0077008

# SAF-RC-033
# 100-F Remaining Sites Burial Grounds - Other Solid Quick Turn
# FINAL DATA PACKAGE

**COMPLETE COPY OF DATA PACKAGE TO:**

| | | |
|---|---|---|
| Jeff DeBuigne | X9-07 | KW 4/14/08<br>INITIAL/DATE |
| Kathy Wendt | H4-21 | KW 4/14/08<br>INITIAL/DATE |

**COMMENTS:**

**SDG: K1160 SAF-RC-033**

Rad only X Chem only Rad & Chem

X Complete Partial

**Waste Site: 118-F-6 Garbage Can/White Powder**

RECEIVED
MAY 01 2008
EDMC

LIONVILLE LABORATORY INC.

11 April 2008

RECEIVED APR 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 # | 0803L806 |
| SDG # | K1160 |
| SAF # | RC-033 |
| Date Received | 3/25/08 |
| # Samples | 1 |
| Matrix | OTHER SOLID |
| Volatiles | |
| Semivolatiles | |
| 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

Orlette S. Johnson
Project Manager

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

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-033 K1160

RECEIVED
APR 2008

DATE RECEIVED: 03/25/08 LVL LOT # 10803L806

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| J16DW0 | | | | | | |
| BROMIDE BY IC | 001 | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| BROMIDE BY IC | 001 REP | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| BROMIDE BY IC | 001 MS | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| CHLORIDE BY IC | 001 | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| CHLORIDE BY IC | 001 REP | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| CHLORIDE BY IC | 001 MS | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| FLUORIDE BY IC | 001 | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| FLUORIDE BY IC | 001 REP | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| FLUORIDE BY IC | 001 MS | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| NITRITE BY IC | 001 | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| NITRITE BY IC | 001 REP | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| NITRITE BY IC | 001 MS | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| NITRATE BY IC | 001 | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| NITRATE BY IC | 001 REP | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| NITRATE BY IC | 001 MS | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| TOTAL CYANIDE | 001 | SO | 08LC020 | 03/18/08 | 03/31/08 | 03/31/08 |
| TOTAL CYANIDE | 001 REP | SO | 08LC020 | 03/18/08 | 03/31/08 | 03/31/08 |
| TOTAL CYANIDE | 001 MS | SO | 08LC020 | 03/18/08 | 03/31/08 | 03/31/08 |
| PHOSPHATE BY IC | 001 | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| PHOSPHATE BY IC | 001 REP | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| PHOSPHATE BY IC | 001 MS | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| SULFATE BY IC | 001 | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| SULFATE BY IC | 001 REP | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| SULFATE BY IC | 001 MS | SO | 08LICS22 | 03/18/08 | 03/26/08 | 03/26/08 |
| PH | 001 | SO | 08LPH015 | 03/18/08 | 03/28/08 | 03/28/08 |
| PH | 001 REP | SO | 08LPH015 | 03/18/08 | 03/28/08 | 03/28/08 |
| SULFIDE | 001 | SO | 08LSD019 | 03/18/08 | 03/31/08 | 03/31/08 |
| SULFIDE | 001 REP | SO | 08LSD019 | 03/18/08 | 03/31/08 | 03/31/08 |
| SULFIDE | 001 MS | SO | 08LSD019 | 03/18/08 | 03/31/08 | 03/31/08 |
| TOTAL INORGANIC CARB | 001 | SO | 08LTZ002 | 03/18/08 | 04/01/08 | 04/03/08 |
| TOTAL INORGANIC CARB | 001 REP | SO | 08LTZ002 | 03/18/08 | 04/01/08 | 04/03/08 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| BROMIDE BY IC | MB1 | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-033 K1160

DATE RECEIVED: 03/25/08 LVL LOT # :0803L806

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| BROMIDE BY IC | MB1 BS | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| CHLORIDE BY IC | MB1 | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| CHLORIDE BY IC | MB1 BS | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| FLUORIDE BY IC | MB1 | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| FLUORIDE BY IC | MB1 BS | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| NITRITE BY IC | MB1 | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| NITRITE BY IC | MB1 BS | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| NITRATE BY IC | MB1 | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| NITRATE BY IC | MB1 BS | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| TOTAL CYANIDE | LCS L | S | 08LC020 | N/A | 03/31/08 | 03/31/08 |
| TOTAL CYANIDE | LCS L | S | 08LC020 | N/A | 03/31/08 | 03/31/08 |
| TOTAL CYANIDE | MB1 | S | 08LC020 | N/A | 03/31/08 | 03/31/08 |
| PHOSPHATE BY IC | MB1 | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| PHOSPHATE BY IC | MB1 BS | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| SULFATE BY IC | MB1 | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| SULFATE BY IC | MB1 BS | S | 08LICS22 | N/A | 03/26/08 | 03/26/08 |
| SULFIDE | MB1 | S | 08LSD019 | N/A | 03/31/08 | 03/31/08 |
| SULFIDE | MB1 BS | S | 08LSD019 | N/A | 03/31/08 | 03/31/08 |
| SULFIDE | MB1 BSD | S | 08LSD019 | N/A | 03/31/08 | 03/31/08 |

LIONVILLE LABORATORY INC.

**Analytical Report**

**Client:** TNU-HANFORD RC-033 K1160
**LVL#:** 0803L806

**W.O.#:** 11343-606-001-9999-00
**Date Received:** 03-25-08

**INORGANIC NARRATIVE**

1. This narrative covers the analyses of 1 solid sample.

2. The sample was prepared and analyzed in accordance with the methods indicated 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 with the exception of Sulfide.

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.

8. The replicate analyses were within the 20% RPD control limit with the exception of Chloride, Nitrate, Sulfate and Total Inorganic Carbon that may be attributed to sample inhomogeneity.

9. Results for these soil samples are reported on an "as-received" weight basis.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/10/08
Date

njp\i03-806

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 14 pages.

**Lionville Laboratory Incorporated**

## WET CHEMISTRY

## METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

| | ASTM | SW846 | OTHER |
|---|---|---|---|
| % 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/9014 | __ ILMO4.0 (e) |
| Cyanide, Reactive | | __ Section 7.3/9014 | |
| Halides, Extractable Organic | | __ 9020B | __ 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~~ Inorganic jp 4-9-08 | | ✓ 9060 (mod.) | ✓ Lloyd Kahn (mod)/415 (mo |
| Oxygen Bomb Prep for Anions | __ D240-87(mod) | __ 5050 | |
| Petroleum Hydrocarbons, Total Recoverable | | __ 9071 jp 4-9-08 | __ EPA 418.1 |
| pH, Soil | | __ 9045~~C~~ D | |
| Sulfide, Reactive | | __ Section 7.3/9030B | |
| Sulfide | | ✓ 9030B(mod)/9034 | |
| Specific Gravity | __ D1429-76C/ | __ D5057-90 | |
| Sulfur, Total | | __ 9056 | |
| Synthetic Preparation Leach | | __ 1312 | |
| Paint Filter | | __ 9095A | |

**Other:** Bromide, Chloride, Fluoride, } **Method:** EPA 300.0

**Other:** Nitrite, Nitrate, Phosphate, Sulfate } **Method**

L-WI-034/B-01/01

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 04/04/08

CLIENT: TNUHANFORD RC-033 K1160

LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| -001 | J16DW0 | Bromide by IC | 2.6 | u | MG/KG | 2.6 | 1.0 |
| | | Chloride by IC | 5.7 | | MG/KG | 2.6 | 1.0 |
| | | Fluoride by IC | 2.6 | u | MG/KG | 2.6 | 1.0 |
| | | Nitrite by IC | 2.58 | u | MG/KG | 2.58 | 1.0 |
| | | Nitrate by IC | 82.8 | | MG/KG | 2.58 | 1.0 |
| | | Cyanide, Total | 0.44 | u | MG/KG | 0.44 | 1.0 |
| | | Phosphate by IC | 2.6 | u | MG/KG | 2.6 | 1.0 |
| | | Sulfate by IC | 18.8 | | MG/KG | 2.6 | 1.0 |
| | | pH | 8.6 | | SOIL PH | 0.01 | 1.0 |
| | | Sulfide | 21.3 | u | MG/KG | 21.3 | 1.0 |
| | | Total Inorganic Carbon | 293000 | | MG/KG | 1750 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/04/08

CLIENT: TNUHANFORD RC-033 K1160 LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|---|
| BLANK10 | 08LICS22-MB1 | Bromide by IC | 2.5 | u | MG/KG | 2.5 | 1.0 |
| | | Chloride by IC | 2.5 | u | MG/KG | 2.5 | 1.0 |
| | | Fluoride by IC | 2.5 | u | MG/KG | 2.5 | 1.0 |
| | | Nitrite by IC | 2.45 | u | MG/KG | 2.45 | 1.0 |
| | | Nitrate by IC | 2.45 | u | MG/KG | 2.45 | 1.0 |
| | | Phosphate by IC | 2.5 | u | MG/KG | 2.5 | 1.0 |
| | | Sulfate by IC | 2.5 | u | MG/KG | 2.5 | 1.0 |
| BLANK1 | 08LC020-MB1 | Cyanide, Total | 0.49 | u | MG/KG | 0.49 | 1.0 |
| BLANK10 | 08LSD019-MB1 | Sulfide | 37.2 | u | MG/KG | 37.2 | 1.0 |
| BLANK10 | 08LTZ002-MB1 | Total Organic Carbon | 4.7 | u | MG/KG | 4.7 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/04/08

CLIENT: TNUHANFORD RC-033 K1160

LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV | DILUTION FACTOR(SPK) |
|---|---|---|---|---|---|---|---|
| -001 | J16DW0 | Bromide by IC | 100 | 0.0 | 96.6 | 103.8 | 2.0 |
| | | Chloride by IC | 107 | 5.7 | 96.6 | 104.8 | 2.0 |
| | | Fluoride by IC | 99.9 | 0.0 | 96.6 | 103.4 | 2.0 |
| | | Nitrite by IC | 103 | 2.58u | 96.6 | 106.7 | 2.0 |
| | | Nitrate by IC | 175 | 82.8 | 96.6 | 95.4 | 2.0 |
| | | Cyanide, Total | 5.03 | 0.44u | 5.17 | 97.4 | 1.0 |
| | | Phosphate by IC | 117 | 2.6 u | 96.6 | 120.9 | 2.0 |
| | | Sulfate by IC | 113 | 18.8 | 96.6 | 97.3 | 2.0 |
| | | Sulfide | 361 | 2.1 | 367 | 97.9 | 1.0 |
| BLANK10 | 08LICS22-MB1 | Bromide by IC | 60.8 | 2.5 u | 62.7 | 97.0 | 1.0 |
| | | Chloride by IC | 60.4 | 2.5 u | 62.7 | 96.4 | 1.0 |
| | | Fluoride by IC | 59.8 | 2.5 u | 62.7 | 95.4 | 1.0 |
| | | Nitrite by IC | 60.8 | 2.45u | 62.7 | 97.0 | 1.0 |
| | | Nitrate by IC | 60.0 | 2.45u | 62.7 | 95.6 | 1.0 |
| | | Phosphate by IC | 59.8 | 2.5 u | 62.7 | 95.4 | 1.0 |
| | | Sulfate by IC | 61.8 | 2.5 u | 62.7 | 98.6 | 1.0 |
| BLANK10 | 08LSD019-MB1 | Sulfide | 476 | 37.2 u | 495 | 96.1 | 1.0 |
| | | Sulfide MSD | 479 | 37.2 u | 510 | 93.8 | 1.0 |
| BLANK10 | 08LTZ002-MB1 | Total Organic Carbon | 405 | 4.7 u | 400 | 101.3 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 04/04/08

CLIENT: TNUHANFORD RC-033 K1160 LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| BLANK10 | 08LSD019-MB1 | Sulfide | 96.1 | 93.8 | 2.4 |

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/04/08

CLIENT: TNUHANFORD RC-033 K1160 LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | RPD | DILUTION FACTOR(REP) |
|---|---|---|---|---|---|---|
| -001REP | J16DW0 | Bromide by IC | 2.6 u | 2.4 u | NC | 1.0 |
| | | Chloride by IC | 5.7 | 4.0 | 34.7 | 1.0 |
| | | Fluoride by IC | 2.6 u | 2.4 u | NC | 1.0 |
| | | Nitrite by IC | 2.58u | 2.40u | NC | 1.0 |
| | | Nitrate by IC | 82.8 | 62.8 | 27.5 | 1.0 |
| | | Cyanide, Total | 0.44u | 0.50u | NC | 1.0 |
| | | Phosphate by IC | 2.6 u | 2.4 u | NC | 1.0 |
| | | Sulfate by IC | 18.8 | 13.6 | 32.5 | 1.0 |
| | | pH | 8.6 | 8.6 | 0.1 | 1.0 |
| | | Sulfide | 21.3 u | 28.3 u | NC | 1.0 |
| | | Total Inorganic Carbon | 293000 | 361000 | 20.9 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/04/08

CLIENT: TNUHANFORD RC-033 K1160

LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCSS1 | 08LC020-LCS1 | Cyanide, Total LCS | 1.96 | 2.0 | MG/KG | 98.2 |
| LCSS2 | 08LC020-LCS2 | Cyanide, Total LCS | 9.80 | 10.0 | MG/KG | 98.0 |

onville Laboratory Use Only
08031806

# Custody Transfer Record/Lab Work Request



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

000000012

ent TNU Hanford RC-033
Final Proj. Sampling Date
oject# 11343-606-001-9999-00
oject Contact/Phone#
onville Laboratory Project Manager O Johnson
SW846 Del STD TAT 3 DAYS
te Rec'd 3/25/08 Date Due 3-28-08

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | A | B→ | | C | D | | | | |
| #/Type Container | Liquid | | | | | | | | 1qt | 1qL | | 1qL | 1qL | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Volume | | | | | | | | | 60mL | 60mL | | 60mL | 60mL | | | | |
| Preservatives | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | INORG | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | Metal | CN | | | | | | | |
| | | Lionville Laboratory Use Only | | | | | | | | | | | | | | | |
| | | | | | | | | | ICP +Hg | TOTAL CN 9010 | Sulfides 9030 | ICAMS +PH | FIC 4/15.1M | | | | |

| TRIX DES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Soil | 001 | J16DWD | | | SO | 3/18/08 | 1410 | | | | | | | | X | X | X | X | X | | |
| Sediment | | | | | | | | | | | | | | | | | | | | | |
| Solid | | | | | | | | | | | | | | | | | | | | | |
| Sludge | | | | | | | | | | | | | | | | | | | | | |
| Water | | | | | | | | | | | | | | | | | | | | | |
| Oil | | | | | | | | | | | | | | | | | | | | | |
| Air | | | | | | | | | | | | | | | | | | | | | |
| Drum Solids | | | | | | | | | | | | | | | | | | | | | |
| Drum Liquids | | | | | | | | | | | | | | | | | | | | | |
| EP/TCLP Leachate | | | | | | | | | | | | | | | | | | | | | |
| Wipe | | | | | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | | | | | |
| Fish | | | | | | | | | | | | | | | | | | | | | |

Special Instructions: Run matrix QC
C = ICBR, ICCL, ICSO4, ICPO4, ICFL
ICNO2, ICNO3
Temp 2°C

CP = HSL+B, MO, Si NOTL

Special Instructions:
1.
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Fedex | [signature] | 3/25 | 1005 |
| | | | |

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

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

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-033-051 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: T. Welch-Koelling | Company Contact: J R DeBuigne | Telephone No.: 528-6409 | Project Coordinator: KESSNER, JH |
| Project Designation: 100-F Remaining Sites Burial Grounds - Other Solid Quick T | Sampling Location: 118-F-6 Garbage Can/White Powder | | SAF No.: RC-033 |
| Ice Chest No.: AFS-04-123 | Field Logbook No.: EFL-1174-4 | COA: R118F62000 | Method of Shipment: Fed Ex |
| Shipped To: EBERLINE SERVICES / CONVILLE | Offsite Property No.: A080201 | | Bill of Lading/Air Bill No.: See OSPC 7992 9481 7262 |

Price Code: 4A

Data Turnaround: 3 DAY

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | Cool 4C | | | | | | |
| Type of Container | aG | aG | aG | aG | aG | | | | | | |
| No. of Container(s) | 1 | 1 | 1 | 1 | 1 | | | | | | |
| Volume | 60mL | 60mL | 60mL | 60mL | 60ml | | | | | | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Semi-VOA - 8270A (TCL) | IC Anions - 300.0; pH - 150.1 | Total Cyanide - 9010; Sulfides - 9030 | TIC - 415.1M | | | | | | |

JRD 3-18-08

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J16DW0 | OTHER SOLID | 3-18-08 | 1410 | X | | X | X | X | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| [signature] | 3/18/08 1430 | JR DeBuigne [signature] | 3-18-08 1430 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| JR DeBuigne [signature] | 3-18-08 1600 | M Stankovich | 3/18/08 1600 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| David St. John [signature] | 3/24/08 1030 | FEDEX | |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| Fed X | 3/25/08 1025 | [signature] | 3/25/08 1025 |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| Relinquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |

SPECIAL INSTRUCTIONS

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

MIKE STANKOVICH UNAVAILABLE TO RELINQUISH SAMPLES FOR SHIPMENT TO LAB DUE TO ILLNESS. SAMPLES REMOVED FROM REF 3A AT 1010 BATELLE BLDG BY D. ST. JOHN ON 3/24/08 FOR SHIPMENT.

Matrix *

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

| | | | |
|---|---|---|---|
| LABORATORY SECTION | Received By: [signature] | Title: Lab Tech | Date/Time: 3/25/08 1025 |
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

WCH-EE-011

0000001313

Lionville Laboratory Incorporated

# SAMPLE RECEIPT CHECKLIST (SRC)

**CLIENT:** TNU Hanford **Date:** 3/25/08

Project/SAF/SOW/Release #:

**LvLI Batch #:** 08031806 **Sample Custodian:** [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

| | | | |
|---|---|---|---|
| 1. Samples Hand Delivered or Shipped? | (Carrier) Fed X | | Airbill # Fed X 7992-9481-7[illegible] |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | ☑ Yes | ☐ No | ☐ No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | ☑ Yes | ☐ No | *Comments:* |
| 4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible? | ☑ Yes | ☐ No | |
| 5. Samples received cooled or ambient? | (Temp) 2° | °C | Cooler # |
| How was the temperature taken? | ☑ IR | ☐ Temp. Blank | ☐ Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | ☑ Yes | ☐ No | |
| 6. Custody seals on sample containers intact, signed and dated? | ☑ Yes | ☐ No | ☐ No Seals |
| 7. COC (Client & LvLI) signed & dated? | ☑ Yes | ☐ No | |
| 8. Sample containers are intact? | ☑ Yes | ☐ No | |
| 9. All samples on COC received? | ☑ Yes | ☐ No | |
| All samples received on COC? | ☑ Yes | ☐ No | |
| 10. All sample label information matches COC? | ☑ Yes | ☐ No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | ☑ Yes | ☐ No | |
| 12. Samples received within hold times? | ☑ Yes | ☐ No | |
| Short holds taken to wet lab? | ☑ Yes | ☐ No | ☐ N/A |
| 13. VOA, TOC, TOX free of headspace? | ☐ Yes | ☐ No | ☑ N/A |
| 14. QC stickers placed on bottles designated by client? | ☐ Yes | ☐ No | ☑ 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.) | ☑ Yes | ☐ No | |
| 16. Project Manager contacted concerning any discrepancies? | ☑ Yes | ☐ No | ☐ N/A |

Person Contacted _____ Date _____

LvLI LIONVILLE LABORATORY INC.

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-033 K1160

RECEIVED
APR 2008

DATE RECEIVED: 03/25/08 LVL LOT # :0803L806

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| J16DW0 | | | | | | |
| SILVER, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SILVER, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SILVER, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ALUMINUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ALUMINUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ALUMINUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ARSENIC, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ARSENIC, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ARSENIC, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| BORON, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| BORON, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| BORON, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| BARIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| BARIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| BARIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| BERYLLIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| BERYLLIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| BERYLLIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| CALCIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| CALCIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| CALCIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| CADMIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| CADMIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| CADMIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| COBALT, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| COBALT, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| COBALT, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| CHROMIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| CHROMIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| CHROMIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| COPPER, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| COPPER, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| COPPER, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| IRON, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| IRON, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-033 K1160

DATE RECEIVED: 03/25/08 LVL LOT # :0803L806

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| IRON, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MERCURY, TOTAL | 001 | SO | 08C0053 | 03/18/08 | 03/27/08 | 03/27/08 |
| MERCURY, TOTAL | 001 REP | SO | 08C0053 | 03/18/08 | 03/27/08 | 03/27/08 |
| MERCURY, TOTAL | 001 MS | SO | 08C0053 | 03/18/08 | 03/27/08 | 03/27/08 |
| POTASSIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| POTASSIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| POTASSIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MAGNESIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MAGNESIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MAGNESIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MANGANESE, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MANGANESE, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MANGANESE, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MOLYBDENUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MOLYBDENUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| MOLYBDENUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SODIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SODIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SODIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| NICKEL, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| NICKEL, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| NICKEL, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| LEAD, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| LEAD, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| LEAD, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ANTIMONY, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ANTIMONY, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ANTIMONY, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SELENIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SELENIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SELENIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SILICON, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SILICON, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| SILICON, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| VANADIUM, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| VANADIUM, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| VANADIUM, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ZINC, TOTAL | 001 | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-033 K1160

DATE RECEIVED: 03/25/08 LVL LOT # :0803L806

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ZINC, TOTAL | 001 REP | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |
| ZINC, TOTAL | 001 MS | SO | 08L0116 | 03/18/08 | 03/26/08 | 03/27/08 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| SILVER, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| ALUMINUM LABORTORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| ALUMINUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| ARSENIC LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| ARSENIC, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| BORON LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| BORON, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| BARIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| BARIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| BERYLLIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| BERYLLIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| CALCIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| CALCIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| CADMIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| CADMIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| COBALT LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| COBALT, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| CHROMIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| CHROMIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| COPPER LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| COPPER, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| IRON LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| IRON, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| MERCURY LABORATORY | LC1 BS | S | 08C0053 | N/A | 03/27/08 | 03/27/08 |
| MERCURY, TOTAL | MB1 | S | 08C0053 | N/A | 03/27/08 | 03/27/08 |
| POTASSIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| POTASSIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| MAGNESIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| MAGNESIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| MANGANESE LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| MANGANESE, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| MOLYBDENUM LABORATOR | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-033 K1160

DATE RECEIVED: 03/25/08 LVL LOT # :0803L806

| CLIENT ID /ANALYSIS | LVL # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| MOLYBDENUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| SODIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| SODIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| NICKEL LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| NICKEL, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| LEAD LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| LEAD, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| ANTIMONY LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| ANTIMONY, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| SELENIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| SELENIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| SILICON LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| SILICON, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| VANADIUM LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| VANADIUM, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| ZINC LABORATORY | LC1 BS | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |
| ZINC, TOTAL | MB1 | S | 08L0116 | N/A | 03/26/08 | 03/27/08 |

LIONVILLE LABORATORY INC.

**Analytical Report**

**Client:** TNU-HANFORD RC-033
**LVL#:** 0803L806
**SDG/SAF#:** K1160/RC-033

**W.O.#:** 11343-606-001-9999-00
**Date Receivd:** 03-25-08

**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 solid sample.

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

   The sample was reported with a 3-fold dilution for ICP metals due to sample matrix. The sample was rerun on a different instrument with a 6-fold dilution for Calcium, Potassium, Sodium, and Magnesium, due to sample matrix and/or high concentrations.

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. The preparation/method blank for 1 analyte was outside 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.

   a). The MB result for Sodium was greater than the Limit of Quantitation (LOQ) {3-10x the (LOD) Limit of Detection} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

7. All ICP Interference Check Standards were within 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 20 pages.

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 67.1%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

9. The matrix spike (MS) recoveries for 5 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

| Sample ID | Element | PDS Concentration (ppb) | PDS % Recovery |
|---|---|---|---|
| J16DW0 | Aluminum | 66,000 | 102.7 |
| | Calcium | 240,000 | 70.7 |
| | Iron | 66,000 | 96.9 |
| | Silicon | 6,300 | 98.2 |
| | Zinc | 300 | 88.7 |

11. The duplicate analyses for 2 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

4/1/08
Date

jjw/m03-306

LIONVILLE LABORATORY INC.

# METALS METHOD GLOSSARY

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

Lot#: 08031806

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A X 3050B __3051 __200.7 __SS17
__Other: _____

## Metals Analysis Methods

| | SW846 | | EPA | | STD MTD | EPA OSWR | USATHAMA |
|---|---|---|---|---|---|---|---|
| Aluminum | X 6010B | | __200.7 | | | | __99 |
| Antimony | X 6010B | __7041 [5] | __200.7 | __204.2 | | | __99 |
| Arsenic | X 6010B | __7060A [5] | __200.7 | __206.2 | __3113B | | __99 |
| Barium | X 6010B | | __200.7 | | | | __99 |
| Beryllium | X 6010B | | __200.7 | | | | __99 |
| Bismuth | __6010B [1] | | __200.7 [1] | | | __1620 | __99 |
| Boron | X 6010B | | __200.7 | | | | __99 |
| Cadmium | X 6010B | __7131A [5] | __200.7 | __213.2 | | | __99 |
| Calcium | X 6010B | | __200.7 | | | | __99 |
| Chromium | X 6010B | __7191 [5] | __200.7 | __218.2 | | | __SS17 |
| Cobalt | X 6010B | | __200.7 | | | | __99 |
| Copper | X 6010B | __7211 [5] | __200.7 | __220.2 | | | __99 |
| Iron | X 6010B | | __200.7 | | | | __99 |
| Lead | X 6010B | __7421 [5] | __200.7 | __239.2 | __3113B | | __99 |
| Lithium | __6010B | __7430 [4] | __200.7 | | | __1620 | __99 |
| Magnesium | X 6010B | | __200.7 | | | | __99 |
| Manganese | X 6010B | | __200.7 | | | | __99 |
| Mercury | __7470A [3] | X 7471A [3] | __245.1 [2] | __245.5 [2] | | | __99 |
| Molybdenum | X 6010B | | __200.7 | | | | __99 |
| Nickel | X 6010B | | __200.7 | | | | __99 |
| Potassium | X 6010B | __7610 [4] | __200.7 | __258.1 [4] | | | __99 |
| Rare Earths | __6010B [1] | | __200.7 [1] | | | __1620 | __99 |
| Selenium | X 6010B | __7740 [5] | __200.7 | __270.2 | __3113B | | __99 |
| Silicon | X 6010B [1] | | __200.7 | | | __1620 | __99 |
| Silica | __6010B | | __200.7 | | | __1620 | __99 |
| Silver | X 6010B | __7761 [5] | __200.7 | __272.2 | | | __99 |
| Sodium | X 6010B | __7770 [4] | __200.7 | __273.1 [4] | | | __99 |
| Strontium | __6010B | | __200.7 | | | | __99 |
| Thallium | __6010B | __7841 [5] | __200.7 | __279.2 | __200.9 | | __99 |
| Tin | __6010B | | __200.7 | | | | __99 |
| Titanium | __6010B | | __200.7 | | | | __99 |
| Uranium | __6010B [1] | | __200.7 [1] | | | __1620 | __99 |
| Vanadium | X 6010B | | __200.7 | | | | __99 |
| Zinc | X 6010B | | __200.7 | | | | __99 |
| Zirconium | __6010B [1] | | __200.7 [1] | | | __1620 | __99 |

Other:_____ Method:_____

L-WI-033/M-03/01

000000007

# 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 03/31/08

CLIENT: TNUHANFORD RC-033 K1160 LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -001 | J16DW0 | Silver, Total | 0.25 u | MG/KG | 0.25 | 3.0 |
| | | Aluminum, Total | 3720 | MG/KG | 10.2 | 3.0 |
| | | Arsenic, Total | 1.3 u | MG/KG | 1.3 | 3.0 |
| | | Boron, Total | 1.3 u | MG/KG | 1.3 | 3.0 |
| | | Barium, Total | 34.2 | MG/KG | 0.25 | 3.0 |
| | | Beryllium, Total | 0.17 | MG/KG | 0.13 | 3.0 |
| | | Calcium, Total | 181000 | MG/KG | 20.3 | 6.0 |
| | | Cadmium, Total | 0.13 u | MG/KG | 0.13 | 3.0 |
| | | Cobalt, Total | 3.8 | MG/KG | 0.51 | 3.0 |
| | | Chromium, Total | 6.0 | MG/KG | 0.51 | 3.0 |
| | | Copper, Total | 8.0 | MG/KG | 0.51 | 3.0 |
| | | Iron, Total | 11100 | MG/KG | 11.4 | 3.0 |
| | | Mercury, Total | 0.009u | MG/KG | 0.009 | 1.0 |
| | | Potassium, Total | 743 | MG/KG | 250 | 6.0 |
| | | Magnesium, Total | 2670 | MG/KG | 18.8 | 6.0 |
| | | Manganese, Total | 245 | MG/KG | 0.10 | 3.0 |
| | | Molybdenum, Total | 0.76 u | MG/KG | 0.76 | 3.0 |
| | | Sodium, Total | 203 | MG/KG | 10.2 | 6.0 |
| | | Nickel, Total | 6.5 | MG/KG | 0.51 | 3.0 |
| | | Lead, Total | 7.5 | MG/KG | 0.76 | 3.0 |
| | | Antimony, Total | 0.76 u | MG/KG | 0.76 | 3.0 |
| | | Selenium, Total | 1.5 u | MG/KG | 1.5 | 3.0 |
| | | Silicon, Total | 377 | MG/KG | 10.2 | 3.0 |
| | | Vanadium, Total | 34.9 | MG/KG | 0.36 | 3.0 |
| | | Zinc, Total | 431 | MG/KG | 1.5 | 3.0 |

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/31/08

CLIENT: TNUHANFORD RC-033 K1160 LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| BLANK1 | 08L0116-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 | 10.9 | 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 | 49.3 u | MG/KG | 49.3 | 1.0 |
| | | Magnesium, Total | 3.7 u | MG/KG | 3.7 | 1.0 |
| | | Manganese, Total | 0.09 | MG/KG | 0.04 | 1.0 |
| | | Molybdenum, Total | 0.30 u | MG/KG | 0.30 | 1.0 |
| | | Sodium, Total | 10.3 | 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 | 08C0053-MB1 | Mercury, Total | 0.01 u | MG/KG | 0.01 | 1.0 |

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/31/08

CLIENT: TNUHANFORD RC-033 K1160 LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV | DILUTION FACTOR(SPK) |
|---|---|---|---|---|---|---|---|
| -001 | J16DW0 | Silver, Total | 4.0 | 0.25u | 4.2 | 95.2 | 3.0 |
| | | Aluminum, Total | 4640 | 3720 | 169 | 540.5* | 3.0 |
| | | Arsenic, Total | 158 | 1.3 u | 169 | 93.3 | 3.0 |
| | | Boron, Total | 82.4 | 1.3 u | 84.7 | 97.3 | 3.0 |
| | | Barium, Total | 201 | 34.2 | 169 | 98.7 | 3.0 |
| | | Beryllium, Total | 4.2 | 0.17 | 4.2 | 96.1 | 3.0 |
| | | Calcium, Total | 146000 | 181000 | 2120 | -1600. * | 6.0 |
| | | Cadmium, Total | 4.1 | 0.13u | 4.2 | 97.6 | 3.0 |
| | | Cobalt, Total | 44.2 | 3.8 | 42.3 | 95.5 | 3.0 |
| | | Chromium, Total | 22.3 | 6.0 | 16.9 | 96.4 | 3.0 |
| | | Copper, Total | 28.1 | 8.0 | 21.2 | 94.8 | 3.0 |
| | | Iron, Total | 13300 | 11100 | 84.7 | 2584 * | 3.0 |
| | | Mercury, Total | 0.16 | 0.00u | 0.15 | 105.4 | 1.0 |
| | | Potassium, Total | 2690 | 743 | 2120 | 91.7 | 6.0 |
| | | Magnesium, Total | 4760 | 2670 | 2120 | 98.6 | 6.0 |
| | | Manganese, Total | 292 | 245 | 42.3 | 111.3* | 3.0 |
| | | Molybdenum, Total | 76.5 | 0.76u | 84.7 | 90.3 | 3.0 |
| | | Sodium, Total | 2280 | 203 | 2120 | 98.1 | 6.0 |
| | | Nickel, Total | 46.1 | 6.5 | 42.3 | 93.6 | 3.0 |
| | | Lead, Total | 48.6 | 7.5 | 42.3 | 97.2 | 3.0 |
| | | Antimony, Total | 39.9 | 0.76u | 42.3 | 94.3 | 3.0 |
| | | Selenium, Total | 138 | 1.5 u | 169 | 81.8 | 3.0 |
| | | Silicon, Total | 579 | 377 | 84.7 | 238.7* | 3.0 |
| | | Vanadium, Total | 77.2 | 34.9 | 42.3 | 100 | 3.0 |
| | | Zinc, Total | 624 | 431 | 42.3 | 457.0* | 3.0 |

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/31/08

CLIENT: TNUHANFORD RC-033 K1160 LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | RPD | DILUTION FACTOR(REP) |
|---|---|---|---|---|---|---|
| -001REP | J16DW0 | Silver, Total | 0.25u | 0.30u | NC | 3.0 |
| | | Aluminum, Total | 3720 | 4020 | 7.7 | 3.0 |
| | | Arsenic, Total | 1.3 u | 1.5 u | NC | 3.0 |
| | | Boron, Total | 1.3 u | 1.5 u | NC | 3.0 |
| | | Barium, Total | 34.2 | 37.0 | 7.9 | 3.0 |
| | | Beryllium, Total | 0.17 | 0.17 | 4.2 | 3.0 |
| | | Calcium, Total | 181000 | 159000 | 12.9 | 6.0 |
| | | Cadmium, Total | 0.13u | 0.15u | NC | 3.0 |
| | | Cobalt, Total | 3.8 | 4.2 | 10 | 3.0 |
| | | Chromium, Total | 6.0 | 6.2 | 3.3 | 3.0 |
| | | Copper, Total | 8.0 | 6.4 | 22.2 | 3.0 |
| | | Iron, Total | 11100 | 12100 | 8.3 | 3.0 |
| | | Mercury, Total | 0.00u | 0.00u | NC | 1.0 |
| | | Potassium, Total | 743 | 852 | 13.6 | 6.0 |
| | | Magnesium, Total | 2670 | 2770 | 3.7 | 6.0 |
| | | Manganese, Total | 245 | 250 | 2.3 | 3.0 |
| | | Molybdenum, Total | 0.76u | 0.89u | NC | 3.0 |
| | | Sodium, Total | 203 | 215 | 5.8 | 6.0 |
| | | Nickel, Total | 6.5 | 6.7 | 3.0 | 3.0 |
| | | Lead, Total | 7.5 | 8.8 | 16.0 | 3.0 |
| | | Antimony, Total | 0.76u | 0.89u | NC | 3.0 |
| | | Selenium, Total | 1.5 u | 1.8 u | NC | 3.0 |
| | | Silicon, Total | 377 | 450 | 17.6 | 3.0 |
| | | Vanadium, Total | 34.9 | 35.2 | 0.86 | 3.0 |
| | | Zinc, Total | 431 | 663 | 42.5 | 3.0 |

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/31/08

CLIENT: TNUHANFORD RC-033 K1160

LVL LOT #: 0803L806

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

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 08L0116-LC1 | Silver, LCS | 47.0 | 50.0 | MG/KG | 94.0 |
| | | Aluminum, LCS | 478 | 500 | MG/KG | 95.5 |
| | | Arsenic, LCS | 932 | 1000 | MG/KG | 93.2 |
| | | Boron, LCS | 468 | 500 | MG/KG | 93.6 |
| | | Barium, LCS | 470 | 500 | MG/KG | 94.1 |
| | | Beryllium, LCS | 24.2 | 25.0 | MG/KG | 96.8 |
| | | Calcium, LCS | 2260 | 2500 | MG/KG | 90.4 |
| | | Cadmium, LCS | 24.2 | 25.0 | MG/KG | 96.8 |
| | | Cobalt, LCS | 242 | 250 | MG/KG | 96.8 |
| | | Chromium, LCS | 48.1 | 50.0 | MG/KG | 96.2 |
| | | Copper, LCS | 118 | 125 | MG/KG | 94.8 |
| | | Iron, LCS | 484 | 500 | MG/KG | 96.7 |
| | | Potassium, LCS | 2270 | 2500 | MG/KG | 90.8 |
| | | Magnesium, LCS | 2230 | 2500 | MG/KG | 89.0 |
| | | Manganese, LCS | 72.3 | 75.0 | MG/KG | 96.4 |
| | | Molybdenum, LCS | 466 | 500 | MG/KG | 93.2 |
| | | Sodium, LCS | 2290 | 2500 | MG/KG | 91.7 |
| | | Nickel, LCS | 192 | 200 | MG/KG | 96.1 |
| | | Lead, LCS | 242 | 250 | MG/KG | 96.7 |
| | | Antimony, LCS | 280 | 300 | MG/KG | 93.2 |
| | | Selenium, LCS | 911 | 1000 | MG/KG | 91.1 |
| | | Silicon, LCS | 336 | 500 | MG/KG | 67.1 |
| | | Vanadium, LCS | 235 | 250 | MG/KG | 94.0 |
| | | Zinc, LCS | 95.9 | 100 | MG/KG | 95.9 |
| LCS1 | 08C0053-LC1 | Mercury, LCS | 4.7 | 4.7 | MG/KG | 99.1 |

Lionville Laboratory Incorporated

# MERCURY PREPARATION

Logbook # 422

Analyst: TCB
Date 3/27/08
Start Time/Temp: 1155 / 94°
End Time/Temp: 1235 / 95°

Instrument ID HG3.1
Balance #: B29 /NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 0860053
Worksheet: HG032701
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 Inital/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 | L53 | | | 10mL | 50mL | |
| 0.2 µg/L | JS | 0.100 | | | | |
| 1.0 | 3T | 0.500 | | | | |
| 2.0 | Gd | 1.000 | | | | |
| 5.0 | PC | 2.500 | | | | |
| 10.0 | PO | 5.000 | | | | |
| ICV | 194 | 0.125 | 2.5 | | | |
| CCV | HT | 0.250 | 5.0 | | | |
| ICB/CCB | SE | | | | | 9.50L |
| MB1 | 700 | | | 0.30 | | PBS153 100.0 |
| LC1 | A94 | * | * | 0.33 | | LCSS153 ⊥ |
| 0803L755-001 | B14 | | | 0.33 | | 98.6L |
| 001R | 297 | | | 0.31 | | ⊥ |
| 001S | AIR | 0.500 | 1.0 | 0.36 | | |
| 002 | J1 | | | 0.31 | | 97.92 |
| 0803L762-001 | A1 | | | 0.33 | | 97.92 |
| 002 | A9 | | | 0.38 | | 97.26 |
| 003 | TR | | | 0.37 | | 96.72 |
| 0803L793-001 | X8 | | | 0.32 | | 79.84 |
| 001R | K35 | | | 0.35 | | ⊥ |
| 001S | M1 | 0.500 | 1.0 | 0.36 | | |
| 002 | 183 | | | 0.35 | | 90.06 |
| 003 | 71L | | | 0.32 | | 90.71 |
| 004 | 114 | | | 0.36 | | 93.42 |
| 005 | 500 | | | 0.37 | | 88.25 |
| 0803L806-001 | P18 | | | 0.34 | | 100.00 |
| 001R | AHA | | | 0.39 | | ⊥ |

| Standard: | ID | Prep Date/Time |
|---|---|---|
| CAL/MS | R1 6072-75-07B | 3/27/08 1000 |
| ICV/CCV/LCS | US 6072-75-08A | ⊥ |

Reviewed By/Date: [signature] 3/31/08

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

Lionville Laboratory Incorporated

# MERCURY PREPARATION

Logbook # 422

Analyst: TLB
Date 3/27/08
Start Time/Temp:
End Time/Temp: see page 48

Instrument ID HG3.1
Balance #: B29 /NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0053
Worksheet: HG032701
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 Inital/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. |
|---|---|---|---|---|---|---|
| 0803L806-001S | 508 | 0.500 | 1.0 | 0.34 | 50mL | 100.0 |
| 0803L807-001 | PT | | | 0.37 | ↓ | ↓ |
| 001R | 3VG | | | 0.33 | | |
| 001S | DR | 0.025 | 5.0 | 0.37 | | |

TLB 3/27/08

| Standard: | ID | Prep Date/Time |
|---|---|---|
| ICAL/MS | | |
| ICV/CCV/LCS | see page 047 | |

Reviewed By/Date: [signature] 3/31/08

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

**Lionville Laboratory Incorporated** Logbook #: 440

# SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0116
Date/Time Initiated: 3/26/08 1420
Date/Time Completed: " 1730
Analyst(s): TED
Matrix: (Soil) Water Other:
Instr. Type: AA (CP)
Parameters: See packlog

(Digested) Undigested (circle one)
~~Balance #:~~ B29
Balance Cal Verif: (Y) NA
Hot Plate Temp: 93°

Method: SW (circle)
3005A
3010A
3015
3020A
7060A (As/Se)
7760A (Ag)
(3050B)
3051
CLP ILMO3.0
ILMO4.0

DW 200.7 (1994)
200.9
3113B
MCAWW 200.7 (1982)
200 (AA)
206.2 (As/Se)
SM 3030C (NC)
Other

TNU

| COC Batch # | Spike Vol(s) (mL) | Initial Wt/Vol (g/mL) | Final Vol (mL) | pH <2 | Type: To/So/TC | Texture | Color/Appearance | Artifact | Turb |
|---|---|---|---|---|---|---|---|---|---|
| 0803L793-001 | | 1.10 | 100mL | NA | TOT | fine | BROWN/mud | NA | NA |
| 001R | | 1.11 | | | | | | | |
| * 001S | 1.0 | 1.12 | | | | | | | |
| 002 | | 1.05 | | | | | BROWN/SOIL | | |
| 003 | | 1.06 | | | | | | | |
| 004 | | 1.09 | | | | | | | |
| 005 | | 1.05 | | | | | | | |
| 0803L699-001 | | 1.09 | | | | | GRAY/Sandy | | |
| 001R | | 1.07 | | | | | | | |
| 001S | 1.0 | 1.14 | | | | | | | |
| 002 | | 1.12 | | | | | | | |
| 003 | | 1.31 | | | | | GRAY/Wet SAND | | |
| 0803L805-001 | | 1.21 | | | | | BROWN/SAND | | |
| 001R | | 1.18 | | | | | | | |
| 001S | 1.0 | 1.21 | | | | | | | |
| 002 | | 1.35 | | | | | GRAY/Sandy | | |
| 003 | | 1.18 | | | | | | | |
| 004 | | 1.23 | | | | | | | |
| 005 | | 1.07 | | | | | | | |
| 006 | | 1.10 | | | | | | | |
| 0803L806-001 | | 1.18 | | | | COARSE | White/rubble | | |
| 001R | | 1.01 | | | | | | | |
| 001S | 1.0 | 1.18 | | | | | | | |
| 0803L807-001 | | 1.13 | | | | SOFT | DRY/Abs. cloth | | |

See Next Page (019)

Spiking IDs:
MS #: 8100-04-01
02
03
6072-078-07
LCS #: 08
09
10
11

Reagent IDs:
$HNO_3$ E46025
HCL E45047
$H_2O_2$ E44A06
1:1 $HNO_3$ 9789-070-06
1:1 HCL ~~9789 on 3/26/08~~

File ID#: IC011601, IC011602, IC011603

LIMS Transfer: (Y) N Updated

Data Review By/Date: PMP, 03/27/08

* Also spiked w/ 0.250mL of Bi 6072-76-06, P- 6072-076-07, U- 6072-078-01 & Zr 6072-077-10

**Lionville Laboratory Incorporated** Logbook #: 440

# SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0116
Date/Time Initiated: 3/26/08 1420
Date/Time Completed:
Analyst(s): TEB
Matrix: (Soil) Water Other:
Instr. Type: AA (ICP)
Parameters: See backing

(Digested) / Undigested (circle one)
Balance #: B29
Balance Cal Verif: (Y) NA
Hot Plate Temp: 93°

Method: SW (circle)
3005A
3010A
3015
3020A
7060A (As/Se)
7760A (Ag)
(3050B)
3051
CLP ILMO3.0
ILMO4.0

DW 200.7 (1994)
200.9
3113B
MCAWW 200.7 (1982)
200 (AA)
206.2 (As/Se)
SM 3030C (NC)
Other

TNL

| COC Batch # | Spike Vol(s) (mL) | Initial Wt/Vol (g/mL) | Final Vol (mL) | pH <2 | Type: To/So/TC | Texture | Color/Appearance | Artifact | Turb |
|---|---|---|---|---|---|---|---|---|---|
| 08031807-001R | | 1.11 | 100mL | NA | TOT | Soft | DIRTY w/ cloth | NA | NA |
| 001S | 1.0 | 1.14 | | | | | | | |
| 08L0116-MB1 | | 1.0 | | | | NA | NA | | |
| * LC1 | 1.0 | 1.0 | | | | | | | |

TEB 3/26/08

CUT from pg. 18

Spiking IDs:
MS #:
LCS #: see page 018

Reagent IDs:
$HNO_3$
HCL
$H_2O_2$
1:1 $HNO_3$
1:1 HCL
see page 018

File ID#: IC011601, IC011602, IC011603
LIMS Transfer: (Y) N Update
Data Review By/Date: PMP, 03/27/08

nville Laboratory Use Only

8031806

# Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI

000000018

nt TNU Hanford RC-033

Final Proj. Sampling Date

ect# 11343-606-001-9999-00

ect Contact/Phone#

nville Laboratory Project Manager O Johnson

SW846 Del STD TAT 3 DAYS

e Rec'd 3/20/08 Date Due 3-28-08

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Refrigerator # | | | | | | | | A | B→ | C | D | | | | | |
| | #/Type Container | Liquid / Solid | | | | | | | 1gb | 1gL | 1gL | 1gL | | | | | |
| | Volume | | | | | | | | 60mL | 60mL | 60mL | 60mL | | | | | |
| | Preservatives | | | | | | | | | | | | | | | | |
| | ANALYSES REQUESTED → | | ORGANIC | | | | | | INORG | | | | | | | | |
| | | | VOA | BNA | Pest/PCB | Herb | | | Metal | CN | | | | | | | |

| RIX | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | Lionville Laboratory Use Only | | | | | | | ICP + Hg | TOTAL CN 9010 | Sulfides 9030 | ICP Anions IPH | TIC 415.1M | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Soil, Sediment, Solid, Sludge, Water, Oil, Air, Drum Solids, Drum Liquids, EP/TCLP Leachate, Wipe, Other, Fish | 001 | J16DW0 | | | SO | 3/18/08 | 1410 | | | | | | | | X | X | X | X | X | | | |

ecial Instructions: Run matrix QC

: = ICBR, ICCL, ICSO4, ICPO4, ICFL
ICNO2, ICNO3

Temp 20C

:P = HSL+B, Mo, Si NOTL

Special Instructions:

1.
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [signature] | 3/20 | 1005 |
| | | | |

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

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

| Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-033-051 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| ollector<br>T. Welch-Koelling | Company Contact<br>J R DeBuigne<br>Telephone No.<br>528-6409 | Project Coordinator<br>KESSNER, JH | Price Code<br>4A<br>Data Turnaround<br>3DAY |
| oject Designation<br>100-F Remaining Sites Burial Grounds - Other Solid Quick T | Sampling Location<br>118-F-6 Garbage Can/White Powder | SAF No.<br>RC-033 | |
| e Chest No.<br>AFS-04-123 | Field Logbook No.<br>EFL-1174-4<br>COA<br>R118F62000 | Method of Shipment<br>Fed Ex | |
| ipped To<br>EBERLINE SERVICES / CONVILLE | Offsite Property No.<br>A080201 | Bill of Lading/Air Bill No.<br>See OSPC<br>7992 9481 7262 | |

'OSSIBLE SAMPLE HAZARDS/REMARKS
/A

pecial Handling and/or Storage
/A

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | Cool 4C | Cool 4C | Cool 4C | | | | | | |
| Type of Container | aG | aG | aG | aG | aG | | | | | | |
| No. of Container(s) | 1 | 1 | 1 | 1 | 1 | | | | | | |
| Volume | 60mL | 60mL | 60mL | 60mL | 60ml | | | | | | |
| SAMPLE ANALYSIS | See item (1) in Special Instructions. | Semi-VOA - 8270A (TCL) | IC Anions - 300.0; pH - 150.1 | Total Cyanide - 9010; Sulfides - 9030 | TIC - 415.1M | | | | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6DW0 | OTHER SOLID | 3-18-08 | 1410 | X | | X | X | X | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | | Sign/Print Names | |
|---|---|---|---|
| inquished By/Removed From | Date/Time 3/18/08 1430 | Received By/Stored In | Date/Time 1430 3-18-08 |
| inquished By/Removed From | Date/Time 1600 3-18-08 | Received By/Stored In | Date/Time 1600 3/18/08 |
| inquished By/Removed From | Date/Time 3/24/08 1030 | Received By/Stored In FEDEX | Date/Time |
| inquished By/Removed From | Date/Time 3/24/08 1024 | Received By/Stored In | Date/Time 3/24/08 1024 |
| inquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |
| inquished By/Removed From | Date/Time | Received By/Stored In | Date/Time |

SPECIAL INSTRUCTIONS

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

MIKE STANKOVICH UNAVAILABLE TO RELINQUISH SAMPLES FOR SHIPMENT TO LAB DUE TO ILLNESS. SAMPLES REMOVED FROM REF 3A AT 1010 BATELLE BLVD BY D. ST. JOHN ON 3/24/08 FOR SHIPMENT.

Matrix *
S=Soil
SB=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

| | | | |
|---|---|---|---|
| ABORATORY SECTION | Received By | Title Lab Tech | Date/Time 3/25/08 1025 |
| NAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

CH-EE-011

0000000019

Lionville Laboratory Incorporated

# SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU Hanford  Date: 3/25/08

Project/SAF/SOW/Release #:

LvLI Batch #: 08031806  Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

| | | | |
|---|---|---|---|
| 1. Samples Hand Delivered or Shipped? | (Carrier) Fed X | | Airbill # Fed X 7992-9481-72 |
| 2. Custody Seals on coolers or shipping containers intact, signed & dated? | ☑ Yes | ☐ No | ☐ No Seals |
| 3. Outside of coolers or shipping containers are free from damage? | ☑ Yes | ☐ No | *Comments:* |
| 4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible? | ☑ Yes | ☐ No | |
| 5. Samples received cooled or ambient? | (Temp) 2° | °C | Cooler # |
| How was the temperature taken? | ☑ IR | ☐ Temp. Blank | ☐ Other (Specify): |
| Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) | ☑ Yes | ☐ No | |
| 6. Custody seals on sample containers intact, signed and dated? | ☑ Yes | ☐ No | ☐ No Seals |
| 7. COC (Client & LvLI) signed & dated? | ☑ Yes | ☐ No | |
| 8. Sample containers are intact? | ☑ Yes | ☐ No | |
| 9. All samples on COC received? | ☑ Yes | ☐ No | |
| All samples received on COC? | ☑ Yes | ☐ No | |
| 10. All sample label information matches COC? | ☑ Yes | ☐ No | |
| 11. Samples properly preserved? (If #5 is no, then this is no.) | ☑ Yes | ☐ No | |
| 12. Samples received within hold times? | ☑ Yes | ☐ No | |
| Short holds taken to wet lab? | ☑ Yes | ☐ No | ☐ N/A |
| 13. VOA, TOC, TOX free of headspace? | ☐ Yes | ☐ No | ☑ N/A |
| 14. QC stickers placed on bottles designated by client? | ☐ Yes | ☐ No | ☑ 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.) | ☑ Yes | ☐ No | |
| 16. Project Manager contacted concerning any discrepancies? | ☑ Yes | ☐ No | ☐ N/A |

Person Contacted _____  Date _____

LvLI LIONVILLE LABORATORY INC.