

**START**

961340362653

0043145

9112L829-WES-282

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

**DATE:** January 26, 1993

**TO:** File 9111L286  
9111L317  
9111L353  
9111L511  
9112L781  
9112L829

**FROM:** S.D.L.A.

**Telephone:** 2-3206

**CC:**

**SUBJECT:**  
**VALIDATION DOCUMENTATION**

Validation documentation for the above mentioned data package is filed with Data Package 9111L276.



ROY F. WESTON, INC.  
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD  
RFW #: 9112L829  
W.O. #: 6168-02-01

SAMPLES RECEIVED: 12-19-91

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 with the exception of pH which was received past hold and total dissolved solids which was analyzed past hold.
2. All preparation blank results were below the required detection limit.
3. All laboratory control standards (blank spikes) 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%. 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 limits. All %RPD were within the 20% guidance limit.
6. Replicate results are summarized on the Inorganic Precision Report contained within this document. All results were within the 20% RPD guidance limit.
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. Bealy*  
Jack R. Tuschall, Ph.D.  
Laboratory Manager  
Lionville Analytical Laboratory

*1-21-92*  
Date



9613403.2655

ROY F. WESTON INC.

## INORGANICS DATA SUMMARY REPORT 01/10/92

CLIENT: WESTINGHOUSE HANFORD  
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L829

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
=====	=====	=====	=====	=====	=====
-001	B019D1	Alkalinity	90.0	MG/L	2.0
		Chloride by IC	21.7	MG/L	2.5
		Fluoride by IC	0.50 u	MG/L	0.50
		Nitrite by IC	0.25 u	MG/L	0.25
		Nitrate by IC	108	MG/L	2.5
		Cyanide, Total	99.9	UG/L	20.0
		Phosphate by IC	0.25 u	MG/L	0.25
		Sulfate by IC	135	MG/L	2.5
		Nitrate Nitrite	26.7	MG-N/L	2.5
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	7.6	PH UNITS	0.010
		Total Dissolved Solids	503	MG/L	5.0

WESTON Analytics Use Only

9112L829

# Custody Transfer Record/Lab Work Request



Client <b>Westinghouse Hanford Company</b>		Refrigerator # <b>N/A</b>	3	3	SUB	3	3	SUB	SUB	3		
Est. Final Proj. Sampling Date	<b>6/28-02-01-0003</b>	#/Type Container	Liquid <b>3aG</b>	1.P	1.P	3.P	3.P	1.P	1.G	3.P		
Work Order #	<b>6198-02-01-0003</b>		Solid <b>3</b>									
Project Contact/Phone #	<b>P. H. Butcher 509-376-5045</b>	Volume	Liquid <b>40ml</b>	1L	1L	4L	1L	1L	250ml	1L		
AD Project Manager	<b>Peg Beatty / [unclear]</b>		Solid									
QC <b>Chp</b>	Del <b>Chp</b>	Preservatives		<b>H454</b>			<b>H454</b>	<b>H454</b>	<b>H454</b>			
Date Rec'd <b>12-19-91</b>	Date Due <b>1-23-92</b>	ANALYSES REQUESTED →	ORGANIC			INORG						
Account # <b>WS-Hanford</b>			VOA	BNA	Pest/PCB	Herb	1	2	3	Metal	4	5

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 GC Chosen (✓)		Matrix	Date Collected	Time Collected	WESTON Analytics Use Only															
			MS	MSD				1	2	3	Metal	4	5	Metal									
	001	B01901			W	12/14/91	1015																
	002	B01902			W	12/14/91	1015																
		B0																					
		1) TOC, NO <sub>2</sub> /NO <sub>3</sub> (Hg SO <sub>4</sub> )																					
		2) Anions, TDS, FAIK, PH																					
		3) Gross Alpha, Beta, Tc-99, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240 (HNO <sub>3</sub> )																					
		4) Total Uranium (HCl)																					
		5) Tritium																					
		CLP - Metal, B1/S1 (HNO <sub>3</sub> )																					

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS				DATE/REVISIONS:				WESTON Analytics Use Only			
Special Instructions: (F) = Filtered BOL # <b>2509864918</b> OPC # <b>W92-0-0035-74</b>				1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____				Samples were: <input checked="" type="checkbox"/> or Hand Delivered <input checked="" type="checkbox"/> Airbill # <b>2509865105</b> 2) Ambient or Chilled <input checked="" type="checkbox"/> 3) Received in Good Condition <input checked="" type="checkbox"/> or N 4) Labels Indicate Property Preserved <input checked="" type="checkbox"/> or N 5) Received Within Holding Times <input checked="" type="checkbox"/> or N COC Tape was: 1) Present on Outer Package <input checked="" type="checkbox"/> or N 2) Unbroken on Outer Package <input checked="" type="checkbox"/> or N 3) Present on Sample <input checked="" type="checkbox"/> or N 4) Unbroken on Sample <input checked="" type="checkbox"/> or N COC Record Present Upon Sample Rec't <input checked="" type="checkbox"/> or N Ph, Anions out of cell.			
Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between Samples Labels and COC Record? Y or N			
<i>Emerg</i>	<i>[Signature]</i>	<b>12-19-91</b>	<b>14:30</b>	<i>[Signature]</i>	<i>[Signature]</i>	<b>12-19-91</b>		NOTES:			

