.0	U J	TH
Thorium 230	14269-63-7	0.153	0.31	0.59	1.0	U	TH
Thorium 232	TH-232	0	0.15	0.59	1.0	U J	TH
Uranium 233/234	U-233/234	-0.003	0.010	0.025	1.0	U	U
Uranium 235	15117-96-1	-0.003	0.006	0.024	1.0	U	U
Uranium 238	U-238	0.003	0.010	0.020	1.0	U	U
Plutonium 238	13981-16-3	0	0.087	0.33	1.0	U	PU
Plutonium 239/240	PU-239/240	0.043	0.087	0.33	1.0	U	PU
Potassium 40	13966-00-2	6.21	0.70	0.32			GAM
Cobalt 60	10198-40-0	U		0.041	0.050	U	GAM
Cesium 137	10045-97-3	U		0.033	0.10	U	GAM
Radium 226	13982-63-3	U		0.061	0.10	U	GAM
Radium 228	15262-20-1	U		0.14	0.20	U	GAM
Europium 152	14683-23-9	U		0.080	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Thorium 228	14274-82-9	U		0.048		U	GAM
Thorium 232	TH-232	U		0.14		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		4.5		U	GAM
Americium 241	14596-10-2	U		0.22		U	GAM
Beryllium 7	13966-02-4	U		1.3		U	GAM
Ruthenium 106	13967-48-1	U		0.28		U	GAM
Antimony 125	14234-35-6	U		0.080		U	GAM
Cesium 134	13967-70-9	U		0.043		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-03 J11X72

DATA SHEET

SDG	7451	Client/Case no	Hanford		SDG K0358
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-03	Client sample id	J11X72		
Dept sample id	7451-003	Location/Matrix	600-23		SOLID
Received	05/17/06	Collected/Weight	05/12/06 13:15	698 g	
% solids	100.0	Custody/SAF No	RC-047-386	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.040	0.098	0.22	1.0	U	SR
Thorium 228	14274-82-9	0	0.14	0.26	1.0	U J	TH
Thorium 230	14269-63-7	0.034	0.21	0.26	1.0	U	TH
Thorium 232	TH-232	0	0.068	0.26	1.0	U J	TH
Uranium 233/234	U-233/234	0.003	0.011	0.021	1.0	U	U
Uranium 235	15117-96-1	0.003	0.007	0.026	1.0	U	U
Uranium 238	U-238	-0.006	0.006	0.021	1.0	U	U
Plutonium 238	13981-16-3	0.035	0.14	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.070	0.27	1.0	U	PU
Potassium 40	13966-00-2	4.69	0.42	0.22			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	U		0.018	0.10	U	GAM
Radium 226	13982-63-3	U		0.035	0.10	U	GAM
Radium 228	15262-20-1	U		0.080	0.20	U	GAM
Europium 152	14683-23-9	U		0.044	0.10	U	GAM
Europium 154	15585-10-1	U		0.074	0.10	U	GAM
Europium 155	14391-16-3	U		0.032	0.10	U	GAM
Thorium 228	14274-82-9	U		0.027		U	GAM
Thorium 232	TH-232	U		0.080		U	GAM
Uranium 235	15117-96-1	U		0.057		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Americium 241	14596-10-2	U		0.020		U	GAM
Beryllium 7	13966-02-4	U		0.28		U	GAM
Ruthenium 106	13967-48-1	U		0.17		U	GAM
Antimony 125	14234-35-6	U		0.038		U	GAM
Cesium 134	13967-70-9	U		0.024		U	GAM

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-04 J11X73

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-04	Client sample id	J11X73		
Dept sample id	7451-004	Location/Matrix	600-23	SOLID	
Received	05/17/06	Collected/Weight	05/12/06 13:30	893 g	
% solids	100.0	Custody/SAF No	RC-047-386	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.015	0.12	0.25	1.0	U	SR
Thorium 228	14274-82-9	0	0.12	0.28	1.0	U J	TH
Thorium 230	14269-63-7	0.086	0.17	0.22	1.0	U	TH
Thorium 232	TH-232	0	0.058	0.22	1.0	U J	TH
Uranium 233/234	U-233/234	0.006	0.019	0.024	1.0	U	U
Uranium 235	15117-96-1	0	0.008	0.029	1.0	U	U
Uranium 238	U-238	0	0.013	0.024	1.0	U	U
Plutonium 238	13981-16-3	0.034	0.067	0.26	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.067	0.26	1.0	U	PU
Potassium 40	13966-00-2	3.53	3.0	0.50			GAM
Cobalt 60	10198-40-0	U		0.072	0.050	U	GAM
Cesium 137	10045-97-3	U		0.10	0.10	U	GAM
Radium 226	13982-63-3	U		0.14	0.10	U	GAM
Radium 228	15262-20-1	U		0.29	0.20	U	GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	U		0.093		U	GAM
Thorium 232	TH-232	U		0.29		U	GAM
Uranium 235	15117-96-1	U		0.24		U	GAM
Uranium 238	U-238	U		6.8		U	GAM
Americium 241	14596-10-2	U		0.29		U	GAM
Beryllium 7	13966-02-4	U		3.1		U	GAM
Ruthenium 106	13967-48-1	U		0.56		U	GAM
Antimony 125	14234-35-6	U		0.14		U	GAM
Cesium 134	13967-70-9	U		0.083		U	GAM

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-05 J11X74

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-05	Client sample id	J11X74		
Dept sample id	7451-005	Location/Matrix	JA JONES 1	SOLID	
Received	05/17/06	Collected/Weight	05/10/06 12:30	811 g	
% solids	100.0	Custody/SAF No	RC-047-387	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.001	0.085	0.18	1.0	U	SR
Thorium 228	14274-82-9	-0.033	0.067	0.26	1.0	U J	TH
Thorium 230	14269-63-7	0.100	0.20	0.25	1.0	U	TH
Thorium 232	TH-232	0.067	0.067	0.25	1.0	U J	TH
Uranium 233/234	U-233/234	0.003	0.013	0.025	1.0	U	U
Uranium 235	15117-96-1	0.004	0.008	0.031	1.0	U	U
Uranium 238	U-238	-0.003	0.007	0.025	1.0	U	U
Plutonium 238	13981-16-3	-0.030	0.060	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0.030	0.060	0.23	1.0	U	PU
Potassium 40	13966-00-2	9.94	2.7	0.48			GAM
Cobalt 60	10198-40-0	U		0.049	0.050	U	GAM
Cesium 137	10045-97-3	U		0.048	0.10	U	GAM
Radium 226	13982-63-3	U		0.11	0.10	U	GAM
Radium 228	15262-20-1	U		0.22	0.20	U	GAM
Europium 152	14683-23-9	U		0.13	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	U		0.078		U	GAM
Thorium 232	TH-232	U		0.22		U	GAM
Uranium 235	15117-96-1	U		0.20		U	GAM
Uranium 238	U-238	U		5.6		U	GAM
Americium 241	14596-10-2	U		0.36		U	GAM
Beryllium 7	13966-02-4	U		1.9		U	GAM
Ruthenium 106	13967-48-1	U		0.42		U	GAM
Antimony 125	14234-35-6	U		0.11		U	GAM
Cesium 134	13967-70-9	U		0.066		U	GAM

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-06 J11X75

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-06	Client sample id	J11X75		
Dept sample id	7451-006	Location/Matrix	JA JONES 1	SOLID	
Received	05/17/06	Collected/Weight	05/10/06 12:45	823 g	
% solids	100.0	Custody/SAF No	RC-047-387	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.044	0.090	0.18	1.0	U	SR
Thorium 228	14274-82-9	0.023	0.081	0.13	1.0	U J	TH
Thorium 230	14269-63-7	0.046	0.12	0.21	1.0	U	TH
Thorium 232	TH-232	0	0.012	0.044	1.0	U J	TH
Uranium 233/234	U-233/234	0	0.042	0.16	1.0	U	U
Uranium 235	15117-96-1	0	0.050	0.19	1.0	U	U
Uranium 238	U-238	0	0.042	0.16	1.0	U	U
Plutonium 238	13981-16-3	0	0.11	0.43	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.11	0.43	1.0	U	PU
Potassium 40	13966-00-2	6.10	0.81	0.53			GAM
Cobalt 60	10198-40-0	U		0.046	0.050	U	GAM
Cesium 137	10045-97-3	U		0.032	0.10	U	GAM
Radium 226	13982-63-3	U		0.074	0.10	U	GAM
Radium 228	15262-20-1	U		0.14	0.20	U	GAM
Europium 152	14683-23-9	U		0.095	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.071	0.10	U	GAM
Thorium 228	14274-82-9	U		0.057		U	GAM
Thorium 232	TH-232	U		0.14		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM
Uranium 238	U-238	U		4.8		U	GAM
Americium 241	14596-10-2	U		0.030		U	GAM
Beryllium 7	13966-02-4	U		0.70		U	GAM
Ruthenium 106	13967-48-1	U		0.32		U	GAM
Antimony 125	14234-35-6	U		0.078		U	GAM
Cesium 134	13967-70-9	U		0.042		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-07 J11X76

