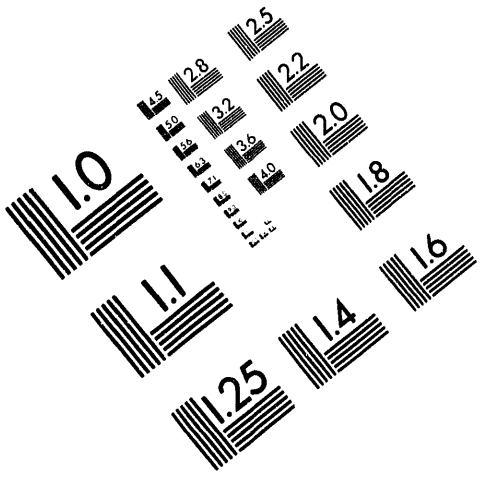

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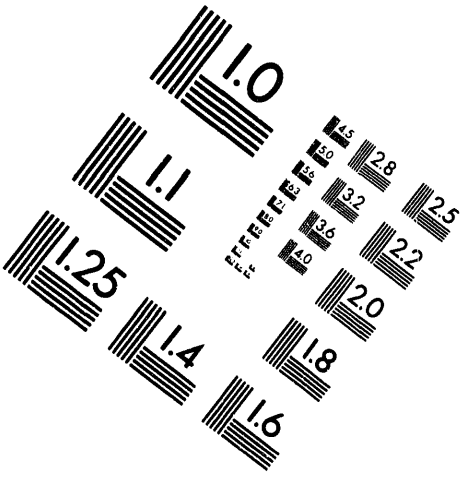
301/587-8202



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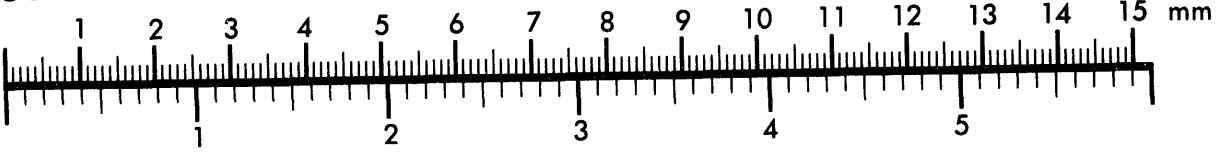


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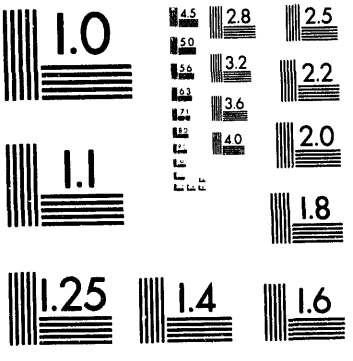

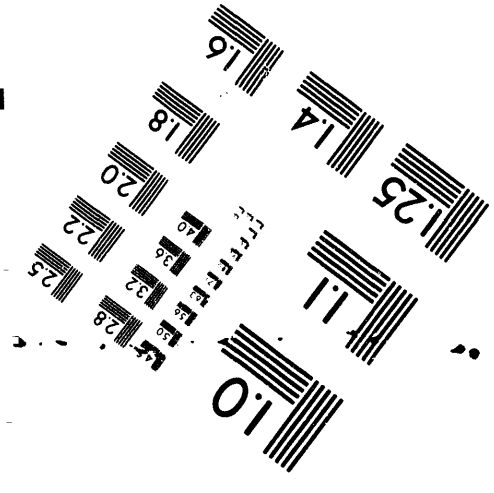

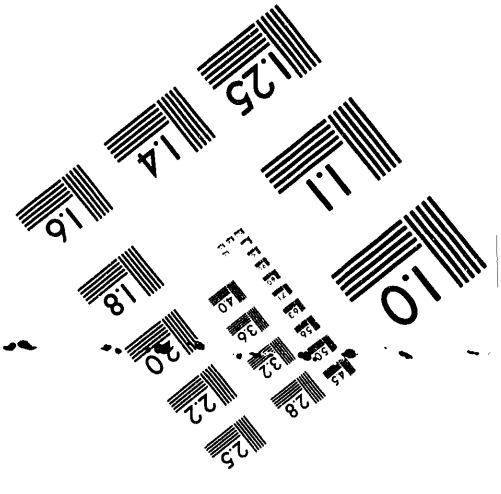

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1 of 7

WSRC-TR-92-415

# ANALYSIS OF WATER AND SOIL FROM THE WETLANDS OF UPPER THREE RUNS CREEK - VOLUMES 1, 2A, 2B, & 3

RECEIVED
JUL 12 1994
OSTI

by
Haselow, L. A.

Westinghouse Savannah River Company
Savannah River Site
Aiken, South Carolina 29808

Haselow, L. A., WSRC/ERD
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Eidson, G. W., Ph. D., Normandeau Associates, Inc.
Herring, M. K., Normandeau Associates, Inc.

A document prepared for N/A at from thru .

DOE Contract No. DE-AC09-89SR18035

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Analytical Data Packages
September/October 1991


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Note: Sections 1 through 8 include Metal, Inorganic, Volatile Organic and Radionuclide Data Packages. Sections 9 through 11 include Metal, Inorganic and Radionuclide Data Packages.

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-05-91
**RFW #:** 9109L612
**W.O. #:** 0630-28-27-0000

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples with the exception of pH, specific conductance which was received past hold and nitrate which was analyzed past hold.

2. All preparation blank results were below the required detection limit with the exception of acidity.

3. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

4. Replicate results are summarized on the Inorganic Precision Report contained within this document. Results were within the 20% RPD guidance limit with the exception of hardness.

5. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

10.3.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc.21\i9-612

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/02/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L612

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 15 | Acidity | 300 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 10.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 4.4 | | MG/L | 0.50 |
| | | pH | 4.5 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 14.9 | | UMHOS/CM | 1.0 |
| -002 | SITE 15 DUP | Acidity | 810 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 7.6 | | MG/L | 0.10 |
| | | Nitrate, as N | 0.11 | | MG/L | 0.10 |
| | | pH | 4.6 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 31.7 | | UMHOS/CM | 1.0 |
| 004 | SITE 22 | Acidity | 40.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 42.0 | | MG/L | 1.0 |
| | | Nitrate, as N | 8.7 | | MG/L | 0.50 |
| | | pH | 4.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 28.8 | | UMHOS/CM | 1.0 |
| -005 | FIELD BLANK | Acidity | 400 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 0.10 | u | MG/L | 0.10 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 5.0 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/02/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L612
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK10 | 91LAL048-MB1 | Acidity | 0.50 u | MG/L | 0.50 |
| BLANK20 | 91LAL048-MB2 | Acidity | 8.5 | MG/L | 0.50 |
| BLANK10 | 91LCL107-MB1 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK20 | 91LCL107-MB2 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK10 | 91LHD017-MB1 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LHD017-MB2 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LNO217-MB1 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LNO217-MB2 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK30 | 91LNO217-MB3 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LS4082-MB1 | Sulfate | 5.0 u | MG/L | 5.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/02/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L612
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK20 | 91LS4082-MB2 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK10 | 91LSP055-MB1 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/02/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L612
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| BLANK10 | 91LCL107-MB1 | Chloride | 23.9 | 5.0 u | 25.0 | 95.7 |
| | | Chloride MSD | 23.8 | 5.0 u | 25.0 | 95.1 |
| BLANK20 | 91LCL107-MB2 | Chloride | 24.0 | 5.0 u | 25.0 | 96.0 |
| BLANK10 | 91LHD017-MB1 | Hardness | 102 | 0.10u | 100 | 102 |
| | | Hardness MSD | 101 | 0.10u | 100 | 101 |
| BLANK20 | 91LHD017-MB2 | Hardness | 330 | 0.10u | 330 | 100 |
| BLANK10 | 91LNO217-MB1 | Nitrate, as N | 0.39 | 0.10u | 0.40 | 98.2 |
| BLANK20 | 91LNO217-MB2 | Nitrate, as N | 0.41 | 0.10u | 0.40 | 104 |
| BLANK30 | 91LNO217-MB3 | Nitrate, as N | 0.40 | 0.10u | 0.40 | 101 |
| BLANK10 | 91LS4082-MB1 | Sulfate | 21.1 | 5.0 u | 20.0 | 106 |
| | | Sulfate | 21.5 | 5.0 u | 20.0 | 107 |
| BLANK20 | 91LS4082-MB2 | Sulfate | 31.4 | 5.0 u | 30.0 | 105 |
| BLANK10 | 91LSP055-MB1 | Specific Conductance | 141 | 1.0 u | 147 | 95.9 |
| | | Specific Conductance M | 142 | 1.0 u | 147 | 96.6 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/02/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L612

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| BLANK10 | 91LCL107-MB1 | Chloride | 95.7 | 95.1 | 0.60 |
| BLANK10 | 91LHD017-MB1 | Hardness | 102 | 101 | 1.5 |
| BLANK10 | 91LS4082-MB1 | Sulfate | 106 | 107 | 1.6 |
| BLANK10 | 91LSP055-MB1 | Specific Conductance | 95.9 | 96.6 | 0.70 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 10/02/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L612

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | SITE 15 | pH | 4.5 | 4.5 | 0.67 |
| -004REP | SITE 22 | Hardness | 42.0 | 33.3 | 23.0 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/05/91 RFW LOT # :9109L612

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 15 | | | | | | |
| ACIDITY | 001 | W | 91LAL048 | 09/03/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 001 | W | 91LCL107 | 09/03/91 | 09/09/91 | 09/09/91 |
| HARDNESS | 001 | W | 91LHD017 | 09/03/91 | 09/16/91 | 09/16/91 |
| NITRATE | 001 | W | 91LNO217 | 09/03/91 | 09/10/91 | 09/11/91 |
| PH | 001 | W | 91LPH144 | 09/03/91 | 09/09/91 | 09/09/91 |
| PH | 001 REP | W | 91LPH144 | 09/03/91 | 09/09/91 | 09/09/91 |
| SULFATE | 001 | W | 91LS4082 | 09/03/91 | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | 001 | W | 91LSP055 | 09/03/91 | 09/09/91 | 09/09/91 |
| SITE 15 DUP | | | | | | |
| ACIDITY | 002 | W | 91LAL048 | 09/03/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 002 | W | 91LCL107 | 09/03/91 | 09/09/91 | 09/09/91 |
| HARDNESS | 002 | W | 91LHD017 | 09/03/91 | 09/16/91 | 09/16/91 |
| NITRATE | 002 | W | 91LNO217 | 09/03/91 | 09/10/91 | 09/11/91 |
| PH | 002 | W | 91LPH144 | 09/03/91 | 09/09/91 | 09/09/91 |
| SULFATE | 002 | W | 91LS4082 | 09/03/91 | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | 002 | W | 91LSP055 | 09/03/91 | 09/09/91 | 09/09/91 |
| SITE 22 | | | | | | |
| ACIDITY | 004 | W | 91LAL048 | 09/03/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 004 | W | 91LCL107 | 09/03/91 | 09/09/91 | 09/09/91 |
| HARDNESS | 004 | W | 91LHD017 | 09/03/91 | 09/16/91 | 09/16/91 |
| HARDNESS | 004 REP | W | 91LHD017 | 09/03/91 | 09/16/91 | 09/16/91 |
| NITRATE | 004 | W | 91LNO217 | 09/03/91 | 09/10/91 | 09/11/91 |
| PH | 004 | W | 91LPH144 | 09/03/91 | 09/09/91 | 09/09/91 |
| SULFATE | 004 | W | 91LS4082 | 09/03/91 | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | 004 | W | 91LSP055 | 09/03/91 | 09/09/91 | 09/09/91 |
| FIELD BLANK | | | | | | |
| ACIDITY | 005 | W | 91LAL048 | 09/03/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 005 | W | 91LCL107 | 09/03/91 | 09/09/91 | 09/09/91 |
| HARDNESS | 005 | W | 91LHD017 | 09/03/91 | 09/16/91 | 09/16/91 |
| NITRATE | 005 | W | 91LNO217 | 09/03/91 | 09/10/91 | 09/11/91 |
| PH | 005 | W | 91LPH144 | 09/03/91 | 09/09/91 | 09/09/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/05/91 RFW LOT # :9109L612

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SULFATE | 005 | W | 91LS4082 | 09/03/91 | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | 005 | W | 91LSP055 | 09/03/91 | 09/09/91 | 09/09/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| ALKALINITY | MB1 BS | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| ACIDITY | MB2 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| CHLORIDE | MB1 | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| CHLORIDE | MB1 BS | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| CHLORIDE | MB1 BSD | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| CHLORIDE | MB2 | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| CHLORIDE | MB2 BS | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| HARDNESS | MB1 | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB1 BS | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB1 BSD | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB2 | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB2 BS | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| NITRATE | MB1 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB1 BS | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB2 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB2 BS | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB3 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB3 BS | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| SULFATE | MB1 | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SULFATE | MB1 BS | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SULFATE | MB1 BSD | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SULFATE | MB2 | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SULFATE | MB2 BS | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | MB1 | W | 91LSP055 | N/A | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | MB1 BS | W | 91LSP055 | N/A | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | MB1 BSD | W | 91LSP055 | N/A | 09/09/91 | 09/09/91 |

WESTON Analytics Use Only

91092612

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27-0001
Project Contact/Phone #:
AD Project Manager: D Thomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 9/5/91 Date Due: 10/5/91
Account #: WSRC27STD

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | | | | | | | | | | 1 | 1 | | 1 | | 1 | | 1 | 1 | | | | |
| | Solid | | | | | | | | | | 1 | 1 | | | | | | | | | | | |
| Volume | Liquid | | | | | | | | | | 1L | 1L | | 1L | | 1L | | 1L | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | HNO3 | none | | HNO3 | | | | none | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | | | | | | INORG | | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | | | Lab's Chem | Tritium | | Metal | CN | Hardness | Cl NO3 | Alk Acid | PH SO4 | Spec | | | |

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 | WESTON Analytics Use Only | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Site 15 | | | W | 9/5/91 | | | | | | ✓ | ✓ | | See Below | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 2 | 15 Dup | | | | | | | | | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| ~~3~~ | ~~15 Dup~~ | | | | | | | | | | | | | | | Represented on 002 | | | | | | | |
| 4 | Site 22 | | | | | | | | | | ✓ | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 5 | Field Blank | | | | | | | | | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| ~~6~~ | ~~Field Blank~~ | | | | | | | | | | | | | | | Represented on 005 | | | | | | | |
| | Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn, ~~[illegible]~~ | | | | | | | | | | | | | | | | | | | | | | |
| | Radiochem: Gross Alpha/Beta, Tc-99, Am-241, I-129, Sr-89, Sr-90, C-14, Gamma, PHA, Total Radium | | | | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
VOA's Rec'd in plastic - NOT Logged.
Hardness for 001+004 take from H2SO4 bottle
for 002+005 take from HNO3 bottle

Original Signature

DATE/REVISIONS: PU 238/239/240 + U 234/238.
9-30-91 1. Cancel Alkal on #001 - #005 per SDC
2.
3.
4.
5.
6.

WESTON Analytics 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 VOA: HCl 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

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/5/91 | 9:30 AM |
| | P 9/7/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | P 9/7/91 | | |

Discrepancies Between Samples Labels and COC Record? (Y) or N
NOTES: PH, SO4, ACID NOT on orig - HNO3, PH, Spec out
PH on orig.

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-05-91
**RFW #:** 9109L612
**W.O. #:** 0630-28-27-0000

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

10.7.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc\m9-612

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/05/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L612

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 15 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 14000 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 42.1 | | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 14700 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 75.6 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 51.0 | | UG/L | 30.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 46.1 | | UG/L | 20.0 |
| -002 | SITE 15 DUP | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 19800 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 230 | | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 43.5 | | UG/L | 10.0 |
| | | Copper, Total | 27.0 | | UG/L | 25.0 |
| | | Iron, Total | 19800 | | UG/L | 100 |
| | | Mercury, Total | 1.0 | | UG/L | 0.20 |
| | | Manganese, Total | 95.2 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 60.0 | | UG/L | 30.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 50.6 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/05/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L612
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -004 | SITE 22 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 52800 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 536 | | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 950 | | UG/L | 10.0 |
| | | Copper, Total | 108 | | UG/L | 25.0 |
| | | Iron, Total | 38000 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 669 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 500 | | UG/L | 40.0 |
| | | Lead, Total | 73.0 | | UG/L | 30.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 162 | | UG/L | 20.0 |
| -005 | FIELD BLANK | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/05/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L612
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L1743-MB1 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| BLANK1 | 91L1742-MB1 | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| BLANK1 | 91C258-MB1 | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| BLANK2 | 91C258-MB2 | Mercury, Total | 0.20 | u | UG/L | 0.20 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/05/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L612
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L1743-LC2 | Silver, LCS | 99.2 | 103 | 3.9 |
| | | Aluminum, LCS | 99.4 | 104 | 4.7 |
| | | Barium, LCS | 96.9 | 102 | 5.1 |
| | | Cadmium, LCS | 95.5 | 98.6 | 3.2 |
| | | Chromium, LCS | 94.4 | 97.6 | 3.3 |
| | | Copper, LCS | 94.9 | 100 | 5.3 |
| | | Iron, LCS | 95.9 | 99.6 | 3.8 |
| | | Manganese, LCS | 95.8 | 99.2 | 3.5 |
| | | Sodium, LCS | 97.7 | 103 | 5.1 |
| | | Nickel, LCS | 95.5 | 98.4 | 3.0 |
| | | Zinc, LCS | 98.3 | 101 | 3.0 |
| LCS2 | 91L1742-LC2 | Arsenic, LCS | 98.7 | 95.0 | 3.8 |
| | | Lead, LCS | 110 | 110 | 0.00 |
| | | Selenium, LCS | 96.0 | 95.7 | 0.31 |
| LCS2 | 91C258-LC2 | Mercury, LCS | 97.9 | 101 | 3.1 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/05/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L1743-LC1 | Silver, LCS | 496 | 500 | UG/L | 99.2 |
| | | Aluminum, LCS | 4970 | 5000 | UG/L | 99.4 |
| | | Barium, LCS | 4850 | 5000 | UG/L | 96.9 |
| | | Cadmium, LCS | 239 | 250 | UG/L | 95.5 |
| | | Chromium, LCS | 472 | 500 | UG/L | 94.4 |
| | | Copper, LCS | 1190 | 1250 | UG/L | 94.9 |
| | | Iron, LCS | 4800 | 5000 | UG/L | 95.9 |
| | | Manganese, LCS | 718 | 750 | UG/L | 95.8 |
| | | Sodium, LCS | 24400 | 25000 | UG/L | 97.7 |
| | | Nickel, LCS | 1910 | 2000 | UG/L | 95.5 |
| | | Zinc, LCS | 983 | 1000 | UG/L | 98.3 |
| LCS2 | 91L1743-LC2 | Silver, LCS | 515 | 500 | UG/L | 103 |
| | | Aluminum, LCS | 5210 | 5000 | UG/L | 104 |
| | | Barium, LCS | 5100 | 5000 | UG/L | 102 |
| | | Cadmium, LCS | 246 | 250 | UG/L | 98.6 |
| | | Chromium, LCS | 488 | 500 | UG/L | 97.6 |
| | | Copper, LCS | 1250 | 1250 | UG/L | 100 |
| | | Iron, LCS | 4980 | 5000 | UG/L | 99.6 |
| | | Manganese, LCS | 744 | 750 | UG/L | 99.2 |
| | | Sodium, LCS | 25700 | 25000 | UG/L | 103 |
| | | Nickel, LCS | 1970 | 2000 | UG/L | 98.4 |
| | | Zinc, LCS | 1010 | 1000 | UG/L | 101 |
| LCS1 | 91L1742-LC1 | Arsenic, LCS | 29.6 | 30.0 | UG/L | 98.7 |
| | | Lead, LCS | 32.9 | 30.0 | UG/L | 110 |
| | | Selenium, LCS | 28.8 | 30.0 | UG/L | 96.0 |
| LCS2 | 91L1742-LC2 | Arsenic, LCS | 28.5 | 30.0 | UG/L | 95.0 |
| | | Lead, LCS | 32.9 | 30.0 | UG/L | 110 |
| | | Selenium, LCS | 28.7 | 30.0 | UG/L | 95.7 |
| LCS1 | 91C258-LC1 | Mercury, LCS | 4.9 | 5.0 | UG/L | 97.9 |
| LCS2 | 91C258-LC2 | Mercury, LCS | 5.0 | 5.0 | UG/L | 101 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/05/91 RFW LOT # :9109L612

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 15 | | | | | | |
| SILVER, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| ALUMINUM, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| ARSENIC, TOTAL | 001 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/15/91 |
| BARIUM, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| CADMIUM, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| CHROMIUM, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| COPPER, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| IRON, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| MERCURY, TOTAL | 001 | W | 91C258 | 09/03/91 | 09/12/91 | 09/12/91 |
| MANGANESE, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| SODIUM, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| NICKEL, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| LEAD, TOTAL | 001 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | 001 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/16/91 |
| ZINC, TOTAL | 001 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| SITE 15 DUP | | | | | | |
| SILVER, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| ALUMINUM, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| ARSENIC, TOTAL | 002 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/15/91 |
| BARIUM, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| CADMIUM, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| CHROMIUM, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| COPPER, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| IRON, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| MERCURY, TOTAL | 002 | W | 91C258 | 09/03/91 | 09/12/91 | 09/12/91 |
| MANGANESE, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| SODIUM, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| NICKEL, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| LEAD, TOTAL | 002 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | 002 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/16/91 |
| ZINC, TOTAL | 002 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| SITE 22 | | | | | | |
| SILVER, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/05/91 RFW LOT # :9109L612

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| ARSENIC, TOTAL | 004 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/15/91 |
| BARIUM, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| CADMIUM, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| CHROMIUM, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| COPPER, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| IRON, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| MERCURY, TOTAL | 004 | W | 91C258 | 09/03/91 | 09/12/91 | 09/12/91 |
| MANGANESE, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| SODIUM, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| NICKEL, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| LEAD, TOTAL | 004 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | 004 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/16/91 |
| ZINC, TOTAL | 004 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| FIELD BLANK | | | | | | |
| SILVER, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| ALUMINUM, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| ARSENIC, TOTAL | 005 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/15/91 |
| BARIUM, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| CADMIUM, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| CHROMIUM, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| COPPER, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| IRON, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| MERCURY, TOTAL | 005 | W | 91C258 | 09/03/91 | 09/12/91 | 09/12/91 |
| MANGANESE, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| SODIUM, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| NICKEL, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |
| LEAD, TOTAL | 005 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | 005 | W | 91L1742 | 09/03/91 | 09/10/91 | 09/16/91 |
| ZINC, TOTAL | 005 | W | 91L1743 | 09/03/91 | 09/10/91 | 10/04/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| ALUMINUM LABORTORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| BARIUM LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| CADMIUM LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| CHROMIUM LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/05/91 RFW LOT # :9109L612

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| COPPER LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| IRON LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| MANGANESE LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| SODIUM LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| NICKEL LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| ZINC LABORATORY | LC1 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| SILVER LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| ALUMINUM LABORTORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| BARIUM LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| CADMIUM LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| CHROMIUM LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| COPPER LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| IRON LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| MANGANESE LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| SODIUM LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| NICKEL LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| ZINC LABORATORY | LC2 BS | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| SILVER, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| ALUMINUM, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| BARIUM, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| CADMIUM, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| CHROMIUM, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| COPPER, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| IRON, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| MANGANESE, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| SODIUM, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| NICKEL, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| ZINC, TOTAL | MB1 | W | 91L1743 | N/A | 09/10/91 | 10/04/91 |
| ARSENIC LABORATORY | LC1 BS | W | 91L1742 | N/A | 09/10/91 | 09/15/91 |
| LEAD LABORATORY | LC1 BS | W | 91L1742 | N/A | 09/10/91 | 09/16/91 |
| SELENIUM LABORATORY | LC1 BS | W | 91L1742 | N/A | 09/10/91 | 09/16/91 |
| ARSENIC LABORATORY | LC2 BS | W | 91L1742 | N/A | 09/10/91 | 09/15/91 |
| LEAD LABORATORY | LC2 BS | W | 91L1742 | N/A | 09/10/91 | 09/16/91 |
| SELENIUM LABORATORY | LC2 BS | W | 91L1742 | N/A | 09/10/91 | 09/16/91 |
| ARSENIC, TOTAL | MB1 | W | 91L1742 | N/A | 09/10/91 | 09/15/91 |
| LEAD, TOTAL | MB1 | W | 91L1742 | N/A | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | MB1 | W | 91L1742 | N/A | 09/10/91 | 09/16/91 |
| MERCURY LABORATORY | LC1 BS | W | 91C258 | N/A | 09/12/91 | 09/12/91 |
| MERCURY LABORATORY | LC2 BS | W | 91C258 | N/A | 09/12/91 | 09/12/91 |
| MERCURY, TOTAL | MB1 | W | 91C258 | N/A | 09/12/91 | 09/12/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/05/91 RFW LOT # :9109L612

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| MERCURY, TOTAL | MB2 | W | 91C258 | N/A | 09/12/91 | 09/12/91 |

WESTON Analytics Use Only
9109L612

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27-0000
Project Contact/Phone #:
AD Project Manager: D Thomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 9/5/91 Date Due: 10/5/91
Account #: WSRC27STD

| Refrigerator # | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | | | | | 1 1/P | 1 1/P | | 1 1/P | | 1 1/P | 1 1/P | 1 1/P | | | |
| | Solid | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | 1 1L | 1 1L | | 1 1L | | 1 1L | 1 1L | 1 1L | | | |
| | Solid | | | | | | | | | | | | | | | |
| Preservatives | | | | | | HNO3 | none | | HNO3 | | | none | | | | |
| ANALYSES REQUESTED → | | VOA | BNA | Pest/PCB | Herb | Lab Chem | Tritium | | INORG Metal | INORG CN | Hardness | Cl NO3 | Alk Acid | PH SO4 | Spec. | |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | ISUB | ISUB | See Below | | IHARD | ICL INO3 IALK IACID IPH ISO4 ISPCL |
| S - Soil | 001 | Site 15 | | | W | 9/5/91 | | | | | | ✓ | ✓ | ✓ | | ✓ | ✓ ✓ ✓ ✓ ✓ |
| SE - Sediment | 2 | 15 Dup | | | | | | | | | | | | ✓ | | ✓ | ✓ ✓ ✓ ✓ ✓ |
| SO - Solid | 3 | 15 Dup | | | | | | | | | | | | | | Represented on 002 | |
| SL - Sludge | 4 | Site 22 | | | | | | | | | | ✓ | ✓ | ✓ | | ✓ | ✓ ✓ ✓ ✓ ✓ |
| W - Water | 5 | Field Blank | | | | | | | | | | | | ✓ | | ✓ | ✓ ✓ ✓ ✓ ✓ |
| O - Oil | 6 | Field Blank | | | | | | | | | | | | | | Represented on 005 | |
| A - Air | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | | Metals - Ag, Al, As, Ba, Cd, Ca, Cr, Cu, Hg, N, Na, Pb, Se, Zn, Fe, Mn, | | | | | | | | | | | | | | | |
| DL - Drum Liquids | | Radiochem = Gross Alpha/Beta, Tc-99, Am-241, I-129, Sr-89, Sr-90, C-14, Gamma, PHA, Total Radium | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | |

FIELD PERSONNel: COMPLETE ONLY SHADED AREAS

Special Instructions:
VOAs Rec'd in plastic - NOT Logged.
Hardness for 001+004 take from H2SO4 bottle
for 002+005 take from HNO3 bottle

Original Rewritten

DATE/REVISIONS: PU 238/239/240 & U 234/238.
9-30-91 1. Cancel ALKL on #001 - #005 per SDC
10/1/91 2. ISUB Cancelled - Represented on 9109L687
3.
4.
5.
6.

WESTON Analytics 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 VOA: 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

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/5/91 | 9:30 am |
| | P 9/7/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | P 9/7/91 | | |

Discrepancies Between Samples Labels and COC Record? (Y) or N
NOTES: PH, SO4, ACID NOT on orig - PH, NO3, PH spec short

RFW 21-21-001/A-7/91 ___ L372 ___ L373 L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC - TASK 27 **SAMPLES RECEIVED:** 09-13-91
**RFW #:** 9109L687, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of three (3) water samples collected on 09-11-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 09-17,19,24-91.

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

1. Samples SITE 15 MS and MSD were analyzed outside the holding time.

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

3. All surrogate recoveries were within EPA QC limits.

4. All matrix spike recoveries were within EPA QC limits.

5. The laboratory blanks contained the common contaminants methylene chloride and acetone at levels less than 2x the CRQL.

10. 3. 91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 09/27/91 13:20

RFW Batch Number: 9109L687 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 1a

| | Cust ID: | SITE 15 TB | | SITE 15 | | SITE 15 | | SITE 15 | | SITE-22 | | VBLK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 003 | | 003 MS | | 003 MSD | | 004 | | 91LVK162-MB1 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 94 | % | 101 | % | 104 | % | 102 | % | 101 | % | 95 | % |
| | Bromofluorobenzene | 91 | % | 94 | % | 100 | % | 100 | % | 95 | % | 94 | % |
| | 1,2-Dichloroethane-d4 | 100 | % | 88 | % | 93 | % | 87 | % | 94 | % | 97 | % |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 7 | B | 5 | B | 6 | B | 7 | B | 3 | JB | 4 | JB |
| Acetone | | 25 | | 120 | | 140 | B | 170 | B | 15 | | 10 | U |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 97 | % | 98 | % | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 36 | | 25 | | 24 | | 3 | J | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 36 | | 39 | | 46 | | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 12 | | 99 | % | 100 | % | 2 | J | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 106 | % | 97 | % | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW[illegible]ch Number: 9109L687 Client: WSRC-TASK 2[illegible] Work Order: 0630-28-27-0000 [illegible]ge: 1b

| Cust ID: | SITE 15 TB | SITE 15 | SITE 15 | SITE 15 | SITE-22 | VBLK |
|---|---|---|---|---|---|---|
| RFW#: | 001 | 003 | 003 MS | 003 MSD | 004 | 91LVK162-MB1 |
| Toluene | 5 U | 2 J | 111 % | 109 % | 2 J | 5 U |
| Chlorobenzene | 5 U | 5 U | 112 % | 110 % | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9109L687 | Client: WSRC-TASK 27 | Work Order: 0630-28-27-0000 | Report Date: 09/27/91 13:20 | Page: 2a

| | | | | | |
|---|---|---|---|---|---|
| | Cust ID: | VBLK | | VBLK | |
| Sample Information | RFW#: | 91LVK164-MB1 | | 91LVK166-MB1 | |
| | Matrix: | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 95 | % | 99 | % |
| | Bromofluorobenzene | 95 | % | 96 | % |
| | 1,2-Dichloroethane-d4 | 95 | % | 89 | % |
| Chloromethane | | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U |
| Methylene Chloride | | 4 | J | 9 | |
| Acetone | | 10 | U | 7 | J |
| Carbon Disulfide | | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

| | | | | |
|---|---|---|---|---|
| Cust ID: | VBLK | | VBLK | |
| RFW#: | 91LVK164-MB1 | | 91LVK166-MB1 | |
| Toluene | 5 | U | 5 | U |
| Chlorobenzene | 5 | U | 5 | U |
| Ethylbenzene | 5 | U | 5 | U |
| Styrene | 5 | U | 5 | U |
| Xylene (total) | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/13/91 RFW LOT # :9109L687

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 15 TB | 001 | W | 91LVK162 | 09/11/91 | N/A | 09/17/91 |
| SITE 15 | 003 | W | 91LVK164 | 09/11/91 | N/A | 09/19/91 |
| SITE 15 | 003 MS | W | 91LVK166 | 09/11/91 | N/A | 09/24/91 |
| SITE 15 | 003 MSD | W | 91LVK166 | 09/11/91 | N/A | 09/24/91 |
| SITE-22 | 004 | W | 91LVK164 | 09/11/91 | N/A | 09/19/91 |
| LAB QC: | | | | | | |
| VBLK | MB1 | W | 91LVK162 | N/A | N/A | 09/17/91 |
| VBLK | MB1 | W | 91LVK164 | N/A | N/A | 09/19/91 |
| VBLK | MB1 | W | 91LVK166 | N/A | N/A | 09/24/91 |

WESTON Analytics Use Only
9109L687

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TOR27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27-0000
Project Contact/Phone #:
AD Project Manager: Dthomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 9/12/91 Date Due: 10/13/91
Account #: WSRC-275AA

Refrigerator #: 1

| #/Type Container | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Liquid | | | | | | | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | | | | | | | |

ANALYSES REQUESTED →

| ORGANIC | | | | | INORG | | |
|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | | Metal | CN | Radio Chem |

WESTON Analytics 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 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Site 15 TB | | | W | 9/11/91 | | ✓ | | (2) @ 40ml | | | | | | | | ✓ | | | | | | |
| 2 | 117 | | | | | | ✓ | | (1) @ 40ml | | | | | | | | ✓ | | | | | | |
| 3 | 15 | | | | | | ✓ | | (2) @ 40ml | | | | | | | | ✓ | | | | | | |
| 4 | 22 | | | | | | ✓ | | (1) @ 40ml | | | | | | | | ✓ | | | | | | |
| | Radiochem = see 910946 12 | | | | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Expedment/Bangh

original Quantity

DATE/REVISIONS:
10/8/91 1. [illegible]
2.
3.
4.
5.
6.

WESTON Analytics 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'd (Y) or N

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/12/91 | 9:30 am |
| | [illegible] | 9/12/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | [illegible] | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 281 596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

Task #27

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Radium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L687-002 | 620 | ±120 | 570 | ±50 | 95 | ±18 |
| 9109L687-003 | 46 | ±11 | 34 | ±5 | 28 | ±9 |
| 9109L687-004 | 86 | ±19 | 51 | ±8 | 29 | ±8 |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ | Am-241 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|---|---|
| 9109L687-002 | 14 | ±5 | 0.0 | ±1.3 | 9.3 | ±3.9 | 0.5 | ±3.0 |
| 9109L687-003 | 5.8 | ±3.4 | 0.7 | ±1.8 | 4.4 | ±2.9 | 0.0 | ±4.2 |
| 9109L687-004 | 1.7 | ±2.3 | 0.0 | ±1.3 | 2.3 | ±2.3 | 0.0 | ±7.1 |

| Sample Id | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L687-002 | 46000 | ±1000 | *0 | ±120 | 0.5 | ±2.5 |
| 9109L687-003 | 11000 | ±560 | 25 | ±20 | 0.0 | ±3.6 |
| 9109L687-004 | 2700 | ±370 | 2 | ±13 | 0.0 | ±3.7 |

| Sample Id | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|---|---|
| 9109L687-002 | 46 | ±9 | 1.0 | ±6.0 | 10 | ±10 | 0.0 | ±3.7 |
| 9109L687-003 | 260 | ±20 | 8.9 | ±6.2 | 0.0 | ±9.7 | 1.1 | ±3.8 |
| 9109L687-004 | 6.3 | ±5.5 | 3.9 | ±5.6 | 4.7 | ±5.9 | 0.0 | ±3.8 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

**Sample Type: Water**

| Sample Id | C-14 pCi/l | Error 2σ |
|---|---|---|
| 9109L687-002 | 530 | ±240 |
| 9109L687-003 | 45 | ±23 |
| 9109L687-004 | 20 | ±22 |

GAMMA SPECTROSCOPY

| Sample Id | Bi-214* pCi/l | Pb-214* pCi/l |
|---|---|---|
| **Sample Type: Water** | | |
| 9109L687-002 | <180 | <150 |
| 9109L687-003 | <210 | <150 |
| 9109L687-004 | <46 | <26 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

Abbreviations:

Parameters:

| | |
|---|---|
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| Am-241 | : Americium-241 |
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Bi-214* | : Bismuth 214-MDA Reported at 1.645 sigma |
| Pb-214* | : Lead 214-MDA Reported at 1.654 sigma |
| Co-58* | : Cobalt 58-MDA Reported at 1.645 sigma |
| Co-60* | : Cobalt 60-MDA Reported at 1.645 sigma |
| Cs-137* | : Cesium 137-MDA Reported at 1.645 sigma |
| Ag-110m* | : Silver 110m-MDA Reported at 1.645 sigma |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| $2\sigma$ | : Counting error at the 95% confidence level, $2\sigma$ |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 4
Copy: 1 of 2

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E Status: Final

Quality codes:

< : Not Detected- below detection limit.
* : Rerun in progress

Job approved by:

Signed: Ellen La Riviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
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Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E
Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Radium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 10 | ±33 | 93 | ±25 | 1.4 | ±0.7 |
| Duplicate | 0 | ±26 | 41 | ±22 | 0.2 | ±0.4 |
| Duplicate % diff. | 100 | --- | 39 | --- | 75 | --- |
| Std (found value) | 233 | ±6 | 110 | ±2 | 117 | ±4 |
| Std (true value) | 206 | --- | 106 | --- | 101 | --- |
| Std % diff. | 13 | --- | 3.8 | --- | 16 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.3 | ±0.3 | 0.2 | ±0.2 |
| Spike % rec. | 103 | --- | 102 | --- | --- | --- |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ | Am-241 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|---|---|
| Duplicate | 13 | ±3 | 0.0 | ±0.6 | 9.8 | ±2.8 | 1.0 | ±3.2 |
| Duplicate | 4.3 | ±2.0 | 0.0 | ±0.7 | 2.6 | ±1.6 | 0.0 | ±2.8 |
| Duplicate % diff. | *50 | --- | 0.0 | --- | *58 | --- | 100 | --- |
| Std (found value) | 202 | ±6 | 8.2 | ±1.1 | 185 | ±5 | 123 | ±7 |
| Std (true value) | 192 | --- | 8.8 | --- | 192 | --- | 103 | --- |
| Std % diff. | 5.2 | --- | 6.8 | --- | 3.6 | --- | 19 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- | 119 | --- |
| Blank | 0.0 | ±0.2 | 0.0 | ±0.1 | 0.0 | ±0.2 | 0.0 | ±0.4 |
| Spike % rec. | 113 | --- | 100 | --- | 108 | --- | --- | --- |

| Sample Id | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 2800 | ±370 | 0.0 | ±3.4 | 0.0 | ±3.3 |
| Duplicate | 2600 | ±360 | 1.1 | ±4.2 | 0.0 | ±4.0 |
| Duplicate % diff. | 4.4 | --- | 100 | --- | 0.0 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std (found value) | 55551 | ±1081 | 1126 | ±19 | --- | --- |
| Std (true value) | 55800 | --- | 993 | --- | --- | --- |
| Std % diff. | 0.2 | --- | 13.4 | --- | --- | --- |
| Std % rec. | 99.5 | --- | 113 | --- | --- | --- |
| Blank | 18 | ±280 | 0.0 | ±3.2 | 0.0 | ±0.2 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 370 | ±30 | 0.3 | ±2.7 | 0.0 | ±5.1 |
| Duplicate | 140 | ±20 | 0.0 | ±2.4 | 2.4 | ±5.5 |
| Duplicate % diff. | #45 | --- | 100 | --- | 100 | --- |
| Std (found value) | 90 | ±4 | 23 | ±2 | 23 | ±2 |
| Std (true value) | 104 | --- | 21 | --- | 21 | --- |
| Std % diff. | 13 | --- | 9.5 | --- | 9.5 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.1 | 0.0 | ±1.0 | 0.0 | ±1.0 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|
| Duplicate | 0.0 | ±3.6 | 23 | ±17 |
| Duplicate | 0.0 | ±4.0 | 16 | ±27 |
| Duplicate % diff. | 0.0 | --- | 18 | --- |
| Std (found value) | 101 | ±3 | 982 | ±21 |
| Std (true value) | 100 | --- | 992 | --- |
| Std % diff. | 1.0 | --- | 1.0 | --- |

BARRINGER LABORATORIES INC.
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27-Jan-92

Diane Thomas
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208 Welsh Pool Road
Lionville, PA 19353

Page: 3
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Tc-99 pCi/l | Tc-99 Error 2σ | C-14 pCi/l | C-14 Error 2σ |
|---|---|---|---|---|
| Std % rec. | 101 | --- | --- | --- |
| Blank | 0.0 | ±0.8 | 0.6 | ±3.1 |
| Spike % rec. | --- | --- | --- | --- |

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27-Jan-92

Diane Thomas
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208 Welsh ool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Co-58* pCi/l | Error 2σ | Co-60* pCi/l | Error 2σ | Cs-137* pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 810 | ±100 | 410 | ±80 | 95 | ±41 |
| Duplicate | 810 | ±100 | 440 | ±100 | 100 | ±40 |
| Duplicate % diff. | 0.0 | --- | 3.5 | --- | 2.6 | --- |

| Sample Id | Ag-110m* pCi/l | Error 2σ | Gamma Spec pCi/l | Error 2σ |
|---|---|---|---|---|
| Duplicate | 180 | ±40 | --- | --- |
| Duplicate | 200 | ±40 | --- | --- |
| Duplicate % diff. | 5.3 | --- | --- | --- |
| Std (found value) | --- | --- | 17 | ±4 |
| Std (true value) | --- | --- | 19 | --- |
| Std % diff. | --- | --- | 11 | --- |

Abbreviations:

Parameters:

U-234 : Uranium-234
U-235 : Uranium-235
U-238 : Uranium-238
Am-241 : Americium-241

BARRINGER LABORATORIES INC.
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27-Jan-92

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Page: 5
Copy: 1 of 2

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E Status: Final

QUALITY CONTROL REPORT

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Bi-214* | : Bismuth 214-MDA Reported at 1.645 sigma |
| Pb-214* | : Lead 214-MDA Reported at 1.654 sigma |
| Co-58* | : Cobalt 58-MDA Reported at 1.645 sigma |
| Co-60* | : Cobalt 60-MDA Reported at 1.645 sigma |
| Cs-137* | : Cesium 137-MDA Reported at 1.645 sigma |
| Ag-110m* | : Silver 110m-MDA Reported at 1.645 sigma |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |

Quality codes:

| | |
|---|---|
| # | : Samples were heavy in suspended solids, and difficult to get an homogenious sample. |
| * | : Rerun in progress |

Job approved by:

Signed: .....
Approved
Quality Assurance Department

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 6
Copy: 1 of 2

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: ljb Via: Federal Express

Sample Container Type: pl btls
Sample Type: Water
Preservative When Received: None
Additional Lab Preparation: None

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 2 pCi/l | none | Pingilley | 12/ 8-12/18 |
| Gross Beta | 900.0 | 2 pCi/l | none | Pingilley | 12/ 8-12/18 |
| Radium | 900.1 | 1 pCi/l | none | Seidel | 12/31- 1/ 3 |
| U-234/235/238 | 907.0 | 0.4 pCi/l | none | Meyer | 1/17- 1/24 |
| Am-241 | 907.0 | 0.5 pCi/l | none | Preston | 1/14- 1/22 |
| Tritium | 906.0 | 460 pCi/l | none | Meyer | 12/20- 1/26 |
| I-129 | 902.0 | 1 pCi/l | none | Preston | 1/ 6- 1/10 |
| Pu-238/239/240 | 907.0 | 0.4 pCi/l | none | Preston | 1/21- 1/24 |
| Sr-89/90 | 905.0 | 1 pCi/l | none | Kidwell | 12/30- 1/23 |
| Tc-99 | HASL 300 | 1 pCi/l | none | Preston | 12/26- 1/ 5 |
| C-14 | 520-84-006 | 3 pCi/l | none | Meyer | 12/18- 1/17 |
| Bi-214* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Pb-214* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Co-58* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Co-60* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Cs-137* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Ag-110m* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Gamma Spec | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

WESTON Analytics Use Only.

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client: Weston-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 01302827
Project Contact/Phone #:
AD Project Manager: Bellomo
QC: Del: TAT:

Date Rec'd: ____ Date Due: ____
Account #: ____

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | | | | | 1L | 1L | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | 1gal | 1gal | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | INORG | | | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Radio chem (3) | | | Metal | CN | | | | | | | | | |
| | | WESTON Analytics 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 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Site 117 | | | W | 9/11/91 | | | | | | | | ✓ | ✓ | | | 91092687-002 | | | | |
| | 15 | | | | | | | | | | | | | | | | | | | 003 | |
| | 28 | | | | | | | | | | | | | | | | | | | 004 | |
| | Site 15 FTB | | | W | 9/11/91 | | | | | | | | ✓ | ✓ | | | 91092687-001 | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem (3) See Attached

DATE/REVISIONS:
1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | FedEx | 11/21/91 | 1630 |
| | [illegible] | 11/22/91 | 9:30 |

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

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

* I did not receive spl #4 (91092687-1) #001 is trip blank - NO RAD req'd DCT

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

20-Apr-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Radium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Site 117 | 620 | ±120 | 570 | ±50 | 95 | ±18 |
| Site 15 | 46 | ±11 | 34 | ±5 | 28 | ±9 |
| Site 22 | 86 | ±19 | 51 | ±8 | 29 | ±8 |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ | Am-241 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|---|---|
| Site 117 | 14 | ±5 | 0.0 | ±1.3 | 9.3 | ±3.9 | 0.5 | ±3.0 |
| Site 15 | 5.8 | ±3.4 | 0.7 | ±1.8 | 4.4 | ±2.9 | 0.0 | ±4.2 |
| Site 22 | 1.7 | ±2.3 | 0.0 | ±1.3 | 2.3 | ±2.3 | 0.0 | ±7.1 |

| Sample Id | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Site 117 | 46000 | ±1000 | a1 | ±24 | 0.5 | ±2.5 |
| Site 15 | 11000 | ±560 | 25 | ±20 | 0.0 | ±3.6 |
| Site 22 | 2700 | ±370 | 2 | ±13 | 0.0 | ±3.7 |

| Sample Id | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|---|---|
| Site 117 | 46 | ±9 | 1.0 | ±6.0 | 10 | ±10 | 0.0 | ±3.7 |
| Site 15 | 260 | ±20 | 8.9 | ±6.2 | 0.0 | ±9.7 | 1.1 | ±3.8 |
| Site 22 | 6.3 | ±5.5 | 3.9 | ±5.6 | 4.7 | ±5.9 | 0.0 | ±3.8 |

BARRINGER LABORATORIES INC.
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20-Apr-92

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PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | C-14 pCi/l | Error 2σ |
|---|---|---|
| Site 117 | 530 | ±240 |
| Site 15 | 45 | ±23 |
| Site 22 | 20 | ±22 |

AMENDED REPORT

| Sample | Bi-214* pCi/l | Pb-214* pCi/l |
|---|---|---|
| **Sample Type: Water** | | |
| Site 117 | <180 | <150 |
| Site 15 | <210 | <150 |
| Site 22 | <46 | <26 |

BARRINGER LABORATORIES INC.
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20-Apr-92

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PO #: LSA #LL-0962-F4

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Status: Final

AMENDED REPORT

Abbreviations:

Parameters:

| | |
|---|---|
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| Am-241 | : Americium-241 |
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Bi-214* | : Bismuth 214-MDA Reported at 1.645 sigma |
| Pb-214* | : Lead 214-MDA Reported at 1.654 sigma |
| Co-58* | : Cobalt 58-MDA Reported at 1.645 sigma |
| Co-60* | : Cobalt 60-MDA Reported at 1.645 sigma |
| Cs-137* | : Cesium 137-MDA Reported at 1.645 sigma |
| Ag-110m* | : Silver 110m-MDA Reported at 1.645 sigma |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| $2\sigma$ | : Counting error at the 95% confidence level, $2\sigma$ |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

20-Apr-92

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Page: 4
Copy: 1 of 2

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Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

AMENDED REPORT

a : Amended Value

Job approved by:

Signed: Ellen LaRiviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

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Job: 912297E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Radium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 10 | ±33 | 93 | ±25 | 1.4 | ±0.7 |
| Duplicate | 0 | ±26 | 41 | ±22 | 0.2 | ±0.4 |
| Duplicate % diff. | 100 | --- | 39 | --- | 75 | --- |
| Std (found value) | 233 | ±6 | 110 | ±2 | 117 | ±4 |
| Std (true value) | 206 | --- | 106 | --- | 101 | --- |
| Std % diff. | 13 | --- | 3.8 | --- | 16 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.3 | ±0.3 | 0.2 | ±0.2 |
| Spike % rec. | 103 | --- | 102 | --- | --- | --- |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ | Am-241 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|---|---|
| Duplicate | a0.2 | ±0.9 | a0.0 | ±0.5 | a0.4 | ±0.9 | 1.0 | ±3.2 |
| Duplicate | a0.3 | ±6.7 | a0.0 | ±0.4 | a0.4 | ±0.8 | 0.0 | ±2.8 |
| Duplicate % diff. | a20 | --- | a0.0 | --- | a0.0 | --- | 100 | --- |
| Std (found value) | 202 | ±6 | 8.2 | ±1.1 | 185 | ±5 | 123 | ±7 |
| Std (true value) | 192 | --- | 8.8 | --- | 192 | --- | 103 | --- |
| Std % diff. | 5.2 | --- | 6.8 | --- | 3.6 | --- | 19 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- | 119 | --- |
| Blank | 0.0 | ±0.2 | 0.0 | ±0.1 | 0.0 | ±0.2 | 0.0 | ±0.4 |
| Spike % rec. | 113 | --- | 100 | --- | 108 | --- | --- | --- |

| Sample Id | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 2800 | ±370 | 0.0 | ±3.4 | 0.0 | ±3.3 |
| Duplicate | 2600 | ±360 | 1.1 | ±4.2 | 0.0 | ±4.0 |
| Duplicate % diff. | 4.4 | --- | 100 | --- | 0.0 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

20-Apr-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std (found value) | 55551 | ±1081 | 1126 | ±19 | --- | --- |
| Std (true value) | 55800 | --- | 993 | --- | --- | --- |
| Std % diff. | 0.2 | --- | 13.4 | --- | --- | --- |
| Std % rec. | 99.5 | --- | 113 | --- | --- | --- |
| Blank | 18 | ±280 | 0.0 | ±3.2 | 0.0 | ±0.2 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 370 | ±30 | 0.3 | ±2.7 | 0.0 | ±5.1 |
| Duplicate | 140 | ±20 | 0.0 | ±2.4 | 2.4 | ±5.5 |
| Duplicate % diff. | #45 | --- | 100 | --- | 100 | --- |
| Std (found value) | 90 | ±4 | 23 | ±2 | 23 | ±2 |
| Std (true value) | 104 | --- | 21 | --- | 21 | --- |
| Std % diff. | 13 | --- | 9.5 | --- | 9.5 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.1 | 0.0 | ±1.0 | 0.0 | ±1.0 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|
| Duplicate | 0.0 | ±3.6 | 23 | ±17 |
| Duplicate | 0.0 | ±4.0 | 16 | ±27 |
| Duplicate % diff. | 0.0 | --- | 18 | --- |
| Std (found value) | 101 | ±3 | 982 | ±21 |
| Std (true value) | 100 | --- | 992 | --- |
| Std % diff. | 1.0 | --- | 1.0 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

20-Apr-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 3
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Tc-99 pCi/l | Tc-99 Error 2σ | C-14 pCi/l | C-14 Error 2σ |
|---|---|---|---|---|
| Std % rec. | 101 | --- | --- | --- |
| Blank | 0.0 | ±0.8 | 0.6 | ±3.1 |
| Spike % rec. | --- | --- | --- | --- |

BARRINGER LABORATORIES INC.
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20-Apr-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Co-58* pCi/l | Error 2σ | Co-60* pCi/l | Error 2σ | Cs-137* pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 810 | ±100 | 410 | ±80 | 95 | ±41 |
| Duplicate | 810 | ±100 | 440 | ±100 | 100 | ±40 |
| Duplicate % diff. | 0.0 | --- | 3.5 | --- | 2.6 | --- |
| Std (found value) | --- | --- | --- | --- | --- | --- |
| Std (true value) | --- | --- | --- | --- | --- | --- |
| Std % diff. | --- | --- | --- | --- | --- | --- |

| Sample Id | Ag-110m* pCi/l | Error 2σ | Gamma Spec pCi/l | Error 2σ |
|---|---|---|---|---|
| Duplicate | 180 | ±40 | --- | --- |
| Duplicate | 200 | ±40 | --- | --- |
| Duplicate % diff. | 5.3 | --- | --- | --- |
| Std (found value) | --- | --- | 17 | ±4 |
| Std (true value) | --- | --- | 19 | --- |
| Std % diff. | --- | --- | 11 | --- |

Abbreviations:

Parameters:

U-234 : Uranium-234
U-235 : Uranium-235
U-238 : Uranium-238
Am-241 : Americium-241

BARRINGER LABORATORIES INC.
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20-Apr-92

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WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E Status: Final

QUALITY CONTROL REPORT

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Bi-214* | : Bismuth 214-MDA Reported at 1.645 sigma |
| Pb-214* | : Lead 214-MDA Reported at 1.654 sigma |
| Co-58* | : Cobalt 58-MDA Reported at 1.645 sigma |
| Co-60* | : Cobalt 60-MDA Reported at 1.645 sigma |
| Cs-137* | : Cesium 137-MDA Reported at 1.645 sigma |
| Ag-110m* | : Silver 110m-MDA Reported at 1.645 sigma |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |

Quality codes:

| | |
|---|---|
| # | : Samples heavy in suspended solids, difficult to get an homogenious sample. |
| a | : Amended Value |

Job approved by:

Signed: .....
Approved
Quality Assurance Department

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

20-Apr-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 6
Copy: 1 of 2

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 12:32
PO #: LSA #LL-0962-F4

Job: 912297E

Status: Final

QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: ljb Via: Federal Express

Sample Container Type: pl btls
Sample Type: Water
Preservative When Received: None
Additional Lab Preparation: None

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 2 pCi/l | none | Pingilley | 12/ 8-12/18 |
| Gross Beta | 900.0 | 2 pCi/l | none | Pingilley | 12/ 8-12/18 |
| Radium | 900.1 | 1 pCi/l | none | Seidel | 12/31- 1/ 3 |
| U-234/235/238 | 907.0 | 0.4 pCi/l | none | Meyer | 1/17- 1/24 |
| Am-241 | 907.0 | 0.5 pCi/l | none | Preston | 1/14- 1/22 |
| Tritium | 906.0 | 460 pCi/l | none | Meyer | 12/20- 1/26 |
| I-129 | 902.0 | 1 pCi/l | none | Preston | 1/ 6- 1/10 |
| Pu-238/239/240 | 907.0 | 0.4 pCi/l | none | Preston | 1/21- 1/24 |
| Sr-89/90 | 905.0 | 1 pCi/l | none | Kidwell | 12/30- 1/23 |
| Tc-99 | HASL 300 | 1 pCi/l | none | Preston | 12/26- 1/ 5 |
| C-14 | 520-84-006 | 3 pCi/l | none | Meyer | 12/18- 1/17 |
| Bi-214* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Pb-214* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Co-58* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Co-60* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Cs-137* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Ag-110m* | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |
| Gamma Spec | 901.1 | ---- | none | Kidwell | 12/20- 1/ 6 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

WES - 27

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client: [redacted]
Est. Final Proj. Sampling Date: [redacted]
Work Order #: [redacted] 30 21 27
Project Contact/Phone #: [redacted]
AD Project Manager: Dillamae
QC: Std Del: Std TAT: ____
Date Rec'd: ____ Date Due: ____
Account #: ____

Refrigerator #: ____

| #/Type Container | Liquid | Solid |
|---|---|---|
| Volume | Liquid | Solid |
| Preservatives | | |

ANALYSES REQUESTED →

| ORGANIC | | | | | | | INORG | |
|---|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Rad Chem (3) | | | Metal | CN |

WESTON Analytics 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 | Rad Chem (3) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Site 117 | | | W | 9/11/91 | | | | | | ✓ | ✓ | | | 91092687-002 | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | 003 | |
| | 22 | | | | | | | | | | | | | | | | | | 004 | |
| | Site 15 TB | | | W | 9/11/91 | | | | | | ✓ | ✓ | | | 91092687-001 | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem (3) See Attached

DATE/REVISIONS:
1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Steger | FedEx | | |
| | | | |

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

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

WESTON Analytics Use Only
9109L687

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSPC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 01630-28-27-0000
Project Contact/Phone #:
AD Project Manager: Thomas
QC: std Del: std TAT: 30 day
Date Rec'd: 9/13/91 Date Due: 10/13/91
Account #: WSPC275TB

Refrigerator #:
#/Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives

ANALYSES REQUESTED: ORGANIC (VOA, BNA, Pest/PCB, Herb, Radio chem, Radio chem); INORG (Metal, CN)

WESTON Analytics Use Only

| MATRIX CODES | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | VOA | BNA | Pest/PCB | Herb | Radio chem | Radio chem | Metal | CN | Radio chem |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Ua24hr | | | | | | | | Ina |
| | 001 | Site 15 TB | | | W | 9/11/91 | | ✓ | | (2) a) 40ml | | | | | | ✓ |
| | 2 | 117 | | | | | | ✓ | | (1) a) 40ml | | | | | | ✓ |
| | 3 | 15 | | | | | | ✓ | | (2) a) 40ml | | | | | | ✓ |
| | 4 | 22 | | | | | | ✓ | | (1) a) 40ml | | | | | | ✓ |
| | | Radiochem = soil 9109L612 | | | | | | | | | | | | | | |

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

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Replacement samples
original rewritten

DATE/REVISIONS:
10/8/91 1. QC 2 cancelled for VOA per SDR.
11/25/91 2. Radiochemistry added to Barringer
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/13/91 | 9:30 am |
| | [illegible] | 9/13/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 9/13/91 | |

WESTON Analytics 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'd Y or N

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# N/A Cooler# N/A 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27
**RFW #:** 9109L617
**W.O. #:** 0630-28-27-0000

**SAMPLES RECEIVED:** 09-06-91

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. Sample holding times as required by 40CFR136 were met for water samples with the exception of nitrate, nitrite, pH and specific conductance which were received past hold.

2. All preparation blank results were below the required detection limit with the exception of acidity for 91LAL048-MB1.

3. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

4. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

5. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

10.7.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc\i9-617

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/04/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L617

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 23 | Acidity | 30.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 5.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.18 | | MG/L | 0.10 |
| | | pH | 5.1 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 20.9 | | UMHOS/CM | 1.0 |
| -002 | SITE 66 | Acidity | 570 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 16.8 | | MG/L | 0.40 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 4.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 50.7 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/04/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L617

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -003 | SITE 24 | Acidity | 40.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 7.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 4.4 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 15.3 | | UMHOS/CM | 1.0 |
| -004 | SITE 65 | Acidity | 110 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 62.8 | | MG/L | 0.40 |
| | | Nitrate, as N | 0.24 | | MG/L | 0.10 |
| | | pH | 5.2 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 21.9 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/04/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L617

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK10 | 91LAL048-MB1 | Acidity | 0.50 u | MG/L | 0.50 |
| BLANK20 | 91LAL048-MB2 | Acidity | 8.5 | MG/L | 0.50 |
| BLANK10 | 91LCL107-MB1 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK20 | 91LCL107-MB2 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK10 | 91LHD017-MB1 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LHD017-MB2 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LNO217-MB1 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LNO217-MB2 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK30 | 91LNO217-MB3 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LS4082-MB1 | Sulfate | 5.0 u | MG/L | 5.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/04/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L617

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK20 | 91LS4082-MB2 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK10 | 91LSP055-MB1 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/04/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L617

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| BLANK10 | 91LCL107-MB1 | Chloride | 23.9 | 5.0 u | 25.0 | 95.7 |
| | | Chloride MSD | 23.8 | 5.0 u | 25.0 | 95.1 |
| BLANK20 | 91LCL107-MB2 | Chloride | 24.0 | 5.0 u | 25.0 | 96.0 |
| BLANK10 | 91LHD017-MB1 | Hardness | 102 | 0.10u | 100 | 102 |
| | | Hardness MSD | 101 | 0.10u | 100 | 101 |
| BLANK20 | 91LHD017-MB2 | Hardness | 330 | 0.10u | 330 | 100 |
| BLANK10 | 91LNO217-MB1 | Nitrate, as N | 0.39 | 0.10u | 0.40 | 98.2 |
| BLANK20 | 91LNO217-MB2 | Nitrate, as N | 0.41 | 0.10u | 0.40 | 104 |
| BLANK30 | 91LNO217-MB3 | Nitrate, as N | 0.40 | 0.10u | 0.40 | 101 |
| BLANK10 | 91LS4082-MB1 | Sulfate | 21.1 | 5.0 u | 20.0 | 106 |
| | | Sulfate | 21.5 | 5.0 u | 20.0 | 107 |
| BLANK20 | 91LS4082-MB2 | Sulfate | 31.4 | 5.0 u | 30.0 | 105 |
| BLANK10 | 91LSP055-MB1 | Specific Conductance | 141 | 1.0 u | 147 | 95.9 |
| | | Specific Conductance M | 142 | 1.0 u | 147 | 96.6 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/04/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L617

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| BLANK10 | 91LCL107-MB1 | Chloride | 95.7 | 95.1 | 0.60 |
| BLANK10 | 91LHD017-MB1 | Hardness | 102 | 101 | 1.5 |
| BLANK10 | 91LS4082-MB1 | Sulfate | 106 | 107 | 1.6 |
| BLANK10 | 91LSP055-MB1 | Specific Conductance | 95.9 | 96.6 | 0.70 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 10/04/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L617

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | SITE 23 | Nitrate, as N | 0.18 | 0.18 | 0.57 |
| | | pH | 5.1 | 5.1 | 0.20 |
| | | Specific Conductance | 20.9 | 20.9 | 0.00 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/06/91 RFW LOT # :9109L617

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 23 | | | | | | |
| ACIDITY | 001 | W | 91LAL048 | 09/04/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 001 | W | 91LCL107 | 09/04/91 | 09/09/91 | 09/09/91 |
| HARDNESS | 001 | W | 91LHD017 | 09/04/91 | 09/16/91 | 09/16/91 |
| NITRATE | 001 | W | 91LNO217 | 09/04/91 | 09/10/91 | 09/11/91 |
| NITRATE | 001 REP | W | 91LNO217 | 09/04/91 | 09/10/91 | 09/11/91 |
| PH | 001 | W | 91LPH143 | 09/04/91 | 09/07/91 | 09/07/91 |
| PH | 001 REP | W | 91LPH143 | 09/04/91 | 09/07/91 | 09/07/91 |
| SULFATE | 001 | W | 91LS4082 | 09/04/91 | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | 001 | W | 91LSP055 | 09/04/91 | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | 001 REP | W | 91LSP055 | 09/04/91 | 09/09/91 | 09/09/91 |
| SUB-OUT TEST FOR SUB | 001 | W | | 09/04/91 | | |
| SITE 66 | | | | | | |
| ACIDITY | 002 | W | 91LAL048 | 09/04/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 002 | W | 91LCL107 | 09/04/91 | 09/09/91 | 09/09/91 |
| HARDNESS | 002 | W | 91LHD017 | 09/04/91 | 09/16/91 | 09/16/91 |
| NITRATE | 002 | W | 91LNO217 | 09/04/91 | 09/10/91 | 09/11/91 |
| PH | 002 | W | 91LPH143 | 09/04/91 | 09/07/91 | 09/07/91 |
| SULFATE | 002 | W | 91LS4082 | 09/04/91 | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | 002 | W | 91LSP055 | 09/04/91 | 09/09/91 | 09/09/91 |
| SUB-OUT TEST FOR SUB | 002 | W | | 09/04/91 | | |
| SITE 24 | | | | | | |
| ACIDITY | 003 | W | 91LAL048 | 09/04/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 003 | W | 91LCL107 | 09/04/91 | 09/09/91 | 09/09/91 |
| HARDNESS | 003 | W | 91LHD017 | 09/04/91 | 09/16/91 | 09/16/91 |
| NITRATE | 003 | W | 91LNO217 | 09/04/91 | 09/10/91 | 09/11/91 |
| PH | 003 | W | 91LPH143 | 09/04/91 | 09/07/91 | 09/07/91 |
| SULFATE | 003 | W | 91LS4082 | 09/04/91 | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | 003 | W | 91LSP055 | 09/04/91 | 09/09/91 | 09/09/91 |
| SUB-OUT TEST FOR SUB | 003 | W | | 09/04/91 | | |
| SITE 65 | | | | | | |
| ACIDITY | 004 | W | 91LAL048 | 09/04/91 | 09/17/91 | 09/17/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/06/91 RFW LOT # :9109L617

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHLORIDE | 004 | W | 91LCL107 | 09/04/91 | 09/09/91 | 09/09/91 |
| HARDNESS | 004 | W | 91LHD017 | 09/04/91 | 09/16/91 | 09/16/91 |
| NITRATE | 004 | W | 91LNO217 | 09/04/91 | 09/10/91 | 09/11/91 |
| PH | 004 | W | 91LPH143 | 09/04/91 | 09/07/91 | 09/07/91 |
| SULFATE | 004 | W | 91LS4082 | 09/04/91 | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | 004 | W | 91LSP055 | 09/04/91 | 09/09/91 | 09/09/91 |
| SUB-OUT TEST FOR SUB | 004 | W | | 09/04/91 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| ALKALINITY | MB1 BS | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| ACIDITY | MB2 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| CHLORIDE | MB1 | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| CHLORIDE | MB1 BS | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| CHLORIDE | MB1 BSD | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| CHLORIDE | MB2 | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| CHLORIDE | MB2 BS | W | 91LCL107 | N/A | 09/09/91 | 09/09/91 |
| HARDNESS | MB1 | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB1 BS | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB1 BSD | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB2 | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB2 BS | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| NITRATE | MB1 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB1 BS | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB2 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB2 BS | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB3 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB3 BS | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| SULFATE | MB1 | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SULFATE | MB1 BS | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SULFATE | MB1 BSD | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SULFATE | MB2 | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SULFATE | MB2 BS | W | 91LS4082 | N/A | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | MB1 | W | 91LSP055 | N/A | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | MB1 BS | W | 91LSP055 | N/A | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | MB1 BSD | W | 91LSP055 | N/A | 09/09/91 | 09/09/91 |

WESTON Analytics Use Only
9109L617

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: Thomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 9/10/91 Date Due: 10/10/91
Account #: WSRC27SDS

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | | | | | 50 | | | | 4 | | 4 | | | | | |
| #/Type Container | Liquid | 10 | | | | | 1/4 | | | | 1/2 | | 1/2 | 1/2 | | | | |
| | Solid | | | | | | 1/4 | | | | | | | | | | | |
| Volume | Liquid | 40 | | | | | 1/2 | | | | 40 | | 500 | 40 | | | | |
| | Solid | | | | | | 1/2 | | | | | | | | | | | |
| Preservatives | | None | | | | | 1/4 | | | | None | | None | None | | | | |

| ANALYSES REQUESTED | ORGANIC | | | | | | | INORG | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VOA | BNA | Pest/PCB | Herb | Radio Chem | | | Metal | CN | Hardness | Cl | NO3 | Alkal | PH | SO4 | Spcd |
| | 0624 | | | | ISUB | | | See Below | | | | | | | | |

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 (✓) | Matrix | Date Collected |
|---|---|---|---|---|
| 001 | Site 23 | | W | 9/4/91 |
| 2 | 66 | | | |
| 3 | 24 | | | |
| 4 | 65 | | | |
| 5 | Trip Blank | | | |

Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn

Special Instructions: Radiochem - see 9109L612 -
VOA samples 001 -- 004 have air bubbles S. Perko 9/9/91
original w/ writer

DATE/REVISIONS:
9-30-91 1. Cancel ALKL on #001 - #004 gm SDCH
2
3
4
5
6

WESTON Analytics Use Only

Samples were:
1) Shipped ___ or Hand Delivered
Airbill #
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) 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'd Y or N

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | 9/6/91 | 9 am | | [illegible] | 9/9/91 | |

RFW 21-2 A-8/90 L372 L373 L L377 L378 Ref# Cooler# 381 596

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-06-91
**RFW #:** 9109L617
**W.O. #:** 0630-28-27-0000

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

10.2.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc\m9-617

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/30/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L617

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 23 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 326 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 880 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 25.0 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 46.0 | | UG/L | 40.0 |
| | | Lead, Total | 6.6 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 171 | | UG/L | 20.0 |
| -002 | SITE 66 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 209 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 182 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 26.5 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 93.6 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/30/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L617

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -003 | SITE 24 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 237 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 367 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 44.0 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 43.9 | | UG/L | 40.0 |
| | | Lead, Total | 9.0 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 314 | | UG/L | 20.0 |
| -004 | SITE 65 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.7 | | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 186 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.1 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 4.1 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 95.5 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/30/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L617
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L1745-MB1 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| BLANK1 | 91L1744-MB1 | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| BLANK1 | 91C256-MB1 | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| BLANK2 | 91C256-MB2 | Mercury, Total | 0.20 | u | UG/L | 0.20 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 09/30/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L617
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L1745-LC2 | Silver, LCS | 96.3 | 96.8 | 0.52 |
| | | Aluminum, LCS | 104 | 104 | 0.67 |
| | | Barium, LCS | 103 | 104 | 0.77 |
| | | Cadmium, LCS | 107 | 107 | 0.19 |
| | | Chromium, LCS | 95.0 | 95.3 | 0.32 |
| | | Copper, LCS | 96.6 | 97.1 | 0.52 |
| | | Iron, LCS | 97.2 | 97.1 | 0.10 |
| | | Manganese, LCS | 95.9 | 96.3 | 0.42 |
| | | Sodium, LCS | 107 | 105 | 1.4 |
| | | Nickel, LCS | 95.6 | 95.7 | 0.10 |
| | | Zinc, LCS | 97.6 | 98.0 | 0.41 |
| LCS2 | 91L1744-LC2 | Arsenic, LCS | 95.3 | 96.7 | 1.5 |
| | | Lead, LCS | 113 | 106 | 6.4 |
| | | Selenium, LCS | 91.7 | 89.7 | 2.2 |
| LCS2 | 91C256-LC2 | Mercury, LCS | 96.7 | 94.7 | 2.1 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/30/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L1745-LC1 | Silver, LCS | 482 | 500 | UG/L | 96.3 |
| | | Aluminum, LCS | 5190 | 5000 | UG/L | 104 |
| | | Barium, LCS | 5140 | 5000 | UG/L | 103 |
| | | Cadmium, LCS | 268 | 250 | UG/L | 107 |
| | | Chromium, LCS | 475 | 500 | UG/L | 95.0 |
| | | Copper, LCS | 1210 | 1250 | UG/L | 96.6 |
| | | Iron, LCS | 4860 | 5000 | UG/L | 97.2 |
| | | Manganese, LCS | 719 | 750 | UG/L | 95.9 |
| | | Sodium, LCS | 26600 | 25000 | UG/L | 107 |
| | | Nickel, LCS | 1910 | 2000 | UG/L | 95.6 |
| | | Zinc, LCS | 976 | 1000 | UG/L | 97.6 |
| LCS2 | 91L1745-LC2 | Silver, LCS | 484 | 500 | UG/L | 96.8 |
| | | Aluminum, LCS | 5230 | 5000 | UG/L | 104 |
| | | Barium, LCS | 5180 | 5000 | UG/L | 104 |
| | | Cadmium, LCS | 267 | 250 | UG/L | 107 |
| | | Chromium, LCS | 477 | 500 | UG/L | 95.3 |
| | | Copper, LCS | 1210 | 1250 | UG/L | 97.1 |
| | | Iron, LCS | 4860 | 5000 | UG/L | 97.1 |
| | | Manganese, LCS | 722 | 750 | UG/L | 96.3 |
| | | Sodium, LCS | 26300 | 25000 | UG/L | 105 |
| | | Nickel, LCS | 1910 | 2000 | UG/L | 95.7 |
| | | Zinc, LCS | 980 | 1000 | UG/L | 98.0 |
| LCS1 | 91L1744-LC1 | Arsenic, LCS | 28.6 | 30.0 | UG/L | 95.3 |
| | | Lead, LCS | 34.0 | 30.0 | UG/L | 113 |
| | | Selenium, LCS | 27.5 | 30.0 | UG/L | 91.7 |
| LCS2 | 91L1744-LC2 | Arsenic, LCS | 29.0 | 30.0 | UG/L | 96.7 |
| | | Lead, LCS | 31.9 | 30.0 | UG/L | 106 |
| | | Selenium, LCS | 26.9 | 30.0 | UG/L | 89.7 |
| LCS1 | 91C256-LC1 | Mercury, LCS | 4.8 | 5.0 | UG/L | 96.7 |
| LCS2 | 91C256-LC2 | Mercury, LCS | 4.7 | 5.0 | UG/L | 94.7 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/06/91 RFW LOT # :9109L617

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 23 | | | | | | |
| SILVER, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| ALUMINUM, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| ARSENIC, TOTAL | 001 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| BARIUM, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| CADMIUM, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| CHROMIUM, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| COPPER, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| IRON, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| MERCURY, TOTAL | 001 | W | 91C256 | 09/04/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| SODIUM, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| NICKEL, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| LEAD, TOTAL | 001 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | 001 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| ZINC, TOTAL | 001 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| SITE 66 | | | | | | |
| SILVER, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| ALUMINUM, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| ARSENIC, TOTAL | 002 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| BARIUM, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| CADMIUM, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| CHROMIUM, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| COPPER, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| IRON, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| MERCURY, TOTAL | 002 | W | 91C256 | 09/04/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| SODIUM, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| NICKEL, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| LEAD, TOTAL | 002 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | 002 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| ZINC, TOTAL | 002 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| SITE 24 | | | | | | |
| SILVER, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/06/91 RFW LOT # :9109L617

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| ARSENIC, TOTAL | 003 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| BARIUM, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| CADMIUM, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| CHROMIUM, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| COPPER, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| IRON, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| MERCURY, TOTAL | 003 | W | 91C256 | 09/04/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| SODIUM, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| NICKEL, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| LEAD, TOTAL | 003 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | 003 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| ZINC, TOTAL | 003 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| SITE 65 | | | | | | |
| SILVER, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| ALUMINUM, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| ARSENIC, TOTAL | 004 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| BARIUM, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| CADMIUM, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| CHROMIUM, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| COPPER, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| IRON, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| MERCURY, TOTAL | 004 | W | 91C256 | 09/04/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| SODIUM, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| NICKEL, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |
| LEAD, TOTAL | 004 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | 004 | W | 91L1744 | 09/04/91 | 09/10/91 | 09/16/91 |
| ZINC, TOTAL | 004 | W | 91L1745 | 09/04/91 | 09/10/91 | 09/27/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| ALUMINUM LABORTORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| BARIUM LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| CADMIUM LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| CHROMIUM LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/06/91 RFW LOT # :9109L617

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| COPPER LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| IRON LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| MANGANESE LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| SODIUM LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| NICKEL LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| ZINC LABORATORY | LC1 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| SILVER LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| ALUMINUM LABORTORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| BARIUM LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| CADMIUM LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| CHROMIUM LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| COPPER LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| IRON LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| MANGANESE LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| SODIUM LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| NICKEL LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| ZINC LABORATORY | LC2 BS | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| SILVER, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| ALUMINUM, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| BARIUM, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| CADMIUM, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| CHROMIUM, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| COPPER, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| IRON, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| MANGANESE, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| SODIUM, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| NICKEL, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| ZINC, TOTAL | MB1 | W | 91L1745 | N/A | 09/10/91 | 09/27/91 |
| ARSENIC LABORATORY | LC1 BS | W | 91L1744 | N/A | 09/10/91 | 09/16/91 |
| LEAD LABORATORY | LC1 BS | W | 91L1744 | N/A | 09/10/91 | 09/16/91 |
| SELENIUM LABORATORY | LC1 BS | W | 91L1744 | N/A | 09/10/91 | 09/16/91 |
| ARSENIC LABORATORY | LC2 BS | W | 91L1744 | N/A | 09/10/91 | 09/16/91 |
| LEAD LABORATORY | LC2 BS | W | 91L1744 | N/A | 09/10/91 | 09/16/91 |
| SELENIUM LABORATORY | LC2 BS | W | 91L1744 | N/A | 09/10/91 | 09/16/91 |
| ARSENIC, TOTAL | MB1 | W | 91L1744 | N/A | 09/10/91 | 09/16/91 |
| LEAD, TOTAL | MB1 | W | 91L1744 | N/A | 09/10/91 | 09/16/91 |
| SELENIUM, TOTAL | MB1 | W | 91L1744 | N/A | 09/10/91 | 09/16/91 |
| MERCURY LABORATORY | LC1 BS | W | 91C256 | N/A | 09/10/91 | 09/11/91 |
| MERCURY LABORATORY | LC2 BS | W | 91C256 | N/A | 09/10/91 | 09/11/91 |
| MERCURY, TOTAL | MB1 | W | 91C256 | N/A | 09/10/91 | 09/11/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/06/91 RFW LOT # :9109L617

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| MERCURY, TOTAL | MB2 | W | 91C256 | N/A | 09/10/91 | 09/11/91 |

WESTON Analytics Use Only: 9109L617

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: Thomas
QC: Del TAT: 30 day
Date Rec'd: 9/4/91 Date Due: 10/4/91
Account #: WSRC27SB

Refrigerator #

| #/Type Container | Liquid | 1 | | | | 4 | | | | 4 | | 4 | 1 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Solid | 1 | | | | | | | | | | | | | |
| Volume | Liquid | 40 | | | | 1 | | | | 1 | | 1 | 1 | | |
| | Solid | | | | | | | | | | | | | | |
| Preservatives | | None | | | | | | | | | | | | | |

| ANALYSES REQUESTED | ORGANIC | | | | | | | | INORG | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VOA | BNA | Pest/PCB | Herb. | Rad's chem | | | | Metal | CN | Alkalinity | Cl | NO3 | Nitrate | Sol |
| | 062444 | | | | TSUB | | | | See below | | | | | | |

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 (✓) | Matrix | Date Collected |
|---|---|---|---|---|
| 001 | Site 23 | | W | 9/4/91 |
| 2 | 66 | | | |
| 3 | 24 | | | |
| 4 | 65 | | | |
| 5 | Trip blank | | | |

Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Pb, Pb, Se, Zn, Fe, Mn

Special Instructions: Radiochem - see 9109L612 -

original signature

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | 9/6/91 | 9:25 am | | [illegible] | 9/7/91 | |

WESTON Analytics Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill #
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) 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'd Y or N

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-8/90 L372 L373 L375 L377 L378 Ref# Cooler# 381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC - TASK 27 **SAMPLES RECEIVED:** 09-06-91
**RFW #:** 9109L617, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of five (5) water samples collected on 09-04-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 09-09,10-91.

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

1. Non-target compounds were not detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. All matrix spike recoveries were within EPA QC limits.

4. The laboratory blanks contained the common contaminant methylene chloride at levels less than 2x the CRQL.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

9.20.91
Date

WESTON SM

# GLOSSARY OF VOA DATA

## DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

X = Additional qualifiers used as required are explained in the case narrative.

NQ = Result qualitatively confirmed but not able to quantify.

## ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not applicable.

DF = Dilution factor.

NR = Not required.

Roy F. Weston, I[illegible]. Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 09/13/91 14:03

RFW Batch Number: 9109L617 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 1a

| | Cust ID: | SITE 23 | | SITE 66 | | SITE 24 | | SITE 24 | | SITE 24 | | SITE 65 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 002 | | 003 | | 003 MS | | 003 MSD | | 004 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 100 | % | 93 | % | 100 | % | 102 | % | 101 | % | 94 | % |
| | Bromofluorobenzene | 94 | % | 92 | % | 95 | % | 96 | % | 94 | % | 97 | % |
| | 1,2-Dichloroethane-d4 | 107 | % | 97 | % | 98 | % | 98 | % | 98 | % | 114 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 4 | JB | 3 | JB | 4 | JB | 5 | B | 6 | B | 3 | JB |
| Acetone | | 4 | J | 10 | U | 10 | U | 5 | J | 10 | U | 5 | J |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U | 89 | % | 92 | % | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 3 | J | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 6 | | 5 | U | 5 | U | 105 | % | 104 | % | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U | 110 | % | 112 | % | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW[illegible]ch Number: 9109L617 Client: WSRC-TASK [illegible] Work Order: 0630-28-27-0000 [illegible]ge: 1b

| Cust ID: | SITE 23 | SITE [illegible] | SITE 24 | SITE 24 | SITE 24 | SITE 65 |
|---|---|---|---|---|---|---|
| RFW#: | 001 | 002 | 003 | 003 MS | 003 MSD | 004 |
| Toluene | 5 U | 5 U | 5 U | 118 % | 113 % | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U | 111 % | 109 % | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9109L617 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Report Date: 09/13/91 14:03 Page: 2a

| | Cust ID: | TRIP BLANK | | VBLK | | VBLK | |
|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 005 | | 91LVK156-MB1 | | 91LVK157-MB1 | |
| | Matrix: | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 98 | % | 98 | % | 93 | % |
| | Bromofluorobenzene | 92 | % | 94 | % | 92 | % |
| | 1,2-Dichloroethane-d4 | 104 | % | 103 | % | 102 | % |
| Chloromethane | | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 6 | B | 6 | | 6 | |
| Acetone | | 14 | | 10 | U | 10 | U |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW[illegible]ch Number: 9109L617 Client: WSRC-TASK 2[illegible] Work Order: 0630-28-27-0000 [illegible]ge: 2b

| Cust ID: | TRIP BLANK | VBLK | VBLK |
|---|---|---|---|
| RFW#: | 005 | 91LVK156-MB1 | 91LVK157-MB1 |
| Toluene | 5 U | 5 U | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/06/91 RFW LOT # :9109L617

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 23 | 001 | W | 91LVK156 | 09/04/91 | N/A | 09/09/91 |
| SITE 66 | 002 | W | 91LVK157 | 09/04/91 | N/A | 09/10/91 |
| SITE 24 | 003 | W | 91LVK156 | 09/04/91 | N/A | 09/09/91 |
| SITE 24 | 003 MS | W | 91LVK156 | 09/04/91 | N/A | 09/09/91 |
| SITE 24 | 003 MSD | W | 91LVK156 | 09/04/91 | N/A | 09/09/91 |
| SITE 65 | 004 | W | 91LVK157 | 09/04/91 | N/A | 09/10/91 |
| TRIP BLANK | 005 | W | 91LVK156 | 09/04/91 | N/A | 09/09/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| VBLK | MB1 | W | 91LVK156 | N/A | N/A | 09/09/91 |
| VBLK | MB1 | W | 91LVK157 | N/A | N/A | 09/10/91 |

WESTON Analytics Use Only
9109L617

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: Thomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 9/4/91 Date Due: 10/10/91
Account #: WSRC27SDS

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | | | | | 504 | | | | 4 | | 4 | | | | | | |
| #/Type Container | Liquid | 10 | | | | | 1 liq 1 oil | | | | 1P | | 1P | 1P | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Volume | Liquid | 40 | | | | | 1L | | | | 1L | | 500 | 1L | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Preservatives | | None | | | | | HNO3 | | | | HNO3 | | HCl | None | | | | | |

ANALYSES REQUESTED →

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) | Matrix | Date Collected | ORGANIC VOA | BNA | Pest/PCB | Herb | Radio chem | | | | INORG Metal | CN | Hardness | Cl | NO3 | Alk Acid | pH | SO4 | Spcd |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 062444 | | | | ISUB | | | | See Below | | | | | | | | |
| S - Soil | 001 | Site 23 | | W | 9/4/91 | | | | | | | | | | | | | | | | | |
| SE - Sediment | 2 | 66 | | | | | | | | | | | | | | | | | | | | |
| SO - Solid | 3 | 24 | | | | | | | | | | | | | | | | | | | | |
| SL - Sludge | 4 | 65 | | | | | | | | | | | | | | | | | | | | |
| W - Water | 5 | Trip Blank | | | | | | | | | | | | | | | | | | | | |
| O - Oil | | | | | | | | | | | | | | | | | | | | | | |
| A - Air | | | | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | | | | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | | | | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn | | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | | | |

Special Instructions: Radiochem - see 9109L612 -

VOA samples 001 - 004 have air bubbles S.Perko 9/9/91

original w/written

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill #
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| Jeff Cp | Pergi | 9/6/91 | 9 am | | | | |

RFW 21-21 8/90 ___ L372 ___ L373 ___ L3 ___ L377 ___ L378 Ref# ___ Cooler# 81-596a

ALBUQUERQUE LABORATORY

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
O. NO.: 9110153
Lab Code : BE

# REPORT OF ANALYSIS

TYPE OF ANALYSIS: [illegible] CUSTOMER ORDER NUMBER: 57600200[illegible] SAMPLES RECEIVED: 10/04/91

CORRECTED PARTIAL REPORT

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 23 001 | 112291 2103 | 09/04/91 | ALPHA | 2.80 | 1.90 | pCi/l | 1.01 | 011 CA |
| SITE 23 001 | 112291 2103 | 09/04/91 | BETA | 4.50 | 3.60 | pCi/l | 1.06 | 011 CA |
| SITE 23 001 | 121191 1406 | 09/04/91 | PU-239 | 0.06 | 0.04 | pCi/l | 1.03 | 119 RG |
| SITE 23 001 | 121191 1406 | 09/04/91 | PU-238 | 0.00 | 0.04 | pCi/l | 1.03 | 119 RG |
| SITE 23 001 | 121691 2315 | 09/04/91 | U-238 | 0.19 | 0.11 | pCi/l | 1.04 | 073 DJ |
| SITE 23 001 | 121691 2315 | 09/04/91 | U-235 | 0.00 | 0.04 | pCi/l | 1.04 | 073 DJ |
| SITE 23 001 | 121691 2315 | 09/04/91 | U-234 | 0.27 | 0.13 | pCi/l | 1.04 | 073 DJ |
| [illegible] 23 | 122291 1502 | 09/04/91 | CM-244 | 0.00 | 0.32 | pCi/l | 0.93 | 091 DJ |
| SITE 23 001 | 121391 1002 | 09/04/91 | TC-99 | 0.00 | 1.11 | pCi/l | 0.94 | 141 BP |
| SITE 23 001 | 111591 0921 | 09/04/91 | I-129 | 0.00 | 84.40 | pCi/l | 0.91 | 005 PB |
| SITE 23 001 | 111191 0259 | 09/04/91 | H-3 | 99.60 | 1.80 | pCi/ml | 1.00 | 051 BS |
| SITE 23 001 | 111291 1516 | 09/04/91 | T-RA | 0.23 | 0.13 | pCi/l | 1.00 | 011 WV |
| SITE 23 001 | 121191 1435 | 09/04/91 | AM-241 | 0.00 | 66.80 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | CS-134 | 0.00 | 24.10 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | CS-137 | 0.00 | 27.20 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | EU-152 | 0.00 | 70.40 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | EU-154 | 0.00 | 99.10 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | EU-155 | 0.00 | 77.80 | pCi/l | 0.91 | 006 RG |

☐ REPORTED VIA TELEPHONE ☐ FAX



TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461
FAX (505) 761-5416

02-04-1992

APPROVED BY: Cliff Gravel, Data Analyst

DATE

ALBUQUERQUE LABORATORY

CUSTOMER Weston - SRP
ATTENTION Diane C. Thomas
ADDRESS 208 Welsh Pool Rd.
CITY Lionville, Pa 19353
O. NO. 9110153
Lab Code : BE

# REPORT OF ANALYSIS

TYPE OF ANALYSIS [redacted] CUSTOMER ORDER NUMBER 57600200 SAMPLES RECEIVED 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 23 001 | 121191 1435 | 09/04/91 | CO-60 | 0.00 | 25.90 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | RU-106 | 0.00 | 246.80 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | SB-125 | 0.00 | 67.80 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | TH-232 | 0.00 | 109.40 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | NP-237 | 0.00 | 110.30 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 111491 1437 | 09/04/91 | SR-90 | 0.70 | 0.30 | pCi/l | 0.86 | 131 BP |
| SITE 23 001 | 111491 1437 | 09/04/91 | SR-89 | 0.00 | 0.40 | pCi/l | 0.86 | 131 BP |
| [illegible] 23 | 122291 1502 | 09/04/91 | AM-241 | 0.00 | 0.15 | pCi/l | 0.93 | 091 DJ |
| SITE 23 001 | 111191 2030 | 09/04/91 | C-14 | 23.50 | 0.50 | pCi/ml | 1.07 | 051 BS |
| SITE 24 003 | 112291 2103 | 09/04/91 | ALPHA | 303.00 | 65.00 | pCi/l | 1.01 | 013 CA |
| SITE 24 003 | 112291 2103 | 09/04/91 | BETA | 191.00 | 46.00 | pCi/l | 1.06 | 013 CA |
| SITE 24 003 | 121191 1406 | 09/04/91 | PU-239 | 1.43 | 0.28 | pCi/l | 1.03 | 121 RG |
| SITE 24 003 | 121191 1406 | 09/04/91 | PU-238 | 0.52 | 0.15 | pCi/l | 1.03 | 121 RG |
| SITE 24 003 | 121691 1426 | 09/04/91 | U-238 | 11.48 | 1.86 | pCi/l | 1.04 | 073 RG |
| SITE 24 003 | 121691 1426 | 09/04/91 | U-235 | 0.50 | 0.18 | pCi/l | 1.04 | 073 RG |
| SITE 24 003 | 121691 1426 | 09/04/91 | U-234 | 11.21 | 1.82 | pCi/l | 1.04 | 073 RG |
| SITE 24 003 | 122291 1502 | 09/04/91 | CM-244 | 0.21 | 0.16 | pCi/l | 0.93 | 093 DJ |
| SITE 24 003 | | 09/04/91 | TC-99 | * | | | | |

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Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461
FAX (505) 761-5416

02-04-1992

APPROVED BY Cliff Gravel, Data Analyst DATE

ALBUQUERQUE LABORATORY

# REPORT OF ANALYSIS

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
P.O. NO.: 9110153
Lab Code : BE

TYPE OF ANALYSIS: [redacted] 57600200 CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY | ERROR | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 24 003 | 111591 1302 | 09/04/91 | I-129 | 0.00 | 93.70 | pCi/l | 0.91 | 005 PB |
| SITE 24 003 | 111191 0259 | 09/04/91 | H-3 | 29.30 | 1.40 | pCi/ml | 1.00 | 051 BS |
| SITE 24 003 | 111291 1516 | 09/04/91 | T-RA | 0.26 | 0.13 | pCi/l | 1.00 | 013 WV |
| SITE 24 003 | 121191 2025 | 09/04/91 | AM-241 | 0.00 | 65.80 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | CS-134 | 0.00 | 25.30 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | CS-137 | 0.00 | 26.20 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | EU-152 | 0.00 | 68.70 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | EU-154 | 0.00 | 112.00 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | EU-155 | 0.00 | 78.50 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | CO-60 | 0.00 | 29.50 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | RU-106 | 0.00 | 232.20 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | SB-125 | 0.00 | 62.20 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | TH-232 | 0.00 | 113.40 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | NP-237 | 0.00 | 114.30 | Ci/l | 0.91 | 006 RG |
| SITE 24 003 | 111491 1437 | 09/04/91 | SR-90 | 1.00 | 0.40 | pCi/l | 0.86 | 133 BP |
| SITE 24 003 | 111491 1437 | 09/04/91 | SR-89 | 0.00 | 0.40 | pCi/l | 0.86 | 133 BP |
| SITE 24 003 | 122291 1502 | 09/04/91 | AM-241 | 0.22 | 0.15 | pCi/l | 0.93 | 093 DJ |
| SITE 24 003 | 111191 2030 | 09/04/91 | C-14 | 4.30 | 0.30 | pCi/ml | 1.07 | 051 BS |

☑ REPORTED VIA TELEPHONE ☐ FAX



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FAX (505) 761-5416

APPROVED BY Cliff Gravel, Data Analyst

DATE 02-04-1992

ALBUQUERQUE LABORATORY

# REPORT OF ANALYSIS

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
O. NO.: 9110153
Lab Code : BE

TYPE OF ANALYSIS:

CUSTOMER ORDER NUMBER: 57600200

SAMPLES RECEIVED: 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 65 004 | 112291 2103 | 09/04/91 | ALPHA | 83.50 | 29.40 | pCi/l | 1.01 | 014 CA |
| SITE 65 004 | 112291 2103 | 09/04/91 | BETA | 0.00 | 54.60 | pCi/l | 1.06 | 014 CA |
| SITE 65 004 | 121191 1406 | 09/04/91 | PU-239 | 1.13 | 0.35 | pCi/l | 1.03 | 122 RG |
| SITE 65 004 | 121191 1406 | 09/04/91 | PU-238 | 0.41 | 0.19 | pCi/l | 1.03 | 122 RG |
| SITE 65 004 | 121691 1426 | 09/04/91 | U-238 | 3.09 | 0.68 | pCi/l | 1.04 | 074 RG |
| SITE 65 004 | 121691 1426 | 09/04/91 | U-235 | 0.14 | 0.11 | pCi/l | 1.04 | 074 RG |
| SITE 65 004 | 121691 1426 | 09/04/91 | U-234 | 2.83 | 0.63 | pCi/l | 1.04 | 074 RG |
| SITE 65 | 122291 1502 | 09/04/91 | CM-244 | 0.00 | 0.13 | pCi/l | 0.93 | 094 DJ |
| SITE 65 004 | 121391 1002 | 09/04/91 | TC-99 | 0.00 | 1.35 | pCi/l | 0.94 | 143 BP |
| SITE 65 004 | 111591 1302 | 09/04/91 | I-129 | 0.00 | 123.00 | pCi/l | 0.91 | 005 RG |
| SITE 65 004 | 111191 0259 | 09/04/91 | H-3 | 45.20 | 3.40 | pCi/ml | 1.00 | 051 BS |
| SITE 65 004 | 111291 1516 | 09/04/91 | T-RA | 0.15 | 0.10 | pCi/l | 1.00 | 014 WV |
| SITE 65 004 | 111291 1516 | 09/04/91 | AM-241 | 0.00 | 65.30 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | CS-134 | 0.00 | 26.30 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | CS-137 | 0.00 | 27.90 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | EU-152 | 0.00 | 69.40 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | EU-154 | 0.00 | 110.90 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | EU-155 | 0.00 | 78.50 | pCi/l | 0.91 | 006 RG |

☐ REPORTED VIA TELEPHONE ☐ FAX



TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461
FAX (505) 761-5416

02-04-1992

APPROVED BY: Cliff Gravel, Data Analyst

DATE

ALBUQUERQUE LABORATORY

# REPORT OF ANALYSIS

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
P.O. NO.: 9110153
Lab Code : BE

TYPE OF ANALYSIS:
CUSTOMER ORDER NUMBER: 57600200
SAMPLES RECEIVED: 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY | ERROR | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 65 004 | 111291 1516 | 09/04/91 | CO-60 | 0.00 | 26.70 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | RU-106 | 0.00 | 251.40 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | SB-125 | 0.00 | 65.80 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | TH-232 | 0.00 | 105.80 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | NP-237 | 0.00 | 110.60 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111491 1437 | 09/04/91 | SR-90 | 0.70 | 0.40 | pCi/l | 0.86 | 143 BP |
| SITE 65 004 | 111491 1437 | 09/04/91 | SR-89 | 0.00 | 0.50 | pCi/l | 0.86 | 134 BP |
| SITE 65 | 122291 1502 | 09/04/91 | AM-241 | 0.00 | 0.11 | pCi/l | 0.93 | 094 DJ |
| SITE 65 004 | 111191 2030 | 09/04/91 | C-14 | 1.40 | 0.30 | pCi/ml | 1.07 | 051 BS |
| SITE 66 002 | 112291 2103 | 09/04/91 | ALPHA | 63.90 | 26.90 | pCi/l | 1.01 | 012 CA |
| SITE 66 002 | 112291 2103 | 09/04/91 | BETA | 0.00 | 61.00 | pCi/l | 1.06 | 012 CA |
| SITE 66 002 | 121191 1406 | 09/04/91 | PU-239 | 0.21 | 0.09 | pCi/l | 1.03 | 120 RG |
| SITE 66 002 | 121191 1406 | 09/04/91 | PU-238 | 0.07 | 0.05 | pCi/l | 1.03 | 120 RG |
| SITE 66 002 | 121691 1426 | 09/04/91 | U-238 | 3.31 | 0.65 | pCi/l | 1.04 | 072 RG |
| SITE 66 002 | 121691 1426 | 09/04/91 | U-235 | 0.17 | 0.10 | pCi/l | 1.04 | 072 RG |
| SITE 66 002 | 121691 1426 | 09/04/91 | U-234 | 3.34 | 0.66 | pCi/l | 1.04 | 072 RG |
| SITE 66 002 | 122291 1502 | 09/04/91 | CM-244 | 0.00 | 0.06 | pCi/l | 0.93 | 092 DJ |
| SITE 66 002 | 121391 1002 | 09/04/91 | TC-99 | 0.00 | 0.99 | pCi/l | 0.94 | 142 BP |

☐ REPORTED VIA TELEPHONE ☐ FAX



TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461
FAX (505) 761-5416

APPROVED BY: Cliff Gravel, Data Analyst

DATE: 02-04-1992

ALBUQUERQUE LABORATORY

# REPORT OF ANALYSIS

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
O. NO.: 9110153
Lab Code : BE

TYPE OF ANALYSIS:

CUSTOMER ORDER NUMBER: 57600200

SAMPLES RECEIVED: 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 66 002 | 111591 1048 | 09/04/91 | I-129 | 0.00 | 98.40 | pCi/l | 0.91 | 005 PB |
| SITE 66 002 | 111191 0259 | 09/04/91 | H-3 | 16.70 | 1.80 | pCi/ml | 1.00 | 051 BS |
| SITE 66 002 | 111291 1516 | 09/04/91 | T-RA | 0.00 | 0.16 | pCi/l | 1.00 | 012 WV |
| SITE 66 002 | 111291 1516 | 09/04/91 | AM-241 | 0.00 | 68.00 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | CS-134 | 0.00 | 26.30 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | CS-137 | 0.00 | 27.20 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | EU-152 | 0.00 | 68.00 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | EU-154 | 0.00 | 110.40 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | EU-155 | 0.00 | 29.80 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | CO-60 | 0.00 | 28.60 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | RU-106 | 0.00 | 242.40 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | SB-125 | 0.00 | 65.80 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | TH-232 | 0.00 | 108.80 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | NP-237 | 0.00 | 101.30 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111491 1437 | 09/04/91 | SR-90 | 0.60 | 0.30 | pCi/l | 0.86 | 132 BP |
| SITE 66 002 | 111491 1437 | 09/04/91 | SR-89 | 0.00 | 0.40 | pCi/l | 0.86 | 132 BP |
| SITE 66 002 | 122291 1502 | 09/04/91 | AM-241 | 0.00 | 0.06 | pCi/l | 0.93 | 092 DJ |
| SITE 66 002 | 111191 2030 | 09/04/91 | C-14 | 0.00 | 0.50 | pCi/ml | 1.07 | 051 BS |

☐ REPORTED VIA TELEPHONE ☐ FAX



TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461
FAX (505) 761-5416

02-04-1992

APPROVED BY: Cliff Gravel, Data Analyst

DATE

α/7/92

WSRC TASK #27

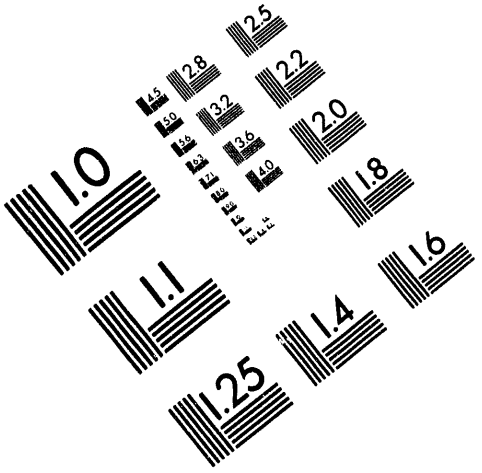
ASK AMOUNT: $175,000.00
ANALYTICAL USED(%): $75,542.00 (43%)
$ SAMPLING EFFORT: $0.00
$ AVAILABLE: $99,458.00

| RFW# | PARAM | #,MATRIX | STATUS | PARTIALS | SENT HC | COMMENTS |
|---|---|---|---|---|---|---|
| 9109L612 | GC/MS VOA | SEE COMMEN | SEE COMMENT | | SEE COMMENT | QC/DEL: STD/STD |
| | METALS | 4, W | DONE | | 10/8/91 | DATE REC'D: 9/5/91 |
| CLIENT ID: | CHLORIDE | 4, W | DONE | | 10/7/91 | |
| | SULFATE | 4, W | DONE | | 10/7/91 | ANAL. COST: $1,192.00 |
| SITE 15 | ALKALINITY | 4, W | DONE | | 10/7/91 | |
| SITE 15 DUP | ACIDITY | 4, W | DONE | | 10/7/91 | DATA SENT TO ED CAMPBELL |
| SITE 22 | HARDNESS | 4, W | DONE | | 10/7/91 | |
| FIELD BLANK | CONDUCTIVITY | 4, W | DONE | | 10/7/91 | VOA'S REC'D IN PLASTIC |
| | PH | 4, W | DONE | | 10/7/91 | RESAMPLED - SEE 9109L687 |
| | NITRATE | 4, W | DONE | | 10/7/91 | |
| | RADIOCHEM | 2, W | SEE COMMENT | | SEE COMMENT | RADIOCHEM RESAMPLED SEE ABOVE |
| | EDD | | DONE | | 1/27/92 | |
| 9109L617 | GC/MS VOA | 5, W | DONE | | | QC/DEL: STD/STD |
| | METALS | 4, W | DONE | | 10/7/91 | DATE REC'D: 9/6/91 |
| CLIENT ID: | CHLORIDE | 4, W | DONE | | 10/8/91 | |
| | SULFATE | 4, W | DONE | | 10/8/91 | ANAL. COST: $5,104.00 |
| SITE 23 | ALKALINITY | 4, W | SEE COMMENT | | SEE COMMENT | |
| SITE 24 | ACIDITY | 4, W | DONE | | 10/8/91 | DATA SENT TO ED CAMPBELL |
| SITE 65 | HARDNESS | 4, W | DONE | | 10/8/91 | |
| SITE 66 | CONDUCTIVITY | 4, W | DONE | | 10/8/91 | ALKALINITY WAS CANCELLED |
| TRIP BLANK | PH | 4, W | DONE | | 10/8/91 | ANALYZED FOR ACIDITY |
| | NITRATE | 4, W | DONE | | 10/8/91 | |
| | RADIOCHEM | 4, W | DONE/PARTIAL | NEED PU-240 & TC-99 | 2/7/92 | RADIOCHEM SUBBED TO EBERLINE |
| | EDD | | DONE | MET,INORG,VOA | 1/27/92 | |
| 9109L631 | GC/MS VOA | 10, W | DONE | | 10/2/91 | QC/DEL: STD/STD |
| | METALS | 8, W | DONE | | 10/17/91 | DATE REC'D: 9/7/91 |
| CLIENT ID: | CHLORIDE | 8, W | DONE | | 10/23/91 | |
| | SULFATE | 8, W | DONE | | 10/23/91 | ANAL. COST: $9,285.00 |
| SITE 68 | ALKALINITY | 8, W | SEE COMMENT | | SEE COMMENT | |
| SITE 71 | ACIDITY | 8, W | DONE | | 10/23/91 | DATA SENT TO ED CAMPBELL |
| SITE 77 | HARDNESS | 8, W | DONE | | 10/23/91 | |
| SITE 114 | CONDUCTIVITY | 8, W | DONE | | 10/23/91 | SITE 117 RADIOCHEM RESAMPLED |
| SITE 115 | PH | 8, W | DONE | | 10/23/91 | SEE 9109L687 |
| SITE 116 | NITRATE | 8, W | DONE | | 10/23/91 | |
| SITE 117 | RADIOCHEM | 7, W | SUBBED | | | ALKALINITY WAS CANCELLED |
| SITE 118 | | | | | | ANALYZED FOR ACIDITY |
| TRIP BLANK | | | | | | |
| TRIP BLANK | EDD | | DONE | MET,INORG,VOA | 1/27/92 | RADIOCHEM SUBBED TO BARRINGER |
| 9109L652 | GC/MS VOA | 4, W | DONE | | 10/2/91 | QC/DEL: STD/STD |
| | METALS | 3, W | DONE | | 10/17/91 | DATE REC'D: 9/11/91 |
| CLIENT ID: | CHLORIDE | 3, W | DONE | | 10/23/91 | |
| | SULFATE | 3, W | DONE | | 10/23/91 | ANAL. COST: $3,785.00 |
| SITE 155 | ALKALINITY | 3, W | SEE COMMENT | | SEE COMMENT | |
| SITE 156 | ACIDITY | 3, W | DONE | | 10/23/91 | DATA SENT TO ED CAMPBELL |
| SITE 157 | HARDNESS | 3, W | DONE | | 10/23/91 | |
| TRIP BLANK | CONDUCTIVITY | 3, W | DONE | | 10/23/91 | * SITE 15 VOA REC'D BROKEN |
| SITE 15 * | PH | 3, W | DONE | | 10/23/91 | |
| | NITRATE | 3, W | DONE | | 10/23/91 | ALKALINITY WAS CANCELLED |
| | RADIOCHEM | 3, W | SUBBED | | | ANALYZED FOR ACIDITY |
| | | | | | | RADIOCHEM SUBBED TO BARRINGER |
| | EDD | | DONE | MET,INORG,VOA | 1/27/92 | |

WSRC TASK #27

TASK AMOUNT: $175,000.00
$ ANALYTICAL USED(%): $75,542.00 (43%)
$ SAMPLING EFFORT: $0.00
$ AVAILABLE: $99,458.00

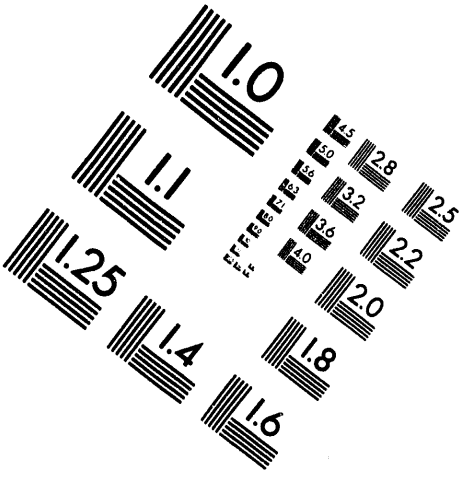
| RFW# | PARAM | #,MATRIX | STATUS | PARTIALS | SENT HC | COMMENTS |
|---|---|---|---|---|---|---|
| 9109L662 | GC/MS VOA | 6, W | DONE | | 10/2/91 | QC/DEL: STD/STD |
| | METALS | 8, W | DONE | | 10/17/91 | DATE REC'D: 9/12/91 |
| CLIENT ID: | CHLORIDE | 8, W | DONE | | 10/23/91 | ANAL. COST: $9,006.00 |
| | SULFATE | 8, W | DONE | | 10/23/91 | |
| SITE 134 | ALKALINITY | 1, W | DONE | | 10/23/91 | DATA SENT TO ED CAMPBELL |
| SITE 135 | ACIDITY | 7, W | DONE | | 10/23/91 | |
| SITE 137 * | HARDNESS | 8, W | DONE | | 10/23/91 | * VOA HAD AIR BUBBLES |
| SITE 140 | CONDUCTIVITY | 8, W | DONE | | 10/23/91 | RESAMPLED - SEE 9109L778 |
| SITE 142 * | PH | 8, W | DONE | | 10/23/91 | |
| SITE 160 | NITRATE | 8, W | DONE | | 10/23/91 | RADIOCHEM SUBBED TO BARRINGER |
| SITE 161 | RADIOCHEM | 8, W | SUBBED | | | |
| SITE 164 | | | | | | |
| | EDD | | | | | |
| 9109L687 | GC/MS VOA | 3, W | SEE COMMENT | | | QC/DEL: STD/STD |
| | RADIOCHEM | 2, W | SUBBED | | | DATE REC'D: 9/13/91 |
| CLIENT ID: | | | | | | ANAL. COST: $2,086.00 |
| SITE 15 | | | | | | DATA SENT TO ED CAMPBELL |
| SITE 22 | | | | | | |
| SITE 117 * | | | | | | * SITE 117 VOA REC'D BROKEN |
| SITE 15 TB | | | | | | RESAMPLED - SEE 9110L005 |
| | | | | | | RADIOCHEM SUBBED TO BARRINGER |
| | EDD | | | | | |
| 9109L702 | GC/MS VOA | 11, W | DONE | | 10/8/91 | QC/DEL: STD/STD |
| | METALS | 10, W | DONE | | 10/17/91 | DATE REC'D: 9/14/91 |
| CLIENT ID: | CHLORIDE | 10, W | DONE | | 10/23/91 | ANAL. COST: $12,370.00 |
| | SULFATE | 10, W | DONE | | 10/23/91 | |
| SITE 186 | ALKALINITY | 10, W | SEE COMMENT | | SEE COMMENT | DATA SENT TO ED CAMPBELL |
| SITE 190 | ACIDITY | 10, W | DONE | | 10/23/91 | |
| SITE 191 | HARDNESS | 10, W | DONE | | 10/23/91 | ALKALINITY WAS CANCELLED |
| SITE 192 | CONDUCTIVITY | 10, W | DONE | | 10/23/91 | ANALYZED FOR ACIDITY |
| SITE 196 | PH | 10, W | DONE | | 10/23/91 | |
| SITE 205 | NITRATE | 10, W | DONE | | 10/23/91 | RADIOCHEM SUBBED TO BARRINGER |
| SITE 206 | RADIOCHEM | 10, W | SUBBED | | | |
| SITE 207 | | | | | | |
| SITE 208 | | | | | | |
| SITE 209 | EDD | | | | | |
| 9109L755 | GC/MS VOA | 16, W | DONE | | 10/23/91 | QC/DEL: STD/STD |
| | METALS | 15, W | DONE | | 10/23/91 | DATE REC'D: 9/20/91 |
| CLIENT ID: | CHLORIDE | 15, W | DONE | | 10/23/91 | ANAL. COST: $18,425.00 |
| | SULFATE | 15, W | DONE | | 10/23/91 | |
| SITE 220 SITE 259 | ALKALINITY | 15, W | SEE COMMENT | | SEE COMMENT | DATA SENT TO ED CAMPBELL |
| SITE 221 SITE 262 | ACIDITY | 15, W | DONE | | 10/23/91 | |
| SITE 222 SITE 263 | HARDNESS | 15, W | DONE | | 10/23/91 | ALKALINITY WAS CANCELLED |
| SITE 225 SITE 266 | CONDUCTIVITY | 15, W | DONE | | 10/23/91 | ANALYZED FOR ACIDITY |
| SITE 230 SITE 267 | PH | 15, W | DONE | | 10/23/91 | |
| SITE 254 SITE 268 | NITRATE | 15, W | DONE | | 10/23/91 | RADIOCHEM SUBBED TO BARRINGER |
| SITE 258 SITE 269 | RADIOCHEM | 15, W | SUBBED | | | |
| SITE 271 | | | | | | |
| | EDD | | | | | |



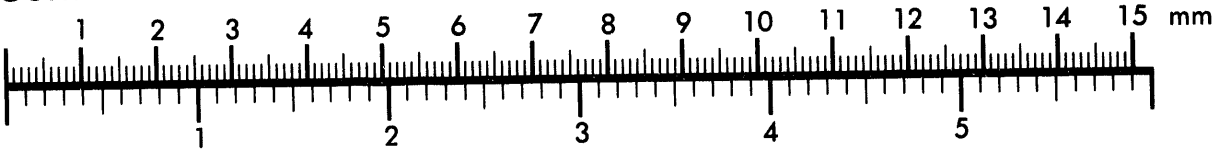
**Association for Information and Image Management**

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

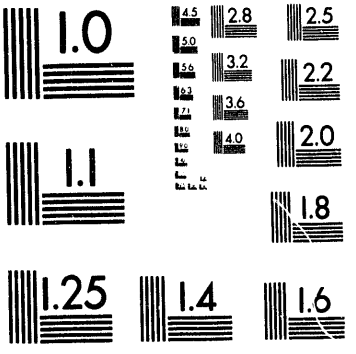
301/587-8202

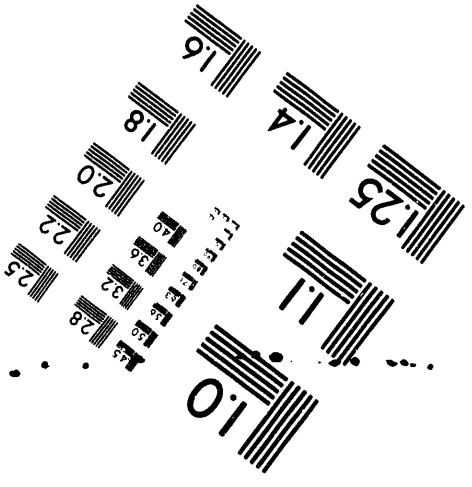


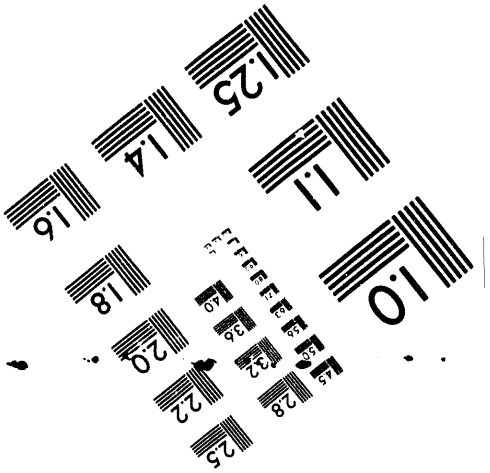
Centimeter




Inches







MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

2 of 7

WSRC TASK #27

TASK AMOUNT: $175,000.00
ANALYTICAL USED(%): $75,542.00 (43%)
$ SAMPLING EFFORT: $0.00
$ AVAILABLE: $99,458.00

| RFW# | PARAM | #,MATRIX | STATUS | PARTIALS | SENT HC | COMMENTS |
|---|---|---|---|---|---|---|
| 9109L778 | GC/MS VOA | 3, W | DONE | | 10/17/91 | QC/DEL: STD/STD<br>DATE REC'D: 9/23/91<br>ANAL. COST: $780.00<br>DATA SENT TO ED CAMPBELL |
| CLIENT ID: | | | | | | |
| SITE 137 | | | | | | |
| SITE 142 | | | | | | |
| FIELD BLANK | EDD | | | | | |
| 9109L803 | GC/MS VOA | 4, W | DONE | | 10/25/91 | QC/DEL: STD/STD<br>DATE REC'D: 9/26/91<br>ANAL. COST: $3,785.00<br>DATA SENT TO ED CAMPBELL<br>ALKALINITY WAS CANCELLED<br>ANALYZED FOR ACIDITY<br>RADIOCHEM SUBBED TO BARRINGER |
| | METALS | 3, W | DONE | | 10/23/91 | |
| CLIENT ID: | CHLORIDE | 3, W | DONE | | 11/18/91 | |
| | SULFATE | 3, W | DONE | | 11/18/91 | |
| SITE 118D | ALKALINITY | 3, W | SEE COMMENT | | SEE COMMENT | |
| SITE 205D | ACIDITY | 3, W | DONE | | 11/18/91 | |
| SITE 254D | HARDNESS | 3, W | DONE | | 11/18/91 | |
| TRIP BLANK | CONDUCTIVITY | 3, W | DONE | | 11/18/91 | |
| | PH | 3, W | DONE | | 11/18/91 | |
| | NITRATE | 3, W | DONE | | 11/18/91 | |
| | RADIOCHEM | 3, W | SUBBED | | | |
| | EDD | | | | | |
| 9110L003 | METALS | 2, S | DONE | | 11/18/91 | QC/DEL: STD/STD<br>DATE REC'D: 10/12/91<br>ANAL. COST: $2,148.00<br>DATA SENT TO ED CAMPBELL<br>RADIOCHEM SUBBED TO BARRINGER<br>ALKALINITY WAS CANCELLED<br>ANALYZED FOR ACIDITY |
| | CHLORIDE | 2, S | DONE | | 11/18/91 | |
| CLIENT ID: | SULFATE | 2, S | DONE | | 11/18/91 | |
| | ALKALINITY | 2, S | SEE COMMENT | | 11/18/91 | |
| SITE 258 SAND | ACIDITY | 2, S | DONE | | 11/18/91 | |
| SITE 258 SAND/ORG | NITRATE | 2, S | DONE | | 11/18/91 | |
| | RADIOCHEM | 2, S | SUBBED | | | |
| | EDD | | | | | |
| 9110L004 | METALS | 2, S | DONE | | 11/18/91 | QC/DEL: STD/STD<br>DATE REC'D: 10/12/91<br>ANAL. COST: $3,068.00<br>DATA SENT TO ED CAMPBELL<br>RADIOCHEM SUBBED TO BARRINGER<br>ALKALINITY WAS CANCELLED<br>ANALYZED FOR ACIDITY |
| | CHLORIDE | 2, S | DONE | | 11/18/91 | |
| CLIENT ID: | SULFATE | 2, S | DONE | | 11/18/91 | |
| | ALKALINITY | 2, S | SEE COMMENT | | 11/18/91 | |
| SITE 206 SAND | ACIDITY | 2, S | DONE | | 11/18/91 | |
| SITE 206 CLAY | NITRATE | 2, S | DONE | | 11/18/91 | |
| | RADIOCHEM | 2, S | SUBBED | | | |
| | EDD | | | | | |
| 9110L005 | GC/MS VOA | 2, W | DONE | | 11/18/91 | QC/DEL: STD/STD<br>DATE REC'D: 10/12/91<br>ANAL. COST: $3,588.00<br>DATA SENT TO ED CAMPBELL<br>RADIOCHEM SUBBED TO BARRINGER<br>ALKALINITY WAS CANCELLED<br>ANALYZED FOR ACIDITY |
| | METALS | 2, S | DONE | | 11/18/91 | |
| CLIENT ID: | CHLORIDE | 2, S | DONE | | 11/18/91 | |
| | SULFATE | 2, S | DONE | | 11/18/91 | |
| SITE 161 SAND | ALKALINITY | 2, S | SEE COMMENT | | 11/18/91 | |
| SITE 161 ORGANIC | ACIDITY | 2, S | DONE | | 11/18/91 | |
| SITE 117 | NITRATE | 2, S | DONE | | 11/18/91 | |
| TRIP BLANK | RADIOCHEM | 2, S | SUBBED | | | |
| | EDD | | | | | |

ALBUQUERQUE LABORATORY

CUSTOMER
ATTENTION
ADDRESS
CITY
V.O. NO.

Weston - SRP
Diane C. Thomas
208 Welsh Pool Rd.
Lionville, Pa 19353
9110153
Lab Code : BE

# REPORT OF ANALYSIS

57600200

TYPE OF ANALYSIS

CUSTOMER ORDER NUMBER

SAMPLES RECEIVED 10/04/91

CORRECTED PARTIAL REPORT

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 23 001 | 112291 2103 | 09/04/91 | ALPHA | 2.80 | 1.90 | pCi/l | 1.01 | 011 CA |
| SITE 23 001 | 112291 2103 | 09/04/91 | BETA | 4.50 | 3.60 | pCi/l | 1.06 | 011 CA |
| SITE 23 001 | 121191 1406 | 09/04/91 | PU-239 | 0.06 | 0.04 | pCi/l | 1.03 | 119 RG |
| SITE 23 001 | 121191 1406 | 09/04/91 | PU-238 | 0.00 | 0.04 | pCi/l | 1.03 | 119 RG |
| SITE 23 001 | 121691 2315 | 09/04/91 | U-238 | 0.19 | 0.11 | pCi/l | 1.04 | 073 DJ |
| SITE 23 001 | 121691 2315 | 09/04/91 | U-235 | 0.00 | 0.04 | pCi/l | 1.04 | 073 DJ |
| SITE 23 001 | 121691 2315 | 09/04/91 | U-234 | 0.27 | 0.13 | pCi/l | 1.04 | 073 DJ |
| E 23 1 | 122291 1502 | 09/04/91 | CM-244 | 0.00 | 0.32 | pCi/l | 0.93 | 091 DJ |
| SITE 23 001 | 121391 1002 | 09/04/91 | TC-99 | 0.00 | 1.11 | pCi/l | 0.94 | 141 BP |
| SITE 23 001 | 111591 0921 | 09/04/91 | I-129 | 0.00 | 84.40 | pCi/l | 0.91 | 005 PB |
| SITE 23 001 | 111191 0259 | 09/04/91 | H-3 | 99.60 | 1.80 | pCi/ml | 1.00 | 051 BS |
| SITE 23 001 | 111291 1516 | 09/04/91 | T-RA | 0.23 | 0.13 | pCi/l | 1.00 | 011 WV |
| SITE 23 001 | 121191 1435 | 09/04/91 | AM-241 | 0.00 | 66.80 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | CS-134 | 0.00 | 24.10 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | CS-137 | 0.00 | 27.20 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | EU-152 | 0.00 | 70.40 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | EU-154 | 0.00 | 99.10 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | EU-155 | 0.00 | 77.80 | pCi/l | 0.91 | 006 RG |

EPORTED VIA TELEPHONE ☐ FAX



TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461
FAX (505) 761-5416

02-04-1992

APPROVED BY

DATE

- Cliff Gravel, Data Analyst

ALBUQUERQUE LABORATORY

# REPORT OF ANALYSIS

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
O. NO.: 9110153
Lab Code : BE

TYPE OF ANALYSIS

CUSTOMER ORDER NUMBER: 57600200

SAMPLES RECEIVED: 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 23 001 | 121191 1435 | 09/04/91 | CO-60 | 0.00 | 25.90 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | RU-106 | 0.00 | 246.80 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | SB-125 | 0.00 | 67.80 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | TH-232 | 0.00 | 109.40 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 121191 1435 | 09/04/91 | NP-237 | 0.00 | 110.30 | pCi/l | 0.91 | 006 RG |
| SITE 23 001 | 111491 1437 | 09/04/91 | SR-90 | 0.70 | 0.30 | pCi/l | 0.86 | 131 BP |
| SITE 23 001 | 111491 1437 | 09/04/91 | SR-89 | 0.00 | 0.40 | pCi/l | 0.86 | 131 BP |
| [illegible] 23 | 122291 1502 | 09/04/91 | AM-241 | 0.00 | 0.15 | pCi/l | 0.93 | 091 DJ |
| SITE 23 001 | 111191 2030 | 09/04/91 | C-14 | 23.50 | 0.50 | pCi/ml | 1.07 | 051 BS |
| SITE 24 003 | 112291 2103 | 09/04/91 | ALPHA | 303.00 | 65.00 | pCi/l | 1.01 | 013 CA |
| SITE 24 003 | 112291 2103 | 09/04/91 | BETA | 191.00 | 46.00 | pCi/l | 1.06 | 013 CA |
| SITE 24 003 | 121191 1406 | 09/04/91 | PU-239 | 1.43 | 0.28 | pCi/l | 1.03 | 121 RG |
| SITE 24 003 | 121191 1406 | 09/04/91 | PU-238 | 0.52 | 0.15 | pCi/l | 1.03 | 121 RG |
| SITE 24 003 | 121691 1426 | 09/04/91 | U-238 | 11.48 | 1.86 | pCi/l | 1.04 | 073 RG |
| SITE 24 003 | 121691 1426 | 09/04/91 | U-235 | 0.50 | 0.18 | pCi/l | 1.04 | 073 RG |
| SITE 24 003 | 121691 1426 | 09/04/91 | U-234 | 11.21 | 1.82 | pCi/l | 1.04 | 073 RG |
| SITE 24 003 | 122291 1502 | 09/04/91 | CM-244 | 0.21 | 0.16 | pCi/l | 0.93 | 093 DJ |
| SITE 24 003 | | 09/04/91 | TC-99 | * | | | | |

☐ REPORTED VIA TELEPHONE ☐ FAX



MA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461
FAX (505) 761-5416

APPROVED BY: Cliff Gravel, Data Analyst

DATE: 02-04-1992

ALBUQUERQUE LABORATORY

# REPORT OF ANALYSIS

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
P.O. NO.: 9110153
Lab Code : BE

TYPE OF ANALYSIS

CUSTOMER ORDER NUMBER: 57600200

SAMPLES RECEIVED: 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 24 003 | 111591 1302 | 09/04/91 | I-129 | 0.00 | 93.70 | pCi/l | 0.91 | 005 PB |
| SITE 24 003 | 111191 0259 | 09/04/91 | H-3 | 29.30 | 1.40 | pCi/ml | 1.00 | 051 BS |
| SITE 24 003 | 111291 1516 | 09/04/91 | T-RA | 0.26 | 0.13 | pCi/l | 1.00 | 013 WV |
| SITE 24 003 | 121191 2025 | 09/04/91 | AM-241 | 0.00 | 65.80 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | CS-134 | 0.00 | 25.30 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | CS-137 | 0.00 | 26.20 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | EU-152 | 0.00 | 68.70 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | EU-154 | 0.00 | 112.00 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | EU-155 | 0.00 | 78.50 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | CO-60 | 0.00 | 29.50 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | RU-106 | 0.00 | 232.20 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | SB-125 | 0.00 | 62.20 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | TH-232 | 0.00 | 113.40 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 121191 2025 | 09/04/91 | NP-237 | 0.00 | 114.30 | pCi/l | 0.91 | 006 RG |
| SITE 24 003 | 111491 1437 | 09/04/91 | SR-90 | 1.00 | 0.40 | pCi/l | 0.86 | 133 BP |
| SITE 24 003 | 111491 1437 | 09/04/91 | SR-89 | 0.00 | 0.40 | pCi/l | 0.86 | 133 BP |
| SITE 24 003 | 122291 1502 | 09/04/91 | AM-241 | 0.22 | 0.15 | pCi/l | 0.93 | 093 DJ |
| SITE 24 003 | 111191 2030 | 09/04/91 | C-14 | 4.30 | 0.30 | pCi/ml | 1.07 | 051 BS |

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PHONE (505) 345-3461
FAX (505) 761-5416

APPROVED BY: Cliff Gravel, Data Analyst

DATE: 02-04-1992

ALBUQUERQUE LABORATORY

# REPORT OF ANALYSIS

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
W.O. NO.: 9110153
Lab Code : BE

TYPE OF ANALYSIS

CUSTOMER ORDER NUMBER: 57600200

SAMPLES RECEIVED: 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 65 004 | 112291 2103 | 09/04/91 | ALPHA | 83.50 | 29.40 | pCi/l | 1.01 | 014 CA |
| SITE 65 004 | 112291 2103 | 09/04/91 | BETA | 0.00 | 54.60 | pCi/l | 1.06 | 014 CA |
| SITE 65 004 | 121191 1406 | 09/04/91 | PU-239 | 1.13 | 0.35 | pCi/l | 1.03 | 122 RG |
| SITE 65 004 | 121191 1406 | 09/04/91 | PU-238 | 0.41 | 0.19 | pCi/l | 1.03 | 122 RG |
| SITE 65 004 | 121691 1426 | 09/04/91 | U-238 | 3.09 | 0.68 | pCi/l | 1.04 | 074 RG |
| SITE 65 004 | 121691 1426 | 09/04/91 | U-235 | 0.14 | 0.11 | pCi/l | 1.04 | 074 RG |
| SITE 65 004 | 121691 1426 | 09/04/91 | U-234 | 2.83 | 0.63 | pCi/l | 1.04 | 074 RG |
| SITE 65 004 | 122291 1502 | 09/04/91 | CM-244 | 0.00 | 0.13 | pCi/l | 0.93 | 094 DJ |
| SITE 65 004 | 121391 1002 | 09/04/91 | TC-99 | 0.00 | 1.35 | pCi/l | 0.94 | 143 BP |
| SITE 65 004 | 111591 1302 | 09/04/91 | I-129 | 0.00 | 123.00 | pCi/l | 0.91 | 005 RG |
| SITE 65 004 | 111191 0259 | 09/04/91 | H-3 | 45.20 | 3.40 | pCi/ml | 1.00 | 051 BS |
| SITE 65 004 | 111291 1516 | 09/04/91 | T-RA | 0.15 | 0.10 | pCi/l | 1.00 | 014 WV |
| SITE 65 004 | 111291 1516 | 09/04/91 | AM-241 | 0.00 | 65.30 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | CS-134 | 0.00 | 26.30 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | CS-137 | 0.00 | 27.90 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | EU-152 | 0.00 | 69.40 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | EU-154 | 0.00 | 110.90 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | EU-155 | 0.00 | 78.50 | pCi/l | 0.91 | 006 RG |

REPORTED VIA TELEPHONE ☐ FAX



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Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
ALBUQUERQUE, NEW MEXICO 87109
PHONE (505) 345-3461
FAX (505) 761-5416

02-04-1992

APPROVED BY - Cliff Gravel, Data Analyst

DATE

ALBUQUERQUE LABORATORY

# REPORT OF ANALYSIS

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
P.O. NO.: 9110153
Lab Code : BE

TYPE OF ANALYSIS

CUSTOMER ORDER NUMBER: 57600200

SAMPLES RECEIVED: 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 65 004 | 111291 1516 | 09/04/91 | CO-60 | 0.00 | 26.70 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | RU-106 | 0.00 | 251.40 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | SB-125 | 0.00 | 65.80 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | TH-232 | 0.00 | 105.80 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111291 1516 | 09/04/91 | NP-237 | 0.00 | 110.60 | pCi/l | 0.91 | 006 RG |
| SITE 65 004 | 111491 1437 | 09/04/91 | SR-90 | 0.70 | 0.40 | pCi/l | 0.86 | 143 BP |
| SITE 65 004 | 111491 1437 | 09/04/91 | SR-89 | 0.00 | 0.50 | pCi/l | 0.86 | 134 BP |
| SITE 65 004 | 122291 1502 | 09/04/91 | AM-241 | 0.00 | 0.11 | pCi/l | 0.93 | 094 DJ |
| SITE 65 004 | 111191 2030 | 09/04/91 | C-14 | 1.40 | 0.30 | pCi/ml | 1.07 | 051 BS |
| SITE 66 002 | 112291 2103 | 09/04/91 | ALPHA | 63.90 | 26.90 | pCi/l | 1.01 | 012 CA |
| SITE 66 002 | 112291 2103 | 09/04/91 | BETA | 0.00 | 61.00 | pCi/l | 1.06 | 012 CA |
| SITE 66 002 | 121191 1406 | 09/04/91 | PU-239 | 0.21 | 0.09 | pCi/l | 1.03 | 120 RG |
| SITE 66 002 | 121191 1406 | 09/04/91 | PU-238 | 0.07 | 0.05 | pCi/l | 1.03 | 120 RG |
| SITE 66 002 | 121691 1426 | 09/04/91 | U-238 | 3.31 | 0.65 | pCi/l | 1.04 | 072 RG |
| SITE 66 002 | 121691 1426 | 09/04/91 | U-235 | 0.17 | 0.10 | pCi/l | 1.04 | 072 RG |
| SITE 66 002 | 121691 1426 | 09/04/91 | U-234 | 3.34 | 0.66 | pCi/l | 1.04 | 072 RG |
| SITE 66 002 | 122291 1502 | 09/04/91 | CM-244 | 0.00 | 0.06 | pCi/l | 0.93 | 092 DJ |
| SITE 66 002 | 121391 1002 | 09/04/91 | TC-99 | 0.00 | 0.99 | pCi/l | 0.94 | 142 BP |

REPORTED VIA TELEPHONE ☐ FAX



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Thermo Analytical Inc.
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PHONE (505) 345-3461
FAX (505) 761-5416

APPROVED BY - Cliff Gravel, Data Analyst

DATE 02-04-1992

ALBUQUERQUE LABORATORY

# REPORT OF ANALYSIS

CUSTOMER: Weston - SRP
ATTENTION: Diane C. Thomas
ADDRESS: 208 Welsh Pool Rd.
CITY: Lionville, Pa 19353
P.O. NO.: 9110153
Lab Code : BE

TYPE OF ANALYSIS

CUSTOMER ORDER NUMBER: 57600200

SAMPLES RECEIVED: 10/04/91

| Customer Identification | DATE TIME ANALY. | Date Collected | Type of Analysis | ACTIVITY/ERROR | | UNTS | ACCRCY | INST/INIT |
|---|---|---|---|---|---|---|---|---|
| SITE 66 002 | 111591 1048 | 09/04/91 | I-129 | 0.00 | 98.40 | pCi/l | 0.91 | 005 PB |
| SITE 66 002 | 111191 0259 | 09/04/91 | H-3 | 16.70 | 1.80 | pCi/ml | 1.00 | 051 BS |
| SITE 66 002 | 111291 1516 | 09/04/91 | T-RA | 0.00 | 0.16 | pCi/l | 1.00 | 012 WV |
| SITE 66 002 | 111291 1516 | 09/04/91 | AM-241 | 0.00 | 68.00 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | CS-134 | 0.00 | 26.30 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | CS-137 | 0.00 | 27.20 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | EU-152 | 0.00 | 68.00 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | EU-154 | 0.00 | 110.40 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | EU-155 | 0.00 | 29.80 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | CO-60 | 0.00 | 28.60 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | RU-106 | 0.00 | 242.40 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | SB-125 | 0.00 | 65.80 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | TH-232 | 0.00 | 108.80 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111291 1516 | 09/04/91 | NP-237 | 0.00 | 101.30 | pCi/l | 0.91 | 006 SJ |
| SITE 66 002 | 111491 1437 | 09/04/91 | SR-90 | 0.60 | 0.30 | pCi/l | 0.86 | 132 BP |
| SITE 66 002 | 111491 1437 | 09/04/91 | SR-89 | 0.00 | 0.40 | pCi/l | 0.86 | 132 BP |
| SITE 66 002 | 122291 1502 | 09/04/91 | AM-241 | 0.00 | 0.06 | pCi/l | 0.93 | 092 DJ |
| SITE 66 002 | 111191 2030 | 09/04/91 | C-14 | 0.00 | 0.50 | pCi/ml | 1.07 | 051 BS |

REPORTED VIA TELEPHONE ☐ FAX



TMA Eberline
Thermo Analytical Inc.
7021 PAN AMERICAN FREEWAY, N.E.
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PHONE (505) 345-3461
FAX (505) 761-5416

APPROVED BY: - Cliff Gravel, Data Analyst

DATE: 02-04-1992

2/7/92

WSRC TASK #27

TASK AMOUNT: $175,000.00
$ ANALYTICAL USED(%): $75,542.00 (43%)
$ SAMPLING EFFORT: $0.00
$ AVAILABLE: $99,458.00

| RFW# | PARAM | #,MATRIX | STATUS | PARTIALS | SENT HC | COMMENTS |
|---|---|---|---|---|---|---|
| 9109L612 | GC/MS VOA | SEE COMMEN | SEE COMMENT | | SEE COMMENT | QC/DEL: STD/STD |
| | METALS | 4, W | DONE | | 10/8/91 | DATE REC'D: 9/5/91 |
| CLIENT ID: | CHLORIDE | 4, W | DONE | | 10/7/91 | |
| | SULFATE | 4, W | DONE | | 10/7/91 | ANAL. COST: $1,192.00 |
| SITE 15 | ALKALINITY | 4, W | DONE | | 10/7/91 | |
| SITE 15 DUP | ACIDITY | 4, W | DONE | | 10/7/91 | DATA SENT TO ED CAMPBELL |
| SITE 22 | HARDNESS | 4, W | DONE | | 10/7/91 | |
| FIELD BLANK | CONDUCTIVITY | 4, W | DONE | | 10/7/91 | VOA'S REC'D IN PLASTIC |
| | PH | 4, W | DONE | | 10/7/91 | RESAMPLED - SEE 9109L687 |
| | NITRATE | 4, W | DONE | | 10/7/91 | |
| | RADIOCHEM | 2, W | SEE COMMENT | | SEE COMMENT | RADIOCHEM RESAMPLED SEE ABOVE |
| | EDD | | DONE | | 1/27/92 | |
| 9109L617 | GC/MS VOA | 5, W | DONE | | | QC/DEL: STD/STD |
| | METALS | 4, W | DONE | | 10/7/91 | DATE REC'D: 9/6/91 |
| CLIENT ID: | CHLORIDE | 4, W | DONE | | 10/8/91 | |
| | SULFATE | 4, W | DONE | | 10/8/91 | ANAL. COST: $5,104.00 |
| SITE 23 | ALKALINITY | 4, W | SEE COMMENT | | SEE COMMENT | |
| SITE 24 | ACIDITY | 4, W | DONE | | 10/8/91 | DATA SENT TO ED CAMPBELL |
| SITE 65 | HARDNESS | 4, W | DONE | | 10/8/91 | |
| SITE 66 | CONDUCTIVITY | 4, W | DONE | | 10/8/91 | ALKALINITY WAS CANCELLED |
| TRIP BLANK | PH | 4, W | DONE | | 10/8/91 | ANALYZED FOR ACIDITY |
| | NITRATE | 4, W | DONE | | 10/8/91 | |
| | RADIOCHEM | 4, W | DONE/PARTIAL | NEED PU-240 & TC-99 | 2/7/92 | RADIOCHEM SUBBED TO EBERLINE |
| | EDD | | DONE | MET,INORG,VOA | 1/27/92 | |
| 9109L631 | GC/MS VOA | 10, W | DONE | | 10/2/91 | QC/DEL: STD/STD |
| | METALS | 8, W | DONE | | 10/17/91 | DATE REC'D: 9/7/91 |
| CLIENT ID: | CHLORIDE | 8, W | DONE | | 10/23/91 | |
| | SULFATE | 8, W | DONE | | 10/23/91 | ANAL. COST: $9,285.00 |
| SITE 68 | ALKALINITY | 8, W | SEE COMMENT | | SEE COMMENT | |
| SITE 71 | ACIDITY | 8, W | DONE | | 10/23/91 | DATA SENT TO ED CAMPBELL |
| SITE 77 | HARDNESS | 8, W | DONE | | 10/23/91 | |
| SITE 114 | CONDUCTIVITY | 8, W | DONE | | 10/23/91 | SITE 117 RADIOCHEM RESAMPLED |
| SITE 115 | PH | 8, W | DONE | | 10/23/91 | SEE 9109L687 |
| SITE 116 | NITRATE | 8, W | DONE | | 10/23/91 | |
| SITE 117 | RADIOCHEM | 7, W | SUBBED | | | ALKALINITY WAS CANCELLED |
| SITE 118 | | | | | | ANALYZED FOR ACIDITY |
| TRIP BLANK | | | | | | |
| TRIP BLANK | EDD | | DONE | MET,INORG,VOA | 1/27/92 | RADIOCHEM SUBBED TO BARRINGER |
| 9109L652 | GC/MS VOA | 4, W | DONE | | 10/2/91 | QC/DEL: STD/STD |
| | METALS | 3, W | DONE | | 10/17/91 | DATE REC'D: 9/11/91 |
| CLIENT ID: | CHLORIDE | 3, W | DONE | | 10/23/91 | |
| | SULFATE | 3, W | DONE | | 10/23/91 | ANAL. COST: $3,785.00 |
| SITE 155 | ALKALINITY | 3, W | SEE COMMENT | | SEE COMMENT | |
| SITE 156 | ACIDITY | 3, W | DONE | | 10/23/91 | DATA SENT TO ED CAMPBELL |
| SITE 157 | HARDNESS | 3, W | DONE | | 10/23/91 | |
| TRIP BLANK | CONDUCTIVITY | 3, W | DONE | | 10/23/91 | * SITE 15 VOA REC'D BROKEN |
| SITE 15 * | PH | 3, W | DONE | | 10/23/91 | |
| | NITRATE | 3, W | DONE | | 10/23/91 | ALKALINITY WAS CANCELLED |
| | RADIOCHEM | 3, W | SUBBED | | | ANALYZED FOR ACIDITY |
| | | | | | | RADIOCHEM SUBBED TO BARRINGER |
| | EDD | | DONE | MET,INORG,VOA | 1/27/92 | |

WSRC TASK #27

TASK AMOUNT: $175,000.00
$ ANALYTICAL USED(%): $75,542.00 (43%)
$ SAMPLING EFFORT: $0.00
$ AVAILABLE: $99,458.00

| RFW# | PARAM | #,MATRIX | STATUS | PARTIALS | SENT HC | COMMENTS |
|---|---|---|---|---|---|---|
| 9109L662 | GC/MS VOA | 6, W | DONE | | 10/2/91 | QC/DEL: STD/STD |
| | METALS | 8, W | DONE | | 10/17/91 | DATE REC'D: 9/12/91 |
| CLIENT ID: | CHLORIDE | 8, W | DONE | | 10/23/91 | ========== |
| | SULFATE | 8, W | DONE | | 10/23/91 | ANAL. COST: $9,006.00 |
| SITE 134 | ALKALINITY | 1, W | DONE | | 10/23/91 | ========== |
| SITE 135 | ACIDITY | 7, W | DONE | | 10/23/91 | DATA SENT TO ED CAMPBELL |
| SITE 137 * | HARDNESS | 8, W | DONE | | 10/23/91 | ========== |
| SITE 140 | CONDUCTIVITY | 8, W | DONE | | 10/23/91 | * VOA HAD AIR BUBBLES |
| SITE 142 * | PH | 8, W | DONE | | 10/23/91 | RESAMPLED - SEE 9109L778 |
| SITE 160 | NITRATE | 8, W | DONE | | 10/23/91 | ========== |
| SITE 161 | RADIOCHEM | 8, W | SUBBED | | | RADIOCHEM SUBBED TO BARRINGER |
| SITE 164 | | | | | | |
| | EDD | | | | | |
| 9109L687 | GC/MS VOA | 3, W | SEE COMMENT | | | QC/DEL: STD/STD |
| | RADIOCHEM | 2, W | SUBBED | | | DATE REC'D: 9/13/91 |
| CLIENT ID: | | | | | | ========== |
| | | | | | | ANAL. COST: $2,086.00 |
| SITE 15 | | | | | | ========== |
| SITE 22 | | | | | | DATA SENT TO ED CAMPBELL |
| SITE 117 * | | | | | | ========== |
| SITE 15 TB | | | | | | * SITE 117 VOA REC'D BROKEN |
| | | | | | | RESAMPLED - SEE 9110L005 |
| | | | | | | ========== |
| | | | | | | RADIOCHEM SUBBED TO BARRINGER |
| | EDD | | | | | |
| 9109L702 | GC/MS VOA | 11, W | DONE | | 10/8/91 | QC/DEL: STD/STD |
| | METALS | 10, W | DONE | | 10/17/91 | DATE REC'D: 9/14/91 |
| CLIENT ID: | CHLORIDE | 10, W | DONE | | 10/23/91 | ========== |
| | SULFATE | 10, W | DONE | | 10/23/91 | ANAL. COST: $12,370.00 |
| SITE 186 | ALKALINITY | 10, W | SEE COMMENT | | SEE COMMENT | ========== |
| SITE 190 | ACIDITY | 10, W | DONE | | 10/23/91 | DATA SENT TO ED CAMPBELL |
| SITE 191 | HARDNESS | 10, W | DONE | | 10/23/91 | ========== |
| SITE 192 | CONDUCTIVITY | 10, W | DONE | | 10/23/91 | ALKALINITY WAS CANCELLED |
| SITE 196 | PH | 10, W | DONE | | 10/23/91 | ANALYZED FOR ACIDITY |
| SITE 205 | NITRATE | 10, W | DONE | | 10/23/91 | ========== |
| SITE 206 | RADIOCHEM | 10, W | SUBBED | | | RADIOCHEM SUBBED TO BARRINGER |
| SITE 207 | | | | | | |
| SITE 208 | | | | | | |
| SITE 209 | EDD | | | | | |
| 9109L755 | GC/MS VOA | 16, W | DONE | | 10/23/91 | QC/DEL: STD/STD |
| | METALS | 15, W | DONE | | 10/23/91 | DATE REC'D: 9/20/91 |
| CLIENT ID: | CHLORIDE | 15, W | DONE | | 10/23/91 | ========== |
| | SULFATE | 15, W | DONE | | 10/23/91 | ANAL. COST: $18,425.00 |
| SITE 220 SITE 259 | ALKALINITY | 15, W | SEE COMMENT | | SEE COMMENT | ========== |
| SITE 221 SITE 262 | ACIDITY | 15, W | DONE | | 10/23/91 | DATA SENT TO ED CAMPBELL |
| SITE 222 SITE 263 | HARDNESS | 15, W | DONE | | 10/23/91 | ========== |
| SITE 225 SITE 266 | CONDUCTIVITY | 15, W | DONE | | 10/23/91 | ALKALINITY WAS CANCELLED |
| SITE 230 SITE 267 | PH | 15, W | DONE | | 10/23/91 | ANALYZED FOR ACIDITY |
| SITE 254 SITE 268 | NITRATE | 15, W | DONE | | 10/23/91 | ========== |
| SITE 258 SITE 269 | RADIOCHEM | 15, W | SUBBED | | | RADIOCHEM SUBBED TO BARRINGER |
| SITE 271 | | | | | | |
| | EDD | | | | | |

WSRC TASK #27

TASK AMOUNT: $175,000.00
$ ANALYTICAL USED(%): $75,542.00 (43%)
$ SAMPLING EFFORT: $0.00
$ AVAILABLE: $99,458.00

| RFW# | PARAM | #,MATRIX | STATUS | PARTIALS | SENT HC | COMMENTS |
|---|---|---|---|---|---|---|
| 9109L778<br>CLIENT ID:<br>SITE 137<br>SITE 142<br>FIELD BLANK | GC/MS VOA<br>EDD | 3, W | DONE | | 10/17/91 | QC/DEL: STD/STD<br>DATE REC'D: 9/23/91<br>ANAL. COST: $780.00<br>DATA SENT TO ED CAMPBELL |
| 9109L803<br>CLIENT ID:<br>SITE 118D<br>SITE 205D<br>SITE 254D<br>TRIP BLANK | GC/MS VOA<br>METALS<br>CHLORIDE<br>SULFATE<br>ALKALINITY<br>ACIDITY<br>HARDNESS<br>CONDUCTIVITY<br>PH<br>NITRATE<br>RADIOCHEM<br>EDD | 4, W<br>3, W<br>3, W<br>3, W<br>3, W<br>3, W<br>3, W<br>3, W<br>3, W<br>3, W<br>3, W | DONE<br>DONE<br>DONE<br>DONE<br>SEE COMMENT<br>DONE<br>DONE<br>DONE<br>DONE<br>DONE<br>SUBBED | | 10/25/91<br>10/23/91<br>11/18/91<br>11/18/91<br>SEE COMMENT<br>11/18/91<br>11/18/91<br>11/18/91<br>11/18/91<br>11/18/91 | QC/DEL: STD/STD<br>DATE REC'D: 9/26/91<br>ANAL. COST: $3,785.00<br>DATA SENT TO ED CAMPBELL<br>ALKALINITY WAS CANCELLED<br>ANALYZED FOR ACIDITY<br>RADIOCHEM SUBBED TO BARRINGER |
| 9110L003<br>CLIENT ID:<br>SITE 258 SAND<br>SITE 258 SAND/ORG | METALS<br>CHLORIDE<br>SULFATE<br>ALKALINITY<br>ACIDITY<br>NITRATE<br>RADIOCHEM<br>EDD | 2, S<br>2, S<br>2, S<br>2, S<br>2, S<br>2, S<br>2, S | DONE<br>DONE<br>DONE<br>SEE COMMENT<br>DONE<br>DONE<br>SUBBED | | 11/18/91<br>11/18/91<br>11/18/91<br>11/18/91<br>11/18/91<br>11/18/91 | QC/DEL: STD/STD<br>DATE REC'D: 10/12/91<br>ANAL. COST: $2,148.00<br>DATA SENT TO ED CAMPBELL<br>RADIOCHEM SUBBED TO BARRINGER<br>ALKALINITY WAS CANCELLED<br>ANALYZED FOR ACIDITY |
| 9110L004<br>CLIENT ID:<br>SITE 206 SAND<br>SITE 206 CLAY | METALS<br>CHLORIDE<br>SULFATE<br>ALKALINITY<br>ACIDITY<br>NITRATE<br>RADIOCHEM<br>EDD | 2, S<br>2, S<br>2, S<br>2, S<br>2, S<br>2, S<br>2, S | DONE<br>DONE<br>DONE<br>SEE COMMENT<br>DONE<br>DONE<br>SUBBED | | 11/18/91<br>11/18/91<br>11/18/91<br>11/18/91<br>11/18/91<br>11/18/91 | QC/DEL: STD/STD<br>DATE REC'D: 10/12/91<br>ANAL. COST: $3,068.00<br>DATA SENT TO ED CAMPBELL<br>RADIOCHEM SUBBED TO BARRINGER<br>ALKALINITY WAS CANCELLED<br>ANALYZED FOR ACIDITY |
| 9110L005<br>CLIENT ID:<br>SITE 161 SAND<br>SITE 161 ORGANIC<br>SITE 117<br>TRIP BLANK | GC/MS VOA<br>METALS<br>CHLORIDE<br>SULFATE<br>ALKALINITY<br>ACIDITY<br>NITRATE<br>RADIOCHEM<br>EDD | 2, W<br>2, S<br>2, S<br>2, S<br>2, S<br>2, S<br>2, S<br>2, S | DONE<br>DONE<br>DONE<br>DONE<br>SEE COMMENT<br>DONE<br>DONE<br>SUBBED | | 11/18/91<br>11/18/91<br>11/18/91<br>11/18/91<br>11/18/91<br>11/18/91<br>11/18/91 | QC/DEL: STD/STD<br>DATE REC'D: 10/12/91<br>ANAL. COST: $3,588.00<br>DATA SENT TO ED CAMPBELL<br>RADIOCHEM SUBBED TO BARRINGER<br>ALKALINITY WAS CANCELLED<br>ANALYZED FOR ACIDITY |

WESTON Analytics Use Only

9[illegible]-617

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TA 27
Est. Final Proj. Sampling Date:
Work Order #: 01630-28-27
Project Contact/Phone #: Thomas
AD Project Manager:
QC: Del TAT: 30 day
Date Rec'd: 9/4/91 Date Due: 10/4/91
Account #: WSRC27SUB

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | | | | 504 | | | | 4 | | 4 | | | | |
| #/Type Container | Liquid | 1a | | | | 1/4 | | | | 1/2 | | 1/2 | 1/2 | | | |
| | Solid | | | | | 1/4 | | | | | | | | | | |
| Volume | Liquid | 40 | | | | 1/4 | | | | 0L | | 100 | 0L | | | |
| | Solid | | | | | 1/4 | | | | | | | | | | |
| Preservatives | | None | | | | | | | | None | | None | None | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | Radio chem | | | | INORG | | Hardness | Cl | Nitric Acid | pH | Spcd |
| | | VOA | BNA | Pest/PCB | Herb. | | | | | Metal | CN | | NO3 | | SO4 | |

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 (✓) | Matrix | Date Collected | VOA | BNA | Pest/PCB | Herb. | Radio chem | | | | Metal | CN | Hardness | Cl | Nitric Acid | pH | Spcd |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 062444 | | | | ISUB | | | | See Below! | | | | | | |
| 001 | Site 23 | | W | 9/4/91 | | | | | | | | | | | | | | | |
| 2 | 66 | | | | | | | | | | | | | | | | | | |
| 3 | 24 | | | | | | | | | | | | | | | | | | |
| 4 | 65 | | | | | | | | | | | | | | | | | | |
| 5 | Trip Blank | | | | | | | | | | | | | | | | | | |

Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn

Special Instructions: Radiochem - see 91091612 -

original supervisor

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | 9/6/91 | 9:20 am | | [illegible] | 9/9/91 | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # ___
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) 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'd Y or N

RFW 21-21-001/A-8/90 L372 L373 L375 L377 L378 Rel# Cooler# 381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC-TASK 27
**RFW #:** 9109L631
**W.O. #:** 0630-28-27

**SAMPLES RECEIVED:** 09-07-91

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. Sample holding times as required by 40CFR136 were met for water samples with the exception of pH and specific conductance which were both received past hold and nitrate which was analyzed past hold.

2. Preparation blank results were below the required detection limit with the exception of acidity.

3. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

4. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

5. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

Margaret M. Leahy
Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

10/18/91
Date

pas.21\i9-631

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/18/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 117 | Acidity | 22.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 6.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 4.4 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 19.1 | | UMHOS/CM | 1.0 |
| -002 | SITE 118 | Acidity | 54.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 9.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.23 | | MG/L | 0.10 |
| | | pH | 5.1 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 20.2 | | UMHOS/CM | 1.0 |
| -003 | SITE 114 | Acidity | 60.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 11.2 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.54 | | MG/L | 0.10 |
| | | pH | 4.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 21.9 | | UMHOS/CM | 1.0 |
| -004 | SITE 116 | Acidity | 446 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 76.0 | | MG/L | 1.0 |
| | | Nitrate, as N | 0.27 | | MG/L | 0.10 |
| | | pH | 4.4 | | PH UNITS | 0.010 |
| | | Sulfate | 22.4 | | MG/L | 5.0 |
| | | Specific Conductance | 53.5 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/18/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -005 | SITE 115 | Acidity | 270 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 20.7 | | MG/L | 0.67 |
| | | Nitrate, as N | 0.15 | | MG/L | 0.10 |
| | | pH | 5.0 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 19.5 | | UMHOS/CM | 1.0 |
| -006 | SITE 71 | Acidity | 180 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 48.0 | | MG/L | 2.0 |
| | | Nitrate, as N | 1.5 | | MG/L | 0.10 |
| | | pH | 5.2 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 23.1 | | UMHOS/CM | 1.0 |
| -007 | SITE 68 | Acidity | 180 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 16.0 | | MG/L | 1.0 |
| | | Nitrate, as N | 0.37 | | MG/L | 0.10 |
| | | pH | 4.7 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 20.9 | | UMHOS/CM | 1.0 |
| -008 | SITE 77 | Acidity | 390 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 38.0 | | MG/L | 1.0 |
| | | Nitrate, as N | 0.48 | | MG/L | 0.10 |
| | | pH | 5.7 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 23.4 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/18/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK10 | 91LAL048-MB1 | Acidity | 0.50 u | MG/L | 0.50 |
| BLANK20 | 91LAL048-MB2 | Acidity | 8.5 | MG/L | 0.50 |
| BLANK10 | 91LCL108-MB1 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK20 | 91LCL108-MB2 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK30 | 91LCL108-MB3 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK10 | 91LHD017-MB1 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LHD017-MB2 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LNO217-MB1 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LNO217-MB2 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK30 | 91LNO217-MB3 | Nitrate, as N | 0.10 u | MG/L | 0.10 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/18/91

LIENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK10 | 91LS4084-MB1 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK20 | 91LS4084-MB2 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK30 | 91LS4084-MB3 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK10 | 91LSP055-MB1 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |
| BLANK10 | 91LSP056-MB1 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/18/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|---|
| BLANK30 | 91LS4084-MB3 | Sulfate | | 29.6 | 5.0 u | 30.0 | 98.7 |
| BLANK10 | 91LSP055-MB1 | Specific Conductance | | 141 | 1.0 u | 147 | 95.9 |
| | | Specific Conductance | M | 142 | 1.0 u | 147 | 96.6 |
| BLANK10 | 91LSP056-MB1 | Specific Conductance | | 142 | 1.0 u | 147 | 96.6 |
| | | Specific Conductance | M | 141 | 1.0 u | 147 | 95.9 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/18/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| BLANK10 | 91LCL108-MB1 | Chloride | 24.2 | 5.0 u | 25.0 | 96.8 |
| | | Chloride MSD | 24.4 | 5.0 u | 25.0 | 97.8 |
| BLANK20 | 91LCL108-MB2 | Chloride | 24.6 | 5.0 u | 25.0 | 98.4 |
| BLANK30 | 91LCL108-MB3 | Chloride | 24.8 | 5.0 u | 25.0 | 99.3 |
| BLANK10 | 91LHD017-MB1 | Hardness | 102 | 0.10u | 100 | 102 |
| | | Hardness MSD | 101 | 0.10u | 100 | 101 |
| BLANK20 | 91LHD017-MB2 | Hardness | 330 | 0.10u | 330 | 100 |
| BLANK10 | 91LNO217-MB1 | Nitrate, as N | 0.39 | 0.10u | 0.40 | 98.2 |
| BLANK20 | 91LNO217-MB2 | Nitrate, as N | 0.41 | 0.10u | 0.40 | 104 |
| BLANK30 | 91LNO217-MB3 | Nitrate, as N | 0.40 | 0.10u | 0.40 | 101 |
| BLANK10 | 91LS4084-MB1 | Sulfate | 21.2 | 5.0 u | 20.0 | 106 |
| | | Sulfate | 21.2 | 5.0 u | 20.0 | 106 |
| BLANK20 | 91LS4084-MB2 | Sulfate | 29.7 | 5.0 u | 30.0 | 98.9 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/18/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| BLANK10 | 91LCL108-MB1 | Chloride | 96.8 | 97.8 | 1.0 |
| BLANK10 | 91LHD017-MB1 | Hardness | 102 | 101 | 1.5 |
| BLANK10 | 91LS4084-MB1 | Sulfate | 106 | 106 | 0.10 |
| BLANK10 | 91LSP055-MB1 | Specific Conductance | 95.9 | 96.6 | 0.70 |
| BLANK10 | 91LSP056-MB1 | Specific Conductance | 96.6 | 95.9 | 0.70 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 10/18/91

IENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | SITE 117 | Sulfate | 5.0 u | 5.0 u | NC |
| -004REP | SITE 116 | Specific Conductance | 53.5 | 53.5 | 0.00 |
| -006REP | SITE 71 | Nitrate, as N | 1.5 | 1.5 | 1.8 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/07/91 RFW LOT # :9109L631

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 117 | | | | | | |
| ACIDITY | 001 | W | 91LAL048 | 09/06/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 001 | W | 91LCL108 | 09/06/91 | 09/11/91 | 09/11/91 |
| HARDNESS | 001 | W | 91LHD017 | 09/06/91 | 09/16/91 | 09/16/91 |
| NITRATE | 001 | W | 91LNO217 | 09/06/91 | 09/11/91 | 09/11/91 |
| PH | 001 | W | 91LPH144 | 09/06/91 | 09/09/91 | 09/09/91 |
| SULFATE | 001 | W | 91LS4084 | 09/06/91 | 09/19/91 | 09/19/91 |
| SULFATE | 001 REP | W | 91LS4084 | 09/06/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 001 | W | 91LSP055 | 09/06/91 | 09/09/91 | 09/09/91 |
| SITE 118 | | | | | | |
| ACIDITY | 002 | W | 91LAL048 | 09/06/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 002 | W | 91LCL108 | 09/06/91 | 09/11/91 | 09/11/91 |
| HARDNESS | 002 | W | 91LHD017 | 09/06/91 | 09/16/91 | 09/16/91 |
| NITRATE | 002 | W | 91LNO217 | 09/06/91 | 09/11/91 | 09/11/91 |
| PH | 002 | W | 91LPH144 | 09/06/91 | 09/09/91 | 09/09/91 |
| SULFATE | 002 | W | 91LS4084 | 09/06/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 002 | W | 91LSP055 | 09/06/91 | 09/09/91 | 09/09/91 |
| SUB-OUT TEST FOR SUB | 002 | W | | 09/06/91 | | |
| SITE 114 | | | | | | |
| ACIDITY | 003 | W | 91LAL048 | 09/06/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 003 | W | 91LCL108 | 09/06/91 | 09/11/91 | 09/11/91 |
| HARDNESS | 003 | W | 91LHD017 | 09/06/91 | 09/16/91 | 09/16/91 |
| NITRATE | 003 | W | 91LNO217 | 09/06/91 | 09/11/91 | 09/11/91 |
| PH | 003 | W | 91LPH144 | 09/06/91 | 09/09/91 | 09/09/91 |
| SULFATE | 003 | W | 91LS4084 | 09/06/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 003 | W | 91LSP055 | 09/06/91 | 09/09/91 | 09/09/91 |
| SUB-OUT TEST FOR SUB | 003 | W | | 09/06/91 | | |
| SITE 116 | | | | | | |
| ACIDITY | 004 | W | 91LAL048 | 09/06/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 004 | W | 91LCL108 | 09/06/91 | 09/11/91 | 09/11/91 |
| HARDNESS | 004 | W | 91LHD017 | 09/06/91 | 09/16/91 | 09/16/91 |
| NITRATE | 004 | W | 91LNO217 | 09/06/91 | 09/11/91 | 09/11/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/07/91 RFW LOT # :9109L631

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| PH | 004 | W | 91LPH144 | 09/06/91 | 09/09/91 | 09/09/91 |
| SULFATE | 004 | W | 91LS4084 | 09/06/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 004 | W | 91LSP056 | 09/06/91 | 09/10/91 | 09/10/91 |
| SPECIFIC CONDUCTANCE | 004 REP | W | 91LSP056 | 09/06/91 | 09/10/91 | 09/10/91 |
| SUB-OUT TEST FOR SUB | 004 | W | | 09/06/91 | | |
| SITE 115 | | | | | | |
| ACIDITY | 005 | W | 91LAL048 | 09/06/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 005 | W | 91LCL108 | 09/06/91 | 09/11/91 | 09/11/91 |
| HARDNESS | 005 | W | 91LHD017 | 09/06/91 | 09/16/91 | 09/16/91 |
| NITRATE | 005 | W | 91LNO217 | 09/06/91 | 09/11/91 | 09/11/91 |
| PH | 005 | W | 91LPH144 | 09/06/91 | 09/09/91 | 09/09/91 |
| SULFATE | 005 | W | 91LS4084 | 09/06/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 005 | W | 91LSP056 | 09/06/91 | 09/10/91 | 09/10/91 |
| SUB-OUT TEST FOR SUB | 005 | W | | 09/06/91 | | |
| SITE 71 | | | | | | |
| ACIDITY | 006 | W | 91LAL048 | 09/06/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 006 | W | 91LCL108 | 09/06/91 | 09/11/91 | 09/11/91 |
| HARDNESS | 006 | W | 91LHD017 | 09/06/91 | 09/16/91 | 09/16/91 |
| NITRATE | 006 | W | 91LNO217 | 09/06/91 | 09/11/91 | 09/11/91 |
| NITRATE | 006 REP | W | 91LNO217 | 09/06/91 | 09/11/91 | 09/11/91 |
| PH | 006 | W | 91LPH144 | 09/06/91 | 09/09/91 | 09/09/91 |
| SULFATE | 006 | W | 91LS4084 | 09/06/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 006 | W | 91LSP056 | 09/06/91 | 09/10/91 | 09/10/91 |
| SUB-OUT TEST FOR SUB | 006 | W | | 09/06/91 | | |
| SITE 68 | | | | | | |
| ACIDITY | 007 | W | 91LAL048 | 09/06/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 007 | W | 91LCL108 | 09/06/91 | 09/11/91 | 09/11/91 |
| HARDNESS | 007 | W | 91LHD017 | 09/06/91 | 09/16/91 | 09/16/91 |
| NITRATE | 007 | W | 91LNO217 | 09/06/91 | 09/11/91 | 09/11/91 |
| PH | 007 | W | 91LPH144 | 09/06/91 | 09/09/91 | 09/09/91 |
| SULFATE | 007 | W | 91LS4084 | 09/06/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 007 | W | 91LSP056 | 09/06/91 | 09/10/91 | 09/10/91 |
| SUB-OUT TEST FOR SUB | 007 | W | | 09/06/91 | | |
| SITE 77 | | | | | | |
| ACIDITY | 008 | W | 91LAL048 | 09/06/91 | 09/17/91 | 09/17/91 |

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INORGANIC ANALYTICAL DATA PACKAGE FOR
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| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHLORIDE | 008 | W | 91LCL108 | 09/06/91 | 09/11/91 | 09/11/91 |
| HARDNESS | 008 | W | 91LHD017 | 09/06/91 | 09/16/91 | 09/16/91 |
| NITRATE | 008 | W | 91LNO217 | 09/06/91 | 09/11/91 | 09/11/91 |
| PH | 008 | W | 91LPH144 | 09/06/91 | 09/09/91 | 09/09/91 |
| SULFATE | 008 | W | 91LS4084 | 09/06/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 008 | W | 91LSP056 | 09/06/91 | 09/10/91 | 09/10/91 |
| SUB-OUT TEST FOR SUB | 008 | W | | 09/06/91 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| ACIDITY | MB2 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| CHLORIDE | MB1 | W | 91LCL108 | N/A | 09/11/91 | 09/11/91 |
| CHLORIDE | MB1 BS | W | 91LCL108 | N/A | 09/11/91 | 09/11/91 |
| CHLORIDE | MB1 BSD | W | 91LCL108 | N/A | 09/11/91 | 09/11/91 |
| CHLORIDE | MB2 | W | 91LCL108 | N/A | 09/11/91 | 09/11/91 |
| CHLORIDE | MB2 BS | W | 91LCL108 | N/A | 09/11/91 | 09/11/91 |
| CHLORIDE | MB3 | W | 91LCL108 | N/A | 09/11/91 | 09/11/91 |
| CHLORIDE | MB3 BS | W | 91LCL108 | N/A | 09/11/91 | 09/11/91 |
| HARDNESS | MB1 | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB1 BS | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB1 BSD | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB2 | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| HARDNESS | MB2 BS | W | 91LHD017 | N/A | 09/16/91 | 09/16/91 |
| NITRATE | MB1 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB1 BS | W | 91LNO217 | N/A | 09/11/91 | 09/11/91 |
| NITRATE | MB2 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB2 BS | W | 91LNO217 | N/A | 09/11/91 | 09/11/91 |
| NITRATE | MB3 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB3 BS | W | 91LNO217 | N/A | 09/11/91 | 09/11/91 |
| SULFATE | MB1 | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB1 BS | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB1 BSD | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB2 | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB2 BS | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB3 | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB3 BS | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | MB1 | W | 91LSP055 | N/A | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | MB1 BS | W | 91LSP055 | N/A | 09/09/91 | 09/09/91 |
| SPECIFIC CONDUCTANCE | MB1 BSD | W | 91LSP055 | N/A | 09/09/91 | 09/09/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/07/91 RFW LOT # :9109L631

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SPECIFIC CONDUCTANCE | MB1 | W | 91LSP056 | N/A | 09/10/91 | 09/10/91 |
| SPECIFIC CONDUCTANCE | MB1 BS | W | 91LSP056 | N/A | 09/10/91 | 09/10/91 |
| SPECIFIC CONDUCTANCE | MB1 BSD | W | 91LSP056 | N/A | 09/10/91 | 09/10/91 |

WESTON Analytics Use Only
9109L631

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TO 0827
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27-0000
Project Contact/Phone #:
AD Project Manager: Thomas
QC: Yes Del: Yes TAT: 30 day
Date Rec'd: 9/7/91 Date Due: 10/7/91
Account #: WSRC27STD.

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | 2/G | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | |
| Volume | Liquid | 1L | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | |
| Preservatives | | None | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | | INORG | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Radio chem | | | | Metal | CN | NO3 SO4 | PH ALK | ACID CL | SPCL | Hard | | |
| WESTON Analytics Use Only | | | | | | | | | | | | | | | | | | |
| | | 0624W | | | | ISOB | | | | See Below | | INORG ISOU | IPH IPALK | IACID ICL | ISPCL | IHARD | | |

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 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Site 117 | | | W | 9/6/91 | | ✓ | airbubbles | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 2 | 118 | | | | | | ✓ | airbubbles | | | | ✓ | | ✓ | | | | | |
| 3 | 114 | | | | | | ✓ | | | | | ✓ | | ✓ | | | | | |
| 4 | 116 | | | | | | ✓ | | | | | ✓ | | ✓ | | | | | |
| 5 | 115 | | | | | | ✓ | | | | | ✓ | | ✓ | | | | | |
| 6 | 71 | | | | | | ✓ | | | | | ✓ | | ✓ | | | | | |
| 7 | 68 | | | | | | ✓ | | | | | ✓ | | ✓ | | | | | |
| 8 | 77 | | | | | | ✓ | | | | | ✓ | | ✓ | | | | | |
| 9 | Trip Blank | | | | | | ✓ | | | | | | | | | | | | |
| 10 | Trip Blank | | | W | 9/5/91 | | ✓ | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals = Ag, AL, As, Ba, Cd, CR, Cu, Hg, Ni, K, Na, Pb, Se, ZN, FE, MN.
Radiochem - See 9109L612
original sent written

DATE/REVISIONS:
10/1/91 1. ISOB cancelled on 001 Reinserted on 9109L687
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/7/91 | 930 am |
| [illegible] | [illegible] | 9/9/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 9/9/91 | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27
**RFW #:** 9109L631
**W.O. #:** 0630-28-27

**SAMPLES RECEIVED:** 09-07-91

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

10.14.91
Date

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

pas.21\m9-631

# ROY F. WESTON, INC.
# GLOSSARY OF TERMS - INORGANIC REPORTS

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L631

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 117 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 299 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.1 | | UG/L | 5.0 |
| | | Chromium, Total | 14.1 | | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 5180 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 176 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 47.7 | | UG/L | 20.0 |
| -002 | SITE 118 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 2550 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 36.9 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 141 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -003 | SITE 114 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 1320 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 4030 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 129 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 5.9 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 133 | | UG/L | 20.0 |
| -004 | SITE 116 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 343 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 3170 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 146 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 13.0 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 280 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L631

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -005 | SITE 115 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 1000 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 71.1 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.1 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 92.4 | | UG/L | 20.0 |
| -006 | SITE 71 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 242 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 182 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 42.7 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 10.3 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 190 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L631

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -007 | SITE 68 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 255 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 35.7 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 10.2 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 248 | | UG/L | 20.0 |
| -008 | SITE 77 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 308 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 4240 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 173 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 9.5 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 153 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/11/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L631
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L1749-MB1 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| BLANK1 | 91L1748-MB1 | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| BLANK1 | 91C256-MB1 | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| BLANK2 | 91C256-MB2 | Mercury, Total | 0.20 | u | UG/L | 0.20 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/11/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L631

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L1749-LC2 | Silver, LCS | 102 | 104 | 1.6 |
| | | Aluminum, LCS | 100 | 102 | 1.2 |
| | | Barium, LCS | 100 | 102 | 1.3 |
| | | Cadmium, LCS | 102 | 104 | 1.6 |
| | | Chromium, LCS | 102 | 103 | 0.68 |
| | | Copper, LCS | 101 | 102 | 0.99 |
| | | Aluminum, LCS | 102 | 103 | 1.7 |
| | | Manganese, LCS | 102 | 101 | 0.59 |
| | | Sodium, LCS | 100 | 101 | 0.50 |
| | | Nickel, LCS | 96.8 | 98.5 | 1.7 |
| | | Zinc, LCS | 104 | 103 | 1.1 |
| LCS2 | 91L1748-LC2 | Arsenic, LCS | 93.0 | 93.7 | 0.75 |
| | | Lead, LCS | 101 | 105 | 4.2 |
| | | Selenium, LCS | 90.3 | 92.7 | 2.6 |
| LCS2 | 91C256-LC2 | Mercury, LCS | 96.7 | 94.7 | 2.1 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/11/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L1749-LC1 | Silver, LCS | 511 | 500 | UG/L | 102 |
| | | Aluminum, LCS | 5020 | 5000 | UG/L | 100 |
| | | Barium, LCS | 5020 | 5000 | UG/L | 100 |
| | | Cadmium, LCS | 256 | 250 | UG/L | 102 |
| | | Chromium, LCS | 512 | 500 | UG/L | 102 |
| | | Copper, LCS | 1260 | 1250 | UG/L | 101 |
| | | Aluminum, LCS | 5080 | 5000 | UG/L | 102 |
| | | Manganese, LCS | 765 | 750 | UG/L | 102 |
| | | Sodium, LCS | 25100 | 25000 | UG/L | 100 |
| | | Nickel, LCS | 1940 | 2000 | UG/L | 96.8 |
| | | Zinc, LCS | 1040 | 1000 | UG/L | 104 |
| LCS2 | 91L1749-LC2 | Silver, LCS | 519 | 500 | UG/L | 104 |
| | | Aluminum, LCS | 5080 | 5000 | UG/L | 102 |
| | | Barium, LCS | 5090 | 5000 | UG/L | 102 |
| | | Cadmium, LCS | 259 | 250 | UG/L | 104 |
| | | Chromium, LCS | 516 | 500 | UG/L | 103 |
| | | Copper, LCS | 1270 | 1250 | UG/L | 102 |
| | | Aluminum, LCS | 5170 | 5000 | UG/L | 103 |
| | | Manganese, LCS | 761 | 750 | UG/L | 101 |
| | | Sodium, LCS | 25200 | 25000 | UG/L | 101 |
| | | Nickel, LCS | 1970 | 2000 | UG/L | 98.5 |
| | | Zinc, LCS | 1030 | 1000 | UG/L | 103 |
| LCS1 | 91L1748-LC1 | Arsenic, LCS | 27.9 | 30.0 | UG/L | 93.0 |
| | | Lead, LCS | 30.2 | 30.0 | UG/L | 101 |
| | | Selenium, LCS | 27.1 | 30.0 | UG/L | 90.3 |
| LCS2 | 91L1748-LC2 | Arsenic, LCS | 28.1 | 30.0 | UG/L | 93.7 |
| | | Lead, LCS | 31.5 | 30.0 | UG/L | 105 |
| | | Selenium, LCS | 27.8 | 30.0 | UG/L | 92.7 |
| LCS1 | 91C256-LC1 | Mercury, LCS | 4.8 | 5.0 | UG/L | 96.7 |
| LCS2 | 91C256-LC2 | Mercury, LCS | 4.7 | 5.0 | UG/L | 94.7 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/07/91 RFW LOT # :9109L631

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 117 | | | | | | |
| SILVER, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ALUMINUM, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ARSENIC, TOTAL | 001 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| BARIUM, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CADMIUM, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CHROMIUM, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| COPPER, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| IRON, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| MERCURY, TOTAL | 001 | W | 91C256 | 09/06/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SODIUM, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| NICKEL, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| LEAD, TOTAL | 001 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/17/91 |
| SELENIUM, TOTAL | 001 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| ZINC, TOTAL | 001 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SITE 118 | | | | | | |
| SILVER, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ALUMINUM, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ARSENIC, TOTAL | 002 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| BARIUM, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CADMIUM, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CHROMIUM, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| COPPER, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| IRON, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| MERCURY, TOTAL | 002 | W | 91C256 | 09/06/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SODIUM, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| NICKEL, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| LEAD, TOTAL | 002 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/17/91 |
| SELENIUM, TOTAL | 002 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| ZINC, TOTAL | 002 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SITE 114 | | | | | | |
| SILVER, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/07/91 RFW LOT # :9109L631

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ARSENIC, TOTAL | 003 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| BARIUM, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CADMIUM, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CHROMIUM, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| COPPER, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| IRON, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| MERCURY, TOTAL | 003 | W | 91C256 | 09/06/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SODIUM, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| NICKEL, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| LEAD, TOTAL | 003 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/17/91 |
| SELENIUM, TOTAL | 003 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| ZINC, TOTAL | 003 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SITE 116 | | | | | | |
| SILVER, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ALUMINUM, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ARSENIC, TOTAL | 004 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| BARIUM, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CADMIUM, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CHROMIUM, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| COPPER, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| IRON, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| MERCURY, TOTAL | 004 | W | 91C256 | 09/06/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SODIUM, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| NICKEL, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| LEAD, TOTAL | 004 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/17/91 |
| SELENIUM, TOTAL | 004 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| ZINC, TOTAL | 004 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SITE 115 | | | | | | |
| SILVER, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ALUMINUM, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ARSENIC, TOTAL | 005 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| BARIUM, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CADMIUM, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/07/91 RFW LOT # :9109L631

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHROMIUM, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| COPPER, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| IRON, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| MERCURY, TOTAL | 005 | W | 91C256 | 09/06/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SODIUM, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| NICKEL, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| LEAD, TOTAL | 005 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/17/91 |
| SELENIUM, TOTAL | 005 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| ZINC, TOTAL | 005 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SITE 71 | | | | | | |
| SILVER, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ALUMINUM, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ARSENIC, TOTAL | 006 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| BARIUM, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CADMIUM, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CHROMIUM, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| COPPER, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| IRON, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| MERCURY, TOTAL | 006 | W | 91C256 | 09/06/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SODIUM, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| NICKEL, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| LEAD, TOTAL | 006 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/17/91 |
| SELENIUM, TOTAL | 006 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| ZINC, TOTAL | 006 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SITE 68 | | | | | | |
| SILVER, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ALUMINUM, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ARSENIC, TOTAL | 007 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| BARIUM, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CADMIUM, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CHROMIUM, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| COPPER, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| IRON, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| MERCURY, TOTAL | 007 | W | 91C256 | 09/06/91 | 09/10/91 | 09/11/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/07/91 RFW LOT # :9109L631

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| MANGANESE, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SODIUM, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| NICKEL, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| LEAD, TOTAL | 007 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/17/91 |
| SELENIUM, TOTAL | 007 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| ZINC, TOTAL | 007 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SITE 77 | | | | | | |
| SILVER, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ALUMINUM, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| ARSENIC, TOTAL | 008 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| BARIUM, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CADMIUM, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| CHROMIUM, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| COPPER, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| IRON, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| MERCURY, TOTAL | 008 | W | 91C256 | 09/06/91 | 09/10/91 | 09/11/91 |
| MANGANESE, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| SODIUM, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| NICKEL, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |
| LEAD, TOTAL | 008 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/17/91 |
| SELENIUM, TOTAL | 008 | W | 91L1748 | 09/06/91 | 09/11/91 | 09/16/91 |
| ZINC, TOTAL | 008 | W | 91L1749 | 09/06/91 | 09/11/91 | 10/10/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| ALUMINUM LABORTORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| BARIUM LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| CADMIUM LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| CHROMIUM LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| COPPER LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| IRON LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| MANGANESE LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| SODIUM LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| NICKEL LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| ZINC LABORATORY | LC1 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| SILVER LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| ALUMINUM LABORTORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/07/91 RFW LOT # :9109L631

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| BARIUM LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| CADMIUM LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| CHROMIUM LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| COPPER LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| IRON LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| MANGANESE LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| SODIUM LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| NICKEL LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| ZINC LABORATORY | LC2 BS | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| SILVER, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| ALUMINUM, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| BARIUM, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| CADMIUM, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| CHROMIUM, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| COPPER, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| IRON, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| MANGANESE, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| SODIUM, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| NICKEL, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| ZINC, TOTAL | MB1 | W | 91L1749 | N/A | 09/11/91 | 10/10/91 |
| ARSENIC LABORATORY | LC1 BS | W | 91L1748 | N/A | 09/11/91 | 09/16/91 |
| LEAD LABORATORY | LC1 BS | W | 91L1748 | N/A | 09/11/91 | 09/17/91 |
| SELENIUM LABORATORY | LC1 BS | W | 91L1748 | N/A | 09/11/91 | 09/16/91 |
| ARSENIC LABORATORY | LC2 BS | W | 91L1748 | N/A | 09/11/91 | 09/16/91 |
| LEAD LABORATORY | LC2 BS | W | 91L1748 | N/A | 09/11/91 | 09/17/91 |
| SELENIUM LABORATORY | LC2 BS | W | 91L1748 | N/A | 09/11/91 | 09/16/91 |
| ARSENIC, TOTAL | MB1 | W | 91L1748 | N/A | 09/11/91 | 09/16/91 |
| LEAD, TOTAL | MB1 | W | 91L1748 | N/A | 09/11/91 | 09/17/91 |
| SELENIUM, TOTAL | MB1 | W | 91L1748 | N/A | 09/11/91 | 09/16/91 |
| MERCURY LABORATORY | LC1 BS | W | 91C256 | N/A | 09/10/91 | 09/11/91 |
| MERCURY LABORATORY | LC2 BS | W | 91C256 | N/A | 09/10/91 | 09/11/91 |
| MERCURY, TOTAL | MB1 | W | 91C256 | N/A | 09/10/91 | 09/11/91 |
| MERCURY, TOTAL | MB2 | W | 91C256 | N/A | 09/10/91 | 09/11/91 |

WESTON Analytics Use Only
91094631

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TO 0827
Est. Final Proj. Sampling Date:
Work Order #: 0430-28-27-0000
Project Contact/Phone #:
AD Project Manager: Dthomas
QC: Std Pet: Std TAT: 30 day
Date Rec'd: 9/7/91 Date Due: 10/7/91
Account #: WSRC27STD

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | 2/G | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | |
| Volume | Liquid | 1L | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | |
| Preservatives | | NONE | | | | | | | | | | | | | | |
| ANALYSES REQUESTED | | ORGANIC: VOA | BNA | Pest/PCB | Herb | Radio chem | | | INORG: Metal | CN | NO3 SO4 | PH ALK | ACID CL | Sol | Hard | |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | VOA | BNA | Pest/PCB | Herb | Radio chem | | | Metal | CN | NO3 SO4 | PH ALK | ACID CL | Sol | Hard |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WESTON Analytics Use Only | | | | | | 0624H | | | | ISOR 9/9/91 | | | See Below | | INORG ISOC | TPH DRK | TPCLD ICL | TSCLD | DHARD |
| S - Soil | 001 | Site 117 | | | W | 9/6/91 | | ✓ | airbubbles | | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| SE - Sediment | 2 | 118 | | | | | | ✓ | airbubbles | | | ✓ | | | ✓ | | ✓ | | | | |
| SO - Solid | 3 | 114 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | |
| SL - Sludge | 4 | 116 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | |
| W - Water | 5 | 115 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | |
| O - Oil | 6 | 71 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | |
| A - Air | 7 | 68 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | |
| DS - Drum Solids | 8 | 77 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | |
| DL - Drum Liquids | 9 | Trip Blank | | | | | | ✓ | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | 10 | Trip Blank | | | W | 9/5/91 | | ✓ | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals = Ag, AL, As, Ba, Cd, CR, Cu, Hg, Ni, Na, Pb, Se, ZN, Fe, MN.
Radiochem - See 91094612
original pewritten

DATE/REVISIONS:
10/1/91 1. ISOR cancelled on 001 Regenerated on 91094687
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/7/91 | 9:30 am |
| | [illegible] | [illegible] | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 9/9/91 | |

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC - TASK 27 **SAMPLES RECEIVED:** 09-07-91
**RFW #:** 9109L631, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of ten (10) water samples collected on 09-05,06-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 09-10,11-91.

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

1. Non-target compounds were not detected in these samples.

2. Two (2) of thirty-nine (39) surrogate recoveries were outside EPA QC limits. Sample Site 116 was re-analyzed on 09-11-91 and reported.

3. Matrix spike samples are associated with RFW lot 9109L617.

4. The laboratory blanks contained the common contaminants methylene chloride and acetone at levels less than the CRQL.

9.17.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

WESTON SM

# GLOSSARY OF VOA DATA

## DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

X = Additional qualifiers used as required are explained in the case narrative.

NQ = Result qualitatively confirmed but not able to quantify.

## ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not applicable.

DF = Dilution factor.

NR = Not required.

Roy F. Weston, I[illegible] - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 09/13/91 13:40

RFW Batch Number: 9109L631 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 1a

| | Cust ID: | SITE 117 | SITE 118 | SITE 114 | SITE 116 | SITE 116 | SITE 115 |
|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | 002 | 003 | 004 | 004 | 005 |
| | Matrix: | WATER | WATER | WATER | WATER | WATER | WATER |
| | D.F.: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Units: | ug/L | ug/L | ug/L | ug/L | ug/L REPREP | ug/L |
| Surrogate Recovery | Toluene-d8 | 106 % | 104 % | 106 % | 102 % | 107 % | 98 % |
| | Bromofluorobenzene | 112 % | 107 % | 108 % | 102 % | 110 % | 99 % |
| | 1,2-Dichloroethane-d4 | 114 % | 100 % | 99 % | 115 * % | 116 * % | 109 % |
| | | fl | fl | fl | fl | fl | fl |
| Chloromethane | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Bromomethane | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Vinyl Chloride | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Chloroethane | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Methylene Chloride | | 2 JB | 4 JB | 5 B | 20 B | 5 B | 3 JB |
| Acetone | | 6 JB | 27 B | 25 B | 33 B | 36 B | 8 JB |
| Carbon Disulfide | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1-Dichloroethene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1-Dichloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,2-Dichloroethene (total) | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Chloroform | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,2-Dichloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 2-Butanone | | 10 U | 74 | 34 | 97 | 120 | 10 U |
| 1,1,1-Trichloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Carbon Tetrachloride | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Vinyl Acetate | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Bromodichloromethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,2-Dichloropropane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| cis-1,3-Dichloropropene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Trichloroethene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Dibromochloromethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1,2-Trichloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Benzene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Trans-1,3-Dichloropropene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Bromoform | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 4-Methyl-2-pentanone | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Hexanone | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Tetrachloroethene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1,2,2-Tetrachloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

RF[illegible]:ch Number: 9109L631 Client: WSRC-TASK [illegible] Work Order: 0630-28-27-0000 [illegible]ge: 1b

| Cust ID: | SITE 117 | SITE 118 | SITE 114 | SITE 116 | SITE 116 | SITE 115 |
|---|---|---|---|---|---|---|
| RFW#: | 001 | 002 | 003 | 004 | 004 REPREP | 005 |
| Toluene | 5 U | 5 U | 5 U | 20 | 17 | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 3 J | 4 J | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 09/13/91 13:40

RFW Batch Number: 9109L631 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 2a

| | Cust ID: | SITE 71 | SITE 68 | SITE 77 | TRIP BLANK | TRIP BLANK | VBLK |
|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 006 | 007 | 008 | 009 | 010 | 91LVW148-MB1 |
| | Matrix: | WATER | WATER | WATER | WATER | WATER | WATER |
| | D.F.: | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | Units: | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Surrogate Recovery | Toluene-d8 | 103 % | 102 % | 104 % | 101 % | 105 % | 104 % |
| | Bromofluorobenzene | 106 % | 106 % | 106 % | 99 % | 104 % | 108 % |
| | 1,2-Dichloroethane-d4 | 111 % | 110 % | 112 % | 93 % | 97 % | 107 % |
| Chloromethane | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Bromomethane | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Vinyl Chloride | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Chloroethane | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Methylene Chloride | | 3 JB | 4 JB | 3 JB | 6 B | 12 B | 2 J |
| Acetone | | 12 B | 13 B | 10 U | 14 B | 9 JB | 4 J |
| Carbon Disulfide | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1-Dichloroethene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1-Dichloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,2-Dichloroethene (total) | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Chloroform | | 5 U | 5 U | 5 U | 5 U | 3 J | 5 U |
| 1,2-Dichloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 2-Butanone | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,1,1-Trichloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Carbon Tetrachloride | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Vinyl Acetate | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Bromodichloromethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,2-Dichloropropane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| cis-1,3-Dichloropropene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Trichloroethene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Dibromochloromethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1,2-Trichloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Benzene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Trans-1,3-Dichloropropene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Bromoform | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 4-Methyl-2-pentanone | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Hexanone | | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Tetrachloroethene | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 1,1,2,2-Tetrachloroethane | | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

RFW ch Number: 9109L631 Client: WSRC-TASK 2 Work Order: 0630-28-27-0000 ge: 2b

| Cust ID: | SITE 71 | SITE 68 | SITE 77 | TRIP BLANK | TRIP BLANK | VBLK |
|---|---|---|---|---|---|---|
| RFW#: | 006 | 007 | 008 | 009 | 010 | 91LVW148-MB1 |
| Toluene | 36 | 19 | 5 U | 5 U | 2 J | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 3 J | 1 J | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 19 | 5 | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 09/13/91 13:40

RFW Batch Number: 9109L631 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 3a

Cust ID: VBLK

Sample Information

RFW#: 91LVW147-MB1
Matrix: WATER
D.F.: 1.00
Units: ug/L

| | | | |
|---|---|---|---|
| Surrogate Recovery | Toluene-d8 | 104 | % |
| | Bromofluorobenzene | 105 | % |
| | 1,2-Dichloroethane-d4 | 108 | % |

| | | |
|---|---|---|
| Chloromethane | 10 | U |
| Bromomethane | 10 | U |
| Vinyl Chloride | 10 | U |
| Chloroethane | 10 | U |
| Methylene Chloride | 3 | J |
| Acetone | 7 | J |
| Carbon Disulfide | 5 | U |
| 1,1-Dichloroethene | 5 | U |
| 1,1-Dichloroethane | 5 | U |
| 1,2-Dichloroethene (total) | 5 | U |
| Chloroform | 5 | U |
| 1,2-Dichloroethane | 5 | U |
| 2-Butanone | 10 | U |
| 1,1,1-Trichloroethane | 5 | U |
| Carbon Tetrachloride | 5 | U |
| Vinyl Acetate | 10 | U |
| Bromodichloromethane | 5 | U |
| 1,2-Dichloropropane | 5 | U |
| cis-1,3-Dichloropropene | 5 | U |
| Trichloroethene | 5 | U |
| Dibromochloromethane | 5 | U |
| 1,1,2-Trichloroethane | 5 | U |
| Benzene | 5 | U |
| Trans-1,3-Dichloropropene | 5 | U |
| Bromoform | 5 | U |
| 4-Methyl-2-pentanone | 10 | U |
| 2-Hexanone | 10 | U |
| Tetrachloroethene | 5 | U |
| 1,1,2,2-Tetrachloroethane | 5 | U |

*= Outside of EPA CLP QC limits.

Cust ID: VBLK

RFW#: 91LVW147-MB1

| | | |
|---|---|---|
| Toluene | 5 | U |
| Chlorobenzene | 5 | U |
| Ethylbenzene | 5 | U |
| Styrene | 5 | U |
| Xylene (total) | 5 | U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/07/91 RFW LOT # :9109L631

| CLIENT ID | RFW # | | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|---|
| SITE 117 | 001 | | W | 91LVW148 | 09/06/91 | N/A | 09/11/91 |
| SITE 118 | 002 | | W | 91LVW148 | 09/06/91 | N/A | 09/11/91 |
| SITE 114 | 003 | | W | 91LVW148 | 09/06/91 | N/A | 09/11/91 |
| SITE 116 | 004 | | W | 91LVW147 | 09/06/91 | N/A | 09/10/91 |
| SITE 116 | 004 | R1 | W | 91LVW148 | 09/06/91 | N/A | 09/11/91 |
| SITE 115 | 005 | | W | 91LVW147 | 09/06/91 | N/A | 09/10/91 |
| SITE 71 | 006 | | W | 91LVW148 | 09/06/91 | N/A | 09/11/91 |
| SITE 68 | 007 | | W | 91LVW148 | 09/06/91 | N/A | 09/11/91 |
| SITE 77 | 008 | | W | 91LVW148 | 09/06/91 | N/A | 09/11/91 |
| TRIP BLANK | 009 | | W | 91LVW148 | 09/06/91 | N/A | 09/11/91 |
| TRIP BLANK | 010 | | W | 91LVW147 | 09/05/91 | N/A | 09/10/91 |

LAB QC:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| VBLK | MB1 | | W | 91LVW148 | N/A | N/A | 09/11/91 |
| VBLK | MB1 | | W | 91LVW147 | N/A | N/A | 09/10/91 |

WESTON Analytics Use Only
9109L631

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TO DR27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27-0000
Project Contact/Phone #:
AD Project Manager: Thomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 9/7/91 Date Due: 10/7/91
Account #: WSRC27STD

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | 2/6 | | | | 500 | | | | H | | H | | | | H | |
| | Solid | | | | | Na2S2O3 | | | | HP | | HP | | | | HP | |
| Volume | Liquid | 1L | | | | HP | | | | 1L | | 1L | | | | 500 | |
| | Solid | | | | | 1L | | | | | | | | | | | |
| Preservatives | | NONE | | | | | | | | NONE | | NONE | | | | NONE | |
| ANALYSES REQUESTED | | ORGANIC | | | | Pesticides | | | | INORG | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | | Metal | CN | NO3 SO4 | PH ALK | ACID CL | PCL | Metal | |

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 | Metals | | | | ISUB | | | See Below | | INORG ISOL | IPPS | IPALK | IACID | ISPCL | IMAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Site 117 | | | W | 9/6/91 | | ✓ | air bubbles | | | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 2 | 118 | | | | | | ✓ | air bubbles | | | ✓ | | | ✓ | | ✓ | | | | | |
| 3 | 114 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | | |
| 4 | 116 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | | |
| 5 | 115 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | | |
| 6 | 71 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | | |
| 7 | 68 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | | |
| 8 | 77 | | | | | | ✓ | | | | ✓ | | | ✓ | | ✓ | | | | | |
| 9 | Trip Blank | | | | | | ✓ | | | | | | | | | | | | | | |
| 10 | Trip Blank | | | W | 9/5/91 | | ✓ | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals = Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn.
Radiochem - See 9109L612
original permitted

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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'd Y or N

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/7/91 | 9:30 am |
| | [illegible] | [illegible] | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 9/9/91 | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

Sample 117 resampled

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC - TASK 27 **SAMPLES RECEIVED:** 10-12-91
**RFW #:** 9110L005, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of two (2) water samples collected on 10-10-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 10-17-91.

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

1. Non-target compounds were not detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. All matrix spike recoveries were within EPA QC limits.

4. The laboratory blank contained the common contaminants methylene chloride and acetone at levels less than 2x the CRQL.

11.12.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

WESTON

# GLOSSARY OF GC VOA DATA

## DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

N = Not Confirmed.

Y = Confirmed Positive.

## ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not applicable.

DF = Dilution factor.

NR = Not required.

Roy F. Weston, I[illegible] - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 11/0[illegible]/91 10:17

RFW Batch Number: 9110L005 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 1a

| | Cust ID: | SITE 117 | | SITE 117 | | SITE 117 | | TRIP BLANK | | VBLK | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 003 | | 003 MS | | 003 MSD | | 004 | | 91LVK182-MB1 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 102 | % | 108 | % | 109 | % | 103 | % | 99 | % |
| | Bromofluorobenzene | 96 | % | 100 | % | 99 | % | 95 | % | 96 | % |
| | 1,2-Dichloroethane-d4 | 94 | % | 97 | % | 100 | % | 101 | % | 107 | % |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 4 | JB | 7 | B | 8 | B | 8 | B | 8 | |
| Acetone | | 3 | JB | 6 | JB | 9 | JB | 7 | JB | 12 | |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 100 | % | 103 | % | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 110 | % | 109 | % | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 118 | % | 119 | % | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW ch Number: 9110L005 Client: WSRC-TASK Work Order: 0630-28-27-0000 ge: 1b

| Cust ID: | SITE 117 | SITE 117 | SITE 117 | TRIP BLANK | VBLK |
|---|---|---|---|---|---|
| RFW#: | 003 | 003 MS | 003 MSD | 004 | 91LVK182-MB1 |
| Toluene | 5 U | 122 % | 123 % | 5 U | 5 U |
| Chlorobenzene | 5 U | 119 % | 118 % | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L005

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 117 | 003 | W | 91LVK182 | 10/10/91 | N/A | 10/17/91 |
| SITE 117 | 003 MS | W | 91LVK182 | 10/10/91 | N/A | 10/17/91 |
| SITE 117 | 003 MSD | W | 91LVK182 | 10/10/91 | N/A | 10/17/91 |
| TRIP BLANK | 004 | W | 91LVK182 | 10/10/91 | N/A | 10/17/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| VBLK | MB1 | W | 91LVK182 | N/A | N/A | 10/17/91 |

WESTON Analytics Use Only

91101L005

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: USEC-Task 27
Est. Final Proj. Sampling Date: 10/30-28-27
Work Order #: 01630
Project Contact/Phone #:
AD Project Manager: S Thomas
QC: Std Del Std TAT: 30 Days
Date Rec'd: 10/12/91 Date Due: 11/11/91
Account #: USEC27505

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | | | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED | ORGANIC: VOA | BNA | Pest/PCB | Herb | Radio Chem | | | INORG: Metal | CN | | | | | | | | | | |

WESTON Analytics Use Only

| MATRIX CODES | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | VOA | BNA | Pest/PCB | Herb | Radio Chem | | | Metal | CN | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 8260/HS | | | | 8260 | | | See Below | TCL 8204 | | TAL Metals 6003 | | | | | |
| S - Soil | 001 | Site 161 Soil | | | Soil | 10/7/91 | | | | | | ✓ | | | ✓ | ✓ | | ✓ | | | | | |
| SE - Sediment | 2 | Site 161 Soil | | | Soil | 10/7/91 | | | | | | ✓ | | | ✓ | ✓ | | ✓ | | | | | |
| SO - Solid | 3 | Site 117 | | | W | 10/10/91 | | | | | | | | | | | | | | | | | |
| SL - Sludge | 4 | Trip Blank | | | W | 10/10/91 | | | | | | | | | | | | | | | | | |
| W - Water | | | | | | | | | | | | | | | | | | | | | | | |
| O - Oil | | | | | | | | | | | | | | | | | | | | | | | |
| A - Air | | | | | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | | | | | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | | | | | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | | | | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | | | | |

Metals - Na, Al, As, Ba, Ca, Cr, Cu, Hg, Ni, Mn, Pb, Se, Zn
Fe, Mg, K

Original signature

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem - Gross alpha, non-volatile beta
Am241, C-14, Gamma PHA,
H-3, I-129, PU238, 239, 240
Total (RA), SR-89, 90
TC-99, U-234, 238, U-235

DATE/REVISIONS:
11/5/91 1. HiKL cancelled - these were
2. purgeable activity
11/6/91 3. Subbed Radiochem to Barringer Lab
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Emory | [illegible] | 10/11/91 | [illegible] |
| | [illegible] | 10/15/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 10/15/92 | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

February 10, 1992

R.O. #27

Ms. Diane Thomas
Roy F. Weston, Inc.
208 Welsh Pool Road
Lionville, Pennsylvania 19353

Ref: Weston Project Numbers 9109L662, 9109L631, and 9109L652
(Barringer Job Numbers 91-2205, 91-2206, and 91-2210)

Dear Ms. Thomas:

This letter is in response to our telephone conversation of last week.

As discussed, we had problems performing the analyses on your 18 water samples from the above projects for isotopic uranium (U-238, U-235 and U-234) by EPA Method 908.0. It appears those problems were due to matrix interferences brought on by the high suspended solids content of those samples.

All 18 samples were analyzed and re-analyzed for isotopic uranium a total of three times. The results of many of these analyses were inconsistent with results obtained by performing internal checks for total uranium by fluorometry. Because most of the sample was consumed during the re-analyses, further re-analysis, most likely, would not have produced any better results, therefore the fluorometric uranium values in mg/liter were reported.

The total uranium activities in pCi/liter were determined by calculation from the mass equivalent of uranium in mg/liter based on equilibrium conditions between U-238 and U-234. From the data obtained by alpha spectroscopy it appears the two isotopes are in equilibrium.

I hope this clarifies our previous telephone conversation concerning this matter. If you should have any further questions please contact me at (303) 277-1687.

Sincerely,

David Lasher
Quality Assurance Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Tritium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L631-002 | 56 | ±9 | 27 | ±4 | 210000 | ±1100 |
| 9109L631-003 | 35 | ±7 | 19 | ±3 | 200000 | ±1100 |
| 9109L631-004 | 220 | ±60 | 210 | ±40 | 11000 | ±800 |
| 9109L631-005 | 42 | ±11 | 37 | ±6 | 10000 | ±800 |
| 9109L631-006 | 220 | ±50 | 150 | ±30 | 34000 | ±500 |
| 9109L631-007 | 11 | ±3 | 8.3 | ±2.0 | 89000 | ±700 |
| 9109L631-008 | 410 | ±100 | 280 | ±40 | 42000 | ±500 |

| Sample Id | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L631-002 | 0 | ±18 | 0.0 | ±0.4 | 1.2 | ±0.9 |
| 9109L631-003 | 0 | ±17 | 0.0 | ±1.0 | 2.2 | ±1.0 |
| 9109L631-004 | 0 | ±21 | 0.0 | ±0.5 | 0.0 | ±0.4 |
| 9109L631-005 | 0 | ±20 | 0.0 | ±0.5 | 0.0 | ±0.4 |
| 9109L631-006 | 0.0 | ±7.9 | 0.0 | ±0.4 | 1.0 | ±0.7 |
| 9109L631-007 | 0.0 | ±9.5 | 0.0 | ±0.4 | 0.0 | ±0.4 |
| 9109L631-008 | 4 | ±20 | 0.0 | ±0.9 | 3.2 | ±1.8 |

| Sample Id | Sr-90 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L631-002 | 2.0 | ±2.7 | 1.1 | ±2.5 | 0.5 | ±3.3 |
| 9109L631-003 | 2.2 | ±2.6 | 2.6 | ±2.6 | 0.3 | ±1.7 |
| 9109L631-004 | 1.4 | ±2.5 | 6.4 | ±2.7 | 0.0 | ±1.6 |
| 9109L631-005 | 2.2 | ±2.7 | 1.1 | ±2.4 | 0.2 | ±1.7 |
| 9109L631-006 | 14 | ±18 | 4 | ±18 | 0.1 | ±1.8 |
| 9109L631-007 | 2.0 | ±3.1 | 9.0 | ±3.0 | 0.1 | ±1.8 |
| 9109L631-008 | 4.2 | ±3.2 | 6.8 | ±3.0 | 4.3 | ±2.1 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | C-14 pCi/l | Error 2σ | Ra-226 Total pCi/l | Error 2σ | U Total mg/l | U Total pCi/l* |
|---|---|---|---|---|---|---|
| 9109L631-002 | 15 | ±13 | 2.9 | ±0.9 | 0.0157 | 11 |
| 9109L631-003 | 19 | ±13 | 2.3 | ±1.0 | 0.0125 | 8.4 |
| 9109L631-004 | 410 | ±300 | 12 | ±2 | 0.0061 | 4.1 |
| 9109L631-005 | 90 | ±71 | 0.6 | ±0.5 | 0.0236 | 16 |
| 9109L631-006 | 92 | ±62 | 5.5 | ±1.4 | 0.0199 | 13 |
| 9109L631-007 | 77 | ±67 | 2.7 | ±1.0 | 0.0103 | 7.0 |
| 9109L631-008 | 180 | ±120 | 27 | ±3 | 0.0481 | 33 |

| Sample Id | Am-241 pCi/l | Error 2σ |
|---|---|---|
| 9109L631-002 | 0.0 | ±3.7 |
| 9109L631-003 | 0.0 | ±2.3 |
| 9109L631-004 | 0.0 | ±5.0 |
| 9109L631-005 | 0.0 | ±2.9 |
| 9109L631-006 | 0.0 | ±3.0 |
| 9109L631-007 | 0.0 | ±2.0 |
| 9109L631-008 | 0.0 | ±3.3 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | Pb-214 pCi/l | Error 2σ | Pb-212 pCi/l | Error 2σ | Bi-214 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L631-002 | <15 | --- | <12 | --- | <24 | --- |
| 9109L631-003 | 16 | ±11 | <13 | --- | <26 | --- |
| 9109L631-004 | 31 | ±11 | <15 | --- | 26 | ±16 |
| 9109L631-005 | <16 | --- | <10 | --- | <23 | --- |
| 9109L631-006 | 21 | ±11 | <14 | --- | <26 | --- |
| 9109L631-007 | <19 | --- | <14 | --- | <27 | --- |
| 9109L631-008 | 19 | ±12 | 16 | ±9 | 32 | ±18 |

| Sample Id | Cs-137 pCi/l |
|---|---|
| 9109L631-002 | <14 |
| 9109L631-003 | <16 |
| 9109L631-004 | <12 |
| 9109L631-005 | <14 |
| 9109L631-006 | <16 |
| 9109L631-007 | <14 |
| 9109L631-008 | <15 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 4
Copy: 1 of 2
Set : 4

Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E Status: Final

AMENDED REPORT

Abbreviations:

Parameters:

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-90 | : Strontium -90 |
| Sr-89 | : Strontium-89 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Ra-226 | : Radium-226 |
| U | : Uranium |
| Am-241 | : Americium-241 |
| Pb-214 | : Lead-214 |
| Pb-212 | : Lead-212 |
| Bi-214 | : Bismuth-214 |
| Cs-137 | : Cesium-137 |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| mg/l | : milligrams per liter |
| pCi/l* | : pCi/l*-Combined U238,234,235 based on equilibrium co |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

Job approved by:

Signed: Ellen La Riviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E

Status: Final

AMENDED QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Tritium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 390 | ±80 | 250 | ±40 | 34000 | ±500 |
| Duplicate | 420 | ±110 | 320 | ±40 | 33000 | ±500 |
| Duplicate % diff. | 3.7 | --- | 12 | --- | 3.0 | --- |
| Std (found value) | 200 | ±6 | 105 | ±2 | 55190 | ±590 |
| Std (true value) | 206 | --- | 106 | --- | 55980 | --- |
| Std % diff. | 2.9 | --- | 0.9 | --- | 0.7 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.1 | ±0.2 | 0.5 | ±0.3 | 60 | ±150 |
| Spike % rec. | 81 | --- | 97 | --- | --- | --- |

| Sample Id | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 7 | ±21 | 0.0 | ±0.9 | 0.3 | ±1.3 |
| Duplicate | 0 | ±18 | 0.0 | ±1.1 | 4.1 | ±1.9 |
| Duplicate % diff. | 100 | --- | 0.0 | --- | 86 | --- |
| Std (found value) | 1037 | ±22 | 113 | --- | 113 | --- |
| Std (true value) | 993 | --- | 104 | --- | 104 | --- |
| Std % diff. | 4.4 | --- | 8.7 | --- | 8.7 | --- |
| Std % rec. | 104 | --- | 109 | --- | 109 | --- |
| Blank | 0.0 | ±3.4 | 0.0 | ±0.1 | 0.0 | ±0.2 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Sr-90 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 9 | ±22 | 4 | ±15 | 4.2 | ±7.0 |
| Duplicate | 20 | ±15 | 2 | ±10 | 4.3 | ±7.8 |
| Duplicate % diff. | 38 | --- | 33 | --- | 1.2 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E

Status: Final

AMENDED QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Sr-90 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std (found value) | 24 | ±2 | 26 | ±2 | 100 | ±3 |
| Std (true value) | 21 | --- | 21 | --- | 100 | --- |
| Std % diff. | 14 | --- | 24 | --- | 0.0 | --- |
| Std % rec. | --- | --- | --- | --- | 100 | --- |
| Blank | 0.5 | ±1.0 | 1.0 | ±1.0 | 0.3 | ±0.7 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | C-14 pCi/l | Error 2σ | Ra-226 Total pCi/l | Error 2σ | U Total mg/l | U Total pCi/l* |
|---|---|---|---|---|---|---|
| Duplicate | 110 | ±68 | 2.6 | ±0.6 | 0.0180 | --- |
| Duplicate | 43 | ±65 | 3.5 | ±0.7 | 0.0179 | --- |
| Duplicate % diff. | 44 | --- | 15 | --- | 0.6 | --- |
| Std (found value) | 935 | ±16 | 110 | ±4 | 35 | --- |
| Std (true value) | 992 | --- | 101 | --- | 34 | --- |
| Std % diff. | 5.8 | --- | 8.9 | --- | 2.9 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 1.5 | ±3.9 | 0.0 | ±0.1 | <0.0003 | --- |
| Spike % rec. | --- | --- | --- | --- | 97 | --- |

| Sample Id | Am-241 pCi/l | Error 2σ |
|---|---|---|
| Duplicate | 0.0 | ±3.7 |
| Duplicate | 0.0 | ±2.9 |
| Duplicate % diff. | 0.0 | --- |
| Std (found value) | 104 | ±5 |
| Std (true value) | 103 | --- |
| Std % diff. | 1.0 | --- |

BARRINGER LABORATORIES INC.
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23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 3
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E Status: Final

AMENDED QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Am-241 pCi/l | Error 2σ |
|---|---|---|
| Std % rec. | 101 | --- |
| Blank | 0.0 | ±0.2 |
| Spike % rec. | --- | --- |

BARRINGER LABORATORIES INC.
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23-Jan-92

Diane Thomas
WESTON
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Page: 4
Copy: 1 of 2
Set : 3

Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E

Status: Final

AMENDED QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gamma Spec pCi/l | Error 2σ | Pb-214 pCi/l | Error 2σ | Pb-212 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | --- | --- | 19 | ±12 | 16 | ±9 |
| Duplicate | --- | --- | 22 | ±11 | 32 | ±10 |
| Duplicate % diff. | --- | --- | 7.3 | --- | 33 | --- |
| Std (found value) | 19 | ±1 | --- | --- | --- | --- |
| Std (true value) | 19 | --- | --- | --- | --- | --- |
| Std % diff. | 0.0 | --- | --- | --- | --- | --- |

| Sample Id | Bi-214 pCi/l | Error 2σ |
|---|---|---|
| Duplicate | 32 | ±18 |
| Duplicate | <27 | --- |
| Duplicate % diff. | 100 | --- |
| Std (found value) | --- | --- |
| Std (true value) | --- | --- |
| Std % diff. | --- | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
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Page: 5
Copy: 1 of 2
Set : 4

Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E Status: Final

AMENDED QUALITY CONTROL REPORT

Abbreviations:

Parameters:

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-90 | : Strontium -90 |
| Sr-89 | : Strontium-89 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Ra-226 | : Radium-226 |
| U | : Uranium |
| Am-241 | : Americium-241 |
| Pb-214 | : Lead-214 |
| Pb-212 | : Lead-212 |
| Bi-214 | : Bismuth-214 |
| Cs-137 | : Cesium-137 |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| mg/l | : milligrams per liter |
| pCi/l* | : pCi/l*-Combined U238,234,235 based on equilibrium co |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

Job approved by:

Signed:
.....
Approved
Quality Assurance Department

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 6
Copy: 1 of 2

Attn: Diane Thomas
Project: 9109L631

Received: 13-Nov-91 09:40
PO #: LSA #LL-0962-F4

Job: 912206E

Status: Final

AMENDED QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: gm Via: Fed Ex

Sample Container Type: gl Gal jars, pl L btls
Sample Type: Water
Preservative When Received: none
Additional Lab Preparation: none

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 2 pCi/l | none | Pingilley | 11/26-12/ 4 |
| Gross Beta | 900.0 | 4 pCi/l | none | Pingilley | 11/26-12/ 4 |
| Tritium | 906.0 | 460 pCi/l | none | Meyer | 11/25-12/ 2 |
| I-129 | 902.0 | 1 pCi/l | none | Preston | 11/29-12/16 |
| Pu-238/239/240 | 907.0 | 0.4 pCi/l | none | Preston | 11/27-12/13 |
| Sr-90/89 | 905.0 | 1 pCi/l | none | Kidwell | 11/25-12/26 |
| Tc-99 | HASL 300 | 1 pCi/l | none | Preston | 11/29-12/19 |
| C-14 | 520-84-006 | 3 pCi/l | none | Preston | 12/11-12/23 |
| Ra-226 | SM-705 | 0.2 pCi/l | none | Seidel | 11/22-12/15 |
| U | ASTM D2907 | 0.0003 mg/l | none | Meyer | 11/26-12/ 1 |
| Am-241 | 907.0 | 0.5 pCi/l | none | Preston | 1/ 6- 1/13 |
| Gamma Spec | 901.1 | 25 pCi/l | none | Kidwell | 1/22 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

12206

Client: [illegible]
Est. Final Proj. Sampling Date: ____
Work Order #: 0630-28-27
Project Contact/Phone #: ____
AD Project Manager: Thomas
QC: Oth Del: Sth TAT: ____
Date Rec'd: ____ Date Due: ____
Account #: ____

| Refrigerator # | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | | | | | 1G | 1P | | | | 1P | | | | | |
| | Solid | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | gal | gal | | | | 1L | | | | | |
| | Solid | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | INORG | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Radiochem (3) | | | Metal | CN | Radiochem (2) | | | | | |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S - Soil | | ~~Site 117~~ | | | W | 9/6/91 | | | 89-01/191 | | | | | | | | ✓ | | | 910 ~~DO NOT run~~ 631-001 | |
| SE - Sediment | | Site 118 | | | | | | | | | ✓ | ✓ | | | | | | | | 910916631-002 | |
| SO - Solid | | 114 | | | | | | | | | | | | | | | | | | | 003 |
| SL - Sludge | | 116 | | | | | | | | | | | | | | | | | | | 004 |
| W - Water | | 115 | | | | | | | | | | | | | | | | | | | 005 |
| O - Oil | | 71 | | | | | | | | | | | | | | | | | | | 006 |
| A - Air | | 68 | | | | | | | | | | | | | | | | | | | 007 |
| DS - Drum Solids | | 77 | | | | | | | | | | | | | | | | | | | 008 |
| DL - Drum Liquids | | | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem (3) see attached

DATE/REVISIONS:
1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| Megan Kelley | | 11/12/91 | 630 | | D Mantey | 11/13/91 | 1930 |
| | | | | | | | |

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 361-598a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-11-91
**RFW #:** 9109L652
**W.O. #:** 0630-28-27

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. Sample holding times as required by 40CFR136 were met for water samples with the exception of pH and specific conductance, both received past hold.

2. Preparation blank results were below the required detection limit with the exception of acidity.

3. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

4. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

5. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

10.17.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

pas.21\i9-652

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/17/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L652

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 155 | Acidity | 50.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 8.2 | | MG/L | 0.20 |
| | | Nitrate, as N | 2.4 | | MG/L | 0.25 |
| | | pH | 5.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 33.8 | | UMHOS/CM | 1.0 |
| -002 | SITE 156 | Acidity | 30.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 14.0 | | MG/L | 0.20 |
| | | Nitrate, as N | 5.3 | | MG/L | 0.50 |
| | | pH | 3.9 | | PH UNITS | 0.010 |
| | | Sulfate | 18.8 | | MG/L | 5.0 |
| | | Specific Conductance | 52.8 | | UMHOS/CM | 1.0 |
| -003 | SITE 157 | Acidity | 30.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 10.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.36 | | MG/L | 0.10 |
| | | pH | 6.0 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 32.8 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L652
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK10 | 91LAL048-MB1 | Acidity | 0.50 u | MG/L | 0.50 |
| BLANK20 | 91LAL048-MB2 | Acidity | 8.5 | MG/L | 0.50 |
| BLANK10 | 91LCL109-MB1 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK20 | 91LCL109-MB2 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK30 | 91LCL109-MB3 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK40 | 91LCL109-MB4 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK10 | 91LHD018-MB1 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LHD018-MB2 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LNO217-MB1 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| ANK20 | 91LNO217-MB2 | Nitrate, as N | 0.10 u | MG/L | 0.10 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/17/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L652

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK30 | 91LNO217-MB3 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LS4084-MB1 | Sulfate | 5.0 u | MG/L | 5.0 |
| BLANK20 | 91LS4084-MB2 | Sulfate | 5.0 u | MG/L | 5.0 |
| BLANK30 | 91LS4084-MB3 | Sulfate | 5.0 u | MG/L | 5.0 |
| BLANK10 | 91LSP057-MB1 | Specific Conductance | 1.0 u | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/17/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L652

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| BLANK10 | 91LCL109-MB1 | Chloride | 23.9 | 5.0 u | 25.0 | 95.7 |
| | | Chloride MSD | 24.6 | 5.0 u | 25.0 | 98.2 |
| BLANK20 | 91LCL109-MB2 | Chloride | 49.3 | 5.0 u | 50.0 | 98.7 |
| BLANK30 | 91LCL109-MB3 | Chloride | 24.2 | 5.0 u | 25.0 | 96.9 |
| BLANK40 | 91LCL109-MB4 | Chloride | 24.2 | 5.0 u | 25.0 | 97.0 |
| BLANK10 | 91LHD018-MB1 | Hardness | 101 | 0.10u | 100 | 101 |
| | | Hardness MSD | 101 | 0.10u | 100 | 101 |
| BLANK20 | 91LHD018-MB2 | Hardness | 330 | 0.10u | 330 | 99.9 |
| BLANK10 | 91LNO217-MB1 | Nitrate, as N | 0.39 | 0.10u | 0.40 | 98.2 |
| BLANK20 | 91LNO217-MB2 | Nitrate, as N | 0.41 | 0.10u | 0.40 | 104 |
| BLANK30 | 91LNO217-MB3 | Nitrate, as N | 0.40 | 0.10u | 0.40 | 101 |
| BLANK10 | 91LS4084-MB1 | Sulfate | 21.2 | 5.0 u | 20.0 | 106 |
| | | Sulfate | 21.2 | 5.0 u | 20.0 | 106 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L652
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| BLANK20 | 91LS4084-MB2 | Sulfate | 29.7 | 5.0 u | 30.0 | 98.9 |
| BLANK30 | 91LS4084-MB3 | Sulfate | 29.6 | 5.0 u | 30.0 | 98.7 |
| BLANK10 | 91LSP057-MB1 | Specific Conductance | 142 | 1.0 u | 147 | 96.6 |
| | | Specific Conductance M | 141 | 1.0 u | 147 | 95.9 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L652
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| BLANK10 | 91LCL109-MB1 | Chloride | 95.7 | 98.2 | 2.8 |
| BLANK10 | 91LHD018-MB1 | Hardness | 101 | 101 | 0.40 |
| BLANK10 | 91LS4084-MB1 | Sulfate | 106 | 106 | 0.10 |
| BLANK10 | 91LSP057-MB1 | Specific Conductance | 96.6 | 95.9 | 0.70 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 10/17/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L652

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | SITE 155 | Hardness | 8.2 | 8.0 | 2.5 |
| | | pH | 5.8 | 5.8 | 0.17 |
| | | Specific Conductance | 33.8 | 33.8 | 0.00 |
| -003REP | SITE 157 | Nitrate, as N | 0.36 | 0.35 | 2.3 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/11/91 RFW LOT # :9109L652

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 155 | | | | | | |
| ACIDITY | 001 | W | 91LAL048 | 09/09/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 001 | W | 91LCL109 | 09/09/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 001 | W | 91LHD018 | 09/09/91 | 09/18/91 | 09/18/91 |
| HARDNESS | 001 REP | W | 91LHD018 | 09/09/91 | 09/18/91 | 09/18/91 |
| NITRATE | 001 | W | 91LNO217 | 09/09/91 | 09/11/91 | 09/11/91 |
| PH | 001 | W | 91LPH146 | 09/09/91 | 09/11/91 | 09/11/91 |
| PH | 001 REP | W | 91LPH146 | 09/09/91 | 09/11/91 | 09/11/91 |
| SULFATE | 001 | W | 91LS4084 | 09/09/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 001 | W | 91LSP057 | 09/09/91 | 09/11/91 | 09/11/91 |
| SPECIFIC CONDUCTANCE | 001 REP | W | 91LSP057 | 09/09/91 | 09/11/91 | 09/11/91 |
| SUB-OUT TEST FOR SUB | 001 | W | | 09/09/91 | | |
| SITE 156 | | | | | | |
| ACIDITY | 002 | W | 91LAL048 | 09/09/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 002 | W | 91LCL109 | 09/09/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 002 | W | 91LHD018 | 09/09/91 | 09/18/91 | 09/18/91 |
| NITRATE | 002 | W | 91LNO217 | 09/09/91 | 09/11/91 | 09/11/91 |
| PH | 002 | W | 91LPH146 | 09/09/91 | 09/11/91 | 09/11/91 |
| SULFATE | 002 | W | 91LS4084 | 09/09/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 002 | W | 91LSP057 | 09/09/91 | 09/11/91 | 09/11/91 |
| SUB-OUT TEST FOR SUB | 002 | W | | 09/09/91 | | |
| SITE 157 | | | | | | |
| ACIDITY | 003 | W | 91LAL048 | 09/09/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 003 | W | 91LCL109 | 09/09/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 003 | W | 91LHD018 | 09/09/91 | 09/18/91 | 09/18/91 |
| NITRATE | 003 | W | 91LNO217 | 09/09/91 | 09/11/91 | 09/11/91 |
| NITRATE | 003 REP | W | 91LNO217 | 09/09/91 | 09/11/91 | 09/11/91 |
| PH | 003 | W | 91LPH146 | 09/09/91 | 09/11/91 | 09/11/91 |
| SULFATE | 003 | W | 91LS4084 | 09/09/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 003 | W | 91LSP057 | 09/09/91 | 09/11/91 | 09/11/91 |
| SUB-OUT TEST FOR SUB | 003 | W | | 09/09/91 | | |
| LAB QC: | | | | | | |
| ACIDITY | MB1 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/11/91 RFW LOT # :9109L652

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALKALINITY | MB1 BS | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| ACIDITY | MB2 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| CHLORIDE | MB1 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB1 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB1 BSD | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB2 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB2 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB3 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB3 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB4 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB4 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| HARDNESS | MB1 | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB1 BS | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB1 BSD | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB2 | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB2 BS | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| NITRATE | MB1 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB1 BS | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB2 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB2 BS | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB3 | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| NITRATE | MB3 BS | W | 91LNO217 | N/A | 09/10/91 | 09/11/91 |
| SULFATE | MB1 | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB1 BS | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB1 BSD | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB2 | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB2 BS | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB3 | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB3 BS | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | MB1 | W | 91LSP057 | N/A | 09/11/91 | 09/11/91 |
| SPECIFIC CONDUCTANCE | MB1 BS | W | 91LSP057 | N/A | 09/11/91 | 09/11/91 |
| SPECIFIC CONDUCTANCE | MB1 BSD | W | 91LSP057 | N/A | 09/11/91 | 09/11/91 |

WESTON Analytics Use Only

9109L652

Diane Thomas PM

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 01630-28-27
Project Contact/Phone #:
AD Project Manager: Thomas
QC: SH Del: SH TAT: 30 day
Date Rec'd: 9/11/91 Date Due: 10/11/91
Account #: WSRC27STD

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | | | | | SUD | | | H | | 4 | | | | | | | |
| #/Type Container | Liquid | 1G | | | | | | | | 1P | | 1P | 1P | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Volume | Liquid | 1D | | | | | | | | 1L | | 500 | 1L | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Preservatives | | NA | | | | | | | | NaOH | | HCl | NaOH | | | | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | | INORG | | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | Radio Chem | | | Metal | CN | Hardness | CL | NO3 | Phos | Phenol | PH | SO4 | Spcd |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 06634 | | | | 15U3 | | | See Below | | 1WRED | 1CL 2NO3N | 1PHL 1Phed | 1PH 1SO4 | 1Spcd |
| S - Soil | 001 | Site 155 | | | W | 9/9/91 | | | | | | | | | | | | | | |
| SE - Sediment | 2 | 156 | | | | | | | | | | | | | | | | | | |
| SO - Solid | 3 | 157 | | | | | | | | | | | | | | | | | | |
| SL - Sludge | 4 | Trip Blank | | | | | | | | | | | | | | | | | | |
| W - Water | | Site 15 | | | | | | | | | | | | | | | | | | |
| O - Oil | | | | | | | | | | | | | | | | | | | | |
| A - Air | | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | |

Received broken (1) 40ml VOT. on original

Trip Blank logged for VOA only.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals - Ag, Al, Ba, As, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn
Radiochem - See 9109L612.
original signature

DATE/REVISIONS:
9-30-91 1. Carol AHKL on #001 - 003 on SDC
2.
3.
4.
5.
6.

WESTON Analytics 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

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Fedex | Pleigh | 9/11/91 | 9:30 am |
| | PS 9/11/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | PS 9/11/91 | | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# NA Cooler# NA 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WSRC-TASK 27
RFW #: 9109L652
W.O. #: 0630-28-27

SAMPLES RECEIVED: 09-11-91

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

10.14.91.

Jack R. Tusehall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

pas.21\m9-652

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L652

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 155 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 46.2 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 36.4 | | UG/L | 20.0 |
| -002 | SITE 156 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 50.7 | | UG/L | 15.0 |
| | | Sodium, Total | 6310 | | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 66.4 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L652
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -003 | SITE 157 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 54.8 | | UG/L | 15.0 |
| | | Sodium, Total | 5480 | | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 80.1 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/11/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L652
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L1771-MB1 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| BLANK1 | 91L1770-MB1 | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| BLANK1 | 91C258-MB1 | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| LANK2 | 91C258-MB2 | Mercury, Total | 0.20 | u | UG/L | 0.20 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/11/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L652

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L1771-LC2 | Silver, LCS | 85.9 | 87.3 | 1.6 |
| | | Aluminum, LCS | 95.4 | 99.2 | 3.9 |
| | | Barium, LCS | 94.5 | 97.6 | 3.2 |
| | | Cadmium, LCS | 98.2 | 102 | 3.6 |
| | | Chromium, LCS | 94.7 | 99.1 | 4.5 |
| | | Copper, LCS | 96.0 | 98.5 | 2.6 |
| | | Iron, LCS | 96.0 | 99.0 | 3.1 |
| | | Manganese, LCS | 95.1 | 98.7 | 3.7 |
| | | Sodium, LCS | 96.1 | 98.9 | 2.9 |
| | | Nickel, LCS | 92.0 | 95.7 | 3.9 |
| | | Zinc, LCS | 95.0 | 98.3 | 3.4 |
| LCS2 | 91L1770-LC2 | Arsenic, LCS | 83.3 | 86.0 | 3.2 |
| | | Lead, LCS | 109 | 111 | 2.1 |
| | | Selenium, LCS | 91.3 | 94.0 | 2.9 |
| LCS2 | 91C258-LC2 | Mercury, LCS | 97.9 | 101 | 3.1 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/11/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L1771-LC1 | Silver, LCS | 429 | 500 | UG/L | 85.9 |
| | | Aluminum, LCS | 4770 | 5000 | UG/L | 95.4 |
| | | Barium, LCS | 4730 | 5000 | UG/L | 94.5 |
| | | Cadmium, LCS | 246 | 250 | UG/L | 98.2 |
| | | Chromium, LCS | 473 | 500 | UG/L | 94.7 |
| | | Copper, LCS | 1200 | 1250 | UG/L | 96.0 |
| | | Iron, LCS | 4800 | 5000 | UG/L | 96.0 |
| | | Manganese, LCS | 714 | 750 | UG/L | 95.1 |
| | | Sodium, LCS | 24000 | 25000 | UG/L | 96.1 |
| | | Nickel, LCS | 1840 | 2000 | UG/L | 92.0 |
| | | Zinc, LCS | 950 | 1000 | UG/L | 95.0 |
| LCS2 | 91L1771-LC2 | Silver, LCS | 436 | 500 | UG/L | 87.3 |
| | | Aluminum, LCS | 4960 | 5000 | UG/L | 99.2 |
| | | Barium, LCS | 4880 | 5000 | UG/L | 97.6 |
| | | Cadmium, LCS | 254 | 250 | UG/L | 102 |
| | | Chromium, LCS | 496 | 500 | UG/L | 99.1 |
| | | Copper, LCS | 1230 | 1250 | UG/L | 98.5 |
| | | Iron, LCS | 4950 | 5000 | UG/L | 99.0 |
| | | Manganese, LCS | 740 | 750 | UG/L | 98.7 |
| | | Sodium, LCS | 24700 | 25000 | UG/L | 98.9 |
| | | Nickel, LCS | 1910 | 2000 | UG/L | 95.7 |
| | | Zinc, LCS | 983 | 1000 | UG/L | 98.3 |
| LCS1 | 91L1770-LC1 | Arsenic, LCS | 25.0 | 30.0 | UG/L | 83.3 |
| | | Lead, LCS | 32.7 | 30.0 | UG/L | 109 |
| | | Selenium, LCS | 27.4 | 30.0 | UG/L | 91.3 |
| LCS2 | 91L1770-LC2 | Arsenic, LCS | 25.8 | 30.0 | UG/L | 86.0 |
| | | Lead, LCS | 33.4 | 30.0 | UG/L | 111 |
| | | Selenium, LCS | 28.2 | 30.0 | UG/L | 94.0 |
| LCS1 | 91C258-LC1 | Mercury, LCS | 4.9 | 5.0 | UG/L | 97.9 |
| LCS2 | 91C258-LC2 | Mercury, LCS | 5.0 | 5.0 | UG/L | 101 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/11/91 RFW LOT # :9109L652

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 155 | | | | | | |
| SILVER, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| ALUMINUM, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| ARSENIC, TOTAL | 001 | W | 91L1770 | 09/09/91 | 09/13/91 | 09/18/91 |
| BARIUM, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| CADMIUM, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| CHROMIUM, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| COPPER, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| IRON, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| MERCURY, TOTAL | 001 | W | 91C258 | 09/09/91 | 09/12/91 | 09/12/91 |
| MANGANESE, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| SODIUM, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| NICKEL, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| LEAD, TOTAL | 001 | W | 91L1770 | 09/09/91 | 09/13/91 | 09/19/91 |
| SELENIUM, TOTAL | 001 | W | 91L1770 | 09/09/91 | 09/13/91 | 09/18/91 |
| ZINC, TOTAL | 001 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| SITE 156 | | | | | | |
| SILVER, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| ALUMINUM, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| ARSENIC, TOTAL | 002 | W | 91L1770 | 09/09/91 | 09/13/91 | 09/18/91 |
| BARIUM, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| CADMIUM, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| CHROMIUM, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| COPPER, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| IRON, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| MERCURY, TOTAL | 002 | W | 91C258 | 09/09/91 | 09/12/91 | 09/12/91 |
| MANGANESE, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| SODIUM, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| NICKEL, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| LEAD, TOTAL | 002 | W | 91L1770 | 09/09/91 | 09/13/91 | 09/19/91 |
| SELENIUM, TOTAL | 002 | W | 91L1770 | 09/09/91 | 09/13/91 | 09/18/91 |
| ZINC, TOTAL | 002 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| SITE 157 | | | | | | |
| SILVER, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/11/91 RFW LOT # :9109L652

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| ARSENIC, TOTAL | 003 | W | 91L1770 | 09/09/91 | 09/13/91 | 09/18/91 |
| BARIUM, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| CADMIUM, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| CHROMIUM, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| COPPER, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| IRON, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| MERCURY, TOTAL | 003 | W | 91C258 | 09/09/91 | 09/12/91 | 09/12/91 |
| MANGANESE, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| SODIUM, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| NICKEL, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |
| LEAD, TOTAL | 003 | W | 91L1770 | 09/09/91 | 09/13/91 | 09/19/91 |
| SELENIUM, TOTAL | 003 | W | 91L1770 | 09/09/91 | 09/13/91 | 09/18/91 |
| ZINC, TOTAL | 003 | W | 91L1771 | 09/09/91 | 09/13/91 | 10/10/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| ALUMINUM LABORTORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| BARIUM LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| CADMIUM LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| CHROMIUM LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| COPPER LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| IRON LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| MANGANESE LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| SODIUM LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| NICKEL LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| ZINC LABORATORY | LC1 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| SILVER LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| ALUMINUM LABORTORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| BARIUM LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| CADMIUM LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| CHROMIUM LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| COPPER LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| IRON LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| MANGANESE LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| SODIUM LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| NICKEL LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| ZINC LABORATORY | LC2 BS | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| SILVER, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/11/91 RFW LOT # :9109L652

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| BARIUM, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| CADMIUM, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| CHROMIUM, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| COPPER, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| IRON, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| MANGANESE, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| SODIUM, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| NICKEL, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| ZINC, TOTAL | MB1 | W | 91L1771 | N/A | 09/13/91 | 10/10/91 |
| ARSENIC LABORATORY | LC1 BS | W | 91L1770 | N/A | 09/13/91 | 09/18/91 |
| LEAD LABORATORY | LC1 BS | W | 91L1770 | N/A | 09/13/91 | 09/19/91 |
| SELENIUM LABORATORY | LC1 BS | W | 91L1770 | N/A | 09/13/91 | 09/18/91 |
| ARSENIC LABORATORY | LC2 BS | W | 91L1770 | N/A | 09/13/91 | 09/18/91 |
| LEAD LABORATORY | LC2 BS | W | 91L1770 | N/A | 09/13/91 | 09/19/91 |
| SELENIUM LABORATORY | LC2 BS | W | 91L1770 | N/A | 09/13/91 | 09/18/91 |
| ARSENIC, TOTAL | MB1 | W | 91L1770 | N/A | 09/13/91 | 09/18/91 |
| LEAD, TOTAL | MB1 | W | 91L1770 | N/A | 09/13/91 | 09/19/91 |
| SELENIUM, TOTAL | MB1 | W | 91L1770 | N/A | 09/13/91 | 09/18/91 |
| MERCURY LABORATORY | LC1 BS | W | 91C258 | N/A | 09/12/91 | 09/12/91 |
| MERCURY LABORATORY | LC2 BS | W | 91C258 | N/A | 09/12/91 | 09/12/91 |
| MERCURY, TOTAL | MB1 | W | 91C258 | N/A | 09/12/91 | 09/12/91 |
| MERCURY, TOTAL | MB2 | W | 91C258 | N/A | 09/12/91 | 09/12/91 |

WESTON Analytics Use Only
9109L652

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: Thomas
QC: OH Del: OH TAT: 30 day
Date Rec'd: 9/11/91 Date Due: 10/11/91
Account #: WSRC27STD

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | | | | | SUD | | | | H | | | | | | |
| #/Type Container | Liquid | 1G | | | | | 1G | | | | 1P | | 1P | 1P | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Volume | Liquid | 40 | | | | | | | | | 1L | | 500 | 9L | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Preservatives | | NA | | | | | | | | | NaOH | | H2SO4 | None | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | | | INORG | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | | | Metal | CN | Hardness | TSS | Phenol | PH | Spec |

| MATRIX CODES | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | VOA | BNA | Pest/PCB | Herb | | | | Metal | CN | Hardness | TSS | Phenol | PH | Spec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | WESTON Analytics Use Only | | | | | | | | | | | | | |
| | | | | | | | | 0630-4 | | | | 15UB | | | See below | | Limited | SC | DPLC Acid | PH | Spec |
| S - Soil | 001 | Site 155 | | | W | 9/9/91 | | | | | | | | | | | | | | | |
| SE - Sediment | 2 | 156 | | | | | | | | | | | | | | | | | | | |
| SO - Solid | 3 | 157 | | | | | | | | | | | | | | | | | | | |
| SL - Sludge | 4 | Trip Blank | | | | | | | | | | | | | | | | | | | |
| W - Water | | Site 15 | | | | | | | | | | | | | | | | | | | |
| O - Oil | | | | | | | | | | | | | | | | | | | | | |
| A - Air | | | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | | | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | | Trip Blank logged for VOA only. | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | | |

Received broken (1) 40ml VOT. on original.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals - Ag, Al, Ba, As, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn
Radiochem - See 9109L612.
original submitted

DATE/REVISIONS:
9-30-91 1. Carol ALKL on #001-003 on side
2.
3.
4.
5.
6.

WESTON Analytics 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'd Y or N

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/11/91 | 9:30 AM |
| | PS 9/11/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | PS 9/11/91 | | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381 596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC - TASK 27 **SAMPLES RECEIVED:** 09-11-91
**RFW #:** 9109L652, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of four (4) water samples collected on 09-09-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 09-12,16-91.

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

1. Non-target compounds were not detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. Matrix spike recoveries are associated with RFW lot 9109L617.

4. The laboratory blanks contained the common contaminants methylene chloride and acetone at levels less than 2x the CRQL.

Linda A. Hayhurst 9.26.91

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

WESTON SM

# GLOSSARY OF VOA DATA

## DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

X = Additional qualifiers used as required are explained in the case narrative.

NQ = Result qualitatively confirmed but not able to quantify.

## ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not applicable.

DF = Dilution factor.

NR = Not required.

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9109L652 | Client: WSRC-TASK 27 | Work Order: 0630-28-27-0000 | Report Date: 09/20/91 15:55 | Page: 1a

| | Cust ID: | SITE 155 | | SITE 156 | | SITE 157 | | TRIP BLANK | | VBLK | | VBLK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 002 | | 003 | | 004 | | 91LVW149-MB1 | | 91LVW151-MB1 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 105 | % | 107 | % | 107 | % | 104 | % | 104 | % | 104 | % |
| | Bromofluorobenzene | 105 | % | 109 | % | 113 | % | 106 | % | 102 | % | 105 | % |
| | 1,2-Dichloroethane-d4 | 102 | % | 108 | % | 107 | % | 89 | % | 89 | % | 98 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 5 | B | 5 | U | 4 | JB | 13 | B | 5 | | 3 | J |
| Acetone | | 10 | U | 10 | U | 10 | B | 9 | J | 7 | J | 10 | U |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 2 | J | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 3 | J | 8 | | 5 | U | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

AIIM

Association for Information and image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

301/587-8202

Centimeter

Inches

MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

3 of 7

RFW ch Number: 9109L652 Client: WSRC-TASK Work Order: 0630-28-27-0000 ge: 1b

| Cust ID: | SITE 155 | SITE 156 | SITE 157 | TRIP BLANK | VBLK | VBLK |
|---|---|---|---|---|---|---|
| RFW#: | 001 | 002 | 003 | 004 | 91LVW149-MB1 | 91LVW151-MB1 |
| Toluene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/11/91 RFW LOT # :9109L652

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 155 | 001 | W | 91LVW149 | 09/09/91 | N/A | 09/12/91 |
| SITE 156 | 002 | W | 91LVW149 | 09/09/91 | N/A | 09/12/91 |
| SITE 157 | 003 | W | 91LVW149 | 09/09/91 | N/A | 09/12/91 |
| TRIP BLANK | 004 | W | 91LVW151 | 09/09/91 | N/A | 09/16/91 |
| LAB QC: | | | | | | |
| VBLK | MB1 | W | 91LVW149 | N/A | N/A | 09/12/91 |
| VBLK | MB1 | W | 91LVW151 | N/A | N/A | 09/16/91 |

WESTON Analytics Use Only
9109L652

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 01630-28-27
Project Contact/Phone #:
AD Project Manager: Thomas
QC: SH Del: SH TAT: 30 day
Date Rec'd: 9/11/91 Date Due: 10/11/91
Account #: WSRC27STD

Refrigerator #: 1

| # Type Container | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Liquid | 1G | | | | | SUD | | | 1P | | 1P | 1P | | | | |
| Solid | | | | | | 1G | | | | | | | | | | |
| Volume Liquid | 40 | | | | | | | | 1L | | 500 | 9L | | | | |
| Volume Solid | | | | | | | | | | | | | | | | |
| Preservatives | non | | | | | | | | HNO3 | | H2SO4 | none | | | | |

ANALYSES REQUESTED →

| ORGANIC | | | | | INORG | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Lab Com | Metal | CN | Hardness | Cl | NO3 | Acid | PH | SO4 | Spcd |

WESTON Analytics 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 | 01634 | | | | 15UC | | see below | | Limited | SCL | 1Pint | 1Pint | 1Pint | 1Pint |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Site 155 | | | W | 9/9/91 | | | | | | | | | | | | | | | |
| 2 | 156 | | | | | | | | | | | | | | | | | | | |
| 3 | 157 | | | | | | | | | | | | | | | | | | | |
| 4 | Trip Blank | | | | | | | | | | | | | | | | | | | |
| | Site 15 | | | | | | | | | | | | | | | | | | | |

Received broken (1) 40ml vial on arrival

Trip Blank logged for VOA only.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals - Ag, Al, Ba, As, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn
Radiochem - See 91CAL612.
original signature

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/11/91 | 9:30 AM |
| | [illegible] | 9/11/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 9/11/91 | |

RFW 21-21-001/A-7/91 L372 L373 L375 L377 L378 Ref# Cooler# 381-596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

February 10, 1992

Ms. Diane Thomas
Roy F. Weston, Inc.
208 Welsh Pool Road
Lionville, Pennsylvania 19353

R.O. #27

Ref: Weston Project Numbers 9109L662, 9109L631, and 9109L652
(Barringer Job Numbers 91-2205, 91-2206, and 91-2210)

Dear Ms. Thomas:

This letter is in response to our telephone conversation of last week.

As discussed, we had problems performing the analyses on your 18 water samples from the above projects for isotopic uranium (U-238, U-235 and U-234) by EPA Method 908.0. It appears those problems were due to matrix interferences brought on by the high suspended solids content of those samples.

All 18 samples were analyzed and re-analyzed for isotopic uranium a total of three times. The results of many of these analyses were inconsistent with results obtained by performing internal checks for total uranium by fluorometry. Because most of the sample was consumed during the re-analyses, further re-analysis, most likely, would not have produced any better results, therefore the fluorometric uranium values in mg/liter were reported.

The total uranium activities in pCi/liter were determined by calculation from the mass equivalent of uranium in mg/liter based on equilibrium conditions between U-238 and U-234. From the data obtained by alpha spectroscopy it appears the two isotopes are in equilibrium.

I hope this clarifies our previous telephone conversation concerning this matter. If you should have any further questions please contact me at (303) 277-1687.

Sincerely,

David Lasher
Quality Assurance Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Tritium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L652-001 | 59 | ±10 | 46 | ±5 | 50000 | ±600 |
| 9109L652-002 | 110 | ±20 | 130 | ±10 | 80000 | ±700 |
| 9109L652-003 | 29 | ±6 | 20 | ±3 | 78000 | ±700 |

| Sample Id | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L652-001 | 0.5 | ±8.5 | 0.0 | ±0.4 | 0.0 | ±0.4 |
| 9109L652-002 | 0.0 | ±9.8 | 0.0 | ±0.6 | 0.5 | ±0.7 |
| 9109L652-003 | 2.7 | ±9.1 | 0.5 | ±0.6 | 0.5 | ±0.6 |

| Sample Id | Sr-90 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L652-001 | 3.6 | ±2.9 | 0.0 | ±2.2 | 11 | ±6 |
| 9109L652-002 | 26 | ±4 | 3.0 | ±4.0 | 34 | ±6 |
| 9109L652-003 | 5.6 | ±6.0 | 0.0 | ±2.9 | 5.2 | ±4.0 |

| Sample Id | C-14 pCi/l | Error 2σ | Ra-226 Total pCi/l | Error 2σ | U Total mg/l | U Total pCi/l* |
|---|---|---|---|---|---|---|
| 9109L652-001 | 64 | ±53 | 6.8 | ±1.5 | 0.0120 | 8.1 |
| 9109L652-002 | 1 | ±12 | 12 | ±2 | 0.0125 | 8.4 |
| 9109L652-003 | 68 | ±42 | 6.1 | ±1.8 | 0.0131 | 8.8 |

BARRINGER LABORATORIES INC.
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23-Jan-92

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Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | Am-241 pCi/l | Error 2σ |
|---|---|---|
| 9109L652-001 | 0.0 | ±5.2 |
| 9109L652-002 | 1.5 | ±3.0 |
| 9109L652-003 | 0.0 | ±5.5 |

BARRINGER LABORATORIES INC.
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23-Jan-92

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WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 3
Copy: 1 of 2
Set : 2

Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | Bi-214 pCi/l | Bi-214 Error 2σ | Pb-214 pCi/l | Pb-214 Error 2σ |
|---|---|---|---|---|
| 9109L652-001 | 45 | ±16 | 43 | ±11 |
| 9109L652-002 | 34 | ±15 | 26 | ±12 |
| 9109L652-003 | 38 | ±15 | 23 | ±12 |

BARRINGER LABORATORIES INC.
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23-Jan-92

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208 Welsh Pool Road
Lionville, PA 19353

Page: 4
Copy: 1 of 2
Set : 4

Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E Status: Final

AMENDED REPORT

Abbreviations:

Parameters:

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Ra-226 | : Radium-226 |
| U | : Uranium |
| Am-241 | : Americium-241 |
| Bi-214 | : Bismuth-214 |
| Pb-214 | : Lead-214 |
| Gamma Spec | : Gamma Spectralanalysis |
| Pb-212 | : Lead-212 |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| mg/l | : milligrams per liter |
| pCi/l* | : pCi/l*-Combined U238,234,235 based on equilibrium co |

Job approved by:

Signed: Ellen La Riviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
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Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E

Status: Final

AMENDED QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Tritium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 2000 | ±200 | 340 | ±50 | 0.0 | ±140 |
| Duplicate | 2200 | ±200 | 400 | ±50 | 0.0 | ±140 |
| Duplicate % diff. | 4.8 | --- | 8.1 | --- | 0.0 | --- |
| Std (found value) | 399 | ±9 | 221 | ±3 | 111230 | ±810 |
| Std (true value) | 412 | --- | 212 | --- | 111960 | --- |
| Std % diff. | 3.2 | --- | 4.2 | --- | 0.3 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.2 | ±0.2 | 0.5 | ±0.3 | 100 | ±140 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 7 | ±21 | 0.0 | ±0.9 | 0.3 | ±1.3 |
| Duplicate | 0 | ±18 | 0.0 | ±1.1 | 4.1 | ±1.9 |
| Duplicate % diff. | 100 | --- | 0 | --- | 86 | --- |
| Std (found value) | 1037 | ±22 | 113 | ±4 | 113 | ±4 |
| Std (true value) | 993 | --- | 104 | --- | 104 | --- |
| Std % diff. | 4.4 | --- | 8.7 | --- | 8.7 | --- |
| Std % rec. | 104 | --- | 109 | --- | 109 | ±0.2 |
| Blank | 0.0 | ±3.4 | 0.0 | ±0.1 | 0.0 | --- |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Sr-90 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 5.3 | ±5.6 | 0.0 | ±2.7 | 4.2 | ±7.0 |
| Duplicate | 5.9 | ±6.4 | 0.0 | ±3.1 | 4.3 | ±7.8 |
| Duplicate % diff. | 5.4 | --- | 0.0 | --- | 1.2 | --- |

BARRINGER LABORATORIES INC.
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Diane Thomas
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208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E

Status: Final

AMENDED QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Sr-90 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std (found value) | 25 | ±2 | 23 | ±2 | 100 | ±3 |
| Std (true value) | 21 | --- | 21 | --- | 100 | --- |
| Std % diff. | 19 | --- | 9.5 | --- | 0 | --- |
| Std % rec. | --- | --- | --- | --- | 100 | --- |
| Blank | 1.9 | ±1.0 | 0.1 | ±0.8 | 0.3 | ±0.7 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | C-14 pCi/l | Error 2σ | Ra-226 Total pCi/l | Error 2σ | U Total mg/l | U Total pCi/l* |
|---|---|---|---|---|---|---|
| Duplicate | 110 | ±68 | 2.6 | ±0.6 | 0.0180 | --- |
| Duplicate | 43 | ±65 | 3.5 | ±0.7 | 0.0179 | --- |
| Duplicate % diff. | 44 | --- | 15 | --- | 0.6 | --- |
| Std (found value) | 935 | ±16 | 110 | ±4 | 34 | --- |
| Std (true value) | 993 | --- | 101 | --- | 34 | --- |
| Std % diff. | 5.8 | --- | 8.9 | --- | 0.0 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 2.5 | ±2.7 | 0.0 | ±0.1 | <0.0003 | --- |
| Spike % rec. | --- | --- | --- | --- | 97 | --- |

| Sample Id | Am-241 pCi/l | Error 2σ |
|---|---|---|
| Duplicate | 0.0 | ±3.7 |
| Duplicate | 0.0 | ±2.9 |
| Duplicate % diff. | 0.0 | --- |
| Std (found value) | 104 | ±5 |
| Std (true value) | 103 | --- |
| Std % diff. | 1.0 | --- |

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Page: 3
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E

Status: Final

AMENDED QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Am-241 pCi/l | Error 2σ |
|---|---|---|
| Std % rec. | 101 | --- |
| Blank | 0.0 | ±0.2 |
| Spike % rec. | --- | --- |

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Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E Status: Final

AMENDED QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gamma Spec pCi/l | Error 2σ | Bi-214 pCi/l | Error 2σ | Pb-214 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | --- | --- | 32 | ±18 | 19 | ±12 |
| Duplicate | --- | --- | <27 | --- | 22 | ±11 |
| Duplicate % diff. | --- | --- | 100 | --- | 7.3 | --- |
| Std (found value) | 19 | ±1 | --- | --- | --- | --- |
| Std (true value) | 19 | --- | --- | --- | --- | --- |
| Std % diff. | 0.0 | --- | --- | --- | --- | --- |

| Sample Id | Pb-212 pCi/l | Error 2σ |
|---|---|---|
| Duplicate | 16 | ±9 |
| Duplicate | 32 | ±10 |
| Duplicate % diff. | 33 | --- |
| Std (found value) | --- | --- |
| Std (true value) | --- | --- |
| Std % diff. | --- | --- |

BARRINGER LABORATORIES INC.
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23-Jan-92

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208 Welsh Pool Road
Lionville, PA 19353

Page: 5
Copy: 1 of 2
Set : 4

Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E

Status: Final

AMENDED QUALITY CONTROL REPORT

Abbreviations:

Parameters:

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Ra-226 | : Radium-226 |
| U | : Uranium |
| Am-241 | : Americium-241 |
| Bi-214 | : Bismuth-214 |
| Pb-214 | : Lead-214 |
| Gamma Spec | : Gamma Spectralanalysis |
| Pb-212 | : Lead-212 |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| mg/l | : milligrams per liter |
| pCi/l* | : pCi/l*-Combined U238,234,235 based on equilibrium co |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

Job approved by:

Signed: .....
Approved
Quality Assurance Department

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 6
Copy: 1 of 2

Attn: Diane Thomas
Project: 9109L652

Received: 13-Nov-91 11:16
PO #: LSA #LL-0962-F4

Job: 912210E

Status: Final

AMENDED QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: gm Via: Fed Ex

Sample Container Type: gl Gal jars, pl L btls
Sample Type: Water
Preservative When Received: none
Additional Lab Preparation: none

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 2 pCi/l | none | Pingilley | 11/26-12/ 4 |
| Gross Beta | 900.0 | 4 pCi/l | none | Pingilley | 11/26-12/ 4 |
| Tritium | 906.0 | 460 pCi/l | none | Meyer | 11/23-12/ 2 |
| I-129 | 902.0 | 1 pCi/l | none | Preston | 11/29-12/16 |
| Pu-238/239/240 | 907.0 | 0.4 pCi/l | none | Preston | 11/27-12/31 |
| Sr-89/90 | 905.0 | 1 pCi/l | none | Kidwell | 11/25-12/26 |
| Tc-99 | HASL 300 | 1 pCi/l | none | Preston | 12/13-12/19 |
| C-14 | 520-84-006 | 3 pCi/l | none | Preston | 12/11-1/ 9 |
| Ra-226 | SM-705 | 0.2 pCi/l | none | Seidel | 11/22-12/15 |
| U | ASTM D2907 | 0.0003 mg/l | none | Meyer | 11/29-12/ 1 |
| Am-241 | 907.0 | 0.5 pCi/l | none | Preston | 1/ 6- 1/13 |
| Gamma Spec | 901.1 | 25 pCi/l | none | Kidwell | 1/22 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

2010

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client: Weston-Task 27
Est. Final Proj. Sampling Date:
Work Order #:
Project Contact/Phone #:
AD Project Manager: Diane Thomas
QC: ____ Del: ____ TAT:
Date Rec'd: ____ Date Due:
Account #:

Refrigerator #:
#/Type Container: Liquid 1/2 1L; Solid
Volume: Liquid gal 1/2L; Solid
Preservatives:

ANALYSES REQUESTED →

| ORGANIC | | | | | | | INORG | |
|---|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Rad'p chem ③ | | | Metal | CN |

WESTON Analytics 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 | Rad'p chem ③ | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Site 155 | | | W | 9/9/91 | | ✓ | ✓ | | | | | | 9109L652-001 | | | | | | |
| | 156 | | | | | | | | | | | | | | | | | | | 002 |
| | 157 | | | | | | | | | | | | | | | | | | | 003 |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem ③ = See attached

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 11/12/91 | 6.30 |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 9/13/91 | 0930 |

____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____

RFW 21-21-001/A-7/91

381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC-TASK 27
**RFW #:** 9109L662
**W.O. #:** 0630-28-27

**SAMPLES RECEIVED:** 09-12-91

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. Sample holding times as required by 40CFR136 were met for water samples with the exception of specific conductance and pH which were received past hold and nitrate which was analyzed past hold .

2. Preparation blank results were below the required detection limit with the exception of acidity.

3. Laboratory control standards (blank spikes) were within the control limits of 80-120%.

4. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

5. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

6. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

10.17.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

pas.21\i9-662

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L662
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 161 | Acidity | 30.0 | | MG/L | 2.0 |
| | | Chloride | 5.7 | | MG/L | 5.0 |
| | | Hardness | 62.8 | | MG/L | 0.20 |
| | | Nitrate, as N | 24.3 | | MG/L | 2.5 |
| | | pH | 4.9 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 210 | | UMHOS/CM | 1.0 |
| -002 | SITE 164 | Acidity | 2.0 | u | MG/L | 2.0 |
| | | Chloride | 7.3 | | MG/L | 5.0 |
| | | Hardness | 13.2 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.96 | | MG/L | 0.10 |
| | | pH | 5.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 51.1 | | UMHOS/CM | 1.0 |
| -003 | SITE 142 | Acidity | 48.0 | | MG/L | 2.0 |
| | | Chloride | 5.9 | | MG/L | 5.0 |
| | | Hardness | 130 | | MG/L | 2.0 |
| | | Nitrate, as N | 0.39 | | MG/L | 0.10 |
| | | pH | 5.0 | | PH UNITS | 0.010 |
| | | Sulfate | 27.0 | | MG/L | 5.0 |
| | | Specific Conductance | 80.2 | | UMHOS/CM | 1.0 |
| -004 | SITE 160 | Acidity | 240 | | MG/L | 2.0 |
| | | Chloride | 6.7 | | MG/L | 5.0 |
| | | Hardness | 60.8 | | MG/L | 0.20 |
| | | Nitrate, as N | 10.8 | | MG/L | 1.0 |
| | | pH | 6.7 | | PH UNITS | 0.010 |
| | | Sulfate | 13.0 | | MG/L | 5.0 |
| | | Specific Conductance | 202 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/17/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L662

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -005 | SITE 135 | Acidity | 2.0 | u | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 43.0 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.15 | | MG/L | 0.10 |
| | | pH | 6.0 | | PH UNITS | 0.010 |
| | | Sulfate | 20.2 | | MG/L | 5.0 |
| | | Specific Conductance | 102 | | UMHOS/CM | 1.0 |
| -006 | SITE 140 | Alkalinity | 84.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 33.2 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 5.8 | | PH UNITS | 0.010 |
| | | Sulfate | 7.1 | | MG/L | 5.0 |
| | | Specific Conductance | 73.6 | | UMHOS/CM | 1.0 |
| -007 | SITE 134 | Acidity | 44.0 | | MG/L | 2.0 |
| | | Chloride | 7.9 | | MG/L | 5.0 |
| | | Hardness | 30.0 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 5.6 | | PH UNITS | 0.010 |
| | | Sulfate | 7.7 | | MG/L | 5.0 |
| | | Specific Conductance | 40.0 | | UMHOS/CM | 1.0 |
| -008 | SITE 137 | Acidity | 14.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 32.8 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.16 | | MG/L | 0.10 |
| | | pH | 5.5 | | PH UNITS | 0.010 |
| | | Sulfate | 10.6 | | MG/L | 5.0 |
| | | Specific Conductance | 54.9 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/17/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L662

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK10 | 91LAL048-MB1 | Acidity | 0.50 u | MG/L | 0.50 |
| BLANK20 | 91LAL048-MB2 | Acidity | 8.5 | MG/L | 0.50 |
| BLANK10 | 91LCL109-MB1 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK20 | 91LCL109-MB2 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK30 | 91LCL109-MB3 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK40 | 91LCL109-MB4 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK10 | 91LHD018-MB1 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LHD018-MB2 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LNB218-MB1 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| LANK20 | 91LNB218-MB2 | Nitrate, as N | 0.10 u | MG/L | 0.10 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/17/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L662

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK10 | 91LS4083-MB1 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK10 | 91LSP058-MB1 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |
| BLANK20 | 91LSP058-MB2 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |
| BLANK20 | 91LAL049-MB2 | Alkalinity | 0.50 | u | MG/L | 0.50 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/17/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L662

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| BLANK10 | 91LCL109-MB1 | Chloride | 23.9 | 5.0 u | 25.0 | 95.7 |
| | | Chloride MSD | 24.6 | 5.0 u | 25.0 | 98.2 |
| BLANK20 | 91LCL109-MB2 | Chloride | 49.3 | 5.0 u | 50.0 | 98.7 |
| BLANK30 | 91LCL109-MB3 | Chloride | 24.2 | 5.0 u | 25.0 | 96.9 |
| BLANK40 | 91LCL109-MB4 | Chloride | 24.2 | 5.0 u | 25.0 | 97.0 |
| BLANK10 | 91LHD018-MB1 | Hardness | 101 | 0.10u | 100 | 101 |
| | | Hardness MSD | 101 | 0.10u | 100 | 101 |
| BLANK20 | 91LHD018-MB2 | Hardness | 330 | 0.10u | 330 | 99.9 |
| BLANK10 | 91LNB218-MB1 | Nitrate, as N | 0.39 | 0.10u | 0.40 | 97.5 |
| | | Nitrate, as N MSD | 0.40 | 0.10u | 0.40 | 99.2 |
| BLANK20 | 91LNB218-MB2 | Nitrate, as N | 0.42 | 0.10u | 0.40 | 106 |
| BLANK10 | 91LS4083-MB1 | Sulfate | 21.1 | 5.0 u | 20.0 | 106 |
| | | Sulfate | 20.6 | 5.0 u | 20.0 | 103 |
| BLANK10 | 91LSP058-MB1 | Specific Conductance | 141 | 1.0 u | 147 | 95.9 |
| | | Specific Conductance M | 142 | 1.0 u | 147 | 96.6 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/17/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L662

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| BLANK20 | 91LSP058-MB2 | Specific Conductance | 1400 | 1.0 u | 1410 | 99.2 |
| BLANK20 | 91LAL049-MB2 | Alkalinity | 118 | 0.50u | 100 | 118 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/17/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L662

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| BLANK10 | 91LCL109-MB1 | Chloride | 95.7 | 98.2 | 2.8 |
| BLANK10 | 91LHD018-MB1 | Hardness | 101 | 101 | 0.40 |
| BLANK10 | 91LNB218-MB1 | Nitrate, as N | 97.5 | 99.2 | 1.8 |
| BLANK10 | 91LS4083-MB1 | Sulfate | 106 | 103 | 2.5 |
| BLANK10 | 91LSP058-MB1 | Specific Conductance | 95.9 | 96.6 | 0.70 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 10/17/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L662

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | SITE 161 | pH | 4.9 | 4.9 | 0.00 |
| | | Sulfate | 5.0 u | 5.0 u | NC |
| | | Specific Conductance | 210 | 210 | 0.00 |
| -002REP | SITE 164 | Nitrate, as N | 0.96 | 0.95 | 1.0 |
| -007REP | SITE 134 | Chloride | 7.9 | 8.0 | 2.0 |
| -008REP | SITE 137 | Hardness | 32.8 | 32.0 | 2.5 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 161 | | | | | | |
| ACIDITY | 001 | W | 91LAL048 | 09/10/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 001 | W | 91LCL109 | 09/10/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 001 | W | 91LHD018 | 09/10/91 | 09/18/91 | 09/18/91 |
| NITRATE | 001 | W | 91LNB218 | 09/10/91 | 09/13/91 | 09/13/91 |
| PH | 001 | W | 91LPH147 | 09/10/91 | 09/12/91 | 09/12/91 |
| PH | 001 REP | W | 91LPH147 | 09/10/91 | 09/12/91 | 09/12/91 |
| SULFATE | 001 | W | 91LS4083 | 09/10/91 | 09/13/91 | 09/13/91 |
| SULFATE | 001 REP | W | 91LS4083 | 09/10/91 | 09/13/91 | 09/13/91 |
| SPECIFIC CONDUCTANCE | 001 | W | 91LSP058 | 09/10/91 | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | 001 REP | W | 91LSP058 | 09/10/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 001 | W | | 09/10/91 | | |
| SITE 164 | | | | | | |
| ACIDITY | 002 | W | 91LAL048 | 09/10/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 002 | W | 91LCL109 | 09/10/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 002 | W | 91LHD018 | 09/10/91 | 09/18/91 | 09/18/91 |
| NITRATE | 002 | W | 91LNB218 | 09/10/91 | 09/13/91 | 09/13/91 |
| NITRATE | 002 REP | W | 91LNB218 | 09/10/91 | 09/13/91 | 09/13/91 |
| PH | 002 | W | 91LPH147 | 09/10/91 | 09/12/91 | 09/12/91 |
| SULFATE | 002 | W | 91LS4083 | 09/10/91 | 09/13/91 | 09/13/91 |
| SPECIFIC CONDUCTANCE | 002 | W | 91LSP058 | 09/10/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 002 | W | | 09/10/91 | | |
| SITE 142 | | | | | | |
| ACIDITY | 003 | W | 91LAL048 | 09/10/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 003 | W | 91LCL109 | 09/10/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 003 | W | 91LHD018 | 09/10/91 | 09/18/91 | 09/18/91 |
| NITRATE | 003 | W | 91LNB218 | 09/10/91 | 09/13/91 | 09/13/91 |
| PH | 003 | W | 91LPH147 | 09/10/91 | 09/12/91 | 09/12/91 |
| SULFATE | 003 | W | 91LS4083 | 09/10/91 | 09/13/91 | 09/13/91 |
| SPECIFIC CONDUCTANCE | 003 | W | 91LSP058 | 09/10/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 003 | W | | 09/10/91 | | |
| SITE 160 | | | | | | |
| ACIDITY | 004 | W | 91LAL048 | 09/10/91 | 09/17/91 | 09/17/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHLORIDE | 004 | W | 91LCL109 | 09/10/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 004 | W | 91LHD018 | 09/10/91 | 09/18/91 | 09/18/91 |
| NITRATE | 004 | W | 91LNB218 | 09/10/91 | 09/13/91 | 09/13/91 |
| PH | 004 | W | 91LPH147 | 09/10/91 | 09/12/91 | 09/12/91 |
| SULFATE | 004 | W | 91LS4083 | 09/10/91 | 09/13/91 | 09/13/91 |
| SPECIFIC CONDUCTANCE | 004 | W | 91LSP058 | 09/10/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 004 | W | | 09/10/91 | | |
| SITE 135 | | | | | | |
| ACIDITY | 005 | W | 91LAL048 | 09/10/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 005 | W | 91LCL109 | 09/10/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 005 | W | 91LHD018 | 09/10/91 | 09/18/91 | 09/18/91 |
| NITRATE | 005 | W | 91LNB218 | 09/10/91 | 09/13/91 | 09/13/91 |
| PH | 005 | W | 91LPH147 | 09/10/91 | 09/12/91 | 09/12/91 |
| SULFATE | 005 | W | 91LS4083 | 09/10/91 | 09/13/91 | 09/13/91 |
| SPECIFIC CONDUCTANCE | 005 | W | 91LSP058 | 09/10/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 005 | W | | 09/10/91 | | |
| SITE 140 | | | | | | |
| ALKALINITY | 006 | W | 91LAL049 | 09/10/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 006 | W | 91LCL109 | 09/10/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 006 | W | 91LHD018 | 09/10/91 | 09/18/91 | 09/18/91 |
| NITRATE | 006 | W | 91LNB218 | 09/10/91 | 09/13/91 | 09/13/91 |
| PH | 006 | W | 91LPH147 | 09/10/91 | 09/12/91 | 09/12/91 |
| SULFATE | 006 | W | 91LS4083 | 09/10/91 | 09/13/91 | 09/13/91 |
| SPECIFIC CONDUCTANCE | 006 | W | 91LSP058 | 09/10/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 006 | W | | 09/10/91 | | |
| SITE 134 | | | | | | |
| ACIDITY | 007 | W | 91LAL048 | 09/10/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 007 | W | 91LCL109 | 09/10/91 | 09/21/91 | 09/21/91 |
| CHLORIDE | 007 REP | W | 91LCL109 | 09/10/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 007 | W | 91LHD018 | 09/10/91 | 09/18/91 | 09/18/91 |
| NITRATE | 007 | W | 91LNB218 | 09/10/91 | 09/13/91 | 09/13/91 |
| PH | 007 | W | 91LPH147 | 09/10/91 | 09/12/91 | 09/12/91 |
| SULFATE | 007 | W | 91LS4083 | 09/10/91 | 09/13/91 | 09/13/91 |
| SPECIFIC CONDUCTANCE | 007 | W | 91LSP058 | 09/10/91 | 09/14/91 | 09/14/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SUB-OUT TEST FOR SUB | 007 | W | | 09/10/91 | | |
| SITE 137 | | | | | | |
| ACIDITY | 008 | W | 91LAL048 | 09/10/91 | 09/17/91 | 09/17/91 |
| CHLORIDE | 008 | W | 91LCL109 | 09/10/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 008 | W | 91LHD018 | 09/10/91 | 09/18/91 | 09/18/91 |
| HARDNESS | 008 REP | W | 91LHD018 | 09/10/91 | 09/18/91 | 09/18/91 |
| NITRATE | 008 | W | 91LNB218 | 09/10/91 | 09/13/91 | 09/13/91 |
| PH | 008 | W | 91LPH147 | 09/10/91 | 09/12/91 | 09/12/91 |
| SULFATE | 008 | W | 91LS4083 | 09/10/91 | 09/13/91 | 09/13/91 |
| SPECIFIC CONDUCTANCE | 008 | W | 91LSP058 | 09/10/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 008 | W | | 09/10/91 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| ALKALINITY | MB1 BS | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| ACIDITY | MB2 | W | 91LAL048 | N/A | 09/17/91 | 09/17/91 |
| CHLORIDE | MB1 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB1 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB1 BSD | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB2 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB2 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB3 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB3 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB4 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB4 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| HARDNESS | MB1 | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB1 BS | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB1 BSD | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB2 | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB2 BS | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| NITRATE | MB1 | W | 91LNB218 | N/A | 09/13/91 | 09/13/91 |
| NITRATE | MB1 BS | W | 91LNB218 | N/A | 09/13/91 | 09/13/91 |
| NITRATE | MB1 BSD | W | 91LNB218 | N/A | 09/13/91 | 09/13/91 |
| NITRATE | MB2 | W | 91LNB218 | N/A | 09/13/91 | 09/13/91 |
| NITRATE | MB2 BS | W | 91LNB218 | N/A | 09/13/91 | 09/13/91 |
| SULFATE | MB1 | W | 91LS4083 | N/A | 09/13/91 | 09/13/91 |
| SULFATE | MB1 BS | W | 91LS4083 | N/A | 09/13/91 | 09/13/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SULFATE | MB1 BSD | W | 91LS4083 | N/A | 09/13/91 | 09/13/91 |
| SPECIFIC CONDUCTANCE | MB1 | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | MB1 BS | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | MB1 BSD | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | MB2 | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | MB2 BS | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |
| ACIDITY | MB1 | W | 91LAL049 | N/A | 09/18/91 | 09/18/91 |
| ALKALINITY | MB2 | W | 91LAL049 | N/A | 09/18/91 | 09/18/91 |
| ALKALINITY | MB2 BS | W | 91LAL049 | N/A | 09/18/91 | 09/18/91 |

WESTON Analytics Use Only

91091662

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TASK27

Est. Final Proj. Sampling Date:

Work Order #: 0630-28-27-0000

Project Contact/Phone #: Haselow

AD Project Manager: Denise Thomas

QC: Del: TAT: 30 Day

Date Rec'd: 9-12-91 Date Due: 10-12-91

Account #: WSRC275TD

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | | | | Sub | | | 4 | | 4 | | | | | | |
| #/Type Container | Liquid | 1G | | | | 1G/1L | | | 1P | | 1P | 1P | | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Volume | Liquid | 40ml | | | | 40ml/1L | | | 1L | | 500ml | 1L | | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | HNO3 | | H2SO4 | | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | INORG | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Sulfide Chem | | | Metal | CN | Sulfate | OC NO3 | ALKL Cond | PH SO4 | Hgcl, | | |

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

WESTON Analytics Use Only — WSRC27LS1

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | 0624H | | | | I Sulf | | Inorganics Metals | | I HNO3 | ICL I NO3 | TALKL I Cond | IPH I SO4 | ISRD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Sito 161 | | | W | 9-10-91 | | ✓ | | | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2 | Sito 164 | | | | | | | | | | | | | | | | | | |
| 3 | Sito 142 | | | | | | Canceled | | | | | | | | | | | | |
| 4 | Sito 160 | | | | | | ✓ | | | | | | | | | | | | |
| 5 | Sito 135 | | | | | | | | | | | | | | | | | | |
| 6 | Sito 140 | | | | | | | | | | | | | | | | | | |
| 7 | Sito 134 | | | | | | | | | | | | | | | | | | |
| 8 | Sito 137 | | | | | | Canceled | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Radio Chem - See 91091612

VOA Samples
Have air bubbles

Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn

DATE/REVISIONS:

9-18-91 1. Cancel #003 & #008 VOA 0624H due to air bubbles. Client to resample per Denise Thomas

2. Client to resample per Denise Thomas

9-30-91 3. Cancel ALKL on #001-#005 & #007, 008, Cancel ACID on #006 per SDR.

4.

5.

6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Fred-X | [illegible] | 9-12-91 | 09:30 |
| | [illegible] | 9-12-91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | | | |
| | [illegible] | 9-12-91 | |

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 0594833761
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
Ph (out) & Only

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
But not on an official form.

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-12-91
**RFW #:** 9109L662
**W.O. #:** 0630-28-27-0000

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

10.14.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc\m9-662

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L662

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 161 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 106 | | UG/L | 15.0 |
| | | Sodium, Total | 11500 | | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| -002 | SITE 164 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 359 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 19.7 | | UG/L | 15.0 |
| | | Sodium, Total | 6150 | | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 36.0 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L662

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -003 | SITE 142 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 416 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 16900 | | UG/L | 500 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 1260 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 78.0 | | UG/L | 40.0 |
| | | Lead, Total | 3.5 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 131 | | UG/L | 20.0 |
| -004 | SITE 160 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 34.1 | | UG/L | 15.0 |
| | | Sodium, Total | 19400 | | UG/L | 5000 |
| | | Nickel, Total | 45.0 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 26.1 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L662
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -005 | SITE 135 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 87.6 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 98.4 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 64.0 | | UG/L | 20.0 |
| -006 | SITE 140 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 118 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 80.2 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 80.3 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L662

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -007 | SITE 134 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 505 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 425 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 34.8 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 55.1 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 109 | | UG/L | 20.0 |
| -008 | SITE 137 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 172 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 79.7 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 109 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L662

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L1785-MB1 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| BLANK1 | 91L1784-MB1 | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| BLANK1 | 91C264-MB1 | Mercury, Total | 0.20 | u | UG/L | 0.20 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/11/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L662
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L1785-LC2 | Silver, LCS | 87.8 | 83.8 | 4.7 |
| | | Aluminum, LCS | 97.7 | 94.9 | 2.9 |
| | | Barium, LCS | 97.2 | 94.7 | 2.6 |
| | | Cadmium, LCS | 99.7 | 96.3 | 3.5 |
| | | Chromium, LCS | 97.8 | 95.9 | 2.0 |
| | | Copper, LCS | 98.0 | 94.8 | 3.3 |
| | | Iron, LCS | 98.6 | 95.6 | 3.1 |
| | | Manganese, LCS | 97.7 | 96.7 | 1.0 |
| | | Sodium, LCS | 97.5 | 93.7 | 4.0 |
| | | Nickel, LCS | 95.2 | 93.2 | 2.1 |
| | | Zinc, LCS | 99.9 | 94.6 | 5.4 |
| LCS2 | 91L1784-LC2 | Arsenic, LCS | 104 | 105 | 1.2 |
| | | Lead, LCS | 105 | 105 | 0.00 |
| | | Selenium, LCS | 81.3 | 84.0 | 3.3 |
| LCS2 | 91C264-LC2 | Mercury, LCS | 85.7 | 98.5 | 13.9 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/11/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L1785-LC1 | Silver, LCS | 439 | 500 | UG/L | 87.8 |
| | | Aluminum, LCS | 4880 | 5000 | UG/L | 97.7 |
| | | Barium, LCS | 4860 | 5000 | UG/L | 97.2 |
| | | Cadmium, LCS | 249 | 250 | UG/L | 99.7 |
| | | Chromium, LCS | 489 | 500 | UG/L | 97.8 |
| | | Copper, LCS | 1220 | 1250 | UG/L | 98.0 |
| | | Iron, LCS | 4930 | 5000 | UG/L | 98.6 |
| | | Manganese, LCS | 733 | 750 | UG/L | 97.7 |
| | | Sodium, LCS | 24400 | 25000 | UG/L | 97.5 |
| | | Nickel, LCS | 1900 | 2000 | UG/L | 95.2 |
| | | Zinc, LCS | 999 | 1000 | UG/L | 99.9 |
| LCS2 | 91L1785-LC2 | Silver, LCS | 419 | 500 | UG/L | 83.8 |
| | | Aluminum, LCS | 4750 | 5000 | UG/L | 94.9 |
| | | Barium, LCS | 4740 | 5000 | UG/L | 94.7 |
| | | Cadmium, LCS | 241 | 250 | UG/L | 96.3 |
| | | Chromium, LCS | 479 | 500 | UG/L | 95.9 |
| | | Copper, LCS | 1190 | 1250 | UG/L | 94.8 |
| | | Iron, LCS | 4780 | 5000 | UG/L | 95.6 |
| | | Manganese, LCS | 725 | 750 | UG/L | 96.7 |
| | | Sodium, LCS | 23400 | 25000 | UG/L | 93.7 |
| | | Nickel, LCS | 1860 | 2000 | UG/L | 93.2 |
| | | Zinc, LCS | 946 | 1000 | UG/L | 94.6 |
| LCS1 | 91L1784-LC1 | Arsenic, LCS | 31.1 | 30.0 | UG/L | 104 |
| | | Lead, LCS | 31.4 | 30.0 | UG/L | 105 |
| | | Selenium, LCS | 24.4 | 30.0 | UG/L | 81.3 |
| LCS2 | 91L1784-LC2 | Arsenic, LCS | 31.5 | 30.0 | UG/L | 105 |
| | | Lead, LCS | 31.4 | 30.0 | UG/L | 105 |
| | | Selenium, LCS | 25.2 | 30.0 | UG/L | 84.0 |
| LCS1 | 91C264-LC1 | Mercury, LCS | 4.3 | 5.0 | UG/L | 85.7 |
| LCS2 | 91C264-LC2 | Mercury, LCS | 4.9 | 5.0 | UG/L | 98.5 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 161 | | | | | | |
| SILVER, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ALUMINUM, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ARSENIC, TOTAL | 001 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| BARIUM, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CADMIUM, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CHROMIUM, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| COPPER, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| IRON, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| MERCURY, TOTAL | 001 | W | 91C264 | 09/10/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SODIUM, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| NICKEL, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| LEAD, TOTAL | 001 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| SELENIUM, TOTAL | 001 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| ZINC, TOTAL | 001 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SITE 164 | | | | | | |
| SILVER, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ALUMINUM, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ARSENIC, TOTAL | 002 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| BARIUM, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CADMIUM, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CHROMIUM, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| COPPER, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| IRON, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| MERCURY, TOTAL | 002 | W | 91C264 | 09/10/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SODIUM, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| NICKEL, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| LEAD, TOTAL | 002 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| SELENIUM, TOTAL | 002 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| ZINC, TOTAL | 002 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SITE 142 | | | | | | |
| SILVER, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ARSENIC, TOTAL | 003 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| BARIUM, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CADMIUM, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CHROMIUM, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| COPPER, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| IRON, TOTAL | 003 | W | 9191L178 | 09/10/91 | 09/16/91 | 10/10/91 |
| MERCURY, TOTAL | 003 | W | 91C264 | 09/10/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SODIUM, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| NICKEL, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| LEAD, TOTAL | 003 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| SELENIUM, TOTAL | 003 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| ZINC, TOTAL | 003 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SITE 160 | | | | | | |
| SILVER, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ALUMINUM, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ARSENIC, TOTAL | 004 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| BARIUM, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CADMIUM, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CHROMIUM, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| COPPER, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| IRON, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| MERCURY, TOTAL | 004 | W | 91C264 | 09/10/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SODIUM, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| NICKEL, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| LEAD, TOTAL | 004 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| SELENIUM, TOTAL | 004 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| ZINC, TOTAL | 004 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SITE 135 | | | | | | |
| SILVER, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ALUMINUM, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ARSENIC, TOTAL | 005 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| BARIUM, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CADMIUM, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHROMIUM, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| COPPER, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| IRON, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| MERCURY, TOTAL | 005 | W | 91C264 | 09/10/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SODIUM, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| NICKEL, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| LEAD, TOTAL | 005 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| SELENIUM, TOTAL | 005 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| ZINC, TOTAL | 005 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SITE 140 | | | | | | |
| SILVER, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ALUMINUM, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ARSENIC, TOTAL | 006 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| BARIUM, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CADMIUM, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CHROMIUM, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| COPPER, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| IRON, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| MERCURY, TOTAL | 006 | W | 91C264 | 09/10/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SODIUM, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| NICKEL, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| LEAD, TOTAL | 006 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| SELENIUM, TOTAL | 006 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| ZINC, TOTAL | 006 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SITE 134 | | | | | | |
| SILVER, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ALUMINUM, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ARSENIC, TOTAL | 007 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| BARIUM, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CADMIUM, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CHROMIUM, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| COPPER, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| IRON, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| MERCURY, TOTAL | 007 | W | 91C264 | 09/10/91 | 09/18/91 | 09/19/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| MANGANESE, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SODIUM, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| NICKEL, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| LEAD, TOTAL | 007 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| SELENIUM, TOTAL | 007 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| ZINC, TOTAL | 007 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SITE 137 | | | | | | |
| SILVER, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ALUMINUM, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| ARSENIC, TOTAL | 008 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| BARIUM, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CADMIUM, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| CHROMIUM, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| COPPER, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| IRON, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| MERCURY, TOTAL | 008 | W | 91C264 | 09/10/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| SODIUM, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| NICKEL, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |
| LEAD, TOTAL | 008 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| SELENIUM, TOTAL | 008 | W | 91L1784 | 09/10/91 | 09/16/91 | 09/19/91 |
| ZINC, TOTAL | 008 | W | 91L1785 | 09/10/91 | 09/16/91 | 10/10/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| ALUMINUM LABORTORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| BARIUM LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| CADMIUM LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| CHROMIUM LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| COPPER LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| IRON LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| MANGANESE LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| SODIUM LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| NICKEL LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| ZINC LABORATORY | LC1 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| SILVER LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| ALUMINUM LABORTORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| BARIUM LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| CADMIUM LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| CHROMIUM LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| COPPER LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| IRON LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| MANGANESE LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| SODIUM LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| NICKEL LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| ZINC LABORATORY | LC2 BS | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| SILVER, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| ALUMINUM, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| BARIUM, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| CADMIUM, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| CHROMIUM, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| COPPER, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| IRON, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| MANGANESE, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| SODIUM, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| NICKEL, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| ZINC, TOTAL | MB1 | W | 91L1785 | N/A | 09/16/91 | 10/10/91 |
| ARSENIC LABORATORY | LC1 BS | W | 91L1784 | N/A | 09/16/91 | 09/19/91 |
| LEAD LABORATORY | LC1 BS | W | 91L1784 | N/A | 09/16/91 | 09/19/91 |
| SELENIUM LABORATORY | LC1 BS | W | 91L1784 | N/A | 09/16/91 | 09/19/91 |
| ARSENIC LABORATORY | LC2 BS | W | 91L1784 | N/A | 09/16/91 | 09/19/91 |
| LEAD LABORATORY | LC2 BS | W | 91L1784 | N/A | 09/16/91 | 09/19/91 |
| SELENIUM LABORATORY | LC2 BS | W | 91L1784 | N/A | 09/16/91 | 09/19/91 |
| ARSENIC, TOTAL | MB1 | W | 91L1784 | N/A | 09/16/91 | 09/19/91 |
| LEAD, TOTAL | MB1 | W | 91L1784 | N/A | 09/16/91 | 09/19/91 |
| SELENIUM, TOTAL | MB1 | W | 91L1784 | N/A | 09/16/91 | 09/19/91 |
| MERCURY LABORATORY | LC1 BS | W | 91C264 | N/A | 09/18/91 | 09/19/91 |
| MERCURY LABORATORY | LC2 BS | W | 91C264 | N/A | 09/18/91 | 09/19/91 |
| MERCURY, TOTAL | MB1 | W | 91C264 | N/A | 09/18/91 | 09/19/91 |

WESTON Analytics Use Only
91091662

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TASK27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27-0000
Project Contact/Phone #: Hasslow
AD Project Manager: Lorine Thomas
QC: Del TAT: 30 Day
Date Rec'd: 9-12-91 Date Due: 10-12-91
Account #: WSRC27STD

| Refrigerator # | | 1 | | | | Sub | | | 4 | | 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | 1G | | | | 1G/1P | | | 1P | | 1P | 1P | | |
| | Solid | | | | | | | | | | | | | |
| Volume | Liquid | 40ml | | | | 40ml/1L | | | 1L | | 500ml | 1L | | |
| | Solid | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | HNO3 | | H2SO4 | — | | |

ANALYSES REQUESTED →

| ORGANIC | | | | INORG | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Metal | CN | Volume | QC HNO3 | ALKL Cancel | Ph SO4 | Acid |

WESTON Analytics Use Only (WSR27LS1)

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 | Cancel | | | | Ident | | Miscellaneous | Z HNO3 | TCL IVOA | TAL KL IAcID | IPH ISO4 | ISRD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Lito 161 | | | W | 9-10-91 | | ✓ | | | | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2 | Lito 164 | | | | | | | | | | | | | | | | | |
| 3 | Lito 142 | | | | | | Cancelled | | | | | | | | | | | |
| 4 | Lito 160 | | | | | | ✓ | | | | | | | | | | | |
| 5 | Lito 135 | | | | | | | | | | | | | | | | | |
| 6 | Lito 140 | | | | | | | | | | | | | | | | | |
| 7 | Lito 134 | | | | | | | | | | | | | | | | | |
| 8 | Lito 137 | | | | | | Cancelled | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radio Chem - See 91091612

VOA Samples
Have air bubbles
9-12-91

Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mg

DATE/REVISIONS:
9-18-91 1. Cancel #003 & #008 VOA 0624H due to
2. air bubbles. Client to resample per Dave Thomas
9-30-91 3. Cancel ALKL on #001-#005 & #007, 008, Cancel
4. ACID on #006 per SDR.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Rad-X | [illegible] | 9-12-91 | 09:30 |
| | [illegible] | 9-12-91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | | | |
| | [illegible] | 9-12-91 | |

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # 0594823761
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
Ph (out) & Only

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
But not on an official form.

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

L372 L373 L375 L377 L378 Ref# Cooler#

RFW 21-21-001/A-7/91

381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC - TASK 27 **SAMPLES RECEIVED:** 09-12-91
**RFW #:** 9109L662, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of six (6) water samples collected on 09-10-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 09-17,18-91.

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

1. Non-target compounds were not detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. All matrix spike recoveries were within EPA QC limits.

4. The laboratory blanks contained the common contaminant methylene chloride at levels less than 2x the CRQL. Laboratory blank 91LVW153-MB1 also contained the common contaminant toluene at a level less than the CRQL.

9.27.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

WESTON SM

# GLOSSARY OF VOA DATA

## DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

X = Additional qualifiers used as required are explained in the case narrative.

NQ = Result qualitatively confirmed but not able to quantify.

## ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not applicable.

DF = Dilution factor.

NR = Not required.

Roy F. Weston, Inc. · Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 09/25/91 12:41

RFW Batch Number: 9109L662 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 1a

| | Cust ID: | SITE 161 | | SITE 161 | | SITE 161 | | SITE 164 | | SITE 160 | | SITE 135 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 001 MS | | 001 MSD | | 002 | | 004 | | 005 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 99 | % | 99 | % | 102 | % | 103 | % | 102 | % | 102 | % |
| | Bromofluorobenzene | 103 | % | 100 | % | 104 | % | 106 | % | 105 | % | 101 | % |
| | 1,2-Dichloroethane-d4 | 85 | % | 97 | % | 95 | % | 107 | % | 107 | % | 90 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 2 | JB | 4 | JB | 12 | B | 3 | JB | 2 | JB | 4 | JB |
| Acetone | | 9 | J | 13 | | 14 | | 34 | | 11 | | 10 | U |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 122 | % | 121 | % | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 112 | % | 108 | % | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 127 | % | 123 | % | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RF[illegible]:ch Number: 9109L662 Client: WSRC-TASK [illegible] Work Order: 0630-28-27-0000 [illegible]ge: 1b

| Cust ID: | SITE 161 | SITE 161 | SITE 161 | SITE 164 | SITE 160 | SITE 135 |
|---|---|---|---|---|---|---|
| RFW#: | 001 | 001 MS | 001 MSD | 002 | 004 | 005 |
| Toluene | 5 U | 124 % | 121 % | 5 U | 4 J | 5 U |
| Chlorobenzene | 5 U | 126 % | 124 % | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 2 J | 5 U | 5 U | 5 U | 2 J | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9109L662 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Report Date: 09/25/91 12:41 Page: 2a

| | Cust ID: | SITE 140 | | SITE 134 | | VBLK | | VBLK | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 006 | | 007 | | 91LVW152-MB1 | | 91LVW153-MB1 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 103 | % | 105 | % | 101 | % | 101 | % |
| | Bromofluorobenzene | 103 | % | 107 | % | 101 | % | 102 | % |
| | 1,2-Dichloroethane-d4 | 96 | % | 100 | % | 97 | % | 100 | % |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 3 | JB | 6 | B | 5 | | 4 | J |
| Acetone | | 10 | U | 10 | U | 10 | U | 10 | U |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW[illegible]ch Number: 9109L662 Client: WSRC-TASK [illegible] Work Order: 0630-28-27-0000 [illegible]ge: 2b

| Cust ID: | SITE 140 | SITE [illegible] | VBLK | VBLK |
|---|---|---|---|---|
| RFW#: | 006 | 007 | 91LVW152-MB1 | 91LVW153-MB1 |
| Toluene | 5 U | 5 U | 5 U | 2 J |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/12/91 RFW LOT # :9109L662

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 161 | 001 | W | 91LVW152 | 09/10/91 | N/A | 09/17/91 |
| SITE 161 | 001 MS | W | 91LVW152 | 09/10/91 | N/A | 09/17/91 |
| SITE 161 | 001 MSD | W | 91LVW152 | 09/10/91 | N/A | 09/17/91 |
| SITE 164 | 002 | W | 91LVW152 | 09/10/91 | N/A | 09/17/91 |
| SITE 160 | 004 | W | 91LVW152 | 09/10/91 | N/A | 09/17/91 |
| SITE 135 | 005 | W | 91LVW153 | 09/10/91 | N/A | 09/18/91 |
| SITE 140 | 006 | W | 91LVW153 | 09/10/91 | N/A | 09/18/91 |
| SITE 134 | 007 | W | 91LVW153 | 09/10/91 | N/A | 09/18/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| VBLK | MB1 | W | 91LVW152 | N/A | N/A | 09/17/91 |
| VBLK | MB1 | W | 91LVW153 | N/A | N/A | 09/18/91 |

WEST[illegible] Analytics Use Only

91091L662

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TASK 27
Est. Final Proj. Sampling Date:
Work Order #: 0030-28-27-0000
Project Contact/Phone #: Hamlow
AD Project Manager: Rainer Thomas
QC: Std Del: Std TAT: 30 Day
Date Rec'd: 9-18-91 Date Due: 10-9-91
Account #: WSRC27STD

| Refrigerator # | | 1 | | | | | | | 4 | | 4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | 16 | | | | 16/11 | | | 18 | | 18 | 18 | | | |
| | Solid | | | | | | | | | | | | | | |
| Volume | Liquid | 40 ml | | | | 40/11 | | | 1L | | 500 ml | 1L | | | |
| | Solid | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | HNO3 | | NaOH | — | | | |
| ANALYSES REQUESTED | | VOA | BNA | Pest/PCB | Herb | Radio Chem | | | Metal | CN | Chloride | OG | ALK, Cond | TR SOL | Sol. |
| | | ORGANIC | | | | | | | INORG | | | | | | |

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

WESTON Analytics Use Only (WSRC27L31)

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | 624/8 | | | | Ibuf | | Wiscons Ibuf | | Chloride | OG | ALK/Cond | TR SOL | Sol. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Lito 161 | | | W | 9-10-91 | | ✓ | | | | ✓ | | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2 | Lito 164 | | | | | | | | | | | | | | | | | | |
| 3 | Lito 142 | | | | | | Cancelled | | | | | | | | | | | | |
| 4 | Lito 160 | | | | | | ✓ | 9-17-91 | | | | | | | | | | | |
| 5 | Lito 135 | | | | | | | | | | | | | | | | | | |
| 6 | Lito 140 | | | | | | | | | | | | | | | | | | |
| 7 | Lito 134 | | | | | | | | | | | | | | | | | | |
| 8 | Lito 137 | | | | | | Cancelled | | | | | | | | | | | | |
| | | | | | | | | 9-17-91 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radio Chem - See 91091L612

VOA Samples
Have air bubbles Call 9-12-91

Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn

DATE/REVISIONS:
9-18-91 1. Cancel #003 & #008 VOA 624/H due to
2. air bubbles. Client to resample on Dennis Thomas
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 0194835741
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
Ph (out) & DO only

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
But not on an official form.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Fed-X | [illegible] | 9-12-91 | 09:30 |
| | [illegible] | 9-12-91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | | | |
| | [illegible] | 9-12-91 | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-23-91
**RFW #:** 9109L778, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of three (3) water samples collected on 09-20-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 09-24,25-91.

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

1. All surrogate recoveries were within laboratory control limits.

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

3. All matrix spike recoveries were within EPA QC limits.

4. The laboratory blanks contained the common contaminants methylene chloride and acetone at levels less than 2x times the CRQL.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

10/1/91
Date

WESTON SM

# GLOSSARY OF VOA DATA

## DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

X = Additional qualifiers used as required are explained in the case narrative.

NQ = Result qualitatively confirmed but not able to quantify.

## ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not applicable.

DF = Dilution factor.

NR = Not required.

Roy F. Weston, Inc - Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9109L778 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Report Date: 09/27/91 12:27 Page: 1a

| | Cust ID: | 137 | | 137 | | 137 | | 142 | | FIELD BLANK | | VBLK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 001 MS | | 001 MSD | | 002 | | 003 | | 91LVK166-MB1 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 100 | % | 104 | % | 101 | % | 102 | % | 102 | % | 99 | % |
| | Bromofluorobenzene | 96 | % | 98 | % | 98 | % | 98 | % | 94 | % | 96 | % |
| | 1,2-Dichloroethane-d4 | 105 | % | 99 | % | 106 | % | 109 | % | 106 | % | 89 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 6 | B | 9 | B | 12 | B | 5 | B | 6 | B | 9 | |
| Acetone | | 5 | JB | 9 | JB | 17 | B | 26 | B | 4 | JB | 7 | J |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 92 | % | 86 | % | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 105 | % | 106 | % | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 101 | % | 104 | % | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW ch Number: 9109L778 Client: WSRC-TASK 2 Work Order: 0630-28-27-0000 Page: 1b

| Cust ID: | 137 | 137 | 137 | 142 | FIELD BLANK | VBLK |
|---|---|---|---|---|---|---|
| RFW#: | 001 | 001 MS | 001 MSD | 002 | 003 | 91LVK166-MB1 |
| Toluene | 5 U | 108 % | 104 % | 5 U | 5 U | 5 U |
| Chlorobenzene | 5 U | 111 % | 114 % | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Cust ID: VBLK

Sample Information
RFW#: 91LVK167-MB1
Matrix: WATER
D.F.: 1.00
Units: ug/L

| | | | |
|---|---|---|---|
| Surrogate Recovery | Toluene-d8 | 102 | % |
| | Bromofluorobenzene | 96 | % |
| | 1,2-Dichloroethane-d4 | 104 | % |

| | | |
|---|---|---|
| Chloromethane | 10 | U |
| Bromomethane | 10 | U |
| Vinyl Chloride | 10 | U |
| Chloroethane | 10 | U |
| Methylene Chloride | 9 | |
| Acetone | 4 | J |
| Carbon Disulfide | 5 | U |
| 1,1-Dichloroethene | 5 | U |
| 1,1-Dichloroethane | 5 | U |
| 1,2-Dichloroethene (total) | 5 | U |
| Chloroform | 5 | U |
| 1,2-Dichloroethane | 5 | U |
| 2-Butanone | 10 | U |
| 1,1,1-Trichloroethane | 5 | U |
| Carbon Tetrachloride | 5 | U |
| Vinyl Acetate | 10 | U |
| Bromodichloromethane | 5 | U |
| 1,2-Dichloropropane | 5 | U |
| cis-1,3-Dichloropropene | 5 | U |
| Trichloroethene | 5 | U |
| Dibromochloromethane | 5 | U |
| 1,1,2-Trichloroethane | 5 | U |
| Benzene | 5 | U |
| Trans-1,3-Dichloropropene | 5 | U |
| Bromoform | 5 | U |
| 4-Methyl-2-pentanone | 10 | U |
| 2-Hexanone | 10 | U |
| Tetrachloroethene | 5 | U |
| 1,1,2,2-Tetrachloroethane | 5 | U |

*= Outside of EPA CLP QC limits.

Cust ID: VBLK

RFW#: 91LVK167-MB1

| | | |
|---|---|---|
| Toluene | 5 | U |
| Chlorobenzene | 5 | U |
| Ethylbenzene | 5 | U |
| Styrene | 5 | U |
| Xylene (total) | 5 | U |

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

142

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L778-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9019

Level: (low/med) LOW

Date Received: 09/23/91

% Moisture: not dec. _____

Date Analyzed: 09/24/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 4

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | HYDROCARBON | 19.14 | 20 | J |
| 2. | ALKENE | 20.77 | 6 | J |
| 3. | DIMETHYLETHYLBENZENE ISOMER | 22.77 | 20 | J |
| 4. | HYDROCARBON | 23.59 | 5 | J |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

FIELD BLANK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L778-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9017

Level: (low/med) LOW

Date Received: 09/23/91

% Moisture: not dec. _____

Date Analyzed: 09/24/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 91LVK166-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9006

Level: (low/med) LOW

Date Received: 09/24/91

% Moisture: not dec. _____

Date Analyzed: 09/24/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 91LVK167-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9P03

Level: (low/med) LOW

Date Received: 09/25/91

% Moisture: not dec. _____

Date Analyzed: 09/25/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/23/91 RFW LOT # :9109L778

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| 137 | 001 | W | 91LVK166 | 09/20/91 | N/A | 09/24/91 |
| 137 | 001 MS | W | 91LVK167 | 09/20/91 | N/A | 09/25/91 |
| 137 | 001 MSD | W | 91LVK167 | 09/20/91 | N/A | 09/25/91 |
| 142 | 002 | W | 91LVK166 | 09/20/91 | N/A | 09/24/91 |
| FIELD BLANK | 003 | W | 91LVK166 | 09/20/91 | N/A | 09/24/91 |
| LAB QC: | | | | | | |
| VBLK | MB1 | W | 91LVK166 | N/A | N/A | 09/24/91 |
| VBLK | MB1 | W | 91LVK167 | N/A | N/A | 09/25/91 |

DATA

WESTON Analytics Use Only
9109L778

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC - TASK 87
Est. Final Proj. Sampling Date:
Work Order #: 0630-98-27-0000
Project Contact/Phone #:
AD Project Manager: Diane Thomas
QC: Std. Del: Std. TAT: 30 day
Date Rec'd: 9/23/91 Date Due: 10/23/91
Account #: WSRC.27 STD

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | 1/L | | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Volume | Liquid | 1L | | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Preservatives | | — | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | INORG | | | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | Metal | CN | | | | | | | | | |

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 | WESTON Analytics Use Only: 0630-98-27 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 137 | | | W | 9/20/91 | 1030 | X | | | | | | | | | | | | |
| 002 | 142 | | | W | 9/20/91 | 1000 | X | | | | | | | | | | | | |
| 003 | Field Blank | | | W | 9/20/91 | 0830 | X | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions: Orig. Rewritten.

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 1333928622
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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Fed-Ex | Brian Shaffer | 9/21/91 | 9:30am |
| | 9/23/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | | | |
| | 9/23/91 | | |

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# N/A Cooler# N/A 381-596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

February 10, 1992

L.O.#27

Ms. Diane Thomas
Roy F. Weston, Inc.
208 Welsh Pool Road
Lionville, Pennsylvania 19353

Ref: Weston Project Numbers 9109L662, 9109L631, and 9109L652
(Barringer Job Numbers 91-2205, 91-2206, and 91-2210)

Dear Ms. Thomas:

This letter is in response to our telephone conversation of last week.

As discussed, we had problems performing the analyses on your 18 water samples from the above projects for isotopic uranium (U-238, U-235 and U-234) by EPA Method 908.0. It appears those problems were due to matrix interferences brought on by the high suspended solids content of those samples.

All 18 samples were analyzed and re-analyzed for isotopic uranium a total of three times. The results of many of these analyses were inconsistent with results obtained by performing internal checks for total uranium by fluorometry. Because most of the sample was consumed during the re-analyses, further re-analysis, most likely, would not have produced any better results, therefore the fluorometric uranium values in mg/liter were reported.

The total uranium activities in pCi/liter were determined by calculation from the mass equivalent of uranium in mg/liter based on equilibrium conditions between U-238 and U-234. From the data obtained by alpha spectroscopy it appears the two isotopes are in equilibrium.

I hope this clarifies our previous telephone conversation concerning this matter. If you should have any further questions please contact me at (303) 277-1687.

Sincerely,

David Lasher
Quality Assurance Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Tritium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L662-001 | 17 | ±3 | 220 | ±10 | 400000 | ±3000 |
| 9109L662-002 | 1.0 | ±1.4 | 5.6 | ±1.8 | 82000 | ±1300 |
| 9109L662-003 | 47 | ±11 | 32 | ±6 | 4700 | ±430 |
| 9109L662-004 | 3.4 | ±2.5 | 83 | ±4 | 440000 | ±3000 |
| 9109L662-005 | 5.3 | ±2.8 | 9.1 | ±2.1 | 32000 | ±850 |
| 9109L662-006 | IS | --- | IS | --- | 13000 | ±590 |
| 9109L662-007 | 280 | ±60 | 180 | ±30 | 27000 | ±800 |
| 9109L662-008 | 88 | ±24 | 54 | ±10 | 24000 | ±760 |

| Sample Id | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L662-001 | 0.0 | ±8.5 | 0.0 | ±0.4 | 0.0 | ±0.4 |
| 9109L662-002 | 3 | ±16 | 0.0 | ±0.6 | 0.0 | ±0.4 |
| 9109L662-003 | 0.0 | ±7.9 | 0.0 | ±0.5 | 9.1 | ±1.8 |
| 9109L662-004 | 0.0 | ±7.2 | 0.0 | ±0.5 | 0.0 | ±0.5 |
| 9109L662-005 | 0.0 | ±8.5 | 0.0 | ±0.5 | 0.0 | ±0.4 |
| 9109L662-006 | 0 | ±35 | 1.0 | ±2.7 | 0.0 | ±2.1 |
| 9109L662-007 | 3 | ±14 | 0.0 | ±2.3 | 6.7 | ±3.8 |
| 9109L662-008 | 6 | ±12 | 0.2 | ±0.5 | 2.2 | ±0.9 |

| Sample Id | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L662-001 | 0 | ±10 | 130 | ±10 | 0.5 | ±1.9 |
| 9109L662-002 | 1.1 | ±2.0 | 0.0 | ±2.6 | 0.4 | ±1.8 |
| 9109L662-003 | 1.0 | ±2.7 | 5.0 | ±5.5 | 0.0 | ±1.6 |
| 9109L662-004 | 0.0 | ±4.0 | 43 | ±4 | 0.0 | ±1.9 |
| 9109L662-005 | 0.1 | ±2.6 | 3.3 | ±3.5 | 0.0 | ±1.8 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample Id | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L662-006 | 2 | ±18 | 16 | ±20 | 5.3 | ±7.5 |
| 9109L662-007 | 7.9 | ±3.2 | 1.3 | ±4.4 | 1.2 | ±1.9 |
| 9109L662-008 | 0.0 | ±2.8 | 9.1 | ±8.5 | 1.1 | ±1.9 |

| Sample Id | C-14 pCi/l | Error 2σ | Ra-226 Total pCi/l | Error 2σ | U Total mg/l | U Total pCi/l* |
|---|---|---|---|---|---|---|
| 9109L662-001 | 330 | ±90 | 3.8 | ±1.4 | 0.0144 | 9.7 |
| 9109L662-002 | 38 | ±51 | 1.1 | ±1.1 | 0.0162 | 11 |
| 9109L662-003 | 46 | ±16 | 7.6 | ±2.0 | 0.0856 | 58 |
| 9109L662-004 | 22 | ±59 | 1.2 | ±1.1 | 0.0098 | 6.6 |
| 9109L662-005 | 10 | ±13 | 0.1 | ±0.6 | 0.0120 | 8.1 |
| 9109L662-006 | 6 | ±61 | IS | --- | 0.0197 | 13 |
| 9109L662-007 | 19 | ±47 | 4.6 | ±1.6 | 0.0730 | 49 |
| 9109L662-008 | 15 | ±11 | 3.0 | ±1.4 | 0.0180 | 12 |

| Sample Id | Am-241 pCi/l | Error 2σ |
|---|---|---|
| 9109L662-001 | 0.0 | ±2.6 |
| 9109L662-002 | 0.7 | ±3.5 |
| 9109L662-003 | 0.0 | ±6.6 |
| 9109L662-004 | 1.0 | ±3.4 |
| 9109L662-005 | 1.0 | ±1.6 |
| 9109L662-006 | 2.0 | ±1.9 |
| 9109L662-007 | 0.8 | ±6.0 |
| 9109L662-008 | 2.1 | ±5.0 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 3
Copy: 1 of 2
Set : 2

Attn: Diane Thomas
Project: 9109L662

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PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

AMENDED REPORT

GAMMA SPECTROSCOPY

**Sample Type: Water**

| Sample Id | Pb-212 pCi/l | Error 2σ | Pb-214 pCi/l | Error 2σ | Bi-214 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L662-001 | a<64 | --- | a<93 | --- | a140 | ±60 |
| 9109L662-002 | a<59 | --- | a<80 | --- | a<85 | --- |
| 9109L662-003 | a<54 | --- | a95 | ±52 | a94 | ±57 |
| 9109L662-004 | a22 | ±90 | a22 | ±12 | a<22 | --- |
| 9109L662-005 | a<16 | --- | a<22 | --- | a<26 | --- |
| 9109L662-006 | a<54 | --- | a140 | ±50 | a150 | ±50 |
| 9109L662-007 | a34 | ±11 | a34 | ±14 | a28 | ±17 |
| 9109L662-008 | a31 | ±9 | a50 | ±13 | a<27 | --- |

BARRINGER LABORATORIES INC.
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23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

AMENDED REPORT

Abbreviations:

Parameters:

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Ra-226 | : Radium-226 |
| U | : Uranium |
| Am-241 | : Americium-241 |
| Pb-212 | : Lead-212 |
| Pb-214 | : Lead-214 |
| Bi-214 | : Bismuth-214 |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| mg/l | : milligrams per liter |
| pCi/l* | : pCi/l*-Combined U238,234,235 based on equilibrium co |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |
| IS | : Insufficient Sample to complete analysis. |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 5
Copy: 1 of 2

Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

AMENDED REPORT

a : Amended Value

Job approved by:

Signed: Ellen LaRiviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Tritium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 280 | ±60 | 190 | ±30 | 440000 | ±3000 |
| Duplicate | 280 | ±60 | 170 | ±30 | 440000 | ±3000 |
| Duplicate % diff. | 0.0 | --- | 5.6 | --- | 0.0 | --- |
| Std (found value) | 184 | ±6 | 197 | ±3 | 55830 | ±1100 |
| Std (true value) | 206 | --- | 212 | --- | 55920 | --- |
| Std % diff. | 11 | --- | 7.1 | --- | 0.1 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.4 | ±0.3 | 0.0 | ±290 |
| Spike % rec. | 101 | --- | 99 | --- | --- | --- |

| Sample Id | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0 | ±15 | 0.0 | ±1.5 | 10 | ±3 |
| Duplicate | 6 | ±17 | 0.0 | ±2.5 | 7.2 | ±4.1 |
| Duplicate % diff. | 100 | --- | 0.0 | --- | 16 | --- |
| Std (found value) | 1155 | ±25 | 115 | ±4 | 115 | ±4 |
| Std (true value) | 993 | --- | 104 | --- | 104 | --- |
| Std % diff. | 16 | --- | 11 | --- | 11 | --- |
| Std % rec. | 116 | --- | 111 | --- | 111 | --- |
| Blank | 0.0 | ±2.5 | 0.1 | ±0.2 | 0.0 | ±0.2 |
| Spike % rec. | --- | --- | 118 | --- | 118 | --- |

| Sample Id | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±3.0 | 10 | ±8 | 1.0 | ±3.4 |
| Duplicate | 0.0 | ±2.7 | 8.2 | ±9.0 | 0.0 | ±3.2 |
| Duplicate % diff. | 0.0 | --- | 9.9 | --- | 100 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std (found value) | 21 | ±2 | 23 | ±2 | 96 | ±3 |
| Std (true value) | 21 | --- | 21 | --- | 100 | --- |
| Std % diff. | 0.0 | --- | 9.5 | --- | 4.0 | --- |
| Std % rec. | --- | --- | --- | --- | 96 | --- |
| Blank | 0.5 | ±1.1 | 0.5 | ±1.1 | 0.6 | ±0.8 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | C-14 pCi/l | Error 2σ | Ra-226 Total pCi/l | Error 2σ | U Total mg/l | U Total pCi/l* |
|---|---|---|---|---|---|---|
| Duplicate | 110 | ±68 | 2.0 | ±1.6 | 0.0180 | --- |
| Duplicate | 43 | ±65 | 0.9 | ±1.2 | 0.0179 | --- |
| Duplicate % diff. | 44 | --- | 38 | --- | 0.6 | --- |
| Std (found value) | 935 | ±16 | 100 | ±2 | 35 | --- |
| Std (true value) | 992 | --- | 101 | --- | 34 | --- |
| Std % diff. | 5.8 | --- | 1.0 | --- | 2.9 | --- |
| Std % rec. | 94.3 | --- | --- | --- | --- | --- |
| Blank | 1.5 | ±3.9 | <0.2 | ±0.2 | <0.0003 | --- |
| Spike % rec. | --- | --- | --- | --- | 97 | --- |

| Sample Id | Am-241 pCi/l | Error 2σ |
|---|---|---|
| Duplicate | 4.2 | ±5.5 |
| Duplicate | 0.0 | ±4.4 |
| Duplicate % diff. | 100 | --- |
| Std (found value) | 104 | ±5 |
| Std (true value) | 103 | --- |
| Std % diff. | 1.0 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 3
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Am-241 pCi/l | Error 2σ |
|---|---|---|
| Std % rec. | 101 | --- |
| Blank | 0.0 | ±0.2 |
| Spike % rec. | --- | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

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208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Bi-214 pCi/l | Bi-214 Error 2σ | Pb-212 pCi/l | Pb-212 Error 2σ | Pb-214 pCi/l | Pb-214 Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | a32 | ±18 | a16 | ±9 | a19 | ±12 |
| Duplicate | a<27 | --- | a32 | ±10 | a22 | ±11 |
| Duplicate % diff. | --- | --- | a33 | --- | a7.3 | --- |
| Std (found value) | --- | --- | --- | --- | --- | --- |
| Std (true value) | --- | --- | --- | --- | --- | --- |
| Std % diff. | --- | --- | --- | --- | --- | --- |

| Sample Id | Gamma Spec pCi/l | Gamma Spec Error 2σ |
|---|---|---|
| Duplicate | --- | --- |
| Duplicate | --- | --- |
| Duplicate % diff. | --- | --- |
| Std (found value) | 22 | ±1 |
| Std (true value) | 19 | --- |
| Std % diff. | 16 | --- |

Abbreviations:

Parameters:

I-129 : Iodine-129
Pu-238 : Plutonium-238
Pu-239/240 : Plutonium-239/240
Sr-89 : Strontium-89
Sr-90 : Strontium -90

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
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208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E Status: Final

QUALITY CONTROL REPORT

| | |
|---|---|
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Ra-226 | : Radium-226 |
| U | : Uranium |
| Am-241 | : Americium-241 |
| Pb-212 | : Lead-212 |
| Pb-214 | : Lead-214 |
| Bi-214 | : Bismuth-214 |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| mg/l | : milligrams per liter |
| pCi/l* | : pCi/l*-Combined U238,234,235 based on equilibrium co |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |
| a | : Amended Value |

Job approved by:

Signed:

.....
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 9109L662

Received: 13-Nov-91 08:43
PO #: LSA# LL-0962-F4

Job: 912205E

Status: Final

QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: gm Via: Fed Ex

Sample Container Type: pl L btls, gl Gal jars
Sample Type: Water
Preservative When Received: none
Additional Lab Preparation: none

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 2 pCi/l | none | Pingilley | 11/25-12/ 2 |
| Gross Beta | 900.0 | 4 pCi/l | none | Pingilley | 11/25-12/ 2 |
| Tritium | 906.0 | 460 pCi/l | none | Meyer | 11/26-12/ 2 |
| I-129 | 902.0 | 1 pCi/l | none | Preston | 12/20-12/30 |
| Pu-238/239/240 | 907.0 | 0.4 pCi/l | none | Preston | 12/18-1/ 6 |
| Sr-89/90 | 905.0 | 1 pCi/l | none | Kidwell | 12/12-12/24 |
| Tc-99 | HASL 300 | 1 pCi/l | none | Preston | 11/29-12/10 |
| C-14 | 520-84-006 | 3 pCi/l | none | Preston | 12/30-1/ 8 |
| Ra-226 | SM-705 | 0.2 pCi/l | none | Howard | 11/25-12/15 |
| U | ASTM D2907 | 0.0003 mg/l | none | Meyer | 11/26-12/ 1 |
| Am-241 | 907.0 | 0.5 pCi/l | none | Preston | 1/ 6- 1/13 |
| Gamma Spec | 901.1 | 25 pCi/l | none | Kidwell | 12/ 2-1/14 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

220

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client: Weston-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: D Thomas
QC: Std Del: Std TAT:
Date Rec'd: Date Due:
Account #:

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | | | | | 1G | 1L | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | gal | 1L | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | INORG | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Radio Chem (3) | | | Metal | CN | | | | | | | |

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 | WESTON Analytics Use Only | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Site 161 | | | W | 9/10/91 | | | | | | ✓ | ✓ | | | 9109 | 6662 | -001 | |
| | 164 | | | | | | | | | | | ✓ | | | | | -002 | |
| | 142 | | | | | | | | | | | | | | | | -003 | |
| | 160 | | | | | | | | | | | | | | | | -004 | |
| | 135 | | | | | | | | | | | | | | | | -005 | |
| | 140 | | | | | | | | | | | | | | | | -006 | |
| | 134 | | | | | | | | | | | | | | | | -007 | |
| | 137 | | | | | | | | | | | | | | | | -008 | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem (3) - See Attached

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| P Meyer | Fed Ex | 11/12/91 | 630 | | G Martey | 11/13/91 | 0970 |
| | | | | | | | |

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# _____ Cooler# _____ 381-5066

Received glass gallon containers [illegible] 0006 11-13-91 (GM)

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WSRC-TASK 27
RFW #: 9109L702
W.O. #: 0630-28-27

SAMPLES RECEIVED: 09-14-91

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. Preparation blank results were below the required detection limit with the exception of acidity.

3. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

4. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limit. All %RPD were within the 20% guidance limit.

5. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

6. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

10.21.91.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

Date

pas.21\i9-702

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/18/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L702

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 209 | Acidity | 36.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 4.2 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 4.4 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 14.9 | | UMHOS/CM | 1.0 |
| -002 | SITE 186 | Acidity | 46.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 10.8 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 4.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 28.1 | | UMHOS/CM | 1.0 |
| -003 | SITE 190 | Acidity | 58.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 6.4 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.16 | | MG/L | 0.10 |
| | | pH | 5.1 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 23.4 | | UMHOS/CM | 1.0 |
| -004 | SITE 191 | Acidity | 52.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 3.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.88 | | MG/L | 0.10 |
| | | pH | 5.2 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 16.1 | | UMHOS/CM | 1.0 |
| -005 | SITE 192 | Acidity | 30.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 7.4 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.15 | | MG/L | 0.10 |
| | | pH | 5.1 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 27.0 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/18/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L702

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -006 | SITE 196 | Acidity | 150 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 5.4 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 4.6 | | PH UNITS | 0.010 |
| | | Sulfate | 51.1 | | MG/L | 10.0 |
| | | Specific Conductance | 21.6 | | UMHOS/CM | 1.0 |
| -007 | SITE 205 | Acidity | 68.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 9.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | | MG/L | 0.10 |
| | | pH | 5.4 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 40.2 | | UMHOS/CM | 1.0 |
| -008 | SITE 206 | Acidity | 78.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 6.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 1.5 | | MG/L | 0.10 |
| | | pH | 5.2 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 22.5 | | UMHOS/CM | 1.0 |
| -009 | SITE 207 | Acidity | 30.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 4.6 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.63 | | MG/L | 0.10 |
| | | pH | 5.0 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 15.5 | | UMHOS/CM | 1.0 |
| -010 | SITE 208 | Acidity | 24.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 3.4 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 4.7 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 16.1 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/18/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L702
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK10 | 91LAL049-MB1 | Acidity | 9.5 | | MG/L | 0.50 |
| BLANK10 | 91LCL109-MB1 | Chloride | 5.0 | u | MG/L | 5.0 |
| BLANK20 | 91LCL109-MB2 | Chloride | 5.0 | u | MG/L | 5.0 |
| BLANK30 | 91LCL109-MB3 | Chloride | 5.0 | u | MG/L | 5.0 |
| BLANK40 | 91LCL109-MB4 | Chloride | 5.0 | u | MG/L | 5.0 |
| BLANK10 | 91LHD018-MB1 | Hardness | 0.10 | u | MG/L | 0.10 |
| BLANK20 | 91LHD018-MB2 | Hardness | 0.10 | u | MG/L | 0.10 |
| BLANK10 | 91LNO219-MB1 | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| BLANK20 | 91LNO219-MB2 | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| LANK10 | 91LS4084-MB1 | Sulfate | 5.0 | u | MG/L | 5.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/18/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L702

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK20 | 91LS4084-MB2 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK30 | 91LS4084-MB3 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK10 | 91LSP058-MB1 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |
| BLANK20 | 91LSP058-MB2 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/18/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L702

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -009 | SITE 207 | Nitrate, as N | 1.7 | 0.63 | 1.0 | 106 |
| | | Nitrate, as N MSD | 1.7 | 0.63 | 1.0 | 105 |
| BLANK10 | 91LCL109-MB1 | Chloride | 23.9 | 5.0 u | 25.0 | 95.7 |
| | | Chloride MSD | 24.6 | 5.0 u | 25.0 | 98.2 |
| BLANK20 | 91LCL109-MB2 | Chloride | 49.3 | 5.0 u | 50.0 | 98.7 |
| BLANK30 | 91LCL109-MB3 | Chloride | 24.2 | 5.0 u | 25.0 | 96.9 |
| BLANK40 | 91LCL109-MB4 | Chloride | 24.2 | 5.0 u | 25.0 | 97.0 |
| BLANK10 | 91LHD018-MB1 | Hardness | 101 | 0.10u | 100 | 101 |
| | | Hardness MSD | 101 | 0.10u | 100 | 101 |
| BLANK20 | 91LHD018-MB2 | Hardness | 330 | 0.10u | 330 | 99.9 |
| BLANK10 | 91LNO219-MB1 | Nitrate, as N | 0.38 | 0.10u | 0.40 | 94.5 |
| | | Nitrate, as N MSD | 0.38 | 0.10u | 0.40 | 96.0 |
| BLANK20 | 91LNO219-MB2 | Nitrate, as N | 0.39 | 0.10u | 0.40 | 96.5 |
| BLANK10 | 91LS4084-MB1 | Sulfate | 21.2 | 5.0 u | 20.0 | 106 |
| | | Sulfate | 21.2 | 5.0 u | 20.0 | 106 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/18/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L702
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|---|
| BLANK20 | 91LS4084-MB2 | Sulfate | | 29.7 | 5.0 u | 30.0 | 98.9 |
| BLANK30 | 91LS4084-MB3 | Sulfate | | 29.6 | 5.0 u | 30.0 | 98.7 |
| BLANK10 | 91LSP058-MB1 | Specific Conductance | | 141 | 1.0 u | 147 | 95.9 |
| | | Specific Conductance | M | 142 | 1.0 u | 147 | 96.6 |
| BLANK20 | 91LSP058-MB2 | Specific Conductance | | 1400 | 1.0 u | 1410 | 99.2 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/18/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L702

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| -009 | SITE 207 | Nitrate, as N | 106 | 105 | 0.40 |
| BLANK10 | 91LCL109-MB1 | Chloride | 95.7 | 98.2 | 2.8 |
| BLANK10 | 91LHD018-MB1 | Hardness | 101 | 101 | 0.40 |
| BLANK10 | 91LNO219-MB1 | Nitrate, as N | 94.5 | 96.0 | 1.5 |
| BLANK10 | 91LS4084-MB1 | Sulfate | 106 | 106 | 0.10 |
| BLANK10 | 91LSP058-MB1 | Specific Conductance | 95.9 | 96.6 | 0.70 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 10/18/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L702
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | SITE 209 | Acidity | 36.0 | 32.0 | 11.8 |
| | | pH | 4.4 | 4.4 | 0.23 |
| | | Sulfate | 5.0 u | 5.0 u | NC |
| -008REP | SITE 206 | Nitrate, as N | 1.5 | 1.5 | 0.47 |
| -009REP | SITE 207 | Nitrate, as N | 0.63 | 0.63 | 0.32 |
| -010REP | SITE 208 | Specific Conductance | 16.1 | 16.1 | 0.00 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 209 | | | | | | |
| ACIDITY | 001 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| ACIDITY | 001 REP | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 001 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 001 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 001 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 001 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 001 REP | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 001 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SULFATE | 001 REP | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 001 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 001 | W | | 09/13/91 | | |
| SITE 186 | | | | | | |
| ACIDITY | 002 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 002 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 002 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 002 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 002 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 002 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 002 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 002 | W | | 09/13/91 | | |
| SITE 190 | | | | | | |
| ACIDITY | 003 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 003 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 003 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 003 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 003 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 003 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 003 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 003 | W | | 09/13/91 | | |
| SITE 191 | | | | | | |
| ACIDITY | 004 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHLORIDE | 004 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 004 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 004 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 004 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 004 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 004 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 004 | W | | 09/13/91 | | |
| SITE 192 | | | | | | |
| ACIDITY | 005 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 005 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 005 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 005 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 005 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 005 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 005 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 005 | W | | 09/13/91 | | |
| SITE 196 | | | | | | |
| ACIDITY | 006 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 006 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 006 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 006 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 006 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 006 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 006 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 006 | W | | 09/13/91 | | |
| SITE 205 | | | | | | |
| ACIDITY | 007 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 007 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 007 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 007 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 007 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 007 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 007 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 007 | W | | 09/13/91 | | |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 206 | | | | | | |
| ACIDITY | 008 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 008 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 008 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 008 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| NITRATE | 008 REP | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 008 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 008 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 008 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 008 | W | | 09/13/91 | | |
| SITE 207 | | | | | | |
| ACIDITY | 009 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 009 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 009 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 009 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| NITRATE | 009 REP | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| NITRATE | 009 MS | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| NITRATE | 009 MSD | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 009 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 009 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 009 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 009 | W | | 09/13/91 | | |
| SITE 208 | | | | | | |
| ACIDITY | 010 | W | 91LAL049 | 09/13/91 | 09/18/91 | 09/18/91 |
| CHLORIDE | 010 | W | 91LCL109 | 09/13/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 010 | W | 91LHD018 | 09/13/91 | 09/18/91 | 09/18/91 |
| NITRATE | 010 | W | 91LNO219 | 09/13/91 | 09/14/91 | 09/14/91 |
| PH | 010 | W | 91LPH149 | 09/13/91 | 09/14/91 | 09/14/91 |
| SULFATE | 010 | W | 91LS4084 | 09/13/91 | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | 010 | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | 010 REP | W | 91LSP058 | 09/13/91 | 09/14/91 | 09/14/91 |
| SUB-OUT TEST FOR SUB | 010 | W | | 09/13/91 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | W | 91LAL049 | N/A | 09/18/91 | 09/18/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALKALINITY | MB2 | W | 91LAL049 | N/A | 09/18/91 | 09/18/91 |
| ALKALINITY | MB2 BS | W | 91LAL049 | N/A | 09/18/91 | 09/18/91 |
| CHLORIDE | MB1 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB1 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB1 BSD | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB2 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB2 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB3 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB3 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB4 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB4 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| HARDNESS | MB1 | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB1 BS | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB1 BSD | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB2 | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| HARDNESS | MB2 BS | W | 91LHD018 | N/A | 09/18/91 | 09/18/91 |
| NITRATE | MB1 | W | 91LNO219 | N/A | 09/14/91 | 09/14/91 |
| NITRATE | MB1 BS | W | 91LNO219 | N/A | 09/14/91 | 09/14/91 |
| NITRATE | MB1 BSD | W | 91LNO219 | N/A | 09/14/91 | 09/14/91 |
| NITRATE | MB2 | W | 91LNO219 | N/A | 09/14/91 | 09/14/91 |
| NITRATE | MB2 BS | W | 91LNO219 | N/A | 09/14/91 | 09/14/91 |
| SULFATE | MB1 | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB1 BS | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB1 BSD | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB2 | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB2 BS | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB3 | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SULFATE | MB3 BS | W | 91LS4084 | N/A | 09/19/91 | 09/19/91 |
| SPECIFIC CONDUCTANCE | MB1 | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | MB1 BS | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | MB1 BSD | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | MB2 | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |
| SPECIFIC CONDUCTANCE | MB2 BS | W | 91LSP058 | N/A | 09/14/91 | 09/14/91 |

WESTON Analytics Use Only: 9109L702

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

Client: WSRC-Task27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-270000
Project Contact/Phone #: D Thomas
AD Project Manager:
QC: SH Del: SH TAT: 30 day
Date Rec'd: 9/14/91 Date Due: 10/14/91
Account #: WSRC27

Refrigerator #

| #/Type Container | Liquid | 1/G | | | | 1/G | | | 1/P | | 1/P | | 1/P | 1/P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Solid | | | | | | | | | | | | | |
| Volume | Liquid | 40 | | | | 40 | | | 1L | | 1L | | 500 | 500 |
| | Solid | | | | | | | | | | | | | |
| Preservatives | | none | | | | 1 drop HCl | | | none | | none | | none | none |

ANALYSES REQUESTED

| ORGANIC | | | | | | | INORG | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Cyanide | | | Metal | Cr 6+ | Acetate Acetic Acid | NO3 | Total P | Phenols | |

WESTON Analytics Use Only

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | VOA | BNA | Pest/PCB | Herb | Cyanide | | | Metal | Cr 6+ | Acetate | Acetic Acid | NO3 | Total P | Phenols |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 062444 | | | | TSS | | | See Below | | TKN | TOC | TCL | TRS | TSS |
| S - Soil | M1 | Site 209 | | | W | 9/13/91 | | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| SE - Sediment | 2 | 186 | | | | | | | | | | | | | | | | | | | |
| SO - Solid | 3 | 190 | | | | | | | | | | | | | | | | | | | |
| SL - Sludge | 4 | 191 | | | | | | | | | | | | | | | | | | | |
| W - Water | 5 | 192 | | | | | | | | | | | | | | | | | | | |
| O - Oil | 6 | 196 | | | | | | | | | | | | | | | | | | | |
| A - Air | 7 | 205 | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | 8 | 206 | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | 9 | 207 | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | 10 | 208 | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals = Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn

Original submitted.

DATE/REVISIONS:
9-16-91 1. added metals list to C.O.C. 9-16-91
9-30-91 2. Cancel ALKL on #001 thru #010 per SDR
3.
4.
5.
6.

WESTON Analytics 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'd Y or N

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | 9/14/91 | 10:30 AM | | RS 9/14/91 | | |
| | RS 9/14/91 | | | | | | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# N/A Cooler# N/A 381-596a

WESTON Analytics Use Only
9109L702

# Custody Transfer Record/Lab Work Request

WESTON



Client: WSPC-Task 27
Est. Final Proj. Sampling Date:
Work Order #:
Project Contact/Phone #:
AD Project Manager:
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

| | | |
|---|---|---|
| Refrigerator # | | |
| #/Type Container | Liquid | 4 |
| | Solid | |
| Volume | Liquid | 40 |
| | Solid | |
| Preservatives | | nil |

ANALYSES REQUESTED: ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

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 | WESTON Analytics Use Only (062418) |
|---|---|---|---|---|---|---|---|
| 11 | Trip Blank | | | W | 9/13/91 | | ✓ |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/14/91 | 10:30 am |
| | [illegible] | 9/14/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | | |
| | | | |

RFW 21-21-001/A 7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-14-91
**RFW #:** 9109L702
**W.O. #:** 0630-28-27-0000

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit.

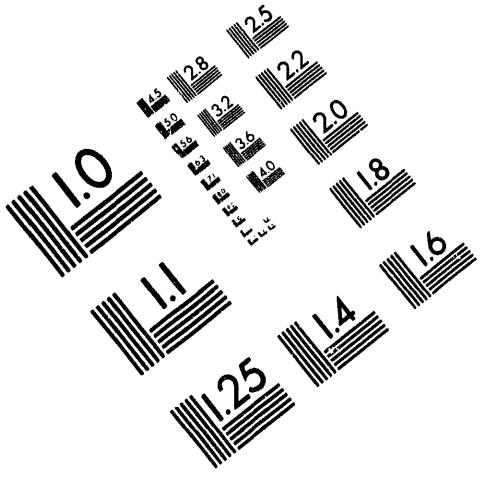
3. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

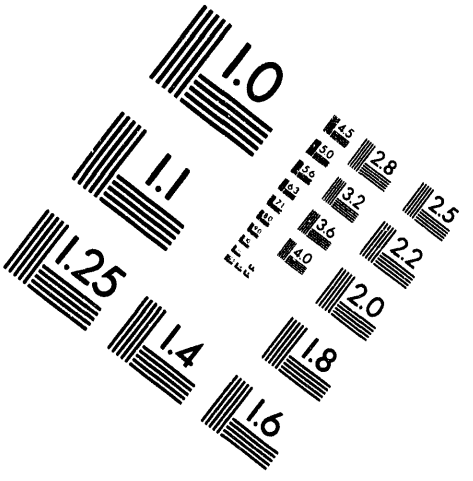
10.11.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc\m9-702

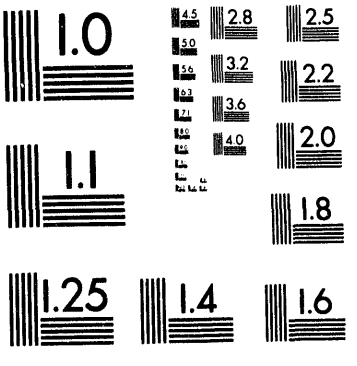


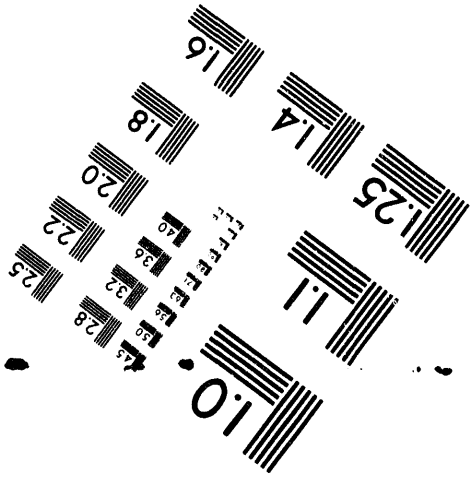
**Association for Information and Image Management**
1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910
301/587-8202

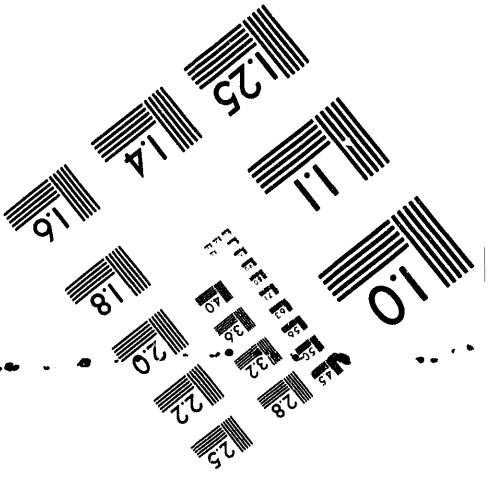


Centimeter

Inches







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BY APPLIED IMAGE, INC.

4 of 7

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L702

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 209 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 43.7 | | UG/L | 20.0 |
| -002 | SITE 186 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 1150 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 54.9 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 44.7 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 65.6 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L702

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -003 | SITE 190 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| -004 | SITE 191 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 277 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L702

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -005 | SITE 192 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 122 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 39.8 | | UG/L | 20.0 |
| -006 | SITE 196 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 417 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 1580 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 39.2 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 44.5 | | UG/L | 40.0 |
| | | Lead, Total | 10.1 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 163 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L702
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -007 | SITE 205 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 357 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 14400 | | UG/L | 500 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 166 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 52.2 | | UG/L | 20.0 |
| -008 | SITE 206 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 124 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/11/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L702
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -009 | SITE 207 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| -010 | SITE 208 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 181 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 6.5 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 130 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/11/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L702
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L1793-MB1 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| BLANK1 | 91L1792-MB1 | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| BLANK1 | 91C265-MB1 | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| BLANK2 | 91C265-MB2 | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| BLANK3 | 91C265-MB3 | Mercury, TCLP Leachate | 0.20 | u | UG/L | 0.20 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/11/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L702

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L1793-LC2 | Silver, LCS | 86.0 | 89.2 | 3.7 |
| | | Aluminum, LCS | 97.7 | 99.2 | 1.5 |
| | | Barium, LCS | 97.3 | 98.7 | 1.4 |
| | | Cadmium, LCS | 96.1 | 98.0 | 2.0 |
| | | Chromium, LCS | 96.8 | 99.6 | 2.9 |
| | | Copper, LCS | 100 | 101 | 1.4 |
| | | Iron, LCS | 105 | 107 | 2.1 |
| | | Manganese, LCS | 98.5 | 98.4 | 0.10 |
| | | Sodium, LCS | 101 | 101 | 0.099 |
| | | Nickel, LCS | 97.5 | 100 | 2.9 |
| | | Zinc, LCS | 97.8 | 99.1 | 1.3 |
| LCS2 | 91L1792-LC2 | Arsenic, LCS | 90.3 | 89.3 | 1.1 |
| | | Lead, LCS | 109 | 106 | 2.2 |
| | | Selenium, LCS | 85.3 | 90.0 | 5.4 |
| LCS2 | 91C265-LC2 | Mercury, LCS | 88.3 | 98.1 | 10.5 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/11/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L1793-LC1 | Silver, LCS | 430 | 500 | UG/L | 86.0 |
| | | Aluminum, LCS | 4880 | 5000 | UG/L | 97.7 |
| | | Barium, LCS | 4860 | 5000 | UG/L | 97.3 |
| | | Cadmium, LCS | 240 | 250 | UG/L | 96.1 |
| | | Chromium, LCS | 484 | 500 | UG/L | 96.8 |
| | | Copper, LCS | 1250 | 1250 | UG/L | 100 |
| | | Iron, LCS | 5240 | 5000 | UG/L | 105 |
| | | Manganese, LCS | 738 | 750 | UG/L | 98.5 |
| | | Sodium, LCS | 25300 | 25000 | UG/L | 101 |
| | | Nickel, LCS | 1950 | 2000 | UG/L | 97.5 |
| | | Zinc, LCS | 978 | 1000 | UG/L | 97.8 |
| LCS2 | 91L1793-LC2 | Silver, LCS | 446 | 500 | UG/L | 89.2 |
| | | Aluminum, LCS | 4960 | 5000 | UG/L | 99.2 |
| | | Barium, LCS | 4940 | 5000 | UG/L | 98.7 |
| | | Cadmium, LCS | 245 | 250 | UG/L | 98.0 |
| | | Chromium, LCS | 498 | 500 | UG/L | 99.6 |
| | | Copper, LCS | 1270 | 1250 | UG/L | 101 |
| | | Iron, LCS | 5350 | 5000 | UG/L | 107 |
| | | Manganese, LCS | 738 | 750 | UG/L | 98.4 |
| | | Sodium, LCS | 25200 | 25000 | UG/L | 101 |
| | | Nickel, LCS | 2010 | 2000 | UG/L | 100 |
| | | Zinc, LCS | 991 | 1000 | UG/L | 99.1 |
| LCS1 | 91L1792-LC1 | Arsenic, LCS | 27.1 | 30.0 | UG/L | 90.3 |
| | | Lead, LCS | 32.6 | 30.0 | UG/L | 109 |
| | | Selenium, LCS | 25.6 | 30.0 | UG/L | 85.3 |
| LCS2 | 91L1792-LC2 | Arsenic, LCS | 26.8 | 30.0 | UG/L | 89.3 |
| | | Lead, LCS | 31.9 | 30.0 | UG/L | 106 |
| | | Selenium, LCS | 27.0 | 30.0 | UG/L | 90.0 |
| LCS1 | 91C265-LC1 | Mercury, LCS | 4.4 | 5.0 | UG/L | 88.3 |
| LCS2 | 91C265-LC2 | Mercury, LCS | 4.9 | 5.0 | UG/L | 98.1 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 209 | | | | | | |
| SILVER, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 001 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 001 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 001 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | 001 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 001 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SITE 186 | | | | | | |
| SILVER, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 002 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 002 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 002 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | 002 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 002 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SITE 190 | | | | | | |
| SILVER, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 003 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 003 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 003 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | 003 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 003 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SITE 191 | | | | | | |
| SILVER, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 004 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 004 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 004 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | 004 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 004 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SITE 192 | | | | | | |
| SILVER, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 005 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHROMIUM, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 005 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 005 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | 005 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 005 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SITE 196 | | | | | | |
| SILVER, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 006 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 006 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 006 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | 006 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 006 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SITE 205 | | | | | | |
| SILVER, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 007 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 007 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| MANGANESE, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 007 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | 007 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 007 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SITE 206 | | | | | | |
| SILVER, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 008 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 008 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 008 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | 008 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 008 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SITE 207 | | | | | | |
| SILVER, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 009 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 009 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 009 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SELENIUM, TOTAL | 009 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 009 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SITE 208 | | | | | | |
| SILVER, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| ARSENIC, TOTAL | 010 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| BARIUM, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| IRON, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| MERCURY, TOTAL | 010 | W | 91C265 | 09/13/91 | 09/18/91 | 09/19/91 |
| MANGANESE, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |
| LEAD, TOTAL | 010 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | 010 | W | 91L1792 | 09/13/91 | 09/17/91 | 09/19/91 |
| ZINC, TOTAL | 010 | W | 91L1793 | 09/13/91 | 09/17/91 | 10/10/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| ALUMINUM LABORTORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| BARIUM LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| CADMIUM LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| CHROMIUM LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| COPPER LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| IRON LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| MANGANESE LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| SODIUM LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| NICKEL LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| ZINC LABORATORY | LC1 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| SILVER LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| ALUMINUM LABORTORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| BARIUM LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| CADMIUM LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| CHROMIUM LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| COPPER LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| IRON LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| MANGANESE LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| SODIUM LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| NICKEL LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| ZINC LABORATORY | LC2 BS | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| SILVER, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| ALUMINUM, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| BARIUM, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| CADMIUM, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| CHROMIUM, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| COPPER, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| IRON, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| MANGANESE, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| SODIUM, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| NICKEL, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| ZINC, TOTAL | MB1 | W | 91L1793 | N/A | 09/17/91 | 10/10/91 |
| ARSENIC LABORATORY | LC1 BS | W | 91L1792 | N/A | 09/17/91 | 09/19/91 |
| LEAD LABORATORY | LC1 BS | W | 91L1792 | N/A | 09/17/91 | 09/19/91 |
| SELENIUM LABORATORY | LC1 BS | W | 91L1792 | N/A | 09/17/91 | 09/19/91 |
| ARSENIC LABORATORY | LC2 BS | W | 91L1792 | N/A | 09/17/91 | 09/19/91 |
| LEAD LABORATORY | LC2 BS | W | 91L1792 | N/A | 09/17/91 | 09/19/91 |
| SELENIUM LABORATORY | LC2 BS | W | 91L1792 | N/A | 09/17/91 | 09/19/91 |
| ARSENIC, TOTAL | MB1 | W | 91L1792 | N/A | 09/17/91 | 09/19/91 |
| LEAD, TOTAL | MB1 | W | 91L1792 | N/A | 09/17/91 | 09/19/91 |
| SELENIUM, TOTAL | MB1 | W | 91L1792 | N/A | 09/17/91 | 09/19/91 |
| MERCURY LABORATORY | LC1 BS | W | 91C265 | N/A | 09/18/91 | 09/19/91 |
| MERCURY LABORATORY | LC2 BS | W | 91C265 | N/A | 09/18/91 | 09/19/91 |
| MERCURY, TOTAL | MB1 | W | 91C265 | N/A | 09/18/91 | 09/19/91 |
| MERCURY, TOTAL | MB2 | W | 91C265 | N/A | 09/18/91 | 09/19/91 |
| MERCURY, TCLP LEACHA | MB3 | W | 91C265 | N/A | 09/18/91 | 09/19/91 |

WESTON Analytics Use Only
9109L702

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27000
Project Contact/Phone #: D Thomas
AD Project Manager:
QC: Del: TAT: 30 day
Date Rec'd: 9/14/91 Date Due: 10/14/91
Account #: WSRC 27 TD

Refrigerator #

| #/Type Container | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Liquid | 1/G | | | | | 1/G | | | 1/P | | 1/P | — | 1 | 1/P | 1/P | |
| Solid | | | | | | | | | | | | | | | | |
| Volume Liquid | 40 | | | | | 40 | | | 1L | | 1L | — | 1 | 500 | 500 | |
| Volume Solid | | | | | | | | | | | | | | | | |
| Preservatives | NONE | | | | | HCl | | | HNO3 | | none | — | 1 | none | H2SO4 | |

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb, Rad chem; INORG: Metal, Cd 1991, Acidity, Sol, NO3, TOC, Phos, Radio

WESTON Analytics 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 | VOA | BNA | Pest/PCB | Herb | Rad chem | | Metal | Cd 1991 | Acidity | Sol | NO3 | TOC | Phos | Radio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 624/4 | | | | ISV | | See Below | | THK | ICP | ICP | INOR | TOC | INORG |
| 01 | Site 209 | | | W | 9/13/91 | | ✓ | | | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2 | 186 | | | | | | | | | | | | | | | | | | | |
| 3 | 190 | | | | | | | | | | | | | | | | | | | |
| 4 | 191 | | | | | | | | | | | | | | | | | | | |
| 5 | 192 | | | | | | | | | | | | | | | | | | | |
| 6 | 196 | | | | | | | | | | | | | | | | | | | |
| 7 | 205 | | | | | | | | | | | | | | | | | | | |
| 8 | 206 | | | | | | | | | | | | | | | | | | | |
| 9 | 207 | | | | | | | | | | | | | | | | | | | |
| 10 | 208 | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals = Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn

Original permitter

DATE/REVISIONS:
9-16-91 1. added metals list to C.O.C. 9-16-91
9-30-91 2. Cancel ALKL on #001 thru #010 Per SDR JK
3.
4.
5.
6.

WESTON Analytics 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'l Y or N

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/14/91 | 10:30 am |
| [illegible] | [illegible] | 9/14/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 9/14/91 | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# N/A Cooler# N/A 381-596a

WESTON Analytics Use Only
9109L702

# Custody Transfer Record/Lab Work Request

WESTON

Page 2 of 8

Client: WSPC-Task 27
Est. Final Proj. Sampling Date:
Work Order #:
Project Contact/Phone #:
AD Project Manager:
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #:
#/Type Container: Liquid 6/6; Solid
Volume: Liquid 40; Solid
Preservatives: nil

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

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 | WESTON Analytics Use Only: 0624/5 |
|---|---|---|---|---|---|---|---|
| 11 | Trip Blank | | | W | 9/13/91 | | ✓ |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/14/91 | 10:30 am |
| [illegible] | [illegible] | 9/14/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# N/A Cooler# N/A

381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC - TASK 27 **SAMPLES RECEIVED:** 09-14-91
**RFW #:** 9109L702, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of eleven (11) water samples collected on 09-13-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 09-19,20-91.

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

1. Non-target compounds were detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. Matrix spike recoveries are associated with RFW lot 9109L662.

4. The laboratory blanks contained the common contaminants methylene chloride and acetone at levels less 2X than the CRQL.

10.7.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

WESTON SM

# GLOSSARY OF VOA DATA

## DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

X = Additional qualifiers used as required are explained in the case narrative.

NQ = Result qualitatively confirmed but not able to quantify.

## ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not applicable.

DF = Dilution factor.

NR = Not required.

Roy F. Weston, Inc - Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9109L702 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Report Date: 09/25/91 12:48 Page: 1a

| | Cust ID: | SITE 209 | | SITE 186 | | SITE 190 | | SITE 191 | | SITE 192 | | SITE 196 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 002 | | 003 | | 004 | | 005 | | 006 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 99 | % | 100 | % | 94 | % | 97 | % | 95 | % | 94 | % |
| | Bromofluorobenzene | 97 | % | 99 | % | 91 | % | 95 | % | 97 | % | 91 | % |
| | 1,2-Dichloroethane-d4 | 100 | % | 106 | % | 99 | % | 104 | % | 106 | % | 101 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 3 | JB | 3 | JB | 4 | JB | 5 | B | 3 | JB | 4 | JB |
| Acetone | | 10 | U | 6 | J | 4 | J | 10 | U | 5 | J | 10 | U |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9109L702 Client: WSRC-TASK 2 Work Order: 0630-28-27-0000 Page: 1b

| Cust ID: | SITE 209 | SITE 186 | SITE 190 | SITE 191 | SITE 192 | SITE 196 |
|---|---|---|---|---|---|---|
| RFW#: | 001 | 002 | 003 | 004 | 005 | 006 |
| Toluene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, Ii - Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9109L702 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Report Date: 09/25/91 12:48 Page: 2a

| | Cust ID: | SITE 205 | | SITE 206 | | SITE 207 | | SITE 208 | | TRIP BLANK | | VBLK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 007 | | 008 | | 009 | | 010 | | 011 | | 91LVK164-MB1 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 96 | % | 94 | % | 97 | % | 98 | % | 97 | % | 95 | % |
| | Bromofluorobenzene | 94 | % | 92 | % | 97 | % | 97 | % | 93 | % | 95 | % |
| | 1,2-Dichloroethane-d4 | 111 | % | 107 | % | 106 | % | 96 | % | 100 | % | 95 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 3 | JB | 4 | JB | 5 | B | 3 | JB | 5 | B | 4 | J |
| Acetone | | 10 | U | 10 | U | 10 | U | 10 | U | 3 | J | 10 | U |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW .cch Number: 9109L702 Client: WSRC-TASK 2 Work Order: 0630-28-27-0000 Page: 2b

| Cust ID: | SITE 205 | SITE 206 | SITE 207 | SITE 208 | TRIP BLANK | VBLK |
|---|---|---|---|---|---|---|
| RFW#: | 007 | 008 | 009 | 010 | 011 | 91LVK164-MB1 |
| Toluene | 3 J | 5 U | 5 U | 5 U | 5 U | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, I - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 09/25/91 12:48

RFW Batch Number: 9109L702 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 3a

Cust ID: VBLK

Sample Information

RFW#: 91LVK165-MB1
Matrix: WATER
D.F.: 1.00
Units: ug/L

| | | | |
|---|---|---|---|
| Surrogate Recovery | Toluene-d8 | 100 | % |
| | Bromofluorobenzene | 98 | % |
| | 1,2-Dichloroethane-d4 | 102 | % |

| | | |
|---|---|---|
| Chloromethane | 10 | U |
| Bromomethane | 10 | U |
| Vinyl Chloride | 10 | U |
| Chloroethane | 10 | U |
| Methylene Chloride | 6 | |
| Acetone | 6 | J |
| Carbon Disulfide | 5 | U |
| 1,1-Dichloroethene | 5 | U |
| 1,1-Dichloroethane | 5 | U |
| 1,2-Dichloroethene (total) | 5 | U |
| Chloroform | 5 | U |
| 1,2-Dichloroethane | 5 | U |
| 2-Butanone | 10 | U |
| 1,1,1-Trichloroethane | 5 | U |
| Carbon Tetrachloride | 5 | U |
| Vinyl Acetate | 10 | U |
| Bromodichloromethane | 5 | U |
| 1,2-Dichloropropane | 5 | U |
| cis-1,3-Dichloropropene | 5 | U |
| Trichloroethene | 5 | U |
| Dibromochloromethane | 5 | U |
| 1,1,2-Trichloroethane | 5 | U |
| Benzene | 5 | U |
| Trans-1,3-Dichloropropene | 5 | U |
| Bromoform | 5 | U |
| 4-Methyl-2-pentanone | 10 | U |
| 2-Hexanone | 10 | U |
| Tetrachloroethene | 5 | U |
| 1,1,2,2-Tetrachloroethane | 5 | U |

*= Outside of EPA CLP QC limits.

Cust ID: VBLK

RFW#: 91LVK165-MB1

| | | |
|---|---|---|
| Toluene | 5 | U |
| Chlorobenzene | 5 | U |
| Ethylbenzene | 5 | U |
| Styrene | 5 | U |
| Xylene (total) | 5 | U |

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 209

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J09

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 186

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J10

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 190

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J11

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 191

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-004

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J12

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 192

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-005

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AX9J14

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 196

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-006

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J15

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 205

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-007

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J16

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E
VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 206

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-008

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J17

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 1

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNDECANE | 24.56 | 8 | J |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 207

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-009

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J18

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 208

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-010

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9K04

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

TRIP BLANK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L702-011

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J08

Level: (low/med) LOW

Date Received: 09/14/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 91LVK164-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9J05

Level: (low/med) LOW

Date Received: 09/19/91

% Moisture: not dec. _____

Date Analyzed: 09/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 91LVK165-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9K03

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/14/91 RFW LOT # :9109L702

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 209 | 001 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |
| SITE 186 | 002 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |
| SITE 190 | 003 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |
| SITE 191 | 004 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |
| SITE 192 | 005 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |
| SITE 196 | 006 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |
| SITE 205 | 007 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |
| SITE 206 | 008 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |
| SITE 207 | 009 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |
| SITE 208 | 010 | W | 91LVK165 | 09/13/91 | N/A | 09/20/91 |
| TRIP BLANK | 011 | W | 91LVK164 | 09/13/91 | N/A | 09/19/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| VBLK | MB1 | W | 91LVK164 | N/A | N/A | 09/19/91 |
| VBLK | MB1 | W | 91LVK165 | N/A | N/A | 09/20/91 |

WESTON Analytics Use Only

9109L702

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

Client: WSRC-Task 27

Est. Final Proj. Sampling Date:

Work Order #: 0630-28-270000

Project Contact/Phone #:

AD Project Manager: D Thomas

QC: SH Del: SH TAT: 30 day

Date Rec'd: 9/14/91 Date Due: 10/14/91

Account #: WSRC 27 TB

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | 1/G | | | | | 1/G | | | | 1/P | | 1/P | | | 1/P | 1/P | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Volume | Liquid | 40 | | | | | 40 | | | | 1L | | 1L | | | 500 | 500 | | |
| | Solid | | | | | | | | | | | | | | | | | | |
| Preservatives | | none | | | | | HNO3 | | | | HNO3 | | none | | | none | none-NaOH | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | | | INORG | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | | | Metal | | | | | | | | |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S - Soil | | | | | | | | 0630-44 | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | |
| | M1 | Site 209 | | | W | 9/13/91 | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | 2 | 186 | | | | | | | | | | | | | | | | | |
| | 3 | 190 | | | | | | | | | | | | | | | | | |
| | 4 | 191 | | | | | | | | | | | | | | | | | |
| | 5 | 192 | | | | | | | | | | | | | | | | | |
| | 6 | 196 | | | | | | | | | | | | | | | | | |
| | 7 | 205 | | | | | | | | | | | | | | | | | |
| | 8 | 206 | | | | | | | | | | | | | | | | | |
| | 9 | 207 | | | | | | | | | | | | | | | | | |
| | 10 | 208 | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Metals = Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn

Original paperwork.

DATE/REVISIONS:

9-16-91 1. added metals list to C.O.C. 9-16-91

9-30-91 2. Cancel ALKL on #001 thru #010 Per SDR ck

3.

4.

5.

6.

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | 9/14/91 | 10:30 am | | RS 9/14/91 | | |
| | DG 9/14/91 | | | | | | |

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# NA Cooler# NA 381-596a

WESTON Analytics Use Only

9109L702

# Custody Transfer Record/Lab Work Request

WESTON

Page 2 of 8

Client: WSRC - Task 27

Est. Final Proj. Sampling Date:

Work Order #:

Project Contact/Phone #:

AD Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Account #:

Refrigerator #:

#/Type Container: Liquid 4G; Solid

Volume: Liquid 40; Solid

Preservatives: nn

ANALYSES REQUESTED

| ORGANIC | | | | INORG | |
|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Metal | CN |

WESTON Analytics Use Only: 0624152

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 |
|---|---|---|---|---|---|---|
| 11 | Trip Blank | | | W | 9/13/91 | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/14/91 | 10:30 am |
| [illegible] | [illegible] | 9/14/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | | |
| | | | |

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

Task #27

12-Feb-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E

Status: Final

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Ra-226 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L702-001 | 2.2 | ±1.5 | 3.3 | ±1.7 | 1.3 | ±1.2 |
| 9109L702-002 | 12 | ±3 | 8.7 | ±1.7 | 2.0 | ±0.8 |
| 9109L702-003 | 2.9 | ±1.8 | 5.5 | ±1.8 | 1.7 | ±0.7 |
| 9109L702-004 | 6.9 | ±2.4 | 6.0 | ±1.9 | 5.0 | ±1.3 |
| 9109L702-005 | 1.5 | ±1.5 | 2.8 | ±1.7 | 1.9 | ±0.8 |
| 9109L702-006 | 0.9 | ±1.4 | 5.1 | ±1.8 | 0.8 | ±0.6 |
| 9109L702-007 | 6.8 | ±2.7 | 8.5 | ±2.1 | 3.2 | ±1.6 |
| 9109L702-008 | 69 | ±8 | 36 | ±3 | 24 | ±4 |
| 9109L702-009 | 6.8 | ±2.1 | 7.0 | ±1.9 | 1.2 | ±1.1 |
| 9109L702-010 | 0.9 | ±1.2 | 1.4 | ±1.5 | 1.7 | ±1.3 |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L702-001 | 0.0 | ±0.8 | 0.0 | ±0.7 | 0.4 | ±1.0 |
| 9109L702-002 | 0.2 | ±1.0 | 0.0 | ±0.7 | 0.0 | ±0.7 |
| 9109L702-003 | 0.0 | ±0.6 | 0.0 | ±0.6 | 0.0 | ±0.7 |
| 9109L702-004 | 0.6 | ±1.2 | 0.0 | ±0.6 | 1.0 | ±1.2 |
| 9109L702-005 | 0.0 | ±0.8 | 0.0 | ±0.6 | 0.0 | ±0.7 |
| 9109L702-006 | 0.5 | ±1.1 | 0.0 | ±0.6 | 0.0 | ±0.8 |
| 9109L702-007 | 0.3 | ±1.4 | 0.0 | ±0.8 | 0.0 | ±1.1 |
| 9109L702-008 | 2.4 | ±1.7 | 0.0 | ±0.6 | 2.1 | ±1.5 |
| 9109L702-009 | 0.7 | ±1.2 | 0.0 | ±0.7 | 0.4 | ±1.0 |
| 9109L702-010 | 0.0 | ±0.8 | 0.0 | ±0.6 | 0.0 | ±0.8 |

| Sample Id | Am-241 pCi/l | Error 2σ | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L702-001 | 0.0 | ±1.1 | 9400 | ±520 | 0 | ±15 |
| 9109L702-002 | 0.0 | ±0.8 | 14000 | ±600 | 0 | ±13 |

BARRINGER LABORATORIES INC.
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12-Feb-92

Diane Thomas
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208 Welsh Pool Road
Lionville, PA 19353

Page: 2
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Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E

Status: Final

**Sample Type: Water**

| Sample Id | Am-241 pCi/l | Error 2σ | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L702-003 | 0.0 | ±0.9 | 8400 | ±500 | 0 | ±13 |
| 9109L702-004 | 0.0 | ±0.7 | 8200 | ±490 | 0.0 | ±7.3 |
| 9109L702-005 | 0.1 | ±1.6 | 6400 | ±460 | 0.0 | ±8.7 |
| 9109L702-006 | 0.0 | ±0.8 | 7800 | ±490 | 0 | ±12 |
| 9109L702-007 | 0.0 | ±1.1 | 7800 | ±490 | 1.6 | ±8.4 |
| 9109L702-008 | 0.0 | ±0.8 | 66000 | ±1200 | 0.0 | ±9.4 |
| 9109L702-009 | 0.6 | ±1.0 | 18000 | ±670 | 0.0 | ±8.7 |
| 9109L702-010 | 0.0 | ±1.7 | 21000 | ±710 | 5.4 | ±8.1 |

| Sample Id | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L702-001 | 0.0 | ±0.6 | 0.8 | ±0.8 | 0.0 | ±5.4 |
| 9109L702-002 | 0.0 | ±0.7 | 0.4 | ±0.6 | 0.0 | ±4.1 |
| 9109L702-003 | 0.0 | ±0.5 | 0.0 | ±0.4 | 0.0 | ±5.3 |
| 9109L702-004 | 0.0 | ±0.6 | 0.0 | ±0.4 | 0.0 | ±4.6 |
| 9109L702-005 | 0.0 | ±0.4 | 0.0 | ±0.3 | 0.8 | ±6.5 |
| 9109L702-006 | 0.0 | ±1.9 | 0.7 | ±2.0 | 4.2 | ±5.2 |
| 9109L702-007 | 0.0 | ±0.5 | 0.6 | ±0.8 | 0.0 | ±4.4 |
| 9109L702-008 | 0.0 | ±0.8 | 8.5 | ±1.8 | 0.0 | ±1.9 |
| 9109L702-009 | 0.0 | ±0.4 | 2.2 | ±1.0 | 0.0 | ±4.5 |
| 9109L702-010 | 0.0 | ±0.6 | 1.1 | ±0.9 | 0.0 | ±3.6 |

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L702-001 | 0.0 | ±4.5 | 0.0 | ±1.8 | 4.0 | ±11 |
| 9109L702-002 | 2.3 | ±3.8 | 1.3 | ±1.9 | 2 | ±12 |
| 9109L702-003 | 0.8 | ±4.5 | 1.0 | ±1.7 | 17 | ±15 |
| 9109L702-004 | 8.7 | ±6.5 | 2.2 | ±2.0 | 0.0 | ±9.7 |

BARRINGER LABORATORIES INC.
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12-Feb-92

Diane Thomas
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208 Welsh Pool Road
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Page: 3
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E

Status: Final

**Sample Type: Water**

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L702-005 | 14 | ±10 | 0.2 | ±1.9 | 12 | ±12 |
| 9109L702-006 | 0.4 | ±5.7 | 0.0 | ±1.8 | 10 | ±12 |
| 9109L702-007 | 8.7 | ±4.1 | 0.3 | ±1.7 | 13 | ±27 |
| 9109L702-008 | 0.0 | ±1.9 | 0.0 | ±1.8 | 11 | ±8 |
| 9109L702-009 | 3.1 | ±4.7 | 0.6 | ±1.9 | 13 | ±17 |
| 9109L702-010 | 5.8 | ±5.1 | 0.8 | ±1.9 | 1 | ±15 |

BARRINGER LABORATORIES INC.
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12-Feb-92

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Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E

Status: Final

GAMMA SPECTROSCOPY

**Sample Type: Water**

| Sample Id | Cs-137 pCi/l |
|---|---|
| 9109L702-001 | <10 |
| 9109L702-002 | <10 |
| 9109L702-003 | <10 |
| 9109L702-004 | <10 |
| 9109L702-005 | <10 |
| 9109L702-006 | <10 |
| 9109L702-007 | <10 |
| 9109L702-008 | <10 |
| 9109L702-009 | <10 |
| 9109L702-010 | <10 |

BARRINGER LABORATORIES INC.
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12-Feb-92

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208 Welsh Pool Road
Lionville, PA 19353

Page: 5
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Set : 4

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E Status: Final

Abbreviations:

Parameters:

| | |
|---|---|
| Ra-226 | : Radium-226 |
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| Am-241 | : Americium-241 |
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Cs-137 | : Cesium-137 |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

Job approved by:

Signed: Ellen La Riviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Feb-92

Diane Thomas
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Page: 1
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Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Ra-226 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 2.4 | ±1.6 | 4.2 | ±1.8 | 2.0 | ±1.0 |
| Duplicate | 3.4 | ±1.9 | 6.8 | ±1.9 | 1.6 | ±0.9 |
| Duplicate % diff. | 17 | --- | 24 | --- | 11 | --- |
| Std (found value) | 225 | ±6 | 108 | ±2 | 112 | ±4 |
| Std (true value) | 206 | --- | 106 | --- | 101 | --- |
| Std % diff. | 9.2 | --- | 1.9 | --- | 11 | --- |
| Std % rec. | --- | --- | --- | --- | 111 | --- |
| Blank | 0.0 | ±0.2 | 0.4 | ±0.3 | 0.0 | ±0.1 |
| Spike % rec. | 96 | --- | 99 | --- | 105 | --- |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.7 | ±1.2 | 0.0 | ±0.6 | 1.0 | ±1.2 |
| Duplicate | 0.5 | ±1.1 | 0.0 | ±0.6 | 1.0 | ±1.2 |
| Duplicate % diff. | 17 | --- | 0.0 | --- | 0.0 | --- |
| Std (found value) | 201 | ±6 | 8.0 | ±1.1 | 187 | ±5 |
| Std (true value) | 192 | --- | 8.8 | --- | 192 | --- |
| Std % diff. | 4.5 | --- | 9.1 | --- | 2.6 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.1 | 0.0 | ±0.1 | 0.0 | ±0.1 |
| Spike % rec. | 115 | --- | 102 | --- | 110 | --- |

| Sample Id | Am-241 pCi/l | Error 2σ | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±1.6 | 21000 | ±710 | 0.0 | ±9.0 |
| Duplicate | 0.2 | ±1.6 | 21000 | ±710 | 0.0 | ±9.0 |
| Duplicate % diff. | 100 | --- | 0.1 | --- | 0.0 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Feb-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E
Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Am-241 pCi/l | Error 2σ | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std (found value) | 102 | ±4 | 55551 | ±1081 | 1065 | ±22 |
| Std (true value) | 103 | --- | 55800 | --- | 993 | --- |
| Std % diff. | 1.0 | --- | 0.2 | --- | 7.3 | --- |
| Std % rec. | 99 | --- | 99.5 | --- | 107 | --- |
| Blank | 0.1 | ±0.3 | 0.0 | ±280 | 0.0 | ±3.5 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±1.2 | 0.0 | ±1.0 | 0.0 | ±3.6 |
| Duplicate | 0.0 | ±1.3 | 0.0 | ±1.0 | 0.0 | ±4.6 |
| Duplicate % diff. | 0.0 | --- | 0.0 | --- | 0.0 | --- |
| Std (found value) | 101 | ±4 | 101 | ±4 | 21 | ±2 |
| Std (true value) | 104 | --- | 104 | --- | 21 | --- |
| Std % diff. | 2.9 | --- | 2.9 | --- | 0.0 | --- |
| Std % rec. | 97 | --- | 97 | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.0 | ±0.2 | 0.7 | ±1.2 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.8 | ±6.1 | 4.3 | ±7.8 | 7 | ±22 |
| Duplicate | 0.0 | ±5.3 | 4.2 | ±7.0 | 28 | ±38 |
| Duplicate % diff. | 100 | --- | 1.2 | --- | 60 | --- |
| Std (found value) | 20 | ±4 | 100 | ±3 | 940 | ±17 |
| Std (true value) | 21 | --- | 100 | --- | 993 | --- |
| Std % diff. | 4.8 | --- | 0 | --- | 5.3 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Feb-92

Diane Thomas
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208 Welsh Pool Road
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Page: 3
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Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std % rec. | --- | --- | 100 | --- | 95 | --- |
| Blank | 1.5 | ±1.7 | 0.3 | ±0.7 | 0.0 | ±1.9 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

BARRINGER LABORATORIES INC.
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12-Feb-92

Diane Thomas
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Page: 4
Copy: 1 of 2

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

Cs-137 Gamma Spec Error

| Sample Id | pCi/l | pCi/l | 2σ |
|---|---|---|---|
| Duplicate | <10 | --- | --- |
| Duplicate | <10 | --- | --- |
| Duplicate % diff. | 0.0 | --- | --- |
| Std (found value) | --- | 18 | ±1 |
| Std (true value) | --- | 19 | --- |
| Std % diff. | --- | 5.3 | --- |

Abbreviations:

Parameters:

| | |
|---|---|
| Ra-226 | : Radium-226 |
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| Am-241 | : Americium-241 |
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Cs-137 | : Cesium-137 |
| Gamma Spec | : Gamma Spectralanalysis |

BARRINGER LABORATORIES INC.
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12-Feb-92

Diane Thomas
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Copy: 1 of 2

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PO #: LSA #LL-0962-F4

Job: 912294E

Status: Final

QUALITY CONTROL REPORT

Units:

pCi/l : picoCuries per liter
2σ : Counting error at the 95% confidence level, 2σ

Quality codes:

< : Not Detected- below detection limit.

Job approved by:

Signed: .....
Approved
Quality Assurance Department

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

12-Feb-92

Diane Thomas
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208 Welsh Pool Road
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Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:07
PO #: LSA #LL-0962-F4

Job: 912294E

Status: Final

QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: ljb Via: Federal Express

Sample Container Type: pl L btl,gl jar
Sample Type: Water
Preservative When Received: None
Additional Lab Preparation: None

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 2 pCi/l | none | Pingilley | 12/ 6-12/17 |
| Gross Beta | 900.0 | 2 pCi/l | none | Pingilley | 12/ 6-12/17 |
| Ra-226 | SM-705 | 0.2 pCi/l | none | Seidel | 12/14-12/30 |
| U-234/235/238 | 908.0 | 0.4 pCi/l | none | Tonning | 1/15- 1/21 |
| Am-241 | 907.0 | 0.4 pCi/l | none | Preston | 1/12- 1/20 |
| Tritium | 906.0 | 460 pCi/l | none | Meyer | 12/20-12/26 |
| I-129 | 902.0 | 1 pCi/l | none | Preston | 12/20-12/30 |
| Pu-238/238/240 | 907.0 | 0.4 pCi/l | none | Preston | 12/18- 1/ 6 |
| Sr-89/90 | 905.0 | 1 pCi/l | none | Kidwell | 12/20- 1/ 7 |
| Tc-99 | HASL 300 | 1 pCi/l | none | Preston | 12/13-12/19 |
| C-14 | 520-84-006 | 3 pCi/l | none | Preston | 12/16- 1/ 8 |
| Gamma Spec | 901.1 | 25 pCi/l | none | Kidwell | 12/20-12/23 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

22

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client: [illegible]
Est. Final Proj. Sampling Date
Work Order # 01-30-28-07
Project Contact/Phone #
AD Project Manager: Thomas
QC: SH Del: SH TAT

Date Rec'd ____ Date Due ____
Account # ____

Refrigerator #

| #/Type Container | Liquid | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Solids | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | |
| | Solids | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | |

ANALYSES REQUESTED →

| ORGANIC | | | | | | INORG | |
|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Radiochem (3) | | Metal | CN |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S - Soil | | L7e 209 | | | W | 9/2/91 | | | | | | ✓ | ✓ | | | 9109L702-001 | | | | |
| SE - Sediment | | 189 | | | | | | | | | | | | | | | | | | 002 |
| SO - Solid | | 190 | | | | | | | | | | | | | | | | | | 003 |
| SL - Sludge | | 191 | | | | | | | | | | | | | | | | | | 004 |
| W - Water | | 192 | | | | | | | | | | | | | | | | | | 005 |
| O - Oil | | 196 | | | | | | | | | | | | | | | | | | 006 |
| A - Air | | 205 | | | | | | | | | | | | | | | | | | 007 |
| DS - Drum Solids | | 206 | | | | | | | | | | | | | | | | | | 008 |
| DL - Drum Liquids | | 207 | | | | | | | | | | | | | | | | | | 009 |
| L - EP/TCLP Leachate | | 208 | | | | | | | | | | | | | | | | | | 010 |
| Wi - Wipe | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Radiochem (3) = See Attached

DATE/REVISIONS:

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

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 11/21/91 | 6:35 |
| | [illegible] | 11/22/91 | 9:30 |

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

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-20-91
**RFW #:** 9109L755
**W.O. #:** 0630-28-27

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. Sample holding times as required by 40CFR136 were met for water samples with the exception of nitrate, pH and specific conductance, all received past hold.

2. Preparation blank results were below the required detection limit with the exception of acidity.

3. All laboratory control standards (blank spikes) were within the control limits of 80-120%.

4. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limit. All %RPD were within the 20% guidance limit.

6. Replicate results are summarized on the Inorganic Precision Report contained within this document. Results were within the 20% RPD guidance limit with the exception of nitrate.

7. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

Margaret M. Beaty 10/8/91
Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

pas.21\i9-755

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/17/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 266 | Acidity | 32.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 14.0 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 5.0 | | PH UNITS | 0.010 |
| | | Sulfate | 6.0 | | MG/L | 5.0 |
| | | Specific Conductance | 34.1 | | UMHOS/CM | 1.0 |
| -002 | SITE 267 | Acidity | 94.0 | | MG/L | 2.0 |
| | | Chloride | 5.2 | | MG/L | 5.0 |
| | | Hardness | 24.0 | | MG/L | 0.40 |
| | | Nitrate, as N | 0.18 | | MG/L | 0.10 |
| | | pH | 4.7 | | PH UNITS | 0.010 |
| | | Sulfate | 6.8 | | MG/L | 5.0 |
| | | Specific Conductance | 34.3 | | UMHOS/CM | 1.0 |
| -003 | SITE 268 | Acidity | 14.0 | | MG/L | 2.0 |
| | | Chloride | 6.5 | | MG/L | 5.0 |
| | | Hardness | 4.2 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.17 | | MG/L | 0.10 |
| | | pH | 4.9 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 23.7 | | UMHOS/CM | 1.0 |
| -004 | SITE 269 | Acidity | 16.0 | | MG/L | 2.0 |
| | | Chloride | 7.1 | | MG/L | 5.0 |
| | | Hardness | 23.2 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.13 | | MG/L | 0.10 |
| | | pH | 5.4 | | PH UNITS | 0.010 |
| | | Sulfate | 8.5 | | MG/L | 5.0 |
| | | Specific Conductance | 48.3 | | UMHOS/CM | 1.0 |
| -005 | SITE 271 | Acidity | 40.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 23.6 | | MG/L | 0.40 |
| | | Nitrate, as N | 0.10 | | MG/L | 0.10 |
| | | pH | 5.2 | | PH UNITS | 0.010 |
| | | Sulfate | 8.4 | | MG/L | 5.0 |
| | | Specific Conductance | 38.6 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/17/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -006 | SITE 258 | Acidity | 428 | | MG/L | 2.0 |
| | | Chloride | 5.4 | | MG/L | 5.0 |
| | | Hardness | 10.2 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.22 | | MG/L | 0.10 |
| | | pH | 5.0 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 33.6 | | UMHOS/CM | 1.0 |
| -007 | SITE 259 | Acidity | 30.0 | | MG/L | 2.0 |
| | | Chloride | 5.1 | | MG/L | 5.0 |
| | | Hardness | 4.8 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.11 | | MG/L | 0.10 |
| | | pH | 4.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 26.2 | | UMHOS/CM | 1.0 |
| -008 | SITE 262 | Acidity | 308 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 8.0 | | MG/L | 0.40 |
| | | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| | | pH | 4.4 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 26.4 | | UMHOS/CM | 1.0 |
| -009 | SITE 225 | Acidity | 76.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 8.0 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.16 | | MG/L | 0.10 |
| | | pH | 4.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 38.4 | | UMHOS/CM | 1.0 |
| -010 | SITE 230 | Acidity | 312 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 10.0 | | MG/L | 0.40 |
| | | Nitrate, as N | 0.60 | | MG/L | 0.10 |
| | | pH | 5.3 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 27.2 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/17/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -011 | SITE 254 | Acidity | 48.0 | | MG/L | 2.0 |
| | | Chloride | 5.3 | | MG/L | 5.0 |
| | | Hardness | 6.4 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.29 | | MG/L | 0.10 |
| | | pH | 4.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 24.6 | | UMHOS/CM | 1.0 |
| -012 | SITE 220 | Acidity | 62.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 7.0 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.20 | | MG/L | 0.10 |
| | | pH | 4.7 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 27.5 | | UMHOS/CM | 1.0 |
| -013 | SITE 221 | Acidity | 142 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 8.0 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.20 | | MG/L | 0.10 |
| | | pH | 4.6 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 30.1 | | UMHOS/CM | 1.0 |
| -014 | SITE 222 | Acidity | 28.0 | | MG/L | 2.0 |
| | | Chloride | 5.1 | | MG/L | 5.0 |
| | | Hardness | 5.8 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.15 | | MG/L | 0.10 |
| | | pH | 4.6 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 22.2 | | UMHOS/CM | 1.0 |
| -015 | SITE 263 | Acidity | 164 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 11.2 | | MG/L | 0.40 |
| | | Nitrate, as N | 0.18 | | MG/L | 0.10 |
| | | pH | 4.6 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 23.8 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L755
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK10 | 91LAL050-MB1 | Acidity | 7.5 | MG/L | 0.50 |
| BLANK20 | 91LAL050-MB2 | Acidity | 8.0 | MG/L | 0.50 |
| BLANK10 | 91LCL109-MB1 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK20 | 91LCL109-MB2 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK30 | 91LCL109-MB3 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK40 | 91LCL109-MB4 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK10 | 91LHD020-MB1 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LHD020-MB2 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LNO222-MB1 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| LANK20 | 91LNO222-MB2 | Nitrate, as N | 0.10 u | MG/L | 0.10 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L755
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK30 | 91LNO222-MB3 | Nitrate, as N | 0.10 | u | MG/L | 0.10 |
| BLANK10 | 91LS4085-MB1 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK20 | 91LS4085-MB2 | Sulfate | 5.0 | u | MG/L | 5.0 |
| BLANK10 | 91LSP059-MB1 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L755
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -010 | SITE 230 | Nitrate, as N | 1.6 | 0.60 | 1.0 | 96.9 |
| | | Nitrate, as N MSD | 1.6 | 0.60 | 1.0 | 101 |
| BLANK20 | 91LAL050-MB2 | Acidity | 176 | 8.0 | 150 | 112 |
| BLANK10 | 91LCL109-MB1 | Chloride | 23.9 | 5.0 u | 25.0 | 95.7 |
| | | Chloride MSD | 24.6 | 5.0 u | 25.0 | 98.2 |
| BLANK20 | 91LCL109-MB2 | Chloride | 49.3 | 5.0 u | 50.0 | 98.7 |
| BLANK30 | 91LCL109-MB3 | Chloride | 24.2 | 5.0 u | 25.0 | 96.9 |
| BLANK40 | 91LCL109-MB4 | Chloride | 24.2 | 5.0 u | 25.0 | 97.0 |
| BLANK10 | 91LHD020-MB1 | Hardness | 100 | 0.10u | 100 | 100 |
| | | Hardness MSD | 100 | 0.10u | 100 | 100 |
| BLANK20 | 91LHD020-MB2 | Hardness | 328 | 0.10u | 330 | 99.3 |
| BLANK10 | 91LNO222-MB1 | Nitrate, as N | 0.40 | 0.10u | 0.40 | 99.5 |
| BLANK20 | 91LNO222-MB2 | Nitrate, as N | 0.41 | 0.10u | 0.40 | 102 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L755
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| BLANK30 | 91LNO222-MB3 | Nitrate, as N | 0.40 | 0.10u | 0.40 | 100 |
| BLANK10 | 91LS4085-MB1 | Sulfate | 19.5 | 5.0 u | 20.0 | 97.3 |
| | | Sulfate | 19.5 | 5.0 u | 20.0 | 97.3 |
| BLANK20 | 91LS4085-MB2 | Sulfate | 30.0 | 5.0 u | 30.0 | 100 |
| BLANK10 | 91LSP059-MB1 | Specific Conductance | 142 | 1.0 u | 147 | 96.6 |
| | | Specific Conductance M | 718 | 1.0 u | 718 | 100 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L755
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| -010 | SITE 230 | Nitrate, as N | 96.9 | 101 | 4.4 |
| BLANK10 | 91LCL109-MB1 | Chloride | 95.7 | 98.2 | 2.8 |
| BLANK10 | 91LHD020-MB1 | Hardness | 100 | 100 | 0.20 |
| BLANK10 | 91LS4085-MB1 | Sulfate | 97.3 | 97.3 | 0.00 |
| BLANK10 | 91LSP059-MB1 | Specific Conductance | 96.6 | 100 | 3.7 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 10/17/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L755
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | SITE 266 | Acidity | 32.0 | 30.0 | 6.5 |
| | | Hardness | 14.0 | 14.8 | 5.6 |
| | | pH | 5.0 | 4.9 | 0.61 |
| | | Sulfate | 6.0 | 6.1 | 1.7 |
| | | Specific Conductance | 34.1 | 34.1 | 0.00 |
| -008REP | SITE 262 | Hardness | 8.0 | 8.0 | 0.00 |
| -010REP | SITE 230 | Nitrate, as N | 0.60 | 0.44 | 31.1 |
| -011REP | SITE 254 | Chloride | 5.3 | 5.4 | 1.7 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 266 | | | | | | |
| ACIDITY | 001 | W | 91LAL050 | 09/18/91 | 09/23/91 | 09/23/91 |
| ACIDITY | 001 REP | W | 91LAL050 | 09/18/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 001 | W | 91LCL109 | 09/18/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 001 | W | 91LHD020 | 09/18/91 | 10/14/91 | 10/14/91 |
| HARDNESS | 001 REP | W | 91LHD020 | 09/18/91 | 10/14/91 | 10/14/91 |
| NITRATE | 001 | W | 91LNO222 | 09/18/91 | 09/20/91 | 09/20/91 |
| PH | 001 | W | 91LPH154 | 09/18/91 | 09/20/91 | 09/20/91 |
| PH | 001 REP | W | 91LPH154 | 09/18/91 | 09/20/91 | 09/20/91 |
| SULFATE | 001 | W | 91LS4085 | 09/18/91 | 10/01/91 | 10/01/91 |
| SULFATE | 001 REP | W | 91LS4085 | 09/18/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 001 | W | 91LSP059 | 09/18/91 | 09/21/91 | 09/21/91 |
| SPECIFIC CONDUCTANCE | 001 REP | W | 91LSP059 | 09/18/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 001 | W | | 09/18/91 | | |
| SITE 267 | | | | | | |
| ACIDITY | 002 | W | 91LAL050 | 09/18/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 002 | W | 91LCL109 | 09/18/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 002 | W | 91LHD020 | 09/18/91 | 10/14/91 | 10/14/91 |
| NITRATE | 002 | W | 91LNO222 | 09/18/91 | 09/20/91 | 09/20/91 |
| PH | 002 | W | 91LPH154 | 09/18/91 | 09/20/91 | 09/20/91 |
| SULFATE | 002 | W | 91LS4085 | 09/18/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 002 | W | 91LSP059 | 09/18/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 002 | W | | 09/18/91 | | |
| SITE 268 | | | | | | |
| ACIDITY | 003 | W | 91LAL050 | 09/18/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 003 | W | 91LCL109 | 09/18/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 003 | W | 91LHD020 | 09/18/91 | 10/14/91 | 10/14/91 |
| NITRATE | 003 | W | 91LNO222 | 09/18/91 | 09/20/91 | 09/20/91 |
| PH | 003 | W | 91LPH154 | 09/18/91 | 09/20/91 | 09/20/91 |
| SULFATE | 003 | W | 91LS4085 | 09/18/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 003 | W | 91LSP059 | 09/18/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 003 | W | | 09/18/91 | | |
| SITE 269 | | | | | | |
| ACIDITY | 004 | W | 91LAL050 | 09/18/91 | 09/23/91 | 09/23/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHLORIDE | 004 | W | 91LCL109 | 09/18/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 004 | W | 91LHD020 | 09/18/91 | 10/14/91 | 10/14/91 |
| NITRATE | 004 | W | 91LNO222 | 09/18/91 | 09/20/91 | 09/20/91 |
| PH | 004 | W | 91LPH154 | 09/18/91 | 09/20/91 | 09/20/91 |
| SULFATE | 004 | W | 91LS4085 | 09/18/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 004 | W | 91LSP059 | 09/18/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 004 | W | | 09/18/91 | | |
| SITE 271 | | | | | | |
| ACIDITY | 005 | W | 91LAL050 | 09/18/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 005 | W | 91LCL109 | 09/18/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 005 | W | 91LHD020 | 09/18/91 | 10/14/91 | 10/14/91 |
| NITRATE | 005 | W | 91LNO222 | 09/18/91 | 09/20/91 | 09/20/91 |
| PH | 005 | W | 91LPH154 | 09/18/91 | 09/20/91 | 09/20/91 |
| SULFATE | 005 | W | 91LS4085 | 09/18/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 005 | W | 91LSP059 | 09/18/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 005 | W | | 09/18/91 | | |
| SITE 258 | | | | | | |
| ACIDITY | 006 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 006 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 006 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 006 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 006 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 006 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 006 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 006 | W | | 09/17/91 | | |
| SITE 259 | | | | | | |
| ACIDITY | 007 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 007 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 007 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 007 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 007 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 007 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 007 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 007 | W | | 09/17/91 | | |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 262 | | | | | | |
| ACIDITY | 008 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 008 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 008 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| HARDNESS | 008 REP | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 008 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 008 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 008 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 008 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 008 | W | | 09/17/91 | | |
| SITE 225 | | | | | | |
| ACIDITY | 009 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 009 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 009 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 009 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 009 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 009 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 009 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 009 | W | | 09/17/91 | | |
| SITE 230 | | | | | | |
| ACIDITY | 010 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 010 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 010 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 010 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| NITRATE | 010 REP | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| NITRATE | 010 MS | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| NITRATE | 010 MSD | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 010 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 010 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 010 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 010 | W | | 09/17/91 | | |
| SITE 254 | | | | | | |
| ACIDITY | 011 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHLORIDE | 011 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| CHLORIDE | 011 REP | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 011 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 011 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 011 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 011 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 011 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 011 | W | | 09/17/91 | | |
| SITE 220 | | | | | | |
| ACIDITY | 012 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 012 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 012 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 012 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 012 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 012 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 012 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 012 | W | | 09/17/91 | | |
| SITE 221 | | | | | | |
| ACIDITY | 013 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 013 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 013 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 013 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 013 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 013 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 013 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 013 | W | | 09/17/91 | | |
| SITE 222 | | | | | | |
| ACIDITY | 014 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 014 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 014 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 014 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 014 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 014 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 014 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SUB-OUT TEST FOR SUB | 014 | W | | 09/17/91 | | |
| SITE 263 | | | | | | |
| ACIDITY | 015 | W | 91LAL050 | 09/17/91 | 09/23/91 | 09/23/91 |
| CHLORIDE | 015 | W | 91LCL109 | 09/17/91 | 09/21/91 | 09/21/91 |
| HARDNESS | 015 | W | 91LHD020 | 09/17/91 | 10/14/91 | 10/14/91 |
| NITRATE | 015 | W | 91LNO222 | 09/17/91 | 09/20/91 | 09/20/91 |
| PH | 015 | W | 91LPH154 | 09/17/91 | 09/20/91 | 09/20/91 |
| SULFATE | 015 | W | 91LS4085 | 09/17/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 015 | W | 91LSP059 | 09/17/91 | 09/21/91 | 09/21/91 |
| SUB-OUT TEST FOR SUB | 015 | W | | 09/17/91 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | W | 91LAL050 | N/A | 09/23/91 | 09/23/91 |
| ACIDITY | MB2 | W | 91LAL050 | N/A | 09/23/91 | 09/23/91 |
| ACIDITY | MB2 BS | W | 91LAL050 | N/A | 09/23/91 | 09/23/91 |
| CHLORIDE | MB1 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB1 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB1 BSD | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB2 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB2 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB3 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB3 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB4 | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| CHLORIDE | MB4 BS | W | 91LCL109 | N/A | 09/21/91 | 09/21/91 |
| HARDNESS | MB1 | W | 91LHD020 | N/A | 10/14/91 | 10/14/91 |
| HARDNESS | MB1 BS | W | 91LHD020 | N/A | 10/14/91 | 10/14/91 |
| HARDNESS | MB1 BSD | W | 91LHD020 | N/A | 10/14/91 | 10/14/91 |
| HARDNESS | MB2 | W | 91LHD020 | N/A | 10/14/91 | 10/14/91 |
| HARDNESS | MB2 BS | W | 91LHD020 | N/A | 10/14/91 | 10/14/91 |
| NITRATE | MB1 | W | 91LNO222 | N/A | 09/20/91 | 09/20/91 |
| NITRATE | MB1 BS | W | 91LNO222 | N/A | 09/20/91 | 09/20/91 |
| NITRATE | MB2 | W | 91LNO222 | N/A | 09/20/91 | 09/20/91 |
| NITRATE | MB2 BS | W | 91LNO222 | N/A | 09/20/91 | 09/20/91 |
| NITRATE | MB3 | W | 91LNO222 | N/A | 09/20/91 | 09/20/91 |
| NITRATE | MB3 BS | W | 91LNO222 | N/A | 09/20/91 | 09/20/91 |
| SULFATE | MB1 | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |
| SULFATE | MB1 BS | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SULFATE | MB1 BSD | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |
| SULFATE | MB2 | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |
| SULFATE | MB2 BS | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | MB1 | W | 91LSP059 | N/A | 09/21/91 | 09/21/91 |
| SPECIFIC CONDUCTANCE | MB1 BS | W | 91LSP059 | N/A | 09/21/91 | 09/21/91 |
| SPECIFIC CONDUCTANCE | MB1 BSD | W | 91LSP059 | N/A | 09/21/91 | 09/21/91 |

WESTON Analytics Use Only
9109L755

# Custody Transfer Record/Lab Work Request

WESTON



Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: DThomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 9/20/91 Date Due: 10/20/91
Account #: WSRC273TD

| Refrigerator # | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | 1 | | | | | 500 | | | 4 | | 4 | | | | | |
| | Solid | 1/9 | | | | | 1/9 | | | 1/P | | 1/P | 1P | | | | |
| Volume | Liquid | 1D | | | | | 1/9 gal | | | 1TR | | 500 | 1TR | | | | |
| | Solid | | | | | | 1TR | | | | | | | | | | |
| Preservatives | | NONE | | | | | 1TR | | | NaOH | | NaOH | NONE | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | | INORG | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Rad Chem | | | | Metal | CN | Hardness | CL | Alk/Acid | PH | Sol | Spec |
| WESTON Analytics Use Only | | 0624H | | | | TCLP | | | | See Below | | DIRECT | TCL 1003 | OTHER SOLID | APH | TCLP | TCRCD |

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 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Site 266 | | | W | 9/18/9 | | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ |
| 2 | 267 | | | | | | | | | | | | | | | | | | |
| 3 | 268 | | | | | | | | | | | | | | | | | | |
| 4 | 269 | | | | | | | | | | | | | | | | | | |
| 5 | 271 | | | | | | | | | | | | | | | | | | |
| 6 | ~~220~~ 258 | | | | 9/17/91 | | | | | | | | | | | | | | |
| 7 | ~~221~~ 259 | | | | | | | | | | | | | | | | | | |
| 8 | ~~222~~ 262 | | | | | | | | | | | | | | | | | | |
| 9 | ~~PT~~ 225 | | | | | | | | | | | | | | | | | | |
| 10 | 230 | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn
Radiochem - See 9109L612

original rewritten

DATE/REVISIONS:
10/1/91 1. ALK cancelled on 001-015
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/20/91 | 9:30 am |
| | [illegible] | 9/20/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 9/20/91 | |
| | | | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

WESTON Analytics Use Only
91041-755

# Custody Transfer Record/Lab Work Request

WESTON



Client: WSPC - Task 27
Est. Final Proj. Sampling Date:
Work Order #:
Project Contact/Phone #:
AD Project Manager:
QC: Date: TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #:
#/Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives:

See page (1)

ANALYSES REQUESTED →

| ORGANIC | | | | | | | INORG | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Radiochem | | | Metal | CN | TPHCS | Cr NB | NH3 ACID | PH SO4 | Spd |

WESTON Analytics 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 | VOA | Radiochem | Metal | TPHCS | Cr NB | NH3 ACID | PH SO4 | Spd |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | See page (1) | | See below | See page (1) | | | | |
| 011 | Site 254 | | | W | 9/17/91 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 12 | ~~258~~ 220 | | | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 13 | ~~259~~ 221 | | | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 14 | ~~260~~ 222 | | | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 15 | 263 | | | ↓ | ↓ | | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 110 | Trip Blank | | | ↓ | ↓ | | ↓ | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

original submitted

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/20/91 | 930 am |
| | PG | 9/20/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | PG | 9/20/91 | |

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 L378 Ref# Cooler# 381 596a

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-20-91
**RFW #:** 9109L755
**W.O. #:** 0630-28-27-0000

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit. The mercury TCLP leachate method blank reported on the Method Blank Data Summary Page is not relative to this report and had no effect on sample data.

3. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

Margaret M. Beaty 10/18/91
Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

pas\m9-755

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 266 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 11.8 | | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 3230 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 200 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 121 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 239 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -002 | SITE 267 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 4570 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 139 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 53.4 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 109 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -003 | SITE 268 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 42.4 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 27.2 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -004 | SITE 269 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 141 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 57.0 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 244 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -005 | SITE 271 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 219 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 280 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 59.6 | | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 137 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -006 | SITE 258 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 445 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 5040 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 40.4 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 46.6 | | UG/L | 40.0 |
| | | Lead, Total | 12.6 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 224 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -007 | SITE 259 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 201 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 2030 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 18.2 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 100 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -008 | SITE 262 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 262 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 2270 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 43.5 | | UG/L | 40.0 |
| | | Lead, Total | 7.0 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 234 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L755

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -009 | SITE 225 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 1000 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 9870 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 18.1 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 48.9 | | UG/L | 40.0 |
| | | Lead, Total | 20.8 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 283 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -010 | SITE 230 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 1130 | | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 8410 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 24.3 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 52.5 | | UG/L | 40.0 |
| | | Lead, Total | 6.1 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 210 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L755
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -011 | SITE 254 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 884 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 61.3 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 4.8 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 119 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -012 | SITE 220 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 123 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 61.6 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 65.3 | | UG/L | 40.0 |
| | | Lead, Total | 5.0 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 265 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -013 | SITE 221 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 1380 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 22.4 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 4.3 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 57.5 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -014 | SITE 222 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 2040 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 42.5 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 110 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/16/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L755

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -015 | SITE 263 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 1600 | | UG/L | 100 |
| | | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| | | Manganese, Total | 41.6 | | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 75.7 | | UG/L | 40.0 |
| | | Lead, Total | 12.2 | | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| | | Zinc, Total | 514 | | UG/L | 20.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/16/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L755
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L1856-MB1 | Silver, Total | 10.0 | u | UG/L | 10.0 |
| | | Aluminum, Total | 200 | u | UG/L | 200 |
| | | Barium, Total | 200 | u | UG/L | 200 |
| | | Cadmium, Total | 5.0 | u | UG/L | 5.0 |
| | | Chromium, Total | 10.0 | u | UG/L | 10.0 |
| | | Copper, Total | 25.0 | u | UG/L | 25.0 |
| | | Iron, Total | 100 | u | UG/L | 100 |
| | | Manganese, Total | 15.0 | u | UG/L | 15.0 |
| | | Sodium, Total | 5000 | u | UG/L | 5000 |
| | | Nickel, Total | 40.0 | u | UG/L | 40.0 |
| | | Zinc, Total | 20.0 | u | UG/L | 20.0 |
| BLANK1 | 91L1855-MB1 | Arsenic, Total | 10.0 | u | UG/L | 10.0 |
| | | Lead, Total | 3.0 | u | UG/L | 3.0 |
| | | Selenium, Total | 5.0 | u | UG/L | 5.0 |
| BLANK1 | 91C275-MB1 | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| BLANK2 | 91C275-MB2 | Mercury, Total | 0.20 | u | UG/L | 0.20 |
| BLANK3 | 91C275-MB3 | Mercury, TCLP Leachate | 0.32 | | UG/L | 0.20 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/16/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L755
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L1856-LC2 | Aluminum, LCS | 102 | 102 | 0.098 |
| | | Barium, LCS | 104 | 107 | 2.5 |
| | | Cadmium, LCS | 102 | 103 | 0.78 |
| | | Chromium, LCS | 99.0 | 101 | 1.9 |
| | | Copper, LCS | 106 | 107 | 1.3 |
| | | Iron, LCS | 104 | 107 | 2.5 |
| | | Manganese, LCS | 106 | 106 | 0.19 |
| | | Sodium, LCS | 102 | 103 | 0.68 |
| | | Nickel, LCS | 99.4 | 103 | 3.3 |
| | | Zinc, LCS | 105 | 106 | 1.2 |
| LCS2 | 91L1855-LC2 | Arsenic, LCS | 87.7 | 90.3 | 2.9 |
| | | Lead, LCS | 94.0 | 96.3 | 2.4 |
| | | Selenium, LCS | 95.7 | 99.0 | 3.4 |
| LCS2 | 91C275-LC2 | Mercury, LCS | 92.9 | 93.0 | 0.11 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/16/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L1856-LC1 | Aluminum, LCS | 5080 | 5000 | UG/L | 102 |
| | | Barium, LCS | 5210 | 5000 | UG/L | 104 |
| | | Cadmium, LCS | 255 | 250 | UG/L | 102 |
| | | Chromium, LCS | 495 | 500 | UG/L | 99.0 |
| | | Copper, LCS | 1320 | 1250 | UG/L | 106 |
| | | Iron, LCS | 5200 | 5000 | UG/L | 104 |
| | | Manganese, LCS | 792 | 750 | UG/L | 106 |
| | | Sodium, LCS | 25500 | 25000 | UG/L | 102 |
| | | Nickel, LCS | 1990 | 2000 | UG/L | 99.4 |
| | | Zinc, LCS | 1050 | 1000 | UG/L | 105 |
| LCS2 | 91L1856-LC2 | Aluminum, LCS | 5080 | 5000 | UG/L | 102 |
| | | Barium, LCS | 5340 | 5000 | UG/L | 107 |
| | | Cadmium, LCS | 257 | 250 | UG/L | 103 |
| | | Chromium, LCS | 504 | 500 | UG/L | 101 |
| | | Copper, LCS | 1340 | 1250 | UG/L | 107 |
| | | Iron, LCS | 5330 | 5000 | UG/L | 107 |
| | | Manganese, LCS | 794 | 750 | UG/L | 106 |
| | | Sodium, LCS | 25700 | 25000 | UG/L | 103 |
| | | Nickel, LCS | 2050 | 2000 | UG/L | 103 |
| | | Zinc, LCS | 1060 | 1000 | UG/L | 106 |
| LCS1 | 91L1855-LC1 | Arsenic, LCS | 26.3 | 30.0 | UG/L | 87.7 |
| | | Lead, LCS | 28.2 | 30.0 | UG/L | 94.0 |
| | | Selenium, LCS | 28.7 | 30.0 | UG/L | 95.7 |
| LCS2 | 91L1855-LC2 | Arsenic, LCS | 27.1 | 30.0 | UG/L | 90.3 |
| | | Lead, LCS | 28.9 | 30.0 | UG/L | 96.3 |
| | | Selenium, LCS | 29.7 | 30.0 | UG/L | 99.0 |
| LCS1 | 91C275-LC1 | Mercury, LCS | 4.6 | 5.0 | UG/L | 92.9 |
| LCS2 | 91C275-LC2 | Mercury, LCS | 4.7 | 5.0 | UG/L | 93.0 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 266 | | | | | | |
| SILVER, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 001 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 001 | W | 91C275 | 09/18/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| SODIUM, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 001 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 001 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 001 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| SITE 267 | | | | | | |
| SILVER, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 002 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 002 | W | 91C275 | 09/18/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 002 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 002 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 002 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| SITE 268 | | | | | | |
| SILVER, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

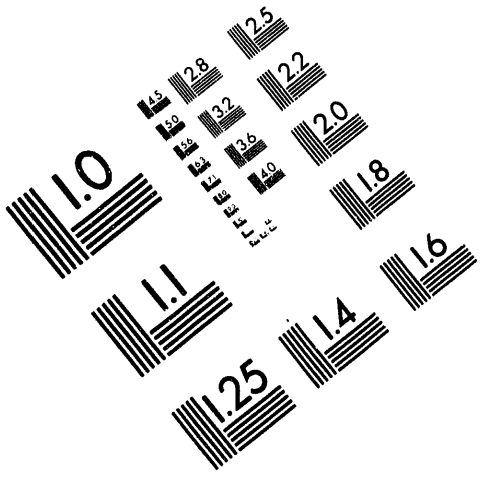
DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 003 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 003 | W | 91C275 | 09/18/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 003 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 003 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 003 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| SITE 269 | | | | | | |
| SILVER, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 004 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 004 | W | 91C275 | 09/18/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 004 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 004 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 004 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| SITE 271 | | | | | | |
| SILVER, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 005 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

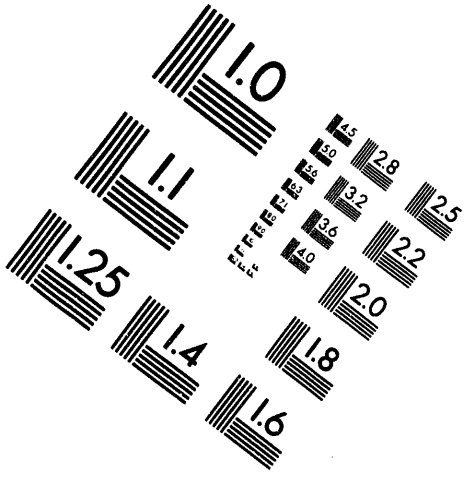
| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHROMIUM, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 005 | W | 91C275 | 09/18/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 005 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 005 | W | 91L1855 | 09/18/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 005 | W | 91L1856 | 09/18/91 | 09/26/91 | 10/15/91 |
| SITE 258 | | | | | | |
| SILVER, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 006 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 006 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 006 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 006 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 006 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SITE 259 | | | | | | |
| SILVER, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 007 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 007 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |



**Association for Information and Image Management**

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

301/587-8202



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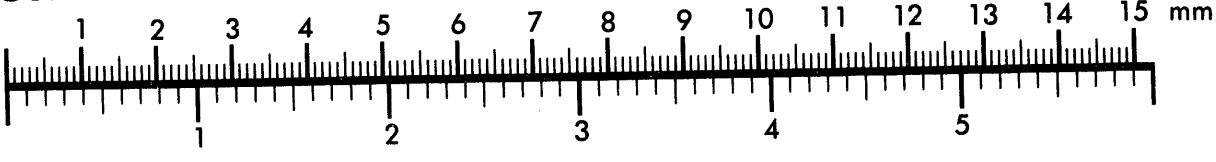


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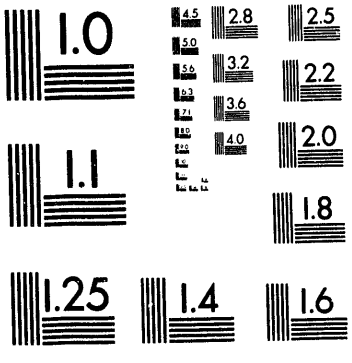

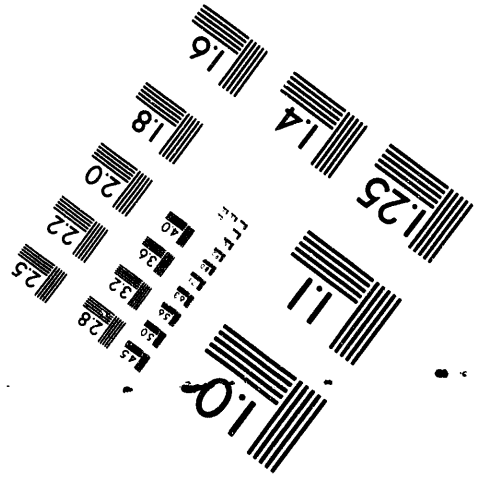

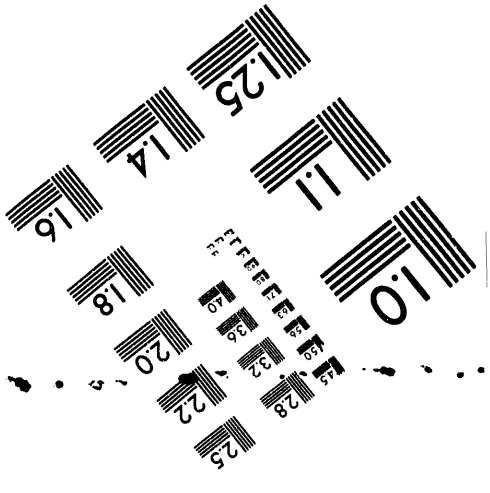

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5 of 7

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| MANGANESE, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 007 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 007 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 007 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SITE 262 | | | | | | |
| SILVER, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 008 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 008 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 008 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 008 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 008 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SITE 225 | | | | | | |
| SILVER, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 009 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 009 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 009 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SELENIUM, TOTAL | 009 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 009 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SITE 230 | | | | | | |
| SILVER, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 010 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 010 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 010 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 010 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 010 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SITE 254 | | | | | | |
| SILVER, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 011 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 011 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 011 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 011 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 011 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SITE 220 | | | | | | |
| SILVER, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 012 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 012 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 012 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 012 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 012 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SITE 221 | | | | | | |
| SILVER, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 013 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 013 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 013 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 013 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 013 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SITE 222 | | | | | | |
| SILVER, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 014 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| CHROMIUM, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 014 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 014 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 014 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 014 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SITE 263 | | | | | | |
| SILVER, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| ARSENIC, TOTAL | 015 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| BARIUM, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| IRON, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| MERCURY, TOTAL | 015 | W | 91C275 | 09/17/91 | 09/26/91 | 09/27/91 |
| MANGANESE, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |
| LEAD, TOTAL | 015 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | 015 | W | 91L1855 | 09/17/91 | 09/26/91 | 09/26/91 |
| ZINC, TOTAL | 015 | W | 91L1856 | 09/17/91 | 09/26/91 | 10/15/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/16/91 |
| ALUMINUM LABORTORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| BARIUM LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| CADMIUM LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| CHROMIUM LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| COPPER LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| IRON LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| MANGANESE LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| SODIUM LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/16/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| NICKEL LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| ZINC LABORATORY | LC1 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| SILVER LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/16/91 |
| ALUMINUM LABORTORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| BARIUM LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| CADMIUM LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| CHROMIUM LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| COPPER LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| IRON LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| MANGANESE LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| SODIUM LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/16/91 |
| NICKEL LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| ZINC LABORATORY | LC2 BS | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| SILVER, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/16/91 |
| ALUMINUM, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| BARIUM, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| CADMIUM, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| CHROMIUM, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| COPPER, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| IRON, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| MANGANESE, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| SODIUM, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/16/91 |
| NICKEL, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| ZINC, TOTAL | MB1 | W | 91L1856 | N/A | 09/26/91 | 10/15/91 |
| ARSENIC LABORATORY | LC1 BS | W | 91L1855 | N/A | 09/26/91 | 09/26/91 |
| LEAD LABORATORY | LC1 BS | W | 91L1855 | N/A | 09/26/91 | 09/26/91 |
| SELENIUM LABORATORY | LC1 BS | W | 91L1855 | N/A | 09/26/91 | 09/26/91 |
| ARSENIC LABORATORY | LC2 BS | W | 91L1855 | N/A | 09/26/91 | 09/26/91 |
| LEAD LABORATORY | LC2 BS | W | 91L1855 | N/A | 09/26/91 | 09/26/91 |
| SELENIUM LABORATORY | LC2 BS | W | 91L1855 | N/A | 09/26/91 | 09/26/91 |
| ARSENIC, TOTAL | MB1 | W | 91L1855 | N/A | 09/26/91 | 09/26/91 |
| LEAD, TOTAL | MB1 | W | 91L1855 | N/A | 09/26/91 | 09/26/91 |
| SELENIUM, TOTAL | MB1 | W | 91L1855 | N/A | 09/26/91 | 09/26/91 |
| MERCURY LABORATORY | LC1 BS | W | 91C275 | N/A | 09/26/91 | 09/27/91 |
| MERCURY LABORATORY | LC2 BS | W | 91C275 | N/A | 09/26/91 | 09/27/91 |
| MERCURY, TOTAL | MB1 | W | 91C275 | N/A | 09/26/91 | 09/27/91 |
| MERCURY, TOTAL | MB2 | W | 91C275 | N/A | 09/26/91 | 09/27/91 |
| MERCURY, TCLP LEACHA | MB3 | W | 91C275 | N/A | 09/26/91 | 09/27/91 |

WESTON Analytics Use Only
9109L755

# Custody Transfer Record/Lab Work Request

WESTON



Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: D Thomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 9/20/91 Date Due: 10/20/91
Account #: WSRC273TD

| Refrigerator # | | 1 | | | | SUB | | | 4 | | 4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | 1/G | | | | 1/G | | | 1P | | 1P | 1P | | | |
| | Solid | | | | | 1/G | | | | | | | | | |
| Volume | Liquid | 40 | | | | 500 | | | 1L | | 500 | 1L | | | |
| | Solid | | | | | 1L | | | | | | | | | |
| Preservatives | | none | | | | 1L | | | HNO3 | | H2SO4 | none | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | INORG | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Lib Chem | | | Metal | CN | Hardness | CL IC | Alk Acid | PH SOX | Spec |

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

WESTON Analytics Use Only

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | 0624 | | | | TCLP | | | See Below | | IC | IC | IC | IC | IC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Site 266 | | | W | 9/18/9 | | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2 | 267 | | | | | | | | | | | | | | | | | | | |
| 3 | 268 | | | | | | | | | | | | | | | | | | | |
| 4 | 269 | | | | | | | | | | | | | | | | | | | |
| 5 | 271 | | | | | | | | | | | | | | | | | | | |
| 6 | ~~220~~ 258 | | | | 9/17/91 | | | | | | | | | | | | | | | |
| 7 | ~~221~~ 259 | | | | | | | | | | | | | | | | | | | |
| 8 | ~~222~~ 262 | | | | | | | | | | | | | | | | | | | |
| 9 | 225 | | | | | | | | | | | | | | | | | | | |
| 10 | 230 | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals - Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn
Radiochem - See 9109L612

original rewritten

DATE/REVISIONS:
10/1/91 1. ALK cancelled on 001-015
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/20/91 | 9:30 am |
| | [illegible] | 9/20/91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | 9/20/91 | |
| | [illegible] | | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

WESTON Analytics Use Only
91042755

# Custody Transfer Record/Lab Work Request

WESTON



Client: WSRC - Task 27
Est. Final Proj. Sampling Date:
Work Order #:
Project Contact/Phone #:
AD Project Manager:
QC: Del TAT
Date Rec'd: Date Due:
Account #:

See page (1)

Refrigerator #:
#/Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives:

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; Radiochem; INORG: Metal, CN; HMPB; Cl, NO3; Alk, Acid; PH, SO4; Sp'd

WESTON Analytics Use Only: 0w2+M; TWP; see below; See page (1)

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 |
|---|---|---|---|---|---|---|
| 011 | Site 254 | | | W | 9/17/91 | |
| 12 | ~~258~~ 220 | | | | | |
| 13 | ~~259~~ 221 | | | | | |
| 14 | ~~260~~ 222 | | | | | |
| 15 | 263 | | | | | |
| 16 | Trip Blank | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

original permitted

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/20/91 | 930 am |
| | PG 9/20/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | PG 9/20/91 | | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

WESTON Analytics 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

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 L378 Ref# Cooler# 381 596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC - TASK 27 **SAMPLES RECEIVED:** 09-20-91
**RFW #:** 9109L755, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of sixteen (16) water samples collected on 09-17,18-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 09-26,27,28-91.

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

1. Non-target compounds were detected in sample Site 263.

2. Two (2) of sixty (60) surrogate recoveries were outside EPA QC limits. Sample Site 230 was re-analyzed on 09-27-91 and reported.

3. Matrix spike recoveries are associated with RFW lot 9109L687.

4. The laboratory blanks contained the common contaminants methylene chloride and acetone at levels less than 3x the CRQL.

10.21.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

WESTON SM

# GLOSSARY OF VOA DATA

## DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

X = Additional qualifiers used as required are explained in the case narrative.

NQ = Result qualitatively confirmed but not able to quantify.

## ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not applicable.

DF = Dilution factor.

NR = Not required.

Roy F. Weston, I[illegible] - Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9109L755 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Report Date: 10/16/91 12:57 Page: 1a

| | Cust ID: | SITE 266 | | SITE 267 | | SITE 268 | | SITE 269 | | SITE 271 | | SITE 258 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 002 | | 003 | | 004 | | 005 | | 006 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 110 | % | 103 | % | 104 | % | 105 | % | 110 | % | 104 | % |
| | Bromofluorobenzene | 113 | % | 101 | % | 103 | % | 109 | % | 112 | % | 106 | % |
| | 1,2-Dichloroethane-d4 | 106 | % | 112 | % | 97 | % | 107 | % | 112 | % | 103 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 35 | B | 29 | B | 4 | JB | 13 | B | 37 | B | 19 | B |
| Acetone | | 16 | B | 17 | B | 10 | U | 10 | U | 24 | | 10 | |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9109L755 Client: WSRC-TASK Work Order: 0630-28-27-0000 Page: 1b

| Cust ID: | SITE 266 | SITE 267 | SITE 268 | SITE 269 | SITE 271 | SITE 258 |
|---|---|---|---|---|---|---|
| RFW#: | 001 | 002 | 003 | 004 | 005 | 006 |
| Toluene | 5 U | 5 U | 5 U | 5 U | 1 J | 2 J |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, I[illegible] - Lionville Laboratory
Volatiles by GC/MS, HSL List

RFW Batch Number: 9109L755 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Report Date: 10/16/91 12:57 Page: 2a

| | Cust ID: | SITE 259 | | SITE 262 | | SITE 225 | | SITE 230 | | SITE 230 | | SITE 254 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 007 | | 008 | | 009 | | 010 | | 010 | | 011 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L REPREP | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 105 | % | 106 | % | 104 | % | 109 | % | 110 | % | 104 | % |
| | Bromofluorobenzene | 111 | % | 111 | % | 112 | % | 113 | % | 117 * | % | 109 | % |
| | 1,2-Dichloroethane-d4 | 92 | % | 90 | % | 84 | % | 122 * | % | 95 | % | 90 | % |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 15 | B | 4 | JB | 9 | B | 32 | B | 5 | B | 4 | JB |
| Acetone | | 10 | U | 10 | U | 10 | U | 32 | B | 10 | U | 10 | U |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RF[illegible] :ch Number: 9109L755 Client: WSRC-TASK [illegible] Work Order: 0630-28-27-0000 [illegible]ge: 2b

| Cust ID: | SITE 259 | SITE 262 | SITE 225 | SITE 230 | SITE 230 | SITE 254 |
|---|---|---|---|---|---|---|
| RFW#: | 007 | 008 | 009 | 010 | 010 REPREP | 011 |
| Toluene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, I[illegible] - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 10/1[illegible]/91 12:57

RFW Batch Number: 9109L755 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 3a

| | Cust ID: | SITE 220 | | SITE 221 | | SITE 222 | | SITE 263 | | TRIP BLANK | | VBLK | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 012 | | 013 | | 014 | | 015 | | 016 | | 91LVW157-MB1 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 104 | % | 105 | % | 100 | % | 107 | % | 105 | % | 110 | % |
| | Bromofluorobenzene | 113 | % | 111 | % | 98 | % | 115 | % | 107 | % | 108 | % |
| | 1,2-Dichloroethane-d4 | 90 | % | 92 | % | 94 | % | 93 | % | 109 | % | 107 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 5 | U | 5 | U | 4 | JB | 4 | JB | 32 | B | 13 | |
| Acetone | | 10 | U | 10 | U | 3 | JB | 29 | | 29 | B | 9 | J |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 3 | J | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 3 | J | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U | 5 | U | 1 | J | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

RFW ch Number: 9109L755 Client: WSRC-TASK Work Order: 0630-28-27-0000 ge: 3b

| Cust ID: | SITE 220 | SITE 221 | SITE 222 | SITE 263 | TRIP BLANK | VBLK |
|---|---|---|---|---|---|---|
| RFW#: | 012 | 013 | 014 | 015 | 016 | 91LVW157-MB1 |
| Toluene | 5 U | 5 U | 5 U | 40 | 5 U | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

Roy F. Weston, I[illegible] - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 10/16/91 12:57

RFW Batch Number: 9109L755 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Page: 4a

| | | | | | |
|---|---|---|---|---|---|
| | Cust ID: | VBLK | | VBLK | |
| Sample Information | RFW#: | 91LVW158-MB1 | | 91LVK170-MB1 | |
| | Matrix: | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 102 | % | 101 | % |
| | Bromofluorobenzene | 103 | % | 97 | % |
| | 1,2-Dichloroethane-d4 | 98 | % | 97 | % |
| Chloromethane | | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U |
| Methylene Chloride | | 14 | | 7 | |
| Acetone | | 10 | U | 3 | J |
| Carbon Disulfide | | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

| | | | | |
|---|---|---|---|---|
| Cust ID: | VBLK | | VBLK | |
| RFW#: | 91LVW158-MB1 | | 91LVK170-MB1 | |
| Toluene | 5 | U | 5 | U |
| Chlorobenzene | 5 | U | 5 | U |
| Ethylbenzene | 5 | U | 5 | U |
| Styrene | 5 | U | 5 | U |
| Xylene (total) | 5 | U | 5 | U |

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 266

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092606

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/26/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 267

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092607

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/26/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 268

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092705

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 269

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-004

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092706

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 271

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-005

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092707

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 258

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-006

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092708

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 259

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-007

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092709

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 262

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-008

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092710

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 225

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-009

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092711

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 230

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-010

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092615

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/26/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 230RE

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-010

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092712

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 254

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-011

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092713

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 220

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-012

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092718

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 221

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-013

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092719

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 222

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-014

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9S04

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/28/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 263

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-015

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092717

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 2

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | DICHLOROFLUOROMETHANE | 2.67 | 60 | J |
| 2. | TRICHLOROFLUOROMETHANE | 4.53 | 37 | C |

C: Response Factor from daily standard.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

TRIP BLANK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L755-016

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092605

Level: (low/med) LOW

Date Received: 09/20/91

% Moisture: not dec. _____

Date Analyzed: 09/26/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 91LVW157-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092603

Level: (low/med) LOW

Date Received: 09/26/91

% Moisture: not dec. _____

Date Analyzed: 09/26/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 91LVW158-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W092704

Level: (low/med) LOW

Date Received: 09/27/91

% Moisture: not dec. _____

Date Analyzed: 09/27/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 91LVK170-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AK9S03

Level: (low/med) LOW

Date Received: 09/28/91

% Moisture: not dec. _____

Date Analyzed: 09/28/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/20/91 RFW LOT # :9109L755

| CLIENT ID | RFW # | | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|---|
| SITE 266 | 001 | | W | 91LVW157 | 09/18/91 | N/A | 09/26/91 |
| SITE 267 | 002 | | W | 91LVW157 | 09/18/91 | N/A | 09/26/91 |
| SITE 268 | 003 | | W | 91LVW158 | 09/18/91 | N/A | 09/27/91 |
| SITE 269 | 004 | | W | 91LVW158 | 09/18/91 | N/A | 09/27/91 |
| SITE 271 | 005 | | W | 91LVW158 | 09/18/91 | N/A | 09/27/91 |
| SITE 258 | 006 | | W | 91LVW158 | 09/17/91 | N/A | 09/27/91 |
| SITE 259 | 007 | | W | 91LVW158 | 09/17/91 | N/A | 09/27/91 |
| SITE 262 | 008 | | W | 91LVW158 | 09/17/91 | N/A | 09/27/91 |
| SITE 225 | 009 | | W | 91LVW158 | 09/17/91 | N/A | 09/27/91 |
| SITE 230 | 010 | | W | 91LVW157 | 09/17/91 | N/A | 09/26/91 |
| SITE 230 | 010 | R1 | W | 91LVW158 | 09/17/91 | N/A | 09/27/91 |
| SITE 254 | 011 | | W | 91LVW158 | 09/17/91 | N/A | 09/27/91 |
| SITE 220 | 012 | | W | 91LVW158 | 09/17/91 | N/A | 09/27/91 |
| SITE 221 | 013 | | W | 91LVW158 | 09/17/91 | N/A | 09/27/91 |
| SITE 222 | 014 | | W | 91LVK170 | 09/17/91 | N/A | 09/28/91 |
| SITE 263 | 015 | | W | 91LVW158 | 09/17/91 | N/A | 09/27/91 |
| TRIP BLANK | 016 | | W | 91LVW157 | 09/17/91 | N/A | 09/26/91 |
| LAB QC: | | | | | | | |
| VBLK | MB1 | | W | 91LVW157 | N/A | N/A | 09/26/91 |
| VBLK | MB1 | | W | 91LVW158 | N/A | N/A | 09/27/91 |
| VBLK | MB1 | | W | 91LVK170 | N/A | N/A | 09/28/91 |

WESTON Analytics Use Only

9109L755

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: DThomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 9/20/91 Date Due: 10/20/91
Account #: WSRC273TD

| Retrigerator # | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | 1/G | | | | | 500 | | | | 4 1/P | | 1/P | 1/P | | | |
| | Solid | | | | | | 1/G | | | | | | | | | | |
| Volume | Liquid | 40 | | | | | 500 | | | | 1L | | 500 | 1L | | | |
| | Solid | | | | | | 1L | | | | | | | | | | |
| Preservatives | | None | | | | | 1L | | | | HNO3 | | H2SO4 | None | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | | | INORG | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Lab Chem | | | | | Metal | CN | Hardness | CL NO3 | Alk Acid | PH SO4 | Spcd |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only: 0630-28 | | | | 1SW8 | | | See Below | | 1SW6 | 1CL 1NO3 | 1SW6 1ALK 1ACID | 1PH 1SO4 | 1SPCD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S - Soil | 001 | Site 266 | | | W | 9/18/9 | | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| SE - Sediment | 2 | 267 | | | | | | | | | | | | | | | | | | | |
| SO - Solid | 3 | 268 | | | | | | | | | | | | | | | | | | | |
| SL - Sludge | 4 | 269 | | | | | | | | | | | | | | | | | | | |
| W - Water | 5 | 271 | | | | | | | | | | | | | | | | | | | |
| O - Oil | 6 | ~~220~~ 258 | | | | 9/17/91 | | | | | | | | | | | | | | | |
| A - Air | 7 | ~~221~~ 259 | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | 8 | ~~222~~ 262 | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | 9 | 225 | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | 10 | 230 | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals-Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn
Radiochem - See 9109L612

original rewritten

DATE/REVISIONS:
10/1/91 1. ALK Cancelled on 001-015
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/20/91 | 9:30 AM |
| | PG 9/20/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | PG 9/20/91 | | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

WESTON Analytics Use Only
91004755

# Custody Transfer Record/Lab Work Request

WESTON



Client: WSPC - Task 27
Est. Final Proj. Sampling Date:
Work Order #:
Project Contact/Phone #:
AD Project Manager:
QC: DL: TAT:
Date Rec'd: Date Due:
Account #:

See page (1)

Refrigerator #
#/Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives

ANALYSES REQUESTED →

ORGANIC: VOA, BNA, Pest/PCB, Herb, Radio Chem
INORG: Metal, CN, Anions, Cl NO3, Alk Acid, pH SO4, Spd

WESTON Analytics Use Only: 0624W, TSP, See below, See page (1)

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 |
|---|---|---|---|---|---|---|
| 011 | Site 254 | | | W | 9/17/91 | |
| 12 | ~~254~~ 220 | | | | | |
| 13 | ~~259~~ 221 | | | | | |
| 14 | ~~262~~ 222 | | | | | |
| 15 | 263 | | | | | |
| 16 | Trip Blank | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

original signature

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 9/20/91 | 9:30 am |
| | P9 9/20/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | P9 9/20/91 | | |

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381 596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

Task #27

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Radium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L755-001 | 0.9 | ±1.4 | 2.7 | ±1.7 | 2.1 | ±0.8 |
| 9109L755-002 | 110 | ±20 | 57 | ±10 | 5.4 | ±1.1 |
| 9109L755-003 | 0.1 | ±1.3 | 3.4 | ±1.7 | 1.6 | ±0.7 |
| 9109L755-004 | 2.7 | ±1.8 | 3.3 | ±1.7 | 1.5 | ±0.6 |
| 9109L755-005 | 33 | ±8 | 17 | ±4 | 2.9 | ±0.9 |
| 9109L755-006 | 16 | ±6 | 16 | ±3 | 2.2 | ±0.8 |
| 9109L755-007 | 5.2 | ±2.2 | 5.0 | ±1.8 | 2.1 | ±0.7 |
| 9109L755-008 | 45 | ±12 | 28 | ±6 | 2.2 | ±0.8 |
| 9109L755-009 | 34 | ±8 | 24 | ±4 | 4.0 | ±1.6 |
| 9109L755-010 | 65 | ±16 | 43 | ±8 | 6.9 | ±1.2 |
| 9109L755-011 | 9.7 | ±2.3 | 8.2 | ±1.9 | 2.6 | ±0.8 |
| 9109L755-012 | 9.1 | ±2.2 | 6.4 | ±1.6 | 4.5 | ±1.7 |
| 9109L755-013 | 7.7 | ±2.6 | 6.6 | ±1.8 | 3.4 | ±0.9 |
| 9109L755-014 | 1.3 | ±1.6 | 5.5 | ±1.8 | 1.8 | ±0.7 |
| 9109L755-015 | 32 | ±7 | 20 | ±4 | 4.2 | ±1.0 |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L755-001 | 0.0 | ±0.8 | 0.0 | ±0.7 | 0.2 | ±0.9 |
| 9109L755-002 | 6.2 | ±2.5 | 0.3 | ±0.8 | 4.5 | ±2.0 |
| 9109L755-003 | 0.2 | ±1.0 | 0.0 | ±0.6 | 0.0 | ±0.8 |
| 9109L755-004 | 4.3 | ±2.0 | 0.0 | ±0.5 | 2.5 | ±1.5 |
| 9109L755-005 | 1.6 | ±1.7 | 0.0 | ±0.8 | 3.5 | ±2.1 |
| 9109L755-006 | 3.1 | ±1.8 | 0.0 | ±0.6 | 2.4 | ±1.5 |
| 9109L755-007 | 2.9 | ±1.7 | 0.0 | ±0.5 | 1.3 | ±1.2 |
| 9109L755-008 | 1.5 | ±1.4 | 0.0 | ±0.5 | 1.5 | ±1.3 |
| 9109L755-009 | 3.3 | ±1.8 | 0.0 | ±0.6 | 2.6 | ±1.6 |
| 9109L755-010 | 2.5 | ±1.6 | 0.0 | ±0.7 | 2.6 | ±1.6 |
| 9109L755-011 | *4.3 | ±2.0 | 0.0 | ±0.6 | 9.8 | ±2.8 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

**Sample Type: Water**

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L755-012 | 2.5 | ±1.6 | 0.0 | ±0.6 | 3.7 | ±1.8 |
| 9109L755-013 | 11 | ±3 | 0.0 | ±0.7 | 8.7 | ±2.6 |
| 9109L755-014 | 5.4 | ±2.2 | 0.0 | ±0.6 | 2.8 | ±1.6 |
| 9109L755-015 | 3.4 | ±2.9 | 0.0 | ±1.3 | 3.1 | ±2.6 |

| Sample Id | Am-241 pCi/l | Error 2σ | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L755-001 | 0.0 | ±1.1 | 1800 | ±400 | 0.8 | ±9.4 |
| 9109L755-002 | 0.0 | ±0.9 | 1600 | ±400 | 6.1 | ±9.8 |
| 9109L755-003 | 0.0 | ±0.8 | 2300 | ±400 | 0.0 | ±8.8 |
| 9109L755-004 | 0.0 | ±0.7 | 1900 | ±400 | 2.1 | ±9.4 |
| 9109L755-005 | 0.5 | ±1.8 | 1400 | ±400 | 4.9 | ±9.2 |
| 9109L755-006 | 0.0 | ±4.2 | 7800 | ±500 | 0 | ±11 |
| 9109L755-007 | 0.0 | ±3.5 | 4000 | ±400 | 0.0 | ±8.6 |
| 9109L755-008 | 0.0 | ±2.3 | 1300 | ±400 | 0.0 | ±9.1 |
| 9109L755-009 | 0.0 | ±2.3 | 9000 | ±500 | 0.0 | ±8.9 |
| 9109L755-010 | 1.4 | ±2.6 | 8600 | ±500 | 2.6 | ±8.6 |
| 9109L755-011 | 0.5 | ±2.5 | 2700 | ±400 | 0.0 | ±9.0 |
| 9109L755-012 | 0.0 | ±4.7 | 18000 | ±700 | 0.2 | ±7.2 |
| 9109L755-013 | 0.0 | ±2.6 | 18000 | ±700 | 7.4 | ±7.8 |
| 9109L755-014 | 0.0 | ±3.7 | 9000 | ±500 | 3.7 | ±8.8 |
| 9109L755-015 | 1.5 | ±7.5 | 3500 | ±400 | 0.0 | ±9.0 |

| Sample Id | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L755-001 | 0.0 | ±0.6 | 0.0 | ±0.5 | 0.0 | ±1.8 |
| 9109L755-002 | 0.0 | ±0.6 | 1.3 | ±0.9 | 1.3 | ±2.1 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 3
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

**Sample Type: Water**

| Sample Id | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L755-003 | 0.0 | ±0.5 | 0.0 | ±0.3 | 0.0 | ±1.8 |
| 9109L755-004 | 0.0 | ±0.6 | 0.0 | ±0.5 | 0.0 | ±1.8 |
| 9109L755-005 | 0.0 | ±1.3 | 0.0 | ±1.0 | 0.0 | ±6.7 |
| 9109L755-006 | 0.2 | ±0.6 | 0.0 | ±0.4 | 0.0 | ±1.8 |
| 9109L755-007 | 0.0 | ±0.5 | 0.0 | ±0.6 | 0.0 | ±1.7 |
| 9109L755-008 | 0.0 | ±0.6 | 0.0 | ±0.5 | 0.8 | ±1.9 |
| 9109L755-009 | 0.0 | ±0.8 | 0.3 | ±0.6 | 0.0 | ±3.3 |
| 9109L755-010 | 0.0 | ±0.4 | 0.0 | ±0.4 | 0.6 | ±1.6 |
| 9109L755-011 | 0.0 | ±0.5 | 0.0 | ±0.6 | 0.4 | ±1.6 |
| 9109L755-012 | 0.0 | ±0.5 | 0.0 | ±0.5 | 0.5 | ±1.3 |
| 9109L755-013 | 0.0 | ±0.6 | 0.0 | ±0.4 | 0.0 | ±1.6 |
| 9109L755-014 | 0.0 | ±1.1 | 0.1 | ±1.0 | 0.4 | ±1.6 |
| 9109L755-015 | 0.0 | ±2.8 | --- | --- | 0.0 | ±2.6 |

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L755-001 | 0.0 | ±1.8 | 0.0 | ±1.7 | 5.1 | ±7.6 |
| 9109L755-002 | 0.0 | ±2.7 | 1.3 | ±2.0 | 0.0 | ±9.0 |
| 9109L755-003 | 0.0 | ±1.8 | 0.0 | ±1.8 | 0.6 | ±9.2 |
| 9109L755-004 | 0.0 | ±1.8 | 0.5 | ±1.9 | 5.7 | ±8.9 |
| 9109L755-005 | 0.0 | ±6.7 | 0.0 | ±9.7 | 1.0 | ±7.3 |
| 9109L755-006 | 0.0 | ±1.8 | 1.1 | ±1.9 | 0 | ±28 |
| 9109L755-007 | 0.0 | ±1.7 | 0.6 | ±1.7 | 10 | ±16 |
| 9109L755-008 | 0.5 | ±3.2 | 2.0 | ±2.0 | 3 | ±12 |
| 9109L755-009 | 0.0 | ±5.3 | 0.3 | ±1.9 | 0 | ±11 |
| 9109L755-010 | 0.0 | ±2.4 | 0.0 | ±1.8 | 8 | ±20 |
| 9109L755-011 | 0.0 | ±2.3 | 0.0 | ±1.8 | 3.8 | ±9.6 |
| 9109L755-012 | 0.0 | ±2.1 | 0.6 | ±1.9 | 13 | ±8 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

**Sample Type: Water**

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109L755-013 | 0.0 | ±1.6 | 0.1 | ±1.9 | 4 | ±22 |
| 9109L755-014 | 0.0 | ±2.8 | 0.0 | ±1.7 | 0 | ±12 |
| 9109L755-015 | 1.2 | ±5.3 | 0.6 | ±2.0 | 1 | ±12 |

GAMMA SPECTROSCOPY

| Sample Id | Bi-214* pCi/l | Error 2σ | Pb-214* pCi/l | Error 2σ |
|---|---|---|---|---|
| **Sample Type: Water** | | | | |
| 9109L755-001 | <25 | --- | <18 | --- |
| 9109L755-002 | 51 | ±17 | 30 | ±15 |
| 9109L755-003 | <25 | --- | <18 | --- |
| 9109L755-004 | <25 | --- | 22 | ±10 |
| 9109L755-005 | <49 | --- | 47 | ±21 |
| 9109L755-006 | 44 | ±17 | 30 | ±11 |
| 9109L755-007 | 36 | ±17 | <21 | --- |
| 9109L755-008 | <27 | --- | 31 | ±12 |
| 9109L755-009 | 30 | ±14 | 25 | ±10 |
| 9109L755-010 | 36 | ±14 | <21 | --- |
| 9109L755-011 | 34 | ±15 | 31 | ±12 |
| 9109L755-012 | 41 | ±16 | 30 | ±11 |
| 9109L755-013 | 22 | ±14 | 25 | ±13 |
| 9109L755-014 | 45 | ±16 | 23 | ±12 |
| 9109L755-015 | 44 | ±17 | 27 | ±13 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E Status: Final

Abbreviations:

Parameters:

| | |
|---|---|
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| Am-241 | : Americium-241 |
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Bi-214* | : Bismuth 214-MDA Reported at 1.645 sigma |
| Pb-214* | : Lead 214-MDA Reported at 1.654 sigma |
| Co-58* | : Cobalt 58-MDA Reported at 1.645 sigma |
| Co-60* | : Cobalt 60-MDA Reported at 1.645 sigma |
| Cs-137* | : Cesium 137-MDA Reported at 1.645 sigma |
| Ag-110m* | : Silver 110m-MDA Reported at 1.645 sigma |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| $2\sigma$ | : Counting error at the 95% confidence level, $2\sigma$ |

BARRINGER LABORATORIES INC.
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27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 6
Copy: 1 of 2

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E Status: Final

Quality codes:

< : Not Detected- below detection limit.
* : Duplicate did not match, Rerun in progress

Job approved by:

Signed: Ellen La Riviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
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208 Welsh Pool Road
Lionville, PA 19353

Page: 1
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Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Radium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 38 | ±8 | 22 | ±4 | 3.7 | ±1.6 |
| Duplicate | 26 | ±6 | 18 | ±3 | 5.3 | ±1.8 |
| Duplicate % diff. | 19 | --- | 10 | --- | 18 | --- |
| Std (found value) | 225 | ±6 | 108 | ±2 | 107 | ±4 |
| Std (true value) | 206 | --- | 106 | --- | 101 | --- |
| Std % diff. | 9.2 | --- | 1.9 | --- | 5.9 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.4 | ±0.3 | 0.0 | ±0.1 |
| Spike % rec. | 96 | --- | 99 | --- | 101 | --- |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 3.5 | ±1.9 | 0.0 | ±0.6 | 2.6 | ±1.6 |
| Duplicate | 3.1 | ±1.8 | 0.0 | ±0.5 | 2.6 | ±1.5 |
| Duplicate % diff. | 6.1 | --- | 0.0 | --- | 0.0 | --- |
| Std (found value) | 202 | ±6 | 8.2 | ±1.1 | 185 | ±5 |
| Std (true value) | 192 | --- | 8.8 | --- | 192 | --- |
| Std % diff. | 5.2 | --- | 6.8 | --- | 3.6 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.0 | ±0.1 | 0.0 | ±0.2 |
| Spike % rec. | 113 | --- | 100 | --- | 102 | --- |

| Sample Id | Am-241 pCi/l | Error 2σ | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±1.6 | 9000 | ±500 | 0.0 | ±9.0 |
| Duplicate | 0.2 | ±1.6 | 9000 | ±500 | 0.0 | ±9.0 |
| Duplicate % diff. | 100 | --- | 0.0 | --- | 0.0 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
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Page: 2
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Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Am-241 pCi/l | Error 2σ | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std (found value) | 102 | ±4 | 56884 | ±1135 | 1065 | --- |
| Std (true value) | 103 | --- | 55740 | --- | 993 | --- |
| Std % diff. | 1.0 | --- | 2.1 | --- | 7.3 | --- |
| Std % rec. | 99 | --- | --- | --- | 107 | --- |
| Blank | 0.0 | ±0.4 | 38 | ±304 | 0.0 | ±3.5 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±1.2 | 0.0 | ±1.0 | 0.3 | ±2.7 |
| Duplicate | 0.0 | ±1.3 | 0.0 | ±1.0 | 0.0 | ±2.4 |
| Duplicate % diff. | 0.0 | --- | 0.0 | --- | 100 | --- |
| Std (found value) | 101 | ±4 | 101 | ±4 | 23 | ±2 |
| Std (true value) | 104 | --- | 104 | --- | 21 | --- |
| Std % diff. | 2.9 | --- | 2.9 | --- | 9.5 | --- |
| Std % rec. | 97 | --- | 97 | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.0 | ±0.2 | 0.0 | ±1.0 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±5.7 | 0.0 | ±1.9 | 23 | ±17 |
| Duplicate | 0.0 | ±4.9 | 0.0 | ±1.8 | 16 | ±27 |
| Duplicate % diff. | 0.0 | --- | 0.0 | --- | 18 | --- |
| Std (found value) | 21 | ±2 | 100 | ±3 | 982 | ±21 |
| Std (true value) | 21 | --- | 100 | --- | 992 | --- |
| Std % diff. | 0.0 | --- | 0.0 | --- | 1.0 | --- |

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27-Jan-92

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Page: 3
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std % rec. | --- | --- | 100 | --- | --- | --- |
| Blank | 1.0 | ±1.0 | 0.0 | ±0.7 | 0.6 | ±3.1 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

BARRINGER LABORATORIES INC.
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27-Jan-92

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Attn: Diane Thomas
Project: 0630-28-27

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PO #: LL-0962-F4

Job: 912295E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Co-58* pCi/l | Error 2σ | Co-60* pCi/l | Error 2σ | Cs-137* pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 810 | ±100 | 410 | ±80 | 95 | ±41 |
| Duplicate | 810 | ±100 | 440 | ±100 | 100 | ±40 |
| Duplicate % diff. | 0.0 | --- | 3.5 | --- | 2.6 | --- |

| Sample Id | Ag-110m* pCi/l | Error 2σ | Gamma Spec pCi/l | Error 2σ |
|---|---|---|---|---|
| Duplicate | 180 | ±40 | --- | --- |
| Duplicate | 200 | ±40 | --- | --- |
| Duplicate % diff. | 5.3 | --- | --- | --- |
| Std (found value) | --- | --- | 20 | ±2 |
| Std (true value) | --- | --- | 19 | --- |
| Std % diff. | --- | --- | 5.3 | --- |

Abbreviations:

Parameters:

U-234 : Uranium-234
U-235 : Uranium-235
U-238 : Uranium-238
Am-241 : Americium-241

BARRINGER LABORATORIES INC.
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27-Jan-92

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208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E Status: Final

QUALITY CONTROL REPORT

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Bi-214* | : Bismuth 214-MDA Reported at 1.645 sigma |
| Pb-214* | : Lead 214-MDA Reported at 1.654 sigma |
| Co-58* | : Cobalt 58-MDA Reported at 1.645 sigma |
| Co-60* | : Cobalt 60-MDA Reported at 1.645 sigma |
| Cs-137* | : Cesium 137-MDA Reported at 1.645 sigma |
| Ag-110m* | : Silver 110m-MDA Reported at 1.645 sigma |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |

Job approved by:

Signed:

.....
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

27-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 6
Copy: 1 of 2

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: ljb Via: Federal Express

Sample Container Type: pl L, gl gal, gl L btl
Sample Type: Water
Preservative When Received: None
Additional Lab Preparation: None

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 2 pCi/l | none | Pingilley | 12/ 6-12/17 |
| Gross Beta | 900.0 | 2 pCi/l | none | Pingilley | 12/ 6-12/17 |
| Radium | 900.1 | 1 pCi/l | none | Seidel | 12/16-12/22 |
| U-234/235/238 | 907.0 | 0.4 pCi/l | none | Meyer | 1/17- 1/24 |
| Am-241 | 907.0 | 0.5 pCi/l | none | Preston | 1/12- 1/20 |
| Tritium | 906.0 | 460 pCi/l | none | Eggelston | 12/22- 1/ 8 |
| I-129 | 902.0 | 1 pCi/l | none | Preston | 12/30- 1/ 7 |
| Pu-238/239/240 | 907.0 | 0.4 pCi/l | none | Preston | 1/ 6- 1/13 |
| Sr-89/90 | 905.0 | 1 pCi/l | none | Kidwell | 12/30-12/23 |
| Tc-99 | HASL 300 | 1 pCi/l | none | Preston | 12/17- 1/ 6 |
| C-14 | 520-84-006 | 3 pCi/l | none | Meyers | 12/16- 1/17 |
| Bi-214* | 901.0 | ---- | none | Kidwell | 1/24 |
| Pb-214* | 901.0 | ---- | none | Kidwell | 1/24 |
| Co-58* | 901.0 | ---- | none | Kidwell | 1/24 |
| Co-60* | 901.0 | ---- | none | Kidwell | 1/24 |
| Cs-137* | 901.0 | ---- | none | Kidwell | 1/24 |
| Ag-110m* | 901.0 | ---- | none | Kidwell | 1/24 |
| Gamma Spec | 901.0 | ---- | none | Kidwell | 1/24 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

Client: Weston
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone:
AD Project Manager: Dillmann
QC: Std Del: Std TAT:

Date Rec'd: Date Due:
Account #:

Refrigerator #:
#/Type Container: 1L 1L
Volume: gal gal
Preservatives:

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; Radio (3); INORG: Metal, CN

WESTON Analytics 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 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WE-216 | | | W | 9/11 | | | | | | | | | | | | | | | | | | 910927 55-001 |
| | 217 | | | | | | | | | | | | | | | | | | | | | | 002 |
| | 218 | | | | | | | | | | | | | | | | | | | | | | 003 |
| | 219 | | | | | | | | | | | | | | | | | | | | | | 004 |
| | 227 | | | | | | | | | | | | | | | | | | | | | | 005 |
| | 258 | | | | 9/11 | | | | | | | | | | | | | | | | | | 006 |
| | 259 | | | | | | | | | | | | | | | | | | | | | | 007 |
| | 262 | | | | | | | | | | | | | | | | | | | | | | 008 |
| | 255 | | | | | | | | | | | | | | | | | | | | | | 009 |
| | 232 | | | | | | | | | | | | | | | | | | | | | | 010 |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem (3) - See Attached

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 11/21/91 | 6:30 pm |
| | [illegible] | 11/22/91 | 9:30 |

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

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client: Weston-Hayes
Est. Final Proj. Sampling Date:
Work Order #: 0630-2827
Project Contact/Phone #:
AD Project Manager: Thomas
QC: ____ Del: ____ TAT: ____

Date Rec'd: ____ Date Due: ____
Account #: ____

Refrigerator #:
#/Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives:

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; Pb/Cd (3); INORG: Metal, CN

WESTON Analytics 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 | VOA | BNA | Pest/PCB | Herb | Pb/Cd (3) | | Metal | CN | WESTON Analytics Use Only |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Site 254 | | | W | 9/17/91 | | | | | | ✓ | ✓ | | | 9109175 5-011 |
| | 220 | | | | | | | | | | | | | | 012 |
| | 221 | | | | | | | | | | | | | | 013 |
| | 222 | | | | | | | | | | | | | | 014 |
| | 223 | | | | | | | | | | | | | | 015 |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | 11/21/91 | 6:30 pm |
| | [illegible] | 11/22/91 | 9:30 |

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

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

20-Apr-92

Diane Thomas
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208 Welsh Pool Road
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Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Radium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Site 266 | 0.9 | ±1.4 | 2.7 | ±1.7 | 2.1 | ±0.8 |
| Site 267 | 110 | ±20 | 57 | ±10 | 5.4 | ±1.1 |
| Site 268 | 0.1 | ±1.3 | 3.4 | ±1.7 | 1.6 | ±0.7 |
| Site 269 | 2.7 | ±1.8 | 3.3 | ±1.7 | 1.5 | ±0.6 |
| Site 271 | 33 | ±8 | 17 | ±4 | 2.9 | ±0.9 |
| Site 258 | 16 | ±6 | 16 | ±3 | 2.2 | ±0.8 |
| Site 259 | 5.2 | ±2.2 | 5.0 | ±1.8 | 2.1 | ±0.7 |
| Site 262 | 45 | ±12 | 28 | ±6 | 2.2 | ±0.8 |
| Site 225 | 34 | ±8 | 24 | ±4 | 4.0 | ±1.6 |
| Site 230 | 65 | ±16 | 43 | ±8 | 6.9 | ±1.2 |
| Site 254 | 9.7 | ±2.3 | 8.2 | ±1.9 | 2.6 | ±0.8 |
| Site 220 | 9.1 | ±2.2 | 6.4 | ±1.6 | 4.5 | ±1.7 |
| Site 221 | 7.7 | ±2.6 | 6.6 | ±1.8 | 3.4 | ±0.9 |
| Site 222 | 1.3 | ±1.6 | 5.5 | ±1.8 | 1.8 | ±0.7 |
| Site 223 | 32 | ±7 | 20 | ±4 | 4.2 | ±1.0 |

| Sample | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ | Am-241 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|---|---|
| Site 266 | 0.0 | ±0.8 | 0.0 | ±0.7 | 0.2 | ±0.9 | 0.0 | ±1.1 |
| Site 267 | 6.2 | ±2.5 | 0.3 | ±0.8 | 4.5 | ±2.0 | 0.0 | ±0.9 |
| Site 268 | 0.2 | ±1.0 | 0.0 | ±0.6 | 0.0 | ±0.8 | 0.0 | ±0.8 |
| Site 269 | 4.3 | ±2.0 | 0.0 | ±0.5 | 2.5 | ±1.5 | 0.0 | ±0.7 |
| Site 271 | 1.6 | ±1.7 | 0.0 | ±0.8 | 3.5 | ±2.1 | 0.5 | ±1.8 |
| Site 258 | 3.1 | ±1.8 | 0.0 | ±0.6 | 2.4 | ±1.5 | 0.0 | ±4.2 |
| Site 259 | 2.9 | ±1.7 | 0.0 | ±0.5 | 1.3 | ±1.2 | 0.0 | ±3.5 |
| Site 262 | 1.5 | ±1.4 | 0.0 | ±0.5 | 1.5 | ±1.3 | 0.0 | ±2.3 |
| Site 225 | 3.3 | ±1.8 | 0.0 | ±0.6 | 2.6 | ±1.6 | 0.0 | ±2.3 |
| Site 230 | 2.5 | ±1.6 | 0.0 | ±0.7 | 2.6 | ±1.6 | 1.4 | ±2.6 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

20-Apr-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

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Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ | Am-241 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|---|---|
| Site 254 | a0.2 | ±0.8 | a0.0 | ±0.4 | a0.4 | ±0.8 | 0.5 | ±2.5 |
| Site 220 | 2.5 | ±1.6 | 0.0 | ±0.6 | 3.7 | ±1.8 | 0.0 | ±4.7 |
| Site 221 | 11 | ±3 | 0.0 | ±0.7 | 8.7 | ±2.6 | 0.0 | ±2.6 |
| Site 222 | 5.4 | ±2.2 | 0.0 | ±0.6 | 2.8 | ±1.6 | 0.0 | ±3.7 |
| Site 223 | 3.4 | ±2.9 | 0.0 | ±1.3 | 3.1 | ±2.5 | 1.5 | ±7.5 |

| Sample | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Site 266 | 1800 | ±400 | 0.8 | ±9.4 | 0.0 | ±0.6 |
| Site 267 | 1600 | ±400 | 6.1 | ±9.8 | 0.0 | ±0.6 |
| Site 268 | 2300 | ±400 | 0.0 | ±8.8 | 0.0 | ±0.5 |
| Site 269 | 1900 | ±400 | 2.1 | ±9.4 | 0.0 | ±0.6 |
| Site 271 | 1400 | ±400 | 4.9 | ±9.2 | 0.0 | ±1.3 |
| Site 258 | 7800 | ±500 | 0 | ±11 | 0.2 | ±0.6 |
| Site 259 | 4000 | ±400 | 0.0 | ±8.6 | 0.0 | ±0.5 |
| Site 262 | 1300 | ±400 | 0.0 | ±9.1 | 0.0 | ±0.6 |
| Site 225 | 9000 | ±500 | 0.0 | ±8.9 | 0.0 | ±0.8 |
| Site 230 | 8600 | ±500 | 2.6 | ±8.6 | 0.0 | ±0.4 |
| Site 254 | 2700 | ±400 | 0.0 | ±9.0 | 0.0 | ±0.5 |
| Site 220 | 18000 | ±700 | 0.2 | ±7.2 | 0.0 | ±0.5 |
| Site 221 | 18000 | ±700 | 7.4 | ±7.8 | 0.0 | ±0.6 |
| Site 222 | 9000 | ±500 | 3.7 | ±8.8 | 0.0 | 1.1 |
| Site 223 | 3500 | ±400 | 0.0 | ±9.0 | 0.0 | ±2.8 |

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20-Apr-92

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Project: 0630-28-27

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PO #: LL-0962-F4

Job: 912295E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Site 266 | 0.0 | ±0.5 | 0.0 | ±1.8 | 0.0 | ±1.8 |
| Site 267 | 1.3 | ±0.9 | 1.3 | ±2.1 | 0.0 | ±2.7 |
| Site 268 | 0.0 | ±0.3 | 0.0 | ±1.8 | 0.0 | ±1.8 |
| Site 269 | 0.0 | ±0.5 | 0.0 | ±1.8 | 0.0 | ±1.8 |
| Site 271 | 0.0 | ±1.0 | 0.0 | ±6.7 | 0.0 | ±6.7 |
| Site 258 | 0.0 | ±0.4 | 0.0 | ±1.8 | 0.0 | ±1.8 |
| Site 259 | 0.0 | ±0.6 | 0.0 | ±1.7 | 0.0 | ±1.7 |
| Site 262 | 0.0 | ±0.5 | 0.8 | ±1.9 | 0.5 | ±3.2 |
| Site 225 | 0.3 | ±0.6 | 0.0 | ±3.3 | 0.0 | ±5.3 |
| Site 230 | 0.0 | ±0.4 | 0.6 | ±1.6 | 0.0 | ±2.4 |
| Site 254 | 0.0 | ±0.6 | 0.4 | ±1.6 | 0.0 | ±2.3 |
| Site 220 | 0.0 | ±0.5 | 0.5 | ±1.3 | 0.0 | ±2.1 |
| Site 221 | 0.0 | ±0.4 | 0.0 | ±1.6 | 0.0 | ±1.6 |
| Site 222 | 0.1 | ±1.0 | 0.4 | ±1.6 | 0.0 | ±2.8 |
| Site 223 | --- | --- | 0.0 | ±2.6 | 1.2 | ±5.3 |

| Sample | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|
| Site 266 | 0.0 | ±1.7 | 5.1 | ±7.6 |
| Site 267 | 1.3 | ±2.0 | 0.0 | ±9.0 |
| Site 268 | 0.0 | ±1.8 | 0.6 | ±9.2 |
| Site 269 | 0.5 | ±1.9 | 5.7 | ±8.9 |
| Site 271 | 0.0 | ±9.7 | 1.0 | ±7.3 |
| Site 258 | 1.1 | ±1.9 | 0 | ±28 |
| Site 259 | 0.6 | ±1.7 | 10 | ±16 |
| Site 262 | 2.0 | ±2.0 | 3 | ±12 |
| Site 225 | 0.3 | ±1.9 | 0 | ±11 |
| Site 230 | 0.0 | ±1.8 | 8 | ±20 |

BARRINGER LABORATORIES INC.
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20-Apr-92

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PO #: LL-0962-F4

Job: 912295E

Status: Final

AMENDED REPORT

**Sample Type: Water**

| Sample | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|
| Site 254 | 0.0 | ±1.8 | 3.8 | ±9.6 |
| Site 220 | 0.6 | ±1.9 | 13 | ±8 |
| Site 221 | 0.1 | ±1.9 | 4 | ±22 |
| Site 222 | 0.0 | ±1.7 | 0 | ±12 |
| Site 223 | 0.6 | ±2.0 | 1 | ±12 |

AMENDED REPORT

| Sample | Bi-214* pCi/l | Error 2σ | Pb-214* pCi/l | Error 2σ |
|---|---|---|---|---|
| **Sample Type: Water** | | | | |
| Site 266 | <25 | --- | <18 | --- |
| Site 267 | 51 | ±17 | 30 | ±15 |
| Site 268 | <25 | --- | <18 | --- |
| Site 269 | <25 | --- | 22 | ±10 |
| Site 271 | <49 | --- | 47 | ±21 |
| Site 258 | 44 | ±17 | 30 | ±11 |
| Site 259 | 36 | ±17 | <21 | --- |
| Site 262 | <27 | --- | 31 | ±12 |
| Site 225 | 30 | ±14 | 25 | ±10 |
| Site 230 | 36 | ±14 | <21 | --- |
| Site 254 | 34 | ±15 | 31 | ±12 |
| Site 220 | 41 | ±16 | 30 | ±11 |
| Site 221 | 22 | ±14 | 25 | ±13 |
| Site 222 | 45 | ±16 | 23 | ±12 |

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AMENDED REPORT

**Sample Type: Water**

| Sample | Bi-214* pCi/l | Error 2σ | Pb-214* pCi/l | Error 2σ |
|---|---|---|---|---|
| Site 223 | 44 | ±17 | 27 | ±13 |

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AMENDED REPORT

Abbreviations:

Parameters:

| | |
|---|---|
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| Am-241 | : Americium-241 |
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Bi-214* | : Bismuth 214-MDA Reported at 1.645 sigma |
| Pb-214* | : Lead 214-MDA Reported at 1.654 sigma |
| Co-58* | : Cobalt 58-MDA Reported at 1.645 sigma |
| Co-60* | : Cobalt 60-MDA Reported at 1.645 sigma |
| Cs-137* | : Cesium 137-MDA Reported at 1.645 sigma |
| Ag-110m* | : Silver 110m-MDA Reported at 1.645 sigma |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| $2\sigma$ | : Counting error at the 95% confidence level, $2\sigma$ |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

BARRINGER LABORATORIES INC.
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20-Apr-92

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PO #: LL-0962-F4

Job: 912295E

Status: Final

AMENDED REPORT

a : Amended Value

Job approved by:

Signed: Ellen LaRiviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
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PO #: LL-0962-F4

Job: 912295E Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Radium pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 38 | ±8 | 22 | ±4 | 3.7 | ±1.6 |
| Duplicate | 26 | ±6 | 18 | ±3 | 5.3 | ±1.8 |
| Duplicate % diff. | 19 | --- | 10 | --- | 18 | --- |
| Std (found value) | 225 | ±6 | 108 | ±2 | 107 | ±4 |
| Std (true value) | 206 | --- | 106 | --- | 101 | --- |
| Std % diff. | 9.2 | --- | 1.9 | --- | 5.9 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.4 | ±0.3 | 0.0 | ±0.1 |
| Spike % rec. | 96 | --- | 99 | --- | 101 | --- |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 3.5 | ±1.9 | 0.0 | ±0.6 | 2.6 | ±1.6 |
| Duplicate | 3.1 | ±1.8 | 0.0 | ±0.5 | 2.6 | ±1.5 |
| Duplicate % diff. | 6.1 | --- | 0.0 | --- | 0.0 | --- |
| Std (found value) | 202 | ±6 | 8.2 | ±1.1 | 185 | ±5 |
| Std (true value) | 192 | --- | 8.8 | --- | 192 | --- |
| Std % diff. | 5.2 | --- | 6.8 | --- | 3.6 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.0 | ±0.1 | 0.0 | ±0.2 |
| Spike % rec. | 113 | --- | 100 | --- | 102 | --- |

| Sample Id | Am-241 pCi/l | Error 2σ | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±1.6 | 9000 | ±500 | 0.0 | ±9.0 |
| Duplicate | 0.2 | ±1.6 | 9000 | ±500 | 0.0 | ±9.0 |
| Duplicate % diff. | 100 | --- | 0.0 | --- | 0.0 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

20-Apr-92

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Project: 0630-28-27

Received: 22-Nov-91 11:34
PO #: LL-0962-F4

Job: 912295E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Am-241 pCi/l | Error 2σ | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std (found value) | 102 | ±4 | 56884 | ±1135 | 1065 | --- |
| Std (true value) | 103 | --- | 55740 | --- | 993 | --- |
| Std % diff. | 1.0 | --- | 2.1 | --- | 7.3 | --- |
| Std % rec. | 99 | --- | --- | --- | 107 | --- |
| Blank | 0.0 | ±0.4 | 38 | ±304 | 0.0 | ±3.5 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Pu-238 pCi/l | Error 2σ | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±1.2 | 0.0 | ±1.0 | 0.3 | ±2.7 |
| Duplicate | 0.0 | ±1.3 | 0.0 | ±1.0 | 0.0 | ±2.4 |
| Duplicate % diff. | 0.0 | --- | 0.0 | --- | 100 | --- |
| Std (found value) | 101 | ±4 | 101 | ±4 | 23 | ±2 |
| Std (true value) | 104 | --- | 104 | --- | 21 | --- |
| Std % diff. | 2.9 | --- | 2.9 | --- | 9.5 | --- |
| Std % rec. | 97 | --- | 97 | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.0 | ±0.2 | 0.0 | ±1.0 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±5.7 | 0.0 | ±1.9 | 23 | ±17 |
| Duplicate | 0.0 | ±4.9 | 0.0 | ±1.8 | 16 | ±27 |
| Duplicate % diff. | 0.0 | --- | 0.0 | --- | 18 | --- |
| Std (found value) | 21 | ±2 | 100 | ±3 | 982 | ±21 |
| Std (true value) | 21 | --- | 100 | --- | 992 | --- |
| Std % diff. | 0.0 | --- | 0.0 | --- | 1.0 | --- |

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PO #: LL-0962-F4

Job: 912295E

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QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Sr-90 pCi/l | Error 2σ | Tc-99 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std % rec. | --- | --- | 100 | --- | --- | --- |
| Blank | 1.0 | ±1.0 | 0.0 | ±0.7 | 0.6 | ±3.1 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

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QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Co-58* pCi/l | Error 2σ | Co-60* pCi/l | Error 2σ | Cs-137* pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 810 | ±100 | 410 | ±80 | 95 | ±41 |
| Duplicate | 810 | ±100 | 440 | ±100 | 100 | ±40 |
| Duplicate % diff. | 0.0 | --- | 3.5 | --- | 2.6 | --- |
| Std (found value) | --- | --- | --- | --- | --- | --- |
| Std (true value) | --- | --- | --- | --- | --- | --- |
| Std % diff. | --- | --- | --- | --- | --- | --- |

| Sample Id | Ag-110m* pCi/l | Error 2σ | Gamma Spec pCi/l | Error 2σ |
|---|---|---|---|---|
| Duplicate | 180 | ±40 | --- | --- |
| Duplicate | 200 | ±40 | --- | --- |
| Duplicate % diff. | 5.3 | --- | --- | --- |
| Std (found value) | --- | --- | 20 | ±2 |
| Std (true value) | --- | --- | 19 | --- |
| Std % diff. | --- | --- | 5.3 | --- |

Abbreviations:

Parameters:

U-234 : Uranium-234
U-235 : Uranium-235
U-238 : Uranium-238
Am-241 : Americium-241

BARRINGER LABORATORIES INC.
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QUALITY CONTROL REPORT

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| C-14 | : Carbon-14 |
| Bi-214* | : Bismuth 214-MDA Reported at 1.645 sigma |
| Pb-214* | : Lead 214-MDA Reported at 1.654 sigma |
| Co-58* | : Cobalt 58-MDA Reported at 1.645 sigma |
| Co-60* | : Cobalt 60-MDA Reported at 1.645 sigma |
| Cs-137* | : Cesium 137-MDA Reported at 1.645 sigma |
| Ag-110m* | : Silver 110m-MDA Reported at 1.645 sigma |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| $2\sigma$ | : Counting error at the 95% confidence level, $2\sigma$ |

Job approved by:

Signed:
.....
Approved
Quality Assurance Department

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

20-Apr-92

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Job: 912295E

Status: Final

QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: ljb Via: Federal Express

Sample Container Type: pl L, gl gal, gl L btl
Sample Type: Water
Preservative When Received: None
Additional Lab Preparation: None

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 2 pCi/l | none | Pingilley | 12/ 6-12/17 |
| Gross Beta | 900.0 | 2 pCi/l | none | Pingilley | 12/ 6-12/17 |
| Radium | 900.1 | 1 pCi/l | none | Seidel | 12/16-12/22 |
| U-234/235/238 | 907.0 | 0.4 pCi/l | none | Meyer | 1/17- 1/24 |
| Am-241 | 907.0 | 0.5 pCi/l | none | Preston | 1/12- 1/20 |
| Tritium | 906.0 | 460 pCi/l | none | Eggelston | 12/22- 1/ 8 |
| I-129 | 902.0 | 1 pCi/l | none | Preston | 12/30- 1/ 7 |
| Pu-238/239/240 | 907.0 | 0.4 pCi/l | none | Preston | 1/ 6- 1/13 |
| Sr-89/90 | 905.0 | 1 pCi/l | none | Kidwell | 12/30-12/23 |
| Tc-99 | HASL 300 | 1 pCi/l | none | Preston | 12/17- 1/ 6 |
| C-14 | 520-84-006 | 3 pCi/l | none | Meyers | 12/16- 1/17 |
| Bi-214* | 901.0 | ---- | none | Kidwell | 1/24 |
| Pb-214* | 901.0 | ---- | none | Kidwell | 1/24 |
| Co-58* | 901.0 | ---- | none | Kidwell | 1/24 |
| Co-60* | 901.0 | ---- | none | Kidwell | 1/24 |
| Cs-137* | 901.0 | ---- | none | Kidwell | 1/24 |
| Ag-110m* | 901.0 | ---- | none | Kidwell | 1/24 |
| Gamma Spec | 901.0 | ---- | none | Kidwell | 1/24 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

GDSRC [redacted] k d't

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 2

Client: [redacted]
Est. Final Proj. Sampling Date: [redacted]
Work Order #: [redacted]
Project Contact/Phone #: [redacted]
AD Project Manager: [redacted]
QC: [redacted] Del: [redacted] TAT: [redacted]

Date Rec'd _____ Date Due _____
Account # _____

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | | | | | | | | 1G | 1G | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | | | | 9L | 1L | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED → | | | ORGANIC | | | | | | | | | INORG | | | | | | |
| | | | VOA | BNA | Pest/PCB | Herb | Radio | | | | | Metal | CN | | | | | |

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 | WESTON Analytics Use Only | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Site 266 | | | W | 9/17 | | | | | | ✓ | ✓ | | | 91092755-001 | | | | | |
| | 267 | | | | | | | | | | | | | | 002 | | | | | |
| | 268 | | | | | | | | | | | | | | 003 | | | | | |
| | 269 | | | | | | | | | | | | | | 004 | | | | | |
| | 271 | | | | | | | | | | | | | | 005 | | | | | |
| | 258 | | | | 9/17 | | | | | | | | | | 006 | | | | | |
| | 259 | | | | | | | | | | | | | | 007 | | | | | |
| | 262 | | | | | | | | | | | | | | 008 | | | | | |
| | 225 | | | | | | | | | | | | | | 009 | | | | | |
| | 230 | | | | | | | | | | | | | | 010 | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem (3) - See Attached

DATE/REVISIONS:
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

WESTON Analytics 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'd Y or N

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [illegible] | [illegible] | | |
| | | | |

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

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# _____ Cooler# _____ 381-596a

USRC Task 27

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client: Weston-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 01-30-28-27
Project Contact/Phone #:
AD Project Manager: Dillmas
QC: Del TAT
Date Rec'd: Date Due:
Account #:

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | INORG | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Pb/Cd (3) | | | Metal | CN | | | | | | | |

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 | WESTON Analytics Use Only | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Site 254 | | | W | 9/7/91 | | | | | | ✓ | ✓ | | | 9109275 | 5-011 | | | |
| | 220 | | | | | | | | | | | | | | | 012 | | | |
| | 221 | | | | | | | | | | | | | | | 013 | | | |
| | 222 | | | | | | | | | | | | | | | 014 | | | |
| | 263 | | | | | | | | | | | | | | | 015 | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
1. ____
2. ____
3. ____
4. ____
5. ____
6. ____

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| Hogan | FedEx | | | | | | |
| | | | | | | | |

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 09-26-91
**RFW #:** 9109L803
**W.O. #:** 0630-28-27-0000

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit.

3. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

4. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

5. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

11.14.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc.21\i9-803

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/13/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L803

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 118D | Acidity | 16.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 22.0 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.11 | | MG/L | 0.10 |
| | | pH | 5.7 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 19.3 | | UMHOS/CM | 1.0 |
| -002 | SITE 205D | Acidity | 30.0 | | MG/L | 2.0 |
| | | Chloride | 5.0 | u | MG/L | 5.0 |
| | | Hardness | 23.4 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.14 | | MG/L | 0.10 |
| | | pH | 4.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 24.7 | | UMHOS/CM | 1.0 |
| -003 | SITE 254D | Acidity | 100 | | MG/L | 2.0 |
| | | Chloride | 5.0 | | MG/L | 5.0 |
| | | Hardness | 8.0 | | MG/L | 0.20 |
| | | Nitrate, as N | 0.12 | | MG/L | 0.10 |
| | | pH | 4.8 | | PH UNITS | 0.010 |
| | | Sulfate | 5.0 | u | MG/L | 5.0 |
| | | Specific Conductance | 29.3 | | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/13/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9109L803

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK10 | 91LAL051-MB1 | Acidity | 0.50 u | MG/L | 0.50 |
| BLANK10 | 91LCL112-MB1 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK20 | 91LCL112-MB2 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK30 | 91LCL112-MB3 | Chloride | 5.0 u | MG/L | 5.0 |
| BLANK10 | 91LHD019-MB1 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LHD019-MB2 | Hardness | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LNO224-MB1 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK20 | 91LNO224-MB2 | Nitrate, as N | 0.10 u | MG/L | 0.10 |
| BLANK10 | 91LS4085-MB1 | Sulfate | 5.0 u | MG/L | 5.0 |
| BLANK20 | 91LS4085-MB2 | Sulfate | 5.0 u | MG/L | 5.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/13/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L803
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK10 | 91LSP060-MB1 | Specific Conductance | 1.0 | u | UMHOS/CM | 1.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/13/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L803
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| BLANK10 | 91LCL112-MB1 | Chloride | 24.0 | 5.0 u | 25.0 | 95.8 |
| | | Chloride MSD | 23.8 | 5.0 u | 25.0 | 95.4 |
| BLANK20 | 91LCL112-MB2 | Chloride | 23.7 | 5.0 u | 25.0 | 94.9 |
| BLANK30 | 91LCL112-MB3 | Chloride | 23.0 | 5.0 u | 25.0 | 92.1 |
| BLANK10 | 91LHD019-MB1 | Hardness | 101 | 0.10u | 100 | 101 |
| | | Hardness MSD | 101 | 0.10u | 100 | 101 |
| BLANK20 | 91LHD019-MB2 | Hardness | 330 | 0.10u | 330 | 100 |
| BLANK10 | 91LNO224-MB1 | Nitrate, as N | 0.37 | 0.10u | 0.40 | 93.5 |
| | | Nitrate, as N MSD | 0.38 | 0.10u | 0.40 | 94.8 |
| BLANK20 | 91LNO224-MB2 | Nitrate, as N | 0.37 | 0.10u | 0.40 | 92.5 |
| BLANK10 | 91LS4085-MB1 | Sulfate | 19.5 | 5.0 u | 20.0 | 97.3 |
| | | Sulfate | 19.5 | 5.0 u | 20.0 | 97.3 |
| BLANK20 | 91LS4085-MB2 | Sulfate | 30.0 | 5.0 u | 30.0 | 100 |
| BLANK10 | 91LSP060-MB1 | Specific Conductance | 142 | 1.0 u | 147 | 96.6 |
| | | Specific Conductance M | 142 | 1.0 u | 147 | 96.6 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/13/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9109L803
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| BLANK10 | 91LCL112-MB1 | Chloride | 95.8 | 95.4 | 0.50 |
| BLANK10 | 91LHD019-MB1 | Hardness | 101 | 101 | 0.00 |
| BLANK10 | 91LNO224-MB1 | Nitrate, as N | 93.5 | 94.8 | 1.4 |
| BLANK10 | 91LS4085-MB1 | Sulfate | 97.3 | 97.3 | 0.00 |
| BLANK10 | 91LSP060-MB1 | Specific Conductance | 96.6 | 96.6 | 0.00 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/13/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9109L803

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -003REP | SITE 254D | Chloride | 5.0 | 5.3 | 4.4 |
| | | Hardness | 8.0 | 8.2 | 2.5 |
| | | Nitrate, as N | 0.12 | 0.12 | 1.7 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/26/91 RFW LOT # :9109L803

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 118D | | | | | | |
| ACIDITY | 001 | W | 91LAL051 | 09/24/91 | 10/02/91 | 10/02/91 |
| CHLORIDE | 001 | W | 91LCL112 | 09/24/91 | 10/18/91 | 10/18/91 |
| HARDNESS | 001 | W | 91LHD019 | 09/24/91 | 10/11/91 | 10/11/91 |
| NITRATE | 001 | W | 91LNO224 | 09/24/91 | 09/27/91 | 09/27/91 |
| PH | 001 | W | 91LPH156 | 09/24/91 | 09/26/91 | 09/26/91 |
| SULFATE | 001 | W | 91LS4085 | 09/24/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 001 | W | 91LSP060 | 09/24/91 | 09/27/91 | 09/27/91 |
| SUB-OUT TEST FOR SUB | 001 | W | | 09/24/91 | | |
| SITE 205D | | | | | | |
| ACIDITY | 002 | W | 91LAL051 | 09/24/91 | 10/02/91 | 10/02/91 |
| CHLORIDE | 002 | W | 91LCL112 | 09/24/91 | 10/18/91 | 10/18/91 |
| HARDNESS | 002 | W | 91LHD019 | 09/24/91 | 10/11/91 | 10/11/91 |
| NITRATE | 002 | W | 91LNO224 | 09/24/91 | 09/27/91 | 09/27/91 |
| PH | 002 | W | 91LPH156 | 09/24/91 | 09/26/91 | 09/26/91 |
| SULFATE | 002 | W | 91LS4085 | 09/24/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 002 | W | 91LSP060 | 09/24/91 | 09/27/91 | 09/27/91 |
| SUB-OUT TEST FOR SUB | 002 | W | | 09/24/91 | | |
| SITE 254D | | | | | | |
| ACIDITY | 003 | W | 91LAL051 | 09/24/91 | 10/02/91 | 10/02/91 |
| CHLORIDE | 003 | W | 91LCL112 | 09/24/91 | 10/18/91 | 10/18/91 |
| CHLORIDE | C03 REP | W | 91LCL112 | 09/24/91 | 10/18/91 | 10/18/91 |
| HARDNESS | 003 | W | 91LHD019 | 09/24/91 | 10/11/91 | 10/11/91 |
| HARDNESS | 003 REP | W | 91LHD019 | 09/24/91 | 10/11/91 | 10/11/91 |
| NITRATE | 003 | W | 91LNO224 | 09/24/91 | 09/27/91 | 09/27/91 |
| NITRATE | 003 REP | W | 91LNO224 | 09/24/91 | 09/27/91 | 09/27/91 |
| PH | 003 | W | 91LPH156 | 09/24/91 | 09/26/91 | 09/26/91 |
| SULFATE | 003 | W | 91LS4085 | 09/24/91 | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | 003 | W | 91LSP060 | 09/24/91 | 09/27/91 | 09/27/91 |
| SUB-OUT TEST FOR SUB | 003 | W | | 09/24/91 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | W | 91LAL051 | N/A | 10/02/91 | 10/02/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/26/91 RFW LOT # :9109L803

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALKALINITY | MB2 | W | 91LAL051 | N/A | 10/02/91 | 10/02/91 |
| ALKALINITY | MB2 BS | W | 91LAL051 | N/A | 10/02/91 | 10/02/91 |
| CHLORIDE | MB1 | W | 91LCL112 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB1 BS | W | 91LCL112 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB1 BSD | W | 91LCL112 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB2 | W | 91LCL112 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB2 BS | W | 91LCL112 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB3 | W | 91LCL112 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB3 BS | W | 91LCL112 | N/A | 10/18/91 | 10/18/91 |
| HARDNESS | MB1 | W | 91LHD019 | N/A | 10/11/91 | 10/11/91 |
| HARDNESS | MB1 BS | W | 91LHD019 | N/A | 10/11/91 | 10/11/91 |
| HARDNESS | MB1 BSD | W | 91LHD019 | N/A | 10/11/91 | 10/11/91 |
| HARDNESS | MB2 | W | 91LHD019 | N/A | 10/11/91 | 10/11/91 |
| HARDNESS | MB2 BS | W | 91LHD019 | N/A | 10/11/91 | 10/11/91 |
| NITRATE | MB1 | W | 91LNO224 | N/A | 09/27/91 | 09/27/91 |
| NITRATE | MB1 BS | W | 91LNO224 | N/A | 09/27/91 | 09/27/91 |
| NITRATE | MB1 BSD | W | 91LNO224 | N/A | 09/27/91 | 09/27/91 |
| NITRATE | MB2 | W | 91LNO224 | N/A | 09/27/91 | 09/27/91 |
| NITRATE | MB2 BS | W | 91LNO224 | N/A | 09/27/91 | 09/27/91 |
| SULFATE | MB1 | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |
| SULFATE | MB1 BS | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |
| SULFATE | MB1 BSD | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |
| SULFATE | MB2 | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |
| SULFATE | MB2 BS | W | 91LS4085 | N/A | 10/01/91 | 10/01/91 |
| SPECIFIC CONDUCTANCE | MB1 | W | 91LSP060 | N/A | 09/27/91 | 09/27/91 |
| SPECIFIC CONDUCTANCE | MB1 BS | W | 91LSP060 | N/A | 09/27/91 | 09/27/91 |
| SPECIFIC CONDUCTANCE | MB1 BSD | W | 91LSP060 | N/A | 09/27/91 | 09/27/91 |

WESTON Analytics Use Only
9109L803

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TASK27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27-0000
Project Contact/Phone #:
AD Project Manager: Dave Thomas
QC: Std Del: Std TAT: 30 Day
Date Rec'd: 9-26-91 Date Due: 10-26-91
Account #: WSRC27STD

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | | | | SUB | | | | | 4 | | 1 | 4 | 4 | |
| #/Type Container | Liquid | 1 G | | | | 4 P | | | 1 P | | 8 P | | 1 | 1 P | 1 P | |
| | Solid | | | | | | | | | | | | | | | |
| Volume | Liquid | 40 | | | | 1 L | | | 1 L | | 500 | | 1 | 500 | 500 | |
| | Solid | | | | | | | | | | | | | | | |
| Preservatives | | None | | | | None | | | None | | None | | 1 | None | None | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | INORG | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Radio Chem | | WSCFF | Metal | CN | ALKL ACID | CL Spec. | NO3 Nitrate | SO4 Ph | Nitrate | |

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

WESTON Analytics Use Only (WS27LSL)

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Lito 118D | | | W | 9-24-91 | 11:15 | ✓ | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 002 | Lito 205D | | | | | 11:45 | ✓ | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 003 | Lito 254D | | | | | 12:30 | ✓ | | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 004 | Trip Blank | | | | | — | ✓ | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Metals = As, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn.
Radio Chem Ref. RFW 9109L612

DATE/REVISIONS:
10/16/91 1 Cancel Alkl analysis sample was for acid
2
3
4
5
6

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 1338472466
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'd Y or N
Bottle order that used instead.

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: N/A

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Fed-X | [illegible] | 9-26-91 | 9:30 |
| | [illegible] 9-26-91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [illegible] | | |
| | [illegible] 9-26-91 | | |

RFW 21-21-001/A-7/91 L372 L373 L375 L377 L378 Ref# Cooler# 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WSRC-TASK 27
RFW #: 9109L803
W.O. #: 0630-28-27-0000

SAMPLES RECEIVED: 9-26-91

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

4. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

10.21.91.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

Date

ncc.21\m9-803

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/18/91

CLIENT: WSRC-TASK 31
WORK ORDER: 0630-28-31-0000

WESTON BATCH #: 9109L728

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| -002 | HIPSL #15 | % Moisture | 3.1 | % | 0.10 |
| | | % Solids | 96.9 | % | 0.10 |
| | | Cation Exchange Capacit | 19.8 | meq/100g | 0.010 |
| | | Nitrate, as N | 1.1 | MG/KG | 0.52 |
| | | Total Organic Carbon | 0.89 | % | 0.10 |
| | | pH | 6.4 | PH UNITS | 0.010 |
| | | Phosphate, as P | 63.5 | MG/KG | 16.5 |
| -005 | HIPSL #14 | % Moisture | 15.2 | % | 0.10 |
| | | % Solids | 84.8 | % | 0.10 |
| | | Cation Exchange Capacit | 7.1 | meq/100g | 0.010 |
| | | Nitrate, as N | 4.8 | MG/KG | 0.59 |
| | | Total Organic Carbon | 2.6 | % | 0.10 |
| | | pH | 5.3 | PH UNITS | 0.010 |
| | | Phosphate, as P | 58.5 | MG/KG | 11.6 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/18/91

CLIENT: WSRC-TASK 31 WESTON BATCH #: 9109L728
WORK ORDER: 0630-28-31-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK10 | 91LNA224-MB1 | Nitrate, as N | 0.50 u | MG/KG | 0.50 |
| BLANK20 | 91LNA224-MB2 | Nitrate, as N | 0.50 u | MG/KG | 0.50 |
| LCSS0 | 91LTP099-LCS | Phosphate, as P | 5.0 u | MG/KG | 5.0 |
| BLANK10 | 91LTP099-MB1 | Phosphate, as P | 5.0 u | MG/KG | 5.0 |
| BLANK20 | 91LTP099-MB2 | Phosphate, as P | 5.0 u | MG/KG | 5.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 10/18/91

CLIENT: WSRC-TASK 31
WORK ORDER: 0630-28-31-0000

WESTON BATCH #: 9109L728

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -002 | HIPSL #15 | Nitrate, as N | 6.4 | 1.1 | 5.2 | 102 |
| | | Nitrate, as N MSD | 6.5 | 1.1 | 5.2 | 105 |
| BLANK10 | 91LNA224-MB1 | Nitrate, as N | 1.9 | 0.50u | 2.0 | 93.4 |
| | | Nitrate, as N MSD | 1.9 | 0.50u | 2.0 | 94.8 |
| BLANK20 | 91LNA224-MB2 | Nitrate, as N | 1.9 | 0.50u | 2.0 | 96.2 |
| LCSS0 | 91LTP099-LCS | Phosphate, as P | 121 | 5.0 u | 115 | 105 |
| BLANK10 | 91LTP099-MB1 | Phosphate, as P | 24.9 | 5.0 u | 25.0 | 99.4 |
| | | Phosphate, as P MSD | 49.8 | 5.0 u | 50.0 | 99.6 |
| BLANK20 | 91LTP099-MB2 | Phosphate, as P | 26.0 | 5.0 u | 25.0 | 104 |
| | | Phosphate, as P MSD | 49.9 | 5.0 u | 50.0 | 99.9 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 10/18/91

CLIENT: WSRC-TASK 31

WESTON BATCH #: 9109L728

WORK ORDER: 0630-28-31-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| -002 | HIPSL #15 | Nitrate, as N | 102 | 105 | 2.8 |
| BLANK10 | 91LNA224-MB1 | Nitrate, as N | 93.4 | 94.8 | 1.4 |
| BLANK10 | 91LTP099-MB1 | Phosphate, as P | 99.4 | 99.6 | 0.00 |
| BLANK20 | 91LTP099-MB2 | Phosphate, as P | 104 | 99.9 | 4.3 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 10/18/91

CLIENT: WSRC-TASK 31

WESTON BATCH #: 9109L728

WORK ORDER: 0630-28-31-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -002REP | HIPSL #15 | Nitrate, as N | 1.1 | 1.2 | 3.2 |
| BLANREP | 91LTP099-MB2 | Phosphate, as P | 5.0 u | 5.0 u | NC |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 31

DATE RECEIVED: 09/18/91 RFW LOT # :9109L728

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| HIPSL #15 | | | | | | |
| SUB-OUT TEST FOR SUB | 001 | W | | 08/28/91 | | |
| % MOISTURE | 002 | S | 91L%S180 | 08/29/91 | 09/20/91 | 09/21/91 |
| % SOLIDS | 002 | S | 91L%S179 | 08/29/91 | 09/20/91 | 09/21/91 |
| CATION EXCHANGE CAPA | 002 | S | 91LCE014 | 08/29/91 | 09/24/91 | 09/25/91 |
| NITRATE | 002 | S | 91LNA224 | 08/29/91 | 09/27/91 | 09/27/91 |
| NITRATE | 002 REP | S | 91LNA224 | 08/29/91 | 09/27/91 | 09/27/91 |
| NITRATE | 002 MS | S | 91LNA224 | 08/29/91 | 09/27/91 | 09/27/91 |
| NITRATE | 002 MSD | S | 91LNA224 | 08/29/91 | 09/27/91 | 09/27/91 |
| TOTAL ORGANIC CARBON | 002 | S | 91LOM051 | 08/29/91 | 09/24/91 | 10/01/91 |
| PH | 002 | S | 91LPH154 | 08/29/91 | 09/20/91 | 09/20/91 |
| TOTAL PHOSPHATE | 002 | S | 91LTP099 | 08/29/91 | 10/16/91 | 10/16/91 |
| SUB-OUT TEST FOR SUB | 002 | S | | 08/29/91 | | |
| TCLP | 002 | S | 91LTO081 | 08/29/91 | 09/23/91 | 09/24/91 |
| HIPSL #14 | | | | | | |
| SUB-OUT TEST FOR SUB | 004 | W | | 08/23/91 | | |
| % MOISTURE | 005 | S | 91L%S180 | 08/28/91 | 09/20/91 | 09/21/91 |
| % SOLIDS | 005 | S | 91L%S179 | 08/28/91 | 09/20/91 | 09/21/91 |
| CATION EXCHANGE CAPA | 005 | S | 91LCE014 | 08/28/91 | 09/24/91 | 09/25/91 |
| NITRATE | 005 | S | 91LNA224 | 08/28/91 | 09/27/91 | 09/27/91 |
| TOTAL ORGANIC CARBON | 005 | S | 91LOM051 | 08/28/91 | 09/24/91 | 10/01/91 |
| PH | 005 | S | 91LPH154 | 08/28/91 | 09/20/91 | 09/20/91 |
| TOTAL PHOSPHATE | 005 | S | 91LTP099 | 08/28/91 | 10/16/91 | 10/16/91 |
| SUB-OUT TEST FOR SUB | 005 | S | | 08/28/91 | | |
| TCLP | 005 | S | 91LTO081 | 08/28/91 | 09/23/91 | 09/24/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| NITRATE | MB1 | S | 91LNA224 | N/A | 09/27/91 | 09/27/91 |
| NITRATE | MB1 BS | S | 91LNA224 | N/A | 09/27/91 | 09/27/91 |
| NITRATE | MB1 BSD | S | 91LNA224 | N/A | 09/27/91 | 09/27/91 |
| NITRATE | MB2 | S | 91LNA224 | N/A | 09/27/91 | 09/27/91 |
| NITRATE | MB2 BS | S | 91LNA224 | N/A | 09/27/91 | 09/27/91 |
| TOTAL PHOSPHATE | LCS | S | 91LTP099 | N/A | 10/16/91 | 10/16/91 |
| TOTAL PHOSPHATE | LCS BS | S | 91LTP099 | N/A | 10/16/91 | 10/16/91 |
| TOTAL PHOSPHATE | MB1 | S | 91LTP099 | N/A | 10/16/91 | 10/16/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 31

DATE RECEIVED: 09/18/91 RFW LOT # :9109L728

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| TOTAL PHOSPHATE | MB1 BS | S | 91LTP099 | N/A | 10/16/91 | 10/16/91 |
| TOTAL PHOSPHATE | MB1 BSD | S | 91LTP099 | N/A | 10/16/91 | 10/16/91 |
| TOTAL PHOSPHATE | MB2 | S | 91LTP099 | N/A | 10/16/91 | 10/16/91 |
| TOTAL PHOSPHATE | MB2 REP | S | 91LTP099 | N/A | 10/16/91 | 10/16/91 |
| TOTAL PHOSPHATE | MB2 BS | S | 91LTP099 | N/A | 10/16/91 | 10/16/91 |
| TOTAL PHOSPHATE | MB2 BSD | S | 91LTP099 | N/A | 10/16/91 | 10/16/91 |

WESTON Analytics Use Only

9109L728

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TASK 31
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-31-0000
Project Contact/Phone #: Tom Gaughan
AD Project Manager: Dirk Thomas
QC: STD Del: STD TAT: 30 day
Date Rec'd: 9-18-91 Date Due: 10-18-91
Account #: WSRC 31 STD

| Refrigerator # | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | | | | | SUB | SUB | 4 | 4 | | 4 | 4 | 4 | | | | |
| | Solid | | | | | 1G | 1P | 1P | 1P | | 1P | | 1P | | | | |
| | | | | | | | | 1G | 1G | | 1G | 1G | | | | | |
| Volume | Liquid | | | | | 4L | 1L | 1L | 1L | | | | 1L | | | | |
| | Solid | | | | | | | 500g | 500g | | 500g | 500g | | | | | |
| Preservatives | | | | | | pour | pour | Hno3 | Hno3 | | | | | | | | |
| ANALYSES REQUESTED | | VOA | BNA | Pest/PCB | Herb | Radio Chem | TRMum | Soil TCLP Metals | Metal | CN | Ph, Do3 % Moist | TOC, Acid Geo, Poly | Pb | | | | |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only: ① ISUB | ② ISUB | ITCLP | ① / ② | IPH, Lig | I % MST | ECOT, ISUB | MPBTO | RCRATCW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 001 | HIPSL #15 | | | W | 8-28-91 | | ⊗ | ⊗ | | ✓ | | | | | |
| | 002 | HIPSL #15 | | | S | 8-29-91 | | ✓ | ⊗ | ✓ | ✓ | | ✓ | ✓ | | |
| | 003 | HIPSL #15 - TCLP of 002 | | | W | - | | | | | | | | | | ✓ |
| | 004 | HIPSL #14 | | | W | 8-23-91 | | ⊗ | ⊗ | | ✓ | | | | | |
| | 005 | HIPSL #14 | | | S | 8-28-91 | | ✓ | ⊗ | ✓ | ✓ | | ✓ | ✓ | | |
| | 006 | HIPSL #14 TCLP of 005 | | | W | | | | | | | | | | | ✓ |
| | 007 | Pb STD 1ppm | | | W | 9/16/91 | | | | | | | | | ✓ | |

Metals ① = TCLP Metals By TCLP Detection Limits (RCRATCW)
Metals ② = Ag, Cd, Fe, Ni, Sn, As, Co, Hg, Pb, Tl, Ba, Cr, Mn, Sb, V, Zn, Be, Cu, Mo, Se

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radio Chem = Am 241, CS137, EU-155, Pu238, SR-90, U234, CM244, CO-60, RU106, Pu239, TC-99, SB125, EU-152, I-129, RA, TH232, U239, CS134, EU-154, NP237, SR-89, U235, Gross Alpha/Beta, H-3
Original Rewritten

DATE/REVISIONS:
10/1/91 1. Radiochem ① to be run on 002 + 005
2. Radiochem ② to be run on 001 + 004
10-3-91 3. Radiochem submitted to Eberline
10-7-91 4. H-3 (Tritium added to Radiochem List of ab.
5.
6.

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| Fed-X | [signature] | 9-19-91 | 09:30 | | | | |
| | [signature] | 9-18-91 | | | [signature] | 9-18-91 | |

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 0560415915
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

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

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

Denise Thomas Pr. Del. yellow initials

WESTON Analytics Use Only: 9109L803

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-TASK 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-2750000
Project Contact/Phone #:
AD Project Manager: Denise Thomas
QC: Del: TAT: 30 Day
Date Rec'd: 9-26-91 Date Due: 10-26-91
Account #: WSRC27STD

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | | | | SUB | | | | | 4 | — | 1 | 4 | 4 | |
| #/Type Container | Liquid | 1G | | | | 4P | | | 1P | | 4P | — | 1 | 1P | 1P | |
| | Solid | | | | | | | | | | | | | | | |
| Volume | Liquid | 40 | | | | 1L | | | 1L | | 500ml | — | 1 | 500ml | 500ml | |
| | Solid | | | | | | | | | | | | | | | |
| Preservatives | | None | | | | None | | | HNO3 | | None | — | | None | HNO3 | |
| ANALYSES REQUESTED | | ORGANIC: VOA | BNA | Pest/PCB | Herb | Rad Chem | | Cyanide | INORG: Metal | CN | AKL Acid | Cl Spec. | | SO4 Ph | Hardness | |

WESTON Analytics Use Only: WS237LS1

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | VOA | BNA | Pest/PCB | Herb | Rad Chem | | Cyanide | Metal | CN | AKL Acid | Cl Spec. | | SO4 Ph | Hardness |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S - Soil | 001 | Site 118D | | | W | 9-24-91 | 11:15 | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| SE - Sediment | 002 | Site 205D | | | | | 11:45 | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| SO - Solid | 003 | Site 254D | | | | | 12:15 | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| SL - Sludge | 004 | Trip Blank | | | | | | ✓ | | | | | | | | | | | | | |
| W - Water | | | | | | | | | | | | | | | | | | | | | |
| O - Oil | | | | | | | | | | | | | | | | | | | | | |
| A - Air | | | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | | | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | | | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Metals = Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn.

Radio-Chem Ref. RFW 9109L612

DATE/REVISIONS:

10-16-91 1. Cancel AKL analysis sample run for acid per [illegible]

2.

3.

4.

5.

6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 1133478666
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'd Y or N

Bottles arrived that need initials.

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: N/A

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| [signature] | [signature] | 9-26-91 | 9:30 |
| | [signature] | 9-26-91 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [signature] | 9-26-91 | |

RFW 21-21-001/A-7/91 ✓ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

# WESTON RADIOACTIVE SAMPLE EVALUATION (Page 2 of 2)

RFW Batch # 9109L802,B03 Completed By C. PIPER

| Activity Rating* | Sample ID | Form (liq or sol) | RFW ID | Gamma microR/hr | Alpha cpm | Alpha eff. fact | Alpha dpm | nCi/g | Mass (g) | nCi |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | LAKELAND 0-6 | SOIL | B02-001 | 4 | 0 | | | 0.0037 | | |
| 1 | LAKELAND 30-36 | | 002 | 4 | 0 | | | 0.0179 | | |
| 1 | ORANGEBURG 0-8 | | 003 | 4 | 0 | | | 0 | | |
| 1 | ORANGEBURG 30-36 | | 004 | 5 | 0 | | | 0.0157 | | |
| 1 | 118D | LIQ | 803-001 | 4 | 0 | | | 0 | | |
| 1 | 205D | | 002 | 4 | 0 | | | 0 | | |
| 1 | 254D | | 003 | 4 | 0 | | | 0 | | |

CAP 9-25-91

*Activity Rating:
(per lab NRC License)

1 Not Radioactive
2 Radioactive
3 Too Radioactive to Handle at Lab

RFW 21-21-013/A-06/91 (Side 2 of 2)

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC - TASK 27 **SAMPLES RECEIVED:** 09-26-91
**RFW #:** 9109L803, GC/MS VOLATILE
**W.O. #:** 0630-28-27

**NARRATIVE**

The set of samples consisted of four (4) water samples collected on 09-24-91.

The samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 10-04-91.

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

1. Non-target compounds were not detected in these samples.

2. All surrogate recoveries were within EPA QC limits.

3. Matrix spike recoveries are associated with RFW lot 9109L778.

4. The laboratory blank contained the common contaminants methylene chloride and acetone at levels less than 2x the CRQL.

10.22.91.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

Date

WESTON

# GLOSSARY OF VOA DATA

## DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero; for example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

X = Additional qualifiers used as required are explained in the case narrative.

NQ = Result qualitatively confirmed but not able to quantify.

## ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that surrogate recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not applicable.

DF = Dilution factor.

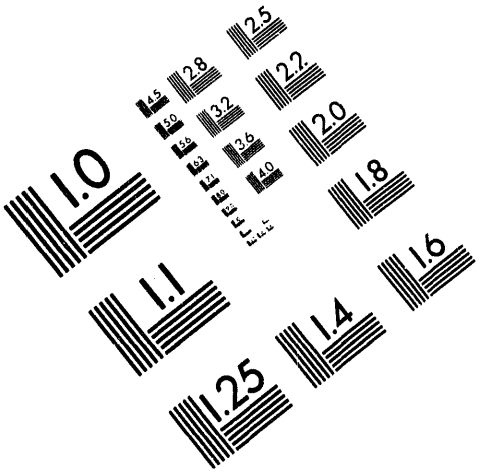
NR = Not required.

Roy F. Weston, [illegible] - Lionville Laboratory
Volatile by GC/MS, HSL List

RFW Batch Number: 9109L803 Client: WSRC-TASK 27 Work Order: 0630-28-27-0000 Report Date: 10/[illegible]/91 17:46 Page: 1a

| | Cust ID: | SITE 118D | | SITE 205D | | SITE 254D | | TRIP BLANK | | VBLK | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 002 | | 003 | | 004 | | 91LVK174-MB1 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | ug/L | | ug/L | | ug/L | | ug/L | | ug/L | |
| Surrogate Recovery | Toluene-d8 | 99 | % | 100 | % | 99 | % | 100 | % | 95 | % |
| | Bromofluorobenzene | 95 | % | 96 | % | 95 | % | 95 | % | 93 | % |
| | 1,2-Dichloroethane-d4 | 94 | % | 97 | % | 93 | % | 88 | % | 91 | % |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 4 | JB | 5 | JB | 4 | JB | 12 | B | 5 | |
| Acetone | | 4 | JB | 5 | JB | 16 | B | 4 | JB | 14 | |
| Carbon Disulfide | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloroethene (total) | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Chloroform | | 5 | U | 5 | U | 5 | U | 3 | J | 5 | U |
| 1,2-Dichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Carbon Tetrachloride | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl Acetate | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2-Dichloropropane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| cis-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trichloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Dibromochloromethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2-Trichloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Benzene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Trans-1,3-Dichloropropene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromoform | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,1,2,2-Tetrachloroethane | | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |

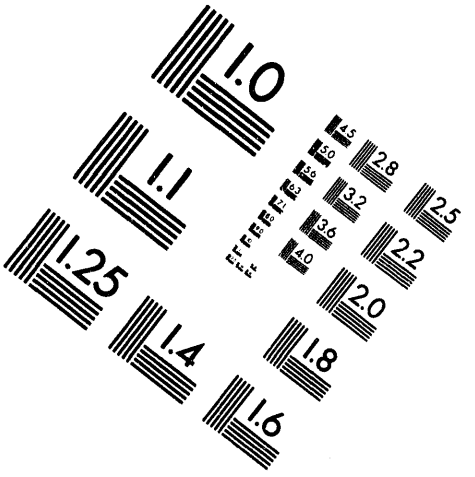
*= Outside of EPA CLP QC limits.



**Association for Information and Image Management**

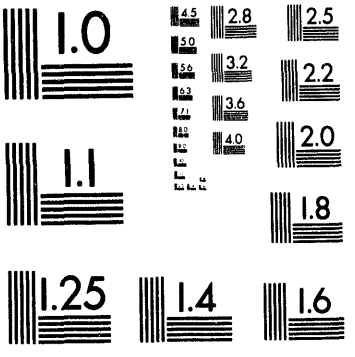
1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

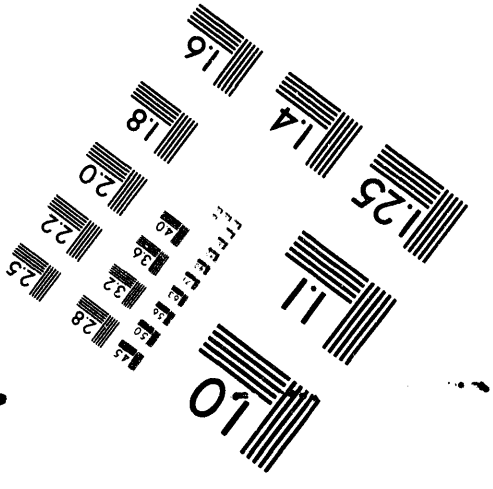
301/587-8202

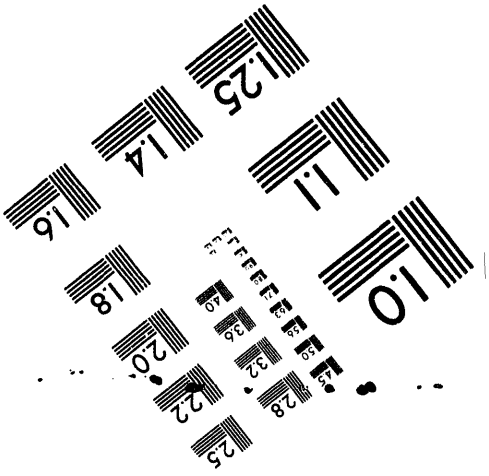


Centimeter

Inches







MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

6 of 7

R[illegible]atch Number: 9109L803 Client: WSRC-TAS[illegible] Work Order: 0630-28-27-0000 Page: 1b

| Cust ID: | SITE 118D | SITE [illegible]5D | SITE 254D | TRIP BLANK | VBLK |
|---|---|---|---|---|---|
| RFW#: | 001 | 002 | 003 | 004 | 91LVK174-MB1 |
| Toluene | 5 U | 5 U | 20 | 5 U | 5 U |
| Chlorobenzene | 5 U | 5 U | 5 U | 5 U | 5 U |
| Ethylbenzene | 5 U | 5 U | 5 U | 5 U | 5 U |
| Styrene | 5 U | 5 U | 5 U | 5 U | 5 U |
| Xylene (total) | 5 U | 5 U | 5 U | 5 U | 5 U |

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 118D

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L803-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AKA405

Level: (low/med) LOW

Date Received: 09/26/91

% Moisture: not dec. _____

Date Analyzed: 10/04/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 205D

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L803-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AKA406

Level: (low/med) LOW

Date Received: 09/26/91

% Moisture: not dec. _____

Date Analyzed: 10/04/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SITE 254D

Lab Name: Roy F. Weston, Inc. Work Order: 0630-?8-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L803-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AKA407

Level: (low/med) LOW

Date Received: 09/26/91

% Moisture: not dec. _____

Date Analyzed: 10/04/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

TRIP BLANK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 9109L803-004

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AKA404

Level: (low/med) LOW

Date Received: 09/26/91

% Moisture: not dec. _____

Date Analyzed: 10/04/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 0630-28-27-0000

Client: WSRC-TASK 27

Matrix: WATER

Lab Sample ID: 91LVK174-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: AKA403

Level: (low/med) LOW

Date Received: 10/04/91

% Moisture: not dec. _____

Date Analyzed: 10/04/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 09/26/91 RFW LOT # :9109L803

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 118D | 001 | W | 91LVK174 | 09/24/91 | N/A | 10/04/91 |
| SITE 205D | 002 | W | 91LVK174 | 09/24/91 | N/A | 10/04/91 |
| SITE 254D | 003 | W | 91LVK174 | 09/24/91 | N/A | 10/04/91 |
| TRIP BLANK | 004 | W | 91LVK174 | 09/24/91 | N/A | 10/04/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| VBLK | MB1 | W | 91LVK174 | N/A | N/A | 10/04/91 |

WESTON Analytics Use Only

9109L803

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

[redacted]

Date Rec'd 9-26-91 Date Due 10-26-91

Account # WSRC27STD

| Refrigerator # | | 1 | | | | Sub | | | | | 4 | | 4 | 4 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # /Type Container | Liquid | 1 G | | | | 1 G | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | |
| Volume | Liquid | 40 | | | | 1 L | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | |
| Preservatives | | None | | | | None | | | | | None | | | | |

ANALYSES REQUESTED →

| ORGANIC | | | | | | | INORG | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Pest Chem | | 8021 | Metal | CN | Alk Acid | Spec | Alk | SO4 Ph | Hardness |

WESTON Analytics Use Only WS227LS1

MATRIX CODES: S - Soil, SE - Sediment, SO - Solids, 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 | 8021 | | | | Sub | | | Pest Chem | Alk Acid | Alk Acid | Spec | Alk | SO4 Ph | Hardness |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | [illegible]718D | | | LO | 9-24-91 | 11:15 | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 002 | [illegible]205D | | | | | 11:45 | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 003 | [illegible]254D | | | | | 12:15 11:45 | ✓ | | | | ✓ | | | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 004 | Trip Blank | | | | | — | ✓ | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Metals = As, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn.

Radio Chem Ref. RFW 9109L612

DATE/REVISIONS:

10-16-91 1. Cancel Alk analyses sample run for acid per SDG

2.

3.

4.

5.

6.

WESTON Analytics Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 1L3334786666
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'd Y or N

Bottles arrived that need instead.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Lad-X | [signature] | 9-26-91 | 9:30 |
| | [signature] 9-26-91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | [signature] 9-26-91 | | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: N/A

L372 ____ L373 ____ L375 ____ L377 ____ L378 ____ Ref# ____ Cooler# ____

RFW 21-21-001/A-7/91

381-596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

Task #27

22-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 09:33
PO #: LSA #LL-0962-F4

Job: 912291E

Status: Final

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Ra-226 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109-803-001 | 0.0 | ±1.1 | 3.6 | ±1.7 | 1.4 | ±0.6 |
| 9109-803-002 | 25 | ±5 | 14 | ±3 | 1.1 | ±0.6 |
| 9109-803-003 | 18 | ±4 | 12 | ±2 | 7.0 | ±1.7 |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109-803-001 | 0.0 | ±0.8 | 0.0 | ±0.6 | 0.0 | ±0.7 |
| 9109-803-002 | 0.5 | ±1.1 | 0.0 | ±0.6 | 0.8 | ±1.2 |
| 9109-803-003 | 0.0 | ±0.9 | 0.0 | ±0.6 | 0.0 | ±0.8 |

| Sample Id | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109-803-001 | 47000 | ±1000 | 0.4 | ±6.6 | 0.0 | ±0.9 |
| 9109-803-002 | 11000 | ±1000 | 5.8 | ±8.9 | 0.2 | ±0.9 |
| 9109-803-003 | 2700 | ±400 | 0 | ±10 | 0.0 | ±1.0 |

| Sample Id | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109-803-001 | 0.0 | ±0.8 | 0.0 | ±4.1 | 0.0 | ±3.8 |
| 9109-803-002 | 1.0 | ±1.1 | 0.0 | ±5.6 | 5.9 | ±5.0 |
| 9109-803-003 | 0.5 | ±1.2 | 0.0 | ±5.4 | 5.8 | ±5.4 |

BARRINGER LABORATORIES INC.
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22-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
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Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 09:33
PO #: LSA #LL-0962-F4

Job: 912291E

Status: Final

**Sample Type: Water**

| Sample Id | Tc-99 pCi/l | Error 2σ | Am-241 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| 9109-803-001 | 4.3 | ±7.0 | 0.0 | ±1.0 | 0.0 | ±31 |
| 9109-803-002 | 2.5 | ±7.5 | 0.0 | ±0.8 | 13 | ±18 |
| 9109-803-003 | 2.4 | ±7.5 | 0.0 | ±0.6 | 18 | ±30 |

GAMMA SPECTROSCOPY

| Sample Id | Cs-137 pCi/l |
|---|---|

**Sample Type: Water**

| | |
|---|---|
| 9109-803-001 | <80 |
| 9109-803-002 | <80 |
| 9109-803-003 | <80 |

BARRINGER LABORATORIES INC.
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22-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 09:33
PO #: LSA #LL-0962-F4

Job: 912291E

Status: Final

GAMMA SPECTROSCOPY

Abbreviations:

Parameters:

| | |
|---|---|
| Ra-226 | : Radium-226 |
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| Am-241 | : Americium-241 |
| C-14 | : Carbon-14 |
| Cs-137 | : Cesium-137 |
| Gamma Spec | : Gamma Spectralanalysis |

Units:

| | |
|---|---|
| pCi/l | : picoCuries per liter |
| 2σ | : Counting error at the 95% confidence level, 2σ |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

Job approved by:

Signed: Ellen La Riviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
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22-Jan-92

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PO #: LSA #LL-0962-F4

Job: 912291E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gross Alpha Total pCi/l | Error 2σ | Gross Beta Total pCi/l | Error 2σ | Ra-226 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 2.4 | ±1.6 | 4.2 | ±1.8 | 0.8 | ±0.6 |
| Duplicate | 3.4 | ±1.9 | 6.8 | ±1.9 | 0.8 | ±0.6 |
| Duplicate % diff. | 17 | --- | 24 | --- | 0.0 | --- |
| Std (found value) | 226 | ±6 | 111 | ±2 | 107 | ±3 |
| Std (true value) | 206 | --- | 106 | --- | 101 | --- |
| Std % diff. | 9.7 | --- | 4.7 | --- | 5.9 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.2 | ±0.2 | 0.3 | ±0.3 | 0.4 | ±0.3 |
| Spike % rec. | 102 | --- | 103 | --- | --- | --- |

| Sample Id | U-234 Total pCi/l | Error 2σ | U-235 Total pCi/l | Error 2σ | U-238 Total pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.7 | ±1.2 | 0.0 | ±0.6 | 1.0 | ±1.2 |
| Duplicate | 0.5 | ±1.1 | 0.0 | ±0.6 | 1.0 | ±1.2 |
| Duplicate % diff. | 17 | --- | 0.0 | --- | 0.0 | --- |
| Std (found value) | 201 | ±6 | 8.0 | ±1.1 | 187 | ±5 |
| Std (true value) | 192 | --- | 8.8 | --- | 192 | --- |
| Std % diff. | 4.5 | --- | 9.1 | --- | 2.6 | --- |
| Std % rec. | --- | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.1 | 0.0 | ±0.1 | 0.0 | ±0.1 |
| Spike % rec. | 115 | --- | 102 | --- | 110 | --- |

| Sample Id | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 2800 | ±400 | 0 | ±15 | 0.0 | ±1.5 |
| Duplicate | 2600 | ±400 | 6 | ±17 | 0.0 | ±2.5 |
| Duplicate % diff. | 3.7 | --- | 100 | --- | 0.0 | --- |

BARRINGER LABORATORIES INC.
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22-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 09:33
PO #: LSA #LL-0962-F4

Job: 912291E
Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Tritium pCi/l | Error 2σ | I-129 pCi/l | Error 2σ | Pu-238 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std (found value) | 55551 | ±1081 | 1155 | ±25 | 115 | ±4 |
| Std (true value) | 55800 | --- | 993 | --- | 104 | --- |
| Std % diff. | 0.2 | --- | 16 | --- | 11 | --- |
| Std % rec. | 99.5 | --- | 116 | --- | 111 | --- |
| Blank | 0.00 | ±280 | 0.0 | ±2.5 | 0.1 | ±0.2 |
| Spike % rec. | --- | --- | --- | --- | 118 | --- |

| Sample Id | Pu-239/240 pCi/l | Error 2σ | Sr-89 pCi/l | Error 2σ | Sr-90 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 10 | --- | 3.1 | ±4.5 | 0.8 | ±6.1 |
| Duplicate | 7.2 | --- | 5.2 | ±5.2 | 0.0 | ±5.3 |
| Duplicate % diff. | 16 | --- | 25 | --- | 50 | --- |
| Std (found value) | 115 | ±4 | 20 | ±2 | 23 | ±2 |
| Std (true value) | 104 | --- | 21 | --- | 20.6 | --- |
| Std % diff. | 11 | --- | --- | --- | 12 | --- |
| Std % rec. | 111 | --- | --- | --- | --- | --- |
| Blank | 0.0 | ±0.2 | 0.0 | ±1.4 | 1.3 | ±1.3 |
| Spike % rec. | 118 | --- | --- | --- | --- | --- |

| Sample Id | Tc-99 pCi/l | Error 2σ | Am-241 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 4.2 | ±7.0 | 0.0 | ±1.6 | 7 | ±22 |
| Duplicate | 4.3 | ±7.8 | 0.2 | ±1.6 | 28 | ±38 |
| Duplicate % diff. | 1.2 | --- | 100 | --- | 60 | --- |
| Std (found value) | 100 | ±3 | 102 | ±4 | 940 | ±17 |
| Std (true value) | 100 | --- | 103 | --- | 993 | --- |
| Std % diff. | 0.0 | --- | 1.0 | --- | 5.3 | --- |

BARRINGER LABORATORIES INC.
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22-Jan-92

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Page: 3
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Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 09:33
PO #: LSA #LL-0962-F4

Job: 912291E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Tc-99 pCi/l | Error 2σ | Am-241 pCi/l | Error 2σ | C-14 pCi/l | Error 2σ |
|---|---|---|---|---|---|---|
| Std % rec. | 100 | --- | 99 | --- | 95 | --- |
| Blank | 0.3 | ±0.7 | 0.1 | ±0.3 | 0.0 | ±1.9 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

22-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353



Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 09:33
PO #: LSA #LL-0962-F4

Job: 912291E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Water**

| Sample Id | Gamma Spec pCi/l | Error 2σ | Cs-137 pCi/l |
|---|---|---|---|
| Duplicate | --- | --- | <80 |
| Duplicate | --- | --- | <80 |
| Duplicate % diff. | --- | --- | 0.0 |
| Std (found value) | 18 | ±1 | --- |
| Std (true value) | 19 | --- | --- |
| Std % diff. | 5.3 | --- | --- |

Abbreviations:

Parameters:

| | |
|---|---|
| Ra-226 | : Radium-226 |
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| Am-241 | : Americium-241 |
| C-14 | : Carbon-14 |
| Cs-137 | : Cesium-137 |
| Gamma Spec | : Gamma Spectralanalysis |

BARRINGER LABORATORIES INC.
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22-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 5
Copy: 1 of 2

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 09:33
PO #: LSA #LL-0962-F4

Job: 912291E Status: Final

QUALITY CONTROL REPORT

Units:

pCi/l : picoCuries per liter
2σ : Counting error at the 95% confidence level, 2σ

Quality codes:

< : Not Detected- below detection limit.

Job approved by:

Signed: .....
Approved
Quality Assurance Department

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

22-Jan-92

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 6
Copy: 1 of 2

Attn: Diane Thomas
Project: 0630-28-27

Received: 22-Nov-91 09:33
PO #: LSA #LL-0962-F4

Job: 912291E

Status: Final

QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: ljt Via: Federal Express

Sample Container Type: pl L btls
Sample Type: Water
Preservative When Received: none
Additional Lab Preparation: none

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 2 pCi/l | none | Pingilley | 12/ 6-12/13 |
| Gross Beta | 900.0 | 2 pCi/l | none | Pingilley | 12/ 6-12/13 |
| Ra-226 | SM-705 | 0.2 pCi/l | none | Howard | 12/14-12/24 |
| U-234/235/238 | 908.0 | 0.4 pCi/l | none | Tonning | 1/15- 1/20 |
| Tritium | 906.0 | 200 pCi/l | none | Meyer | 12/20-12/26 |
| I-129 | ---- | ---- | none | Preston | 12/20-12/30 |
| Pu-238/239/240 | ---- | ---- | none | Preston | 12/18-1/ 6 |
| Sr-89/90 | 905.0 | 1 pCi/l | none | Kidwell | 12/20-1/ 7 |
| Tc-99 | HASL300 | 1 pCi/l | none | Preston | 12/13-12/19 |
| Am-241 | 907.0 | 2 pCi/l | none | Preston | 1/12- 1/20 |
| C-14 | 520-84-006 | 3 pCi/l | none | Preston | 12/16- 1/ 8 |
| Cs-137 | 901.0/SM-709 | 1 pCi/l | none | Kidwell | 12/19-12/20 |
| Gamma Spec | 901.1 | 25 pCi/l | none | Kidwell | 12/19-12/20 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client: Weston-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 01630-28-27
Project Contact/Phone #:
AD Project Manager: D Thomas
QC: Std Del: Std TAT:

Date Rec'd: Date Due:
Account #:

Refrigerator #:
#/Type Container: Liquid / Solid
Volume: Liquid / Solid
Preservatives:

ANALYSES REQUESTED →

| ORGANIC | | | | | INORG | |
|---|---|---|---|---|---|---|
| VOA | BNA | Pest/PCB | Herb | Radio Chem (3) | Metal | CN |

WESTON Analytics 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 | Radio Chem (3) | CN | |
|---|---|---|---|---|---|---|---|---|---|
| | Site 118D | | | | | | ✓ ✓ | 9109280 | 3-001 |
| | 205D | | | | | | ✓ ✓ | | 002 |
| | 254D | | | | | | ✓ ✓ | | 003 |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem (3) - See Attached.

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Brian Shaff | Fed-Ex | 11/21/91 | 6:30 pm |
| | [illegible] | 11/22/91 | 9:30 |

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

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# ____ Cooler# ____ 381-596a

BARRINGER LABORATORIES INC.

15000 W. 6TH AVE., SUITE 300
GOLDEN, COLORADO 80401
PHONE: (303) 277-1687

## CASE NARRATIVE FOR WESTON

Barringer Laboratories, Inc. was informed that Barringer Laboratories, Inc. Job numbers 2206-1 and 2291-1 were duplicates and 2294-7 and 2291-2 were duplicates. The analyses required were Gross Alpha and Beta. Based on the Total Solids (TS) content (required for an accurate Gross Alpha/Beta measurement) these samples are not chemically identical. The TS values for the duplicates are listed below:

| JOB NUMBER | TS VALUE (mg/L) |
|---|---|
| 2206-1 (SITE 118) | 650 |
| 2291-1 (SITE 118 DUP) | 29 |
| 2294-7 (SITE 205) | 200 |
| 2291-2 (SITE 205 DUP) | 420 |

These differing solids content would cause large variations in the requested Gross Alpha/Beta analyses.

Also, the color between the 2 sets of duplicates varies greatly as can be seen by the accompanying photographs. The color difference is in part due to the difference in the solids content between the duplicates.

BARRINGER LABORATORIES, INC.

Mark R. Burkhardt, Ph.D.

Mark R. Burkhardt, Ph.D.
Laboratory Director

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 10-12-91
**RFW #:** 9110L005
**W.O. #:** 0630-28-27-0000

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. Preparation blank results were below the required detection limit with the exception of acidity.

2. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

3. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits. All %RPD were within the 20% guidance limit.

4. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

5. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

11.18.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc.21\i10-005

# ROY F. WESTON, INC.
# GLOSSARY OF TERMS - INORGANIC REPORTS

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/15/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L005

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 161 SAND | % Solids | 74.9 | | % | 0.10 |
| | | Acidity | 214 | | MG/KG | 13.4 |
| | | Chloride | 33.4 | u | MG/KG | 33.4 |
| | | Nitrate, as N | 4.4 | | MG/KG | 0.67 |
| | | Sulfate | 33.4 | u | MG/KG | 33.4 |
| -002 | SITE 161 CLAY | % Solids | 83.3 | | % | 0.10 |
| | | Acidity | 156 | | MG/KG | 12.0 |
| | | Chloride | 30.0 | u | MG/KG | 30.0 |
| | | Nitrate, as N | 10.4 | | MG/KG | 0.60 |
| | | Sulfate | 30.0 | u | MG/KG | 30.0 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/15/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9110L005
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|
| BLANK10 | 91LAC002-MB1 | Acidity | 40.0 | MG/KG | 2.5 |
| BLANK20 | 91LAC002-MB2 | Acidity | 40.0 | MG/KG | 2.5 |
| BLANK10 | 91LCL111-MB1 | Chloride | 25.0 u | MG/KG | 25.0 |
| BLANK10 | 91LNO242-MB1 | Nitrate, as N | 0.50 u | MG/KG | 0.50 |
| BLANK10 | 91LS4A87-MB1 | Sulfate | 25.0 u | MG/KG | 25.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/15/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L005

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -001 | SITE 161 SAND | Nitrate, as N | 11.6 | 4.4 | 6.7 | 107 |
| | | Nitrate, as N MSD | 11.8 | 4.4 | 6.7 | 111 |
| BLANK10 | 91LCL111-MB1 | Chloride | 120 | 25.0 u | 125 | 95.8 |
| | | Chloride MSD | 119 | 25.0 u | 125 | 95.4 |
| BLANK10 | 91LNO242-MB1 | Nitrate, as N | 1.9 | 0.50u | 2.0 | 96.1 |
| | | Nitrate, as N MSD | 2.0 | 0.50u | 2.0 | 97.8 |
| BLANK10 | 91LS4A87-MB1 | Sulfate | 154 | 25.0 u | 150 | 103 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/15/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L005

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| -001 | SITE 161 SAND | Nitrate, as N | 107 | 111 | 3.8 |
| BLANK10 | 91LCL111-MB1 | Chloride | 95.8 | 95.4 | 0.50 |
| BLANK10 | 91LNO242-MB1 | Nitrate, as N | 96.1 | 97.8 | 2.0 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/15/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L005

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | SITE 161 SAND | Nitrate, as N | 4.4 | 4.5 | 1.2 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L005

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 161 SAND | | | | | | |
| % SOLIDS | 001 | S | 91L%S209 | 10/07/91 | 10/17/91 | 10/18/91 |
| ACIDITY | 001 | S | 91LAC002 | 10/07/91 | 10/31/91 | 10/31/91 |
| CHLORIDE | 001 | S | 91LCL111 | 10/07/91 | 10/18/91 | 10/18/91 |
| NITRATE | 001 | S | 91LNO242 | 10/07/91 | 11/01/91 | 11/01/91 |
| NITRATE | 001 REP | S | 91LNO242 | 10/07/91 | 11/01/91 | 11/01/91 |
| NITRATE | 001 MS | S | 91LNO242 | 10/07/91 | 11/01/91 | 11/01/91 |
| NITRATE | 001 MSD | S | 91LNO242 | 10/07/91 | 11/01/91 | 11/01/91 |
| SULFATE | 001 | S | 91LS4A87 | 10/07/91 | 10/24/91 | 10/24/91 |
| SUB-OUT TEST FOR SUB | 001 | S | | 10/07/91 | | |
| SITE 161 CLAY | | | | | | |
| % SOLIDS | 002 | S | 91L%S209 | 10/07/91 | 10/17/91 | 10/18/91 |
| ACIDITY | 002 | S | 91LAC002 | 10/07/91 | 10/31/91 | 10/31/91 |
| CHLORIDE | 002 | S | 91LCL111 | 10/07/91 | 10/18/91 | 10/18/91 |
| NITRATE | 002 | S | 91LNO242 | 10/07/91 | 11/01/91 | 11/01/91 |
| SULFATE | 002 | S | 91LS4A87 | 10/07/91 | 10/24/91 | 10/24/91 |
| SUB-OUT TEST FOR SUB | 002 | S | | 10/07/91 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | S | 91LAC002 | N/A | 10/31/91 | 10/31/91 |
| ACIDITY | MB2 | S | 91LAC002 | N/A | 10/31/91 | 10/31/91 |
| CHLORIDE | MB1 | S | 91LCL111 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB1 BS | S | 91LCL111 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB1 BSD | S | 91LCL111 | N/A | 10/18/91 | 10/18/91 |
| NITRATE | MB1 | W | 91LNO242 | N/A | 11/01/91 | 11/01/91 |
| NITRATE | MB1 BS | W | 91LNO242 | N/A | 11/01/91 | 11/01/91 |
| NITRATE | MB1 BSD | W | 91LNO242 | N/A | 11/01/91 | 11/01/91 |
| SULFATE | MB1 | S | 91LS4A87 | N/A | 10/24/91 | 10/24/91 |
| SULFATE | MB1 BS | S | 91LS4A87 | N/A | 10/24/91 | 10/24/91 |

WES. . Analytics Use Only
91101L005

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: USRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 01630-28-27
Project Contact/Phone #:
AD Project Manager: Thomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 10/12/91 Date Due: 11/11/91
Account #: USRC275TS

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | 5°C | | | H | | | | | | | |
| #/Type Container | Liquid | | | | | 1 | | | 1 | | | | | | | |
| | Solid | | | | | 1 | | | 1 | | | | | | | |
| Volume | Liquid | | | | | 950 ml | | | 950 ml | | | | | | | |
| | Solid | | | | | | | | | | | | | | | |
| Preservatives | | | | | | HNO3 | | | HNO3 | | | | | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | INORG | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Radio Chem | | | Metal | CN | | | | | | |

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 | WESTON Analytics Use Only | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 8624 | | | | 5°C | | | Se Blad | | TCL 1204 | | TCL 1203 |
| 001 | Site 161 Sandy | | | Soil | 10/7/91 | | | | | | ✓ | | | ✓ | | ✓ | ✓ | |
| 2 | Site 161 Organic | | | Soil | 10/7/91 | | | | | | ✓ | | | ✓ | | ✓ | ✓ | |
| 3 | Site 117 | | | W | 10/10/91 | | ✓ | | | | | | | | | | | |
| 4 | Trip Blank | | | W | 10/10/91 | | ✓ | | | | | | | | | | | |
| | Metals: Ag, Al, As, Ba, Cd, Cr, Cu, Hg, Ni, Mn, Pb, Se, Zn, Fe, Mn | | | | | | | | | | | | | | | | | |

Original signature

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem - Gross alpha, non-volatile beta
Am241, C-14, Gamma PHA,
H-3, I-129, PU238, 239, 240
Total (RA), SR-89, 90
TC-99, U-234, 238.

DATE/REVISIONS:
11/5/91 1. HLK cancelled - these were
2. runs for Antony
3.
4.
5.
6.

WESTON Analytics 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

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| Emory | Pleigh | 10/12/91 | 9:30 AM | | | | |
| | 29 10/15/91 | | | | 29 10/15/92 | | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 10-12-91
**RFW #:** 9110L005
**W.O. #:** 0630-28-27-0000

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All preparation blank results were below the required detection limit.

2. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

3. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

11.12.91
Date

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

ncc.21\m10-005

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/12/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9110L005

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 161 SAND | Silver, Total | 2.5 | u | MG/KG | 2.5 |
| | | Aluminum, Total | 1700 | | MG/KG | 49.9 |
| | | Arsenic, Total | 2.5 | u | MG/KG | 2.5 |
| | | Barium, Total | 49.9 | u | MG/KG | 49.9 |
| | | Cadmium, Total | 1.2 | u | MG/KG | 1.2 |
| | | Chromium, Total | 4.7 | | MG/KG | 2.5 |
| | | Copper, Total | 6.2 | u | MG/KG | 6.2 |
| | | Iron, Total | 530 | | MG/KG | 24.9 |
| | | Mercury, Total | 0.13 | u | MG/KG | 0.13 |
| | | Manganese, Total | 8.3 | | MG/KG | 3.7 |
| | | Sodium, Total | 1250 | u | MG/KG | 1250 |
| | | Nickel, Total | 10.0 | u | MG/KG | 10.0 |
| | | Lead, Total | 5.5 | | MG/KG | 0.76 |
| | | Selenium, Total | 1.3 | u | MG/KG | 1.3 |
| | | Zinc, Total | 5.0 | u | MG/KG | 5.0 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/12/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9110L005

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -002 | SITE 161 CLAY | Silver, Total | 2.4 | u | MG/KG | 2.4 |
| | | Aluminum, Total | 1720 | | MG/KG | 47.0 |
| | | Arsenic, Total | 2.3 | u | MG/KG | 2.3 |
| | | Barium, Total | 47.0 | u | MG/KG | 47.0 |
| | | Cadmium, Total | 1.2 | u | MG/KG | 1.2 |
| | | Chromium, Total | 21.9 | | MG/KG | 2.4 |
| | | Copper, Total | 5.9 | u | MG/KG | 5.9 |
| | | Iron, Total | 288 | | MG/KG | 23.5 |
| | | Mercury, Total | 0.12 | u | MG/KG | 0.12 |
| | | Manganese, Total | 3.5 | u | MG/KG | 3.5 |
| | | Sodium, Total | 1180 | u | MG/KG | 1180 |
| | | Nickel, Total | 9.4 | u | MG/KG | 9.4 |
| | | Lead, Total | 3.7 | | MG/KG | 0.70 |
| | | Selenium, Total | 1.2 | u | MG/KG | 1.2 |
| | | Zinc, Total | 6.0 | | MG/KG | 4.7 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/12/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9110L005
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L3011-MB1 | Silver, Total | 2.0 | u | MG/KG | 2.0 |
| | | Aluminum, Total | 40.0 | u | MG/KG | 40.0 |
| | | Barium, Total | 40.0 | u | MG/KG | 40.0 |
| | | Cadmium, Total | 1.0 | u | MG/KG | 1.0 |
| | | Chromium, Total | 2.0 | u | MG/KG | 2.0 |
| | | Copper, Total | 5.0 | u | MG/KG | 5.0 |
| | | Iron, Total | 20.0 | u | MG/KG | 20.0 |
| | | Manganese, Total | 3.0 | u | MG/KG | 3.0 |
| | | Sodium, Total | 1000 | u | MG/KG | 1000 |
| | | Nickel, Total | 8.0 | u | MG/KG | 8.0 |
| | | Zinc, Total | 4.0 | u | MG/KG | 4.0 |
| BLANK1 | 91L3010-MB1 | Arsenic, Total | 2.0 | u | MG/KG | 2.0 |
| | | Lead, Total | 0.60 | u | MG/KG | 0.60 |
| | | Selenium, Total | 1.0 | u | MG/KG | 1.0 |
| BLANK1 | 91C0303-MB1 | Mercury, Total | 0.10 | u | MG/KG | 0.10 |
| BLANK2 | 91C0303-MB2 | Mercury, Total | 0.10 | u | MG/KG | 0.10 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/12/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9110L005
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L3011-LC2 | Silver, LCS | 97.6 | 97.5 | 0.10 |
| | | Aluminum, LCS | 105 | 105 | 0.19 |
| | | Barium, LCS | 106 | 106 | 0.38 |
| | | Cadmium, LCS | 88.2 | 88.0 | 0.23 |
| | | Chromium, LCS | 103 | 102 | 0.49 |
| | | Copper, LCS | 100 | 101 | 0.30 |
| | | Iron, LCS | 105 | 105 | 0.76 |
| | | Manganese, LCS | 103 | 102 | 0.58 |
| | | Sodium, LCS | 107 | 107 | 0.19 |
| | | Nickel, LCS | 102 | 102 | 0.20 |
| | | Zinc, LCS | 102 | 102 | 0.098 |
| LCS2 | 91L3010-LC2 | Arsenic, LCS | 90.3 | 85.7 | 5.2 |
| | | Lead, LCS | 108 | 112 | 3.6 |
| | | Selenium, LCS | 94.3 | 91.0 | 3.6 |
| LCS2 | 91C0303-LC2 | Mercury, LCS | 92.7 | 101 | 9.0 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/12/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L3011-LC1 | Silver, LCS | 97.6 | 100 | MG/KG | 97.6 |
| | | Aluminum, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Barium, LCS | 1060 | 1000 | MG/KG | 106 |
| | | Cadmium, LCS | 44.1 | 50.0 | MG/KG | 88.2 |
| | | Chromium, LCS | 103 | 100 | MG/KG | 103 |
| | | Copper, LCS | 251 | 250 | MG/KG | 100 |
| | | Iron, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Manganese, LCS | 154 | 150 | MG/KG | 103 |
| | | Sodium, LCS | 5350 | 5000 | MG/KG | 107 |
| | | Nickel, LCS | 408 | 400 | MG/KG | 102 |
| | | Zinc, LCS | 205 | 200 | MG/KG | 102 |
| LCS2 | 91L3011-LC2 | Silver, LCS | 97.5 | 100 | MG/KG | 97.5 |
| | | Aluminum, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Barium, LCS | 1060 | 1000 | MG/KG | 106 |
| | | Cadmium, LCS | 44.0 | 50.0 | MG/KG | 88.0 |
| | | Chromium, LCS | 102 | 100 | MG/KG | 102 |
| | | Copper, LCS | 252 | 250 | MG/KG | 101 |
| | | Iron, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Manganese, LCS | 154 | 150 | MG/KG | 102 |
| | | Sodium, LCS | 5340 | 5000 | MG/KG | 107 |
| | | Nickel, LCS | 408 | 400 | MG/KG | 102 |
| | | Zinc, LCS | 204 | 200 | MG/KG | 102 |
| LCS1 | 91L3010-LC1 | Arsenic, LCS | 5.4 | 6.0 | MG/KG | 90.3 |
| | | Lead, LCS | 6.5 | 6.0 | MG/KG | 108 |
| | | Selenium, LCS | 5.7 | 6.0 | MG/KG | 94.3 |
| LCS2 | 91L3010-LC2 | Arsenic, LCS | 5.1 | 6.0 | MG/KG | 85.7 |
| | | Lead, LCS | 6.7 | 6.0 | MG/KG | 112 |
| | | Selenium, LCS | 5.5 | 6.0 | MG/KG | 91.0 |
| LCS1 | 91C0303-LC1 | Mercury, LCS | 11.8 | 12.7 | MG/KG | 92.7 |
| LCS2 | 91C0303-LC2 | Mercury, LCS | 12.9 | 12.7 | MG/KG | 101 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L005

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 161 SAND | | | | | | |
| SILVER, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| ALUMINUM, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| ARSENIC, TOTAL | 001 | S | 91L3010 | 10/07/91 | 10/21/91 | 10/22/91 |
| BARIUM, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| CADMIUM, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| CHROMIUM, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| COPPER, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| IRON, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| MERCURY, TOTAL | 001 | S | 91C0303 | 10/07/91 | 10/22/91 | 10/23/91 |
| MANGANESE, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| SODIUM, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| NICKEL, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| LEAD, TOTAL | 001 | S | 91L3010 | 10/07/91 | 10/21/91 | 10/22/91 |
| SELENIUM, TOTAL | 001 | S | 91L3010 | 10/07/91 | 10/21/91 | 10/22/91 |
| ZINC, TOTAL | 001 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| SITE 161 CLAY | | | | | | |
| SILVER, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| ALUMINUM, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| ARSENIC, TOTAL | 002 | S | 91L3010 | 10/07/91 | 10/21/91 | 10/22/91 |
| BARIUM, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| CADMIUM, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| CHROMIUM, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| COPPER, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| IRON, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| MERCURY, TOTAL | 002 | S | 91C0303 | 10/07/91 | 10/22/91 | 10/23/91 |
| MANGANESE, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| SODIUM, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| NICKEL, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |
| LEAD, TOTAL | 002 | S | 91L3010 | 10/07/91 | 10/21/91 | 10/22/91 |
| SELENIUM, TOTAL | 002 | S | 91L3010 | 10/07/91 | 10/21/91 | 10/22/91 |
| ZINC, TOTAL | 002 | S | 91L3011 | 10/07/91 | 10/21/91 | 11/10/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L005

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM LABORTORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| BARIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CADMIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CHROMIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| COPPER LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| IRON LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| MANGANESE LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SODIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| NICKEL LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ZINC LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SILVER LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ALUMINUM LABORTORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| BARIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CADMIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CHROMIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| COPPER LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| IRON LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| MANGANESE LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SODIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| NICKEL LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ZINC LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SILVER, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ALUMINUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| BARIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CADMIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CHROMIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| COPPER, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| IRON, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| MANGANESE, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SODIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| NICKEL, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ZINC, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ARSENIC LABORATORY | LC1 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| LEAD LABORATORY | LC1 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| SELENIUM LABORATORY | LC1 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| ARSENIC LABORATORY | LC2 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| LEAD LABORATORY | LC2 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| SELENIUM LABORATORY | LC2 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| ARSENIC, TOTAL | MB1 | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| LEAD, TOTAL | MB1 | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L005

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SELENIUM, TOTAL | MB1 | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| MERCURY LABORATORY | LC1 BS | S | 91C0303 | N/A | 10/22/91 | 10/23/91 |
| MERCURY LABORATORY | LC2 BS | S | 91C0303 | N/A | 10/22/91 | 10/23/91 |
| MERCURY, TOTAL | MB1 | S | 91C0303 | N/A | 10/22/91 | 10/23/91 |
| MERCURY, TOTAL | MB2 | S | 91C0303 | N/A | 10/22/91 | 10/23/91 |

WESTON Analytics Use Only: 91101L005

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: USRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: Thomas
QC: Std Del: Std TAT: 30 Day
Date Rec'd: 10/12/91 Date Due: 11/11/91
Account #: USRC27-STD

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | 5D | | | 4 | | | | | | | |
| #/Type Container | Liquid | | | | | | 1G | | | 1G | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | | 950 | | | 950 | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | HNO3 | | | None | | | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | Radio Chem | | | INORG | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | | Metal | CN | 34 | 3 | | | | |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | 8624/8 | | | | 5D | | | Se Blod | TCL Tox | TAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 001 | Site 161 Sand | | | Soil | 10/7/91 | | | | | | ✓ | | | ✓ | ✓ | ✓ | | |
| | 2 | Site 161 Aggregate | | | Soil | 10/7/91 | | | | | | ✓ | | | ✓ | ✓ | ✓ | | |
| | 3 | Site 117 | | | W | 10/10/91 | | ✓ | | | | | | | | | | | |
| | 4 | Trip Blank | | | W | 10/10/91 | | ✓ | | | | | | | | | | | |
| | | Metals: Ag, Al, As, Be, Cd, Ca, Cr, Cu, Hg, K, I, Mg, Pb, Se, Zn, Fe, Mn | | | | | | | | | | | | | | | | | |
| | | original resubmitted | | | | | | | | | | | | | | | | | |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Radiochem - Gross alpha, non-volatile beta
Am241, C-14, Gamma PHA,
H-3, I-129, PU238, 239, 240
Total (RA), SR-89, 90
TC-99, U-234, 238.

DATE/REVISIONS:
11/5/91 1. HLKL cancelled - there were
2. numbers duplicate
3.
4.
5.
6.

WESTON Analytics 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'd Y or N

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Emory | [illegible] | 10/12/91 | 9:30 am |
| | 1291 10/15/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | 1291 10/15/92 | | |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

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Set : 1

Attn:
Project: 9110L005

Received: 7-Nov-91 15:01
PO #: LSA #LL-0962-F4

Job: 912169E

Status: Final

**Sample Type: Soil**

| Sample Id | Gross Alpha Total pCi/g(dry) | Error 2σ | Gross Beta Total pCi/g(dry) | Error 2σ | Tritium pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L005-001 | 22 | ±10 | 8.9 | ±3.9 | 212 | ±2 |
| 9110L005-002 | 46 | ±11 | 13 | ±4 | 151 | ±2 |

| Sample Id | I-129 pCi/g(wet) | Error 2σ | Pu-238 pCi/g(dry) | Error 2σ | Pu-239/240 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L005-001 | 0 | ±15 | 0.0 | ±0.3 | 0.0 | ±0.3 |
| 9110L005-002 | 2.0 | ±4.7 | 0.0 | ±0.4 | 0.0 | ±0.4 |

| Sample Id | Sr-89 pCi/g(dry) | Error 2σ | Sr-90 pCi/g(dry) | Error 2σ | Tc-99 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L005-001 | 3.0 | ±1.1 | 1.0 | ±1.3 | 0.0 | ±0.7 |
| 9110L005-002 | 3.5 | ±1.1 | 0.4 | ±1.1 | 0.0 | ±0.8 |

| Sample Id | U-234 Total pCi/g(dry) | Error 2σ | U-235 Total pCi/g(dry) | Error 2σ | U-238 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L005-001 | 1.5 | ±1.4 | 0.0 | ±0.7 | 0.8 | ±1.0 |
| 9110L005-002 | 1.2 | ±1.3 | 0.0 | ±0.7 | 2.0 | ±1.4 |

| Sample Id | Moisture % | C-14 pCi/g(wet) | Error 2σ | Ra-226 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|
| 9110L005-001 | 21.9 | 0.0 | ±0.2 | 1.2 | ±0.6 |
| 9110L005-002 | 16.8 | 1.2 | ±0.5 | 1.4 | ±0.6 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

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Set : 2

Attn:
Received: 7-Nov-91 15:01
Project: 9110L005
PO #: LSA #LL-0962-F4

Job: 912169E
Status: Final

## GAMMA SPECTROSCOPY

**Sample Type: Soil**

| Sample Id | Pb-212 pCi/g(wet) | Error 2σ | Pb-214 pCi/g(wet) | Error 2σ | Ra-226 pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L005-001 | 0.4 | ±0.1 | 0.5 | ±0.1 | 1.3 | ±0.4 |
| 9110L005-002 | 0.9 | ±0.1 | 0.9 | ±0.1 | 2.4 | ±0.4 |

| Sample Id | Tl-208 pCi/g(wet) | Error 2σ | Ac-228 pCi/g(wet) | Error 2σ | Bi-214 pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L005-001 | 0.2 | ±0.1 | 0.6 | ±0.1 | 0.3 | ±0.1 |
| 9110L005-002 | 0.6 | ±0.1 | 1.1 | ±0.2 | 0.9 | ±0.1 |

| Sample Id | Bi-212 pCi/g(wet) | Error 2σ | Pb-210 pCi/g(wet) | Am-241 pCi/g(wet) |
|---|---|---|---|---|
| 9110L005-001 | <1 | --- | <0.3 | <0.1 |
| 9110L005-002 | 2.1 | ±0.4 | <0.2 | <0.1 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 3
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Attn:
Received: 7-Nov-91 15:01
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PO #: LSA #LL-0962-F4

Job: 912169E
Status: Final

GAMMA SPECTROSCOPY

Abbreviations:

Parameters:

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| C-14 | : Carbon-14 |
| Ra-226 | : Radium-226 |
| Pb-212 | : Lead-212 |
| Pb-214 | : Lead-214 |
| Tl-208 | : Thallium-208 |
| Ac-228 | : Actinium-228 |
| Bi-214 | : Bismuth-214 |
| Bi-212 | : Bismuth-212 |
| Pb-210 | : Lead-210 |
| Am-241 | : Americium-241 |
| Gamma Spec | : Gamma Spectralanalysis |
| Be-7 | : Beryllium-7 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 4
Copy: 1 of 2
Set : 4

Attn:
Received: 7-Nov-91 15:01
Project: 9110L005
PO #: LSA #LL-0962-F4

Job: 912169E
Status: Final

GAMMA SPECTROSCOPY

Units:

| | |
|---|---|
| pCi/g(dry) | : picoCuries per gram (dry) |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| pCi/g(wet) | : picoCuries per gram(wet) |
| % | : percent |
| pCi/g | : picoCuries per gram |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

Job approved by:

Signed: Ellen La Riviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

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Attn:
Received: 7-Nov-91 15:01
Project: 9110L005
PO #: LSA #LL-0962-F4

Job: 912169E
Status: Final

QUALITY CONTROL REPORT

**Sample Type: Soil**

| Sample Id | Gross Alpha Total pCi/g(dry) | Error 2σ | Gross Beta Total pCi/g(dry) | Error 2σ | Tritium pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 49 | ±12 | 27 | ±4 | 2.1 | ±0.3 |
| Duplicate | 63 | ±13 | 24 | ±4 | 2.8 | ±0.3 |
| Duplicate % diff. | 12 | --- | 5.9 | --- | 14 | --- |
| Std (found value) | 217 | ±7 | 114 | ±2 | 114484 | ±1636 |
| Std (true value) | 206 | --- | 106 | --- | 111720 | --- |
| Std % diff. | 5.3 | --- | 7.5 | --- | 2.5 | --- |
| Blank | 0.1 | ±0.2 | 0.2 | ±0.3 | 229 | ±313 |
| Spike % rec. | 99 | --- | 102 | --- | --- | --- |

| Sample Id | I-129 pCi/g(wet) | Error 2σ | Pu-238 pCi/g(dry) | Error 2σ | Pu-239/240 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 8.8 | ±4.4 | 0.0 | ±0.3 | 0.0 | ±0.3 |
| Duplicate | 0.0 | ±0.4 | 0.0 | ±0.3 | 0.0 | ±0.3 |
| Duplicate % diff. | 100 | --- | 0.0 | --- | 0.0 | --- |
| Std (found value) | 1104 | ±22 | --- | --- | 203 | ±8 |
| Std (true value) | 993 | --- | --- | --- | 207 | --- |
| Std % diff. | 11 | --- | --- | --- | 1.9 | --- |
| Blank | 0.0 | ±4.2 | 0.0 | ±0.2 | 0.1 | ±0.2 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Sr-89 pCi/g(dry) | Error 2σ | Sr-90 pCi/g(dry) | Error 2σ | Tc-99 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±1.1 | 1.4 | ±1.4 | 0.0 | ±0.7 |
| Duplicate | 0.0 | ±0.9 | 0.2 | ±1.2 | 0.0 | ±0.8 |
| Duplicate % diff. | 0.0 | --- | 75 | --- | 0 | --- |
| Std (found value) | 26 | ±2 | 24 | ±2 | 100 | ±3 |
| Std (true value) | 21 | --- | 21 | --- | 100 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

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208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn:
Project: 9110L005

Received: 7-Nov-91 15:01
PO #: LSA #LL-0962-F4

Job: 912169E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Soil**

| Sample Id | Sr-89 pCi/g(dry) | Error 2σ | Sr-90 pCi/g(dry) | Error 2σ | Tc-99 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Std % diff. | 24 | --- | 14 | --- | 0.0 | --- |
| Blank | 0.5 | ±0.7 | 0.6 | ±0.9 | 0.0 | ±0.7 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | U-234 Total pCi/g(dry) | Error 2σ | U-235 Total pCi/g(dry) | Error 2σ | U-238 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±1.7 | 0.0 | ±1.2 | 0.5 | ±2.0 |
| Duplicate | 0.0 | ±1.7 | 0.0 | ±1.2 | 2.2 | ±2.6 |
| Duplicate % diff. | 0.0 | --- | 0.0 | --- | 65 | --- |
| Std (found value) | 179 | ±9 | 8.6 | ±2.6 | 160 | ±8 |
| Std (true value) | 170 | --- | 8.0 | --- | 170 | --- |
| Std % diff. | 5.3 | --- | 7.5 | --- | 5.9 | --- |
| Blank | 0.5 | ±0.4 | 0.0 | ±0.2 | 0.3 | ±0.3 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Moisture % | C-14 pCi/g(wet) | Error 2σ | Ra-226 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|
| Duplicate | 12.7 | 2.0 | ±0.6 | 0.9 | ±0.4 |
| Duplicate | 12.8 | 0.3 | ±0.3 | 0.7 | ±0.4 |
| Duplicate % diff. | 0.4 | 74 | --- | 12 | --- |
| Std (found value) | --- | 823 | ±15 | 113 | ±7 |
| Std (true value) | --- | 992 | --- | 99 | --- |
| Std % diff. | --- | 17 | --- | 14 | --- |
| Blank | --- | 0.8 | ±2.5 | 0.0 | ±0.1 |
| Spike % rec. | --- | --- | --- | --- | --- |

BARRINGER LABORATORIES INC.
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23-Dec-91

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208 Welsh Pool Road
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Page: 3
Copy: 1 of 2
Set : 3

Attn:
Project: 9110L005

Received: 7-Nov-91 15:01
PO #: LSA #LL-0962-F4

Job: 912169E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Soil**

| Sample Id | Gamma Spec pCi/g | Error 2σ | Be-7 pCi/g | Error 2σ | Pb-210 pCi/g | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 20 | ±1 | --- | --- | --- | --- |
| Duplicate | 19 | --- | --- | --- | --- | --- |
| Duplicate % diff. | 5.3 | --- | --- | --- | --- | --- |
| Std (found value) | --- | --- | 720 | ±90 | 110 | ±30 |
| Std (true value) | --- | --- | 780 | ±90 | 120 | ±30 |
| Std % diff. | --- | --- | 4.0 | --- | 4.3 | --- |

BARRINGER LABORATORIES INC.
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Attn:
Project: 9110L005

Received: 7-Nov-91 15:01
PO #: LSA #LL-0962-F4

Job: 912169E

Status: Final

QUALITY CONTROL REPORT

Abbreviations:

Parameters:

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| C-14 | : Carbon-14 |
| Ra-226 | : Radium-226 |
| Pb-212 | : Lead-212 |
| Pb-214 | : Lead-214 |
| Tl-208 | : Thallium-208 |
| Ac-228 | : Actinium-228 |
| Bi-214 | : Bismuth-214 |
| Bi-212 | : Bismuth-212 |
| Pb-210 | : Lead-210 |
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| Gamma Spec | : Gamma Spectralanalysis |
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BARRINGER LABORATORIES INC.
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Page: 5
Copy: 1 of 2
Set : 4

Attn:
Received: 7-Nov-91 15:01
Project: 9110L005
PO #: LSA #LL-0962-F4

Job: 912169E
Status: Final

QUALITY CONTROL REPORT

Units:

| | |
|---|---|
| pCi/g(dry) | : picoCuries per gram (dry) |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| pCi/g(wet) | : picoCuries per gram(wet) |
| % | : percent |
| pCi/g | : picoCuries per gram |

Job approved by:

Signed: .....
Approved
Quality Assurance Department

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

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WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 6
Copy: 1 of 2

Attn:
Received: 7-Nov-91 15:01
Project: 9110L005
PO #: LSA #LL-0962-F4

Job: 912169E
Status: Final

QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: gr
Via: Federal Express

Sample Container Type: Gl brn L btl
Sample Type: Soil
Preservative When Received: none
Additional Lab Preparation: none

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 5 pCi/g | none | Pingilley | 11/22-11/26 |
| Gross Beta | 900.0 | 9 pCi/g | none | Pingilley | 11/22-11/26 |
| Tritium | 906.0 | 200 pCi/g | none | Kidwell | 12/ 3-12/12 |
| I-129 | ---- | ---- | none | | |
| Pu-238/239/240 | 907.0 | 1 pCi/g | none | Preston | 11/20-12/ 6 |
| Sr-89/90 | 905.0 | 1 pCi/g | none | Kidwell | 11/19-12/18 |
| Tc-99 | ---- | ---- | none | Preston | 11/24-12/16 |
| U-234/235/238 | 908.0 | 0.4 pCi/g | none | Tonning | 12/15-12/23 |
| C-14 | ---- | ---- | none | Preston | 12/15-12/17 |
| Ra-226 | SM-705 | 0.2 pCi/g | none | Seidel | 11/20-12/10 |
| Gamma Spec | 901.1 | ---- | none | Kidwell | 11/24 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

2169

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page ____ of ____

Client: Weston - Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27-0000
Project Contact/Phone #:
AD Project Manager: Diana Thomas (524-7360)
QC: Std. Del: Std TAT: 30 day.
Date Rec'd: Date Due:
Account #:

| Refrigerator # | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | | | | | | | | | | | | | | | | |
| | Solid | | | | | 1/6L | | | | | | | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | | |
| | Solid | | | | | 90mL | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED → | | ORGANIC | | | | | | | INORG | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Kaso Citrate (3) | | | Metal | CN | | | | | | | |
| | | WESTON Analytics Use Only | | | | | | | | | | | | | | | |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S - Soil | | | | | | | | | | | | | | | | | | | | | |
| SE - Sediment | | | | | | | | | | | | | | | | | | | | | |
| SO - Solid | | | | | | | | | | | | | | | | | | | | | |
| SL - Sludge | | | | | | | | | | | | | | | | | | | | | |
| W - Water | | Site 161 Sand | | | Soil | 10/7/91 | N/A | | | | | X | | | | | 911 | 0L005 | - 001 | | |
| O - Oil | | Site 161 - Clay | | | Soil | 10/7/91 | | | | | | X | | | | | | | 002 | | |
| A - Air | | | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | | | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | | | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | | | | | | | | | | | | | | | | | | | | |
| Wi - Wipe | | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | | |

RFW #

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| Brian [illegible] | Fed-Ex | 11/6/91 | 6:30 | | [illegible] | 11-7-91 | 9:30 |
| | | | | | | | |

RFW 21-21-001/A-7/91 ____ L372 ____ L373 ____ L375 ____ L377 ____ L378 Ref# _____ Cooler# _____ 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WSRC-TASK 27
RFW #: 9110L004
W.O. #: 0630-28-27-0000

SAMPLES RECEIVED: 10-12-91

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. Preparation blank results were below the required detection limit with the exception of acidity.

2. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

3. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits. All %RPD were within the 20% guidance limit.

4. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.

5. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

11.18.91.

Jack R. Tuschall, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

Date

ncc.21\i10-004

# ROY F. WESTON, INC.
# GLOSSARY OF TERMS - INORGANIC REPORTS

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/15/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9110L004

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 206 SAND | % Solids | 86.8 | | % | 0.10 |
| | | Acidity | 127 | | MG/KG | 11.5 |
| | | Chloride | 28.8 | u | MG/KG | 28.8 |
| | | Nitrate, as N | 0.92 | | MG/KG | 0.58 |
| | | Sulfate | 28.8 | u | MG/KG | 28.8 |
| -002 | SITE 206 CLAY | % Solids | 77.8 | | % | 0.10 |
| | | Acidity | 103 | | MG/KG | 12.8 |
| | | Chloride | 32.1 | u | MG/KG | 32.1 |
| | | Nitrate, as N | 2.5 | | MG/KG | 0.64 |
| | | Sulfate | 32.1 | u | MG/KG | 32.1 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/15/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9110L004
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK10 | 91LAC002-MB1 | Acidity | 40.0 | | MG/KG | 2.5 |
| BLANK20 | 91LAC002-MB2 | Acidity | 40.0 | | MG/KG | 2.5 |
| BLANK10 | 91LCL111-MB1 | Chloride | 25.0 | u | MG/KG | 25.0 |
| BLANK10 | 91LNO242-MB1 | Nitrate, as N | 0.50 | u | MG/KG | 0.50 |
| BLANK10 | 91LS4A87-MB1 | Sulfate | 25.0 | u | MG/KG | 25.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/15/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L004

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -002 | SITE 206 CLAY | Nitrate, as N | 8.9 | 2.5 | 6.4 | 101 |
| | | Nitrate, as N MSD | 9.0 | 2.5 | 6.4 | 101 |
| BLANK10 | 91LCL111-MB1 | Chloride | 120 | 25.0 u | 125 | 95.8 |
| | | Chloride MSD | 119 | 25.0 u | 125 | 95.4 |
| BLANK10 | 91LNO242-MB1 | Nitrate, as N | 1.9 | 0.50u | 2.0 | 96.1 |
| | | Nitrate, as N MSD | 2.0 | 0.50u | 2.0 | 97.8 |
| BLANK10 | 91LS4A87-MB1 | Sulfate | 154 | 25.0 u | 150 | 103 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/15/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9110L004
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| -002 | SITE 206 CLAY | Nitrate, as N | 101 | 101 | 0.30 |
| BLANK10 | 91LCL111-MB1 | Chloride | 95.8 | 95.4 | 0.50 |
| BLANK10 | 91LNO242-MB1 | Nitrate, as N | 96.1 | 97.8 | 2.0 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/15/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L004

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -002REP | SITE 206 CLAY | Nitrate, as N | 2.5 | 2.4 | 1.5 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L004

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 206 SAND | | | | | | |
| % SOLIDS | 001 | S | 91L%S209 | 10/08/91 | 10/17/91 | 10/18/91 |
| ACIDITY | 001 | S | 91LAC002 | 10/08/91 | 10/31/91 | 10/31/91 |
| CHLORIDE | 001 | S | 91LCL111 | 10/08/91 | 10/18/91 | 10/18/91 |
| NITRATE | 001 | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| SULFATE | 001 | S | 91LS4A87 | 10/08/91 | 10/24/91 | 10/24/91 |
| SUB-OUT TEST FOR SUB | 001 | S | | 10/08/91 | | |
| SITE 206 CLAY | | | | | | |
| % SOLIDS | 002 | S | 91L%S209 | 10/08/91 | 10/17/91 | 10/18/91 |
| ACIDITY | 002 | S | 91LAC002 | 10/08/91 | 10/31/91 | 10/31/91 |
| CHLORIDE | 002 | S | 91LCL111 | 10/08/91 | 10/18/91 | 10/18/91 |
| NITRATE | 002 | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| NITRATE | 002 REP | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| NITRATE | 002 MS | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| NITRATE | 002 MSD | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| SULFATE | 002 | S | 91LS4A87 | 10/08/91 | 10/24/91 | 10/24/91 |
| SUB-OUT TEST FOR SUB | 002 | S | | 10/08/91 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | S | 91LAC002 | N/A | 10/31/91 | 10/31/91 |
| ACIDITY | MB2 | S | 91LAC002 | N/A | 10/31/91 | 10/31/91 |
| CHLORIDE | MB1 | S | 91LCL111 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB1 BS | S | 91LCL111 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB1 BSD | S | 91LCL111 | N/A | 10/18/91 | 10/18/91 |
| NITRATE | MB1 | W | 91LNO242 | N/A | 11/01/91 | 11/01/91 |
| NITRATE | MB1 BS | W | 91LNO242 | N/A | 11/01/91 | 11/01/91 |
| NITRATE | MB1 BSD | W | 91LNO242 | N/A | 11/01/91 | 11/01/91 |
| SULFATE | MB1 | S | 91LS4A87 | N/A | 10/24/91 | 10/24/91 |
| SULFATE | MB1 BS | S | 91LS4A87 | N/A | 10/24/91 | 10/24/91 |

WESTON Analytics Use Only: 91104004

# Custody Transfer Record/Lab Work Request

WESTON

Page ___ of ___

Client: WSRC-Task 24
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: Dthomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 10/4/91 Date Due: 11/11/91
Account #: WSRC 27 STS

| Refrigerator # | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | | | | | 1 | | | 1 | | | | | | |
| | Solid | | | | | 1 | | | 1 | | | | | | |
| Volume | Liquid | | | | | 950 | | | 950 | | | | | | |
| | Solid | | | | | | | | | | | | | | |
| Preservatives | | | | | | None | | | None | | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | INORG | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | Radio | | | Metal | CN | TCL 504 | Acid ID | | | |

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 | WESTON Analytics Use Only | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | ISOB | | | See below | | TCL ISO4 | Acid ID | | |
| 001 | Site 2016 sand | | | Soil | 10/1/91 | | | | | | ✓ | | | ✓ | | ✓ | ✓ | | |
| 002 | Site 2016 clay | | | ⊥ | ⊥ | | | | | | ✓ | | | ✓ | | ✓ | ✓ | | |
| | ~~Trip Blank~~ | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
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pg 10/15/91 Do Not Log per Dthomas

Radiochem = Same 91104005
Metals - Al, As, Ba, Cd, Ca, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn, Ag
via on Chem Hex

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
11/5/91 1. ALKL cancelled - there were
⊥ 2. pres for Acidity
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Emery | P Berger | 10/2/91 | 2:30 pm |
| | pg 10/15/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | pg 10/15/91 | | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# N/A Cooler# N/A 381-598a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 10-12-91
**RFW #:** 9110L004
**W.O. #:** 0630-28-27-0000

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All preparation blank results were below the required detection limit.

2. All laboratory control standards were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

3. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

11.12.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc.21\m10-004

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/12/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L004

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 206 SAND | Silver, Total | 2.2 | u | MG/KG | 2.2 |
| | | Aluminum, Total | 438 | | MG/KG | 43.5 |
| | | Arsenic, Total | 2.2 | u | MG/KG | 2.2 |
| | | Barium, Total | 43.5 | u | MG/KG | 43.5 |
| | | Cadmium, Total | 1.1 | u | MG/KG | 1.1 |
| | | Chromium, Total | 9.1 | | MG/KG | 2.2 |
| | | Copper, Total | 5.4 | u | MG/KG | 5.4 |
| | | Iron, Total | 2880 | | MG/KG | 21.7 |
| | | Mercury, Total | 0.12 | u | MG/KG | 0.12 |
| | | Manganese, Total | 4.2 | | MG/KG | 3.3 |
| | | Sodium, Total | 1090 | u | MG/KG | 1090 |
| | | Nickel, Total | 8.7 | u | MG/KG | 8.7 |
| | | Lead, Total | 0.67 | u | MG/KG | 0.67 |
| | | Selenium, Total | 1.1 | u | MG/KG | 1.1 |
| | | Zinc, Total | 4.3 | u | MG/KG | 4.3 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/12/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L004

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -002 | SITE 206 CLAY | Silver, Total | 3.7 | | MG/KG | 2.6 |
| | | Aluminum, Total | 4320 | | MG/KG | 51.2 |
| | | Arsenic, Total | 2.5 | u | MG/KG | 2.5 |
| | | Barium, Total | 51.2 | u | MG/KG | 51.2 |
| | | Cadmium, Total | 1.3 | u | MG/KG | 1.3 |
| | | Chromium, Total | 2.6 | u | MG/KG | 2.6 |
| | | Copper, Total | 7.3 | | MG/KG | 6.4 |
| | | Iron, Total | 27500 | | MG/KG | 25.6 |
| | | Mercury, Total | 0.13 | u | MG/KG | 0.13 |
| | | Manganese, Total | 54.2 | | MG/KG | 3.8 |
| | | Sodium, Total | 1280 | u | MG/KG | 1280 |
| | | Nickel, Total | 10.2 | u | MG/KG | 10.2 |
| | | Lead, Total | 2.4 | | MG/KG | 0.75 |
| | | Selenium, Total | 1.2 | u | MG/KG | 1.2 |
| | | Zinc, Total | 22.5 | | MG/KG | 5.1 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/12/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9110L004
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L3011-MB1 | Silver, Total | 2.0 | u | MG/KG | 2.0 |
| | | Aluminum, Total | 40.0 | u | MG/KG | 40.0 |
| | | Barium, Total | 40.0 | u | MG/KG | 40.0 |
| | | Cadmium, Total | 1.0 | u | MG/KG | 1.0 |
| | | Chromium, Total | 2.0 | u | MG/KG | 2.0 |
| | | Copper, Total | 5.0 | u | MG/KG | 5.0 |
| | | Iron, Total | 20.0 | u | MG/KG | 20.0 |
| | | Manganese, Total | 3.0 | u | MG/KG | 3.0 |
| | | Sodium, Total | 1000 | u | MG/KG | 1000 |
| | | Nickel, Total | 8.0 | u | MG/KG | 8.0 |
| | | Zinc, Total | 4.0 | u | MG/KG | 4.0 |
| BLANK1 | 91L3010-MB1 | Arsenic, Total | 2.0 | u | MG/KG | 2.0 |
| | | Lead, Total | 0.60 | u | MG/KG | 0.60 |
| | | Selenium, Total | 1.0 | u | MG/KG | 1.0 |
| BLANK1 | 91C0303-MB1 | Mercury, Total | 0.10 | u | MG/KG | 0.10 |
| BLANK2 | 91C0303-MB2 | Mercury, Total | 0.10 | u | MG/KG | 0.10 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/12/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L004

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L3011-LC2 | Silver, LCS | 97.6 | 97.5 | 0.10 |
| | | Aluminum, LCS | 105 | 105 | 0.19 |
| | | Barium, LCS | 106 | 106 | 0.38 |
| | | Cadmium, LCS | 88.2 | 88.0 | 0.23 |
| | | Chromium, LCS | 103 | 102 | 0.49 |
| | | Copper, LCS | 100 | 101 | 0.30 |
| | | Iron, LCS | 105 | 105 | 0.76 |
| | | Manganese, LCS | 103 | 102 | 0.58 |
| | | Sodium, LCS | 107 | 107 | 0.19 |
| | | Nickel, LCS | 102 | 102 | 0.20 |
| | | Zinc, LCS | 102 | 102 | 0.098 |
| LCS2 | 91L3010-LC2 | Arsenic, LCS | 90.3 | 85.7 | 5.2 |
| | | Lead, LCS | 108 | 112 | 3.6 |
| | | Selenium, LCS | 94.3 | 91.0 | 3.6 |
| LCS2 | 91C0303-LC2 | Mercury, LCS | 92.7 | 101 | 9.0 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/12/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L3011-LC1 | Silver, LCS | 97.6 | 100 | MG/KG | 97.6 |
| | | Aluminum, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Barium, LCS | 1060 | 1000 | MG/KG | 106 |
| | | Cadmium, LCS | 44.1 | 50.0 | MG/KG | 88.2 |
| | | Chromium, LCS | 103 | 100 | MG/KG | 103 |
| | | Copper, LCS | 251 | 250 | MG/KG | 100 |
| | | Iron, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Manganese, LCS | 154 | 150 | MG/KG | 103 |
| | | Sodium, LCS | 5350 | 5000 | MG/KG | 107 |
| | | Nickel, LCS | 408 | 400 | MG/KG | 102 |
| | | Zinc, LCS | 205 | 200 | MG/KG | 102 |
| LCS2 | 91L3011-LC2 | Silver, LCS | 97.5 | 100 | MG/KG | 97.5 |
| | | Aluminum, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Barium, LCS | 1060 | 1000 | MG/KG | 106 |
| | | Cadmium, LCS | 44.0 | 50.0 | MG/KG | 88.0 |
| | | Chromium, LCS | 102 | 100 | MG/KG | 102 |
| | | Copper, LCS | 252 | 250 | MG/KG | 101 |
| | | Iron, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Manganese, LCS | 154 | 150 | MG/KG | 102 |
| | | Sodium, LCS | 5340 | 5000 | MG/KG | 107 |
| | | Nickel, LCS | 408 | 400 | MG/KG | 102 |
| | | Zinc, LCS | 204 | 200 | MG/KG | 102 |
| LCS1 | 91L3010-LC1 | Arsenic, LCS | 5.4 | 6.0 | MG/KG | 90.3 |
| | | Lead, LCS | 6.5 | 6.0 | MG/KG | 108 |
| | | Selenium, LCS | 5.7 | 6.0 | MG/KG | 94.3 |
| LCS2 | 91L3010-LC2 | Arsenic, LCS | 5.1 | 6.0 | MG/KG | 85.7 |
| | | Lead, LCS | 6.7 | 6.0 | MG/KG | 112 |
| | | Selenium, LCS | 5.5 | 6.0 | MG/KG | 91.0 |
| LCS1 | 91C0303-LC1 | Mercury, LCS | 11.8 | 12.7 | MG/KG | 92.7 |
| LCS2 | 91C0303-LC2 | Mercury, LCS | 12.9 | 12.7 | MG/KG | 101 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L004

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 206 SAND | | | | | | |
| SILVER, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| ALUMINUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| ARSENIC, TOTAL | 001 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| BARIUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| CADMIUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| CHROMIUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| COPPER, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| IRON, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| MERCURY, TOTAL | 001 | S | 91C0303 | 10/08/91 | 10/22/91 | 10/23/91 |
| MANGANESE, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| SODIUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| NICKEL, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| LEAD, TOTAL | 001 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| SELENIUM, TOTAL | 001 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| ZINC, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| SITE 206 CLAY | | | | | | |
| SILVER, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| ALUMINUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| ARSENIC, TOTAL | 002 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| BARIUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| CADMIUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| CHROMIUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| COPPER, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| IRON, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| MERCURY, TOTAL | 002 | S | 91C0303 | 10/08/91 | 10/22/91 | 10/23/91 |
| MANGANESE, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| SODIUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| NICKEL, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| LEAD, TOTAL | 002 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| SELENIUM, TOTAL | 002 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| ZINC, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| LAB QC: | | | | | | |
| SILVER LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L004

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM LABORTORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| BARIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CADMIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CHROMIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| COPPER LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| IRON LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| MANGANESE LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SODIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| NICKEL LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ZINC LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SILVER LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ALUMINUM LABORTORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| BARIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CADMIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CHROMIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| COPPER LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| IRON LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| MANGANESE LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SODIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| NICKEL LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ZINC LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SILVER, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ALUMINUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| BARIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CADMIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CHROMIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| COPPER, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| IRON, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| MANGANESE, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SODIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| NICKEL, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ZINC, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ARSENIC LABORATORY | LC1 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| LEAD LABORATORY | LC1 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| SELENIUM LABORATORY | LC1 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| ARSENIC LABORATORY | LC2 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| LEAD LABORATORY | LC2 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| SELENIUM LABORATORY | LC2 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| ARSENIC, TOTAL | MB1 | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| LEAD, TOTAL | MB1 | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L004

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SELENIUM, TOTAL | MB1 | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| MERCURY LABORATORY | LC1 BS | S | 91C0303 | N/A | 10/22/91 | 10/23/91 |
| MERCURY LABORATORY | LC2 BS | S | 91C0303 | N/A | 10/22/91 | 10/23/91 |
| MERCURY, TOTAL | MB1 | S | 91C0303 | N/A | 10/22/91 | 10/23/91 |
| MERCURY, TOTAL | MB2 | S | 91C0303 | N/A | 10/22/91 | 10/23/91 |

WESTON Analytics Use Only

91104004

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 24
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: DThomas
QC: Std Del. Std TAT: 30 day
Date Rec'd: 10/14/91 Date Due: 11/11/91
Account #: WSRC-7575

| Refrigerator # | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | INORG | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | Metal | CN | | | | | | |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S - Soil | 001 | Site 2016 sand | | | Soil | 10/8/91 | | | | | | ✓ | | ✓ | | ✓ | ✓ | | |
| SE - Sediment | 002 | Site 2016 clay | | | ⊥ | ⊥ | | | | | | ✓ | | ✓ | | ✓ | ✓ | | |
| SO - Solid | | ~~Trip Blank~~ | | | | | | | | | | | | | | | | | |
| SL - Sludge | | | | | | | | | | | | | | | | | | | |
| W - Water | | | | | | | | | | | | | | | | | | | |
| O - Oil | | | | | | | | | | | | | | | | | | | |
| A - Air | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | |

~~Trip Blank~~ pg 10/15/91 Do Not Log per DThomas

Radiochem - See 91104005

Metals - Al, As, Ba, Cd, Ca, Cu, Hg, Ni, Na, Pb, Se, Zn, Fe, Mn, Ag

Mercury Speciation Hexl

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:

11/5/91 1. ALKL cancelled - these were
⊥ 2. pull for Facility
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Emery | PHergin | 10/12/91 | 2:30 pm |
| | PJ 10/15/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | PJ 10/15/91 | | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# Na Cooler# Na 381-596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn:
Received: 7-Nov-91 14:45
Project: 9110L004
PO #: LSA #LL-0962-F4

Job: 912168E
Status: Final

**Sample Type: Soil**

| Sample Id | Gross Alpha Total pCi/g(dry) | Error 2σ | Gross Beta Total pCi/g(dry) | Error 2σ | Tritium pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L004-001 | 15 | ±8 | 15 | ±4 | 16 | ±1 |
| 9110L004-002 | 56 | ±12 | 26 | ±4 | 24 | ±1 |

| Sample Id | I-129 pCi/g(wet) | Error 2σ | Pu-238 pCi/g(dry) | Error 2σ | Pu-239/240 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L004-001 | 0.0 | ±3.8 | 0.0 | ±0.2 | 0.0 | ±0.3 |
| 9110L004-002 | 1.2 | ±4.6 | 0.0 | ±0.4 | 0.0 | ±0.4 |

| Sample Id | Ra-226 Total pCi/g(dry) | Error 2σ | Sr-89 pCi/g(dry) | Error 2σ | Sr-90 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L004-001 | 1.8 | ±0.7 | 4.8 | ±1.3 | 0.8 | ±1.1 |
| 9110L004-002 | 2.6 | ±0.9 | 1.6 | ±1.1 | 0.7 | ±1.2 |

| Sample Id | Tc-99 pCi/g(dry) | Error 2σ | U-234 Total pCi/g(dry) | Error 2σ | U-235 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L004-001 | 0.0 | ±0.7 | 0.5 | ±1.1 | 0.0 | ±0.6 |
| 9110L004-002 | 0.1 | ±0.8 | 2.8 | ±1.8 | 0.0 | ±0.8 |

| Sample Id | U-238 Total pCi/g(dry) | Error 2σ | Moisture % | C-14 pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|
| 9110L004-001 | 0.6 | ±1.0 | 13.3 | 0.2 | ±0.3 |
| 9110L004-002 | 3.4 | ±1.8 | 17.8 | 1.5 | ±0.4 |

BARRINGER LABORATORIES INC.
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23-Dec-91

Diane Thomas
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208 Welsh Pool Road
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Page: 2
Copy: 1 of 2
Set : 2

Attn:
Received: 7-Nov-91 14:45
Project: 9110L004
PO #: LSA #LL-0962-F4

Job: 912168E
Status: Final

GAMMA SPECTROSCOPY

**Sample Type: Soil**

| Sample Id | Pb-212 pCi/g(wet) | Error 2σ | Pb-214 pCi/g(wet) | Error 2σ | Ra-226* pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L004-001 | 0.7 | ±0.1 | 0.8 | ±0.1 | 2.2 | ±0.5 |
| 9110L004-002 | 1.3 | ±0.1 | 1.4 | ±0.1 | 4.7 | ±0.8 |

| Sample Id | Tl-208 pCi/g(wet) | Error 2σ | Bi-214 pCi/g(wet) | Error 2σ | Bi-212 pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L004-001 | 0.4 | ±0.1 | 0.8 | ±0.1 | 1.6 | ±0.3 |
| 9110L004-002 | 0.7 | ±0.1 | 1.6 | ±0.1 | 2.3 | ±0.5 |

| Sample Id | Pb-210 pCi/g(wet) | Error 2σ | K-40 pCi/g(wet) | Error 2σ | Am-241 pCi/g(wet) |
|---|---|---|---|---|---|
| 9110L004-001 | <0.1 | --- | <0.6 | --- | <0.1 |
| 9110L004-002 | 0.8 | ±0.2 | 1.9 | ±0.4 | <0.1 |

| Sample Id | Ac-228 pCi/g | Error 2σ |
|---|---|---|
| 9110L004-001 | <0.1 | --- |
| 9110L004-002 | 1.5 | ±0.2 |

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23-Dec-91

Diane Thomas
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Attn:
Received: 7-Nov-91 14:45
Project: 9110L004
PO #: LSA #LL-0962-F4

Job: 912168F
Status: Final

GAMMA SPECTROSCOPY

Abbreviations:

Parameters:

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Ra-226 | : Radium-226 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| C-14 | : Carbon-14 |
| Pb-212 | : Lead-212 |
| Pb-214 | : Lead-214 |
| Ra-226* | : Radium-226 using Bi-214 peak. |
| Tl-208 | : Thallium-208 |
| Bi-214 | : Bismuth-214 |
| Bi-212 | : Bismuth-212 |
| Pb-210 | : Lead-210 |
| K-40 | : Potassium-40 |
| Am-241 | : Americium-241 |
| Ac-228 | : Actinium-228 |
| Gamma Spec | : Gamma Spectralanalysis |
| Be-7 | : Beryllium-7 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
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208 Welsh Pool Road
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Page: 4
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Set : 4

Attn:
Received: 7-Nov-91 14:45
Project: 9110L004
PO #: LSA #LL-0962-F4

Job: 912168E
Status: Final

GAMMA SPECTROSCOPY

Units:

| | |
|---|---|
| pCi/g(dry) | : picoCuries per gram (dry) |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| pCi/g(wet) | : picoCuries per gram(wet) |
| % | : percent |
| pCi/g | : picoCuries per gram |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

Job approved by:

Signed: Ellen LaRiviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn:
Project: 9110L004

Received: 7-Nov-91 14:45
PO #: LSA #LL-0962-F4

Job: 912168E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Soil**

| Sample Id | Gross Alpha Total pCi/g(dry) | Error 2σ | Gross Beta Total pCi/g(dry) | Error 2σ | Tritium pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 49 | ±12 | 27 | ±4 | 2.1 | ±0.3 |
| Duplicate | 63 | ±13 | 24 | ±4 | 2.8 | ±0.3 |
| Duplicate % diff. | 12 | --- | 5.9 | --- | 14 | --- |
| Std (found value) | 217 | ±7 | 114 | ±2 | 114484 | ±1636 |
| Std (true value) | 206 | --- | 106 | --- | 111720 | --- |
| Std % diff. | 5.3 | --- | 7.5 | --- | 2.5 | --- |
| Blank | 0.1 | ±0.2 | 0.2 | ±0.3 | 229 | ±313 |
| Spike % rec. | 99 | --- | 102 | --- | --- | --- |

| Sample Id | I-129 pCi/g(wet) | Error 2σ | Pu-238 pCi/g(dry) | Error 2σ | Pu-239/240 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 8.8 | ±4.4 | 0.0 | ±0.3 | 0.0 | ±0.3 |
| Duplicate | 0.0 | ±4.0 | 0.0 | ±0.3 | 0.0 | ±0.3 |
| Duplicate % diff. | 100 | --- | 0.0 | --- | 0.0 | --- |
| Std (found value) | 1104 | ±22 | --- | --- | 203 | ±8 |
| Std (true value) | 993 | --- | --- | --- | 207 | --- |
| Std % diff. | 11 | --- | --- | --- | 1.9 | --- |
| Blank | 0.0 | ±4.2 | 0.0 | ±0.2 | 0.1 | ±0.2 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Ra-226 Total pCi/g(dry) | Error 2σ | Sr-89 pCi/g(dry) | Error 2σ | Sr-90 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.9 | ±0.4 | 0.0 | ±1.1 | 1.4 | ±1.4 |
| Duplicate | 0.7 | ±0.4 | 0.0 | ±0.9 | 0.2 | ±1.2 |
| Duplicate % diff. | 12 | --- | 0.0 | --- | 75 | --- |
| Std (found value) | 113 | ±7 | 26 | ±2 | 24 | ±2 |
| Std (true value) | 99 | --- | 21 | --- | 21 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn:
Received: 7-Nov-91 14:45
Project: 9110L004
PO #: LSA #LL-0962-F4

Job: 912168E
Status: Final

QUALITY CONTROL REPORT

**Sample Type: Soil**

| Sample Id | Ra-226 Total pCi/g(dry) | Error 2σ | Sr-89 pCi/g(dry) | Error 2σ | Sr-90 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Std % diff. | 14 | --- | 24 | --- | 14 | --- |
| Blank | 0.0 | ±0.1 | 0.5 | ±0.7 | 0.6 | ±0.9 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Tc-99 pCi/g(dry) | Error 2σ | U-234 Total pCi/g(dry) | Error 2σ | U-235 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±0.7 | 1.2 | ±1.4 | 0.0 | ±0.5 |
| Duplicate | 0.0 | ±0.8 | 0.0 | ±0.8 | 0.0 | ±0.4 |
| Duplicate % diff. | 0.0 | --- | 100 | --- | 0.0 | --- |
| Std (found value) | 100 | ±3 | 180 | ±10 | 8.9 | ±2.2 |
| Std (true value) | 100 | --- | 170 | --- | 8.0 | --- |
| Std % diff. | 0.0 | --- | 5.9 | --- | 11 | --- |
| Blank | 0.0 | ±0.7 | 0.0 | ±0.2 | 0.0 | ±0.1 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | U-238 Total pCi/g(dry) | Error 2σ | Moisture % | C-14 pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|
| Duplicate | 1.6 | ±1.4 | 12.7 | 2.0 | ±0.6 |
| Duplicate | 0.2 | ±0.9 | 12.8 | 0.3 | ±0.3 |
| Duplicate % diff. | 78 | --- | 0.4 | 74 | --- |
| Std (found value) | 190 | ±10 | --- | 823 | ±15 |
| Std (true value) | 170 | --- | --- | 992 | --- |
| Std % diff. | 12 | --- | --- | 17 | --- |
| Blank | 0.0 | ±0.2 | --- | 0.8 | ±2.5 |
| Spike % rec. | --- | --- | --- | --- | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
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208 Welsh Pool Road
Lionville, PA 19353

Page: 3
Copy: 1 of 2
Set : 3

Attn:
Received: 7-Nov-91 14:45
Project: 9110L004
PO #: LSA #LL-0962-F4

Job: 912168E
Status: Final

QUALITY CONTROL REPORT

**Sample Type: Soil**

| Sample Id | Gamma Spec pCi/g(wet) | Error 2σ | Be-7 pCi/g(wet) | Error 2σ | Pb-210 pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | --- | --- | 720 | ±90 | 110 | ±30 |
| Duplicate | --- | --- | 780 | ±90 | 120 | ±30 |
| Duplicate % diff. | --- | --- | 4.0 | --- | 4.3 | --- |
| Std (found value) | 20 | ±1 | --- | --- | --- | --- |
| Std (true value) | 19 | --- | --- | --- | --- | --- |
| Std % diff. | 5.3 | --- | --- | --- | --- | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 4
Copy: 1 of 2
Set : 4

Attn:
Project: 9110L004

Received: 7-Nov-91 14:45
PO #: LSA #LL-0962-F4

Job: 912168E

Status: Final

QUALITY CONTROL REPORT

**Abbreviations:**

**Parameters:**

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Ra-226 | : Radium-226 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| C-14 | : Carbon-14 |
| Pb-212 | : Lead-212 |
| Pb-214 | : Lead-214 |
| Ra-226* | : Radium-226 using Bi-214 peak. |
| Tl-208 | : Thallium-208 |
| Bi-214 | : Bismuth-214 |
| Bi-212 | : Bismuth-212 |
| Pb-210 | : Lead-210 |
| K-40 | : Potassium-40 |
| Am-241 | : Americium-241 |
| Ac-228 | : Actinium-228 |
| Gamma Spec | : Gamma Spectralanalysis |
| Be-7 | : Beryllium-7 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
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208 Welsh Pool Road
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Page: 5
Copy: 1 of 2
Set : 4

Attn:
Received: 7-Nov-91 14:45
Project: 9110L004
PO #: LSA #LL-0962-F4

Job: 912168E
Status: Final

QUALITY CONTROL REPORT

Units:

| | |
|---|---|
| pCi/g(dry) | : picoCuries per gram (dry) |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| pCi/g(wet) | : picoCuries per gram(wet) |
| % | : percent |
| pCi/g | : picoCuries per gram |

Job approved by:

Signed: .....
Approved
Quality Assurance Department

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 6
Copy: 1 of 2

Attn:
Received: 7-Nov-91 14:45
Project: 9110L004
PO #: LSA #LL-0962-F4

Job: 912168E
Status: Final

QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: gr
Via: Federal Express

Sample Container Type: Brn gl L btl
Sample Type: Soil
Preservative When Received: none
Additional Lab Preparation: none

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 5 pCi/g | none | Pingilley | 11/22-11/26 |
| Gross Beta | 900.0 | 9 pCi/g | none | Pingilley | 11/22-11/26 |
| Tritium | 906.0 | 200 pCi/g | none | Kidwell | 12/ 3-12/12 |
| I-129 | ---- | ---- | none | Preston | 12/17-12/20 |
| Pu-238/239/240 | 907.0 | 1 pCi/g | none | Preston | 11/20-12/ 6 |
| Ra-226 | SM-705 | 0.2 pCi/g | none | Seidel | 11/20-12/12 |
| Sr-89/90 | 905.0 | 1 pCi/g | none | Kidwell | 11/19-12/18 |
| Tc-99 | ---- | ---- | none | Preston | 11/24-12/10 |
| U-234/235/238 | 908.0 | 0.4 pCi/g | none | Tonning | 11/20-12/ 2 |
| C-14 | ---- | ---- | none | Preston | 12/ 5-12/17 |
| Gamma Spec | 901.1 | ---- | none | Kidwell | 11/23-11/24 |

Signed: .....
Mark Burkhardt, Ph.D.
Laboratory Director

21687

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: Weston - Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27-0000
Project Contact/Phone #:
AD Project Manager: D. Thomas (504-7960)
QC: Std Del: Std TAT: 30 day
Date Rec'd: Date Due:
Account #:

Refrigerator #
#/Type Container: Liquid / Solid: 1/6L
Volume: Liquid / Solid: 750ml
Preservatives

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb, Radio (3); INORG: Metal, CN

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 | Radio (3) | WESTON Analytics Use Only |
|---|---|---|---|---|---|---|---|---|
| | Site 206 Sand | | | Soil | 10/8/91 | | X | RFW # 91 10L004-001 |
| | Site 206 Clay | | | Soil | 10/8/91 | | X | 1 002 |

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| Brian [illegible] | Fed-Ex | 11/6/91 | 6:30 | | [illegible] | 11/7/91 | 09:30 |
| | | | | | | | |

L372 L373 ___ L377 ___ L378 Ref# ___ Cooler# ___

381-596a

**ROY F. WESTON, INC.**
**Lionville Laboratory**

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 10-12-91
**RFW #:** 9110L003
**W.O. #:** 0630-28-27-0000

## INORGANIC NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. Preparation blank results were below the required detection limit with the exception of acidity.

2. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.

3. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits. All %RPD were within the 20% guidance limit.

4. Replicate results are summarized on the Inorganic Precision Report contained within this document. Results were within the 20% RPD guidance limit with the exception of acidity.

5. The analytical methods applied by the laboratory, unless otherwise requested, for all inorganic analyses are derived from the USEPA Method for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020) and Standard Methods for the Examination of Water and Wastewater 16 ed. Methods for the analysis of solid samples are derived from Test Methods for Evaluating Solid Waste (USEPA SW846).

11.18.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc.21\i10-003

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/15/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9110L003

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 258 SAND | % Solids | 90.0 | | % | 0.10 |
| | | Acidity | 222 | | MG/KG | 11.1 |
| | | Chloride | 27.8 | u | MG/KG | 27.8 |
| | | Nitrate, as N | 0.56 | u | MG/KG | 0.56 |
| | | Sulfate | 29.4 | | MG/KG | 27.8 |
| -002 | SITE 258 CLAY | % Solids | 85.0 | | % | 0.10 |
| | | Acidity | 188 | | MG/KG | 11.8 |
| | | Chloride | 29.4 | u | MG/KG | 29.4 |
| | | Nitrate, as N | 0.59 | u | MG/KG | 0.59 |
| | | Sulfate | 29.4 | u | MG/KG | 29.4 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/15/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9110L003
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK10 | 91LAC002-MB1 | Acidity | 40.0 | | MG/KG | 2.5 |
| BLANK20 | 91LAC002-MB2 | Acidity | 40.0 | | MG/KG | 2.5 |
| BLANK10 | 91LCL111-MB1 | Chloride | 25.0 | u | MG/KG | 25.0 |
| BLANK10 | 91LNO242-MB1 | Nitrate, as N | 0.50 | u | MG/KG | 0.50 |
| BLANK10 | 91LS4A87-MB1 | Sulfate | 25.0 | u | MG/KG | 25.0 |

ROY F. WESTON INC.

INORGANICS ACCURACY REPORT 11/15/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L003

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | INITIAL RESULT | SPIKED AMOUNT | %RECOV |
|---|---|---|---|---|---|---|
| -001 | SITE 258 SAND | Nitrate, as N | 5.8 | 0.56u | 5.6 | 104 |
| | | Nitrate, as N MSD | 6.1 | 0.56u | 5.6 | 109 |
| BLANK10 | 91LCL111-MB1 | Chloride | 120 | 25.0 u | 125 | 95.8 |
| | | Chloride MSD | 119 | 25.0 u | 125 | 95.4 |
| BLANK10 | 91LNO242-MB1 | Nitrate, as N | 1.9 | 0.50u | 2.0 | 96.1 |
| | | Nitrate, as N MSD | 2.0 | 0.50u | 2.0 | 97.8 |
| BLANK10 | 91LS4A87-MB1 | Sulfate | 154 | 25.0 u | 150 | 103 |

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/15/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9110L003
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| -001 | SITE 258 SAND | Nitrate, as N | 104 | 109 | 4.7 |
| BLANK10 | 91LCL111-MB1 | Chloride | 95.8 | 95.4 | 0.50 |
| BLANK10 | 91LNO242-MB1 | Nitrate, as N | 96.1 | 97.8 | 2.0 |

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 11/15/91

CLIENT: WSRC-TASK 27

WESTON BATCH #: 9110L003

WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | INITIAL RESULT | REPLICATE | % DIFF |
|---|---|---|---|---|---|
| -001REP | SITE 258 SAND | % Solids | 90.0 | 89.8 | 0.12 |
| | | Acidity | 222 | 167 | 28.6 |
| | | Nitrate, as N | 0.56u | 0.56u | NC |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L003

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 258 SAND | | | | | | |
| % SOLIDS | 001 | S | 91L%S209 | 10/08/91 | 10/17/91 | 10/18/91 |
| % SOLIDS | 001 REP | S | 91L%S209 | 10/08/91 | 10/17/91 | 10/18/91 |
| ACIDITY | 001 | S | 91LAC002 | 10/08/91 | 10/31/91 | 10/31/91 |
| ACIDITY | 001 REP | S | 91LAC002 | 10/08/91 | 10/31/91 | 10/31/91 |
| CHLORIDE | 001 | S | 91LCL111 | 10/08/91 | 10/18/91 | 10/18/91 |
| NITRATE | 001 | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| NITRATE | 001 REP | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| NITRATE | 001 MS | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| NITRATE | 001 MSD | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| SULFATE | 001 | S | 91LS4A87 | 10/08/91 | 10/24/91 | 10/24/91 |
| SUB-OUT TEST FOR SUB | 001 | S | | 10/08/91 | | |
| SITE 258 CLAY | | | | | | |
| % SOLIDS | 002 | S | 91L%S209 | 10/08/91 | 10/17/91 | 10/18/91 |
| ACIDITY | 002 | S | 91LAC002 | 10/08/91 | 10/31/91 | 10/31/91 |
| CHLORIDE | 002 | S | 91LCL111 | 10/08/91 | 10/18/91 | 10/18/91 |
| NITRATE | 002 | S | 91LNO242 | 10/08/91 | 11/01/91 | 11/01/91 |
| SULFATE | 002 | S | 91LS4A87 | 10/08/91 | 10/24/91 | 10/24/91 |
| SUB-OUT TEST FOR SUB | 002 | S | | 10/08/91 | | |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| ACIDITY | MB1 | S | 91LAC002 | N/A | 10/31/91 | 10/31/91 |
| ACIDITY | MB2 | S | 91LAC002 | N/A | 10/31/91 | 10/31/91 |
| CHLORIDE | MB1 | S | 91LCL111 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB1 BS | S | 91LCL111 | N/A | 10/18/91 | 10/18/91 |
| CHLORIDE | MB1 BSD | S | 91LCL111 | N/A | 10/18/91 | 10/18/91 |
| NITRATE | MB1 | W | 91LNO242 | N/A | 11/01/91 | 11/01/91 |
| NITRATE | MB1 BS | W | 91LNO242 | N/A | 11/01/91 | 11/01/91 |
| NITRATE | MB1 BSD | W | 91LNO242 | N/A | 11/01/91 | 11/01/91 |
| SULFATE | MB1 | S | 91LS4A87 | N/A | 10/24/91 | 10/24/91 |
| SULFATE | MB1 BS | S | 91LS4A87 | N/A | 10/24/91 | 10/24/91 |

WES . Analytics Use Only
9110L003

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Task 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: D Thomas
QC: Std Del: Std TAT: Std day
Date Rec'd: 10/12/91 Date Due: [illegible]
Account #: WSRC27STD

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | | | | | | | | | | | | | | | | | |
| #/Type Container | Liquid | | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | | | |
| | Solid | | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED → | | | | | ORGANIC | | | | | | INORG | | | | | | | |
| | | | | | VOA | BNA | Pest/PCB | Herb | | | Metal | CN | | | | | | |

| MATRIX CODES: | Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | WESTON Analytics Use Only | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S - Soil | 001 | Site 258 Sand | | | Soil | 10/8/91 | | | | | | | | | | | | | | |
| SE - Sediment | 002 | Site 258 Clay | | | | | | | | | | | | | | | | | | |
| SO - Solid | | Trip Blank | | | | | | | | | | | | | | | | | | |
| SL - Sludge | | | | | | | | | | | | | | | | | | | | |
| W - Water | | | | | | | | | | | | | | | | | | | | |
| O - Oil | | | | | | | | | | | | | | | | | | | | |
| A - Air | | | | | | | | | | | | | | | | | | | | |
| DS - Drum Solids | | | | | | | | | | | | | | | | | | | | |
| DL - Drum Liquids | | | | | | | | | | | | | | | | | | | | |
| L - EP/TCLP Leachate | | | | | | | | | | | | | | | | | | | | |
| WI - Wipe | | | | | | | | | | | | | | | | | | | | |
| X - Other | | | | | | | | | | | | | | | | | | | | |
| F - Fish | | | | | | | | | | | | | | | | | | | | |

Radiochem See 9110L005
metals Al, As, Ba, Cd, Ca, Cu, Hg, Li, Na, Pb, Se, Zn, Fe, Mn, Ag

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
11/5/91 1. ALKL cancelled - these were run
2. for Acidity
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Emery | Pfleger | 10/9/91 | 2:30 pm |
| | P 9/10/15/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | P 9/10/15/91 | | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

ROY F. WESTON, INC.
Lionville Laboratory

**CLIENT:** WSRC-TASK 27 **SAMPLES RECEIVED:** 10-12-91
**RFW #:** 9110L003
**W.O. #:** 0630-28-27-0000

## METALS NARRATIVE

The following is a summary of the quality control results and a description of any problems encountered during the analysis of this batch of samples:

1. All sample holding times as required by 40CFR136 were met for water samples.

2. All preparation blank results were below the required detection limit.

3. All laboratory control standards were within the control limits of 80-120%. %RPD were within the 20% guidance limit with the exception of mercury (25%) for 91C0302-LC2.

4. All calibration verification checks were within the required control limits of 90-110% (80-120% for Hg). Calibration verification is performed using independent standards from Inorganic Ventures, Inc.

11.12.91.

Jack R. Tuschall, Ph.D. Date
Laboratory Manager
Lionville Analytical Laboratory

ncc.21\m10-003

**ROY F. WESTON, INC.**
**GLOSSARY OF TERMS - INORGANIC REPORTS**

## 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. The USEPA-CLP has determined that spike results on samples where this occurs may be unreliable and therefore, the control limits are not applicable.

## ABBREVIATIONS

MB - Method or preparation blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate.
REP - Sample Replicate.
LC - Indicates a method LCS or Blank Spike.
NC - Not calculable, result below the detection limit.

A suffix of -R and -S following these codes indicates a replicate and spike analysis respectively.

## ANALYTICAL METAL METHODS

| | | | |
|---|---|---|---|
| As : | EPA 206.2 | Se : | EPA 270.2 |
| Pb : | EPA 239.2 | ICP Scan : | EPA 200.7 |
| Hg : | EPA 245.1 | All Others : | EPA 200.7 |
| Tl : | EPA 279.2 | EP Leachates (except Hg) : | 200.7 |

The analytical methods applied by the laboratory for the determination of drinking water is 5.2.1.

## NOTES

The laboratory prepares a matrix spike at one per 20 frequency for TCLP samples. The Federal Register recommends that all matrix spikes be prepared at greater than 50% of the indigenous analyte concentration. A matrix duplicate is also prepared.

Holding times for soil samples have not been promulgated by the USEPA.

For solid samples, all results are reported on a dry weight basis.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/12/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9110L003

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -001 | SITE 258 SAND | Silver, Total | 2.1 | u | MG/KG | 2.1 |
| | | Aluminum, Total | 686 | | MG/KG | 41.9 |
| | | Arsenic, Total | 2.2 | u | MG/KG | 2.2 |
| | | Barium, Total | 41.9 | u | MG/KG | 41.9 |
| | | Cadmium, Total | 1.0 | u | MG/KG | 1.0 |
| | | Chromium, Total | 3.4 | | MG/KG | 2.1 |
| | | Copper, Total | 5.2 | u | MG/KG | 5.2 |
| | | Iron, Total | 765 | | MG/KG | 20.9 |
| | | Mercury, Total | 0.11 | u | MG/KG | 0.11 |
| | | Manganese, Total | 3.1 | u | MG/KG | 3.1 |
| | | Sodium, Total | 1050 | u | MG/KG | 1050 |
| | | Nickel, Total | 8.4 | u | MG/KG | 8.4 |
| | | Lead, Total | 1.4 | | MG/KG | 0.65 |
| | | Selenium, Total | 1.1 | u | MG/KG | 1.1 |
| | | Zinc, Total | 4.2 | u | MG/KG | 4.2 |

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 11/12/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9110L003

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| -002 | SITE 258 CLAY | Silver, Total | 2.2 | u | MG/KG | 2.2 |
| | | Aluminum, Total | 2120 | | MG/KG | 43.5 |
| | | Arsenic, Total | 2.1 | u | MG/KG | 2.1 |
| | | Barium, Total | 43.5 | u | MG/KG | 43.5 |
| | | Cadmium, Total | 1.1 | u | MG/KG | 1.1 |
| | | Chromium, Total | 4.9 | | MG/KG | 2.2 |
| | | Copper, Total | 5.4 | u | MG/KG | 5.4 |
| | | Iron, Total | 114 | | MG/KG | 21.8 |
| | | Mercury, Total | 0.12 | u | MG/KG | 0.12 |
| | | Manganese, Total | 3.3 | u | MG/KG | 3.3 |
| | | Sodium, Total | 1090 | u | MG/KG | 1090 |
| | | Nickel, Total | 8.7 | u | MG/KG | 8.7 |
| | | Lead, Total | 3.6 | | MG/KG | 0.64 |
| | | Selenium, Total | 1.1 | u | MG/KG | 1.1 |
| | | Zinc, Total | 4.3 | u | MG/KG | 4.3 |

ROY F. WESTON INC.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/12/91

CLIENT: WSRC-TASK 27 WESTON BATCH #: 9110L003
WORK ORDER: 0630-28-27-0000

| SAMPLE | SITE ID | ANALYTE | RESULT | | UNITS | REPORTING LIMIT |
|---|---|---|---|---|---|---|
| BLANK1 | 91L3011-MB1 | Silver, Total | 2.0 | u | MG/KG | 2.0 |
| | | Aluminum, Total | 40.0 | u | MG/KG | 40.0 |
| | | Barium, Total | 40.0 | u | MG/KG | 40.0 |
| | | Cadmium, Total | 1.0 | u | MG/KG | 1.0 |
| | | Chromium, Total | 2.0 | u | MG/KG | 2.0 |
| | | Copper, Total | 5.0 | u | MG/KG | 5.0 |
| | | Iron, Total | 20.0 | u | MG/KG | 20.0 |
| | | Manganese, Total | 3.0 | u | MG/KG | 3.0 |
| | | Sodium, Total | 1000 | u | MG/KG | 1000 |
| | | Nickel, Total | 8.0 | u | MG/KG | 8.0 |
| | | Zinc, Total | 4.0 | u | MG/KG | 4.0 |
| BLANK1 | 91L3010-MB1 | Arsenic, Total | 2.0 | u | MG/KG | 2.0 |
| | | Lead, Total | 0.60 | u | MG/KG | 0.60 |
| | | Selenium, Total | 1.0 | u | MG/KG | 1.0 |
| BLANK1 | 91C0302-MB1 | Mercury, Total | 0.10 | u | MG/KG | 0.10 |
| BLANK2 | 91C0302-MB2 | Mercury, Total | 0.10 | u | MG/KG | 0.10 |

AIIM

**Association for Information and Image Management**

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

301/587-8202

Centimeter

Inches

MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

7 of 7

ROY F. WESTON INC.

INORGANICS DUPLICATE SPIKE REPORT 11/12/91

CLIENT: WSRC-TASK 27
WORK ORDER: 0630-28-27-0000

WESTON BATCH #: 9110L003

| SAMPLE | SITE ID | ANALYTE | SPIKE#1 %RECOV | SPIKE#2 %RECOV | %DIFF |
|---|---|---|---|---|---|
| LCS2 | 91L3011-LC2 | Silver, LCS | 97.6 | 97.5 | 0.10 |
| | | Aluminum, LCS | 105 | 105 | 0.19 |
| | | Barium, LCS | 106 | 106 | 0.38 |
| | | Cadmium, LCS | 88.2 | 88.0 | 0.23 |
| | | Chromium, LCS | 103 | 102 | 0.49 |
| | | Copper, LCS | 100 | 101 | 0.30 |
| | | Iron, LCS | 105 | 105 | 0.76 |
| | | Manganese, LCS | 103 | 102 | 0.58 |
| | | Sodium, LCS | 107 | 107 | 0.19 |
| | | Nickel, LCS | 102 | 102 | 0.20 |
| | | Zinc, LCS | 102 | 102 | 0.098 |
| LCS2 | 91L3010-LC2 | Arsenic, LCS | 90.3 | 85.7 | 5.2 |
| | | Lead, LCS | 108 | 112 | 3.6 |
| | | Selenium, LCS | 94.3 | 91.0 | 3.6 |
| LCS2 | 91C0302-LC2 | Mercury, LCS | 92.1 | 118 | 24.5 |

ROY F. WESTON INC.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/12/91

| SAMPLE | SITE ID | ANALYTE | SPIKED SAMPLE | SPIKED AMOUNT | UNITS | %RECOV |
|---|---|---|---|---|---|---|
| LCS1 | 91L3011-LC1 | Silver, LCS | 97.6 | 100 | MG/KG | 97.6 |
| | | Aluminum, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Barium, LCS | 1060 | 1000 | MG/KG | 106 |
| | | Cadmium, LCS | 44.1 | 50.0 | MG/KG | 88.2 |
| | | Chromium, LCS | 103 | 100 | MG/KG | 103 |
| | | Copper, LCS | 251 | 250 | MG/KG | 100 |
| | | Iron, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Manganese, LCS | 154 | 150 | MG/KG | 103 |
| | | Sodium, LCS | 5350 | 5000 | MG/KG | 107 |
| | | Nickel, LCS | 408 | 400 | MG/KG | 102 |
| | | Zinc, LCS | 205 | 200 | MG/KG | 102 |
| LCS2 | 91L3011-LC2 | Silver, LCS | 97.5 | 100 | MG/KG | 97.5 |
| | | Aluminum, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Barium, LCS | 1060 | 1000 | MG/KG | 106 |
| | | Cadmium, LCS | 44.0 | 50.0 | MG/KG | 88.0 |
| | | Chromium, LCS | 102 | 100 | MG/KG | 102 |
| | | Copper, LCS | 252 | 250 | MG/KG | 101 |
| | | Iron, LCS | 1050 | 1000 | MG/KG | 105 |
| | | Manganese, LCS | 154 | 150 | MG/KG | 102 |
| | | Sodium, LCS | 5340 | 5000 | MG/KG | 107 |
| | | Nickel, LCS | 408 | 400 | MG/KG | 102 |
| | | Zinc, LCS | 204 | 200 | MG/KG | 102 |
| LCS1 | 91L3010-LC1 | Arsenic, LCS | 5.4 | 6.0 | MG/KG | 90.3 |
| | | Lead, LCS | 6.5 | 6.0 | MG/KG | 108 |
| | | Selenium, LCS | 5.7 | 6.0 | MG/KG | 94.3 |
| LCS2 | 91L3010-LC2 | Arsenic, LCS | 5.1 | 6.0 | MG/KG | 85.7 |
| | | Lead, LCS | 6.7 | 6.0 | MG/KG | 112 |
| | | Selenium, LCS | 5.5 | 6.0 | MG/KG | 91.0 |
| LCS1 | 91C0302-LC1 | Mercury, LCS | 11.7 | 12.7 | MG/KG | 92.1 |
| LCS2 | 91C0302-LC2 | Mercury, LCS | 15.0 | 12.7 | MG/KG | 118 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L003

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SITE 258 SAND | | | | | | |
| SILVER, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| ALUMINUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| ARSENIC, TOTAL | 001 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| BARIUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| CADMIUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| CHROMIUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| COPPER, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| IRON, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| MERCURY, TOTAL | 001 | S | 91C0302 | 10/08/91 | 10/22/91 | 10/23/91 |
| MANGANESE, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| SODIUM, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| NICKEL, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| LEAD, TOTAL | 001 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| SELENIUM, TOTAL | 001 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| ZINC, TOTAL | 001 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| SITE 258 CLAY | | | | | | |
| SILVER, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| ALUMINUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| ARSENIC, TOTAL | 002 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| BARIUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| CADMIUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| CHROMIUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| COPPER, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| IRON, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| MERCURY, TOTAL | 002 | S | 91C0302 | 10/08/91 | 10/22/91 | 10/23/91 |
| MANGANESE, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| SODIUM, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| NICKEL, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |
| LEAD, TOTAL | 002 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| SELENIUM, TOTAL | 002 | S | 91L3010 | 10/08/91 | 10/21/91 | 10/22/91 |
| ZINC, TOTAL | 002 | S | 91L3011 | 10/08/91 | 10/21/91 | 11/10/91 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SILVER LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L003

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| ALUMINUM LABORTORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| BARIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CADMIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CHROMIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| COPPER LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| IRON LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| MANGANESE LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SODIUM LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| NICKEL LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ZINC LABORATORY | LC1 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SILVER LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ALUMINUM LABORTORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| BARIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CADMIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CHROMIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| COPPER LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| IRON LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| MANGANESE LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SODIUM LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| NICKEL LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ZINC LABORATORY | LC2 BS | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SILVER, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ALUMINUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| BARIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CADMIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| CHROMIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| COPPER, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| IRON, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| MANGANESE, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| SODIUM, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| NICKEL, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ZINC, TOTAL | MB1 | S | 91L3011 | N/A | 10/21/91 | 11/10/91 |
| ARSENIC LABORATORY | LC1 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| LEAD LABORATORY | LC1 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| SELENIUM LABORATORY | LC1 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| ARSENIC LABORATORY | LC2 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| LEAD LABORATORY | LC2 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| SELENIUM LABORATORY | LC2 BS | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| ARSENIC, TOTAL | MB1 | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| LEAD, TOTAL | MB1 | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WSRC-TASK 27

DATE RECEIVED: 10/12/91 RFW LOT # :9110L003

| CLIENT ID /ANALYSIS | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| SELENIUM, TOTAL | MB1 | S | 91L3010 | N/A | 10/21/91 | 10/22/91 |
| MERCURY LABORATORY | LC1 BS | S | 91C0302 | N/A | 10/22/91 | 10/23/91 |
| MERCURY LABORATORY | LC2 BS | S | 91C0302 | N/A | 10/22/91 | 10/23/91 |
| MERCURY, TOTAL | MB1 | S | 91C0302 | N/A | 10/22/91 | 10/23/91 |
| MERCURY, TOTAL | MB2 | S | 91C0302 | N/A | 10/22/91 | 10/23/91 |

WESTON Analytics Use Only
9110L003

# Custody Transfer Record/Lab Work Request

WESTON

Page 1 of 1

Client: WSRC-Tank 27
Est. Final Proj. Sampling Date:
Work Order #: 0630-28-27
Project Contact/Phone #:
AD Project Manager: D Thomas
QC: Std Del: Std TAT: 30 day
Date Rec'd: 10/12/91 Date Due: ~~[illegible]~~ 11/15/91
Account #: WSRC27STA

| Refrigerator # | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | | | | | 500 | | | 4 | | | | | | | | |
| | Solid | | | | | 1/4 | | | 1/4 | | | 1/4 | | | | | |
| Volume | Liquid | | | | | 950 | | | 950 | | | 950 | | | | | |
| | Solid | | | | | | | | | | | | | | | | |
| Preservatives | | | | | | none | | | none | | | | | | | | |
| ANALYSES REQUESTED | | VOA | BNA | Pest/PCB | Herb | Radio chem | | | Metal | CN | | Cl SO4 | Nitrate Nitrite | | | | |
| | | ORGANIC | | | | | | | INORG | | | | | | | | |
| WESTON Analytics Use Only | | | | | | 1305 | | | See below | | | 1CL 1SO4 | 1NO3 1NO2 | | | | |

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 | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | Site 258 Sand | | | Soil | 10/8/91 | | | | | | | ✓ | | | ✓ | | ✓ | ✓ | | | |
| 002 | Site 258 Clay | | | ↓ | ↓ | | | | | | | ✓ | | | ✓ | | ✓ | ✓ | | | |
| | Trip blank | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
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Radiochem See 9110L005
metals Al, As, Ba, Cd, Ca, Cu, Hg, Li, Na, Pb, Se, Zn, Fe, Mn, Hg

prior to do not log per Thomas

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
11/5/91 1. ALKL cancelled - these were run
2. for Facility
3.
4.
5.
6.

WESTON Analytics 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

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Emery | Pfeiger | 10/9/91 | 2:30 pm |
| | P 9/10/15/91 | | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | P 9/10/15/91 | | |

RFW 21-21-001/A-7/91 ___ L372 ___ L373 ___ L375 ___ L377 ___ L378 Ref# ___ Cooler# ___ 381-596a

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 1
Copy: 1 of 2
Set : 1

Attn:
Received: 7-Nov-91 11:40
Project: 9110L003
PO #: LSA #LL-0962-F4

Job: 912164E
Status: Final

**Sample Type: Soil**

| Sample Id | Gross Alpha Total pCi/g(dry) | Error 2σ | Gross Beta Total pCi/g(dry) | Error 2σ | Tritium pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L003-001 | 16 | ±8 | 10 | ±4 | 2.2 | ±0.5 |
| 9110L003-002 | 18 | ±9 | 9.7 | ±4.0 | 2.4 | ±0.3 |

| Sample Id | I-129 pCi/g(wet) | Error 2σ | Pu-238 pCi/g(dry) | Error 2σ | Pu-239/240 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L003-001 | 4.4 | ±2.4 | 0.0 | ±0.4 | 0.8 | ±0.6 |
| 9110L003-002 | 4.9 | ±4.0 | 0.0 | ±0.3 | 0.0 | ±0.3 |

| Sample Id | Sr-89 pCi/g(dry) | Error 2σ | Sr-90 pCi/g(dry) | Error 2σ | Tc-99 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L003-001 | 3.3 | ±1.1 | 0.6 | ±1.0 | 0.0 | ±0.7 |
| 9110L003-002 | 4.0 | ±1.1 | 1.0 | ±1.0 | 0.0 | ±0.8 |

| Sample Id | U-234 Total pCi/g(dry) | Error 2σ | U-235 Total pCi/g(dry) | Error 2σ | U-238 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L003-001 | 0.0 | ±0.9 | 0.0 | ±0.7 | 0.0 | ±0.6 |
| 9110L003-002 | 0.6 | ±1.1 | 0.0 | ±0.6 | 0.9 | ±1.2 |

| Sample Id | Moisture % | C-14 pCi/g(wet) | Error 2σ | Ra-226 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|
| 9110L003-001 | 11.3 | 0.0 | ±1.6 | 0.8 | ±0.5 |
| 9110L003-002 | 13.9 | 1.8 | ±0.7 | 1.5 | ±0.6 |

BARRINGER LABORATORIES INC.
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23-Dec-91

Diane Thomas
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208 Welsh Pool Road
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Page: 2
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Attn:
Received: 7-Nov-91 11:40
Project: 9110L003
PO #: LSA #LL-0962-F4

Job: 912164E
Status: Final

GAMMA SPECTROSCOPY

**Sample Type: Soil**

| Sample Id | Pb-212 pCi/g(wet) | Error 2σ | Pb-214 pCi/g(wet) | Error 2σ | Ra-226 pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L003-001 | 0.6 | ±0.1 | 0.4 | ±0.1 | 1.1 | ±0.3 |
| 9110L003-002 | 0.5 | ±0.1 | 0.4 | ±0.1 | 1.2 | ±0.3 |

| Sample Id | Tl-208 pCi/g(wet) | Error 2σ | Ac-228 pCi/g(wet) | Error 2σ | Bi-214 pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| 9110L003-001 | 0.3 | ±0.1 | 0.7 | ±0.1 | 0.5 | ±0.1 |
| 9110L003-002 | 0.3 | ±0.1 | 0.5 | ±0.1 | 0.4 | ±0.1 |

| Sample Id | Bi-212 pCi/g(wet) | Error 2σ | Pb-210 pCi/g(wet) | Error 2σ | Am-241 pCi/g(wet) |
|---|---|---|---|---|---|
| 9110L003-001 | 0.8 | ±0.2 | <0.2 | --- | <0.1 |
| 9110L003-002 | 1.0 | ±0.2 | 0.3 | ±0.1 | <0.1 |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

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Attn:
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Project: 9110L003
PO #: LSA #LL-0962-F4

Job: 912164E
Status: Final

GAMMA SPECTROSCOPY

Abbreviations:

Parameters:

| | |
|---|---|
| I-129 | : Iodine-129 |
| Pu-238 | : Plutonium-238 |
| Pu-239/240 | : Plutonium-239/240 |
| Sr-89 | : Strontium-89 |
| Sr-90 | : Strontium -90 |
| Tc-99 | : Technetium-99 |
| U-234 | : Uranium-234 |
| U-235 | : Uranium-235 |
| U-238 | : Uranium-238 |
| C-14 | : Carbon-14 |
| Ra-226 | : Radium-226 |
| Pb-212 | : Lead-212 |
| Pb-214 | : Lead-214 |
| Tl-208 | : Thallium-208 |
| Ac-228 | : Actinium-228 |
| Bi-214 | : Bismuth-214 |
| Bi-212 | : Bismuth-212 |
| Pb-210 | : Lead-210 |
| Am-241 | : Americium-241 |
| Gamma Spec | : Gamma Spectralanalysis |
| Be-7 | : Beryllium-7 |

BARRINGER LABORATORIES INC.
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23-Dec-91

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Received: 7-Nov-91 11:40
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PO #: LSA #LL-0962-F4

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Status: Final

GAMMA SPECTROSCOPY

Units:

| | |
|---|---|
| pCi/g(dry) | : picoCuries per gram (dry) |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| pCi/g(wet) | : picoCuries per gram(wet) |
| % | : percent |

Quality codes:

| | |
|---|---|
| < | : Not Detected- below detection limit. |

Job approved by:

Signed: Ellen LaRiviere
Ellen La Riviere
Radiochemistry Laboratory Manager

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
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208 Welsh Pool Road
Lionville, PA 19353

Page: 1
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Set : 1

Attn:
Project: 9110L003

Received: 7-Nov-91 11:40
PO #: LSA #LL-0962-F4

Job: 912164E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Soil**

| Sample Id | Gross Alpha Total pCi/g(dry) | Error 2σ | Gross Beta Total pCi/g(dry) | Error 2σ | Tritium pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 49 | ±12 | 27 | ±4 | 2.1 | ±0.3 |
| Duplicate | 63 | ±13 | 24 | ±4 | 2.8 | ±0.3 |
| Duplicate % diff. | 12 | --- | 5.9 | --- | 14 | --- |
| Std (found value) | 217 | ±7 | 114 | ±2 | 114484 | ±1636 |
| Std (true value) | 206 | --- | 106 | --- | 111720 | --- |
| Std % diff. | 5.3 | --- | 7.5 | --- | 2.5 | --- |
| Blank | 0.1 | ±0.2 | 0.2 | ±0.3 | 229 | ±313 |
| Spike % rec. | 99 | --- | 102 | --- | --- | --- |

| Sample Id | I-129 pCi/g(wet) | Error 2σ | Pu-238 pCi/g(dry) | Error 2σ | Pu-239/240 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 8.8 | ±4.4 | 0.0 | ±0.3 | 0.0 | ±0.3 |
| Duplicate | 0.0 | ±4.0 | 0.0 | ±0.3 | 0.0 | ±0.3 |
| Duplicate % diff. | 100 | --- | 0.0 | --- | 0.0 | --- |
| Std (found value) | 1104 | ±22 | --- | --- | 203 | ±8 |
| Std (true value) | 993 | --- | --- | --- | 207 | --- |
| Std % diff. | 11 | --- | --- | --- | 1.9 | --- |
| Blank | 0.0 | ±4.2 | 0.0 | ±0.2 | 0.1 | ±0.2 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Sr-89 pCi/g(dry) | Error 2σ | Sr-90 pCi/g(dry) | Error 2σ | Tc-99 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 0.0 | ±1.1 | 1.4 | ±1.4 | 0.0 | ±0.7 |
| Duplicate | 0.0 | ±0.9 | 0.2 | ±1.2 | 0.0 | ±0.8 |
| Duplicate % diff. | 0.0 | --- | 75 | --- | 0.0 | --- |
| Std (found value) | 26 | ±2 | 24 | ±2 | 100 | ±3 |
| Std (true value) | 21 | --- | 21 | --- | 100 | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

Page: 2
Copy: 1 of 2
Set : 1

Attn:
Project: 9110L003

Received: 7-Nov-91 11:40
PO #: LSA #LL-0962-F4

Job: 912164E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Soil**

| Sample Id | Sr-89 pCi/g(dry) | Error 2σ | Sr-90 pCi/g(dry) | Error 2σ | Tc-99 pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Std % diff. | 24 | --- | 14 | --- | 0.0 | --- |
| Blank | 0.5 | ±0.7 | 0.6 | ±0.9 | 0.0 | ±0.7 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | U-234 Total pCi/g(dry) | Error 2σ | U-235 Total pCi/g(dry) | Error 2σ | U-238 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | 1.2 | ±1.4 | 0.0 | ±0.7 | 1.6 | ±1.4 |
| Duplicate | 0.0 | ±0.8 | 0.0 | ±0.6 | 0.2 | ±0.9 |
| Duplicate % diff. | 100 | --- | 0.0 | --- | 78 | --- |
| Std (found value) | 180 | ±10 | 8.9 | ±2.2 | 190 | ±10 |
| Std (true value) | 170 | --- | 8 | --- | 170 | --- |
| Std % diff. | 5.9 | --- | 11 | --- | 12 | --- |
| Blank | 0.0 | ±0.2 | 0.0 | ±0.1 | 0.0 | ±0.2 |
| Spike % rec. | --- | --- | --- | --- | --- | --- |

| Sample Id | Moisture % | C-14 pCi/g(wet) | Error 2σ | Ra-226 Total pCi/g(dry) | Error 2σ |
|---|---|---|---|---|---|
| Duplicate | 12.7 | *2.0 | ±0.6 | 1.9 | ±0.8 |
| Duplicate | 12.8 | *0.3 | ±0.3 | 2.3 | ±0.8 |
| Duplicate % diff. | 0.4 | *74 | --- | 9.5 | --- |
| Std (found value) | --- | 823 | ±15 | 98 | ±7 |
| Std (true value) | --- | 992 | --- | 99 | --- |
| Std % diff. | --- | 17 | --- | 1.0 | --- |
| Blank | --- | 0.8 | ±2.5 | 0.0 | ±0.1 |
| Spike % rec. | --- | --- | --- | --- | --- |

BARRINGER LABORATORIES INC.
15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

23-Dec-91

Diane Thomas
WESTON
208 Welsh Pool Road
Lionville, PA 19353

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Attn:
Project: 9110L003

Received: 7-Nov-91 11:40
PO #: LSA #LL-0962-F4

Job: 912164E

Status: Final

QUALITY CONTROL REPORT

**Sample Type: Soil**

| Sample Id | Gamma Spec pCi/g(wet) | Error 2σ | Be-7 pCi/g(wet) | Error 2σ | Pb-210 pCi/g(wet) | Error 2σ |
|---|---|---|---|---|---|---|
| Duplicate | --- | --- | 720 | ±90 | 110 | ±30 |
| Duplicate | --- | --- | 780 | ±90 | 120 | ±30 |
| Duplicate % diff. | --- | --- | 4.0 | --- | 4.3 | --- |
| Std (found value) | 20 | ±1 | --- | --- | --- | --- |
| Std (true value) | 19 | --- | --- | --- | --- | --- |
| Std % diff. | 5.3 | --- | --- | --- | --- | --- |

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QUALITY CONTROL REPORT

Abbreviations:

Parameters:

| | | |
|---|---|---|
| I-129 | : | Iodine-129 |
| Pu-238 | : | Plutonium-238 |
| Pu-239/240 | : | Plutonium-239/240 |
| Sr-89 | : | Strontium-89 |
| Sr-90 | : | Strontium -90 |
| Tc-99 | : | Technetium-99 |
| U-234 | : | Uranium-234 |
| U-235 | : | Uranium-235 |
| U-238 | : | Uranium-238 |
| C-14 | : | Carbon-14 |
| Ra-226 | : | Radium-226 |
| Pb-212 | : | Lead-212 |
| Pb-214 | : | Lead-214 |
| Tl-208 | : | Thallium-208 |
| Ac-228 | : | Actinium-228 |
| Bi-214 | : | Bismuth-214 |
| Bi-212 | : | Bismuth-212 |
| Pb-210 | : | Lead-210 |
| Am-241 | : | Americium-241 |
| Gamma Spec | : | Gamma Spectralanalysis |
| Be-7 | : | Beryllium-7 |

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QUALITY CONTROL REPORT

Units:

| | |
|---|---|
| pCi/g(dry) | : picoCuries per gram (dry) |
| 2σ | : Counting error at the 95% confidence level, 2σ |
| pCi/g(wet) | : picoCuries per gram(wet) |
| % | : percent |

Quality codes:

| | |
|---|---|
| * | : Inhomogeneous sample |

Job approved by:

Signed: .....
Approved
Quality Assurance Department

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QUALITY CONTROL REPORT

**QUALITY CONTROL DATA SHEET**

Received by: gr
Via: Federal Express

Sample Container Type: Brn gl L btl
Sample Type: Soil
Preservative When Received: none
Additional Lab Preparation: none

| Parameter | Method | LLD | Preser-vative | Analyst | Date(s) of Analysis |
|---|---|---|---|---|---|
| Gross Alpha | 900.0 | 5 pCi/g | none | Pingilley | 11/22-11/26 |
| Gross Beta | 900.0 | 9 pCi/g | none | Pingilley | 11/22-11/26 |
| Tritium | 906.0 | 200 pCi/g | none | Kidwell | 12/ 3-12/12 |
| I-129 | ---- | ---- | none | Preston | 12/18-12/20 |
| Pu-238/239/240 | 907.0 | 1 pCi/g | none | Preston | 11/20 |
| Sr-89/90 | 905.0 | 1 pCi/g | none | Kidwell | 11/19-12/18 |
| Tc-99 | ---- | ---- | none | Preston | 11/24-12/10 |
| U-234/235/238 | 908.0 | 0.4 pCi/g | none | Tonning | 11/20-12/ 2 |
| C-14 | ---- | ---- | none | Preston | 12/ 5-12/17 |
| Ra-226 | SM-705 | 0.2 pCi/g | none | Seidel | 11/20-12/10 |
| Gamma Spec | 901.1 | ---- | none | Kidwell | 11/23 |

Signed:
.....
Mark Burkhardt, Ph.D.
Laboratory Director

2164

WESTON

Page 1 of 1

WESTON Analytics Use Only

# Custody Transfer Record/Lab Work Request

Client Weston - Task 27

Est. Final Proj. Sampling Date

Work Order # 0630-28-27-0000

Project Contact/Phone # Diane Thomas (524-7360)

AD Project Manager

QC Std Del Std TAT 30 day

Date Rec'd Date Due

Account #

| Refrigerator # | | |
|---|---|---|
| #/Type Container | Liquid | |
| | Solid | 1/4 50ml |
| Volume | Liquid | |
| | Solid | 50ml |
| Preservatives | | |

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; RADIO CHEM; INORG: Metal, CN

WESTON Analytics 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 | VOA | BNA | Pest/PCB | Herb | RADIO CHEM | Metal | CN | RFW # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Site 258 Sand | | | Soil | 10/8/91 | N/A | | | | | X | | | 9110L003-001 |
| | Site 258 Clay | | | Soil | 10/8/91 | ↓ | | | | | X | | | -002 |

Received spl #1 broken - Analyze anyway per D. Thomas 11-8-91 (GR)

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

WESTON Analytics 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

| Relinquished by | Received by | Date | Time | Relinquished by | Received by | Date | Time |
|---|---|---|---|---|---|---|---|
| Brian Shaft | Fed-Ex | 11/6/91 | 6:30 | | Gina Ruckert | 11-7-91 | 9:30 |

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

L372 L373 L L377 L378 Ref# Cooler#

381-596a

RFW 2.. -001/A-7/91

DATE
FILMED
8/19/94

END