0070163

# 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) H9-02 DE 07/05/06
INITIAL/DATE

**COMMENTS:**

**SDG K0238 SAF-RC-047**

**Waste Site: 300 Area Elevated, 100-K Low, 100-K Elevated**

RECEIVED
JUL 12 2006
EDMC

Date: 19 June 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. K0238-LLI

## INTRODUCTION

This memo presents the results of data validation on Data Package No. K0238 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

| Sample ID | Sample Date | Matrix | Validation | Date |
|---|---|---|---|---|
| J11807 | 2/23/06 | Solid | C | See note 1 |
| J11863 | 2/23/06 | Solid | C | See note 1 |
| J11864 | 2/23/06 | Solid | C | See note 1 |
| J11865 | 2/23/06 | Solid | C | See note 1 |
| J11866 | 2/23/06 | Solid | C | See note 1 |
| J11867 | 2/23/06 | Solid | C | See note 1 |
| J11868 | 2/23/06 | 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 two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-

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

Due to the holding time being exceeded by less than twice the limit, all pesticide and PCB results 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 matrix spike (12%), matrix spike duplicate (14%) and LCS (24%) recoveries outside QC limits, all endrin aldehyde results were qualified as estimates and flagged "J".

Due to matrix spike (36%), matrix spike duplicate (37%) and LCS (28%) recoveries outside QC limits, all endosulfan sulfate results were qualified as estimates and flagged "J".

Due to matrix spike (53%), matrix spike duplicate (55%) and LCS (48%) recoveries outside QC limits, all endrin ketone results were qualified as estimates and flagged "J".

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

All other accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 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".

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 undetected results exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data Package No. K0238 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 than twice the limit, all pesticide and PCB results were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".
- Due to matrix spike (12%), matrix spike duplicate (14%) and LCS (24%) recoveries outside QC limits, all endrin aldehyde results were qualified as estimates and flagged "J".
- Due to matrix spike (36%), matrix spike duplicate (37%) and LCS (28%) recoveries outside QC limits, all endosulfan sulfate results were qualified as estimates and flagged "J".

- Due to matrix spike (53%), matrix spike duplicate (55%) and LCS (48%) recoveries outside QC limits, all endrin ketone results were qualified as estimates and flagged "J".

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

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

**REFERENCES**

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

DOE/RL-2005-42, 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 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: K0238 | REVIEWER: TLI | Project: RCBRA | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| All | J | All | Holding time |
| Endrin ketone<br>Endosulfan sulfate<br>Endrin aldehyde | J | All | MS, MSD and LCS recovery |
| 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, SOLID MATRIX, (UG/KG)



| Project: WASHINGTON CLOSURE HANFORD | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Laboratory: LLI | SDG: K0238 | | | | | | | | | | | | | | |
| Sample Number | | J11807 | | J11863 | | J11864 | | J11865 | | J11866 | | J11867 | | J11868 | |
| Remarks | | | | | | | | | | | | | | | |
| Sample Date | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | |
| Extraction Date | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | |
| Analysis Date | | 3/31/06 | | 4/1/06 | | 4/1/06 | | 4/1/06 | | 4/1/06 | | 4/1/06 | | 4/1/06 | |
| PCB | RQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Aroclor-1016 | | 330 | UJ | 230 | UJ | 260 | UJ | 230 | UJ | 310 | UJ | 270 | UJ | 200 | UJ |
| Aroclor-1221 | | 330 | UJ | 230 | UJ | 260 | UJ | 230 | UJ | 310 | UJ | 270 | UJ | 200 | UJ |
| Aroclor-1232 | 16.5 | 330 | UJ | 230 | UJ | 260 | UJ | 230 | UJ | 310 | UJ | 270 | UJ | 200 | UJ |
| Aroclor-1242 | 16.5 | 330 | UJ | 230 | UJ | 260 | UJ | 230 | UJ | 310 | UJ | 270 | UJ | 200 | UJ |
| Aroclor-1248 | | 330 | UJ | 230 | UJ | 260 | UJ | 230 | UJ | 310 | UJ | 270 | UJ | 200 | UJ |
| Aroclor-1254 | 16.5 | 330 | UJ | 230 | UJ | 260 | UJ | 230 | UJ | 310 | UJ | 270 | UJ | 200 | UJ |
| Aroclor-1260 | 16.5 | 330 | UJ | 230 | UJ | 260 | UJ | 230 | UJ | 310 | UJ | 270 | UJ | 200 | UJ |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Sample Number | | J11807 | | J11863 | | J11864 | | J11865 | | J11866 | | J11867 | | J11868 | |
| Remarks | | | | | | | | | | | | | | | |
| Sample Date | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | |
| Extraction Date | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | |
| Analysis Date | | 4/2/06 | | 4/2/06 | | 4/2/06 | | 4/2/06 | | 4/2/06 | | 4/2/06 | | 4/2/06 | |
| Pesticide | RQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Alpha-BHC | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Gamma-BHC (Lindane) | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Beta-BHC | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Heptachlor | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Delta-BHC | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Aldrin | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Heptachlor Epoxide | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Endosulfan I | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Dieldrin | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| 4,4'-DDE | 5 | 30 | J | 6.4 | J | 7.2 | J | 24 | J | 10 | J | 34 | UJ | 8.1 | J |
| Endrin | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Endosulfan II | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| 4,4'-DDD | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 6.4 | J | 38 | UJ | 34 | UJ | 25 | UJ |
| Endosulfan Sulfate | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| 4,4'-DDT | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Methoxychlor | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Endrin Ketone | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| Endrin Aldehyde | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| alpha-Chlordane | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 25 | UJ |
| gamma-Chlordane | 5 | 41 | UJ | 29 | UJ | 33 | UJ | 29 | UJ | 38 | UJ | 34 | UJ | 5.0 | J |
| Toxaphene | 5 | 410 | UJ | 290 | UJ | 330 | UJ | 290 | UJ | 380 | UJ | 340 | UJ | 250 | 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.

PCBs by GC

Report Date: 04/13/06 17:16

RFW Batch Number: 0603L498 Client: TNUHANFORD RC-047 K0238 Work Order: 11343606001 Page: 1

| | Cust ID: | J11807 | J11807 | J11807 | J11863 | J11864 | J11865 |
|---|---|---|---|---|---|---|---|
| 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 | | 118 % | 89 % | 101 % | 116 % | 112 % | 115 % |
| Decachlorobiphenyl | | 115 % | 87 % | 99 % | 115 % | 120 % | 118 % |
| Aroclor-1016 | | 330 U J | 74 % | 87 % | 230 U J | 260 U J | 230 U J |
| Aroclor-1221 | | 330 U | 240 U | 330 U | 230 U | 260 U | 230 U |
| Aroclor-1232 | | 330 U | 240 U | 330 U | 230 U | 260 U | 230 U |
| Aroclor-1242 | | 330 U | 240 U | 330 U | 230 U | 260 U | 230 U |
| Aroclor-1248 | | 330 U | 240 U | 330 U | 230 U | 260 U | 230 U |
| Aroclor-1254 | | 330 U | 240 U | 330 U | 230 U | 260 U | 230 U |
| Aroclor-1260 | | 330 U | 80 % | 94 % | 230 U | 260 U | 230 U |

| | Cust ID: | J11866 | J11867 | J11868 | PBLKEG | PBLKEG BS |
|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 005 | 006 | 007 | 06LE0221-MB1 | 06LE0221-MB1 |
| | Matrix: | SOLID | SOLID | SOLID | SOIL | SOIL |
| | D.F.: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Units: | UG/KG | UG/KG | UG/KG | UG/KG | UG/KG |
| Surrogate: Tetrachloro-m-xylene | | 114 % | 115 % | 109 % | 101 % | 109 % |
| Decachlorobiphenyl | | 111 % | 113 % | 105 % | 96 % | 106 % |
| Aroclor-1016 | | 310 U J | 270 U J | 200 U J | 13 U | 87 % |
| Aroclor-1221 | | 310 U | 270 U | 200 U | 13 U | 13 U |
| Aroclor-1232 | | 310 U | 270 U | 200 U | 13 U | 13 U |
| Aroclor-1242 | | 310 U | 270 U | 200 U | 13 U | 13 U |
| Aroclor-1248 | | 310 U | 270 U | 200 U | 13 U | 13 U |
| Aroclor-1254 | | 310 U | 270 U | 200 U | 13 U | 13 U |
| Aroclor-1260 | | 310 U | 270 U | 200 U | 13 U | 94 % |

4/13/6

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

4/17/06

**Lionville Laboratory, Inc.**

Pesticide/PCBs by GC, CLP List

Report Date: 04/19/06 09:04

RFW Batch Number: 0603L498 Client: TNUHANFORD RC-047 K0238 Work Order: 11343606001 Page: 1

| | Cust ID: | J11807 | J11807 | J11807 | J11863 | J11864 | J11865 |
|---|---|---|---|---|---|---|---|
| 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 | | 110 % | 102 % | 98 % | 113 % | 114 % | 105 % |
| Decachlorobiphenyl | | 104 % | 101 % | 93 % | 110 % | 111 % | 103 % |
| | | fl | fl | fl | fl | fl | fl |
| Alpha-BHC | | 41 U J | 78 % | 89 % | 29 U J | 33 U J | 29 U J |
| gamma-BHC (Lindane) | | 41 U | 84 % | 95 % | 29 U | 33 U | 29 U |
| Beta-BHC | | 41 U | 76 % | 87 % | 29 U | 33 U | 29 U |
| Heptachlor | | 41 U | 89 % | 99 % | 29 U | 33 U | 29 U |
| Delta-BHC | | 41 U | 61 % | 71 % | 29 U | 33 U | 29 U |
| Aldrin | | 41 U | 84 % | 94 % | 29 U | 33 U | 29 U |
| Heptachlor epoxide | | 41 U | 83 % | 93 % | 29 U | 33 U | 29 U |
| gamma-Chlordane | | 41 U | 76 % | 86 % | 29 U | 33 U | 29 U |
| Endosulfan I | | 41 U | 81 % | 91 % | 29 U | 33 U | 29 U |
| alpha-Chlordane | | 41 U | 79 % | 89 % | 29 U | 33 U | 29 U |
| 4,4'-DDE | | 30 J | 90 % | 101 % | 6.4 J | 7.2 J | 24 J |
| Dieldrin | | 41 U | 85 % | 96 % | 29 U | 33 U | 29 U |
| Endrin | | 41 U | 93 % | 105 % | 29 U | 33 U | 29 U |
| 4,4'-DDD | | 41 U | 99 % | 110 % | 29 U | 33 U | 6.4 J |
| Endosulfan II | | 41 U | 67 % | 74 % | 29 U | 33 U | 29 U |
| 4,4'-DDT | | 41 U | 84 % | 95 % | 29 U | 33 U | 29 U |
| Endrin aldehyde | | 41 U | 12 * % | 14 * % | 29 U | 33 U | 29 U |
| Endosulfan sulfate | | 41 U | 36 * % | 37 * % | 29 U | 33 U | 29 U |
| Methoxychlor | | 41 U | 79 % | 88 % | 29 U | 33 U | 29 U |
| Endrin ketone | | 41 U | 53 * % | 55 * % | 29 U | 33 U | 29 U |
| Toxaphene | | 410 U | 380 U | 330 U | 290 U | 330 U | 290 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

000000005

000013

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 04/19/06 09:04

RFW Batch Number: 0603L498 Client: TNUHANFORD RC-047 K0238 Work Order: 11343606001 Page: 2

| | Cust ID: | J11866 | J11867 | J11868 | PBLKEG | PBLKEG RE | PBLKEG BS |
|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 005 | 006 | 007 | 06LE0221-MB1 | 06LE0221-MB1 | 06LE0221-MB1 |
| | Matrix: | SOLID | SOLID | SOLID | SOIL | SOIL | SOIL |
| | D.F.: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Units: | UG/KG | UG/KG | UG/KG | UG/KG | UG/KG | UG/KG |
| Surrogate: | Tetrachloro-m-xylene | 104 % | 98 % | 98 % | 96 % | 100 % | 101 % |
| | Decachlorobiphenyl | 102 % | 103 % | 96 % | 91 % | 101 % | 93 % |
| | | fl | fl | fl | fl | fl | fl |
| Alpha-BHC | | 38 U J | 34 U J | 25 U J | 1.7 U | 1.7 U | 78 % |
| gamma-BHC (Lindane) | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 83 % |
| Beta-BHC | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 80 % |
| Heptachlor | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 84 % |
| Delta-BHC | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 61 % |
| Aldrin | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 84 % |
| Heptachlor epoxide | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 80 % |
| gamma-Chlordane | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 80 % |
| Endosulfan I | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 84 % |
| alpha-Chlordane | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 81 % |
| 4,4'-DDE | | 10 ~~J~~ | 34 U | 8.1 ~~J~~ | 1.7 U | 1.7 U | 85 % |
| Dieldrin | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 82 % |
| Endrin | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 81 % |
| 4,4'-DDD | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 89 % |
| Endosulfan II | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 64 % |
| 4,4'-DDT | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 78 % |
| Endrin aldehyde | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 24 * % |
| Endosulfan sulfate | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 28 * % |
| Methoxychlor | | 38 U | 34 U | 25 U | 1.7 U | 1.7 U | 63 % |
| Endrin ketone | | 38 U | 34 U | 5.0 ~~J~~ | 1.7 U | 1.7 U | 48 * % |
| Toxaphene | | 380 U | 340 U | 250 U | 17 U | 17 U | 17 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

4/17/06

000014

000000006

Cust ID: PBLKEG BS

Sample Information
RFW#: 06LE0221-MB1
Matrix: SOIL
D.F.: 1.00
Units: UG/KG

| | | | |
|---|---|---|---|
| Surrogate: | Tetrachloro-m-xylene | 102 | % |
| | Decachlorobiphenyl | 107 | % |

| | | |
|---|---|---|
| Alpha-BHC | 100 | % |
| gamma-BHC (Lindane) | 99 | % |
| Beta-BHC | 93 | % |
| Heptachlor | 96 | % |
| Delta-BHC | 87 | % |
| Aldrin | 99 | % |
| Heptachlor epoxide | 97 | % |
| gamma-Chlordane | 96 | % |
| Endosulfan I | 97 | % |
| alpha-Chlordane | 96 | % |
| 4,4'-DDE | 94 | % |
| Dieldrin | 100 | % |
| Endrin | 104 | % |
| 4,4'-DDD | 98 | % |
| Endosulfan II | 100 | % |
| 4,4'-DDT | 102 | % |
| Endrin aldehyde | 91 | % |
| Endosulfan sulfate | 98 | % |
| Methoxychlor | 104 | % |
| Endrin ketone | 99 | % |
| Toxaphene | 17 | 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

000000007

000015

## Appendix 4

## Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

**Case Narrative**

**Client:** TNU-HANFORD RC-047
**LVL #:** 0603L498
**SDG/SAF #** K0238/RC-047

**W.O. #:** 11343-606-001-9999-00
**Date Received:** 03-13-2006

## CHLORINATED PESTICIDES

Seven (7) solid samples were collected on 02-23-2006.

The samples and their associated QC samples were extracted on 03-22-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 04-02,13-2006. 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. The Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy, with the exception of some discrepancies, which have been recorded on the Sample Receipt Checklist. Samples were received out of hold.

2. All required holding times for analysis have been met.

3. The samples were extracted 15 days outside of recommended hold time.

4. The samples and their associated QC samples received Florisil and Copper-Sulfur cleanups according to Lionville Laboratory SOPs based on SW846 methods 3620B and 3660A respectively.

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

6. All surrogate recoveries were within acceptance criteria.

7. All blank spike recoveries were within acceptance criteria in the pre-Florisil cleanup. Three (3) of forty (40) blank spike recoveries were outside acceptance criteria in the Florisil cleanup fraction.

8. Six (6) of forty (40) matrix spike recoveries were outside acceptance criteria in the Florisil cleaned fraction.

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



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

9. All samples required instrument dilution due to chromatographic anomalies. The reporting limits were adjusted to reflect the necessary dilution.

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

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

12. 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.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/21/06
Date

som\r:\group\data\pest\tnu hanford\0603-498s.pst

LVLI
LIONVILLE LABORATORY INC.



000000083

RECEIVED
MAY 2006

Lionville Laboratory, Inc.
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-047 K0238

DATE RECEIVED: 03/13/06 LVL LOT # :0603L198

| CLIENT ID | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| J11807 | 001 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/02/06 |
| J11807 | 001 MS | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/02/06 |
| J11807 | 001 MSD | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/02/06 |
| J11863 | 002 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/02/06 |
| J11864 | 003 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/02/06 |
| J11865 | 004 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/02/06 |
| J11866 | 005 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/02/06 |
| J11867 | 006 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/02/06 |
| J11868 | 007 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/02/06 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| PBLKEG | MB1 | S | 06LE0221 | N/A | 03/22/06 | 04/02/06 |
| PBLKEG | MB1 | S | | N/A | 03/22/06 | 04/13/06 |
| PBLKEG | MB1 BS | S | 06LE0221 | N/A | 03/22/06 | 04/02/06 |
| PBLKEG | MB1 BS | S | | N/A | 03/22/06 | 04/13/06 |

JB 4/13/06

LIONVILLE LABORATORY INC.

**Case Narrative**

**Client:** TNU-HANFORD RC-047
**LVL #:** 0603L498
**SDG/SAF #** K0238/RC-047

**W.O. #:** 11343-606-001-9999-00
**Date Received:** 03-13-2006

**PCB**

Seven (7) solid samples were collected on 02-23-2006.

The samples and their associated QC samples were extracted on 03-22-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 03-31-2006 and 04-01-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

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

2. Samples were received outside the extraction holding time.

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

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

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

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

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

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 4 pages.



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

LvLI
LIONVILLE LABORATORY INC.