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-07	Client sample id	J11X76		
Dept sample id	7451-007	Location/Matrix	600-132/600-190	SOLID	
Received	05/17/06	Collected/Weight	05/12/06 07:10	1003 g	
% solids	100.0	Custody/SAF No	RC-047-388	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.008	0.092	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.026	0.072	0.13	1.0	U J	TH
Thorium 230	14269-63-7	0.150	0.11	0.21	1.0	U	TH
Thorium 232	TH-232	0.005	0.010	0.039	1.0	U J	TH
Uranium 233/234	U-233/234	0	0.048	0.18	1.0	U	U
Uranium 235	15117-96-1	0	0.058	0.22	1.0	U	U
Uranium 238	U-238	0	0.048	0.18	1.0	U	U
Plutonium 238	13981-16-3	0	0.061	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.061	0.23	1.0	U	PU
Potassium 40	13966-00-2	2.97	1.7	0.27			GAM
Cobalt 60	10198-40-0	U		0.031	0.050	U	GAM
Cesium 137	10045-97-3	U		0.030	0.10	U	GAM
Radium 226	13982-63-3	U		0.064	0.10	U	GAM
Radium 228	15262-20-1	U		0.14	0.20	U	GAM
Europium 152	14683-23-9	U		0.078	0.10	U	GAM
Europium 154	15585-10-1	U		0.094	0.10	U	GAM
Europium 155	14391-16-3	U		0.089	0.10	U	GAM
Thorium 228	14274-82-9	U		0.044		U	GAM
Thorium 232	TH-232	U		0.14		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Americium 241	14596-10-2	U		0.22		U	GAM
Beryllium 7	13966-02-4	U		0.39		U	GAM
Ruthenium 106	13967-48-1	U		0.26		U	GAM
Antimony 125	14234-35-6	U		0.066		U	GAM
Cesium 134	13967-70-9	U		0.033		U	GAM

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-08 J11X77

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-08	Client sample id	J11X77		
Dept sample id	7451-008	Location/Matrix	600-132/600-190	SOLID	
Received	05/17/06	Collected/Weight	05/12/06 07:25	720 g	
% solids	100.0	Custody/SAF No	RC-047-388	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.042	0.092	0.18	1.0	U	SR
Thorium 228	14274-82-9	0.038	0.054	0.078	1.0	U J	TH
Thorium 230	14269-63-7	0.038	0.097	0.19	1.0	U	TH
Thorium 232	TH-232	0.011	0.022	0.041	1.0	U J	TH
Uranium 233/234	U-233/234	0	0.045	0.17	1.0	U	U
Uranium 235	15117-96-1	0	0.054	0.21	1.0	U	U
Uranium 238	U-238	0	0.045	0.17	1.0	U	U
Plutonium 238	13981-16-3	0	0.14	0.52	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.14	0.52	1.0	U	PU
Potassium 40	13966-00-2	4.27	0.57	0.40			GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Cesium 137	10045-97-3	U		0.030	0.10	U	GAM
Radium 226	13982-63-3	U		0.057	0.10	U	GAM
Radium 228	15262-20-1	U		0.14	0.20	U	GAM
Europium 152	14683-23-9	U		0.075	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.093	0.10	U	GAM
Thorium 228	14274-82-9	U		0.047		U	GAM
Thorium 232	TH-232	U		0.14		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		4.1		U	GAM
Americium 241	14596-10-2	U		0.19		U	GAM
Beryllium 7	13966-02-4	U		0.44		U	GAM
Ruthenium 106	13967-48-1	U		0.26		U	GAM
Antimony 125	14234-35-6	U		0.070		U	GAM
Cesium 134	13967-70-9	U		0.036		U	GAM

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-09 J11X84

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R605147-09	Client sample id	J11X84	
Dept sample id	7451-009	Location/Matrix	600-131	SOLID
Received	05/17/06	Collected/Weight	05/12/06 09:20	1195 g
% solids	100.0	Custody/SAF No	RC-047-392	RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.009	0.061	0.13	1.0	U	SR
Thorium 228	14274-82-9	0.016	0.063	0.11	1.0	U J	TH
Thorium 230	14269-63-7	0.016	0.094	0.19	1.0	U	TH
Thorium 232	TH-232	0.005	0.021	0.040	1.0	U J	TH
Uranium 233/234	U-233/234	0	0.048	0.18	1.0	U	U
Uranium 235	15117-96-1	0	0.058	0.22	1.0	U	U
Uranium 238	U-238	0	0.048	0.18	1.0	U	U
Plutonium 238	13981-16-3	0	0.084	0.32	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.084	0.32	1.0	U	PU
Potassium 40	13966-00-2	5.79	1.8	0.36			GAM
Cobalt 60	10198-40-0	U		0.049	0.050	U	GAM
Cesium 137	10045-97-3	U		0.042	0.10	U	GAM
Radium 226	13982-63-3	U		0.088	0.10	U	GAM
Radium 228	15262-20-1	U		0.19	0.20	U	GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	U		0.062		U	GAM
Thorium 232	TH-232	U		0.19		U	GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		4.6		U	GAM
Americium 241	14596-10-2	U		0.20		U	GAM
Beryllium 7	13966-02-4	U		0.57		U	GAM
Ruthenium 106	13967-48-1	U		0.36		U	GAM
Antimony 125	14234-35-6	U		0.091		U	GAM
Cesium 134	13967-70-9	U		0.049		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

4/8/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/17/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-10 J11X85

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R605147-10	Client sample id	J11X85	
Dept sample id	7451-010	Location/Matrix	600-131	SOLID
Received	05/17/06	Collected/Weight	05/12/06 09:30	770 g
% solids	100.0	Custody/SAF No	RC-047-392	RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.058	0.065	0.12	1.0	U	SR
Thorium 228	14274-82-9	0.041	0.065	0.10	1.0	U J	TH
Thorium 230	14269-63-7	0.202	0.13	0.21	1.0	U	TH
Thorium 232	TH-232	0	0.032	0.077	1.0	U J	TH
Uranium 233/234	U-233/234	0.047	0.048	0.18	1.0	U	U
Uranium 235	15117-96-1	0	0.057	0.22	1.0	U	U
Uranium 238	U-238	0	0.047	0.18	1.0	U	U
Plutonium 238	13981-16-3	-0.039	0.079	0.30	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.079	0.30	1.0	U	PU
Potassium 40	13966-00-2	2.76	0.50	0.33			GAM
Cobalt 60	10198-40-0	U		0.034	0.050	U	GAM
Cesium 137	10045-97-3	U		0.031	0.10	U	GAM
Radium 226	13982-63-3	U		0.057	0.10	U	GAM
Radium 228	15262-20-1	U		0.12	0.20	U	GAM
Europium 152	14683-23-9	U		0.073	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.086	0.10	U	GAM
Thorium 228	14274-82-9	U		0.064		U	GAM
Thorium 232	TH-232	U		0.12		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Americium 241	14596-10-2	U		0.18		U	GAM
Beryllium 7	13966-02-4	U		0.41		U	GAM
Ruthenium 106	13967-48-1	U		0.26		U	GAM
Antimony 125	14234-35-6	U		0.072		U	GAM
Cesium 134	13967-70-9	U		0.037		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

JC 6/8/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/17/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-11 J11X88

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG_K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-11	Client sample id	J11X88		
Dept sample id	7451-011	Location/Matrix	628-1	SOLID	
Received	05/17/06	Collected/Weight	05/12/06 08:10	1152 g	
% solids	100.0	Custody/SAF No	RC-047-394	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.006	0.086	0.18	1.0	U	SR
Thorium 228	14274-82-9	0.013	0.065	0.11	1.0	U J	TH
Thorium 230	14269-63-7	0.006	0.10	0.21	1.0	U	TH
Thorium 232	TH-232	0.013	0.026	0.050	1.0	U J	TH
Uranium 233/234	U-233/234	0	0.051	0.20	1.0	U	U
Uranium 235	15117-96-1	0	0.062	0.24	1.0	U	U
Uranium 238	U-238	0	0.051	0.20	1.0	U	U
Plutonium 238	13981-16-3	-0.032	0.064	0.24	1.0	U	PU
Plutonium 239/240	PU-239/240	0.032	0.064	0.24	1.0	U	PU
Potassium 40	13966-00-2	4.14	0.42	0.24			GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	U		0.022	0.10	U	GAM
Radium 226	13982-63-3	U		0.041	0.10	U	GAM
Radium 228	15262-20-1	U		0.095	0.20	U	GAM
Europium 152	14683-23-9	U		0.047	0.10	U	GAM
Europium 154	15585-10-1	U		0.078	0.10	U	GAM
Europium 155	14391-16-3	U		0.034	0.10	U	GAM
Thorium 228	14274-82-9	U		0.031		U	GAM
Thorium 232	TH-232	U		0.095		U	GAM
Uranium 235	15117-96-1	U		0.063		U	GAM
Uranium 238	U-238	U		2.7		U	GAM
Americium 241	14596-10-2	U		0.021		U	GAM
Beryllium 7	13966-02-4	U		0.28		U	GAM
Ruthenium 106	13967-48-1	U		0.18		U	GAM
Antimony 125	14234-35-6	U		0.045		U	GAM
Cesium 134	13967-70-9	U		0.026		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

8/8/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/17/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-12 J11X89

DATA SHEET

SDG	7451	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-12	Client sample id	J11X89		
Dept sample id	7451-012	Location/Matrix	628-1	SOLID	
Received	05/17/06	Collected/Weight	05/12/06 08:30	801 g	
% solids	100.0	Custody/SAF No	RC-047-394	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.034	0.10	0.20	1.0	U	SR
Thorium 228	14274-82-9	0	0.14	0.33	1.0	U J	TH
Thorium 230	14269-63-7	0.068	0.21	0.26	1.0	U	TH
Thorium 232	TH-232	0.034	0.068	0.26	1.0	U J	TH
Uranium 233/234	U-233/234	0.012	0.018	0.022	1.0	U	U
Uranium 235	15117-96-1	-0.004	0.007	0.027	1.0	U	U
Uranium 238	U-238	-0.003	0.006	0.022	1.0	U	U
Plutonium 238	13981-16-3	-0.062	0.12	0.48	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.12	0.48	1.0	U	PU
Potassium 40	13966-00-2	5.16	0.38	0.21			GAM
Cobalt 60	10198-40-0	U		0.024	0.050	U	GAM
Cesium 137	10045-97-3	U		0.019	0.10	U	GAM
Radium 226	13982-63-3	U		0.061	0.10	U	GAM
Radium 228	15262-20-1	U		0.22	0.20	U	GAM
Europium 152	14683-23-9	U		0.043	0.10	U	GAM
Europium 154	15585-10-1	U		0.068	0.10	U	GAM
Europium 155	14391-16-3	U		0.032	0.10	U	GAM
Thorium 228	14274-82-9	U		0.053		U	GAM
Thorium 232	TH-232	U		0.22		U	GAM
Uranium 235	15117-96-1	U		0.058		U	GAM
Uranium 238	U-238	U		2.6		U	GAM
Americium 241	14596-10-2	U		0.019		U	GAM
Beryllium 7	13966-02-4	U		0.35		U	GAM
Ruthenium 106	13967-48-1	U		0.17		U	GAM
Antimony 125	14234-35-6	U		0.044		U	GAM
Cesium 134	13967-70-9	U		0.025		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

8/4/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/17/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0358 was composed of thirty-six solid (other solid) samples designated under SAF No. RC-047 with a Project Designation of: 100 & 300 Area Component of the RCBRA sediment and Ti.

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

2.0 ANALYSIS NOTES

2.1 Carbon-14 Analysis

The samples were reanalyzed due to an error in the counting instructions; the original sample planchets were only counted for one minute. No problems were encountered during the course of the reanalyses.

2.2 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.3 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses.

2.4 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.5 Isotopic Plutonium Analysis

No problems were encountered during the course of the analyses

2.6 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion — 7/19/6

Melissa C. Mannion
Senior Program Manager

Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-375	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 300-44/618-4 K0358 (7450)		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-02-001	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060414		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ TRE 5-16-06

000030

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G/P	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	750g	5g	5g	15g	50g	50g					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082					

Sample No.	Matrix *	Sample Date	Sample Time										
J11X50	OTHER SOLID	5-12-06	1215	X	X	X							
J11X51	OTHER SOLID	5-12-06	1230	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From TR KLINCKMAN		5-12-06 1245	EAS LOCKED STORAGE	5-12-06 1245
Relinquished By/Removed From EAS LOCKED STORAGE		MAY 15 2006 0730		5-15-06 0730
Relinquished By/Removed From WCH	J.R. Edmundson	5-16-06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex			Received By/Stored In	05/17/06 9:30
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-380	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 100-F-2 K0358 (7450)		SAF No. RC-047
Ice Chest No. ERC-02-001	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060 414		Bill of Lading/Air Bill No. SEE OSPC

Price Code 9N

Data Turnaround 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C TRB 5-16-06

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G/P	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	750g	5g	5g	15g	50g	50g					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082					

000031

Sample No.	Matrix *	Sample Date	Sample Time										
J11X60	OTHER SOLID	5-10-06	9:20	X	X	X							
J11X61	OTHER SOLID	5-10-06	9:30	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From JR KLINCKMAN	5-10-06 9:45	Received By/Stored In EAS LOCKED STORAGE	5-10-06 9:45
Relinquished By/Removed From EAS LOCKED STORAGE	0730 MAY 15 2006	Received By/Stored In LR Eberlein	5-15-06 0730
Relinquished By/Removed From LR Eberlein WCH	5-16-06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From FED EX		Received By/Stored In 05/17/06 Fwj	9:30
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-382	Page 1 of 1

Collector: TILLER, B. ~~TR KLINCKMAN~~	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: BORROW PIT 9 K0358 (7451)	SAF No.: RC-047	
Ice Chest No.: ERC-02-001	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060414	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ TRK 5-16-06

000032

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G/P	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	750g	5g	5g	15g	50g	50g					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082					
Sample No.	Matrix *	Sample Date	Sample Time								
J11X64	OTHER SOLID	5-12-06	1400	X	X	X					
J11X65	OTHER SOLID	5-12-06	1415	X	X	X					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	~~Date/Time~~ 1430 5-12-06	EAS LOCKED STORAGE	1430 5-12-06
EAS LOCKED STORAGE	0730 MAY 14 2006	TR Klinckman 5-15-06	0730
TR Klinckman 5-16-06	1500	Fed Ex	
FED EX			05/17/06

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-386	Page 1 of 1

Collector TILLER, B. TR KLINGKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-23 K0358 (7451)		SAF No. RC-047	Air Quality ☐
Ice Chest No. ERC-02-001	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX	
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060414		Bill of Lading/Air Bill No. SEE OSPC	

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ TRE 5-16-06

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G/P	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	750g	5g	5g	15g	50g	50g					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082					
Sample No.	Matrix *	Sample Date	Sample Time								
J11X72	OTHER SOLID	5-12-06	1315	X	X	X					
J11X73	OTHER SOLID	5-12-06	1330	X	X	X					

000033

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From TR KLINGKMAN	1345 5-12-06	Received By/Stored In EAS LOCKED STORAGE	1345 5-12-06
Relinquished By/Removed From EAS LOCKED STORAGE MAY 15 2006	0730	Received By/Stored In TR Edmondson	5-15-06 0730
Relinquished By/Removed From TR Edmondson	5-16-06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From FED EX		Received By/Stored In MFW	05/17/06 9:30
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-387	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location JA JONES 1 K0358 (7451)		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-02-001	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060414		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

~~COOL4C~~ TRB 5-16-06

000034

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	G/P	G/P	aG	aG						
No. of Container(s)	1	1	1	1	1	1						
Volume	750g	5g	5g	15g	50g	50g						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082						
Sample No.	Matrix *	Sample Date	Sample Time									
J11X74	OTHER SOLID	5-10-06	12:30	X	X	X						
J11X75	OTHER SOLID	5-10-06	12:45	X	X	X						

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: TR KLINCKMAN	5-10-06 1300	EAS LOCKED STORAGE	5-10-06 1300
Relinquished By/Removed From: EAS LOCKED STORAGE	0730 MAY 15 2006	TR Edmundson	5-15-06 0730
Relinquished By/Removed From: TR Edmundson	5-16-06 1500	Fed Ex	
Relinquished By/Removed From: FED EX		MFW	05/17/06 9:30
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-388	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 600-132/600-190 K0358 (7451)	SAF No.: RC-047	
Ice Chest No.: ERC-02-001	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060414	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

~~COOL~~ 4C TRK 5-16-06

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G/P	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	750g	5g	5g	15g	50g	50g					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082					
Sample No. / Matrix * / Sample Date / Sample Time											
J11X76 / OTHER SOLID / MAY 1 2 2006 / 0710	X	X	X								
J11X77 / OTHER SOLID / MAY 1 2 2006 / 0725	X	X	X								

0000035

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	MAY 1 2 2006 0730	EAS LOCKED STORAGE	MAY 1 2 2006 0730
EAS LOCKED STORAGE	MAY 1 5 2006 0730	J.R. Edmundson	5-15-06 0730
J.R. Edmundson WCH	5-16-06 1500	Fed Ex	
FED EX			05/17/06 9:20

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-392	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-131 K0358 (7451)		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-02-001	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To (EBERLINE SERVICES) LIONVILLE	Offsite Property No. A060414		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ TRK 5-16-06

000036

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G/P	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	750g	5g	5g	15g	50g	50g					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082					

Sample No.	Matrix *	Sample Date	Sample Time										
J11X84	OTHER SOLID	MAY 12 2006	0920	X	X	X							
J11X85	OTHER SOLID	MAY 12 2006	0930	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From TR KLINCKMAN	5-12-06 0945	EAS LOCKED STORAGE	5-12-06 0945
Relinquished By/Removed From EAS LOCKED STORAGE	MAY 15 2006 1730	TR Edmundson	5-15-06 0730
Relinquished By/Removed From T.R. Edmundson	5-16-06 1500	Fed Ex	
Relinquished By/Removed From FED EX		Received By/Stored In	05/17/06 9:30
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) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-394	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 628-1 K0358 (7451)	SAF No.: RC-047	
Ice Chest No.: ERC-02-001	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES // LIONVILLE	Offsite Property No.: TRE 5-16-06 ERC A060414		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

~~COOL 4C~~ TRE 5-16-06

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	G/P	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	750g	5g	5g	15g	50g	50g					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082					

0000037

Sample No.	Matrix *	Sample Date	Sample Time										
J11X88	OTHER SOLID	MAY 12 2006	0810	X	X	X							
J11X89	OTHER SOLID	MAY 12 2006	0830	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	0845 5-12-06	EAS LOCKED STORAGE	0845 5-12-06
EAS LOCKED STORAGE	MAY 15 2006 0730	T.R. Edmundson	5-15-06 0730
T.R. Edmundson 5-16-06	1500	Fed Ex	
FED EX		MTM	05/17/06 9:30

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) (Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238)

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	RCBRA		DATA PACKAGE:	K0358-A	
VALIDATOR:	TLI	LAB:	~~GFE~~ ES	DATE:	8/6/06
			SDG:	K0358-A	

ANALYSES PERFORMED				
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy
Total Uranium	Radium-22	Tritium		

SAMPLES/MATRIX					
J11X50	J11X51	J11X60	J11X61	J11X64	J11X65
J11X72	J11X73	J11X74	J11X75	J11X76	J11X77
J11X84	J11X85	J11X88	J11X89		
					Solid

1. Completeness ..... ☐ N/A

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

Comments: _____

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

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

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

Comments: _____

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

Calibration checked within required frequency? ..... Yes No N/A

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

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

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

Comments: _____

_____

_____

_____

_____

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

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

Background Counts acceptable? ..... Yes No N/A

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

Comments: _____

_____

_____

_____

_____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A

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

Analytes detected in method blank? ..... Yes No N/A

Field blank(s) analyzed? ..... Yes No N/A

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

Analytes detected in field blank(s)? ..... Yes No N/A

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

Comments: no FB

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A

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

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

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

LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A

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

Comments: no th 228 + 232 LCS - Jall

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

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

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: _____

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 Field QC

12. Holding Times (All levels)

Are sample holding times acceptable? ..... Yes No N/A

Comments: _____

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

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

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

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

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

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

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

Comments: 3 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-14 Method Blank

METHOD BLANK

SDG	7451	Client/Case no	Hanford	SDG K0358	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R605147-14	Client sample id	Method Blank		
Dept sample id	7451-014	Material/Matrix		SOLID	
		SAF No	RC-047		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.045	0.089	0.19	1.0	U	SR
Thorium 228	14274-82-9	0	0.10	0.40	1.0	U	TH
Thorium 230	14269-63-7	-0.052	0.21	0.50	1.0	U	TH
Thorium 232	TH-232	0	0.10	0.40	1.0	U	TH
Uranium 233/234	U-233/234	0.016	0.026	0.036	1.0	U	U
Uranium 235	15117-96-1	0.004	0.016	0.030	1.0	U	U
Uranium 238	U-238	-0.007	0.013	0.036	1.0	U	U
Plutonium 238	13981-16-3	0.022	0.090	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.045	0.17	1.0	U	PU
Potassium 40	13966-00-2	U		1.6		U	GAM
Cobalt 60	10198-40-0	U		0.072	0.050	U	GAM
Cesium 137	10045-97-3	U		0.065	0.10	U	GAM
Radium 226	13982-63-3	U		0.13	0.10	U	GAM
Radium 228	15262-20-1	U		0.26	0.20	U	GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	U		0.089		U	GAM
Thorium 232	TH-232	U		0.26		U	GAM
Uranium 235	15117-96-1	U		0.27		U	GAM
Uranium 238	U-238	U		7.0		U	GAM
Americium 241	14596-10-2	U		0.30		U	GAM
Beryllium 7	13966-02-4	U		0.39		U	GAM
Ruthenium 106	13967-48-1	U		0.49		U	GAM
Antimony 125	14234-35-6	U		0.13		U	GAM
Cesium 134	13967-70-9	U		0.072		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/17/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-13

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7451

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0358

Contract No. 630

Lab sample id R605147-13

Dept sample id 7451-013

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-047

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	10.9	0.52	0.24	1.0		SR	10.7	0.43	102	82-118	80-120
Thorium 230	46.2	5.5	0.39	1.0		TH	44.4	1.8	104	79-121	80-120
Uranium 233/234	17.9	0.76	0.33	1.0		U	19.3	0.77	93	89-111	80-120
Uranium 235	14.1	0.65	0.033	1.0		U	15.7	0.63	90	89-111	80-120
Uranium 238	19.4	0.80	0.31	1.0		U	21.0	0.84	92	89-111	80-120
Plutonium 238	27.4	2.8	0.22	1.0		PU	26.2	1.0	105	81-119	80-120
Plutonium 239/240	27.9	2.8	0.22	1.0		PU	29.0	1.2	96	83-117	80-120
Cobalt 60	1.99	0.081	0.050	0.050		GAM	1.92	0.077	104	75-125	80-120
Cesium 137	2.15	0.071	0.053	0.10		GAM	2.02	0.081	106	75-125	80-120

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

QC-LCS 57308

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/17/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605147-15 J11X75

DUPLICATE

SDG	7451			Client/Case no	Hanford SDG K0358
Contact	Melissa C. Mannion			Contract	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R605147-15	Lab sample id	R605147-06	Client sample id	J11X75
Dept sample id	7451-015	Dept sample id	7451-006	Location/Matrix	JA JONES 1 SOLID
		Received	05/17/06	Collected/Weight	05/10/06 12:45 823 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-047-387 RC-047

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Strontium	-0.027	0.085	0.18	1.0	U	SR	0.044	0.090	0.18	U	-		1.1
Thorium 228	0	0.082	0.31	1.0	U	TH	0.023	0.081	0.13	U	-		0.4
Thorium 230	0.041	0.16	0.31	1.0	U	TH	0.046	0.12	0.21	U	-		0.0
Thorium 232	0	0.082	0.31	1.0	U	TH	0	0.012	0.044	U	-		0
Uranium 233/234	-0.006	0.013	0.030	1.0	U	U	0	0.042	0.16	U	-		0.3
Uranium 235	0	0.015	0.029	1.0	U	U	0	0.050	0.19	U	-		0
Uranium 238	0.006	0.013	0.024	1.0	U	U	0	0.042	0.16	U	-		0.3
Plutonium 238	0	0.084	0.23	1.0	U	PU	0	0.11	0.43	U	-		0
Plutonium 239/240	0	0.042	0.16	1.0	U	PU	0	0.11	0.43	U	-		0
Potassium 40	5.67	0.74	0.42			GAM	6.10	0.81	0.53		7	42	0.5
Cobalt 60	U		0.041	0.050	U	GAM	U		0.046	U	-		0.2
Cesium 137	U		0.034	0.10	U	GAM	U		0.032	U	-		0.1
Radium 226	U		0.068	0.10	U	GAM	U		0.074	U	-		0.1
Radium 228	U		0.17	0.20	U	GAM	U		0.14	U	-		0.3
Europium 152	U		0.090	0.10	U	GAM	U		0.095	U	-		0.1
Europium 154	U		0.13	0.10	U	GAM	U		0.13	U	-		0
Europium 155	U		0.10	0.10	U	GAM	U		0.071	U	-		0.5
Thorium 228	U		0.048		U	GAM	U		0.057	U	-		0.2
Thorium 232	U		0.17		U	GAM	U		0.14	U	-		0.3
Uranium 235	U		0.14		U	GAM	U		0.10	U	-		0.5
Uranium 238	U		4.8		U	GAM	U		4.8	U	-		0
Americium 241	U		0.21		U	GAM	U		0.030	U	-		1.7
Beryllium 7	U		1.2		U	GAM	U		0.70	U	-		0.7
Ruthenium 106	U		0.31		U	GAM	U		0.32	U	-		0
Antimony 125	U		0.086		U	GAM	U		0.078	U	-		0.1
Cesium 134	U		0.049		U	GAM	U		0.042	U	-		0.2

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/17/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605146-14 Method Blank

METHOD BLANK

SDG	7450	Client/Case no	Hanford SDG K0358
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R605146-14	Client sample id	Method Blank
Dept sample id	7450-014	Material/Matrix	SOLID
		SAF No	RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.045	0.075	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.046	0.074	0.13	1.0	U	TH
Thorium 230	14269-63-7	-0.036	0.11	0.21	1.0	U	TH
Thorium 232	TH-232	0	0.036	0.069	1.0	U	TH
Uranium 233/234	U-233/234	0	0.017	0.026	1.0	U	U
Uranium 235	15117-96-1	0	0.007	0.026	1.0	U	U
Uranium 238	U-238	0	0.011	0.026	1.0	U	U
Plutonium 238	13981-16-3	0	0.032	0.12	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.016	0.032	0.12	1.0	U	PU
Potassium 40	13966-00-2	U		2.1		U	GAM
Cobalt 60	10198-40-0	U		0.097	0.050	U	GAM
Cesium 137	10045-97-3	U		0.076	0.10	U	GAM
Radium 226	13982-63-3	U		0.17	0.10	U	GAM
Radium 228	15262-20-1	U		0.36	0.20	U	GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Europium 155	14391-16-3	U		0.23	0.10	U	GAM
Thorium 228	14274-82-9	U		0.11		U	GAM
Thorium 232	TH-232	U		0.36		U	GAM
Uranium 235	15117-96-1	U		0.32		U	GAM
Uranium 238	U-238	U		8.2		U	GAM
Americium 241	14596-10-2	U		0.35		U	GAM
Beryllium 7	13966-02-4	U		0.53		U	GAM
Ruthenium 106	13967-48-1	U		0.64		U	GAM
Antimony 125	14234-35-6	U		0.17		U	GAM
Cesium 134	13967-70-9	U		0.089		U	GAM

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	07/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605146-13

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7450

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0358

Contract No. 630

Lab sample id R605146-13

Dept sample id 7450-013

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-047

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	10.0	0.51	0.18	1.0		SR	9.77	0.39	102	82-118	80-120
Thorium 230	40.0	4.2	0.29	1.0		TH	40.4	1.6	99	82-118	80-120
Uranium 233/234	18.0	0.71	0.31	1.0		U	18.6	0.74	97	89-111	80-120
Uranium 235	14.6	0.62	0.028	1.0		U	15.1	0.60	97	89-111	80-120
Uranium 238	20.2	0.77	0.29	1.0		U	20.2	0.81	100	89-111	80-120
Plutonium 238	23.7	1.8	0.12	1.0		PU	23.8	0.95	100	85-115	80-120
Plutonium 239/240	25.4	1.9	0.12	1.0		PU	26.4	1.1	96	86-114	80-120
Cobalt 60	1.99	0.22	0.087	0.050		GAM	1.96	0.078	102	71-129	80-120
Cesium 137	2.07	0.20	0.16	0.10		GAM	2.07	0.083	100	73-127	80-120

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

QC-LCS 57305

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 07/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605146-15 J11X60

DUPLICATE

SDG	7450			Client/Case no	Hanford SDG K0358
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R605146-15	Lab sample id	R605146-11	Client sample id	J11X60
Dept sample id	7450-015	Dept sample id	7450-011	Location/Matrix	100-F-2 SOLID
		Received	05/17/06	Collected/Weight	05/10/06 09:20 979 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-047-380 RC-047

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Strontium	-0.017	0.077	0.16	1.0	U	SR	0.029	0.058	0.11	U	-		1.0
Thorium 228	0.025	0.062	0.095	1.0	U	TH	0.102	0.20	0.39	U	-		0.7
Thorium 230	0.018	0.098	0.19	1.0	U	TH	-0.102	0.10	0.39	U	-		1.7
Thorium 232	-0.024	0.024	0.067	1.0	U	TH	0	0.10	0.39	U	-		0.5
Uranium 233/234	-0.008	0.010	0.025	1.0	U	U	-0.009	0.013	0.030	U	-		0.1
Uranium 235	0	0.006	0.024	1.0	U	U	0.008	0.015	0.029	U	-		1.0
Uranium 238	0.005	0.010	0.020	1.0	U	U	0.009	0.013	0.024	U	-		0.5
Plutonium 238	0	0.036	0.14	1.0	U	PU	0	0.052	0.20	U	-		0
Plutonium 239/240	0.018	0.036	0.14	1.0	U	PU	-0.026	0.052	0.20	U	-		1.4
Potassium 40	4.98	0.53	0.31			GAM	5.47	0.57	0.31		9	39	0.7
Cobalt 60	U		0.026	0.050	U	GAM	U		0.029	U	-		0.2
Cesium 137	U		0.023	0.10	U	GAM	U		0.028	U	-		0.3
Radium 226	U		0.037	0.10	U	GAM	U		0.041	U	-		0.1
Radium 228	U		0.10	0.20	U	GAM	U		0.11	U	-		0.1
Europium 152	U		0.049	0.10	U	GAM	U		0.052	U	-		0.1
Europium 154	U		0.093	0.10	U	GAM	U		0.10	U	-		0.1
Europium 155	U		0.058	0.10	U	GAM	U		0.062	U	-		0.1
Thorium 228	U		0.029		U	GAM	U		0.028	U	-		0
Thorium 232	U		0.10		U	GAM	U		0.11	U	-		0.1
Uranium 235	U		0.079		U	GAM	U		0.078	U	-		0
Uranium 238	U		3.3		U	GAM	U		3.4	U	-		0
Americium 241	U		0.14		U	GAM	U		0.13	U	-		0.1
Beryllium 7	U		0.34		U	GAM	U		0.34	U	-		0
Ruthenium 106	U		0.20		U	GAM	U		0.18	U	-		0.1
Antimony 125	U		0.041		U	GAM	U		0.046	U	-		0.2
Cesium 134	U		0.028		U	GAM	U		0.026	U	-		0.1

100&300 Area Compnt.RCBRA-Sedmnt.&Ti

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0358

R605146-15 J11X60

DUPLICATE, cont.

SDG	7450		Client/Case no	Hanford	SDG K0358
Contact	Melissa C. Mannion		Contract	No. 630	
DUPLICATE		ORIGINAL			
Lab sample id	R605146-15	Lab sample id	R605146-11	Client sample id	J11X60
Dept sample id	7450-015	Dept sample id	7450-011	Location/Matrix	100-F-2 SOLID
		Received	05/17/06	Collected/Weight	05/10/06 09:20 979 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-047-380 RC-047

QC-DUP#11 57307

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	07/11/06

Date: 11 August 2006
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 Area and 300 Area Component of the RCBRA Sediment & Tissue
Subject: PCB/Pesticide - Data Package No. K0358A-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0358A prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11X50	5/12/06	Solid	C	See note 1
J11X51	5/12/06	Solid	C	See note 1
J11X60	5/10/06	Solid	C	See note 1
J11X61	5/10/06	Solid	C	See note 1
J11X64	5/12/06	Solid	C	See note 1
J11X65	5/12/06	Solid	C	See note 1
J11X72	5/12/06	Solid	C	See note 1
J11X73	5/12/06	Solid	C	See note 1
J11X74	5/10/06	Solid	C	See note 1
J11X75	5/10/06	Solid	C	See note 1
J11X76	5/12/06	Solid	C	See note 1
J11X78	5/12/06	Solid	C	See note 1
J11X84	5/12/06	Solid	C	See note 1
J11X85	5/12/06	Solid	C	See note 1
J11X88	5/12/06	Solid	C	See note 1
J11X89	5/12/06	Solid	C	See note 1

1– Pesticides by 8081A and PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area and 300 Area Component of the RCBRA Sampling & Analysis Plan (DOE/RL-2005-42, Rev. 0, October 2005). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times & Sample Preservation**

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 or equal to twice 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".

Due to the holding time being exceeded by less than twice the limit, all pesticide and PCB results in samples J11X50, J11X51, J11X64, J11X65, J11X72, J11X73, J11X76, J11X77, J11X84, J11X85, J11X88 and J11X89 were qualified as estimates and flagged "J".

Due to the holding time being exceeded by greater than twice the limit, all undetected pesticide and PCB results in samples J11X60, J11X61, J11X74 and J11X75 were rejected and flagged "UR".

Due to the holding time being exceeded by greater than twice the limit, all detected pesticide and PCB results in samples J11X60, J11X61, J11X74 and J11X75 were qualified as estimates and flagged "J".

- **Method Blank**

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 80% to 120%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

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

Due to a matrix spike recovery outside QC limits (58%), all heptachlor epoxide results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (37%), all endrin aldehyde results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 20%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

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

Due to an RPD outside QC limits (41%), all endrin aldehyde results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the project specific RQLs to ensure that laboratory detection levels meet the required criteria. All results (with an RQL) exceeded the RQL. Under the WCH validation statement of work, no qualification is required.

- **Completeness**

Data Package No. K0358A 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 75%.

MAJOR DEFICIENCIES

Due to the holding time being exceeded by greater than twice the limit, all undetected pesticide and PCB results in samples J11X60, J11X61, J11X74 and J11X75 were rejected and flagged "UR". Rejected data is unusable and should not be reported.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to the holding time being exceeded by less than twice the limit, all pesticide and PCB results in samples J11X50, J11X51, J11X64, J11X65, J11X72, J11X73, J11X76, J11X77, J11X84, J11X85, J11X88 and J11X89 were qualified as estimates and flagged "J".

- Due to the holding time being exceeded by greater than twice the limit, all detected pesticide and PCB results in samples J11X60, J11X61, J11X74 and J11X75 were qualified as estimates and flagged "J".

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

- Due to a matrix spike recovery outside QC limits (58%), all heptachlor epoxide results were qualified as estimates and flagged "J".

- Due to a matrix spike duplicate recovery outside QC limits (37%), all endrin aldehyde results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (41%), all endrin aldehyde results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All results (with an RQL) exceeded the RQL. Under the WCH validation statement of work, no qualification is required.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K0358A	REVIEWER: TLI	Project: RCBRA	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All pesticide & PCBs	J	J11X50, J11X51 J11X64, J11X65 J11X72, J11X73 J11X76, J11X77 J11X84, J11X85 J11X88, J11X89	Holding time
All detected pesticide & PCSs	J	J11X60, J11X61 J11X74, J11X75	Holding time
All undetected pesticide & PCSs	UR	J11X60, J11X61 J11X74, J11X75	Holding time
Heptachlor epoxide	J	All	MS recovery
Endrin aldehyde	J	All	MSD recovery
Endrin aldehyde	J	All	RPD
Toxaphene	J	All	No MS, MSD or LCS

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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

Project: WASHINGTON CLOSURE HANFORD
Laboratory: LLI SDG: K0358-A

Sample Number		J11X50		J11X51		J11X60		J11X61		J11X64		J11X65		J11X72		J11X73		J11X74		J11X75	
Remarks																					
Sample Date		5/12/06		5/12/06		5/10/06		5/10/06		5/12/06		5/12/06		5/12/06		5/12/06		5/10/06		5/10/06	
Extraction Date		6/8/06		6/8/06		6/8/06		6/8/06		6/8/06		6/8/06		6/8/06		6/8/06		6/8/06		6/8/06	
Analysis Date		6/14/06		6/14/06		6/14/06		6/14/06		6/14/06		6/14/06		6/16/06		6/16/06		6/16/06		6/16/06	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016		80	UJ	80	UJ	80	UR	80	UR	80	UJ	80	UJ	80	UJ	80	UJ	80	UR	80	UR
Aroclor-1221		80	UJ	80	UJ	80	UR	80	UR	80	UJ	80	UJ	80	UJ	80	UJ	80	UR	80	UR
Aroclor-1232	16.5	80	UJ	80	UJ	80	UR	80	UR	80	UJ	80	UJ	80	UJ	80	UJ	80	UR	80	UR
Aroclor-1242	16.5	80	UJ	80	UJ	80	UR	80	UR	80	UJ	80	UJ	80	UJ	80	UJ	80	UR	80	UR
Aroclor-1248		80	UJ	80	UJ	80	UR	80	UR	80	UJ	80	UJ	80	UJ	80	UJ	80	UR	80	UR
Aroclor-1254	16.5	80	UJ	80	UJ	80	UR	80	UR	80	UJ	80	UJ	80	UJ	80	UJ	80	UR	80	UR
Aroclor-1260	16.5	80	UJ	80	UJ	80	UR	80	UR	80	UJ	80	UJ	80	UJ	80	UJ	80	UR	80	UR

Sample Number		J11X50		J11X51		J11X60		J11X61		J11X64		J11X65		J11X72		J11X73		J11X74		J11X75	
Remarks																					
Sample Date		5/12/06		5/12/06		5/10/06		5/10/06		5/12/06		5/12/06		5/12/06		5/12/06		5/10/06		5/10/06	
Extraction Date		6/9/06		6/9/06		6/9/06		6/9/06		6/9/06		6/9/06		6/9/06		6/9/06		6/9/06		6/9/06	
Analysis Date		6/13/06		6/13/06		6/13/06		6/13/06		6/13/06		6/13/06		6/13/06		6/13/06		6/13/06		6/13/06	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	16	UJ	18	UJ	5.4	J	19	UR	17	UJ	13	UJ	16	UJ	16	UUJ	16	UR	19	UR
Gamma-BHC (Lindane)	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	16	UJ	16	UJ	11	J	19	UR
Beta-BHC	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	16	UJ	16	UJ	16	UR	19	UR
Heptachlor	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	16	UJ	16	UJ	16	UR	19	UR
Delta-BHC	5	16	UJ	18	UJ	10	J	19	UR	17	UJ	13	UJ	14	J	16	UJ	16	UR	19	UR
Aldrin	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	12	J	16	UJ	16	UR	19	UR
Heptachlor Epoxide	5	14	J	18	UJ	14	UR	19	UR	17	UJ	13	UJ	16	UJ	16	UJ	16	UR	19	UR
Endosulfan I	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	49	J	16	UJ	16	UR	19	UR
Dieldrin	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	40	J	9.4	J	16	UR	19	UR
4,4'-DDE	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	120	J	24	J	16	UJ	16	UR	44	J
Endrin	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	16	UJ	16	UJ	16	UR	19	UR
Endosulfan II	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	14	J	9.8	J	9.3	J	29	J
4,4'-DDD	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	10	J	16	UJ	16	UJ	16	UR	19	UR
Endosulfan Sulfate	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	16	UJ	16	UJ	12	J	19	UR
4,4'-DDT	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	9.1	J	16	UJ	16	UJ	16	UR	19	UR
Methoxychlor	5	19	J	20	J	14	UR	50	J	30	J	29	J	23	J	34	J	16	UR	31	J
Endrin Ketone	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	16	UJ	16	UJ	16	UR	19	UR
Endrin Aldehyde	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	16	UJ	16	UJ	16	UR	19	UR
alpha-Chlordane	5	16	UJ	18	UJ	14	UR	19	UR	17	UJ	13	UJ	16	UJ	16	UJ	16	UR	19	UR
gamma-Chlordane	5	16	UJ	11	J	14	UR	11	J	17	UJ	22	J	24	J	16	UJ	9.3	J	19	UR
Toxaphene	5	160	UJ	180	UJ	140	UR	190	UR	170	UJ	130	UJ	160	UJ	160	UJ	160	UR	190	UR

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

000011

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

Project: WASHINGTON CLOSURE HANFORD
Laboratory: LLI SDG: K0358-A

Sample Number		J11X76		J11X77		J11X84		J11X85		J11X88		J11X89									
Remarks																					
Sample Date		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06									
Extraction Date		6/8/06		6/8/06		6/8/06		6/8/06		6/8/06		6/8/06									
Analysis Date		6/16/06		6/16/06		6/16/06		6/16/06		6/16/06		6/16/06									
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016		80	UJ	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ								
Aroclor-1221		80	UJ	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ								
Aroclor-1232	16.5	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ								
Aroclor-1242	16.5	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ								
Aroclor-1248		80	UJ	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ								
Aroclor-1254	16.5	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ								
Aroclor-1260	16.5	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ	80	UJ								
Sample Number		J11X76		J11X77		J11X84		J11X85		J11X88		J11X89									
Remarks																					
Sample Date		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06		5/12/06									
Extraction Date		6/9/06		6/9/06		6/9/06		6/9/06		6/9/06		6/9/06									
Analysis Date		6/14/06		6/14/06		6/14/06		6/14/06		6/14/06		6/14/06									
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	17	UJ	18	UJ	15	UJ	14	UJ	6.7	J	15	UJ								
Gamma-BHC (Lindane)	5	17	UJ	18	UJ	7.8	J	14	UJ	13	UJ	15	UJ								
Beta-BHC	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
Heptachlor	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
Delta-BHC	5	17	UJ	18	UJ	15	UJ	11	J	12	J	15	UJ								
Aldrin	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
Heptachlor Epoxide	5	17	UJ	18	UJ	15	UJ	14	UJ	18	J	10	J								
Endosulfan I	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	16	J								
Dieldrin	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
4,4'-DDE	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
Endrin	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
Endosulfan II	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
4,4'-DDD	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
Endosulfan Sulfate	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
4,4'-DDT	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
Methoxychlor	5	17	UJ	18	UJ	30	J	14	UJ	13	UJ	15	UJ								
Endrin Ketone	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
Endrin Aldehyde	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
alpha-Chlordane	5	17	UJ	18	UJ	15	UJ	14	UJ	13	UJ	15	UJ								
gamma-Chlordane	5	17	UJ	9.5	J	8.9	J	14	UJ	13	UJ	15	UJ								
Toxaphene	5	170	UJ	180	UJ	150	UJ	140	UJ	130	UJ	150	UJ								

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

000012

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 07/18/06 18:55

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 1

	Cust ID:	J11X50	J11X50	J11X50	J11X51	J11X60	J11X61
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	91 %	95 %	96 %	81 %	85 %	84 %
	Decachlorobiphenyl	96 %	96 %	100 %	93 %	90 %	94 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		80 U J	99 %	106 %	80 U J	80 U R	80 U R
Aroclor-1221		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1232		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1242		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1248		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1254		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1260		80 U	105 %	113 %	80 U	80 U	80 U

	Cust ID:	J11X64	J11X65	J11X72	J11X73	J11X74	J11X75
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	91 %	85 %	78 %	97 %	90 %	61 %
	Decachlorobiphenyl	94 %	85 %	79 %	105 %	100 %	63 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		80 U J	80 U J	80 U J	80 U J	80 U R	80 U R
Aroclor-1221		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1232		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1242		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1248		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1254		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1260		80 U	80 U	80 U	80 U	80 U	80 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

JR 8/8/06

NR 8/9/06

000000006

000013

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 07/18/06 18:55

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 2

	Cust ID:	J11X76	J11X77	J11X84	J11X85	J11X88	J11X89
Sample Information	RFW#:	011	012	013	014	015	016
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		80 %	87 %	89 %	75 %	70 %	88 %
Decachlorobiphenyl		88 %	94 %	96 %	91 %	77 %	96 %
Aroclor-1016		80 U J	80 U J	80 U J	80 U J	80 U J	80 U J
Aroclor-1221		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1232		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1242		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1248		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1254		80 U	80 U	80 U	80 U	80 U	80 U
Aroclor-1260		80 U	80 U	80 U	80 U	80 U	80 U

	Cust ID:	PBLKJC	PBLKJC BS
Sample Information	RFW#:	06LE0472-MB1	06LE0472-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		93 %	96 %
Decachlorobiphenyl		96 %	98 %
Aroclor-1016		13 U	100 %
Aroclor-1221		13 U	13 U
Aroclor-1232		13 U	13 U
Aroclor-1242		13 U	13 U
Aroclor-1248		13 U	13 U
Aroclor-1254		13 U	13 U
Aroclor-1260		13 U	106 %

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

8/8/06

7/19/06

000000007

000014

Pesticide/PCBs by GC, CLP List

Report Date: 06/15/06 09:49

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 1

	Cust ID:	J11X50	J11X50	J11X50	J11X51	J11X60	J11X61
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		96 %	86 %	99 %	85 %	71 %	83 %
Decachlorobiphenyl		100 %	94 %	100 %	98 %	94 %	98 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		16 U J	62 %	71 %	18 U J	5.4 ~~U~~ J	19 U R
gamma-BHC (Lindane)		16 U	75 %	84 %	18 U	14 U R	19 U
Beta-BHC		16 U	72 %	65 %	18 U	14 U R	19 U
Heptachlor		16 U	76 %	85 %	18 U	14 U R	19 U
Delta-BHC		16 U	60 %	65 %	18 U	10 ~~U~~ J	19 U
Aldrin		16 U	62 %	68 %	18 U	14 ~~U~~ R	19 U
Heptachlor epoxide		14 ~~U~~	58 * %	63 %	18 U	14 U	19 U
gamma-Chlordane		16 U	69 %	75 %	11 ~~U~~	14 U	11 ~~U~~ J
Endosulfan I		16 U	75 %	82 %	18 U	14 U	19 U R
alpha-Chlordane		16 U	66 %	71 %	18 U	14 U	19 U
4,4'-DDE		16 U	77 %	85 %	18 U	14 U	19 U
Dieldrin		16 U	76 %	78 %	18 U	14 U	19 U
Endrin		16 U	84 %	89 %	18 U	14 U	19 U
4,4'-DDD		16 U	71 %	78 %	18 U	14 U	19 U
Endosulfan II		16 U	74 %	80 %	18 U	14 U	19 U
4,4'-DDT		16 U	79 %	83 %	18 U	14 U	19 U
Endrin aldehyde		16 U	56 %	37 * %	18 U	14 U	19 U
Endosulfan sulfate		16 U	75 %	81 %	18 U	14 U	19 U
Methoxychlor		19 ~~U~~	94 %	100 %	20 ~~U~~	14 U	50 J
Endrin ketone		16 U	82 %	88 %	18 U	14 U	19 U R
Toxaphene		160 U	160 U	140 U	180 U	140 U	190 U R

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

8/8/06

6/21/6

000000006

000015

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 06/15/06 09:49

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 2

	Cust ID:	J11X64	J11X65	J11X72	J11X73	J11X74	J11X75
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	88 %	77 %	63 %	95 %	88 %	50 %
	Decachlorobiphenyl	102 %	102 %	91 %	104 %	103 %	67 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		17 U J	13 U J	16 U J	16 U J	16 U R	19 U R
gamma-BHC (Lindane)		17 U	13 U	16 U	16 U	11 ~~U~~ J	19 U
Beta-BHC		17 U	13 U	16 U	16 U	16 ~~U~~ R	19 U
Heptachlor		17 U	13 U	16 U	16 U	16 U	19 U
Delta-BHC		17 U	13 U	14 ~~J~~	16 U	16 U	19 U
Aldrin		17 U	13 U	12 ~~J~~	16 U	16 U	19 U
Heptachlor epoxide		17 U	13 U	16 U	16 U	16 U	19 U
gamma-Chlordane		17 U	22 ~~J~~.I	24	16 U	9.3 ~~J~~ J	29 J
Endosulfan I		17 U	13 U	49	16 U	16 ~~U~~ R	19 U R
alpha-Chlordane		17 U	13 U	16 U	16 U	16 U	19 U R
4,4'-DDE		17 U	120	24	16 U	16 U	44 J
Dieldrin		17 U	13 U	40	9.4 ~~J~~	16 U	19 U R
Endrin		17 U	13 U	16 U	16 ~~U~~	16 U	19 U
4,4'-DDD		17 U	10 J	16 U	16 U	16 U	19 U
Endosulfan II		17 U	13 U	14 ~~J~~	9.8 ~~J~~	9.3 ~~J~~ J	19 U
4,4'-DDT		17 U	9.1 ~~J~~.I	16 U	16 U	16 ~~U~~ R	19 U
Endrin aldehyde		17 U	13 U	16 U	16 U	16 U R	19 U
Endosulfan sulfate		17 U	13 U	16 U	16 U	12 ~~U~~ J	19 U
Methoxychlor		30	29	23	34	16 U R	31 J
Endrin ketone		17 U	13 U	16 U	16 U	16 U R	19 U R
Toxaphene		170 U	130 U	160 U	160 U	160 U R	190 U R