FORM OF PAYMENT

Check  GBL

FCCOD

Bill to Shipper  Bill to Consignee  Third Party Billing

Shipper's Account Number  
E 850281585

**EMERY**  
**WORLDWIDE**



SERVICES

UNITED STATES / CANADA:  Same Day,  AM,  Second Day

INTERNATIONAL:  Express,  Preferred,  Standard,  Saturday Delivery

Business Documents  Customs Clearance  Delivery

Date: 12-17-91 Origin: PSC Shipper's Number: 2509865105

From: WESTINGHOUSE SHIPPING DEPT (509) 376-6665  
US DEPARTMENT OF ENERGY C/O  
WESTINGHOUSE HANFORD

To: PEG REATY  
RF WESTON INC

Tariff Dest. Gateway  
Check to Shipper \$

BLDG 1163  
2355 STEVENS DRIVE  
PICHLAND WA

208 WELSH POOL ROAD  
LIONVILLE PA

Hold for Pick Up   
Canada   
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  
W80230 PE1CA W92-0-0035781 99352

Consignee's Account Number  
E 19341-1313

Description	Pcs	Dimensions			Total Pieces	Total Weight (in lbs)
		L	W	H		
1 COOLER ID: CORY-1 WATER SAMPLES B019D1, B019D2 W92-0-0035781	1				1	84

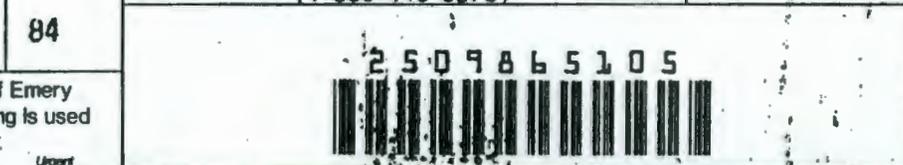
FOR INFORMATION OR RATES  
CALL 1-800-44-EMERY  
(1-800-443-6379)

Declared Value \$

OVERNIGHT DELIVERY  
SIGNATURE SECURITY SERVICE

Zip Ship   
For shipments within the 50 United States Shipper has the option to check this box and, by checking, agrees that the Zip Ship conditions, described in the area to the right, apply.

Mark if Emery Packaging is used  
Urgent Letter  Urgent Pack



Shipper's Signature: X [Signature]

International Shipments: Free Domicile  Commodity Code: E Third Party Account Number mandatory for Third Party Billing: E

International Customs Value: International Insurance: Total Transportation Charges: Other Charges/Advance at Origin: OC/AO: \$

**3 PHL A**

Terms and Conditions on Back

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Roy F. Weston, INC.  
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD CO.      SAMPLES RECEIVED: 12-19-91  
RFW #: 9112L829  
W.O. #: 6168-02-01

METALS NARRATIVE

The set of samples consisted of two (2) water samples collected on 12-14-91.

The samples were analyzed according to criteria set forth in CLP SOW 3/90.

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

1. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.
2. All ICV and CCV values were within control limits.
3. All ICB and CCB values were within control limits.
4. All preparation blank values were within control limits.
5. All LCS results were within the 80-120% control limits.
6. All matrix spike recoveries were within the 75-125% control limits with the exception of As and Fe. All corresponding samples were flagged with an "N" according to CLP protocol.
7. All duplicate analyses were within the 20% RPD control limit with the exception of Fe. All corresponding samples were flagged with an "\*" according to CLP protocol.
8. Se sample results were calculated by the method of standard addition (MSA). All corresponding samples were flagged with an "S" according to CLP protocol.
9. For MSA, results reported on Form 8 are calculated from absorbance values. Results reported on other forms are based on concentration. As indicated in the SOW1LJM01.0, page B-32, differences due to rounding may be found between the MSA values on Form 8 and the results reported on the other forms.

**WESTON**

10. The code CV is currently in use by the laboratory for both mercury instruments in operation (HG1 and HG2). HG1 is complete with autosampler and software, but still requires manual digestion; HG2 is operated by the analyst, produces a strip chart and also requires manual digestion.
11. HG1 requires less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).
12. Quarterly Detection Limits for IC3 are included in this package.
13. During the first analysis, eleven (11) samples were analyzed between CCV's subsequently an iron post matrix spike was run. All eleven samples were reanalyzed but the original PMS was reported.

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

3-18-92  
Date

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ROY F. WESTON INC.

## INORGANIC DATA SUMMARY REPORT 02/17/92

CLIENT: WESTINGHOUSE HANFORD  
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L829

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	B019D1	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
		Beryllium, Total	5.0	u UG/L	5.0
		Bismuth, Total	150	u UG/L	150
		Calcium, Total	73400	UG/L	5000
		Cadmium, Total	5.0	u UG/L	5.0
		Cobalt, Total	50.0	u UG/L	50.0
		Chromium, Total	50.2	UG/L	10.0
		Copper, Total	25.0	u UG/L	25.0
		Iron, Total	3410	UG/L	100
		Mercury, Total	0.20	u UG/L	0.20
		Potassium, Total	8050	UG/L	5000
		Magnesium, Total	23000	UG/L	5000
		Manganese, Total	67.0	UG/L	15.0
		Sodium, Total	31500	UG/L	5000
		Nickel, Total	40.0	u UG/L	40.0
		Lead, Total	3.0	u UG/L	3.0
		Antimony, Total	60.0	u UG/L	60.0
		Selenium, Total	5.0	u UG/L	5.0
		Silicon, Total	7790	UG/L	100
		Thallium, Total	10.0	u UG/L	10.0
		Vanadium, Total	50.0	u UG/L	50.0
		Zinc, Total	20.0	u UG/L	20.0

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ROY F. WESTON INC.

## INORGANIC DATA SUMMARY REPORT 02/17/92

CLIENT: WESTINGHOUSE HANFORD  
WORK ORDER: 6168-02-01-0000

WESTON BATCH #: 9112L829

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-002	B019D2	Silver, Soluble	23.5	UG/L	10.0
		Aluminum, Soluble	200	u UG/L	200
		Arsenic, Soluble	10.0	u UG/L	10.0
		Barium, Soluble	216	UG/L	200
		Beryllium, Soluble	10.7	UG/L	5.0
		Bismuth, Soluble	150	u UG/L	150
		Calcium, Soluble	77300	UG/L	5000
		Cadmium, Soluble	5.0	u UG/L	5.0
		Cobalt, Soluble	50.0	u UG/L	50.0
		Chromium, Soluble	20.4	UG/L	10.0
		Copper, Soluble	49.9	UG/L	25.0
		Iron, Soluble	100	u UG/L	100
		Mercury, Soluble	0.20	u UG/L	0.20
		Potassium, Soluble	5000	u UG/L	5000
		Magnesium, Soluble	5000	u UG/L	5000
		Manganese, Soluble	40.3	UG/L	15.0
		Sodium, Soluble	5000	u UG/L	5000
		Nickel, Soluble	40.0	u UG/L	40.0
		Lead, Soluble	3.0	u UG/L	3.0
		Antimony, Soluble	120	UG/L	60.0
		Selenium, Soluble	13.3	UG/L	5.0
		Silicon, Soluble	8010	UG/L	100
		Thallium, Soluble	10.0	u UG/L	10.0
		Vanadium, Soluble	50.0	u UG/L	50.0
		Zinc, Soluble	48.7	UG/L	20.0

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U.S. EPA - CLP

EPA SAMPLE NO.

1

## INORGANIC ANALYSIS DATA SHEET

B019D1

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

Lab Code: WESTON

Case No.: WEST

SAS No.:

SDG No.: CLP829

Matrix (soil/water): WATER

Lab Sample ID: 911282901

Level (low/med): LOW

Date Received: 12/19/91

\* Solids:

0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	83.00	U		P
7440-36-0	Antimony	23.00	U		P
7440-38-2	Arsenic	3.60	B	N	F
7440-39-3	Barium	38.00	U		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U		P
7440-70-2	Calcium	73400.00			P
7440-47-3	Chromium	50.20			P
7440-48-4	Cobalt	5.00	U		P
7440-50-8	Copper	6.80	B		P
7439-89-6	Iron	3410.00		N*	P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	23000.00			P
7439-96-5	Manganese	67.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	18.00	U		P
7440-09-7	Potassium	8050.00			P
7782-49-2	Selenium	2.50	B	W	F
7440-22-4	Silver	4.30	B		P
7440-23-5	Sodium	31500.00			P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	14.60	B		P
7440-66-6	Zinc	13.60	B		P
	Cyanide	99.90	U		C

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

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U.S. EPA - CLP

EPA SAMPLE NO.

1

## INORGANIC ANALYSIS DATA SHEET

B019D2

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

Lab Code: WESTON

Case No.: WEST

SAS No.:

SDG No.: CLP829

Matrix (soil/water): WATER

Lab Sample ID: 911282902

Level (low/med): LOW

Date Received: 12/19/91

\* Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	83.00	U		P
7440-36-0	Antimony	120.00			P
7440-38-2	Arsenic	2.60	B	N	F
7440-39-3	Barium	216.00			P
7440-41-7	Beryllium	10.70			P
7440-43-9	Cadmium	3.00	U		P
7440-70-2	Calcium	77300.00			P
7440-47-3	Chromium	20.40			P
7440-48-4	Cobalt	5.00	U		P
7440-50-8	Copper	49.90			P
7439-89-6	Iron	41.60	B	*N	P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	1080.00	B		P
7439-96-5	Manganese	40.30			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	18.00	U		P
7440-09-7	Potassium	794.00	B		P
7782-49-2	Selenium	13.30		S	F
7440-22-4	Silver	23.50			P
7440-23-5	Sodium	984.00	B		P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	10.80	B		P
7440-66-6	Zinc	48.70			P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments: