

SAF-RC-073
100-D/DR Burial Grounds & Remaining
Sites – Other Solid Quick Turn
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt

H4-21

KW 6/9/08
INITIAL/DATE

COMMENTS:

SDG K1176

SAF RC-073

Rad only

Chem only

Rad & Chem

Complete

Partial

Waste Site: 126-D-2, white powder anomaly

RECEIVED
JUN 11 2008
EDMC



EBERLINE
SERVICES

April 17, 2008

Ms. Joan Kessner
Washington Closure Hanford
2620 Fermi Avenue
MSIN H4-21
Richland, WA 99352



Reference: **P.O. #S00W235A00**
Eberline Services R8-04-043-7789, SDG K1176

Dear Ms. Kessner:

Enclosed is a data report for one solid (other solid) sample designated under SAF No. RC-073 received at Eberline Services on April 7, 2008. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion
Senior Program Manager

MCM/jag

Enclosure: *Data Package*

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
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1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K1176 was composed of one solid (other solid) sample designated under SAF No. RC-073 with a Project Designation of: 100-D/DR Burial Grounds & Remaining Sites – Other Solid Q.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on April 17, 2008.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

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



Melissa C. Mannion
Senior Program Manager



Date

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1176

SDG 7789
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1176

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S

| | | |
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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 04/16/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1176

SDG 7789
 Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
 Contract No. S00W235A00
 Case no SDG_K1176

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-RG
 Version 3.06
 Report date 04/16/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1176

SDG 7789
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. S00W235A00
Case no SDG K1176

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES

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SUMMARY DATA SECTION

Page 2

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/16/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1176

LAB SAMPLE SUMMARY

SDG 7789
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1176

| LAB | | | | | | CHAIN OF | |
|------------|------------------------|----------------------|--------|-------|--------|------------|----------------|
| SAMPLE ID | CLIENT SAMPLE ID | LOCATION | MATRIX | LEVEL | SAF NO | CUSTODY | COLLECTED |
| R804043-01 | J16J98 | 126-D-2 White Powder | SOLID | | RC-073 | RC-073-038 | 04/01/08 09:20 |
| R804043-02 | Lab Control Sample | | SOLID | | RC-073 | | |
| R804043-03 | Method Blank | | SOLID | | RC-073 | | |
| R804043-04 | Duplicate (R804043-01) | 126-D-2 White Powder | SOLID | | RC-073 | | 04/01/08 09:20 |

LAB SUMMARY

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SUMMARY DATA SECTION

Page 3

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LS
 Version 3.06
 Report date 04/16/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1176

SDG 7789
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1176

| BATCH | CHAIN OF CUSTODY | CLIENT SAMPLE ID | MATRIX | % SOLIDS | SAMPLE AMOUNT | BASIS AMOUNT | DAYS SINCE RECEIVED | LAB COLL SAMPLE ID | DEPARTMENT SAMPLE ID |
|-------|------------------|------------------------|--------|----------|---------------|--------------|---------------------|--------------------|----------------------|
| 89 | RC-073-038 | J16J98 | SOLID | 100.0 | 16.5 g | | 04/07/08 6 | R804043-01 | 7789-001 |
| | | Method Blank | SOLID | | | | | R804043-03 | 7789-003 |
| | | Lab Control Sample | SOLID | | | | | R804043-02 | 7789-002 |
| | | Duplicate (R804043-01) | SOLID | 100.0 | 16.5 g | | 04/07/08 6 | R804043-04 | 7789-004 |

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 04/16/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1176

SDG 7789
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. S00W235A00
 Case no SDG K1176

| TEST | MATRIX | METHOD | PREPARATION ERROR | | PLANCHETS ANALYZED | | | | QUALI- |
|---------------------------|--------|-----------------------|-------------------|------|--------------------|------|----------|-----|--------|
| | | | BATCH | 2σ % | CLIENT | MORE | RE BLANK | LCS | |
| Gas Proportional Counting | | | | | | | | | |
| 93A | SOLID | Gross Alpha in Solids | 6148-064 | 20.6 | 1 | | 1 | 1 | 1/1 |
| 93B | SOLID | Gross Beta in Solids | 6148-064 | 11.0 | 1 | | 1 | 1 | 1/1 |

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-PBS
 Version 3.06
 Report date 04/16/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1176

LAB WORK SUMMARY

SDG 7789
Contact Melissa C. Mannion

Client Hanford
Contract No. S00W235A00
Case no SDG K1176

| B SAMPLE COLLECTED RECEIVED | CLIENT SAMPLE ID LOCATION CUSTODY | SAF No | MATRIX | PLANCHET | TEST | SUF- | | BY | METHOD |
|-----------------------------------|---|--------|--------|----------|--------|----------|----------|----|-----------------------|
| | | | | | | FIX | ANALYZED | | |
| 04043-01 | J16J98 | | | 7789-001 | 93A/93 | 04/15/08 | 04/15/08 | BW | Gross Alpha in Solids |
| 04/01/08 | 126-D-2 White Powder | | SOLID | 7789-001 | 93B/93 | 04/15/08 | 04/15/08 | BW | Gross Beta in Solids |
| 04/07/08 | RC-073-038 | RC-073 | | | | | | | |
| 04043-02 | Lab Control Sample | | | 7789-002 | 93A/93 | 04/15/08 | 04/15/08 | BW | Gross Alpha in Solids |
| | | | SOLID | 7789-002 | 93B/93 | 04/15/08 | 04/15/08 | BW | Gross Beta in Solids |
| | | RC-073 | | | | | | | |
| 04043-03 | Method Blank | | | 7789-003 | 93A/93 | 04/15/08 | 04/15/08 | BW | Gross Alpha in Solids |
| | | | SOLID | 7789-003 | 93B/93 | 04/15/08 | 04/15/08 | BW | Gross Beta in Solids |
| | | RC-073 | | | | | | | |
| 04043-04 | Duplicate (R804043-01) | | | 7789-004 | 93A/93 | 04/15/08 | 04/15/08 | BW | Gross Alpha in Solids |
| 04/01/08 | 126-D-2 White Powder | | SOLID | 7789-004 | 93B/93 | 04/15/08 | 04/15/08 | BW | Gross Beta in Solids |
| 04/07/08 | | RC-073 | | | | | | | |

COUNTS OF TESTS BY SAMPLE TYPE

| TEST | SAF No | METHOD | REFERENCE | CLIENT | MORE | RE | BLANK | LCS | DUP | SPIKE | TOTAL |
|---------------|--------|-----------------------|---------------------|----------|------|----|----------|----------|----------|-------|----------|
| 93A/93 | RC-073 | Gross Alpha in Solids | 900.0_ALPHABETA_GPC | 1 | | | 1 | 1 | 1 | | 4 |
| 93B/93 | RC-073 | Gross Beta in Solids | 900.0_ALPHABETA_GPC | 1 | | | 1 | 1 | 1 | | 4 |
| TOTALS | | | | 2 | | | 2 | 2 | 2 | | 8 |

WORK SUMMARY

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LWS
Version 3.06
Report date 04/16/08

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1176

7789-003

Method Blank

METHOD BLANK

| | | |
|-----------------------------------|--------------------------------------|------------------|
| SDG <u>7789</u> | Client/Case no <u>Hanford</u> | SDG <u>K1176</u> |
| Contact <u>Melissa C. Mannion</u> | Contract No. <u>S00W235A00</u> | |
| Lab sample id <u>R804043-03</u> | Client sample id <u>Method Blank</u> | |
| Dept sample id <u>7789-003</u> | Material/Matrix <u>SOLID</u> | |
| | SAF No <u>RC-073</u> | |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI- FIERS | TEST |
|-------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Gross Alpha | 12587-46-1 | 1.86 | 3.3 | 5.50 | 10.0 | U | 93A |
| Gross Beta | 12587-47-2 | 2.10 | 3.3 | 5.36 | 15.0 | U | 93B |

100-D/DR Burial Grounds & Remaining

| |
|-----------------|
| QC-BLANK #65327 |
|-----------------|

| |
|-----------------------------|
| Lab id <u>EBRLNE</u> |
| Protocol <u>Hanford</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DS</u> |
| Version <u>3.06</u> |
| Report date <u>04/16/08</u> |

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1176

7789-002

Lab Control Sample

LAB CONTROL SAMPLE

| | |
|---|--|
| SDG <u>7789</u> Contact <u>Melissa C. Mannion</u> Lab sample id <u>R804043-02</u> Dept sample id <u>7789-002</u> | Client/Case no <u>Hanford</u> <u>SDG K1176</u> Contract No. <u>S00W235A00</u> Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>RC-073</u> |
|---|--|

| ANALYTE | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI- FIERS TEST | ADDED pCi/g | 2σ ERR pCi/g | REC % | 3σ LMTS (TOTAL) | PROTOCOL LIMITS |
|-------------|-----------------|-------------------|--------------|--------------|----------------------|----------------|-----------------|----------|--------------------|--------------------|
| Gross Alpha | 108 | 17 | 6.40 | 10.0 | 93A | 112 | 4.5 | 96 | 62-138 | 70-130 |
| Gross Beta | 118 | 9.2 | 8.89 | 15.0 | 93B | 112 | 4.5 | 105 | 78-122 | 80-120 |

100-D/DR Burial Grounds & Remaining

QC-LCS #65326

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LCS
 Version 3.06
 Report date 04/16/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1176

7789-004

J16J98

DUPLICATE

| | | |
|---|--|---|
| SDG <u>7789</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R804043-04</u> Dept sample id <u>7789-004</u> % solids <u>100.0</u> | ORIGINAL Lab sample id <u>R804043-01</u> Dept sample id <u>7789-001</u> Received <u>04/07/08</u> % solids <u>100.0</u> | Client/Case no <u>Hanford</u> SDG <u>K1176</u> Contract No. <u>S00W235A00</u> Client sample id <u>J16J98</u> Location/Matrix <u>126-D-2 White Powder</u> SOLID Collected/Weight <u>04/01/08 09:20</u> <u>16.5 g</u> Custody/SAF No <u>RC-073-038</u> <u>RC-073</u> |
|---|--|---|

| ANALYTE | DUPLICATE | | ORIGINAL | | QUALI- FIERS | TEST | QUALI- FIERS | RPD | 3σ | DER | | |
|-------------|-----------|-------------------|----------|-------------------|-----------------|------|-----------------|-----|------|-----|-----|---------|
| | pCi/g | 2σ ERR (COUNT) | pCi/g | 2σ ERR (COUNT) | | | | | | | TOT | σ |
| Gross Alpha | 1.89 | 3.3 | 5.50 | 10.0 | U | 93A | 2.15 | 2.9 | 4.56 | U | - | 0.1 |
| Gross Beta | 4.66 | 3.9 | 6.23 | 15.0 | U | 93B | 6.16 | 3.9 | 5.98 | | 28 | 155 0.5 |

100-D/DR Burial Grounds & Remaining

QC-DUP#1 65328

| |
|-----------------------------|
| Lab id <u>EBRLNE</u> |
| Protocol <u>Hanford</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DUP</u> |
| Version <u>3.06</u> |
| Report date <u>04/16/08</u> |

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP K1176

7789-001

J16J98

DATA SHEET

| | | |
|-----------------------------------|---|------------------|
| SDG <u>7789</u> | Client/Case no <u>Hanford</u> | SDG <u>K1176</u> |
| Contact <u>Melissa C. Mannion</u> | Contract <u>No. S00W235A00</u> | |
| Lab sample id <u>R804043-01</u> | Client sample id <u>J16J98</u> | |
| Dept sample id <u>7789-001</u> | Location/Matrix <u>126-D-2 White Powder</u> | <u>SOLID</u> |
| Received <u>04/07/08</u> | Collected/Weight <u>04/01/08 09:20</u> | <u>16.5 g</u> |
| % solids <u>100.0</u> | Custody/SAF No <u>RC-073-038</u> | <u>RC-073</u> |

| ANALYTE | CAS NO | RESULT pCi/g | 2σ ERR (COUNT) | MDA pCi/g | RDL pCi/g | QUALI- FIERS | TEST |
|-------------|------------|-----------------|-------------------|--------------|--------------|-----------------|------|
| Gross Alpha | 12587-46-1 | 2.15 | 2.9 | 4.56 | 10.0 | U | 93A |
| Gross Beta | 12587-47-2 | 6.16 | 3.9 | 5.98 | 15.0 | | 93B |

100-D/DR Burial Grounds & Remaining

DATA SHEETS

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SUMMARY DATA SECTION

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| |
|-----------------------------|
| Lab id <u>EBRLNE</u> |
| Protocol <u>Hanford</u> |
| Version <u>Ver 1.0</u> |
| Form <u>DVD-DS</u> |
| Version <u>3.06</u> |
| Report date <u>04/16/08</u> |

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1176

LAB METHOD SUMMARY

GROSS ALPHA IN SOLIDS

GAS PROPORTIONAL COUNTING

Test 93A Matrix SOLID
 SDG 7789
 Contact Melissa C. Mannion

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1176

RESULTS

| B | RAW | SUF- | | | |
|--------------------------|----------|----------|------------------------|---|-------------|
| MPLE ID | TEST FIX | PLANCHET | CLIENT SAMPLE ID | | Gross Alpha |
| eparation batch 6148-064 | | | | | |
| 04043-01 | 93 | 7789-001 | J16J98 | | U |
| 04043-02 | 93 | 7789-002 | LCS (QC ID=65326) | | ok |
| 04043-03 | 93 | 7789-003 | BLK (QC ID=65327) | | U |
| 04043-04 | 93 | 7789-004 | Duplicate (R804043-01) | - | U |

Minimal values and limits from method RDLs (pCi/g) 10.0
 0-D/DR Burial Grounds & Remaining

METHOD PERFORMANCE

| B | RAW | SUF- | MDA | ALIQUOT | PREP | DILU- | RESID | EFF | COUNT | FWHM | DRIFT | DAYS | ANAL- | | |
|--------------------------|----------|---|---|---------|------|-------|-------|-----|-------|------|-------|------|----------|-------|----------|
| MPLE ID | TEST FIX | CLIENT SAMPLE ID | pCi/g | g | FAC | TION | mg | % | min | keV | KeV | HELD | PREPARED | YZED | DETECTOR |
| eparation batch 6148-064 | | | 2σ prep error 20.6 % Reference Lab Notebook #6148, pg. 64 | | | | | | | | | | | | |
| 04043-01 | 93 | J16J98 | 4.56 | 0.100 | | | 34 | | 100 | | | 14 | 04/14/08 | 04/15 | GRB-105 |
| 04043-02 | 93 | LCS (QC ID=65326) | 6.40 | 0.100 | | | 60 | | 100 | | | | 04/14/08 | 04/15 | GRB-107 |
| 04043-03 | 93 | BLK (QC ID=65327) | 5.50 | 0.100 | | | 60 | | 100 | | | | 04/14/08 | 04/15 | GRB-109 |
| 04043-04 | 93 | Duplicate (R804043-01) (QC ID=65328) | 5.50 | 0.100 | | | 34 | | 100 | | | 14 | 04/14/08 | 04/15 | GRB-110 |

Minimal values and limits from method 10.0 0.100 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
 SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
 SPP-125 Gross Alpha and Gross Beta in Dissolved Solids,
 rev 0

AVERAGES ± 2 SD MDA 5.49 ± 1.50
 FOR 4 SAMPLES RESIDUE 47 ± 30

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 04/16/08

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K1176

Test 93B Matrix SOLID
 SDG 7789
 Contact Melissa C. Mannion

LAB METHOD SUMMARY

GROSS BETA IN SOLIDS
 GAS PROPORTIONAL COUNTING

Client Hanford
 Contract No. S00W235A00
 Contract SDG K1176

RESULTS

| LAB | RAW | SUF- | CLIENT SAMPLE ID | Gross Beta |
|----------------------------|----------|----------|------------------------|------------|
| AMPLE ID | TEST FIX | PLANCHET | | |
| Preparation batch 6148-064 | | | | |
| 04043-01 | 93 | 7789-001 | J16J98 | 6.16 |
| 04043-02 | 93 | 7789-002 | LCS (QC ID=65326) | ok |
| 04043-03 | 93 | 7789-003 | BLK (QC ID=65327) | U |
| 04043-04 | 93 | 7789-004 | Duplicate (R804043-01) | ok U |

Minimal values and limits from method RDLs (pCi/g) 15.0
 0-D/DR Burial Grounds & Remaining

METHOD PERFORMANCE

| LAB | RAW | SUF- | MDA | ALIQ | PREP | DILU- | RESID | EFF | COUNT | FWHM | DRIFT | DAYS | ANAL- | | |
|--|----------|---|-------|-------|------|-------|-------|-----|-------|------|-------|------|----------|-------|----------|
| AMPLE ID | TEST FIX | CLIENT SAMPLE ID | pCi/g | g | FAC | TION | mg | % | min | keV | KeV | HELD | PREPARED | YZED | DETECTOR |
| Preparation batch 6148-064 2σ prep error 11.0 % Reference Lab Notebook #6148, pg. 64 | | | | | | | | | | | | | | | |
| 04043-01 | 93 | J16J98 | 5.98 | 0.100 | | | 34 | 100 | | | | 14 | 04/14/08 | 04/15 | GRB-105 |
| 04043-02 | 93 | LCS (QC ID=65326) | 8.89 | 0.100 | | | 60 | 100 | | | | | 04/14/08 | 04/15 | GRB-107 |
| 04043-03 | 93 | BLK (QC ID=65327) | 5.36 | 0.100 | | | 60 | 100 | | | | | 04/14/08 | 04/15 | GRB-109 |
| 04043-04 | 93 | Duplicate (R804043-01) (QC ID=65328) | 6.23 | 0.100 | | | 34 | 100 | | | | 14 | 04/14/08 | 04/15 | GRB-110 |

Minimal values and limits from method 15.0 0.100 5-250 100 180

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
 SPP-070 Soil Dissolution, < 1.0g Aliquot, rev 7
 SPP-125 Gross Alpha and Gross Beta in Dissolved Solids,
 rev 0

AVERAGES ± 2 SD MDA 6.62 ± 3.12
 FOR 4 SAMPLES RESIDUE 47 ± 30

METHOD SUMMARIES

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SUMMARY DATA SECTION

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Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-LMS
 Version 3.06
 Report date 04/16/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1176

SDG 7789
Contact Melissa C. Mannion

R E P O R T G U I D E

Client Hanford
Contract No. S00W235A00
Case no SDG_K1176

S A M P L E S U M M A R Y

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES

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SUMMARY DATA SECTION

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Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 04/16/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1176

SDG 7789

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. S00W235A00

Case no SDG K1176

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-RG

Version 3.06

Report date 04/16/08

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP K1176

SDG 7789

Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford

Contract No. S00W235A00

Case no SDG K1176

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORS can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

- U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
 - B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.
- Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.
- For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.
- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
 - H Similar to 'L' except the recovery was high.
 - P The RESULT is 'preliminary'.
 - X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
 - 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

- * An MDA is underlined if it is bigger than its RDL.

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DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.
 2. The error of ADDED.
 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTS divided by their average expressed as a percent.

If both RESULTS are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

- * The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTS prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTS. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:

1. A fixed percentage specified in the protocol.

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GUIDE, cont.

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

- * The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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REPORT GUIDE

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTS are underlined.

- * An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

- * The first, computed limits for the recovery reflect:

1. The errors of the two RESULTS, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

2. The error of ADDED.

3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

- * The second limits are protocol defined upper and lower QC limits

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

- * The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

- * Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

- * The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

- * If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Preparation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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GUIDE, cont.

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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| | | | | | | |
|--|--|---|---------------|------------------------------------|-------------------------|-----------------------------------|
| Washington Closure Hanford | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | RC-073-038 | Page 1 of 2 ^{DA} 4/3/08 |
| Collector D.W. Shea / <i>SEC Down R. Evers</i> | Company Contact D.W. Shea | Telephone No. 521-6014 | <i>K11776</i> | Project Coordinator KESSNER, JH | Price Code <i>9K</i> | Data Turnaround <i>15 days</i> |
| Project Designation 100-D/DR Burial Grounds & Remaining Sites - Other Solid Q | Sample Location 126-D-2, white powder anomaly 100D-AN-08- | <i>(7789)</i> | | SAF No. RC-073 | | |

| | | | |
|--|---|---|---|
| Ice Chest No. <i>1000-1</i> | Field Logbook No. EL-1607-3 | COA R126D22600 | Method of Shipment <i>FedEx HAND DELIVERY - GOVT VEHICLE</i> |
| Shipped To EBERLINE SERVICES / LIONVILLE <i>RCF</i> | Offsite Property No. <i>4/2/08</i> <i>See QRSC NA M3</i> | Bill of Lading/Air Bill No. <i>N/A</i> | |

| | | | | | | | |
|---------------------------------|---------------------|-------|---------|---------|---------|------|------|
| Special Handling and/or Storage | Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None |
| | Type of Container | G/P | aG | aG | G | G/P | G/P |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 |
| | Volume | 60ml. | 60ml. | 60ml. | 60ml. | 5g | 60g |

| | | | | | | | | | |
|-----------------|-------------|---------------|-------------|---------------------------------------|--------------------------|------------|---------------------------------------|-------------------------|---------------------------------------|
| SAMPLE ANALYSIS | | | | See item (1) in Special Instructions. | Sem-A (1A) - 8270A (101) | TOX - 9020 | Total Cyanide - 9010; Sulfides - 9030 | Gross Alpha; Gross Beta | See item (2) in Special Instructions. |
| Sample No. | Matrix * | Sample Date | Sample Time | <i>RCF</i> | | | | | |
| J16J98 | OTHER SOLID | <i>4/1/08</i> | <i>0920</i> | <i>19384</i> | | | | | |

| | | | | | | | | |
|--|------------------------------------|---|---------------------------------|---|--|--|--|--|
| CHAIN OF POSSESSION | | Sign/Print Names | | SPECIAL INSTRUCTIONS | | | | Matrix * |
| Relinquished By/Removed From <i>Down R. Evers</i> | Date/Time <i>4-1-08 1607</i> | Received By/Stored In <i>DWShea</i> | Date/Time <i>4/1/08 1607</i> | (1) ICP Metals - 6010 (Client List); Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc; <i>and Hg via CMA</i> (2) RCF GEA Shipping Screen; Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155; <i>SAMPLE TRANS-SHIPPED FROM RCF TO EBERLINE ON 4/3/08 SEE PAGE 2 OF 2 FOR CONTINUED CHAIN OF POSSESSION</i> | | | | 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 |
| Relinquished By/Removed From <i>DWShea</i> | Date/Time <i>4/1/08 1815</i> | Received By/Stored In <i>Fridley</i> | Date/Time <i>4/1/08 1815</i> | | | | | |
| Relinquished By/Removed From <i>1060 KATELLE</i> | Date/Time <i>3A 4/2/08 0900</i> | Received By/Stored In <i>Down R. Evers</i> | Date/Time <i>4/2/08 0900</i> | | | | | |
| Relinquished By/Removed From <i>Down R. Evers</i> | Date/Time <i>4/2/08 1135</i> | Received By/Stored In <i>M. K. Ruff</i> | Date/Time <i>4-2-08 1135</i> | | | | | |
| Relinquished By/Removed From <i>M. K. Ruff</i> | Date/Time <i>4-3-08 1120</i> | Received By/Stored In <i>Down R. Evers</i> | Date/Time <i>4/3/08 1120</i> | | | | | |

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



RICHMOND, CA LABORATORY

SAMPLE RECEIPT CHECKLIST

JK 4/7/08

Client: W.C HANFORD City RICHLAND State WA

Date/Time received 04/07/08 10:00 CoC No. RC-073-038

Container ID No. ERC-01-041 Requested TAT (Days) _____ P.O. Received Yes [] No []

INSPECTION

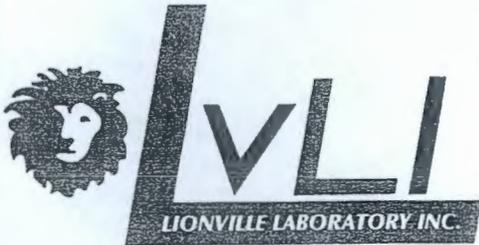
1. Custody seals on shipping container intact? Yes [✓] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [✓] No [] N/A []
3. Custody seals on sample containers intact? Yes [✓] No [] N/A []
4. Custody seals on sample containers dated & signed? Yes [✓] No [] N/A []
5. Packing material is: Wet [] Dry [✓]
6. Number of samples in shipping container: 1 Sample Matrix X
7. Number of containers per sample: 1 (Or see CoC _____)
8. Samples are in correct container Yes [✓] No []
9. Paperwork agrees with samples? Yes [✓] No []
10. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels [✓]
11. Samples are: in good condition [✓] Leaking [] Broken Container [] Missing []
12. Samples are: Preserved [] Not preserved [] pH _____ Preservative _____
13. Describe any anomalies: _____

14. Was P.M. notified of any anomalies? Yes [] No [] Date _____

15. Inspected by MPY Date: 04/07/08 Time: 10:30

| Customer Sample No. | Beta/Gamma cpm | Ion Chamber mR/hr | Wipe | Customer Sample No. | Beta/Gamma cpm | Ion Chamber mR/hr | wipe |
|---------------------|----------------|-------------------|------|---------------------|----------------|-------------------|------|
| <u>J16298</u> | <u>260</u> | | | | | | |
| | | | | | | | |
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| | | | | | | | |

Ion Chamber Ser. No. _____ Calibration date _____
 Alpha Meter Ser. No. _____ Calibration date _____
 Beta/Gamma Meter Ser. No. 100482 Calibration date 09 MAY 07



13 May 2008



Joan Kessner
WC-Hanford
2620 Fermi Avenue
MSIN H9-03
Richland, WA 99354

Subject: Analytical Data Package

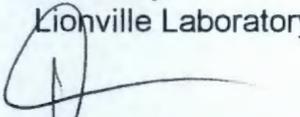
Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

| | |
|---------------|-------------|
| LvLI Batch # | 0804L872 |
| SDG # | K1176 |
| SAF # | RC-073 |
| Date Received | 4/4/08 |
| # Samples | 1 |
| Matrix | OTHER SOLID |
| Volatiles | |
| Semivolatiles | X |
| Pest/PCB | |
| Glycols | |
| DRO/KRO/GRO | |
| GC Alcohols | |
| Herbicides | |
| Metals | X |
| Inorganics | X |

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated



Orette S. Johnson
Project Manager

r:\group\pm\orlette\lnu-hanford\data\b_ltrs.doc

Lionville Laboratory, Inc.
 BNA ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-073 K1176



DATE RECEIVED: 04/04/08

LVL LOT # :0804L872

| CLIENT ID | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|-----------|--------|-----|----------|------------|-----------|----------|
| J16J98 | 001 | SO | 08LE0169 | 04/01/08 | 04/10/08 | 04/17/08 |
| J16J98 | 001 MS | SO | 08LE0169 | 04/01/08 | 04/10/08 | 04/17/08 |

LAB QC:

| | | | | | | |
|--------|--------|---|----------|-----|----------|----------|
| SBLKTV | MB1 | S | 08LE0169 | N/A | 04/10/08 | 04/17/08 |
| SBLKTV | MB1 BS | S | 08LE0169 | N/A | 04/10/08 | 04/17/08 |



Case Narrative

Client: TNU-HANFORD RC-073
LVL #: 0804L872
SDG/SAF # K1176 / RC-073

W.O. #: 11343-606-001-9999-00
Date Received: 04-04-2008

SEMIVOLATILE

One (1) soil sample was collected on 04-01-2008.

The sample and its associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 04-10-2008 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 04-17-2008.

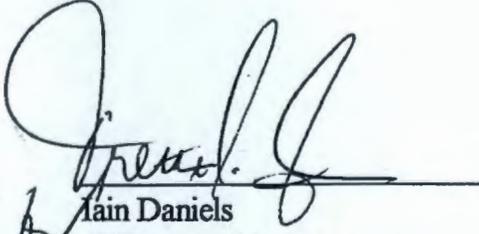
All solid samples are reported on a wet weight basis due to matrix. (white powdery substance). The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

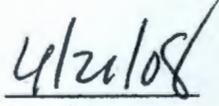
1. All results printed in this report are derived from samples that met LvLI's sample acceptance policy.
2. The sample was extracted and analyzed within holding time.
3. Due to sample matrix, sample J16J98MS was extracted with a reduced initial volume (15 grams). Samples J16J98 and J16J98MS had elevated final volumes of 4.0 mls. Reporting limits have been adjusted to reflect these changes.
4. Non-target compounds were detected in these samples.
5. Samples J16J98 required an 8-fold instrument dilution due to matrix.
6. All surrogate recoveries were within acceptance criteria.
7. Seven (7) of sixty four (64) obtainable matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 08MS080) has been enclosed.
8. Nine (9) of sixty four (64) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR# 08MS080) has been enclosed.

r:\group\data\2008\bna\tnu\0804-872cs1.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

9. The method blank contained the common laboratory contaminant Bis(2-Ethylhexy) phthalate at a level less than 2X the CRQL.
10. All initial calibrations associated with this data set were within acceptance criteria.
11. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
12. Internal standard area and retention time criteria were met.
13. 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").
14. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
15. 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.


Brian Daniels
Laboratory Manager
Lionville Laboratory Incorporated


Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 08MS080

Initiator: Sharon Saylor
 Date: 4-18-08
 Client: TNY R6073
 - K1176

Batch: 0804LP71
 Samples: 001ms BS
 Method: SW846/CAWW/CLPI

Parameter: 8770
 Matrix: SOLID
 Prep Batch: 081E0169

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)

low or no recovery of several spike analytes in the ms + BS

2. Known or Probable Causes(s)

33' durolab berline subject to oxidative losses during solvent concentration; acidic phorb chlorocarbon, nitro carbon are subject to erratic chromatographic behavior especially if the GC system is contaminated with high boiling material; others specific
 P. 4/18/08

3. Discussion and Proposed Action

Other Description:

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

urate

[Handwritten Signature]

4. Project Manager Instructions...signature/date:

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

5. Final Action...signature/date:

Other Explanation:

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

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

- Route Distribution of Completed SDR
- Initiator
 - Lab General Manager: M. Taylor
 - Project Mgr. Stone/Johnson
 - Data Management: Stilwell
 - Sample Prep: Beegle/Kiger

- Route Distribution of Completed SDR
- Metals: Beegle
 - Inorganic: Perrone
 - GC/LC: Kiger
 - MS: Rychlak/Daley
 - Log-in: Perry
 - Admin: _____
 - Other: _____

GLOSSARY

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP, Z = Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP - Missed Peak: manually added peak not found by automatic quan program.
- PA - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

J16J98

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-073 K1176

Matrix: (soil/water) SOLID

Lab Sample ID: 0804L872-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: N041705

Level: (low/med) LOW

Date Received: 04/04/08

% Moisture: 100 decanted: (Y/N)

Date Extracted: 04/10/08

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 04/17/08

Injection Volume: 2.0 (uL)

Dilution Factor: 8.00

GPC Cleanup: (Y/N) N

pH:

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

Number TICs found: 5

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------|--------|------------|---|
| 1. | ORGANIC CCID | 17.002 | 40000 | J |
| 2. | ORGANIC ACID | 19.033 | 200000 | J |
| 3. | ALKENE | 20.219 | 200000 | J |
| 4. | ORGANIC ACID | 20.394 | 400000 | J |
| 5. | UNKNOWN | 24.064 | 60000 | J |

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKTV

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD RC-073 K1176

Matrix: (soil/water) SOIL

Lab Sample ID: 08LE0169-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: N041703

Level: (low/med) LOW

Date Received: 04/10/08

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 04/10/08

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 04/17/08

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

Number TICs found: 5

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|------------------|--------|------------|----|
| 1. | UNKNOWN | 1.217 | 200 | J |
| 2. | UNKNOWN | 3.039 | 200 | J |
| 3. | ALDOL CONDENSATE | 3.981 | 50000 | JA |
| 4. | UNKNOWN | 18.019 | 600 | J |
| 5. | UNKNOWN | 20.216 | 200 | J |

SAMPLE EXTRACTION RECORD

Sheet no.: 1

Extract. Date: 04/10/08

Extraction Batch No: 08LE0169

Analyst: MF

Method: **** SOX3540

Test: 0625

Cleanup Date:

Analyst:

Client: TNUHANFORD F07-040 H3678

LIMS Report Date: 04/11/08

Solvent: DCM/ACETONE

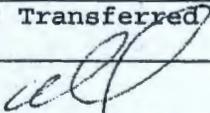
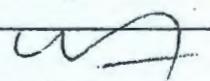
Adsorbent:

| Sample No: | Client Name Client ID | pH | Initial Surr. WT/VOL | Spike Mult. | Final Mult. | Final VOL | Split Mult. | GPC Y/N | % Solids | C/D FACTOR |
|-----------------|--------------------------|----|-------------------------|-------------|-------------|-----------|-------------|---------|----------|------------|
| 0804L856- | TNUHANFORD F07-040 H3678 | | | | | | | | | |
| 001 B | B1PCF9 | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 0.0 | 16.67 |
| 001 BS | B1PCF9 | | 30.0 | 1.0 | 0.8 | 1.0 | 0.5 | N | 0.0 | 16.67 |
| 001 BT | B1PCF9 | | 30.0 | 1.0 | 0.8 | 1.0 | 0.5 | N | 0.0 | 16.67 |
| 0804L857- | TNUHANFORD F07-041 H3672 | | | | | | | | | |
| 001 H | B1TFY7 | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 0.0 | 16.67 |
| 001 HS | B1TFY7 | | 15.0 | 1.0 | 0.8 | 1.0 | 0.5 | N | 0.0 | 33.33 |
| 001 HT | B1TFY7 | | 15.0 | 1.0 | 0.8 | 1.0 | 0.5 | N | 0.0 | 33.33 |
| 0804L872- | TNUHANFORD RC-073 K1176 | | | | | | | | | |
| 001 H | J16J98 | | 30.0 | 1.0 | | 4.0 | 0.5 | N | 0.0 | 66.67 |
| 001 HS | J16J98 | | 15.0 | 1.0 | 0.8 | 4.0 | 0.5 | N | 0.0 | 133.3 |
| 0804L873- | VISTA ENGINEERING | | | | | | | | | |
| 001 N | B064 | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 96.75 | 17.23 |
| 001 NS | B064 | | 30.0 | 1.0 | 0.8 | 1.0 | 0.5 | N | 96.75 | 17.23 |
| 001 NT | B064 | | 30.0 | 1.0 | 0.8 | 1.0 | 0.5 | N | 96.75 | 17.23 |
| 002 N | B065 | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 92.63 | 17.99 |
| 003 N | B066 | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 95.31 | 17.49 |
| 004 N | B068 | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 94.16 | 17.70 |
| 005 N | B069 | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 97.21 | 17.14 |
| 006 N | B070 | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 97.18 | 17.15 |
| 08LE0169-MB1 B | SBLKTV | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 100.00 | 16.67 |
| 08LE0169-MB1 BS | SBLKTV | | 30.0 | 1.0 | 0.8 | 1.0 | 0.5 | N | 100 | 16.67 |
| 08LE0169-MB1 H | SBLKTV | | 30.0 | 1.0 | | 1.0 | 0.5 | N | 100 | 16.67 |
| 08LE0169-MB1 HS | SBLKTV | | 30.0 | 1.0 | 0.8 | 1.0 | 0.5 | N | 100 | 16.67 |

Comments:

Surrogate: 500 UL ESU BNA 89916502 @100-150 UG/ML

Spike: 600 UL BNA LCS SPIKE 86951307

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|---|---|--------------|-------------|--------------|---------------------|
|  |  | 4/11/08 1435 | M | 4/11/08 1440 | Analysis |

000000012

SAMPLE EXTRACTION RECORD

Sheet no.: 2

Extract. Date: 04/10/08

Extraction Batch No: 08LE0169

Analyst: MF

Method: ****

S243540

Test: 0625

Cleanup Date:

Analyst:

Client: TNUHANFORD F07-040 H3678

LIMS Report Date: 04/11/08

Solvent: DCM/ACETONE

Adsorbent:

| Sample No: | Client Name Client ID | pH | Initial WT/VOL | Surr. Mult. | Spike Mult. | Final VOL | Final VOL | Split Mult. | GPC Y/N | % Solids | C/D FACTOR |
|-----------------|--------------------------|----|-------------------|----------------|----------------|--------------|--------------|----------------|------------|-------------|---------------|
| 08LE0169-MB1 N | SBLKTV | | 30.0 | 1.0 | | 1.0 | | 0.5 | N | 100 | 16.67 |
| 08LE0169-MB1 NS | SBLKTV | | 30.0 | 1.0 | 0.8 | 1.0 | | 0.5 | N | 100 | 16.67 |

Comments:

Surrogate: 500 UL ESU BNA 89916502 @100-150 UG/ML

Spike: 600 UL BNA LCS SPIKE 86951307

| Extracts Transferred | Relinquished By | Date Time | Received By | Date Time | Reason for Transfer |
|----------------------|--------------------|----------------------|-------------|---------------------|---------------------|
| <i>all</i> | <i>[Signature]</i> | <i>4/10/08 14:35</i> | <i>M</i> | <i>4/11/08 1440</i> | <i>Analysis</i> |

00000013

Custody Transfer Record/Lab Work Request



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

804L872

Int TNU Hanford RC 073
 Final Proj. Sampling Date _____
 Project # 11343-606-001-9999-00
 Project Contact/Phone# _____
 Lionville Laboratory Project Manager DeLitta Johnson
SW846 Del STD TAT 15 Days
 Rec'd 4.4.08 Date Due 4-19-08

| Refrigerator # | A | | | | B | | | | C | | | | D | | | |
|----------------------|---------|-----|----------|------|------------|----|-------|-----|--------|---|-------|---|--------|---|-------|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| #/Type Container | Liquid | | Solid | | Liquid | | Solid | | Liquid | | Solid | | Liquid | | Solid | |
| Volume | 60 | | 60 | | 60 | | 60 | | 60 | | 60 | | 60 | | 60 | |
| Preservatives | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | |
| ANALYSES REQUESTED → | ORGANIC | | | | | | | | INORG | | | | | | | |
| | VOA | BNA | Pest/PCB | Herb | Metal + Hg | CN | SFD | TOX | | | | | | | | |

| MATRIX DESCRIPTION | Lab ID | Client ID/Description | Matrix QC Chosen (✓) | | Matrix | Date Collected | Time Collected | Lionville Laboratory Use Only | | | | | | | | | | | | | |
|--------------------|--------|-----------------------|----------------------|-----|--------|----------------|----------------|-------------------------------|----|------|------|---|---|---|---|---|----|--|--|--|--|
| | | | MS | MSD | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | |
| | | | | | | | | Met | IC | TSFD | ITOX | | | | | | | | | | |
| 001 | J16J98 | | ✓ | ✓ | 50 | 4-1-08 | 0920 | X | | | | | | | | | | | | | |

Special Instructions:
 Met ① = HSL + B, m, o, S;
 NOTL

- Special Instructions:
- _____
 - _____
 - _____
 - _____
 - _____
 - _____

| Relinquished by | Received by | Date | Time |
|-----------------|-------------|--------|-------|
| Leadex | Dygnich | 4.4.08 | 14:50 |

| Relinquished by | Received by | Date | Time |
|-----------------|-------------|------|------|
| | | | |

| Relinquished by | Received by | Date | Time |
|-----------------|-------------|------|------|
| ORIGINAL | COMPOSITE | | |
| REWRITTEN | WASTE | | |

000000014

| | | | | | |
|--|--|---------------------------|------------------------------------|------------------|----------------------------|
| Collector D.W.Shea / SEC Dawn R. Everhart | Company Contact D.W.Shea | Telephone No. 521-6014 | Project Coordinator KESSNER, JH | Price Code 9K | Data Turnaround 15 days |
| Project Designation 100-D/DR Burial Grounds & Remaining Sites - Other Solid Q | Sampling Location 126-D-2, white powder anomaly 100D-AN-08- | SAF No. RC-073 | | | |

| | | | |
|-------------------------------|--------------------------------|-------------------|------------------------------|
| Field Chest No. AFS-04-011 | Field Logbook No. EL-1607-3 | COA R126D22600 | Method of Shipment Fed Ex |
|-------------------------------|--------------------------------|-------------------|------------------------------|

| | | |
|--|---|---|
| Shipped To WEBERLINE SERVICES / LIONVILLE | Offsite Property No. AD80210 See OPS 23 | Bill of Lading/Air Bill No. SEE OSPL |
|--|---|---|

| | | | | | | | |
|---------------------------------|---------------------|-------|---------|---------|---------|------|------|
| Possible Sample Hazards/Remarks | Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None |
| | Type of Container | G/P | aG | aG | G | G/P | G/P |
| | No. of Container(s) | 1 | 1 | 1 | 1 | | |
| | Volume | 60ml. | 60ml. | 60ml. | 60ml. | 5g | 60g |

| | | | | | | |
|---------------------------------|---------------------------------------|------------------------|------------|---|------------------------|---------------------------------------|
| Special Handling and/or Storage | See item (1) in Special Instructions. | Semi-VOL - 8270A (117) | 10X - 9020 | Total Cyanide - 9010 Sulfides - 9030 | Cross Alpha Gamma Beta | See item (2) in Special Instructions. |
| | SAMPLE ANALYSIS | | | | | |

| Sample No | Matrix * | Sample Date | Sample Time | | | | | | |
|-----------|-------------|-------------|-------------|---|---|---|---|--|--|
| 16J98 | OTHER SOLID | 4/1/08 | 0920 | ✓ | ✓ | ✓ | ✓ | | |

| | | | | | | | | |
|------------------------------|--------------|-------------------------|-----------------|---|--|--|--|--|
| CHAIN OF POSSESSION | | Sign/Print Names | | SPECIAL INSTRUCTIONS | | | | Matrix * |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time | (1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc} and Hg via CMA (2) RCFC GEA Shipping Screen {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} | | | | S=Soil SF=Sediment SD=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W1=Wipe L=Liquid V=Vegetation X=Other |
| <i>Dawn R. Everhart</i> | 4-1-08 1607 | <i>DWShea</i> | 4/1/08 1607 | | | | | |
| <i>DWShea</i> | 4/1/08 1815 | <i>Fredex</i> | 3/A 4/1/08 1815 | | | | | |
| <i>BOBATELE</i> | 4/3/08 1300 | <i>Dawn R. Everhart</i> | 4/3/08 1300 | | | | | |
| <i>Am A STUD</i> | 4/3/08 1300 | <i>FED EX</i> | | | | | | |
| <i>Fed Ex</i> | 4-4-08/14:50 | <i>D.J. Smith</i> | 4-4-08/14:50 | | | | | |

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

000000015

Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU Hanford

Date: 4.4.08

Project/SAF/SOW/Release #: RC.073

LvLI Batch #: 0804L872

Sample Custodian: D. Smith

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|---|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>FedEx</u> | Airbill # <u>7993 0172 3694</u> |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Comments: |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received <u>Cooled</u> or ambient? | Temp <u>2.0</u> °C | Cooler # <u>AFS-04-011</u> |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. COC (Client & LvLI) signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on COC received? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Short holds taken to wet lab? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |

Person Contacted _____

Date _____



Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-073 K1176



DATE RECEIVED: 04/04/08

LVL LOT # :0804L872

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|---------|-----|---------|------------|-----------|----------|
| J16J98 | | | | | | |
| SILVER, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SILVER, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SILVER, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ALUMINUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ALUMINUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ALUMINUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ARSENIC, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ARSENIC, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ARSENIC, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| BORON, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| BORON, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| BORON, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| BARIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| BARIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| BARIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| BERYLLIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| BERYLLIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| BERYLLIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| CALCIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| CALCIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| CALCIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| CADMIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| CADMIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| CADMIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| COBALT, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| COBALT, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| COBALT, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| CHROMIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| CHROMIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| CHROMIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| COPPER, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| COPPER, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| COPPER, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| IRON, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| IRON, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-073 K1176

DATE RECEIVED: 04/04/08

LVL LOT # :0804L872

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|---------|-----|---------|------------|-----------|----------|
| IRON, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MERCURY, TOTAL | 001 | SO | 08C0067 | 04/01/08 | 04/14/08 | 04/16/08 |
| MERCURY, TOTAL | 001 REP | SO | 08C0067 | 04/01/08 | 04/14/08 | 04/16/08 |
| MERCURY, TOTAL | 001 MS | SO | 08C0067 | 04/01/08 | 04/14/08 | 04/16/08 |
| POTASSIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| POTASSIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| POTASSIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MAGNESIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MAGNESIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MAGNESIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MANGANESE, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MANGANESE, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MANGANESE, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MOLYBDENUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MOLYBDENUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| MOLYBDENUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SODIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SODIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SODIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| NICKEL, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| NICKEL, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| NICKEL, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| LEAD, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| LEAD, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| LEAD, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ANTIMONY, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ANTIMONY, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ANTIMONY, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SELENIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SELENIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SELENIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SILICON, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SILICON, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| SILICON, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| VANADIUM, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| VANADIUM, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| VANADIUM, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ZINC, TOTAL | 001 | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-073 K1176

DATE RECEIVED: 04/04/08

LVL LOT # :0804L872

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|---------|-----|---------|------------|-----------|----------|
| ZINC, TOTAL | 001 REP | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |
| ZINC, TOTAL | 001 MS | SO | 08L0155 | 04/01/08 | 04/17/08 | 04/18/08 |

AB QC:

| | | | | | | |
|----------------------|--------|---|---------|-----|----------|----------|
| SILVER LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| SILVER, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| ALUMINUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| ALUMINUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| ARSENIC LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| ARSENIC, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| BORON LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| BORON, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| BARIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| BARIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| BERYLLIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| BERYLLIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| CALCIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| CALCIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| CADMIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| CADMIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| COBALT LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| COBALT, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| CHROMIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| CHROMIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| COPPER LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| COPPER, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| IRON LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| IRON, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| MERCURY LABORATORY | LC1 BS | S | 08C0067 | N/A | 04/14/08 | 04/16/08 |
| MERCURY, TOTAL | MB1 | S | 08C0067 | N/A | 04/14/08 | 04/16/08 |
| POTASSIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| POTASSIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| MAGNESIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| MAGNESIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| MANGANESE LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| MANGANESE, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| MOLYBDENUM LABORATOR | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-073 K1176

DATE RECEIVED: 04/04/08

LVL LOT # :0804L872

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|--------|-----|---------|------------|-----------|----------|
| MOLYBDENUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| SODIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| SODIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| NICKEL LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| NICKEL, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| LEAD LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| LEAD, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| ANTIMONY LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| ANTIMONY, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| SELENIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| SELENIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| SILICON LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| SILICON, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| VANADIUM LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| VANADIUM, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| ZINC LABORATORY | LC1 BS | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |
| ZINC, TOTAL | MB1 | S | 08L0155 | N/A | 04/17/08 | 04/18/08 |



Analytical Report

Client: TNU-HANFORD RC-073
LVL#: 0804L872
SDG/SAF#: K1176/RC-032

W.O.#: 11343-606-001-9999-00
Date Received: 04-04-08

METALS CASE NARRATIVE

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

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

1. This narrative covers the analysis of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

All samples were reported with a 3-fold dilution for all ICP analytes due to sample matrix.

3. All analyses were performed within the required holding times.
4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).
6. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
7. All ICP Interference Check Standards were within control limits.
8. All laboratory control samples (LCS) were within the 80-120% control with the exception of Silicon at 19.9%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.
9. The matrix spike (MS) recoveries for 8 analytes were outside the 75-125% control limits.

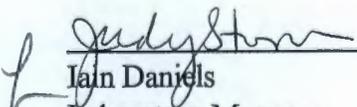
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

Refer to the Inorganics Accuracy Report.

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

| <u>Sample ID</u> | <u>Element</u> | <u>PDS</u> <u>Concentration (ppb)</u> | <u>PDS</u> <u>% Recovery</u> |
|------------------|----------------|--|---------------------------------|
| J16J98 | Aluminum | 66,000 | 100.4 |
| | Barium | 300 | 70.4 |
| | Magnesium | 66,000 | 98.6 |
| | Manganese | 3,000 | 102.4 |
| | Iron | 66,000 | 100.7 |
| | Zinc | 300 | 26.5 |
| | Antimony | 300 | 100.1 |
| | Silicon | 6,300 | 96.5 |

11. The duplicate analyses for 12 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
12. For the purposes of this report, the data has been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.
13. LvLI is NELAP accredited by the state of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/30/08
Date

alm/m04-872

000000005

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within the lot#:

08042872

Eaching Procedure: 1310 1311 1312 Other: _____

LP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A 3050B 3051 200.7 SS17
 Other: _____

Metals Analysis Methods

| | SW846 | EPA | STD MTD | EPA OSWR | USATHAMA |
|-------------|---|---|------------------|-----------------|-----------------|
| Aluminum | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Antimony | <input checked="" type="checkbox"/> 6010B <u> 7041^s </u> | <u> 200.7 </u> <u> 204.2 </u> | | | <u> 99 </u> |
| Arsenic | <input checked="" type="checkbox"/> 6010B <u> 7060A^s </u> | <u> 200.7 </u> <u> 206.2 </u> | <u> 3113B </u> | | <u> 99 </u> |
| Barium | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Beryllium | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Bismuth | <input checked="" type="checkbox"/> 6010B ¹ | <u> 200.7¹ </u> | | <u> 1620 </u> | <u> 99 </u> |
| Boron | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Cadmium | <input checked="" type="checkbox"/> 6010B <u> 7131A^s </u> | <u> 200.7 </u> <u> 213.2 </u> | | | <u> 99 </u> |
| Calcium | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Chromium | <input checked="" type="checkbox"/> 6010B <u> 7191^s </u> | <u> 200.7 </u> <u> 218.2 </u> | | | <u> SS17 </u> |
| Cobalt | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Copper | <input checked="" type="checkbox"/> 6010B <u> 7211^s </u> | <u> 200.7 </u> <u> 220.2 </u> | | | <u> 99 </u> |
| Cron | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Lead | <input checked="" type="checkbox"/> 6010B <u> 7421^s </u> | <u> 200.7 </u> <u> 239.2 </u> | <u> 3113B </u> | | <u> 99 </u> |
| Lithium | <input checked="" type="checkbox"/> 6010B <u> 7430⁴ </u> | <u> 200.7 </u> | | <u> 1620 </u> | <u> 99 </u> |
| Magnesium | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Manganese | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Mercury | <u> 7470A³ </u> <input checked="" type="checkbox"/> <u> 7471A³ </u> | <u> 245.1³ </u> <u> 245.5³ </u> | | | <u> 99 </u> |
| Molybdenum | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Nickel | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Potassium | <input checked="" type="checkbox"/> 6010B <u> 7610⁴ </u> | <u> 200.7 </u> <u> 258.1⁴ </u> | | | <u> 99 </u> |
| Rare Earths | <input checked="" type="checkbox"/> 6010B ¹ | <u> 200.7¹ </u> | | <u> 1620 </u> | <u> 99 </u> |
| Selenium | <input checked="" type="checkbox"/> 6010B <u> 7740^s </u> | <u> 200.7 </u> <u> 270.2 </u> | <u> 3113B </u> | | <u> 99 </u> |
| Silicon | <input checked="" type="checkbox"/> 6010B ¹ | <u> 200.7 </u> | | <u> 1620 </u> | <u> 99 </u> |
| Silica | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | <u> 1620 </u> | <u> 99 </u> |
| Silver | <input checked="" type="checkbox"/> 6010B <u> 7761^s </u> | <u> 200.7 </u> <u> 272.2 </u> | | | <u> 99 </u> |
| Sodium | <input checked="" type="checkbox"/> 6010B <u> 7770⁴ </u> | <u> 200.7 </u> <u> 273.1⁴ </u> | | | <u> 99 </u> |
| Strontium | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Thallium | <input checked="" type="checkbox"/> 6010B <u> 7841^s </u> | <u> 200.7 </u> <u> 279.2 </u> <u> 200.9 </u> | | | <u> 99 </u> |
| Tin | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Titanium | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Uranium | <input checked="" type="checkbox"/> 6010B ¹ | <u> 200.7¹ </u> | | <u> 1620 </u> | <u> 99 </u> |
| Vanadium | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Zinc | <input checked="" type="checkbox"/> 6010B | <u> 200.7 </u> | | | <u> 99 </u> |
| Zirconium | <input checked="" type="checkbox"/> 6010B ¹ | <u> 200.7¹ </u> | | <u> 1620 </u> | <u> 99 </u> |

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate.

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Flame AA.
4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/23/08

CLIENT: TNUHANFORD RC-073 K1176
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|--------|---------|-------------------|--------|-------|--------------------|--------------------|
| -001 | J16J98 | Silver, Total | 0.30 u | MG/KG | 0.30 | 3.0 |
| | | Aluminum, Total | 1320 | MG/KG | 12.0 | 3.0 |
| | | Arsenic, Total | 15.9 | MG/KG | 1.5 | 3.0 |
| | | Boron, Total | 11.2 | MG/KG | 1.5 | 3.0 |
| | | Barium, Total | 713 | MG/KG | 0.30 | 3.0 |
| | | Beryllium, Total | 0.16 | MG/KG | 0.15 | 3.0 |
| | | Calcium, Total | 3750 | MG/KG | 12.0 | 3.0 |
| | | Cadmium, Total | 0.35 | MG/KG | 0.15 | 3.0 |
| | | Cobalt, Total | 2.7 | MG/KG | 0.60 | 3.0 |
| | | Chromium, Total | 11.4 | MG/KG | 0.60 | 3.0 |
| | | Copper, Total | 12.0 | MG/KG | 0.60 | 3.0 |
| | | Iron, Total | 9980 | MG/KG | 13.5 | 3.0 |
| | | Mercury, Total | 0.01 u | MG/KG | 0.01 | 1.0 |
| | | Potassium, Total | 5690 | MG/KG | 12.0 | 3.0 |
| | | Magnesium, Total | 21700 | MG/KG | 7.5 | 3.0 |
| | | Manganese, Total | 160 | MG/KG | 0.12 | 3.0 |
| | | Molybdenum, Total | 0.90 u | MG/KG | 0.90 | 3.0 |
| | | Sodium, Total | 1720 | MG/KG | 6.0 | 3.0 |
| | | Nickel, Total | 11.5 | MG/KG | 0.60 | 3.0 |
| | | Lead, Total | 10.4 | MG/KG | 0.90 | 3.0 |
| | | Antimony, Total | 0.90 u | MG/KG | 0.90 | 3.0 |
| | | Selenium, Total | 1.8 u | MG/KG | 1.8 | 3.0 |
| | | Silicon, Total | 353 | MG/KG | 12.0 | 3.0 |
| | | Vanadium, Total | 14.2 | MG/KG | 0.42 | 3.0 |
| | | Zinc, Total | 1020 | MG/KG | 1.8 | 3.0 |

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/23/08

CLIENT: TNUHANFORD RC-073 K1176
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|--------|-------------|-------------------|--------|-------|--------------------|--------------------|
| ===== | ===== | ===== | ===== | ===== | ===== | ===== |
| BLANK1 | 08L0155-MB1 | Silver, Total | 0.10 u | MG/KG | 0.10 | 1.0 |
| | | Aluminum, Total | 4.0 u | MG/KG | 4.0 | 1.0 |
| | | Arsenic, Total | 0.50 u | MG/KG | 0.50 | 1.0 |
| | | Boron, Total | 0.50 u | MG/KG | 0.50 | 1.0 |
| | | Barium, Total | 0.10 u | MG/KG | 0.10 | 1.0 |
| | | Beryllium, Total | 0.05 u | MG/KG | 0.05 | 1.0 |
| | | Calcium, Total | 5.5 | MG/KG | 4.0 | 1.0 |
| | | Cadmium, Total | 0.05 u | MG/KG | 0.05 | 1.0 |
| | | Cobalt, Total | 0.20 u | MG/KG | 0.20 | 1.0 |
| | | Chromium, Total | 0.20 u | MG/KG | 0.20 | 1.0 |
| | | Copper, Total | 0.20 u | MG/KG | 0.20 | 1.0 |
| | | Iron, Total | 4.5 u | MG/KG | 4.5 | 1.0 |
| | | Potassium, Total | 4.0 u | MG/KG | 4.0 | 1.0 |
| | | Magnesium, Total | 2.5 u | MG/KG | 2.5 | 1.0 |
| | | Manganese, Total | 0.04 u | MG/KG | 0.04 | 1.0 |
| | | Molybdenum, Total | 0.30 u | MG/KG | 0.30 | 1.0 |
| | | Sodium, Total | 13.3 | MG/KG | 2.0 | 1.0 |
| | | Nickel, Total | 0.20 u | MG/KG | 0.20 | 1.0 |
| | | Lead, Total | 0.30 u | MG/KG | 0.30 | 1.0 |
| | | Antimony, Total | 0.30 u | MG/KG | 0.30 | 1.0 |
| | | Selenium, Total | 0.60 u | MG/KG | 0.60 | 1.0 |
| | | Silicon, Total | 4.0 u | MG/KG | 4.0 | 1.0 |
| | | Vanadium, Total | 0.14 u | MG/KG | 0.14 | 1.0 |
| | | Zinc, Total | 0.60 u | MG/KG | 0.60 | 1.0 |
| BLANK1 | 08C0067-MB1 | Mercury, Total | 0.01 u | MG/KG | 0.01 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/23/08

CLIENT: TNUHANFORD RC-073 K1176
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV | DILUTION FACTOR (SPK) |
|--------|---------|-------------------|------------------|-------------------|------------------|--------|--------------------------|
| -001 | J16J98 | Silver, Total | 4.5 | 0.30u | 4.9 | 91.8 | 3.0 |
| | | Aluminum, Total | 1690 | 1320 | 198 | 186.9* | 3.0 |
| | | Arsenic, Total | 189 | 15.9 | 198 | 87.3 | 3.0 |
| | | Boron, Total | 100 | 11.2 | 99.0 | 89.9 | 3.0 |
| | | Barium, Total | 1420 | 713 | 198 | 359.2 | 3.0 |
| | | Beryllium, Total | 4.7 | 0.16 | 4.9 | 92.6 | 3.0 |
| | | Calcium, Total | 6650 | 3750 | 2480 | 116.9 | 3.0 |
| | | Cadmium, Total | 4.9 | 0.35 | 4.9 | 92.9 | 3.0 |
| | | Cobalt, Total | 48.3 | 2.7 | 49.5 | 92.1 | 3.0 |
| | | Chromium, Total | 33.5 | 11.4 | 19.8 | 111.6 | 3.0 |
| | | Copper, Total | 32.6 | 12.0 | 24.8 | 83.1 | 3.0 |
| | | Iron, Total | 13100 | 9980 | 99.0 | 3144 * | 3.0 |
| | | Mercury, Total | 0.17 | 0.01u | 0.17 | 102.4 | 1.0 |
| | | Potassium, Total | 7570 | 5690 | 2480 | 76.1 | 3.0 |
| | | Magnesium, Total | 25400 | 21700 | 2480 | 151.6* | 3.0 |
| | | Manganese, Total | 174 | 160 | 49.5 | 26.7 | 3.0 |
| | | Molybdenum, Total | 89.3 | 0.90u | 99.0 | 90.2 | 3.0 |
| | | Sodium, Total | 4040 | 1720 | 2480 | 93.8 | 3.0 |
| | | Nickel, Total | 54.8 | 11.5 | 49.5 | 87.5 | 3.0 |
| | | Lead, Total | 57.1 | 10.4 | 49.5 | 94.3 | 3.0 |
| | | Antimony, Total | 32.5 | 0.90u | 49.5 | 65.7 | 3.0 |
| | | Selenium, Total | 156 | 1.8 u | 198 | 78.5 | 3.0 |
| | | Silicon, Total | 275 | 353 | 99.0 | -79. | 3.0 |
| | | Vanadium, Total | 58.5 | 14.2 | 49.5 | 89.5 | 3.0 |
| | | Zinc, Total | 1080 | 1020 | 49.5 | 133.5* | 3.0 |

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/23/08

CLIENT: TNUHANFORD RC-073 K1176
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | INITIAL | | | DILUTION |
|---------|---------|-------------------|---------|-----------|------|----------|
| | | | RESULT | REPLICATE | RPD | |
| -001REP | J16J98 | Silver, Total | 0.30u | 0.29u | NC | 3.0 |
| | | Aluminum, Total | 1320 | 1040 | 23.7 | 3.0 |
| | | Arsenic, Total | 15.9 | 11.2 | 34.7 | 3.0 |
| | | Boron, Total | 11.2 | 6.6 | 51.7 | 3.0 |
| | | Barium, Total | 713 | 821 | 14.1 | 3.0 |
| | | Beryllium, Total | 0.16 | 0.14u | NC | 3.0 |
| | | Calcium, Total | 3750 | 3190 | 16.2 | 3.0 |
| | | Cadmium, Total | 0.35 | 0.22 | 45.5 | 3.0 |
| | | Cobalt, Total | 2.7 | 1.3 | 70.0 | 3.0 |
| | | Chromium, Total | 11.4 | 9.4 | 19.2 | 3.0 |
| | | Copper, Total | 12.0 | 10.7 | 11.5 | 3.0 |
| | | Iron, Total | 9980 | 8120 | 20.6 | 3.0 |
| | | Mercury, Total | 0.01u | 0.02 | NC | 1.0 |
| | | Potassium, Total | 5690 | 4560 | 22.0 | 3.0 |
| | | Magnesium, Total | 21700 | 23300 | 7.2 | 3.0 |
| | | Manganese, Total | 160 | 114 | 33.7 | 3.0 |
| | | Molybdenum, Total | 0.90u | 0.86u | NC | 3.0 |
| | | Sodium, Total | 1720 | 1930 | 11.6 | 3.0 |
| | | Nickel, Total | 11.5 | 8.0 | 35.9 | 3.0 |
| | | Lead, Total | 10.4 | 6.4 | 47.6 | 3.0 |
| | | Antimony, Total | 0.90u | 0.86u | NC | 3.0 |
| | | Selenium, Total | 1.8 u | 1.7 u | NC | 3.0 |
| | | Silicon, Total | 353 | 278 | 23.7 | 3.0 |
| | | Vanadium, Total | 14.2 | 12.2 | 15.2 | 3.0 |
| | | Zinc, Total | 1020 | 719 | 34.2 | 3.0 |

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/23/08

CLIENT: TNUHANFORD RC-073 K1176
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | SPIKED | SPIKED | UNITS | %RECOV |
|--------|-------------|-----------------|--------|--------|-------|--------|
| | | | SAMPLE | AMOUNT | | |
| ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| LCS1 | 08L0155-LC1 | Silver, LCS | 45.9 | 50.0 | MG/KG | 91.8 |
| | | Aluminum, LCS | 456 | 500 | MG/KG | 91.2 |
| | | Arsenic, LCS | 860 | 1000 | MG/KG | 86.0 |
| | | Boron, LCS | 445 | 500 | MG/KG | 89.0 |
| | | Barium, LCS | 456 | 500 | MG/KG | 91.3 |
| | | Beryllium, LCS | 22.9 | 25.0 | MG/KG | 91.6 |
| | | Calcium, LCS | 2350 | 2500 | MG/KG | 94.0 |
| | | Cadmium, LCS | 22.7 | 25.0 | MG/KG | 90.8 |
| | | Cobalt, LCS | 231 | 250 | MG/KG | 92.3 |
| | | Chromium, LCS | 45.8 | 50.0 | MG/KG | 91.6 |
| | | Copper, LCS | 114 | 125 | MG/KG | 91.3 |
| | | Iron, LCS | 469 | 500 | MG/KG | 93.8 |
| | | Potassium, LCS | 2130 | 2500 | MG/KG | 85.1 |
| | | Magnesium, LCS | 2320 | 2500 | MG/KG | 92.9 |
| | | Manganese, LCS | 68.5 | 75.0 | MG/KG | 91.3 |
| | | Molybdenum, LCS | 445 | 500 | MG/KG | 89.0 |
| | | Sodium, LCS | 2200 | 2500 | MG/KG | 88.1 |
| | | Nickel, LCS | 183 | 200 | MG/KG | 91.4 |
| | | Lead, LCS | 225 | 250 | MG/KG | 90.1 |
| | | Antimony, LCS | 261 | 300 | MG/KG | 87.0 |
| | | Selenium, LCS | 836 | 1000 | MG/KG | 83.6 |
| | | Silicon, LCS | 99.3 | 500 | MG/KG | 19.9 |
| | | Vanadium, LCS | 228 | 250 | MG/KG | 91.0 |
| | | Zinc, LCS | 89.9 | 100 | MG/KG | 89.9 |
| LCS1 | 08C0067-LC1 | Mercury, LCS | 5.0 | 4.7 | MG/KG | 105.8 |

SAMPLE DIGESTION RECORD

Digestion Batch #: 08L0155 Method: SW 3005A DW 200.7 (1994)
 Date/Time Initiated: 4/17/08 1345 (circle) 3010A 200.9
 Date/Time Completed: 4/17/08 2030 3015 3113B
 Analyst(s): MW 3020A
 Matrix: Soil Water Other: _____
 Instr. Type: AA CP 7060A (As/Se) MCAWW 200.7 (1982)
 Parameters: HSL + B-, Mg, Si (No Ti) (872+915) 7760A (Ag) 200 (AA)
HSL + B₁, B₂, Li, Mn, P₂, Sr, Sn, U- (857) **3050B** 206.2 (As/Se)
 Digest / Undigested (circle one) 3051 SM 3030C (NC)
 Balance #: B20
 Balance Cal Verif: NA CLP ILM03.0 Other _____
 Hot Plate Temp: 91° ILM04.0

TW

| COC Batch # | Spike Vol(s) (mL) | Initial Wt/Vol (g/mL) | Final Vol (mL) | pH | Type: To/So/TC | Texture | Color/Appearance | Artifact | Turb |
|---------------|-------------------|-----------------------|----------------|----|----------------|---------|------------------------------|----------|------|
| 0803L837-001 | | 1.23gm | 100ml | 22 | TD | coarse | black, green, yellow granula | | |
| 002 | | 1.13gm | 1 | | | | | | |
| 002R | | 1.12gm | | | | | | | |
| 002S * 1.0 ml | | 1.14gm | | | | | | | |
| 003 | | 1.17gm | | | | | | | |
| 0804L872-001 | | 1.00gm | | | | | white powder, black lumps | | |
| 001R | | 1.04gm | | | | | | | |
| 001S * 1.0 ml | | 1.01gm | | | | | | | |
| 0804L913-001 | | 1.13gm | | | | | dark brown / rocks | | |
| 001R | | 1.20gm | | | | | | | |
| 001S * 1.0 ml | | 1.18gm | | | | | | | |
| 08L0155-MB1 | | 1.0gm | | | | | boiling chips | | |
| LC1 * 1.0 ml | | 1.0gm | | | | | | | |

Spiking IDs:
 MS #: 8100-04-01
 _____ 02
 _____ 03
6072-78-07
 LCS #: _____ 08
 _____ 09
 _____ 10
 _____ 11

Reagent IDs:
 HNO₃ E46025
 HCL E45047
 H₂O₂ E44A06
 1:1 HNO₃ 9789-07-04
 1:1 HCL _____

File ID#: IC015501
IC015502
 LIMS Transfer: N
 Data Review By/Date: _____
Updated

* anal 0.5 ml 6072-078-01 (U-)
 0.5 ml 6072-076-07 (P-)
 0.5 ml 6072-076-06 (B-)

MERCURY PREPARATION

Logbook # 422

Analyst: CS
Date: 4/14/08
Start Time/Temp: 1555 / 94°
End Time/Temp: 1625 / 98°

Instrument ID: HG-3.1
Balance #: 029 /NA
Pipette Calibration (Daily) Y

Prep Batch: 08C0067
Worksheet: H6041601
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? Yes ~~NA~~ No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Initial/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

| LvLI Batch # | Container Number | Spike Volume (mL) | Spike Conc. (µg/L) | Initial Wt. or Volume (g or mL) | Final Sample Volume (mL) | Comments, % Solids, etc. | |
|--------------|------------------|-------------------|--------------------|---------------------------------|--------------------------|--------------------------|-------|
| Blank | GTR | | | 10mL | 50mL | | |
| 0.2 µg/L | 3P | 0.100 | | | | | |
| 1.0 | R | 0.500 | | | | | |
| 2.0 | G7 | 1.000 | | | | | |
| 5.0 | 290 | 2.500 | | | | | |
| 10.0 | 40 | 5.000 | | | | | |
| ICV | PF | 0.125 | 2.5 | | | | |
| CCV | X0 | 0.250 | 5.0 | | | | |
| ICBlecb | 3T | | | | | 9.50 L | |
| UBI | 461 | | | 0.30 | | PBS167 100.00 | |
| LCI | IV | * | * | 0.32 | | LCSS167 | |
| 0804L872-001 | HS | | | 0.30 | | | |
| 001R | 95 | | | 0.31 | | | |
| 001S | B2 | 0.500 | 1.0 | 0.30 | | | |
| 0804L873-001 | H3 | | | 0.34 | | | 96.75 |
| 002 | X3 | | | 0.34 | | | 92.63 |
| 003 | 114 | | | 0.33 | | | 95.31 |
| 004 | I94 | | | 0.32 | | 94.16 | |
| 005 | R2 | | | 0.31 | | 97.21 | |
| 006 | B6 | | | 0.32 | | 97.18 | |
| 0804L891-001 | 616 | | | 0.39 | | 99.12 | |
| 001R | FS | | | 0.37 | | | |
| 001S | UT | 0.500 | 1.0 | 0.39 | | | |
| 002 | OF | | | 0.33 | | | 91.83 |
| 003 | SH | | | 0.31 | | | 94.05 |
| 004 | 92 | | | 0.36 | | | 93.54 |
| 005 | AIR | | | 0.35 | | | 94.53 |

| | | |
|------------|----------------|----------------|
| Standard: | ID | Prep Date/Time |
| ICALMS | R16072-75-07B | 4/14/08 210 |
| ICV/CV/LCS | US16072-75-08A | |

Reviewed By/Date: [Signature] 4/22/08

see book # 9368 for std traceability information

Soil LCS = US Metals in soil No.3; True Value = 4.70 mg/Kg
Catalogue #1RM-021, Lot # E021

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Water LCS Spiking Concentration: 1.0 µg/ml

Director: D.W. Shea / SEC Down R. Everhart
 Company Contact: D.W. Shea Telephone No. 521-6014
 Project Coordinator: KESSNER, JH Price Code: 9K Data Turnaround: 15 days
 Project Designation: 100-D/DR Burial Grounds & Remaining Sites - Other Solid Q
 Sampling Location: 126-D-2, white powder anomaly 100D-AN-08- SAF No. RC-073

Chest No. AFS-04-011
 Field Logbook No. EL-1607-3 COA R126D22600
 Method of Shipment: Fed Ex

Shipped To: EBERLINE SERVICES LIONVILLE
 Offsite Property No. A080210
 Bill of Lading/Air Bill No. SEE OSPLC

| Special Handling and/or Storage | Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None |
|---------------------------------|---------------------|-------|---------|---------|---------|------|------|
| | Type of Container | G/P | aG | aG | G | G/P | G/P |
| | No. of Container(s) | 1 | 1 | 1 | 1 | | |
| | Volume | 60ml. | 60ml. | 60ml. | 60ml. | 5g | 10g |

SAMPLE ANALYSIS

| Sample No. | Matrix * | Sample Date | Sample Time | See item (1) in Special Instructions | Semi-VOL - 8270A (1,1,1,1) | TOX - 9020 | Total Cyanide - 9010; Sulfides - 9030 | Trace Alpha Gamma Beta | See item (2) in Special Instructions |
|------------|-------------|-------------|-------------|--------------------------------------|----------------------------|------------|---------------------------------------|------------------------|--------------------------------------|
| 6J98 | OTHER SOLID | 4/1/08 | 0920 | ✓ | ✓ | ✓ | ✓ | | |

| CHAIN OF POSSESSION | | Sign/Print Names | | SPECIAL INSTRUCTIONS | | Matrix * |
|--------------------------|-----------|-----------------------|-----------|--|--|----------|
| Received By/Removed From | Date/Time | Received By/Stored In | Date/Time | (1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc} and Hg via CMA (2) RCF GEA Shipping Screen {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} | S=Soil SF=Settlement SL=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation O=Other | |
| Received By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |
| Received By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |
| Received By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |
| Received By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |
| Received By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |

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

0000000017

**Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU Hanford
Project/SAF/SOW/Release #: RC.073

Date: 4.4.08

LvLI Batch #: 0804L872

Sample Custodian: D. Grubich

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|---|
| 1. Samples Hand Delivered or <u>Shipped?</u> | Carrier <u>FedEx</u> | Airbill # <u>7993 0172 3694</u> |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Comments: |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received <u>Cooled</u> or ambient? | Temp <u>2.0</u> °C | Cooler # <u>AFS-04-011</u> |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. COC (Client & LvLI) signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on COC received? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Short holds taken to wet lab? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | Date _____ | |



Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD RC-073 K1176



DATE RECEIVED: 04/04/08

LVL LOT # :08045872

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|---------|-----|----------|------------|-----------|----------|
| J16J98 | | | | | | |
| TOTAL CYANIDE | 001 | SO | 08LC022 | 04/01/08 | 04/11/08 | 04/11/08 |
| EXTRACTABLE ORGANIC | 001 | SO | 08LE004 | 04/01/08 | 04/14/08 | 04/15/08 |
| EXTRACTABLE ORGANIC | 001 MS | SO | 08LE004 | 04/01/08 | 04/14/08 | 04/15/08 |
| EXTRACTABLE ORGANIC | 001 MSD | SO | 08LE004 | 04/01/08 | 04/14/08 | 04/15/08 |
| SULFIDE | 001 | SO | 08LSD023 | 04/01/08 | 04/08/08 | 04/08/08 |
| SULFIDE | 001 REP | SO | 08LSD023 | 04/01/08 | 04/08/08 | 04/08/08 |
| SULFIDE | 001 MS | SO | 08LSD023 | 04/01/08 | 04/08/08 | 04/08/08 |

LAB QC:

| | | | | | | |
|---------------------|---------|---|----------|-----|----------|----------|
| TOTAL CYANIDE | LCS L | S | 08LC022 | N/A | 04/11/08 | 04/11/08 |
| TOTAL CYANIDE | LCS L | S | 08LC022 | N/A | 04/11/08 | 04/11/08 |
| TOTAL CYANIDE | MB1 | S | 08LC022 | N/A | 04/11/08 | 04/11/08 |
| EXTRACTABLE ORGANIC | MB1 | W | 08LE004 | N/A | 04/14/08 | 04/15/08 |
| EXTRACTABLE ORGANIC | MB1 BS | W | 08LE004 | N/A | 04/14/08 | 04/15/08 |
| SULFIDE | MB1 | S | 08LSD023 | N/A | 04/08/08 | 04/08/08 |
| SULFIDE | MB1 BS | S | 08LSD023 | N/A | 04/08/08 | 04/08/08 |
| SULFIDE | MB1 BSD | S | 08LSD023 | N/A | 04/08/08 | 04/08/08 |



Analytical Report

Client: TNU-HANFORD RC-073 K1176
LVL#: 0804L872

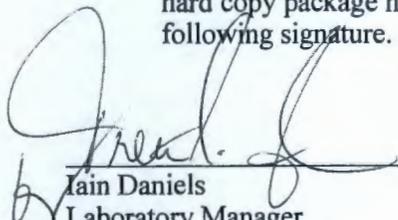
W.O.#: 11343-606-001-9999-00
Date Received: 04-04-08

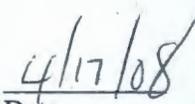
INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 solid sample.
2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.

LvLI is NELAP accredited by the State of Pennsylvania. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvLI certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

3. Sample holding times as required by the method and/or contract were met.
4. The results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicate for Extractable Organic Halides was within the 20% RPD control limit.
8. The replicate analysis for Sulfide was within the 20% RPD control limit.
9. Matrix quality control analyses for Total Cyanide were not performed due to sample volume limitations.
10. Results for solid samples are reported on an "as-received" weight basis.
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 package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Jamin Daniels
Laboratory Manager
Lionville Laboratory Incorporated


Date

njp04-872

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

| | <u>ASTM</u> | <u>SW846</u> | <u>OTHER</u> |
|---|------------------|---------------------------------|----------------------|
| % Ash | ___ D2216-80 | | |
| % Moisture | ___ D2216-80 | | ___ ILMO4.0 (e) |
| % Solids | ___ D2216-80 | | ___ ILMO4.0 (e) |
| % Volatile Solids | ___ D2216-80 | | |
| ASTM Extraction in Water | ___ D3987-81/85 | | |
| BTU | ___ D240-87 | | |
| CEC | | ___ 9081 | ___ c |
| Chromium VI | | ___ 3060A/7196A | |
| Corrosivity ___ by coupon ___ by pH | | ___ 1110(mod) ___ 9045C | |
| Cyanide, Total | | ✓ 9010B / 19014 | ___ ILMO4.0 (e) |
| Cyanide, Reactive | | Section 7.3/9014 | |
| Halides, Extractable Organic | | ✓ 9020B ⁴⁻¹⁶⁻⁰⁵ 9023 | ___ EPA 600/4/84-008 |
| Halides, Total | | ___ 9020B | ___ EPA 600/4/84-008 |
| EP Toxicity | | ___ 1310A | |
| Flash Point | | ___ 1010 | |
| Ignitability | | ___ 1010 | |
| Oil & Grease | | ___ 9071A | |
| Carbon, Total Organic | | ___ 9060 | ___ Lloyd Kahn (mod) |
| Oxygen Bomb Prep for Anions | ___ D240-87(mod) | ___ 5050 | |
| Petroleum Hydrocarbons, Total Recoverable | | ___ 9071 | ___ EPA 418.1 |
| pH, Soil | | ___ 9045C | |
| Sulfide, Reactive | | Section 7.3/9030B | |
| Sulfide | | ✓ 9030B(mod) / 19034 | |
| Specific Gravity | ___ D1429-76C/ | ___ D5057-90 | |
| Sulfur, Total | | ___ 9056 | |
| Synthetic Preparation Leach | | ___ 1312 | |
| Paint Filter | | ___ 9095A | |

Other: Method:

Other: Method

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

- MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/16/08

CLIENT: TNUHANFORD RC-073 K1176
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|--------|---------|-----------------------|--------|---------|--------------------|--------------------|
| -001 | J16J98 | Cyanide, Total | 0.50 | u MG/KG | 0.50 | 1.0 |
| | | Extr. Organic Halides | 37.5 | u MG/KG | 37.5 | 1.0 |
| | | Sulfide | 23.5 | u MG/KG | 23.5 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/16/08

CLIENT: TNUHANFORD RC-073 K1176
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---------|--------------|-----------------------|--------|-------|--------------------|--------------------|
| BLANK1 | 08LC022-MB1 | Cyanide, Total | 0.50 u | MG/KG | 0.50 | 1.0 |
| BLANK1 | 08LE004-MB1 | Extr. Organic Halides | 38.8 u | MG/KG | 38.8 | 1.0 |
| BLANK10 | 08LSD023-MB1 | Sulfide | 20.9 u | MG/KG | 20.9 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/16/08

CLIENT: TNUHANFORD RC-073 K1176
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV | DILUTION FACTOR (SPK) |
|---------|--------------|-----------------------|------------------|-------------------|------------------|--------|--------------------------|
| -001 | J16J98 | Extr. Organic Halides | 2330 | 28.7 | 2440 | 94.3 | 1.0 |
| | | Extr. Organic Halides | 2480 | 28.7 | 2390 | 102.5 | 1.0 |
| | | Sulfide | 307 | -2. | 316 | 98.0 | 1.0 |
| BLANK1 | 08LE004-MB1 | Extr. Organic Halides | 2420 | 38.8 u | 2400 | 100.8 | 1.0 |
| BLANK10 | 08LSD023-MB1 | Sulfide | 272 | 20.9 u | 269 | 101.0 | 1.0 |
| | | Sulfide MSD | 276 | 20.9 u | 269 | 102.5 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 04/16/08

CLIENT: TNUHANFORD RC-073 K1176
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 | SPIKE#2 | %DIFF |
|---------|--------------|-----------------------|---------|---------|-------|
| | | | %RECOV | %RECOV | |
| -001 | J16J98 | Extr. Organic Halides | 94.3 | 102.5 | 8.3 |
| BLANK10 | 08LSD023-MB1 | Sulfide | 101.0 | 102.5 | 1.5 |

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/16/08

CLIENT: TNUHANFORD RC-073 K1176
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | RPD | DILUTION FACTOR (REP) |
|---------|---------|---------|-------------------|-----------|-----|--------------------------|
| -001REP | J16J98 | Sulfide | 23.5 u | 23.8 u | NC | 1.0 |

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/16/08

CLIENT: TNUHANFORD RC-073 K1176
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0804L872

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|--------|--------------|--------------------|------------------|------------------|-------|--------|
| LCSS1 | 08LC022-LCS1 | Cyanide, Total LCS | 1.98 | 2.0 | MG/KG | 99.1 |
| LCSS2 | 08LC022-LCS2 | Cyanide, Total LCS | 9.82 | 10.0 | MG/KG | 98.2 |

| Washington Closure Hanford | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | | | | | RC-073-038 | | Page 1 of 1 | | | |
|--|-------------|--|------|---------------------------------------|--|------------------------------------|---------------------------------------|--|---------------------------------------|-----------------------------------|--|--|
| Collector D.W. Shea / <i>SEC Down R. Everhart</i> | | Company Contact D.W. Shea | | Telephone No. 521-6014 | | Project Coordinator KESSNER, JH | | Price Code <i>9K</i> | | Data Turnaround <i>15 days</i> | | |
| Project Designation 100-D/DR Burial Grounds & Remaining Sites - Other Solid Q | | Sampling Location 126-D-2, white powder anomaly 100D-AN-08- | | | SAF No. RC-073 | | | | | | | |
| Ice Chest No. <i>AFS-04-011</i> | | Field Logbook No. EL-1607-3 | | COA R126D22600 | | Method of Shipment Fed Ex | | | | | | |
| Shipped To EBERLINE SERVICES / <u>LIONVILLE</u> | | Offsite Property No. <i>See OPCS 23</i> A080210 | | | Bill of Lading/Air Bill No. <i>SEE OSPL</i> | | | | | | | |
| Special Handling and/or Storage | | Preservation | | None | Cool 4C | Cool 4C | Cool 4C | None | None | | | |
| | | Type of Container | | G/P | aG | aG | G | G/P | G/P | | | |
| | | No. of Container(s) | | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| | | Volume | | 60ml. | 60ml. | 60ml. | 60ml. | 5g | 60g | | | |
| SAMPLE ANALYSIS | | | | See item (1) in Special Instructions. | Semi-VOL - 8270A (1+1) | ION - 9020 | Total Cyanide - 9010; Sulfides - 9630 | Gross Alpha; Gross Beta | See item (2) in Special Instructions. | | | |
| | | | | Sample No | Matrix * | Sample Date | Sample Time | | | | | |
| J16J98 | OTHER SOLID | 4/1/08 | 0920 | ✓ | ✓ | ✓ | ✓ | <i>DWShea</i> <i>4/1/08</i> | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| CHAIN OF POSSESSION | | | | Sign/Print Names | | | | SPECIAL INSTRUCTIONS | | | | Matrix * |
| Relinquished By/Removed From | | Date/Time | | Received By/Stored In | | Date/Time | | (1) ICP Metals - 6010 (Client List) ;Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc} <i>and Hg via CETA</i> (2) RCF GEA Shipping Screen ;Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} | | | | S= Soil SF= 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 |
| <i>DWShea</i> | | 4-1-08 1607 | | <i>DWShea</i> | | 4/1/08 1607 | | | | | | |
| <i>DWShea</i> | | 4/1/08 1815 | | <i>Freda</i> | | 3A 4/1/08 1815 | | | | | | |
| <i>1660 BATELLE 3A</i> | | 4/3/08 1300 | | <i>DWShea</i> | | 4/3/08 1300 | | | | | | |
| <i>PAVIA</i> | | 4/3/08 1300 | | <i>FED EX</i> | | | | | | | | |
| <i>FED EX</i> | | 4-4-08/14:50 | | <i>DWShea</i> | | 4-4-08/14:50 | | | | | | |
| LABORATORY SECTION | | Received By | | Title | | | | Date/Time | | | | |
| FINAL SAMPLE DISPOSITION | | Disposal Method | | Disposed By | | | | Date/Time | | | | |

**Lionville Laboratory Incorporated
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU Hartford
Project/SAF/SOW/Release #: RC.073

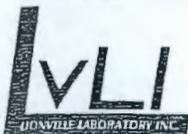
Date: 4-4-08

LvLI Batch #: 0804L872

Sample Custodian: D. Smith

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | | |
|---|---|--------------------------------------|---|
| 1. Samples Hand Delivered or Shipped? | Carrier <u>D. Ex</u> | | Airbill # <u>7993 0172 3694</u> |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | Comments: |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 5. Samples received <u>cooled</u> or ambient? | Temp <u>2.0</u> °C | | Cooler # <u>AFS-04-011</u> |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR | <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. COC (Client & LvLI) signed & dated? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 9. All samples on COC received? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 12. Samples received within hold times? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| Short holds taken to wet lab? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | | Date _____ | |





2 June 2008

Joan Kessner
WC-Hanford
2620 Fermi Avenue
MSIN H9-03
Richland, WA 99354

Subject: Analytical Data Package

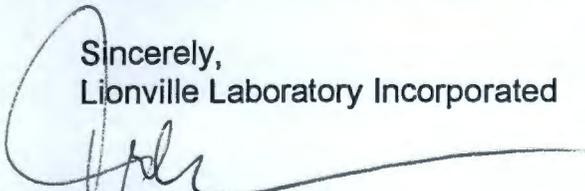
Dear Ms. Kessner:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

| | |
|---------------|-------------|
| LvLI Batch # | 0805L090 |
| SDG # | K1176 ADDON |
| SAF # | RC-073 |
| Date Received | 5/9/08 |
| # Samples | 1 |
| Matrix | OTHER SOLID |
| Volatiles | |
| Semivolatiles | X |
| Pest/PCB | |
| Glycols | |
| DRO/KRO/GRO | |
| GC Organics | |
| Herbicides | |
| Metals | |
| Inorganics | |

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated


Orlette S. Johnson
Project Manager

Lionville Laboratory, Inc.
 BNA ANALYTICAL DATA PACKAGE FOR
 TNU-HANFORD RC-073 K1176



DATE RECEIVED: 05/09/08

LVL LOT # : 08661296

| CLIENT ID | LVL # | MTX | PREP # | LEACH DATE | EXTR/PREP | ANALYSIS |
|-----------|-------|-----|----------|------------|-----------|----------|
| J16J98 | 002 | W | 08LE0236 | 05/13/08 | 05/15/08 | 05/16/08 |

LAB QC:

| | | | | | | |
|--------------|--------|---|----------|-----|----------|----------|
| SBLKUU | MB1 | W | 08LE0236 | N/A | 05/15/08 | 05/16/08 |
| SBLKUU | MB1 BS | W | 08LE0236 | N/A | 05/15/08 | 05/16/08 |
| 08LT0041-LB1 | LB1 | W | 08LE0236 | N/A | 05/15/08 | 05/16/08 |

ADDENDUM

This report provides Toxicity Characteristics Leaching Procedure (TCLP) information. Listed on the next page, the client identification on the ITCL labchron, "TCLP" represents the non-volatile leachate fraction and "TCLP LEACHATE" represents the Zero Headspace Extraction (ZHE) volatile leachate fraction. The "EXTR/PREP DATE" is the date the leachate preparation was initiated; the "ANALYSIS DATE" is the date the leachates were completed.

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD RC-073 K1176

DATE RECEIVED: 05/09/08

LVL LOT # :0805L090

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|-------|-----|----------|------------|-----------|----------|
| J16J98 | | | | | | |
| TCLP | 001 | SO | 08LT0041 | 04/01/08 | 05/12/08 | 05/13/08 |



Case Narrative

Client: TNU-HANFORD RC-073
LVL #: 0805L090
SDG/SAF # K1176 / RC-073

W.O. #: 11343-606-001-9999-00
Date Re-logged: 05-09-2008

SEMIVOLATILE - TCLP

One (1) leachate sample was generated on 05-13-2008 from a solid sample collected on 04-01-2008.

The sample and its associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3520C on 04-02-2008 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for Client Specified Semivolatile target compounds on 05-16-2008.

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

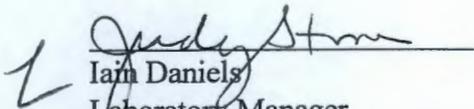
1. Samples were extracted and analyzed within holding times. Sample J16J98 was re-logged, per client request for semivolatiles TCLP analysis. The sample was collected 04-01-08; consequently the sample was leached outside of the recommended holding time.
2. Non-target compounds were detected, but not reported with these samples.
3. All surrogate recoveries were within acceptance criteria.
4. All matrix spike recoveries were within acceptance criteria.
5. One (1) of twelve (12) blank spike recoveries was outside acceptance criteria.
6. The method blank was below the reporting limit for all target compounds.
7. Internal standard area and retention time criteria were met.
8. All continuing calibration standard analyzed prior to sample extracts were within acceptance criteria.

f:\group\data\bna\tuhanford\0805-090k1.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.



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. 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

5/21/08
Date

GLOSSARY

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP, Z = Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP - Missed Peak: manually added peak not found by automatic quan program.
- PA - Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

000000000

| | Cust ID: | J16J98 | SBLKUU | SBLKUU BS | LCHBLK |
|--------------------|-----------------------|--------------|--------------|--------------|--------------|
| Sample Information | RFW#: | 002 | 08LE0236-MB1 | 08LE0236-MB1 | 08LT0041-LB1 |
| | Matrix: | WATER | WATER | WATER | WATER |
| | D.F.: | 1.00 | 1.00 | 1.00 | 1.00 |
| | Units: | mg/L | mg/L | mg/L | mg/L |
| Surrogate | Nitrobenzene-d5 | 53 % | 103 % | 92 % | 71 % |
| Recovery | 2-Fluorobiphenyl | 48 % | 88 % | 101 % | 71 % |
| | p-Terphenyl-d14 | 67 % | 94 % | 82 % | 82 % |
| | Phenol-d5 | 11 % | 29 % | 23 % | 14 % |
| | 2-Fluorophenol | 19 * % | 41 % | 36 % | 24 % |
| | 2,4,6-Tribromophenol | 37 % | 90 % | 101 % | 73 % |
| | | =====fl===== | =====fl===== | =====fl===== | =====fl===== |
| | Pyridine | 0.050 U | 0.050 U | 41 % | 0.050 U |
| | 1,4-Dichlorobenzene | 0.050 U | 0.050 U | 84 % | 0.050 U |
| | 2-Methylphenol | 0.050 U | 0.050 U | 63 % | 0.050 U |
| | 3/4-Methylphenol | 0.050 U | 0.050 U | 57 % | 0.050 U |
| | Hexachloroethane | 0.050 U | 0.050 U | 88 % | 0.050 U |
| | Nitrobenzene | 0.050 U | 0.050 U | 89 % | 0.050 U |
| | Hexachlorobutadiene | 0.050 U | 0.050 U | 95 % | 0.050 U |
| | 2,4,6-Trichlorophenol | 0.050 U | 0.050 U | 96 % | 0.050 U |
| | 2,4,5-Trichlorophenol | 0.12 U | 0.12 U | 102 % | 0.12 U |
| | 2,4-Dinitrotoluene | 0.050 U | 0.050 U | 92 % | 0.050 U |
| | Hexachlorobenzene | 0.050 U | 0.050 U | 90 % | 0.050 U |
| | Pentachlorophenol | 0.12 U | 0.12 U | 114 * % | 0.12 U |

*= Outside of EPA CLP QC limits.

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

204L872

TNU Hanford RC-073

al Proj. Sampling Date
11343-606-001-9999-00

Contact/Phone#

Laboratory Project Manager Debbie Johnson

2846 Del STD TAT 15 Days

ic'd 4.4.08 Date Due 4-19-08

| | | | | |
|----------------------|---------|-----|------------|-------|
| Refrigerator # | A | B | C | D |
| | 3 | 3 | 3 | 3 |
| #/Type Container | Liquid | | | |
| | Solid | 1g | 1g | 1g |
| Volume | Solid | 60 | 60 | 60 |
| Preservatives | | 1 | 1 | 1 |
| ANALYSES REQUESTED → | ORGANIC | | | INORG |
| | VOA | BNA | Pest/PCB | Herb |
| | | | Metal + Hg | ON |
| | | | SFD | TOX |

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) | | Matrix | Date Collected | Time Collected | Lionville Laboratory Use Only | | | | | | | | | | | | |
|--------|-----------------------|----------------------|-----|--------|----------------|----------------|-------------------------------|-----|----------|------|------------|----|-----|-----|--|--|--|--|--|
| | | MS | MSD | | | | VOA | BNA | Pest/PCB | Herb | Metal + Hg | ON | SFD | TOX | | | | | |
| 001 | J16J98 | ✓ | ✓ | SO | 4.1.08 | 0920 | X | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
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Instructions:

1st @ = HSL + B, mo, S:

NOTL

Special Instructions:

- _____
- _____
- _____
- _____
- _____
- _____

| Relinquished by | Received by | Date | Time |
|-----------------|-------------|--------|-------|
| DEX | D. Smith | 4.4.08 | 14:50 |

| Relinquished by | Received by | Date | Time |
|-----------------|-------------|------|------|
| | | | |

| Relinquished by | Received by | Date | Time |
|-----------------|-------------|------|------|
| ORIGINAL | | | |
| REWRITTEN | | | |

COMPOSITE WASTE

000000011

Project Coordinator: KESSNER, JH
 Price Code: 9K
 Data Turnaround: 15 days
 Company Contact: D.W. Shea
 Telephone No.: 521-6014
 Project Designation: D/DR Burial Grounds & Remaining Sites - Other Solid Q
 Sampling Location: 126-D-2, white powder anomaly 100D-AN-08-
 SAF No.: RC-073

Field Logbook No.: EL-1607-3
 COA: R126D22600
 Method of Shipment: Fed Ex
 Est No.: AFS-04-011

Offsite Property No.: A080210
 Bill of Lading/Air Bill No.: SEE OSPL
 See to: AIRLINE SERVICES (LIONVILLE)
 Visible Sample Hazards/Remarks: DWS

| Preservation | None | Cool 4C | Cool 4C | Cool 4C | None | None |
|---------------------|-------|---------|---------|---------|------|------|
| Type of Container | G/P | uG | uG | G | G/P | G/P |
| No. of Container(s) | 1 | 1 | 1 | 1 | | |
| Volume | 60ml. | 60ml. | 60ml. | 60ml. | 5g | 60g |

SAMPLE ANALYSIS

| See item (1) in Special Instructions | Semi-VIIA - 820A (11/11) | IX - 9020 | Total Cyanide - 9010 Sulfides - 9030 | Trace Alpha Gross Beta | See item (2) in Special Instructions |
|--------------------------------------|--------------------------|-----------|--------------------------------------|------------------------|--------------------------------------|
| | | | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | |
|------------|-------------|-------------|-------------|---|---|---|---|
| 3 | OTHER SOLID | 4/1/08 | 0920 | ✓ | ✓ | ✓ | ✓ |

| CHAIN OF POSSESSION | | Sign/Print Names | | SPECIAL INSTRUCTIONS | | Matrix * |
|----------------------|-----------|-----------------------|-----------|--|--|--|
| Shed By/Removed From | Date/Time | Received By/Stored In | Date/Time | (1) ICP Metals - 6010 (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc] and Hg via CMA (2) RCF GEA Shipping Screen [Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155] | | S - Soil SL - Sediment SA - Solids SW - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids T - Tissue W - Wipe L - Liquid V - Vegetation O - Other |
| Shed By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |
| Shed By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |
| Shed By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |
| Shed By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |
| Shed By/Removed From | Date/Time | Received By/Stored In | Date/Time | | | |

| | | | |
|---------------------|-----------------|-------------|-----------|
| LABORATORY POSITION | Received By | Title | Date/Time |
| DISPOSITION | Disposal Method | Disposed By | Date/Time |

000000012

Lionville Laboratory Incorporated
 SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU Hartford
 Project/SAF/SOW/Release #: RC.073

Date: 4.4.08

LvLI Batch #: 0804L872

Sample Custodian: *D. Y. Smith*

NOTE: EXPLAIN ALL DISCREPANCIES

- | | | |
|---|---|---|
| 1. Samples Hand Delivered or <u>Shipped</u> ? | Carrier <i>Dee Ex</i> | Airbill # 7993 0172 3694 |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Comments: |
| 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5. Samples received <u>Cooled</u> or ambient? | Temp <i>2.0</i> °C | Cooler # <i>AFS-04-011</i> |
| How was the temperature taken? | <input checked="" type="checkbox"/> IR <input type="checkbox"/> Temp. Blank | <input type="checkbox"/> Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 6. Custody seals on sample containers intact, signed and dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals |
| 7. COC (Client & LvLI) signed & dated? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 8. Sample containers are intact? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 9. All samples on COC received? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| All samples received on COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 10. All sample label information matches COC? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 12. Samples received within hold times? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Short holds taken to wet lab? | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 13. VOA, TOC, TOX free of headspace? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| 14. QC stickers placed on bottles designated by client? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | |
| 16. Project Manager contacted concerning any discrepancies? | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> N/A |
| Person Contacted _____ | Date _____ | |