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

R 8/8/06

6/12/06

000000007

000016

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

Report Date: 06/15/06 09:49

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 3

	Cust ID:	J11X76	J11X77	J11X84	J11X85	J11X88	J11X89
Sample Information	RFW#:	011	012	013	014	015	016
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	81 %	87 %	94 %	79 %	71 %	90 %
	Decachlorobiphenyl	85 %	96 %	104 %	96 %	78 %	102 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		17 U J	18 U J	15 U J	14 U J	6.7 ~~J~~ J	15 U J
gamma-BHC (Lindane)		17 U	18 U	7.8 ~~J~~	14 U	13 U	15 U
Beta-BHC		17 U	18 U	15 ~~J~~ U	14 U	13 U	15 U
Heptachlor		17 U	18 U	15 U	14 U	13 U	15 U
Delta-BHC		17 U	18 U	15 U	11 ~~J~~	12 ~~J~~	15 U
Aldrin		17 U	18 U	15 U	14 ~~J~~ U	13 U	15 U
Heptachlor epoxide		17 U	18 U	15 U	14 U	18	10 J
gamma-Chlordane		17 U	9.5 ~~J~~	8.9 ~~J~~	14 U	13 U	16 ~~J~~
Endosulfan I		17 U	18 ~~J~~ U	15 U	14 U	13 U	15 U
alpha-Chlordane		17 U	18 U	15 U	14 U	13 U	15 U
4,4'-DDE		17 U	18 U	15 U	14 U	13 U	15 U
Dieldrin		17 U	18 U	15 U	14 U	13 U	15 U
Endrin		17 U	18 U	15 U	14 U	13 U	15 U
4,4'-DDD		17 U	18 U	15 U	14 U	13 U	15 U
Endosulfan II		17 U	18 U	15 U	14 U	13 U	15 U
4,4'-DDT		17 U	18 U	15 U	14 U	13 U	15 U
Endrin aldehyde		17 U	18 U	11 ~~J~~	14 U	13 U	15 U
Endosulfan sulfate		17 U	18 U	15 ~~J~~ U	14 U	13 U	15 U
Methoxychlor		17 U	18 U	30	14 U	13 U	15 U
Endrin ketone		17 U	18 U	15 U	14 U	13 U	15 U
Toxaphene		170 U	180 U	150 U	140 U	130 U	150 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

K 8/8/06

8/1/2016

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000017

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

Report Date: 06/15/06 09:49

RFW Batch Number: 0605L042 Client: TNUHANFORD RC-047 K0358 Work Order: 11343606001 Page: 4

	Cust ID:	PBLKJC	PBLKJC BS
Sample Information	RFW#:	06LE0472-MB1	06LE0472-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG

Surrogate:	Tetrachloro-m-xylene	91	%	83	%
	Decachlorobiphenyl	90	%	81	%
Alpha-BHC		0.33	U	83	%
gamma-BHC (Lindane)		0.33	U	83	%
Beta-BHC		0.33	U	79	%
Heptachlor		0.33	U	68	%
Delta-BHC		0.33	U	74	%
Aldrin		0.33	U	80	%
Heptachlor epoxide		0.33	U	83	%
gamma-Chlordane		0.33	U	82	%
Endosulfan I		0.33	U	93	%
alpha-Chlordane		0.33	U	81	%
4,4'-DDE		0.33	U	98	%
Dieldrin		0.33	U	88	%
Endrin		0.33	U	97	%
4,4'-DDD		0.33	U	94	%
Endosulfan II		0.33	U	85	%
4,4'-DDT		0.33	U	81	%
Endrin aldehyde		0.33	U	77	%
Endosulfan sulfate		0.33	U	83	%
Methoxychlor		0.33	U	86	%
Endrin ketone		0.33	U	84	%
Toxaphene		3.3	U	3.3	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

8/8/06

8/11/06

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000018

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-047
LVL #: 0605L042
SDG/SAF # K0358/RC-047

W.O. #: 11343-606-001-9999-00
Date Received: 05-17-2006

PCB

Sixteen (16) solid samples were collected on 05-10,12-2006.

The samples and their associated QC samples were extracted on 06-08-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-14,16-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were extracted outside required holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

2. All sample results were reported on a wet-weight basis.

3. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.

4. The method blank was below the reporting limits for all target compounds.

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

8. Due to the nature of the sample matrix, reduced sample volume (5g) was used for the extraction and 10mL final volume was used for the analysis resulting in higher sample results.

9. The initial calibrations associated with this data set were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 8 pages.

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

LvLI
LIONVILLE LABORATORY INC.

10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/7/06
Date

som\r:\group\data\pest\tzu hanford\0605-042s.pcb

3

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06PM002

Initiator: Orlette Johnson
Date: 6/21/06
Client: TNU - Hanford

Batch: 0605L042
Samples: all
Method: SW846/MCAWW/CLP/

Parameter: OPcb, Pest, PCNA,
Matrix: Soil
Prep Batch:

1. Reason for SDR

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

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

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

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

Sample(s) was/were extracted 11-16 days beyond the hold time

2. Known or Probable Causes(s) due to a temporary glassware shortage created by a malfunctioning drying kiln i.e, much of our glassware was lost when one of the kilns overheated. We made every effort to replace glassware as soon as possible but our needs exceeded on-the-shelf vendor stocks of certain critical items. This problem was exacerbated by an unusually high number of samples received during this period of time for organics extraction.

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

Other Description:
We have replenished glassware stocks to higher levels than those in-house before the kiln malfunction. We have also replaced the kiln.

4. Project Manager Instructions...signature/date: 6/21/06
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
X Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 7/20/06
__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Welsh
__	X Lab General Manager: I. Daniels	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	X Data Management: Stilwell	__	__ MS: Schneider/Carden
__	__ Sample Prep: Kiger	__	__ Log-In: Perry
		__	__ Admin: _____
		__	__ Other: _____

000022

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-047 K0358

RECEIVED JUL 2006

DATE RECEIVED: 05/17/06 LVL LOT # 0605L042

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J11X50	001	SO	06LE0472	05/12/06	06/08/06	06/14/06
J11X50	001 MS	SO	06LE0472	05/12/06	06/08/06	06/14/06
J11X50	001 MSD	SO	06LE0472	05/12/06	06/08/06	06/14/06
J11X51	002	SO	06LE0472	05/12/06	06/08/06	06/14/06
J11X60	003	SO	06LE0472	05/10/06	06/08/06	06/14/06
J11X61	004	SO	06LE0472	05/10/06	06/08/06	06/14/06
J11X64	005	SO	06LE0472	05/12/06	06/08/06	06/14/06
J11X65	006	SO	06LE0472	05/12/06	06/08/06	06/14/06
J11X72	007	SO	06LE0472	05/12/06	06/08/06	06/16/06
J11X73	008	SO	06LE0472	05/12/06	06/08/06	06/16/06
J11X74	009	SO	06LE0472	05/10/06	06/08/06	06/16/06
J11X75	010	SO	06LE0472	05/10/06	06/08/06	06/16/06
J11X76	011	SO	06LE0472	05/12/06	06/08/06	06/16/06
J11X77	012	SO	06LE0472	05/12/06	06/08/06	06/16/06
J11X84	013	SO	06LE0472	05/12/06	06/08/06	06/16/06
J11X85	014	SO	06LE0472	05/12/06	06/08/06	06/16/06
J11X88	015	SO	06LE0472	05/12/06	06/08/06	06/16/06
J11X89	016	SO	06LE0472	05/12/06	06/08/06	06/16/06

LAB QC:

PBLKJC	MB1	S	06LE0472	N/A	06/08/06	06/14/06
PBLKJC	MB1 BS	S	06LE0472	N/A	06/08/06	06/14/06

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-047
LVL #: 0605L042
SDG/SAF # K0358/RC-047

W.O. #: 11343-606-001-9999-00
Date Received: 05-17-2006

CHLORINATED PESTICIDES

Sixteen (16) solid samples were collected on 05-10,12-2006.

The samples and their associated QC samples were extracted on 06-09-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-13,14-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were extracted outside required holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

2. All sample results were reported on a wet-weight basis.

3. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.

4. The method blank was below the reporting limits for all target compounds.

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recoveries were within acceptance criteria.

7. Two (2) of forty (40) matrix spike recoveries were outside acceptance criteria.

8. All samples required a 4-fold dilution due to the nature of the sample matrix. The dilution factor on the summary form reflects the correct dilution factor; however, reduced sample volume (2 to 3 grams) was used for the extraction and 10mL final volume was used for the analysis. The reporting limits were adjusted to reflect the necessary dilution.

9. The initial calibrations associated with this data set were within acceptance criteria.

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 2 2 pages.

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

LvLI
LIONVILLE LABORATORY INC.

10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

8/7/06
Date

som\r:\group\data\pest\mu hanford\0605-042s.pst-rsv

5

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06PM002

Initiator: Orlette Johnson
Date: 6/21/06
Client: Multiple

Batch: 06L0542
Samples:
Method: SW846/MCAWW/CLP/

Parameter: Best
Matrix: Other Solid
Prep Batch: 06LE0472

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Sample(s) was/were extracted 27 and 29 days beyond the hold time

2. Known or Probable Causes(s) due to a temporary glassware shortage created by a malfunctioning drying kiln i.e, much of our glassware was lost when one of the kilns overheated. We made every effort to replace glassware as soon as possible but our needs exceeded on-the-shelf vendor stocks of certain critical items. This problem was exacerbated by an unusually high number of samples received during this period of time for organics extraction.

3. Discussion and Proposed Action

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

Other Description:

We have replenished glassware stocks to higher levels than those in-house before the kiln malfunction. We have also replaced the kiln.

4. Project Manager Instructions...signature/date: 6/21/06

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
X Include in Case Narrative
X Client Contacted: Date/Person
__ Add
__ Cancel

5. Final Action...signature/date: _____

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Welsh
__	X Lab General Manager: I. Daniels	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	X Data Management: Stilwell	__	__ MS: Schneider/Carden
__	__ Sample Prep: Kiger	__	__ Log-In: Perry
		__	__ Admin: _____
		__	__ Other: _____

Lionville Laboratory, Inc.
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-047 K0358

RECEIVED JUL 2006

DATE RECEIVED: 05/17/06 LVL LOT # :06[illegible]L042

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J11X50	001	SO	06LE0472	05/12/06	06/09/06	06/13/06
J11X50	001 MS	SO	06LE0472	05/12/06	06/09/06	06/13/06
J11X50	001 MSD	SO	06LE0472	05/12/06	06/09/06	06/13/06
J11X51	002	SO	06LE0472	05/12/06	06/09/06	06/13/06
JI1X60	003	SO	06LE0472	05/10/06	06/09/06	06/13/06
J11X61	004	SO	06LE0472	05/10/06	06/09/06	06/13/06
J11X64	005	SO	06LE0472	05/12/06	06/09/06	06/13/06
J11X65	006	SO	06LE0472	05/12/06	06/09/06	06/13/06
J11X72	007	SO	06LE0472	05/12/06	06/09/06	06/13/06
J11X73	008	SO	06LE0472	05/12/06	06/09/06	06/13/06
J11X74	009	SO	06LE0472	05/10/06	06/09/06	06/13/06
J11X75	010	SO	06LE0472	05/10/06	06/09/06	06/13/06
J11X76	011	SO	06LE0472	05/12/06	06/09/06	06/14/06
J11X77	012	SO	06LE0472	05/12/06	06/09/06	06/14/06
J11X84	013	SO	06LE0472	05/12/06	06/09/06	06/14/06
J11X85	014	SO	06LE0472	05/12/06	06/09/06	06/14/06
J11X88	015	SO	06LE0472	05/12/06	06/09/06	06/14/06
J11X89	016	SO	06LE0472	05/12/06	06/09/06	06/14/06

LAB QC:

PBLKJC	MB1	S	06LE0472	N/A	06/09/06	06/14/06
PBLKJC	MB1 BS	S	06LE0472	N/A	06/09/06	06/14/06

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-375	Page 1 of 1

Collector: TILLER, B TR KLINCKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300-44/618-4	SAF No.: RC-047	
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: 1060469	Bill of Lading/Air Bill No.: SEE OSPC	

0100000010

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

0000028

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C				
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	750g	5g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA				
Sample No.	Matrix *	Sample Date	Sample Time								
J11X50	OTHER SOLID	5-12-06	1215				X	X	X	X	
J11X51	OTHER SOLID	5-12-06	1230				X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	5-12-06 1245	EAS LOCKED STORAGE	5-12-06 1245
EAS LOCKED STORAGE	MAY 15 2006 0730	LR Edmundson	5-15-06 0730
LR Edmundson WCH	5-16-06 1500	Fed Ex	
Fed Ex	5-17-06 0925	W Smith	5-17-06 0925
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) Gamma Spec - (Full List) (Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238)

Matrix:*

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-380	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 100-F-2		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000029

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X60	OTHER SOLID	5-10-06	9:20				X	X	X	X	
J11X61	OTHER SOLID	5-10-06	9:30				X	X	X	X	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From TR KLINCKMAN	5-10-06 9:45	Received By/Stored In EAS LOCKED STORAGE	5-10-06 9:45
Relinquished By/Removed From EAS LOCKED STORAGE	0730 MAY 15 2006	Received By/Stored In	5-15-06 0730
Relinquished By/Removed From	5-15-06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From	5-17-06 1025	Received By/Stored In	5-17-06 1025
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-382	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location BORROW PIT 9		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC		

000000012

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000030

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X64	OTHER SOLID	5-12-06	1400				X	X	X	X	
J11X65	OTHER SOLID	5-12-06	1415				X	X	X	X	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	1430 5-12-06	EAS LOCKED STORAGE	1430 5-12-06
EAS LOCKED STORAGE	1730 MAY 14 2006	TR Eberline	5-15-06 0730
TR Eberline 5-15-06	1500	Fed Ex	
Fed Ex	5-17-06 0925	D. Smith	5-17-06 0925

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-386	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-23		SAF No. RC-047	Air Quality ☐	
Ice Chest No. FRE 5-16-06 ERC-00 ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC		

000000813

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X72	OTHER SOLID	5-12-06	1315				X	X	X	X	
J11X73	OTHER SOLID	5-12-06	1330				X	X	X	X	

000031

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From TR KLINCKMAN	Date/Time 1345 5-12-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 1345 5-12-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0730 MAY 15 2006	Received By/Stored In TR Klinckman 5-15-06	Date/Time 0730
Relinquished By/Removed From TR Klinckman 5-16-06	Date/Time 1500	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex 5-17-06	Date/Time 0925	Received By/Stored In D. Smith 5-17-06	Date/Time 0925
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) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-387	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: JA JONES 1	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597; COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060469	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

00000032

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C			
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	750g	5g	5g	15g	50g	50g	50g			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A			
Sample No.	Matrix *	Sample Date	Sample Time								
J11X74	OTHER SOLID	5-10-06	12:30				X	X	X	X	
J11X75	OTHER SOLID	5-10-06	12:45				X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: TR KLINCKMAN / Date/Time: MAY 10 2006 1700	Received By/Stored In: EAS LOCKED STORAGE Date/Time: MAY 10 2006 1305
Relinquished By/Removed From: EAS LOCKED STORAGE Date/Time: MAY 15 2006 0730	Received By/Stored In: TR Blanchard Date/Time: 5-15-06 0730
Relinquished By/Removed From: TR Blanchard Date/Time: 5-16-06 1500	Received By/Stored In: Fed Ex Date/Time:
Relinquished By/Removed From: Fed Ex Date/Time: 5-17-06 10925	Received By/Stored In: [illegible] Date/Time: 5-17-06 10925
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) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-388	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-132/600-190		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC		

51000000

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000033

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	750g	5g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A				
Sample No.	Matrix *	Sample Date	Sample Time								
J11X76	OTHER SOLID	MAY 12 2006	0710				X	X	X	X	
J11X77	OTHER SOLID	MAY 12 2006	0725				X	X	X	X	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From TR KLINCKMAN 0730	MAY 12 2006	EAS LOCKED STORAGE	0730 MAY 12 2006
Relinquished By/Removed From EAS LOCKED STORAGE	0730 MAY 15 2006	Received By/Stored In [illegible]	5-15-06 0730
Relinquished By/Removed From WCH [illegible]	5-15-06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From [illegible]	5-17-06 0925	Received By/Stored In [illegible]	5-17-06 0925
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-392	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N	Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 600-131		SAF No. RC-047	Air Quality ☐	
Ice Chest No. ERC-03-107	Field Logbook No. EL-1597	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060469		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000034

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C				
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	750g	5g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A				
Sample No.	Matrix *	Sample Date	Sample Time								
J11X84	OTHER SOLID	MAY 1 2 2006	0920				X	X	X	X	
J11X85	OTHER SOLID	MAY 1 2 2006	0930				X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From TR KLINCKMAN		5-12-06 0945	EAS LOCKED STORAGE	5-12-06 0945
Relinquished By/Removed From EAS LOCKED STORAGE		MAY 1 5 2006 0730	FR Edmundson	5-15-06 0730
Relinquished By/Removed From FR Edmundson	WCA	5-15-06 1500	Fed Ex	
Relinquished By/Removed From Fed Ex		5-17-06 0905		5-17-06 0905
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Gamma Spec - (Full List) [Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238]

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-394	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 628-1	SAF No.: RC-047	
Ice Chest No.: ERC-03-107	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED-EX
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060469	Bill of Lading/Air Bill No.: SEE OSPC	

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POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000035

Preservation	None	None	None	Cool 4C	Cool 4C	Cool 4C	COOL 4C				
Type of Container	G/P	G/P	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	750g	5g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	Isotopic Plutonium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	SEMI-VOA 8270A				
Sample No.	Matrix *	Sample Date	Sample Time								
J11X88	OTHER SOLID	MAY 12 2006	0810				X	X	X	X	
J11X89	OTHER SOLID	MAY 12 2006	0830				X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: 0545 5-12-06	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 0545 5-12-06
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: MAY 15 2006 0730	Received By/Stored In: TR Edmundson	Date/Time: 5-15-06 0730
Relinquished By/Removed From: TR Edmundson	Date/Time: 5-16-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 5.17.06 0925	Received By/Stored In:	Date/Time: 5.17.06 0925
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) Gamma Spec - (Full List) {Americium-241, Antimony-125, Beryllium-7, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Potassium-40, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238}

Matrix *

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

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

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RCBRA			DATA PACKAGE: K0358A		
VALIDATOR: TLF		LAB: LLI		DATE: 8/6/06	
			SDG: K0358A		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J11X50	J11X51	J11X60	J11X61	J11X64	J11X65
J11X72	J11X73	J11X74	J11X75	J11X76	J11X77
J11X84	J11X85	J11X88	J11X89		
					Solid

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

Comments: _____

PCB DATA VALIDATION CHECKLIST

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

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

Comments: no FB

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

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

Comments: MS – Heptachlor epoxide – 58%
MSD – Endrin Aldehyde – 37%
no FB
no toxaphene MS/MSD/LCS

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: Endrin Aldehyde - 4170 - J all

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No (N/A)

Positive results resolved acceptably? ..... Yes No (N/A)

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

Pass less <2x 50, 51, 64, 65, 72, 73, 76, 77, 84, 85, 88, 89 - J all

Pass >2x 60, 61, 74, 75 - J/UR all

Bust

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 over

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: