H0502-TMA/RECRA

RECRA ENVIRONMENTAL INC.

Chemical and Environmental Measurement Information

**Recra LabNet Philadelphia**
**Analytical Report**

**Client :** TNU-HANFORD B99-078
**RFW# :** 9908L863
**SDG/SAF# :** B99-078/H0502

**W.O.# :** 10985-001-001-9999-00
**Date Received:** 08-25-99

RECEIVED JAN 18 2000 EDMC

**METALS CASE NARRATIVE**

1. This narrative covers the analyses of 8 soil samples.

2. Samples were prepared and analyzed in accordance with methods checked on the attached glossary.

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

4. All cooler temperatures have been recorded on the Chain of Custody.

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

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

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

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

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

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

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

| Sample ID | Element | PDS Concentration (ppb) | PDS % Recovery |
|---|---|---|---|
| B0W5L0 | Antimony | 100 | 106.4 |

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 027 pages.

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-9-99
Date

mld/m08-863

# METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9908L863

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

## Metals Analysis Methods

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

Other:_____ Method:_____



L-WI-033/M-03/98

# 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, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. 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, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -001 | B0W5L0 | Silver, Total | 0.09 u | MG/KG | 0.09 | 1.0 |
| | | Arsenic, Total | 2.9 | MG/KG | 0.30 | 1.0 |
| | | Barium, Total | 75.3 | MG/KG | 0.03 | 1.0 |
| | | Beryllium, Total | 0.69 | MG/KG | 0.009 | 1.0 |
| | | Cadmium, Total | 0.03 u | MG/KG | 0.03 | 1.0 |
| | | Chromium, Total | 7.1 | MG/KG | 0.07 | 1.0 |
| | | Copper, Total | 16.4 | MG/KG | 0.11 | 1.0 |
| | | Mercury, Total | 0.01 u | MG/KG | 0.01 | 1.0 |
| | | Nickel, Total | 8.7 | MG/KG | 0.11 | 1.0 |
| | | Lead, Total | 3.9 | MG/KG | 0.19 | 1.0 |
| | | Antimony, Total | 0.23 u | MG/KG | 0.23 | 1.0 |
| | | Selenium, Total | 0.34 u | MG/KG | 0.34 | 1.0 |
| | | Thallium, Total | 0.49 u | MG/KG | 0.49 | 1.0 |
| | | Vanadium, Total | 51.3 | MG/KG | 0.06 | 1.0 |
| | | Zinc, Total | 44.8 | MG/KG | 0.07 | 1.0 |
| -002 | B0W5L2 | Silver, Total | 0.08 u | MG/KG | 0.08 | 1.0 |
| | | Arsenic, Total | 2.6 | MG/KG | 0.25 | 1.0 |
| | | Barium, Total | 63.0 | MG/KG | 0.02 | 1.0 |
| | | Beryllium, Total | 0.74 | MG/KG | 0.008 | 1.0 |
| | | Cadmium, Total | 0.02 u | MG/KG | 0.02 | 1.0 |
| | | Chromium, Total | 5.2 | MG/KG | 0.06 | 1.0 |
| | | Copper, Total | 16.2 | MG/KG | 0.09 | 1.0 |
| | | Mercury, Total | 0.01 u | MG/KG | 0.01 | 1.0 |
| | | Nickel, Total | 7.1 | MG/KG | 0.09 | 1.0 |
| | | Lead, Total | 3.3 | MG/KG | 0.16 | 1.0 |
| | | Antimony, Total | 0.19 u | MG/KG | 0.19 | 1.0 |
| | | Selenium, Total | 0.28 u | MG/KG | 0.28 | 1.0 |
| | | Thallium, Total | 0.51 | MG/KG | 0.41 | 1.0 |
| | | Vanadium, Total | 54.1 | MG/KG | 0.05 | 1.0 |
| | | Zinc, Total | 40.6 | MG/KG | 0.06 | 1.0 |

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INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -003 | B0W5K4 | Silver, Total | 0.08 u | MG/KG | 0.08 | 1.0 |
| | | Arsenic, Total | 3.4 | MG/KG | 0.27 | 1.0 |
| | | Barium, Total | 77.2 | MG/KG | 0.02 | 1.0 |
| | | Beryllium, Total | 0.63 | MG/KG | 0.008 | 1.0 |
| | | Cadmium, Total | 0.02 u | MG/KG | 0.02 | 1.0 |
| | | Chromium, Total | 10.4 | MG/KG | 0.07 | 1.0 |
| | | Copper, Total | 12.0 | MG/KG | 0.1 | 1.0 |
| | | Mercury, Total | 0.02 u | MG/KG | 0.02 | 1.0 |
| | | Nickel, Total | 10.1 | MG/KG | 0.1 | 1.0 |
| | | Lead, Total | 5.0 | MG/KG | 0.17 | 1.0 |
| | | Antimony, Total | 0.20 u | MG/KG | 0.20 | 1.0 |
| | | Selenium, Total | 0.30 u | MG/KG | 0.30 | 1.0 |
| | | Thallium, Total | 0.56 | MG/KG | 0.43 | 1.0 |
| | | Vanadium, Total | 45.8 | MG/KG | 0.05 | 1.0 |
| | | Zinc, Total | 40.0 | MG/KG | 0.07 | 1.0 |
| -004 | B0W5K5 | Silver, Total | 0.1 u | MG/KG | 0.1 | 1.0 |
| | | Arsenic, Total | 33.8 | MG/KG | 0.33 | 1.0 |
| | | Barium, Total | 129 | MG/KG | 0.03 | 1.0 |
| | | Beryllium, Total | 0.91 | MG/KG | 0.01 | 1.0 |
| | | Cadmium, Total | 0.03 u | MG/KG | 0.03 | 1.0 |
| | | Chromium, Total | 15.7 | MG/KG | 0.08 | 1.0 |
| | | Copper, Total | 22.7 | MG/KG | 0.12 | 1.0 |
| | | Mercury, Total | 0.02 u | MG/KG | 0.02 | 1.0 |
| | | Nickel, Total | 15.1 | MG/KG | 0.12 | 1.0 |
| | | Lead, Total | 12.3 | MG/KG | 0.21 | 1.0 |
| | | Antimony, Total | 0.25 u | MG/KG | 0.25 | 1.0 |
| | | Selenium, Total | 0.37 u | MG/KG | 0.37 | 1.0 |
| | | Thallium, Total | 0.53 u | MG/KG | 0.53 | 1.0 |
| | | Vanadium, Total | 55.2 | MG/KG | 0.06 | 1.0 |
| | | Zinc, Total | 59.1 | MG/KG | 0.08 | 1.0 |

006

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INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -005 | B0W5K6 | Silver, Total | 0.09 u | MG/KG | 0.09 | 1.0 |
| | | Arsenic, Total | 2.9 | MG/KG | 0.29 | 1.0 |
| | | Barium, Total | 72.2 | MG/KG | 0.03 | 1.0 |
| | | Beryllium, Total | 0.67 | MG/KG | 0.009 | 1.0 |
| | | Cadmium, Total | 0.03 u | MG/KG | 0.03 | 1.0 |
| | | Chromium, Total | 8.8 | MG/KG | 0.07 | 1.0 |
| | | Copper, Total | 13.5 | MG/KG | 0.10 | 1.0 |
| | | Mercury, Total | 0.02 u | MG/KG | 0.02 | 1.0 |
| | | Nickel, Total | 9.9 | MG/KG | 0.10 | 1.0 |
| | | Lead, Total | 5.0 | MG/KG | 0.18 | 1.0 |
| | | Antimony, Total | 0.22 u | MG/KG | 0.22 | 1.0 |
| | | Selenium, Total | 0.32 u | MG/KG | 0.32 | 1.0 |
| | | Thallium, Total | 0.46 u | MG/KG | 0.46 | 1.0 |
| | | Vanadium, Total | 62.0 | MG/KG | 0.05 | 1.0 |
| | | Zinc, Total | 47.5 | MG/KG | 0.07 | 1.0 |
| -006 | B0W5K7 | Silver, Total | 0.09 u | MG/KG | 0.09 | 1.0 |
| | | Arsenic, Total | 7.3 | MG/KG | 0.29 | 1.0 |
| | | Barium, Total | 87.7 | MG/KG | 0.03 | 1.0 |
| | | Beryllium, Total | 0.76 | MG/KG | 0.009 | 1.0 |
| | | Cadmium, Total | 0.03 u | MG/KG | 0.03 | 1.0 |
| | | Chromium, Total | 11.0 | MG/KG | 0.07 | 1.0 |
| | | Copper, Total | 14.7 | MG/KG | 0.11 | 1.0 |
| | | Mercury, Total | 0.02 u | MG/KG | 0.02 | 1.0 |
| | | Nickel, Total | 11.6 | MG/KG | 0.11 | 1.0 |
| | | Lead, Total | 7.3 | MG/KG | 0.19 | 1.0 |
| | | Antimony, Total | 0.22 u | MG/KG | 0.22 | 1.0 |
| | | Selenium, Total | 0.33 u | MG/KG | 0.33 | 1.0 |
| | | Thallium, Total | 0.71 | MG/KG | 0.47 | 1.0 |
| | | Vanadium, Total | 50.1 | MG/KG | 0.05 | 1.0 |
| | | Zinc, Total | 46.8 | MG/KG | 0.07 | 1.0 |

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INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| -007 | B0W5K8 | Silver, Total | 0.1 u | MG/KG | 0.1 | 1.0 |
| | | Arsenic, Total | 9.6 | MG/KG | 0.32 | 1.0 |
| | | Barium, Total | 89.5 | MG/KG | 0.03 | 1.0 |
| | | Beryllium, Total | 0.91 | MG/KG | 0.01 | 1.0 |
| | | Cadmium, Total | 0.03 u | MG/KG | 0.03 | 1.0 |
| | | Chromium, Total | 10.2 | MG/KG | 0.08 | 1.0 |
| | | Copper, Total | 17.2 | MG/KG | 0.12 | 1.0 |
| | | Mercury, Total | 0.02 u | MG/KG | 0.02 | 1.0 |
| | | Nickel, Total | 11.9 | MG/KG | 0.12 | 1.0 |
| | | Lead, Total | 6.7 | MG/KG | 0.20 | 1.0 |
| | | Antimony, Total | 0.24 u | MG/KG | 0.24 | 1.0 |
| | | Selenium, Total | 0.36 u | MG/KG | 0.36 | 1.0 |
| | | Thallium, Total | 0.62 | MG/KG | 0.52 | 1.0 |
| | | Vanadium, Total | 63.9 | MG/KG | 0.06 | 1.0 |
| | | Zinc, Total | 55.6 | MG/KG | 0.08 | 1.0 |
| -008 | B0W5K9 | Silver, Total | 0.08 u | MG/KG | 0.08 | 1.0 |
| | | Arsenic, Total | 5.9 | MG/KG | 0.27 | 1.0 |
| | | Barium, Total | 74.8 | MG/KG | 0.02 | 1.0 |
| | | Beryllium, Total | 0.71 | MG/KG | 0.008 | 1.0 |
| | | Cadmium, Total | 0.02 u | MG/KG | 0.02 | 1.0 |
| | | Chromium, Total | 9.0 | MG/KG | 0.07 | 1.0 |
| | | Copper, Total | 13.8 | MG/KG | 0.1 | 1.0 |
| | | Mercury, Total | 0.01 u | MG/KG | 0.01 | 1.0 |
| | | Nickel, Total | 10.1 | MG/KG | 0.1 | 1.0 |
| | | Lead, Total | 5.6 | MG/KG | 0.17 | 1.0 |
| | | Antimony, Total | 0.21 u | MG/KG | 0.21 | 1.0 |
| | | Selenium, Total | 0.32 | MG/KG | 0.30 | 1.0 |
| | | Thallium, Total | 0.52 | MG/KG | 0.44 | 1.0 |
| | | Vanadium, Total | 52.2 | MG/KG | 0.05 | 1.0 |
| | | Zinc, Total | 45.3 | MG/KG | 0.07 | 1.0 |

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT | DILUTION FACTOR |
|---|---|---|---|---|---|---|
| BLANK1 | 99L0601-MB1 | Silver, Total | 0.10 u | MG/KG | 0.10 | 1.0 |
| | | Arsenic, Total | 0.33 u | MG/KG | 0.33 | 1.0 |
| | | Barium, Total | 0.19 | MG/KG | 0.03 | 1.0 |
| | | Beryllium, Total | 0.01 u | MG/KG | 0.01 | 1.0 |
| | | Cadmium, Total | 0.03 u | MG/KG | 0.03 | 1.0 |
| | | Chromium, Total | 0.08 u | MG/KG | 0.08 | 1.0 |
| | | Copper, Total | 0.12 u | MG/KG | 0.12 | 1.0 |
| | | Nickel, Total | 0.12 u | MG/KG | 0.12 | 1.0 |
| | | Lead, Total | 0.21 u | MG/KG | 0.21 | 1.0 |
| | | Antimony, Total | 0.25 u | MG/KG | 0.25 | 1.0 |
| | | Selenium, Total | 0.37 u | MG/KG | 0.37 | 1.0 |
| | | Thallium, Total | 0.53 u | MG/KG | 0.53 | 1.0 |
| | | Vanadium, Total | 0.06 u | MG/KG | 0.06 | 1.0 |
| | | Zinc, Total | 0.23 | MG/KG | 0.08 | 1.0 |
| BLANK1 | 99C0254-MB1 | Mercury, Total | 0.02 u | MG/KG | 0.02 | 1.0 |

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L863

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV | DILUTION FACTOR(SPK) |
|---|---|---|---|---|---|---|---|
| -001 | B0W5L0 | Silver, Total | 4.1 | 0.09u | 4.4 | 93.2 | 1.0 |
| | | Arsenic, Total | 171 | 2.9 | 176 | 95.8 | 1.0 |
| | | Barium, Total | 238 | 75.3 | 176 | 92.8 | 1.0 |
| | | Beryllium, Total | 4.9 | 0.69 | 4.4 | 95.7 | 1.0 |
| | | Cadmium, Total | 4.1 | 0.03u | 4.4 | 93.2 | 1.0 |
| | | Chromium, Total | 23.4 | 7.1 | 17.6 | 92.6 | 1.0 |
| | | Copper, Total | 35.2 | 16.4 | 22.0 | 85.5 | 1.0 |
| | | Mercury, Total | 0.13 | 0.01u | 0.13 | 99.3 | 1.0 |
| | | Nickel, Total | 48.4 | 8.7 | 43.9 | 90.4 | 1.0 |
| | | Lead, Total | 45.2 | 3.9 | 43.9 | 94.1 | 1.0 |
| | | Antimony, Total | 12.1 | 0.23u | 43.9 | 27.6 | 1.0 |
| | | Selenium, Total | 165 | 0.34u | 176 | 93.9 | 1.0 |
| | | Thallium, Total | 169 | 0.49u | 176 | 96.4 | 1.0 |
| | | Vanadium, Total | 92.6 | 51.3 | 43.9 | 94.1 | 1.0 |
| | | Zinc, Total | 83.1 | 44.8 | 43.9 | 87.2 | 1.0 |

010

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | RPD | DILUTION FACTOR(REP) |
|---|---|---|---|---|---|---|
| -001REP | B0W5L0 | Silver, Total | 0.09u | 0.08u | NC | 1.0 |
| | | Arsenic, Total | 2.9 | 1.8 | 46.8 | 1.0 |
| | | Barium, Total | 75.3 | 72.4 | 3.9 | 1.0 |
| | | Beryllium, Total | 0.69 | 0.57 | 18.2 | 1.0 |
| | | Cadmium, Total | 0.03u | 0.02u | NC | 1.0 |
| | | Chromium, Total | 7.1 | 6.8 | 4.3 | 1.0 |
| | | Copper, Total | 16.4 | 13.3 | 20.9 | 1.0 |
| | | Mercury, Total | 0.01u | 0.01u | NC | 1.0 |
| | | Nickel, Total | 8.7 | 7.2 | 18.9 | 1.0 |
| | | Lead, Total | 3.9 | 4.0 | 2.5 | 1.0 |
| | | Antimony, Total | 0.23u | 0.20u | NC | 1.0 |
| | | Selenium, Total | 0.34u | 0.29u | NC | 1.0 |
| | | Thallium, Total | 0.49u | 0.51 | ~~NC~~ 200 | 1.0 |
| | | Vanadium, Total | 51.3 | 50.2 | 2.2 | 1.0 |
| | | Zinc, Total | 44.8 | 41.0 | 8.9 | 1.0 |

Correction D 11/9/99

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Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L863

WORK ORDER: 10985-001-001-9999-00

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 99L0601-LC1 | Silver, LCS | 49.7 | 50.0 | MG/KG | 99.4 |
| | | Arsenic, LCS | 974 | 1000 | MG/KG | 97.4 |
| | | Barium, LCS | 503 | 500 | MG/KG | 100.5 |
| | | Beryllium, LCS | 24.6 | 25.0 | MG/KG | 98.4 |
| | | Cadmium, LCS | 24.6 | 25.0 | MG/KG | 98.4 |
| | | Chromium, LCS | 50.5 | 50.0 | MG/KG | 101.0 |
| | | Copper, LCS | 126 | 125 | MG/KG | 100.4 |
| | | Nickel, LCS | 198 | 200 | MG/KG | 99.0 |
| | | Lead, LCS | 245 | 250 | MG/KG | 98.0 |
| | | Antimony, LCS | 296 | 300 | MG/KG | 98.5 |
| | | Selenium, LCS | 948 | 1000 | MG/KG | 94.8 |
| | | Thallium, LCS | 986 | 1000 | MG/KG | 98.6 |
| | | Vanadium, LCS | 257 | 250 | MG/KG | 102.9 |
| | | Zinc, LCS | 97.1 | 100 | MG/KG | 97.1 |
| LCS1 | 99C0254-LC1 | Mercury, LCS | 0.97 | 1.0 | MG/KG | 96.7 |

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| B0W5L0 | | | | | | |
| SILVER, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SILVER, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SILVER, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| MERCURY, TOTAL | 001 | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| MERCURY, TOTAL | 001 REP | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| MERCURY, TOTAL | 001 MS | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| NICKEL, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| NICKEL, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| NICKEL, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| LEAD, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| LEAD, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| LEAD, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SELENIUM, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SELENIUM, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SELENIUM, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 001 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 001 REP | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 001 MS | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| B0W5L2 | | | | | | |
| SILVER, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| MERCURY, TOTAL | 002 | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| NICKEL, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| LEAD, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SELENIUM, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 002 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| B0W5K4 | | | | | | |
| SILVER, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| MERCURY, TOTAL | 003 | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| NICKEL, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| LEAD, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SELENIUM, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 003 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| B0W5K5 | | | | | | |
| SILVER, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| MERCURY, TOTAL | 004 | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| NICKEL, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| LEAD, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SELENIUM, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 004 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| B0W5K6 | | | | | | |
| SILVER, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| MERCURY, TOTAL | 005 | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| NICKEL, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| LEAD, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SELENIUM, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 005 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| B0W5K7 | | | | | | |
| SILVER, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| MERCURY, TOTAL | 006 | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| NICKEL, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| LEAD, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SELENIUM, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 006 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| B0W5K8 | | | | | | |
| SILVER, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| MERCURY, TOTAL | 007 | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| NICKEL, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| LEAD, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SELENIUM, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 007 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| B0W5K9 | | | | | | |
| SILVER, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ARSENIC, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BARIUM, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| BERYLLIUM, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CADMIUM, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| CHROMIUM, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| COPPER, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| MERCURY, TOTAL | 008 | S | 99C0254 | 08/23/99 | 08/26/99 | 08/27/99 |
| NICKEL, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| LEAD, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ANTIMONY, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| SELENIUM, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| THALLIUM, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| VANADIUM, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |
| ZINC, TOTAL | 008 | S | 99L0601 | 08/23/99 | 09/01/99 | 09/07/99 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| SILVER, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| ARSENIC LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| ARSENIC, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| BARIUM LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| BARIUM, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| BERYLLIUM LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| BERYLLIUM, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| CADMIUM LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| CADMIUM, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| CHROMIUM LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| CHROMIUM, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| COPPER LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 08/25/99 RFW LOT # :9908L863

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| COPPER, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| MERCURY LABORATORY | LC1 BS | S | 99C0254 | N/A | 08/26/99 | 08/27/99 |
| MERCURY, TOTAL | MB1 | S | 99C0254 | N/A | 08/26/99 | 08/27/99 |
| NICKEL LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| NICKEL, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| LEAD LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| LEAD, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| ANTIMONY LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| ANTIMONY, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| SELENIUM LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| SELENIUM, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| THALLIUM LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| THALLIUM, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| VANADIUM LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| VANADIUM, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| ZINC LABORATORY | LC1 BS | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |
| ZINC, TOTAL | MB1 | S | 99L0601 | N/A | 09/01/99 | 09/03/99 |

| RECRA LabNet Use Only |
|---|
| 9908L863 |

# Custody Transfer Record/Lab Work Request

Page 1 of 1

**ALL** FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

RECRA LabNet

Client: TNU Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day

Date Rec'd: 8/25/99 Date Due: 9/24/99
Account #:

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | 6 | 1 | | | | | 6 | | 6 | 6 | | | | |
| #/Type Container | Liquid | | | | | | | | | | | | | | | |
| | Solid | 1g | 1g | 1 | | | | | 1g | | 1g | 1g | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | |
| | Solid | 250 | 500 | 1 | | | | | 500 | | 250 | 1000 | | | | |
| Preservatives | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | INORG | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | Metal | CN | | | | | | |

RECRA LabNet Use Only

MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum, Solids, DL - Drum, Liquids, L - EP/TCLP, Leachate, WI - Wipe, X - Other, F - Fish

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | 0624H | 0625H | OPCB | | OGCSC | ODRO | | Met ① | | IPH | Ang ① | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | BOWSLO | | | S | 8/23/99 | 0942 | X | X | X | | X | X | | X | | X | X | | | | |
| 2 | L2 | | | | | 1025 | | | | | | | | | | | | | | | |
| 3 | K4 | | | | | 0810 | | | | | | | | | | | | | | | |
| 4 | K5 | | | | | 0826 | | | | | | | | | | | | | | | |
| 5 | K6 | | | | | 0846 | | | | | | | | | | | | | | | |
| 6 | K7 | | | | | 0856 | | | | | | | | | | | | | | | |
| 7 | K8 | | | | | 0911 | | | | | | | | | | | | | | | |
| 8 | K9 | | | | | 0928 | | | | | | | | | | | | | | | |

Run Matrix QC

Special Instructions:

Saf# B99-078
8/26/99 Hg added per client COC
11/3/99 Sb + Tl added per client
OGCSC = ethanol propanol

COMPOSITE WASTE

DATE/REVISIONS:

Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se,
2. Ag, V, Zn, ICR6, Hg
Ang ① = 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3
4. 1CPO4, 1CSO4, 1SFD, 1NH3N, 1CNTO
* 5. 423579528657 - 3.2°C
6. 35 - 3.1°C

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| FedEx | Janson | 8/25/99 | 0930 |

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

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*423579528646

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 3.6 °C

| Bechtel Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | B99-078-27 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: Brent Porter | Company Contact: Chris Cearlock — Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ | Price Code: 8N — Data Turnaround: 45 Days |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: GP-14 >15' bgs 15-16 ft | SAF No.: B99-078 | |
| Ice Chest No.: ~~B0W~~ 8-24-99 SML 297 | Field Logbook No.: EL-1511 | Method of Shipment: Federal Express | |
| Shipped To: ~~TMA/RECRA~~ RECRA 8-23-99 | Offsite Property No.: A990297 | Bill of Lading/Air Bill No.: ~~B20GW1-6716~~ 4235 7952 8657 8-23-99 | |
| | | COA: B20GW16716 | |

| POSSIBLE SAMPLE HAZARDS/REMARKS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation | None | None | None | None | Cool 4C | None | Cool 4C | None | Cool 4C | None |
| | Type of Container | aG | aG | aG | aG | aG | aG | aG | aG | aG | aG |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Special Handling and/or Storage | Volume | 60mL | 60mL | 60mL | 120mL | 250mL | 250mL | 500mL | 500mL | 1000mL | 1000mL |
| SAMPLE ANALYSIS | | Isotopic Uranium | Nickel-63 | Technetium-99 | Tritium - H3 | VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol} | pH (Soil) - 9045 | Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082 | See item (1) in Special Instructions. | See item (2) in Special Instructions. | See item (3) in Special Instructions. |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B0W5L0 | Soil | 8-23-99 | 0942 | | | | | X | X | X | X | X | B0W5L0 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By: Brent Porter | Date/Time: 8/23/99 13:00 | Received By: Refer JB | Date/Time: 8/23/99 13:00 |
| Relinquished By: Ref. JB | Date/Time: 8-24-99/1200 | Received By: Doug Bowers Doug Bowers | Date/Time: 8-24-99/1200 |
| Relinquished By: Doug Bowers Doug Bowers | Date/Time: 8-24-99/1200 | Received By: Fed Ex | Date/Time: |
| Relinquished By: Jecley | Date/Time: | Received By: Janson | Date/Time: 8/25/99 0930 |

**SPECIAL INSTRUCTIONS**

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

019 020

| Bechtel Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | B99-078-29 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: Brent Porter | Company Contact: Chris Cearlock | Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ |
| Price Code: 8N | Data Turnaround: 45 Days | | |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: GP-14 >15' bgs 24-251 | SAF No.: B99-078 | |
| Ice Chest No.: SML-297 | Field Logbook No.: EL 1511 | Method of Shipment: Federal Express | |
| Shipped To: ~~TMA/RECRA~~ RECRA TJB 8-23-99 | Offsite Property No.: A990227 | Bill of Lading/Air Bill No.: 4235 7852 8657 | |
| | | COA: B20CW1 671C | |

POSSIBLE SAMPLE HAZARDS/REMARKS

863

Special Handling and/or Storage

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | None | None | None | Cool 4C | None | Cool 4C | None | Cool 4C | None |
| Type of Container | aG | aG | aG | aG | aG | aG | aG | aG | aG | aG |
| No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Volume | 60mL | 60mL | 60mL | 120mL | 250mL | 250mL | 500mL | 500mL | 1000mL | 1000mL |
| SAMPLE ANALYSIS | Isotopic Uranium | Nickel-63 | Technetium-99 | Tritium - H3 | VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol} | pH (Soil) - 9045 | Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082 | See item (1) in Special Instructions. | See item (2) in Special Instructions. | See item (3) in Special Instructions. |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B0W5L2 | Soil | 8-23-99 | 1025 | | | | | X | X | X | X | X | B0W5L2 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By: Brent Porter | Date/Time: 8/23/99 13:00 | Received By: Refer TB | Date/Time: 8/23/99 13:00 |
| Relinquished By: RCF TB | Date/Time: 8-24-99/1200 | Received By: Doug Bowers | Date/Time: 8-24-99/1200 |
| Relinquished By: Doug Bowers | Date/Time: 8-24-99/1200 | Received By: Fed Ex | Date/Time: |
| Relinquished By: Fedex | Date/Time: | Received By: Jenson | Date/Time: 8/25/99 0930 |

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

020021

| Bechtel Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | B99-078-21 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: Brent Porter | Company Contact: Chris Cearlock | Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ |
| Price Code: 8N | Data Turnaround: 45 Days | | |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: GP-14 <15' bgs 3'~4' | SAF No.: B99-078 | |
| Ice Chest No.: ERC 96-030 | Field Logbook No.: EL154 | Method of Shipment: Federal Express | |
| Shipped To: TMA/RECRA BJB 8-23-99 | Offsite Property No.: A990227 | Bill of Lading/Air Bill No.: 4235 7952 8635 | |
| | | COA: B20CW1 671C | |

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | None | Cool 4C | None | Cool 4C | None | | | |
| Type of Container | aG | aG | aG | aG | aG | aG | aG | | | |
| No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Volume | 60mL | 250mL | 250mL | 500mL | 500mL | 1000mL | 1000mL | | | |
| SAMPLE ANALYSIS | Isotopic Uranium | VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol} | pH (Soil) - 9045 | Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082 | See item (1) in Special Instructions. | See item (2) in Special Instructions. | See item (3) in Special Instructions. | | | |
| Sample No. / Matrix * / Sample Date / Sample Time | | | | | | | | | | |
| B0W5K4 / Soil / 8-23-99 / 0810 | | X | X | X | X | X | B0W5K8 | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By: Brent Porter | Date/Time: 8/23/99 13:00 | Received By: Peter JB | Date/Time: 8/23/99 13:00 |
| Relinquished By: Peter JB | Date/Time: 8-24-99 1200 | Received By: Doug Bowers | Date/Time: 8-24-99 1200 |
| Relinquished By: Doug Bowers | Date/Time: 8-24-99 1200 | Received By: Fed Ex | Date/Time: |
| Relinquished By: Jedep | Date/Time: | Received By: Johnson | Date/Time: 8/25/99 0930 |

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

3

220120

| Bechtel Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | B99-078-22 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: Brent Porter | Company Contact: Chris Cearlock — Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ | Price Code: 8N — Data Turnaround: 45 Days |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: GP-14 <15' bgs 5.5'-6.5' | SAF No.: B99-078 | |
| Ice Chest No.: ERC 96-030 | Field Logbook No.: EL1511 | Method of Shipment: Federal Express | |
| Shipped To: TMA/RECRA 8-23-99 | Offsite Property No.: A990227 | Bill of Lading/Air Bill No.: 4235 7952 8635 | |
| | | COA: B20CW1 67/C | |

| POSSIBLE SAMPLE HAZARDS/REMARKS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation | None | Cool 4C | None | Cool 4C | None | Cool 4C | None | | | | |
| | Type of Container | aG | aG | aG | aG | aG | aG | aG | | | | |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Special Handling and/or Storage | Volume | 60mL | 250mL | 250mL | 500mL | 500mL | 1000mL | 1000mL | | | | |
| SAMPLE ANALYSIS | | Isotopic Uranium | VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol) | pH (Soil) - 9045 | Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082 | See item (1) in Special Instructions | See item (2) in Special Instructions | See item (3) in Special Instructions | | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X B0W5K5 | Soil | 8-23-99 | 0826 | | X | X | X | X | X | B0W5L8 | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By: Brent Porter | Date/Time: 8/23/99 1300 | Received By: Refer IB | Date/Time: 8/23/99 13:00 |
| Relinquished By: Ref IB | Date/Time: 8-24-99/1200 | Received By: Doug Bowers | Date/Time: 8-24-99/1200 |
| Relinquished By: Doug Bowers | Date/Time: 8-24-99/1200 | Received By: Fed Ex | Date/Time: |
| Relinquished By: Jedley | Date/Time: | Received By: Johnson | Date/Time: 8/25/99 0930 |

**SPECIAL INSTRUCTIONS**

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

8/9/99

023

| Bechtel Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | B99-078-23 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: Brent Porter | Company Contact: Chris Cearlock | Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ |
| Price Code: 8N | Data Turnaround: 45 Days | | |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: GP-14 <15' bgs 81-91 | SAF No.: B99-078 | |
| Ice Chest No.: ERC 96-030 | Field Logbook No.: EL/T 11 | Method of Shipment: Federal Express | |
| Shipped To: TMA/RECRA 8-27-99 | Offsite Property No.: A990227 | Bill of Lading/Air Bill No.: 4235 7952 8635 | |
| | | COA: B20CW1 67/C | |

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation | None | Cool 4C | None | Cool 4C | None | Cool 4C | None | | | |
| Type of Container | aG | aG | aG | aG | aG | aG | aG | | | |
| No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Volume | 60mL | 250mL | 250mL | 500mL | 500mL | 1000mL | 1000mL | | | |
| SAMPLE ANALYSIS | Isotopic Uranium | VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol) | pH (Soil) - 9045 | Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082 | See item (1) in Special Instructions. | See item (2) in Special Instructions. | See item (3) in Special Instructions. | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B0W5K6 | Soil | 8-27-99 | 0846 | | X | X | X | X | X | | B0W5K8 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By: Brent Porter | Date/Time: 8/23/99 13:00 | Received By: Rick TB | Date/Time: 8/23/99 13:00 |
| Relinquished By: Rick TB | Date/Time: 8-24-99/1200 | Received By: Doug Bowers | Date/Time: 8-24-99/1200 |
| Relinquished By: Doug Bowers | Date/Time: 8-24-99/1200 | Received By: Fed Ex | Date/Time: |
| Relinquished By: Fedex | Date/Time: | Received By: Janson | Date/Time: 8/25/99 0930 |

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

| Bechtel Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | B99-078-24 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: Brent Porter | Company Contact: Chris Cearlock — Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ | Price Code: 8N — Data Turnaround: 45 Days |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: GP-14 <15' bgs 10.5-11.5 | SAF No.: B99-078 | |
| Ice Chest No.: ERC 96-017 | Field Logbook No.: EL 1511 | Method of Shipment: Federal Express | |
| Shipped To: TMA/RECRA BTD 8-23-99 | Offsite Property No.: A 990227 | Bill of Lading/Air Bill No.: 4235 7952 8646 | |
| | | COA: D20 CW1 67K | |

| POSSIBLE SAMPLE HAZARDS/REMARKS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation | None | Cool 4C | None | Cool 4C | None | Cool 4C | None | | | |
| | Type of Container | aG | aG | aG | aG | aG | aG | aG | | | |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Special Handling and/or Storage | Volume | 60mL | 250mL | 250mL | 500mL | 500mL | 1000mL | 1000mL | | | |
| SAMPLE ANALYSIS | | Isotopic Uranium | VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol) | pH (Soil) - 9045 | Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082 | See item (1) in Special Instructions. | See item (2) in Special Instructions. | See item (3) in Special Instructions. | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B0W5K7 | Soil | 8-23-99 | 0856 | | X | X | X | X | X | | B0W5L8 | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

**CHAIN OF POSSESSION** — Sign/Print Names: Peter JB

| Relinquished By | Date/Time | Received By | Date/Time |
|---|---|---|---|
| Brent Porter | 8/23/99 13:00 | Brent Porter | 8/23/99 13:00 |
| Relinquished By: ACFIB | 8-24-99/1200 | Received By: Doug Bowers | 8-24-99/1200 |
| Relinquished By: Doug Bowers | 8-24-99/1200 | Received By: Fed Ex | |
| Relinquished By: Jedeep | | Received By: Janson | 8/25/99 0932 |

**SPECIAL INSTRUCTIONS**

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

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| Bechtel Hanford Inc. | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | B99-078-25 | Page 1 of 1 |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: Brent Porter | Company Contact: Chris Cearlock | Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ |
| Price Code: 8N | Data Turnaround: 45 Days | | |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: GP-14 <15' bgs 13-14' | SAF No.: B99-078 | |
| Ice Chest No.: ERC 96-017 | Field Logbook No.: EL 1511 | Method of Shipment: Federal Express | |
| Shipped To: ~~TMA/RECRA~~ RECRA 8-23-99 | Offsite Property No.: A990227 | Bill of Lading/Air Bill No.: 4235 7952 8646 | |
| | | COA: B20CW1 6716 | |

| POSSIBLE SAMPLE HAZARDS/REMARKS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation | None | Cool 4C | None | Cool 4C | None | Cool 4C | None | | | |
| | Type of Container | aG | aG | aG | aG | aG | aG | aG | | | |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Special Handling and/or Storage | Volume | 60ml. | 250ml | 250ml. | 500ml. | 500ml | 1000ml. | 1000ml. | | | |
| SAMPLE ANALYSIS | | Isotopic Uranium | VOA - 8260A (TCL), VOA - 8260A (Add-On) [1-Propanol, Ethanol] | pH (Soil) - 9045 | Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082 | See item (1) on Special Instructions | See item (2) on Special Instructions | See item (3) on Special Instructions | | | |
| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | |
| B0W5K8 | Soil | 8-23-99 | 0911 | | X | X | X | X | X | | B0W5K8 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By: Brent Porter | Date/Time: 8/23/99 13:00 | Received By: Refer JB | Date/Time: 8/23/99 13:00 |
| Relinquished By: R of JB | Date/Time: 8-24-99/1200 | Received By: Doug Bowers | Date/Time: 8-24-99/1200 |
| Relinquished By: Doug Bowers | Date/Time: 8-24-99/1200 | Received By: Fed Ex | Date/Time: |
| Relinquished By: Jeder | Date/Time: | Received By: Jamison | Date/Time: 8/25/99 0930 |

**SPECIAL INSTRUCTIONS**

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

**Matrix ***
Soil
Water
Vapor
Other Solid
Other Liquid

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

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Bechtel Hanford Inc.

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-26



| | | | |
|---|---|---|---|
| Collector: Brent Porter | Company Contact: Chris Cearlock | Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ |
| Price Code: 8N | Data Turnaround: 45 Days | | |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: GP-14 <15' bgs 14'-15' | SAF No.: B99-078 | |
| Ice Chest No.: ERC 96-017 | Field Logbook No.: EL 1511 | Method of Shipment: Federal Express | |
| Shipped To: TMA/RECRA RECRA BJB 8-27-99 | Offsite Property No.: A990227 | Bill of Lading/Air Bill No.: 4235 7952 8646 | |
| | | COA: B20CW2 671C | |

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

| Sample No. | Matrix * | Sample Date | Sample Time | Preservation: None | Cool 4C | None | Cool 4C | None | Cool 4C | None | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Type of Container: aG | aG | aG | aG | aG | aG | aG | | | |
| | | | | No. of Container(s): 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| | | | | Volume: 60mL | 250mL | 250mL | 500mL | 500mL | 1000mL | 1000mL | | | |
| SAMPLE ANALYSIS | | | | Isotopic Uranium | VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol} | pH (Soil) - 9045 | Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082 | See item (1) in Special Instructions. | See item (2) in Special Instructions. | See item (3) in Special Instructions. | | | |
| B0W5K9 | Soil | 8-23-99 | 0928 | | X | X | X | X | X | B0W5L8 | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By: Brent Porter | Date/Time: 8/23/99 13:00 | Received By: Peter JB | Date/Time: 8/23/99 13:00 |
| Relinquished By: R.P. JB | Date/Time: 8-24-99/1200 | Received By: Doug Damron | Date/Time: 8-24-99/1200 |
| Relinquished By: Doug Damron | Date/Time: 8-24-99/1200 | Received By: Fed Ex | Date/Time: |
| Relinquished By: Declee | Date/Time: | Received By: Johnson | Date/Time: 8/25/99 0930 |

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

0928