10. 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.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/19/6
Date

som\r:\group\data\pest\tnu hanford\0603-498.pcbs



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

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-047 K0238

RECEIVED
MAY 2006

DATE RECEIVED: 03/13/06 LVL LOT # : 5603L498

| CLIENT ID | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| J11807 | 001 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 03/31/06 |
| J11807 | 001 MS | SO | 06LE0221 | 02/23/06 | 03/22/06 | 03/31/06 |
| J11807 | 001 MSD | SO | 06LE0221 | 02/23/06 | 03/22/06 | 03/31/06 |
| J11863 | 002 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/01/06 |
| J11864 | 003 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/01/06 |
| J11865 | 004 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/01/06 |
| J11866 | 005 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/01/06 |
| J11867 | 006 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/01/06 |
| J11868 | 007 | SO | 06LE0221 | 02/23/06 | 03/22/06 | 04/01/06 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| PBLKEG | MB1 | S | 06LE0221 | N/A | 03/22/06 | 03/31/06 |
| PBLKEG | MB1 BS | S | 06LE0221 | N/A | 03/22/06 | 03/31/06 |

4/13/06

Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-047-137 Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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: 300 AREA ELEVATED, SAMPLE 4 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES / LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: See OSPC |

Price Code: 9N

Air Quality ☐

Data Turnaround: 45 Days

000000007

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*POTENTIAL RADIOACTIVE <DOT LIMITS*

**Special Handling and/or Storage**

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | COOL 4C ~~None~~ 1/0 2/14/06 | None | Cool 4C | Cool 4C | Cool 4C | Cool 4C | | | | | |
| Type of Container | G/P | G/P | G/P | aG | aG | aG | | | | | |
| No. of Container(s) | ~~0~~ 1 1/0 2/14/06 | 1 | ~~1~~ 0 1/0 2/14/06 | 0 | 0 | 0 | | | | | |
| Volume | 750g | 5g | 15g | 50g | 50g | 50g | | | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | | | |

000023

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11807 | OTHER SOLID | 2-23-06 | 1545 | X | X | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By/Removed From: JAMES BERNHARD | Date/Time: 2-23-06 1630 | Received By/Stored In: EAS LOCKED STORAGE | Date/Time: 2-23-06 1630 |
| Relinquished By/Removed From: EAS LOCKED STORAGE | Date/Time: 0745 2-27-06 | Received By/Stored In: RZ Stiffler RZ Stiffler | Date/Time: 0745 2-27-06 |
| Relinquished By/Removed From: RZ Stiffler RZ Stiffler | Date/Time: 1600 2-27-06 | Received By/Stored In: Fed Ex | Date/Time: |
| Relinquished By/Removed From: FED EX | Date/Time: | Received By/Stored In: [signature] | Date/Time: 02/28/06 9:20 |
| Relinquished By/Removed From: [signature] | Date/Time: 3/10/06 16:00 | Received By/Stored In: | Date/Time: |
| Relinquished By/Removed From: [signature] | Date/Time: 3-13-06 1100 | Received By/Stored In: [signature] | Date/Time: 3-13-06 1100 |

**SPECIAL INSTRUCTIONS**

NOTE: Eberline- perform Gamma Spec, ~~Iso Uranium and Iso Strontium~~ 1/0 2/14/06 then tranship BOTTLE to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich~~ JOAN KESSNER 1/0 2/14/06

Weigs upon receipt.

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-047-141 | Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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: 100-K ELEVATED, SAMPLE 1 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES/ LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

POSSIBLE SAMPLE HAZARDS/REMARKS

*POTENTIAL RADIOACTIVE <DOT LIMITS*

Special Handling and/or Storage

*COOL 4C "MATRIX COMPOSED OF FISH"*

000024

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | Cool 4C ~~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 | 2g | 5g | 15g | 50g | 50g | 50g | | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| J11863 | OTHER SOLID | 2-23-06 | 1330 | X | X | X | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names |
|---|---|
| Relinquished By/Removed From: JAMES BERNHARD Date/Time: 2-23-06 1630 | Received By/Stored In: EAS LOCKED STORAGE Date/Time: 2-23-06 1630 |
| Relinquished By/Removed From: EAS LOCKED STORAGE Date/Time: 2-27-06 0745 | Received By/Stored In: R2 Stiffler Date/Time: 2-27-06 0745 |
| Relinquished By/Removed From: R2 Stiffler Date/Time: 2-27-06 1600 | Received By/Stored In: Fed Ex Date/Time: |
| Relinquished By/Removed From: Fed Ex Date/Time: | Received By/Stored In: Date/Time: 02/28/06 9:20 |
| Relinquished By/Removed From: Date/Time: 3/10/06 16:00 | Received By/Stored In: Date/Time: |
| Relinquished By/Removed From: Date/Time: 3-13-06 1100 | Received By/Stored In: Date/Time: 3-13-06 1100 |

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec the tranship bottle to Lionville Labs. if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ upon receipt.

JOAN KESSNER 1/02/2006

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 (06/29/2005)

Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-047-142 Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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-K ELEVATED, SAMPLE 2 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

Price Code: 9N

Air Quality ☐

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

*POTENTIAL RADIOACTIVE <DOT LIMITS*

Special Handling and/or Storage

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | Cool 4C ~~None~~ JN 21406 | 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 | 0 | 0 | 0 | 0 | | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | | |

000025

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11864 | OTHER SOLID | 2-23-06 | 1400 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By/Removed From: JAMES BERNHARD | Date/Time: 2-23-06 1630 | Received By/Stored In: EAS LOCKED STORAGE | Date/Time: 2-23-06 1630 |
| Relinquished By/Removed From: EAS LOCKED STORAGE | Date/Time: 0745 2-27-06 | Received By/Stored In: RZ Steffler R.J. Steffler | Date/Time: 0745 2-27-06 |
| Relinquished By/Removed From: RZ Steffler R.J. Steffler | Date/Time: 1600 2-27-06 | Received By/Stored In: Fed Ex | Date/Time: |
| Relinquished By/Removed From: FED EX | Date/Time: | Received By/Stored In: [signature] | Date/Time: 02/28/06 9:20 |
| Relinquished By/Removed From: Alex Kelley | Date/Time: 3/10/06 16:00 | Received By/Stored In: | Date/Time: |
| Relinquished By/Removed From: Fed Ex | Date/Time: 3-13-06 1100 | Received By/Stored In: [signature] | Date/Time: 3-13-06 1100 |

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KESSNER upon receipt.

JN 21406

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-047-145 | Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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: 100-K ELEVATED, SAMPLE 3 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

POSSIBLE SAMPLE HAZARDS/REMARKS

*POTENTIAL RADIOACTIVE <DOT LIMITS*

Special Handling and/or Storage

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | Cool 4 C | 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 | 0 | 0 | 0 | 0 | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | |
| J11865 | OTHER SOLID | 2-23-06 | 1430 | X | X | X | | | | |

9200026

| CHAIN OF POSSESSION | Sign/Print Names | |
|---|---|---|
| Relinquished By/Removed From: JAMES BERNHARD | Date/Time: 2-23-06 1630 | Received By/Stored In: EAS LOCKED STORAGE — Date/Time: 2-23-06 1630 |
| Relinquished By/Removed From: EAS LOCKED STORAGE | Date/Time: 0745 2-27-06 | Received By/Stored In: RE Steffler — Date/Time: 0745 2-27-06 |
| Relinquished By/Removed From: RE Steffler | Date/Time: 1600 2-27-06 | Received By/Stored In: Fed EX — Date/Time: |
| Relinquished By/Removed From: Fed EX | Date/Time: | Received By/Stored In: — Date/Time: 03/28/06 9:20 |
| Relinquished By/Removed From: | Date/Time: 3/10/06 16:00 | Received By/Stored In: — Date/Time: |
| Relinquished By/Removed From: | Date/Time: 3-13-06 1100 | Received By/Stored In: — Date/Time: 3-13-06 1100 |

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rick Weiss~~ JOAN KESSNER upon receipt. 4/4/06

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-047-144 | Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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: ELEVATED #4 100-K ~~LOW, SAMPLE T~~ | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES / LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

Price Code: 9N

Air Quality ☐

Data Turnaround: 45 Days

000000011

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*POTENTIAL RADIOACTIVE <DOT LIMITS*

**Special Handling and/or Storage**

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | COOL 4C ~~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 | 0 | 0 | 0 | 0 | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |

000027

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11866 | OTHER SOLID | 2-23-06 | 1500 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| JAMES BERNHARD | 2-23-06 1630 | EAS LOCKED STORAGE | 2-23-06 1630 |
| EAS LOCKED STORAGE | 0745 2-27-06 | RZ Steffler | 0745 2-27-06 |
| RZ Steffler | 1600 2-27-06 | Fed Ex | |
| Fed Ex | | | 02/28/06 9:20 |
| Alex Kelvey | 3/10/06 16:00 | | |
| Fed Ex | 3-13-06 1100 | | 3-13-06 1100 |

**SPECIAL INSTRUCTIONS**

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ upon receipt.

JOAN KESSNER

AJD 2/14/06

**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-047-145 | Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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-K ~~LOW, SAMPLE 2~~ ELEVATED #5 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 [illegible] 2-27-06 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

Price Code: 9N

Air Quality ☐

Data Turnaround: 45 Days

000000012

POSSIBLE SAMPLE HAZARDS/REMARKS

*POTENTIAL RADIOACTIVE <DOT LIMITS*

Special Handling and/or Storage

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | COOL 4C ~~"None"~~ [illegible] 21406 | 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 | 0 | 0 | 0 | 0 | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |

000028

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11867 | OTHER SOLID | 2-23-06 | 1515 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By/Removed From: JAMES BERNHARD | Date/Time: 2-23-06 1630 | Received By/Stored In: EAS LOCKED STORAGE | Date/Time: 2-23-06 1630 |
| Relinquished By/Removed From: EAS LOCKED STORAGE | Date/Time: 0745 2-27-06 | Received By/Stored In: RZ Steffler [illegible] | Date/Time: 0745 2-27-06 |
| Relinquished By/Removed From: RZ Steffler [illegible] | Date/Time: 1600 WCH 2-27-06 | Received By/Stored In: Fed EX | Date/Time: |
| Relinquished By/Removed From: FED EX | Date/Time: | Received By/Stored In: [illegible] | Date/Time: 02/28/06 9:30 |
| Relinquished By/Removed From: Alex [illegible] | Date/Time: 3/10/06 16:00 | Received By/Stored In: | Date/Time: |
| Relinquished By/Removed From: [illegible] | Date/Time: 3-13-06 1600 | Received By/Stored In: [illegible] | Date/Time: 3-13-06 1100 |

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ upon receipt.

JOAN KESSNER [illegible] 21406

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)

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-047-146 | Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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: 100-K LOW, SAMPLE 2 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES / LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

POSSIBLE SAMPLE HAZARDS/REMARKS

*POTENTIAL RADIOACTIVE <DOT LIMITS*

Special Handling and/or Storage

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | COOL 4C ~~None~~ AH 21706 | 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 | 0 | 0 | 0 | 0 | | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | | |

SAMPLE ANALYSIS

| Sample No. | Matrix * | Sample Date | Sample Time | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11868 | OTHER SOLID | 2-23-06 | 1530 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

CHAIN OF POSSESSION — Sign/Print Names

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| JAMES BERNHARD | 2-23-06 1630 | EAS LOCKED STORAGE | 2-23-06 1630 |
| EAS LOCKED STORAGE | 2-27-06 0745 | RZ Steffler | 2-27-06 0745 |
| RZ Steffler | 2-27-06 1600 | FED EX | |
| FED EX | | MFW | 07/26/06 9:20 |
| Alex Belenl | 3/10/06 16:00 | | |
| FED EX | 3-13-06 1100 | | 3-13-06 1100 |

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weise~~ JOAN KESSNER upon receipt.

AH 21406

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

# PCB DATA VALIDATION CHECKLIST

| VALIDATION LEVEL: | A | B | C | D | E |
|---|---|---|---|---|---|
| PROJECT: RCBRA | | | DATA PACKAGE: ~~6/16/06~~ K0238 | | |
| VALIDATOR: TLI | | LAB: LLI | | DATE: 6/16/06 | |
| | | | SDG: K0238 | | |
| ANALYSES PERFORMED | | | | | |
| SW-846 8081 | SW-846 8081 (TCLP) | SW-846 8082 | SW-846 8081 (TCLP) | | |
| SAMPLES/MATRIX | | | | | |
| J11807 | J11863 | J11864 | J11865 | J11866 | |
| J11867 | J11868 | | | | |
| | | | | | |
| | | | | | |
| | | | | | 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/MSD – Endrin Sulfate, Endosulfan Sulfate, Endrin
LCS – Ketone – J all

no toxaphene MS/MSD/LCS – J all no PAS

# PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

no toxaphen MS/MSD - Jall

## 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: all over by <2X - J all

# 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 undetects 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:

Date: 19 June 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. K0238-LLI

## INTRODUCTION

This memo presents the results of data validation on Data Package No. K0238 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

| Sample ID | Sample Date | Matrix | Validation | Date |
|---|---|---|---|---|
| J11807 | 2/23/06 | Solid | C | See note 1 |
| J11863 | 2/23/06 | Solid | C | See note 1 |
| J11864 | 2/23/06 | Solid | C | See note 1 |
| J11865 | 2/23/06 | Solid | C | See note 1 |
| J11866 | 2/23/06 | Solid | C | See note 1 |
| J11867 | 2/23/06 | Solid | C | See note 1 |
| J11868 | 2/23/06 | 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.

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 semivolatile 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 samples J11864, J11865 and J11866 were qualified as estimates and flagged "J".

Due to method blank contamination, the di-n-butylphthalate result in sample J11864 was qualified as an estimate and flagged "J".

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 matrix spike duplicate and/or matrix spike recoveries outside QC limits, all semivolatile results were qualified as estimates and flagged "J".

Due to LCS recoveries outside QC limits, all semivolatile results (except hexachlorobutadiene, 2,4-6-trichlorophenol and 3,3'-dichlorobenzidine) 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 RPDs outside QC limits, all semivolatile results were qualified as estimates and flagged "J".

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. K0238 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

## MAJOR DEFICIENCIES

None found.

## MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in samples J11864, J11865 and J11866 were qualified as estimates and flagged "J".

- Due to method blank contamination, the di-n-butylphthalate result in sample J11864 was qualified as an estimate and flagged "J".

- Due to matrix spike duplicate and/or matrix spike recoveries outside QC limits, all semivolatile results were qualified as estimates and flagged "J".

- Due to LCS recoveries outside QC limits, all semivolatile results (except hexachlorobutadiene, 2,4-6-trichlorophenol and 3,3'-dichlorobenzidine) were qualified as estimates and flagged "J".

- Due to RPDs outside QC limits, all semivolatile 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

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

| SDG: K0238 | REVIEWER: [illegible] | Project: RCBRA | PAGE 1 OF 1 |
|---|---|---|---|
| COMMENTS: | | | |
| COMPOUND | QUALIFIER | SAMPLES AFFECTED | REASON |
| Bis(2-ethylhexyl)phthalate | J | J11864, J11865 J11866 | Blank contamination |
| Di-n-butylphthalate | J | J11864 | Blank contamination |
| All | J | All | MSD and/or MS recovery |
| All except: Hexachlorobutadiene 2,4-6-Trichlorophenol 3,3'-Dichlorobenzidine | J | All | LCS recovery |
| All | 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: K0238

| Sample Number | | J11807 | | J11863 | | J11864 | | J11865 | | J11866 | | J11867 | | J11868 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Remarks | | | | | | | | | | | | | | | |
| Sample Date | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | |
| Extraction Date | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | |
| Analysis Date | | 4/24/06 | | 4/24/06 | | 4/24/06 | | 4/24/06 | | 4/24/06 | | 4/25/06 | | 4/25/06 | |
| Semivolatile (8270C) | RQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| Phenol | | 12000 | J | 19000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| bis(2-Chloroethyl)ether | | 12000 | J | 17000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2-Chlorophenol | | 12000 | J | 18000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 1,3-Dichlorobenzene | | 10000 | J | 15000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 1,4-Dichlorobenzene | | 10000 | J | 15000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 1,2-Dichlorobenzene | | 10000 | J | 15000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2-Methylphenol | | 11000 | J | 17000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2,2'-oxybis(1-chloropropane) | | 12000 | J | 19000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 4-Methylphenol | | 20000 | J | 37000 | J | 10000 | J | 16000 | J | 2700 | J | 6900 | J | 24000 | J |
| N-Nitroso-di-n-propylamine | | 12000 | J | 18000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Hexachloroethane | | 10000 | J | 15000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Nitrobenzene | | 11000 | J | 17000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Isophorone | | 12000 | J | 18000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2-Nitrophenol | | 12000 | J | 18000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2,4-Dimethylphenol | | 8100 | J | 19000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| bis(2-Chloroethoxy)methane | | 12000 | J | 18000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2,4-Dichlorophenol | | 12000 | J | 19000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 1,2,4-Trichlorobenzene | | 11000 | J | 16000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Naphthalene | | 11000 | J | 17000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 4-Chloroaniline | | 13000 | J | 17000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Hexachlorobutadiene | | 11000 | J | 17000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 4-Chloro-3-methylphenol | | 10000 | J | 17000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2-Methylnaphthalene | | 11000 | J | 18000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Hexachlorocyclopentadiene | | 7300 | J | 6600 | UJ | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2,4,6-Trichlorophenol | | 13000 | J | 21000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2,4,5-Trichlorophenol | | 11000 | J | 19000 | J | 12000 | UJ | 11000 | UJ | 11000 | UJ | 15000 | UJ | 14000 | UJ |
| 2-Chloronaphthalene | | 12000 | J | 18000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2-Nitroaniline | | 15000 | J | 25000 | J | 2700 | J | 11000 | UJ | 11000 | J | 2900 | J | 3600 | J |
| Dimethylphthalate | | 12000 | J | 20000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Acenaphthylene | | 12000 | J | 19000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2,6-Dinitrotoluene | | 13000 | J | 20000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | 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: K0238 | | | | | | | | | | | | | | |
| Sample Number | | J11807 | | J11863 | | J11864 | | J11865 | | J11866 | | J11867 | | J11868 | |
| Remarks | | | | | | | | | | | | | | | |
| Sample Date | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | | 2/23/06 | |
| Extraction Date | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | | 3/22/06 | |
| Analysis Date | | 4/24/06 | | 4/24/06 | | 4/24/06 | | 4/24/06 | | 4/24/06 | | 4/25/06 | | 4/25/06 | |
| Semivolatile (8270C) | RQL | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q | Result | Q |
| 3-Nitroaniline | | 17000 | J | 27000 | J | 12000 | UJ | 11000 | UJ | 11000 | UJ | 15000 | UJ | 14000 | UJ |
| Acenaphthene | | 12000 | J | 19000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2,4-Dinitrophenol | | 10000 | J | 17000 | UJ | 12000 | UJ | 11000 | UJ | 11000 | UJ | 15000 | UJ | 14000 | UJ |
| 4-Nitrophenol | | 10000 | J | 17000 | UJ | 12000 | UJ | 11000 | UJ | 11000 | UJ | 15000 | UJ | 14000 | UJ |
| Dibenzofuran | | 12000 | J | 19000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 2,4-Dinitrotoluene | | 13000 | J | 21000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Diethylphthalate | | 13000 | J | 21000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 4-Chlorophenyl-phenyl ether | | 12000 | J | 19000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Fluorene | | 12000 | J | 19000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 4-Nitroaniline | | 14000 | J | 26000 | J | 12000 | UJ | 11000 | UJ | 11000 | UJ | 15000 | UJ | 14000 | UJ |
| 4,6-Dinitro-2-methylphenol | | 8700 | J | 17000 | J | 12000 | UJ | 11000 | UJ | 11000 | UJ | 15000 | UJ | 14000 | UJ |
| N-Nitrosodiphenylamine | | 9700 | J | 16000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 4-Bromophenyl-phenyl ether | | 10000 | J | 17000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Hexachlorobenzene | | 12000 | J | 20000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Pentachlorophenol | | 4800 | J | 2600 | J | 12000 | UJ | 11000 | UJ | 11000 | UJ | 15000 | UJ | 14000 | UJ |
| Phenanthrene | | 12000 | J | 20000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Anthracene | | 12000 | J | 20000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Carbazole | | 13000 | J | 20000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Di-n-butylphthalate | | 13000 | J | 21000 | J | 300 | J | 420 | J | 420 | J | 440 | J | 800 | J |
| Fluoranthene | | 14000 | J | 23000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Pyrene | | 13000 | J | 24000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Butylbenzylphthalate | | 14000 | J | 25000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| 3,3'-Dichlorobenzidine | | 8400 | J | 7400 | J | 860 | J | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Benzo(a)anthracene | | 13000 | J | 21000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Chrysene | | 12000 | J | 21000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| bis(2-Ethylhexyl)phthalate | | 14000 | J | 24000 | J | 550 | J | 570 | J | 580 | J | 680 | J | 1000 | J |
| Di-n-octylphthalate | | 14000 | J | 25000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Benzo(b)fluoranthene | | 14000 | J | 25000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Benzo(k)fluoranthene | | 12000 | J | 20000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Benzo(a)pyrene | | 12000 | J | 21000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Indeno(1,2,3-cd)pyrene | | 13000 | J | 20000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Dibenz(a,h)anthracene | | 13000 | J | 20000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | UJ |
| Benzo(g,h,i)perylene | | 12000 | J | 18000 | J | 4600 | UJ | 4400 | UJ | 4300 | UJ | 6100 | UJ | 5600 | 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: 05/26/06 08:14

RFW Batch Number: 0603L498 Client: TNUHANFORD RC-047 K0238 Work Order: 11343606001 Page: 1a

| | Cust ID: | J11807 | | J11807 | | J11807 | | J11863 | | J11864 | | J11865 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 001 MS | | 001 MSD | | 002 | | 003 | | 004 | |
| | Matrix: | SOLID | | SOLID | | SOLID | | SOLID | | SOLID | | SOLID | |
| | D.F.: | 0.800 | | 0.800 | | 0.800 | | 0.800 | | 0.800 | | 0.800 | |
| | Units: | ug/Kg | | ug/Kg | | ug/Kg | | ug/Kg | | ug/Kg | | ug/Kg | |
| Surrogate Recovery | Nitrobenzene-d5 | 45 | % | 53 | % | 52 | % | 45 | % | 42 | % | 38 | % |
| | 2-Fluorobiphenyl | 51 | % | 59 | % | 58 | % | 50 | % | 45 | % | 44 | % |
| | Terphenyl-d14 | 57 | % | 72 | % | 71 | % | 67 | % | 63 | % | 45 | % |
| | Phenol-d5 | 52 | % | 60 | % | 59 | % | 51 | % | 48 | % | 40 | % |
| | 2-Fluorophenol | 48 | % | 60 | % | 56 | % | 49 | % | 46 | % | 38 | % |
| | 2,4,6-Tribromophenol | 64 | % | 72 | % | 70 | % | 69 | % | 65 | % | 45 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Phenol | | 12000 | | 0 * | % | 38 * | % | 19000 | | 4600 | U | 4400 | U |
| bis(2-Chloroethyl)ether | | 12000 | | 0 * | % | 34 * | % | 17000 | | 4600 | U | 4400 | U |
| 2-Chlorophenol | | 12000 | | 0 * | % | 37 * | % | 18000 | | 4600 | U | 4400 | U |
| 1,3-Dichlorobenzene | | 10000 | | 0 * | % | 33 * | % | 15000 | | 4600 | U | 4400 | U |
| 1,4-Dichlorobenzene | | 10000 | | 0 * | % | 32 * | % | 15000 | | 4600 | U | 4400 | U |
| 1,2-Dichlorobenzene | | 10000 | | 0 * | % | 31 * | % | 15000 | | 4600 | U | 4400 | U |
| 2-Methylphenol | | 11000 | | 1 * | % | 36 * | % | 17000 | | 4600 | U | 4400 | U |
| 2,2'-oxybis(1-Chloropropane) | | 12000 | | 0 * | % | 39 * | % | 19000 | | 4600 | U | 4400 | U |
| 4-Methylphenol | | 20000 | B | 21 * | % | 63 | % | 37000 | B | 10000 | B | 16000 | B |
| N-Nitroso-di-n-propylamine | | 12000 | | 0 * | % | 36 * | % | 18000 | | 4600 | U | 4400 | U |
| Hexachloroethane | | 10000 | | 0 * | % | 30 * | % | 15000 | | 4600 | U | 4400 | U |
| Nitrobenzene | | 11000 | | 0 * | % | 33 * | % | 17000 | | 4600 | U | 4400 | U |
| Isophorone | | 12000 | | 0 * | % | 36 * | % | 18000 | | 4600 | U | 4400 | U |
| 2-Nitrophenol | | 12000 | | 1 * | % | 41 * | % | 18000 | | 4600 | U | 4400 | U |
| 2,4-Dimethylphenol | | 8100 | | 9 * | % | 48 * | % | 19000 | | 4600 | U | 4400 | U |
| bis(2-Chloroethoxy)methane | | 12000 | | 0 * | % | 37 * | % | 18000 | | 4600 | U | 4400 | U |
| 2,4-Dichlorophenol | | 12000 | | 0 * | % | 38 * | % | 19000 | | 4600 | U | 4400 | U |
| 1,2,4-Trichlorobenzene | | 11000 | | 0 * | % | 35 * | % | 16000 | | 4600 | U | 4400 | U |
| Naphthalene | | 11000 | | 0 * | % | 37 * | % | 17000 | | 4600 | U | 4400 | U |
| 4-Chloroaniline | | 13000 | | 0 * | % | 29 | % | 17000 | | 4600 | U | 4400 | U |
| Hexachlorobutadiene | | 11000 | | 1 * | % | 37 * | % | 17000 | | 4600 | U | 4400 | U |
| 4-Chloro-3-methylphenol | | 10000 | | 0 * | % | 33 * | % | 17000 | | 4600 | U | 4400 | U |
| 2-Methylnaphthalene | | 11000 | | 0 * | % | 38 * | % | 18000 | | 4600 | U | 4400 | U |
| Hexachlorocyclopentadiene | | 7300 | | 0 * | % | 0 * | % | 6600 | U | 4600 | U | 4400 | U |
| 2,4,6-Trichlorophenol | | 13000 | | 1 * | % | 44 | % | 21000 | | 4600 | U | 4400 | U |
| 2,4,5-Trichlorophenol | | 11000 | | 3 * | % | 39 * | % | 19000 | | 12000 | U | 11000 | U |

*= Outside of EPA CLP QC limits.

J J J J

JL 6/17/06

000000008

000003

| Cust ID: | J11807 | | J11807 | | J11807 | | J11863 | | J11864 | | J11865 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RFW#: | 001 | | 001 MS | | 001 MSD | | 002 | | 003 | | 004 | |
| 2-Chloronaphthalene | 12000 | J | 0 * | % | 37 * | % | 18000 | J | 4600 | U J | 4400 | U J |
| 2-Nitroaniline | 15000 | | 2 * | % | 42 * | % | 25000 | | 2700 | J | 11000 | U |
| Dimethylphthalate | 12000 | | 0 * | % | 38 * | % | 20000 | | 4600 | U | 4400 | U |
| Acenaphthylene | 12000 | | 0 * | % | 38 * | % | 19000 | | 4600 | U | 4400 | U |
| 2,6-Dinitrotoluene | 13000 | | 0 * | % | 38 * | % | 20000 | | 4600 | U | 4400 | U |
| 3-Nitroaniline | 17000 | | 0 * | % | 46 * | % | 27000 | | 12000 | U | 11000 | U |
| Acenaphthene | 12000 | | 0 * | % | 39 * | % | 19000 | | 4600 | U | 4400 | U |
| 2,4-Dinitrophenol | 10000 | U | 0 * | % | 59 | % | 17000 | U | 12000 | U | 11000 | U |
| 4-Nitrophenol | 10000 | U | 1 * | % | 5 * | % | 17000 | U | 12000 | U | 11000 | U |
| Dibenzofuran | 12000 | | 0 * | % | 38 * | % | 19000 | | 4600 | U | 4400 | U |
| 2,4-Dinitrotoluene | 13000 | | 0 * | % | 39 * | % | 21000 | | 4600 | U | 4400 | U |
| Diethylphthalate | 13000 | | 0 * | % | 38 * | % | 21000 | | 4600 | U | 4400 | U |
| 4-Chlorophenyl-phenylether | 12000 | | 0 * | % | 38 * | % | 19000 | | 4600 | U | 4400 | U |
| Fluorene | 12000 | | 0 * | % | 38 * | % | 19000 | | 4600 | U | 4400 | U |
| 4-Nitroaniline | 14000 | | 0 * | % | 36 * | % | 26000 | | 12000 | U | 11000 | U |
| 4,6-Dinitro-2-methylphenol | 8700 | | 4 * | % | 40 | % | 17000 | | 12000 | U | 11000 | U |
| N-Nitrosodiphenylamine (1) | 9700 | | 0 * | % | 29 * | % | 16000 | | 4600 | U | 4400 | U |
| 4-Bromophenyl-phenylether | 10000 | | 0 * | % | 31 * | % | 17000 | | 4600 | U | 4400 | U |
| Hexachlorobenzene | 12000 | | 0 * | % | 41 * | % | 20000 | | 4600 | U | 4400 | U |
| Pentachlorophenol | 4800 | | 0 * | % | 0 * | % | 2600 | | 12000 | U | 11000 | U |
| Phenanthrene | 12000 | | 0 * | % | 39 * | % | 20000 | | 4600 | U | 4400 | U |
| Anthracene | 12000 | | 0 * | % | 38 * | % | 20000 | | 4600 | U | 4400 | U |
| Carbazole | 13000 | | 0 * | % | 33 * | % | 20000 | | 4600 | U | 4400 | U |
| Di-n-butylphthalate | 13000 | B | 2 * | % | 40 | % | 21000 | B | 300 | J | 420 | J |
| Fluoranthene | 14000 | | 0 * | % | 43 * | % | 23000 | | 4600 | U | 4400 | U |
| Pyrene | 13000 | | 2 * | % | 50 | % | 24000 | | 4600 | U | 4400 | U |
| Butylbenzylphthalate | 14000 | | 2 * | % | 47 * | % | 25000 | | 4600 | U | 4400 | U |
| 3,3'-Dichlorobenzidine | 8400 | | 0 * | % | 5 * | % | 7400 | | 860 | J | 4400 | U |
| Benzo(a)anthracene | 13000 | | 0 * | % | 41 * | % | 21000 | | 4600 | U | 4400 | U |
| Chrysene | 12000 | | 0 * | % | 39 * | % | 21000 | | 4600 | U | 4400 | U |
| bis(2-Ethylhexyl)phthalate | 14000 | B | 0 * | % | 44 * | % | 24000 | B | 550 | J | 570 | J |
| Di-n-octyl phthalate | 14000 | | 1 * | % | 48 * | % | 25000 | | 4600 | U | 4400 | U |
| Benzo(b)fluoranthene | 14000 | | 0 * | % | 47 * | % | 25000 | | 4600 | U | 4400 | U |
| Benzo(k)fluoranthene | 12000 | | 1 * | % | 37 * | % | 20000 | | 4600 | U | 4400 | U |
| Benzo(a)pyrene | 12000 | | 0 * | % | 37 * | % | 21000 | | 4600 | U | 4400 | U |
| Indeno(1,2,3-cd)pyrene | 13000 | | 0 * | % | 30 * | % | 20000 | | 4600 | U | 4400 | U |
| Dibenz(a,h)anthracene | 13000 | | 0 * | % | 31 * | % | 20000 | | 4600 | U | 4400 | U |
| Benzo(g,h,i)perylene | 12000 | | 0 * | % | 29 * | % | 18000 | | 4600 | U | 4400 | U |

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

6/17/06

000000009

000014

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List Report Date: 05/26/06 08:14

RFW Batch Number: 0603L498 Client: TNUHANFORD RC-047 K0238 Work Order: 11343606001 Page: 2a

| | Cust ID: | J11866 | J11867 | J11868 | SBLKWL | SBLKWL BS |
|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 005 | 006 | 007 | 06LE0222-MB1 | 06LE0222-MB1 |
| | Matrix: | SOLID | SOLID | SOLID | SOIL | SOIL |
| | D.F.: | 0.800 | 0.800 | 0.800 | 0.800 | 0.800 |
| | Units: | ug/Kg | ug/Kg | ug/Kg | ug/Kg | ug/Kg |
| Surrogate Recovery | Nitrobenzene-d5 | 42 % | 48 % | 57 % | 33 % | 47 % |
| | 2-Fluorobiphenyl | 48 % | 50 % | 60 % | 34 % | 52 % |
| | Terphenyl-d14 | 56 % | 58 % | 68 % | 43 % | 62 % |
| | Phenol-d5 | 42 % | 52 % | 58 % | 34 % | 50 % |
| | 2-Fluorophenol | 38 % | 46 % | 53 % | 31 % | 44 % |
| | 2,4,6-Tribromophenol | 55 % | 57 % | 65 % | 44 % | 57 % |

| | | | | | | |
|---|---|---|---|---|---|---|
| Phenol | 4300 U | 6100 U | 5600 U | 270 U | 27 * % | |
| bis(2-Chloroethyl)ether | 4300 U | 6100 U | 5600 U | 270 U | 26 * % | |
| 2-Chlorophenol | 4300 U | 6100 U | 5600 U | 270 U | 26 * % | |
| 1,3-Dichlorobenzene | 4300 U | 6100 U | 5600 U | 270 U | 24 * % | |
| 1,4-Dichlorobenzene | 4300 U | 6100 U | 5600 U | 270 U | 24 * % | |
| 1,2-Dichlorobenzene | 4300 U | 6100 U | 5600 U | 270 U | 25 * % | |
| 2-Methylphenol | 4300 U | 6100 U | 5600 U | 270 U | 24 * % | |
| 2,2'-oxybis(1-Chloropropane) | 4300 U | 6100 U | 5600 U | 270 U | 25 * % | |
| 4-Methylphenol | 2700 JB | 6900 B | 24000 B | 250 J | 16 * % | |
| N-Nitroso-di-n-propylamine | 4300 U | 6100 U | 5600 U | 270 U | 27 * % | |
| Hexachloroethane | 4300 U | 6100 U | 5600 U | 270 U | 24 * % | |
| Nitrobenzene | 4300 U | 6100 U | 5600 U | 270 U | 26 * % | |
| Isophorone | 4300 U | 6100 U | 5600 U | 270 U | 28 * % | |
| 2-Nitrophenol | 4300 U | 6100 U | 5600 U | 270 U | 26 * % | |
| 2,4-Dimethylphenol | 4300 U | 6100 U | 5600 U | 270 U | 15 * % | |
| bis(2-Chloroethoxy)methane | 4300 U | 6100 U | 5600 U | 270 U | 25 * % | |
| 2,4-Dichlorophenol | 4300 U | 6100 U | 5600 U | 270 U | 25 * % | |
| 1,2,4-Trichlorobenzene | 4300 U | 6100 U | 5600 U | 270 U | 25 * % | |
| Naphthalene | 4300 U | 6100 U | 5600 U | 270 U | 25 * % | |
| 4-Chloroaniline | 4300 U | 6100 U | 5600 U | 270 U | 31 % | |
| Hexachlorobutadiene | 4300 U | 6100 U | 5600 U | 270 U | 28 * % | |
| 4-Chloro-3-methylphenol | 4300 U | 6100 U | 5600 U | 270 U | 22 * % | |
| 2-Methylnaphthalene | 4300 U | 6100 U | 5600 U | 270 U | 26 * % | |
| Hexachlorocyclopentadiene | 4300 U | 6100 U | 5600 U | 270 U | 18 * % | |
| 2,4,6-Trichlorophenol | 4300 U | 6100 U | 5600 U | 270 U | 28 % | |
| 2,4,5-Trichlorophenol | 11000 U | 15000 U | 14000 U | 670 U | 22 * % | |

*= Outside of EPA CLP QC limits.

6/17/06

000015

000000010

| Cust ID: | J11866 | | J11867 | | J11868 | | SBLKWL | | SBLKWL BS | |
|---|---|---|---|---|---|---|---|---|---|---|
| RFW#: | 005 | | 006 | | 007 | | 06LE0222-MB1 | | 06LE0222-MB1 | |
| 2-Chloronaphthalene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 27 * | % |
| 2-Nitroaniline | 11000 | U | 2900 | U | 3600 | U | 670 | U | 30 * | % |
| Dimethylphthalate | 4300 | U | 6100 | U | 5600 | U | 270 | U | 30 * | % |
| Acenaphthylene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 27 * | % |
| 2,6-Dinitrotoluene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 29 * | % |
| 3-Nitroaniline | 11000 | U | 15000 | U | 14000 | U | 670 | U | 41 * | % |
| Acenaphthene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 27 * | % |
| 2,4-Dinitrophenol | 11000 | U | 15000 | U | 14000 | U | 670 | U | 0 * | % |
| 4-Nitrophenol | 11000 | U | 15000 | U | 14000 | U | 670 | U | 0 * | % |
| Dibenzofuran | 4300 | U | 6100 | U | 5600 | U | 270 | U | 28 * | % |
| 2,4-Dinitrotoluene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 30 * | % |
| Diethylphthalate | 4300 | U | 6100 | U | 5600 | U | 270 | U | 31 * | % |
| 4-Chlorophenyl-phenylether | 4300 | U | 6100 | U | 5600 | U | 270 | U | 28 * | % |
| Fluorene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 27 * | % |
| 4-Nitroaniline | 11000 | U | 15000 | U | 14000 | U | 670 | U | 33 * | % |
| 4,6-Dinitro-2-methylphenol | 11000 | U | 15000 | U | 14000 | U | 670 | U | 23 * | % |
| N-Nitrosodiphenylamine (1) | 4300 | U | 6100 | U | 5600 | U | 270 | U | 23 * | % |
| 4-Bromophenyl-phenylether | 4300 | U | 6100 | U | 5600 | U | 270 | U | 25 * | % |
| Hexachlorobenzene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 29 * | % |
| Pentachlorophenol | 11000 | U | 15000 | U | 14000 | U | 670 | U | 0 * | % |
| Phenanthrene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 29 * | % |
| Anthracene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 29 * | % |
| Carbazole | 4300 | U | 6100 | U | 5600 | U | 270 | U | 30 * | % |
| Di-n-butylphthalate | 420 | JB | 440 | JB | 800 | JB | 18 | J | 30 * | % |
| Fluoranthene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 32 * | % |
| Pyrene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 31 * | % |
| Butylbenzylphthalate | 4300 | U | 6100 | U | 5600 | U | 270 | U | 33 * | % |
| 3,3'-Dichlorobenzidine | 4300 | U | 6100 | U | 5600 | U | 270 | U | 41 | % |
| Benzo(a)anthracene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 32 * | % |
| Chrysene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 31 * | % |
| bis(2-Ethylhexyl)phthalate | 580 | JB | 680 | JB | 1000 | JB | 31 | J | 32 * | % |
| Di-n-octyl phthalate | 4300 | U | 6100 | U | 5600 | U | 270 | U | 32 * | % |
| Benzo(b)fluoranthene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 31 * | % |
| Benzo(k)fluoranthene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 32 * | % |
| Benzo(a)pyrene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 30 * | % |
| Indeno(1,2,3-cd)pyrene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 31 * | % |
| Dibenz(a,h)anthracene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 33 * | % |
| Benzo(g,h,i)perylene | 4300 | U | 6100 | U | 5600 | U | 270 | U | 32 * | % |

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

6/17/06

000000011

000016

## Appendix 4

## Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

**Case Narrative**

**Client:** TNU-HANFORD RC-047
**LVL #:** 0603L498
**SDG/SAF #** K0238/RC-047

**W.O. #:** 11343-606-001-9999-00
**Date Received:** 03-13-2006

**SEMIVOLATILE**

Seven (7) solid (fish) samples were collected on 02-23-2006.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 03-22-2006 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 04-24,25-2006.

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

2. The sample results were reported on a wet-weight basis. The samples were GPDd and used the reduced sample volume for the extraction due to the nature of the sample matrix. A copy of the Sample Extraction Record has been enclosed.

3. Samples were received outside the extraction holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

5. All surrogate recoveries were within acceptance criteria.

6. One hundred twenty-one (121) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria.

   Sixty-one (61) of sixty-four (64) blank spike recoveries were outside acceptance criteria. The sample J11807 will be re-extracted, analyzed and submitted under separate cover. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

7. The method blank contained the common laboratory contaminants Bis (2-Ethylhexyl) phthalate and Di-n-butylphthalate at levels less than the CRQL. The method blank also contained the target compound 4-Methylphenol at a level less than 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 3 4 pages



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

LIONVILLE LABORATORY INC.

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

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

10. 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.

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

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/30/02
Date

som\gorup\data\bna\tnu-hanford\0603-498.doc



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

# Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06M5176

Initiator: Robert Carden
Date: 5/26/06
Client: TNU Hanford RC 0497

Batch: 06U3L498
Samples: OU1, OU1S, OU1T, OU2, BS
Method: SW846/MCAWW/CLP/

Parameter: 0625H
Matrix: Solid
Prep Batch: 06LE0222

**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)
(1) OU1, OU2 appears to have a large no. of target cmpds present at spike levels
(2) Samples extracted outside of hold (13 days) client requested analysis priority order
(3) OU1S, OU1T - low spikes
(4) BS low spikes

**2. Known or Probable Causes(s)**
(1) possible spiked? possible carryover on GCP? possible sample mixup?
(2) Samples received past hold (4 days)
(3) matrix effect? loss on GPC/extraction? possible sample mixup?
(4) loss on GPC/extraction? possible sample mixup?

**3. Discussion and Proposed Action**
__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
✓ Re-extract OU1, OU1S, OU1T, OU2
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:

**4. Project Manager Instructions**...signature/date: [signature] 5/26/06
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

Reextracted batch 06LE0390 5/4/06

**5. Final Action**...signature/date: [signature] 5/26/06
__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

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

QA-105-A-0805

RECEIVED
MAY 2006

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-047 K0238

DATE RECEIVED: 03/13/06 LVL LOT # :0603L498

| CLIENT ID | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| J11807 | 001 | SO | 06LE0222 | 02/23/06 | 03/22/06 | 04/24/06 |
| J11807 | 001 MS | SO | 06LE0222 | 02/23/06 | 03/22/06 | 04/24/06 |
| J11807 | 001 MSD | SO | 06LE0222 | 02/23/06 | 03/22/06 | 04/24/06 |
| J11863 | 002 | SO | 06LE0222 | 02/23/06 | 03/22/06 | 04/24/06 |
| J11864 | 003 | SO | 06LE0222 | 02/23/06 | 03/22/06 | 04/24/06 |
| J11865 | 004 | SO | 06LE0222 | 02/23/06 | 03/22/06 | 04/24/06 |
| J11866 | 005 | SO | 06LE0222 | 02/23/06 | 03/22/06 | 04/24/06 |
| J11867 | 006 | SO | 06LE0222 | 02/23/06 | 03/22/06 | 04/25/06 |
| J11868 | 007 | SO | 06LE0222 | 02/23/06 | 03/22/06 | 04/25/06 |
| LAB QC: | | | | | | |
| SBLKWL | MB1 | S | 06LE0222 | N/A | 03/22/06 | 04/24/06 |
| SBLKWL | MB1 BS | S | 06LE0222 | N/A | 03/22/06 | 04/24/06 |

Washington Closure Hanford

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-047-137 | Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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 AREA ELEVATED, SAMPLE 4 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: See OSPC |

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*POTENTIAL RADIOACTIVE <DOT LIMITS*

**Special Handling and/or Storage**

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | COOL 4C ~~None~~ JP 2/14/06 | None | Cool 4C | Cool 4C | Cool 4C | Cool 4C | | | | | |
| Type of Container | G/P | G/P | G/P | aG | aG | aG | | | | | |
| No. of Container(s) | ~~2~~ 1 JP 2/14/06 | 1 | ~~2~~ 0 JP 2/14/06 | 0 | 0 | 0 | | | | | |
| Volume | 750g | 5g | 15g | 50g | 50g | 50g | | | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List): Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| J11807 | OTHER SOLID | 2-23-06 | 1545 | X | X | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

220000

| CHAIN OF POSSESSION | Sign/Print Names | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|---|
| Relinquished By/Removed From | JAMES BERNHARD | 2-23-06 1630 | EAS LOCKED STORAGE | 2-23-06 1630 |
| Relinquished By/Removed From | EAS LOCKED STORAGE | 0745 2-27-06 | Received By/Stored In | 0745 2-27-06 |
| Relinquished By/Removed From | R2 Stiffler | 1600 2-27-06 | Received By/Stored In | Fed Ex |
| Relinquished By/Removed From | FED EX | | Received By/Stored In | 02/28/06 9:20 |
| Relinquished By/Removed From | Alex | 3/10/06 16:00 | Received By/Stored In | |
| Relinquished By/Removed From | | 3-13-06 1100 | Received By/Stored In | 3-13-06 1100 |

**SPECIAL INSTRUCTIONS** JP 2/14/06 BOTTLE

NOTE: Eberline- perform Gamma Spec. ~~Iso-Uranium and Iso-Strontium~~ then transship to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich~~ JOHN Weiss upon receipt.

KESSNER JP 2/14/06

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-047-141 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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-K ELEVATED, SAMPLE 1 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1592 57 DA 2/4/06 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES / LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

Price Code: 9N

Air Quality: ☐

Data Turnaround: 45 Days

000000024

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*POTENTIAL RADIOACTIVE <DOT LIMITS*

**Special Handling and/or Storage**

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | COOL 4C ~~None~~ 40 CMOC | 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 | 0 | 0 | 0 | 0 | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11863 | OTHER SOLID | 2-23-06 | 1330 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

000023

| CHAIN OF POSSESSION | Sign/Print Names |
|---|---|
| Relinquished By/Removed From: JAMES BERNHARD — Date/Time: 2-23-06 1630 | Received By/Stored In: EAS LOCKED STORAGE — Date/Time: 2-23-06 1630 |
| Relinquished By/Removed From: EAS LOCKED STORAGE — Date/Time: 0745 2-27-06 | Received By/Stored In: RZ Stoffler — Date/Time: 0745 2-27-06 |
| Relinquished By/Removed From: RZ Stoffler — Date/Time: 1600 2-27-06 | Received By/Stored In: Fed Ex — Date/Time: |
| Relinquished By/Removed From: FED EX — Date/Time: | Received By/Stored In: [signature] — Date/Time: 02/28/06 9:20 |
| Relinquished By/Removed From: Alex Kellerwood — Date/Time: 3/10/06 16:00 | Received By/Stored In: — Date/Time: |
| Relinquished By/Removed From: [signature] — Date/Time: 3-13-06 1100 | Received By/Stored In: [signature] — Date/Time: 3-13-06 1100 |

**SPECIAL INSTRUCTIONS**

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs. if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ upon receipt.

JOAN KESSNER 4/2/06

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-047-142 | Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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-K ELEVATED, SAMPLE 2 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

Price Code: 9N

Air Quality: ☐

Data Turnaround: 45 Days

000000025

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*POTENTIAL RADIOACTIVE <DOT LIMITS*

**Special Handling and/or Storage**

*COOL 4C "MATRIX COMPOSED OF FISH"*

000024

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | Cool 4C ~~None~~ JH 21406 | 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 | 0 | 0 | 0 | 0 | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 -- Total Sc: Isotopic Thorium: Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11864 | OTHER SOLID | 2-23-06 | 1400 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| JAMES BERNHARD | 2-23-06 1630 | EAS LOCKED STORAGE | 2-23-06 1630 |
| EAS LOCKED STORAGE | 0745 2-27-06 | RZ Steffler R.J. Steffler | 0745 2-27-06 |
| RZ Steffler R.J. Steffler | 1600 2-27-06 | Fed Ex | |
| FED EX | | [signature] | 02/28/06 9:30 |
| Alex Kelley | 3/10/06 16:00 | | |
| Fed Ex | 3-13-06 1100 | [signature] | 3-13-06 1100 |

**SPECIAL INSTRUCTIONS**

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville - contact ~~Rich Weiss~~ upon receipt.

JOAN KESSNER

AJA 21406

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-047-143 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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: 100-K ELEVATED, SAMPLE 3 | SAF No.: RC-047 | |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 [illegible] 2-27-06; COA: BESRAS6520 | Method of Shipment: FED EX | |
| Shipped To: EBERLINE SERVICES LIONVILLE | Offsite Property No.: A060308 | Bill of Lading/Air Bill No.: SEE OSPC | |

000000026

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*POTENTIAL RADIOACTIVE <DOT LIMITS*

**Special Handling and/or Storage**

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | COOL 4C ~~None~~ [illegible] 21906 | 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 | 0 | 0 | 0 | 0 | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |

000025

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11865 | OTHER SOLID | 2-23-06 | 1430 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| JAMES BERNHARD | 2-23-06 1630 | EAS LOCKED STORAGE | 2-23-06 1630 |
| EAS LOCKED STORAGE | 0745 2-27-06 | RZ Steffler [signature] | 0745 2-27-06 |
| RZ Steffler [signature] | 1600 2-27-06 | Fed EX | |
| FED EX | | [signature] | 02/28/06 9:20 |
| [signature] | 3/10/06 16:00 | | |
| [signature] | 3-13-06 1100 | [signature] | 3-13-06 1100 |

**SPECIAL INSTRUCTIONS**

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs. if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KESSNER [illegible] 21906 upon receipt.

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)

Hanford Site Analytical

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-047-144 | Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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: ELEVATED #4 100-K ~~LOW SAMPLE~~ | SAF No.: RC-047 | |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES, LIONVILLE | Offsite Property No.: A060308 | Bill of Lading/Air Bill No.: SEE OSPC | |

POSSIBLE SAMPLE HAZARDS/REMARKS

*POTENTIAL RADIOACTIVE <DOT LIMITS*

Special Handling and/or Storage

*COOL 4C "MATRIX COMPOSED OF FISH"*

| Preservation | Cool 4C 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 | 0 | 0 | 0 | 0 | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | |

SAMPLE ANALYSIS

| Sample No. | Matrix * | Sample Date | Sample Time | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11866 | OTHER SOLID | 2-23-06 | 1500 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

CHAIN OF POSSESSION — Sign/Print Names

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| JAMES BERNHARD | 2-23-06 1630 | EAS LOCKED STORAGE | 2-23-06 1630 |
| EAS LOCKED STORAGE | 2-27-06 0745 | RZ Stoffler | 2-27-06 0745 |
| RZ Stoffler | 2-27-06 1600 | Fed Ex | |
| Fed Ex | | | 02/28/06 9:20 |
| Alex Kelly | 3/10/06 16:00 | | |
| Fed Ex | 3-13-06 1100 | | 3-13-06 1100 |

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KESSNER upon receipt. 21406

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-047-145 Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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-K ~~LOW, SAMPLE 2~~ ELEVATED #5 | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 SEB 2-27-06 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

Price Code: 9N

Air Quality: ☐

Data Turnaround: 45 Days

00000028

**POSSIBLE SAMPLE HAZARDS/REMARKS**

*POTENTIAL RADIOACTIVE <DOT LIMITS*

**Special Handling and/or Storage**

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | COOL 4C ~~None~~ SJH 21406 | 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 | 0 | 0 | 0 | 0 | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | |
| SAMPLE ANALYSIS | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |

000027

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11867 | OTHER SOLID | 2-23-06 | 1515 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

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

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| JAMES BERNHARD | 2-23-06 1630 | EAS LOCKED STORAGE | 2-23-06 1630 |
| EAS LOCKED STORAGE | 0745 2-27-06 | RZ Steffler | 0745 2-27-06 |
| RZ Steffler | 1600 WCH 2-27-06 | Fed EX | |
| FED EX | | [signature] | 02/28/06 9:20 |
| Alex [signature] | 3/10/06 16:00 | | |
| [signature] | 3-13-06 1600 | [signature] | 3-13-06 1100 |

**SPECIAL INSTRUCTIONS**

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ upon receipt.

JOANKESSNER SJH 21406

**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)

Hanford Closure Contract

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-047-146 | Page 1 of 1

| | | | |
|---|---|---|---|
| Collector: TILLER, B. JAMES BERNHARD | 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: 100-K LOW, SAMPLE | | SAF No.: RC-047 |
| Ice Chest No.: AFS-04-052 | Field Logbook No.: EL-1597 | COA: BESRAS6520 | Method of Shipment: FED EX |
| Shipped To: EBERLINE SERVICES / LIONVILLE | Offsite Property No.: A060308 | | Bill of Lading/Air Bill No.: SEE OSPC |

POSSIBLE SAMPLE HAZARDS/REMARKS

*POTENTIAL RADIOACTIVE <DOT LIMITS*

**Special Handling and/or Storage**

*COOL 4C "MATRIX COMPOSED OF FISH"*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | COOL 4C ~~None~~ AH 21406 | 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 | 0 | 0 | 0 | 0 | | | |
| Volume | 750g | 2g | 5g | 15g | 50g | 50g | 50g | | | |

SAMPLE ANALYSIS

| Sample No. | Matrix * | Sample Date | Sample Time | Gamma Spec - (Full List) | Carbon-14 | Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium | ICP Metals - 6010 (Full List); Mercury - 7471 - (CV) | Pesticides - 8081 | PCBs - 8082 | Semi-VOA - 8270A (TCL) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J11868 | OTHER SOLID | 2-23-06 | 1530 | X | X | X | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

CHAIN OF POSSESSION — Sign/Print Names

| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
|---|---|---|---|
| JAMES BERNHARD | 2-23-06 1630 | EAS LOCKED STORAGE | 2-23-06 1630 |
| EAS LOCKED STORAGE | 2-27-06 0745 | RZ Stiffler | 2-27-06 0745 |
| RZ Stiffler | 2-27-06 1600 | Fed Ex | |
| Fed Ex | | | 07/28/06 9:22 |
| | 3/10/06 16:00 | | |
| | 3-13-06 1100 | | 3-13-06 1100 |

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ upon receipt.

JOAN KESSNER

AH 21406

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)

# Appendix 5

## Data Validation Supporting Documentation

# GC/MS ORGANIC DATA VALIDATION CHECKLIST

| VALIDATION LEVEL: | A | B | C | D | E |
|---|---|---|---|---|---|
| PROJECT: RCBRA | | | DATA PACKAGE: K0238 | | |
| VALIDATOR: TLI | | LAB: LLI | | DATE: 6/14/06 | |
| | | | SDG: K0238 | | |
| ANALYSES PERFORMED | | | | | |
| SW-846 8260 | | SW-846 8260 (TCLP) | SW-846 8270 | | SW-846 8270 (TCLP) |
| | | | | | |
| SAMPLES/MATRIX | | | | | |
| J11807 | J11863 | J11864 | J11865 | J11866 | |
| J11867 | J11868 | | | | |
| | | | | | |
| | | | | | |
| | | | | | 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 - U ~~at~~ 864, 64, 65
di-n-butylphthalate - U in 64

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

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

Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: MS - all out MSD - all but 7 out - J all
LCS - all but 3 out

no PAS

# GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

MS/MSD RPD values acceptable? ..... Yes No N/A

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

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

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

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

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

Comments: all RPD's out - J all

## 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 ~~of~~ <2x the limit - J

# 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 RDL 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: