

START 0043678 0617422-2697 9304L213-WES-H3T 1121



ROY F. WESTON, INC.  
LIONVILLE ANALYTICAL LABORATORY  
ANALYTICAL CASE NARRATIVE



Client : WESTINGHOUSE HANFORD  
RFW# : 9304L213

W.O. #: 06168-002-001-9999-00  
Date Received: 04-15-93

INORGANIC

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:

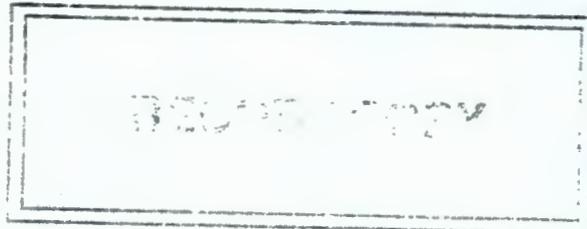
1. All sample holding times as required by 40CFR136 were met.
2. All preparation blank results were below the required detection limits.
3. All calibration verification checks were within the required control limits of 90-110%. Calibration verification is performed using independent standards.
4. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limits. 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), Standard Methods for the Examination of Water and Wastewater 16 ed. and Test Methods for Evaluating Solid Waste (USEPA SW846).

*Margaret M. Beatty ps*  
J. Peter Hershey, Ph.D.  
Laboratory Manager  
Lionville Analytical Laboratory

4/22/93  
Date



mmz/i04-213



0001

9613422.2398

**DON'T SAY IT --- Write It!**

DATE: February 8, 1994

TO: 9304L213-WES-1131

FROM: Pat Reich

H4-19

Telephone: 372-2785

CC:

SUBJECT: *Final Summary*  
DATA VALIDATION REPORT FOR THE 100-IU-4 SODIUM DICHROMATE ERA INV.

THE VALIDATION REPORT FOR THIS DATA PACKAGE IS FILED IN B01971-TMA-454.

PAT REICH  
FILE CLERK

9613422.2399

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 04/21/93

CLIENT: WESTINGHOUSE HANFORD  
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9304L213

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
=====	=====	=====	=====	=====	=====
-001	BO19B0	% Solids	89.2	%	0.10
		Chromium VI	0.11 u	MG/KG	0.11

0004

930423

**EMERY**  
**WORLDWIDE**



**FORM OF PAYMENT**

Check  CBL   FCCOD

Bill to Shipper  Consignee  Third Party Billing

**SERVICES \*\***

**UNITED STATES / CANADA**

Same Day (Extra Charges)  AM  Second Day

Standard Plus  Preferred  Saturday Delivery

**INTERNATIONAL**

Express  Business Documents  Customs Clearance  Delivery

Shipper's Account Number  
**E 850281585**

Date **4/14/93** Origin **P9C** Shipment Number **253695494 8**

From: **WESTINGHOUSE SHIPPING DEPT. (509) 376-6665**  
**U.S. DEPARTMENT OF ENERGY C/O**  
**WESTINGHOUSE HANFORD**  
**BLDG 1163**  
**2355 STEVENS DRIVE**  
**RICHLAND WA**

To: **JOSIE KING**  
**RF WESTON INC**  
**256 WELSH POOL ROAD**  
**LIONVILLE PA**

Tariff Dest. Gateway

Check to Shipper \$

**EMERY WORLDWIDE will accept Consignee's check with all risks being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentation.**

Customer's Reference Numbers  
**PE52L 12911 W93-0-0403#18**

**99352**

Consignee's Account Number  
**E 19341**

Description	Pcs	Dimensions			Total Pieces	Total Weight (in Lbs.)
		L	W	H		
<b>1 COOLER SML 45, SAMPLES #B01980</b>	<b>1</b>	<b>21</b>	<b>16</b>	<b>10</b>	<b>1</b>	<b>29lbs</b>

**FOR INFORMATION OR RATES CALL 1-800 44 EMERY (1-800-443-6379)**

Declared Value \$



Remarks: **OVERNIGHT DELIVERY**

Shipper's Signature: *[Signature]*

**Zip Ship**

Mark if Emery Packaging is used

Urgent Letter  Urgent Pack

9X12  12X15

International Shipments

Free Domicile  Commodity Code

Third Party Account Number mandatory for Third Party Billing: **E**

Third Party Account Number: **E**

International Customs Value: \_\_\_\_\_ International Insurance: \_\_\_\_\_

Base Charge: **0002**

Total Transportation Charges: \_\_\_\_\_

Other Charges/Advance at Origin:  OCAO \$ \_\_\_\_\_

**3-PHLE-A**  
Terms and Conditions on Back

9613422-2400

9304213

9m-Joseph  
Carrara  
Pratt  
Yellow  
of  
Energy

# Custody Transfer Record/Lab Work Request

7000

Client <u>Washinghouse - Hartford</u>	Refrigerator #	<u>2</u>	<u>Sub</u>	<u>2</u>			
Est. Final Proj. Sampling Date	#/Type Container	Liquid					
Work Order # <u>09168-003-001-9999-00</u>	Solid	<u>10</u>	<u>10</u>	<u>10</u>			
Project Contact/Phone #	Volume	Liquid					
AD Project Manager <u>Josie Edwards</u>	Solid	<u>350</u>	<u>1L</u>	<u>350</u>			
QC <u>Specialist</u> Del <u>Specialist</u> <u>10 DAY</u>	Preservatives						
Date Rec'd <u>4/15/93</u> Date Due <u>4/25/93</u>	ANALYSES REQUESTED →	ORGANIC				INORG	
Account # <u>WS HARTFORD</u>		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 (✓)		Matrix	Date Collected	Time Collected	WESTON Analytics Use Only						
			MS	MSD				ICRG	ISUB	see below				
			001	B019B0						S	4/13/93	1035	✓	✓
		* RCRA PROTOCOL sp 4/17/93												
		* Priority TURBAPOUND												
		SAF # 93-045												
		metals = HSL minus Hg												
		Radionem = Gamma Spec												

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:  
 RUN MS/MSD  
 Temp = 5.8°C

ORIGINAL REWRITTEN

DATE/REVISIONS:  
 4/17/93 1. Hg concated from metals list.  
 2. QC/DL changed to AD - this is  
 3. not RCRA PROTOCOL per client per  
 4. SDC 06PM508.  
 5. \_\_\_\_\_  
 6. \_\_\_\_\_

WESTON Analytics Use Only	
Samples were:	COC Tape was:
1) Shipped <input checked="" type="checkbox"/> or Hand Delivered _____	1) Present on Outer Package <input checked="" type="checkbox"/> or N
Airbill # _____	2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N
2) Ambient or <u>Chilled</u>	3) Present on Sample <input checked="" type="checkbox"/> or N
3) Received in Good Condition <input checked="" type="checkbox"/> or N	4) Unbroken on Sample <input checked="" type="checkbox"/> or N
4) Labels Indicate Properly Preserved <input checked="" type="checkbox"/> or N	COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N
5) Received Within Holding Times <input checked="" type="checkbox"/> or N	

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
EMERY	SPERNA	4/15/93	930		SP 4/15/93		
	sp 4/15/93						

Discrepancies Between Samples Labels and COC Record? Y or  N

NOTES:

9613422.2401

9613422.2402

13-5:8

03-213

Westinghouse  
Hanford Company

CHAIN OF CUSTODY

001142

Custody Form Initiator S.M. STEELE / *File copies* # 4/14/93  
Company Contact R.C. SMITH/C.E. HEIDEN

Telephone 509-376-2640

Project Designation/Sampling Locations SAF#93-045, ERA, SODIUM  
DICHROMATE SITE

Collection Date 4/13/93

Ice Chest No. SML 45

Field Logbook No. WHC-N-205-22

Bill of Lading/Airbill No. 2536954948

Offsite Property No. N/A

Method of Shipment AIR EXPRESS OVERNIGHT

Shipped to R.F. WESTON LABS, LIONVILLE PA.

Possible Sample Hazards/Remarks HAZARDS UNKNOWN, PRIORITY TURNAROUND, RCRA PROTOCOL, SEE SAMPLE ANALYSIS REQUEST FOR INDIVIDUAL BOTTLES AND ANALYSIS.

Sample Identification

B019B0 (3) BOTTLES

*MAN 4-14-93*

**PRIORITY TURNAROUND**

Field Transfer of Custody		Chain of Possession			(Sign and Print Names)	
Relinquished By	Date	Time	Received By	Date	Time	
<i>Melvin E. Lyles S.M. Steele</i>	4-14-93	0900				
<i>Emercy</i>	4/15/93	1125	<i>Susan Peters</i>	4/15/93	1125	

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:
Comments:		







**ROY F. WESTON, INC.**  
**LIONVILLE ANALYTICAL LABORATORY**  
**ANALYTICAL CASE NARRATIVE**

**Client:** WESTINGHOUSE HANFORD  
**RFW #:** 9304L213

**W.O. #:** 06168-002-001-9999-00  
**Date Received:** 04-15-93

**CLP METALS**

1. This narrative covers the analysis of (1) soil sample.
2. The samples were prepared and analyzed in accordance with the following protocols: CLP SOW 3/90.
3. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.
4. All analyses were performed within the required holding times.
5. All Initial and Continuing Calibration Verifications (ICV/CCV's) were within control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.
7. All Preparation/Method Blanks were below Reporting Limits.
8. All ICP Interference Check Samples (ICSA and ICSAB) were within control limits.
9. All Laboratory Control Samples (LCS) were within the 80-120% control limits.
10. All Serial Dilution percent differences were within USEPA SOW control limits except for:

<u>RFW #</u>	<u>Element</u>	<u>%Difference</u>
001	Zinc	91.9

11. All Matrix Spike recoveries were within the 75-125% control limits (exception allowed when sample concentration exceeds the spike added concentration by a factor of 4 or more) except for:

<u>RFW #</u>	<u>Element</u>	<u>%Recovery</u>
001	Lead	64.4



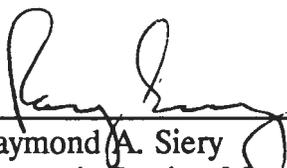
A Post-Matrix Spike analysis was performed for those ICP elements that did not meet the specified control limits (exception allowed for Ag).

Matrix spike analyses are not required for Ca, Mg, Na, K, Al and Fe in soils.

12. All Duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits for samples values greater than 5X Reporting Limit, or +/- the Reporting Limits for sample values less than 5X Reporting Limit.
13. Method of Standard Additions (MSA) analyses were performed on the following samples:

<u>Element</u>	<u>Sample #'s</u>
Lead	001,001R

14. ICP Interelement Correction Factors for IC1 and IC3 are included in this package, but do not appear on EDD.
15. The graphite furnace time that appears on form XIV is the time of the first injection. The time that appears on the data is the print time.

  
 \_\_\_\_\_  
 Raymond A. Siery  
 Inorganic Section Manager  
 Lionville Analytical Laboratory

4.29.93  
 \_\_\_\_\_  
 Date



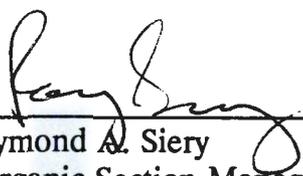
ROY F. WESTON, INC.  
LIONVILLE ANALYTICAL LABORATORY  
ANALYTICAL CASE NARRATIVE

Client: WESTINGHOUSE HANFORD  
RFW #: 9304L213

W.O. #: 06168-002-001-9999-00  
Date Received: 04-15-93

**CLP METALS ADDENDUM**

1. Following Exhibit E, Section V, Item 10, page E-23 of the USEPA Statement of Work for Inorganics Analysis, Document Number ILM02.0 ICP Instrument Detection Limits (IDLs) are reported for two (2) ICP instruments. The instrument identification numbers are "IC1" and "IC3". The highest IDL for the two instruments is used for reporting concentration values in this sample data package.
2. A discrepancy exists between raw data and Form XIVs analytical spikes recovery calculations performed for graphite furnace AA analytes. Instrument software calculates spike recoveries based on absolute values below the IDL for sample results. This is hard-coded by the vendor and is currently not correctable. CLP convention (SOW ILM02.0, Exhibit E, Section V, Item 6, page E-20) requires that when values fall below the IDL, the sample result is equal to zero (0) for the purposes of calculating the percent recovery. The Form XIVs contain the correct calculation.

  
\_\_\_\_\_  
Raymond A. Siery  
Inorganic Section Manager  
Lionville Analytical Laboratory

4.29.93  
Date

9613422.2408

ROY F. WESTON INC.

## INORGANIC DATA SUMMARY REPORT 04/27/93

CLIENT: WESTINGHOUSE HANFORD  
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9304L213

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BO19B0	Silver, Total	2.2	u MG/KG	2.2
		Aluminum, Total	7530	MG/KG	44.8
		Arsenic, Total	2.2	u MG/KG	2.2
		Barium, Total	82.3	MG/KG	44.8
		Beryllium, Total	1.1	u MG/KG	1.1
		Calcium, Total	4030	MG/KG	1120
		Cadmium, Total	1.1	u MG/KG	1.1
		Cobalt, Total	11.4	MG/KG	11.2
		Chromium, Total	32.3	MG/KG	2.2
		Copper, Total	11.8	MG/KG	5.6
		Iron, Total	20200	MG/KG	22.4
		Potassium, Total	2120	MG/KG	1120
		Magnesium, Total	4730	MG/KG	1120
		Manganese, Total	335	MG/KG	3.4
		Sodium, Total	1120	u MG/KG	1120
		Nickel, Total	13.7	MG/KG	9.0
		Lead, Total	5.0	MG/KG	0.67
		Antimony, Total	13.5	u MG/KG	13.5
		Selenium, Total	1.1	u MG/KG	1.1
		Thallium, Total	2.2	u MG/KG	2.2
		Vanadium, Total	34.4	MG/KG	11.2
		Zinc, Total	46.0	MG/KG	4.5

0015

9613422.2409

## U.S. EPA - CLP

EPA SAMPLE NO.

1  
INORGANIC ANALYSIS DATA SHEET

BO19B0

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP213

Matrix (soil/water): SOIL

Lab Sample ID: 930421301

Level (low/med): LOW

Date Received: 4/15/93

% Solids: 89.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7530.00			P
7440-36-0	Antimony	8.97	U		P
7440-38-2	Arsenic	1.30	B		F
7440-39-3	Barium	82.30			P
7440-41-7	Beryllium	.47	B		P
7440-43-9	Cadmium	1.12	U		P
7440-70-2	Calcium	4030.00			P
7440-47-3	Chromium	32.30			P
7440-48-4	Cobalt	11.40			P
7440-50-8	Copper	11.80			P
7439-89-6	Iron	20200.00			P
7439-92-1	Lead	5.00		NS	F
7439-95-4	Magnesium	4730.00			P
7439-96-5	Manganese	335.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	13.70			P
7440-09-7	Potassium	2120.00			P
7782-49-2	Selenium	.45	U	W	F
7440-22-4	Silver	2.02	U		P
7440-23-5	Sodium	169.00	B		P
7440-28-0	Thallium	1.12	U		F
7440-62-2	Vanadium	34.40			P
7440-66-6	Zinc	46.00		E	P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts:

Comments:

FORM I - IN

03/90

0024

9613422.2410

9304L213-WES-1121

FW  
11/1/94

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 04/21/93

CLIENT: WESTINGHOUSE HANFORD  
WORK ORDER: 06168-002-001-9999-00

WESTON BATCH #: 9304L213

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BO19B0	% Solids	89.2	%	0.10
		Chromium VI	0.11	uJ MG/KG	0.11

DO NOT REPORT  
% Solids =  
24.4%

9613422.2411

## U.S. EPA - CLP

EPA SAMPLE NO.

1  
INORGANIC ANALYSIS DATA SHEET

BO19B0

Lab Name: ROY F. WESTON, INC - L372 Contract: 6168-02-01

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP213

Matrix (soil/water): SOIL Lab Sample ID: 930421301

Level (low/med): LOW Date Received: 4/15/93

% Solids: 89.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7530.00			P
7440-36-0	Antimony	5.4 <del>8.97</del>	U		P
7440-38-2	Arsenic	1.30	B		F
7440-39-3	Barium	82.30			P
7440-41-7	Beryllium	.47	B		P
7440-43-9	Cadmium	0.45 <del>1.12</del>	U		P
7440-70-2	Calcium	4030.00			P
7440-47-3	Chromium	32.30			P
7440-48-4	Cobalt	11.40			P
7440-50-8	Copper	11.80			P
7439-89-6	Iron	20200.00			P
7439-92-1	Lead	5.00	J	NS	F
7439-95-4	Magnesium	4730.00			P
7439-96-5	Manganese	335.00			P
7439-97-6	Mercury				NR
7440-02-0	Nickel	13.70			P
7440-09-7	Potassium	2120.00			P
7782-49-2	Selenium	0.22 <del>1.45</del>	U	W	F
7440-22-4	Silver	1.7 <del>2.02</del>	U		P
7440-23-5	Sodium	169.00	B		P
7440-28-0	Thallium	0.67 <del>1.12</del>	U		F
7440-62-2	Vanadium	34.40			P
7440-66-6	Zinc	46.00	I	E	P
	Cyanide				NR

1/5/94  
PHD

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts:

Comments: