9401L206-WES-1456

0042983

WESTON

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L206

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

GC/MS VOLATILE

The set of samples consisted of four (4) water samples collected on 12-30-93.

The samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 01-14-94.

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 system monitoring compound (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.

5. All internal standard area and retention time criteria were met.

6. The pH of these samples exceeded 2.0, indicating that they may not have been properly preserved. Sample pH information has been reported in Section XI (Preparation Logs).

Margaret M. Beaty for
J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

2/15/94
Date

sma/voa/01-206v.cn

0005

HANFORD ANALYTICAL SERVICES MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0012
Record of Disposition No.

DATE: January 18, 1994	LABORATORY: Weston
PROJECT TITLE/NO.: 200-UP-1	NCR NO.: N/A

SAMPLE IDENTIFICATION NUMBERS: B09DT0, B093H5, B093J4

DESCRIPTION OF EVENT:

a) Samples B09DS9 and B09DT0 were collected as field splits and targeted for shipment to TMA (primary) and Weston (split), respectively. During collection, the metals fraction (CLP TAL plus Ti) of sample B09DS9 was inadvertently omitted. A decision was made in the field to ship the metals fraction of sample B09DT0 to TMA to obtain a complete suite of analyses at the primary lab. This change was not reflected on the Weston Chain of Custody and Analytical Request form which indicated that a 500ml container was submitted for metals analysis. No metals fraction was received by Weston.

b) The Chain of Custody and Analytical Request form indicated that VOA fractions for samples B093H5 and B093J4 were shipped to Weston. Weston did not receive a VOA fraction for either of the two samples.

DISPOSITION OF SAMPLES:

Since sample B09DT0 was soil (chemically unpreserved), Weston was instructed to use remaining sample material from the other fractions to perform analysis for the requested metals (CLP; TAL plus Ti). VOA analysis for samples B093H5 and B093J4 was canceled.

APPROVAL SIGNATURES:

J. A. Lerch — 1/19/94
OSM Project Coordinator (Print/Sign Name) — **Date**

M. J. Galgoul — 1/28/94
Technical Representative (Print/Sign Name) — **Date**

N/A
Quality Assurance (Print/Sign Name) — **Date**

WESTON Analytics Use Only
9401L206

Custody Transfer Record/Lab Work Request

WESTON MANAGERS DESIGNERS CONSULTANTS

Page 1 of 1

0010 DFA 7-27-94

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 06168-002-001-9999-00
Project Contact/Phone #:
AD Project Manager: Josie Edwards
QC: CLP Dpl: CLP TAT: 35 DAY
Date Rec'd: 1/10/94 Date Due: 2-14-94
Account #: WS-7HANFORD

Refrigerator #																							
#/Type Container	Liquid	2PL						3 PL		3 PL			3 PL	PL		3 PL							
	Solid																						
Volume	Liquid	40ml						500ml		1PL			1PL	1PL		1PL							
	Solid																						
Preservatives		HCL						HNO3		HNO3			HCL	HNO3		HNO3							
ANALYSES REQUESTED		ORGANIC						NO2 NO3		INORG			7C-99			30							
		VOA	BNA	Pest/PCB	Herb					Metal	CN												
WESTON Analytics Use Only																							
		624C						INO2		MHOLTO				ISUB		MHOLSO							

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	624C					INO2		MHOLTO			ISUB		MHOLSO			
S - Soil	001	B093H3			W	12/30/93	—	X - reqd one w/ one seal					X		X			X	X				
SE - Sediment	002	B093H4			W	12/30/93	—													X			
SO - Solid	003	B093H6			W		1530	X					X		X			X	X				
SL - Sludge	004	B093H7			W		1530													X			
W - Water	005	B093J2			W		—	X					X		X			X	X				
O - Oil	006	B093J3			W		—													X			
A - Air	007	B093J5			W		1530	X					X		X			X	X				
DS - Drum Solids	008	B093J6			W	—														X			
DL - Drum Liquids																							
L - EP/TCLP Leachate																							
WI - Wipe																							
X - Other																							
F - Fish																							

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Temp = 4.8°C
SAF 93-248

Original Rewritten

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: ID's B093H5 & B093J4 in for VOA - none rec'd.

Relinquished by	Received by	Date	Time
Emery	M. Henrie	1/10/94	4:50 pm
	MOH	1/11/94	

Relinquished by	Received by	Date	Time
	MOH	1/11/94	

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

9401L206

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 12/30/93

Ice Chest No. GWS 120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2519008294

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 9401L206-001

B093H3

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2) — One with no Seal AG 1-11-94
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B093H4

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

B093H5

3; 40ml; Gs; WATER; CLP-VOA
Did not Rec'd BS 1-11-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BHFord	1/5/94	0800	AJSimpson AJSIMPSON	1/5/94	0802
AJSimpson AJSIMPSON	1/5/94	0830			
Emery	1-10-94	1650	Brian Hoffa	1-10-94	1650

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Relinquished to refrigerator 1730p 12/30/93 BHF

temp 4.8

A-6000-407 (12/92) WEF061

0011

9401L206

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, G. Hamilton Date Sampled _____ Time _____ hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B093H3	1; 1L; P	WATER	CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
	2; 40ml; Gs	WATER	CLP-VOA(HCl pH<2)
	1; 500ml; P/G	WATER	NO2/NO3(H2SO4 pH<2)
	1; 1L; P/G	WATER	Tc-99(HCl pH<2)
	1; 1L; P/G	WATER	TOTAL URANIUM(HNO3 pH<2)
B093H4	1; 1L; P;	WATER	CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED
B093H5	3; 40ml; Gs	WATER	CLP-VOA
			OPC: W93- W44-0-0190-11
			BOL: 2519008294
			TASK: 93-248

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

0012

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/5

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations

Collection Date 12/30/93

Ice Chest No. GWS 120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2519008294

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 94011206-002

BO 93H6

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

BO 93H7

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

~~BO 93H8~~

~~3; 40ml; Gs; WATER; CLP-VOA~~ 12/30/93

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
PH Butcher	1/5/94	0800	AJ Simpson	1/5/94	0802
AJ Simpson	1/5/94	0850			
Emery	1-10-94	1650		1-10-94	1650

Final Sample Disposition

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

Comments: Relinquished to refrigerator 1720 12/30/93

temp 4.8

A-6000-407 (12/92) WEF061

0013

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector: K. Lee, G. Hamilton — Date Sampled: 12/30/93 — Time: 1530 hours

Company Contact: P. H. Butcher — Telephone: (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B093H6	1: 1L: P	WATER	CLP-ICP/AA METALS & Hg(HNO3 pH<2) **UNFILTERED**
	2: 40ml: Gs	WATER	CLP-VOA(HCl pH<2)
	1: 500ml: P/G	WATER	NO2/NO3(H2SO4 pH<2)
	1: 1L: P/G	WATER	Tc-99(HCl pH<2)
	1: 1L: P/G	WATER	TOTAL URANIUM(HNO3 pH<2)
B093H7	1: 1L: P:	WATER	CLP-ICP/AA METALS & Hg(HNO3 pH<2) **FILTERED**
~~B093H8~~	~~2: 40ml: Gs~~	~~WATER~~	~~CLP-VOA~~ BH 12/30/93
			OPC: W93- WU4-0-0190-11
			BOL: 2S1900 8294
			TASK: 93-248

Field Information* None

Special Handling and/or Storage None

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

0014

*Indicate whether sample is soil, sludge, water, etc.

*Use back of page for additional information relative to sample location.

A-6000-406(05/9

94OIL206

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-UP-1

Ice Chest No. GWS 120

Bill of Lading/Airbill No. 2590 0 8294

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Telephone (509) 376-5045

Collection Date 12/30/93

Field Logbook No. EFL 1104

Offsite Property No. W914-0-0190-

Sample Identification 94OIL206-003

B0 93J2
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B0 93J3
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

B0 93J4
3; 40ml; Gs; WATER; CLP-VOA
Did not rec'd BB. 1-11-94

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BHBiffard	1/5/94	0800	AJSimpson AJ SIMPSON	1/5/94	0805
AJSimpson AJ SIMPSON	1/5/94	0830			
EMERY	1-10-94	1650		1-10-94	1650

Final Sample Disposition

Disposal Method: Disposed by: Date/Time:

Comments: Relinquished to Refrigerator 1720p/12/30/93 BHBiffard

temp 4.8

A-6000-407 (12/92) WEF061

9401120 06

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee. G. Hamilton Date Sampled _____ Time _____ hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B093J2	1: 1L: P	WATER	CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
	2: 40ml: Gs	WATER	CLP-VOA(HCl pH<2)
	1: 500ml: P/G	WATER	NO2/NO3(H2SO4 pH<2)
	1: 1L: P/G	WATER	Tc-99(HCl pH<2)
	1: 1L: P/G	WATER	TOTAL URANIUM(HNO3 pH<2)
B093J3	1: 1L: P:	WATER	CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED
B093J4	3: 40ml: Gs	WATER	CLP-VOA
			OPC: W93- W94-0-0190·11
			BOL: 2519008294
			TASK: 93-248

Field Information** _____

Special Handling and/or Storage _____

Possible Sample Hazards _____

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

0010

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations

Collection Date 12/30/93

Ice Chest No. GWS 120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2590082944

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 94011206-004

B09335
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B09336
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

~~B0~~
~~3; 40ml; Gs; WATER; CLP-VOA~~ BH 12/30/93

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BH Finch BH Finch	1/5/94	0800	RJ Simpson RJ SIMPSON	1/5/94	0800
RJ Simpson RJ SIMPSON	1/5/94	0830			
E Murphy	1-10-94	1650	[signature]	1-10-94	1650

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Relinquished to Refrigerator 1720 [signature] 12/30/93

temp 4.8

A-6000-407 (12/92) WEF061

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector K. Lee, G. Hamilton Date Sampled 12/30/93 Time 1530 hours

Company Contact P. H. Butcher Telephone (509) 376-5045

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B09315	1; 1L; P	WATER	CLP-ICP/AA METALS & Hg(HNO3 pH<2) **UNFILTERED**
	2; 40ml; Gs	WATER	CLP-VOA(HCl pH<2)
	1; 500ml; P/G	WATER	NO2/NO3(H2SO4 pH<2)
	1; 1L; P/G	WATER	Tc-99(HCl pH<2)
	1; 1L; P/G	WATER	TOTAL URANIUM(HNO3 pH<2)
B09316	1; 1L; P;	WATER	CLP-ICP/AA METALS & Hg(HNO3 pH<2) **FILTERED**
~~3; 40ml; Gs~~		WATER	CLP-VOA BHP 12/30/93
			OPC: W93- W04-0-0190-11
			BOL: 2S19008294
			TASK: 93-248

Field Information** None

Special Handling and/or Storage None

Possible Sample Hazards

PART II: LABORATORY SECTION

Received by _____ Title _____ Date _____

Analysis Required _____

0018

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406(05/

OVERNIGHT DELIVERY

Signature Security Servic

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NUMBER (To be obtained from PROPERTY MANAGEMENT)
WHC		W99-0-0190-11

PART I – TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
[redacted]	[redacted]	[redacted]

[redacted] The following items are to be shipped from ☒ Contractor ☐ Vendor [redacted]

Routing Emory ☒ Contractor ☐ Vendor

Shipped to
Roy F. Weston
256 Welsh Pool Rd.
Lyonvill, PA 19341-1313

Off-site Custodian

Full Title

Quantity	Description (Include Serial and any Government Tag Numbers)	Original Cost
1 78 lbs.	Sample #: B093H3 B093H4 B093H5 B093J2 B093J3 B093J4 Cooler ID: GWS120 B093H6 B093H7 B093 B093J5 & B093J6 Polycooler with groundwater samples packed in wet ice and vermiculite	N/A
~~1~~ ~~lbs.~~	~~Sample #:~~ ATS 1/5/94 ~~Cooler ID:~~ ~~Polycooler with groundwater samples packed in wet ice and vermiculite~~	~~N/A~~

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the Off-Site Use of this Property

Sampling supports RI/FS work in the 700 AREAS

BEST AVAILABLE COPY

[redacted]

Location of Property (Area & Bldg.)	Contact	Phone
	PH Butcher	(509) 376-5045

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
1/5/94	WB1232 / PT1FA	NA

Originated By	Date	Authorized By	Date
P.H. Butcher	1/5/94	C.L. Simpson	1/5/94

Signature and Name of Property Control	Custodian Date	Property Management Approval	Date
		W. Tankel	1/5/94

PART II – TO BE COMPLETED BY SHIPPING

Signature of Recipient	Return Order No.	Date Issued	Purchase Order No.	Date Issued
C.A. Wilson 1-5-94				
Date 1-5-94				

DISTRIBUTION

By Originator	Shipping Operation – Sign all Copies and Forward to:
White, Green, Yellow, Pink – Property Management Goldenrod – Retain	White – Property Management, Green – Property Control Custodian (Issuing Office) Yellow – Retain, Pink – Originator

0020

SS-3000-478(10/89)

Emergency Contact: (509) 373-3800 ERG #61 Overnight Delivery Air Bill #

OFFSITE RADIOACTIVE SHIPMENT RECORD

– EXTERIOR INSPECTION PERMITTED –

17596

SHIPPING INST.

SHIP TO:

Company: ROY F. WESTON

Address: ~~208~~ 256 WELSH ~~LOOP~~ POOL ROAD

City, State, Zip: LIONVILLE PA 19341-1313

Attention: Josie Edwards

Contractor: ☐ PNL ☐ KEH ☒ WHC

Site Carrier: W.U. SETZER

PR No. 84279 Veh. No. 16-7566

Ship: ☒ Prepaid ☐ Collect Via:

☐ Motor-Rail ☒ Air Psgr. OR

☐ Excl. Use ☒ Air Cargo

☐ DOE Veh. ☐ Mail

☐ UPS Svc. ☐

SHIPMENT DESCRIPTION AND CERTIFICATION

Proper Shipping Name — Radioactive Material, — UN Number

1. Empty Packages ☐ UN 2908
2. Low Specific Activity, n.o.s. ☐ UN 2912
3. Limited quantity EXCEPTED PACKAGE OF MATERIAL, 7 ☒ UN 2910
4. N.O.S. ☐ UN 2982
5. Fissile n.o.s. ☐ UN 2918
6. Special Form, n.o.s. ☐ UN 2974
7. Instruments & Articles ☐ UN 2911
8. ☐

Material Form: ☐ Special (A1) ☒ Normal (A2)

Labels Applied: ☐ Empty ☐ Radioactive LSA ☐ White I ☐ Yellow II ☐ Yellow III ☒ None ☐ Danger (Air Cargo) ☐ Secondary

Material Category: ☐ Empty ☐ Low Specific Act. (LSA) ☒ Limited Quantity ☐ Type A Quantity ☐ Type B Quantity ☐ Highway Route Controlled Quantity

For Normal Form Identify:

Physical Form: ☒ Solid ☐ Liquid ☐ G

Chemical Form: ☐ Metal ☐ Oxide ☒ Elemental ☐ Nitrate

Other

TYPE-PACKAGE: ☒ Strong Tight ☐ Type A ☐ Type B ☐ Type B (U) ☐ Type B (M)

CONSTRUCTION: ☐ Box, FB ☐ Wood ☐ Steel ☐ Drum ☐ Cask ☒ Other poly cooler

FISSILE CLASS: ☒ Non Fissile ☐ Fissile Exempt ☐ Fissile I ☐ Fissile II ☐ Fissile III

Grams Fissile

SNM: ☒ No ☐ Yes ☐ <1 gr ☐ Category I ☐ Category II ☐ Category III

ACCOUNTABILITY/SECURITY CONTROL: ☐ Classified ☒ Unclassified

Consignee authorized to receive this qty ☒

Sig. Security Svc. Req. ☐ NA ☒

~~Pu, EU > 1 g~~ ☐ N/A ~~NU, DU > 1 Kg~~ ☐

Security Escorts Req. ☐ Not. Req. ☒

External Cask Temperature N/A ☒

(Max. 122° F LTL, 180° F Ex. Use) °F

Packaging conforms to appropriate packaging procedure ☐ N/A ☒ Yes

Complies with D.O.T packaging marking and labeling requirements ☐ N/A ☒ Yes

Container acceptability documented (incl 7A cert.) ☒ N/A ☐ Yes

Container examined: No evidence of deterioration or damage ☒

QA Inspection Current ☐ Yes ☒ N/A Seals required ☒ No ☐

Shipping Doc. ~~N/A 49 CFR~~ Authorization No. N/A

No Pkgs.	Model Package	COC/Spec. No.	Serial No.	Seal No.	Isotopes	Curies/Pkg	T.I.	Gr. V
1	Strong tight	N/A	N/A	N/A	Cs137, Sr90	1.2uCi	N/A	381
	Cooler # EFS-11, 7 Sample Bottles and Volume 3500mL							
					TOTAL	1.2uCi	NA	381

Soil samples in glass bottles. Bottles are double-bagged and packed in wet ice surro by vermiculite absorbent.

(Shipper may describe package in detail on one of unused lines above) ~~TOTAL~~

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials.

Certifier's Signature [redacted]

AREA MONITOR

Surface Dose Rate of Package: ☒ ≤0.5 or ___ mrem/hr (N + βγ)

Dose Rate at 1 Meter from Surface of Package: ☒ ≤0.5 or ___ mrem/hr (N + βγ)

Smears of Outer Container: ☒ ≤2.2 dpm β/γ/cm² ☒ ≤2.2 dpm α/cm²

Surface: [redacted]

@ 6 feet: ☒ ≤10 mrem/hr (N + βγ)

@ Cab or Sleeper ☒ ≤2.0 mrem/hr (N + βγ)

Additional Data and Instructions (inc. Readings on Internal Packaging)

Signature - Radiation Monitoring	Bldg.	Survey No.	Date
J. Valdez	202-5	167328	1-10-94

AUTHORIZATION FOR SHIPMENT

APPROVAL

AIR TRANSPORT CERTIFICATION ▸ Cargo Only: ☐ Danger Labels Applied

Passenger: ☒ 1. Ltd. Qty. ☒ 3. Research or Medical Diagnosis ☐ 2. ≤3 T.I ☐ 4. Human Medical Research

Pkg. Dimensions

Traffic has inspected and verified preshipment compliance to DOT regulations.

Authorized Signature ▸ M.C. Sams Printed Name ▸ M.A. SAMS Date ▸ 1-10-94

APPROVED FOR OFFSITE SHIPMENT

TRAFFIC

B.L. No.	Date Shipped	E.T.A.	Routing		Placards
RMIN-8412	1/10/94	1/11/94	FEDEX	☐ N/A	☐ Yes ☒
Serviced By	Date	Approved for Shipment		Date	Route Plan
	1-10-94	Westinghouse Hanford Company		1/11/94	☐ Yes ☒

*U.S. GPO: 1991-691-714/40068

54-6000-088 (10/88)

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0021

FORM OF PAYMENT

Check ☐ GBL ☐ COD ☐

Bill to Shipper ☒ Bill to Consignee ☐ Third Party Billing ☐

Shipper's Account Number: E 850281585

EMERY WORLDWIDE — A CF Company

SERVICES **

UNITED STATES / CANADA: Same Day (Extra Charges) ☐ AM ☒ PM ☐ Second Day ☐ Saturday Delivery ☐

INTERNATIONAL: Express ☐ Standard Plus ☐ Preferred ☐ Standard ☐ Business Documents ☐ Customs Clearance ☐ Delivery ☐

Date: 1-05-94 Origin: PBC Shipment Number: 251900829

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

To:
RF WESTON INC
RF WESTON INC
256 WELSH POOL ROAD
LIONVILLE PA USA

Customer's Reference Numbers: W81232 PTIFA W94-0190#11 99352

Consignee's Account Number: E

Description: 1 COOLER ID: GWS 120 WATER SAMPLES

Pcs	L	W	H	Total Pieces	Total Weight (In Lbs)
1	24	16	17	1	78

Remarks: OVERNIGHT DELIVERY SIGNATURE SECURITY SERVIC

Shipper's Signature X C.R. Nelson 1-5-94

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 9X12 ☒ Urgent Pack 12X15 ☒

EMERY WORLDWID will accept Consign check with all risk being assumed by Shipper, including but not limited to non-payment, fraud and misrepresentat

Declared Value

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

251900829

International Shipments: Free Domicile ☐ Commodity Code

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

International Customs Value | International Insurance

Base Charge | Total Transportation Charges | Other Charges/Advance at Origin ☐ OCAO $

SAMPLE

Terms and Conditions

EMERY WORLDWIDE — A CF Company

SIGNATURE AND TALLY RECORD

60029-46 (8/89) Litho USA

DATE: 01-05-94 SHIPMENT NO.: 251900829 4

SHIPPER: WESTINGHOUSE SHIPPING DEPT (509) 376-6

REFERENCE NO.: W94-0-0190#11

SHIPPER NAME AND ADDRESS
WESTINGHOUSE SHIPPING DEPT (509) 376-6665
U.S. DEPARTMENT OF ENERGY C/O
WESTINGHOUSE HANFORD COMPANY
2355 STEVENS DRIVE 1163 BUILDING
PO BOX 1970
RICHLAND WA 99352

CONSIGNEE NAME AND ADDRESS
RF WESTON INC
256 WELSH POOL ROAD
LIONVILLE PA 19341

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Pieces	Weight	Description/Marks	Emery Authorization No.
1	78 LBS	COOLER ID; GWS 120 WATER SAMPLES	

EACH PERSON HANDLING OR TAKING CUSTODY OF THIS SHIPMENT MUST SIGN AND COMPLETE THE INFORMATION BELOW

	Name of Person/Company	Transship Point/Destination	Signature of Person Accepting Custody	Time/Date
1.	CR NELSON WESTINGHOUSE SHIPPING DEPT HANFORD CO	RICHLAND WA		
2.				
3.				
4.				
5.	RLWhit	PHLEWR	RLWhit	
6.	WDSNYDER	PHL	WDSnyder	0950
7.	Weston BBurnett	Lionville	BBurnett	0
8.				

SPECIAL HANDLING INSTRUCTIONS

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS, OLM01.8

Report Date: 02/07/94 12:17

RFW Batch Number: 9401L206 Client: WESTINGHOUSE HANFORD Work Order: 06168002001 Page: 1a

0024 DEA 7-27-94

	Cust ID:	B093H3	B093H6	B093J2	B093J2	B093J2	B093J5
Sample Information	RFW#:	001	003	005	005 MS	005 MSD	007
	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	98 %	99 %	97 %	98 %	96 %	95 %
	Bromofluorobenzene	100 %	100 %	103 %	100 %	103 %	102 %
	1,2-Dichloroethane-d4	96 %	97 %	96 %	95 %	97 %	95 %
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	8 JB	7 JB	3 JB	3 JB	1 JB
Acetone		5 JB	5 JB	8 JB	4 JB	5 JB	5 JB
Carbon Disulfide		10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene		10 U	10 U	10 U	109 %	106 %	10 U
1,1-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		3 J	4 J	2 J	2 J	2 J	5 J
1,2-Dichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride		120	190	74	71	69	170
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene		10 U	10 U	10 U	114 %	110 %	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Benzene		10 U	10 U	10 U	114 %	111 %	10 U
Trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 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		10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Toluene		10 U	10 U	10 U	113 %	111 %	10 U

*= Outside of EPA CLP QC limits.

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RFW Batch Number: 9401L206 Client: WESTINGHOUSE HANFORD Work Order: 06168002001 Page: 1b

Cust ID:	B093H3	B093H6	B093J2	B093J2	B093J2	B093J5
RFW#:	001	003	005	005 MS	005 MSD	007
Chlorobenzene	10 U	10 U	10 U	114 %	111 %	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

0025 RSA 7-27-94

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B093H3

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011406

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	JB
67-64-1	Acetone	5	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	3	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	120	
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B093H3

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011406

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B093H6

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011407

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	8	JB
67-64-1	Acetone	5	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	4	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	190	
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

0044

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B093H6

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011407

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

0045

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B093J2

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-005

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011408

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	7	JB
67-64-1	Acetone	8	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	74	
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B093J2

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-005

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011408

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

0054

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B093J5

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-007

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011409

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	1	JB
67-64-1	Acetone	5	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	5	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	170	
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

0062

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B093J5

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-007

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011409

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

0063

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

Client : WESTINGHOUSE HANFORD
RFW# : 9401L206

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

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. The result was 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).

FEB 1994
RECEIVED
SDLA

2.1.94
Date

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

pas/i01-206

RECORD COPY

0001

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/27/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B093H3	Nitrate Nitrite	6.5	MG-N/L	2.0	20.0
-003	B093H6	Nitrate Nitrite	6.6	MG-N/L	1.0	10.0
-005	B093J2	Nitrate Nitrite	6.8	MG-N/L	1.0	10.0
-007	B093J5	Nitrate Nitrite	6.0	MG-N/L	1.0	10.0

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L206

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

CLP METALS

1. This narrative covers the analysis of eight (8) water samples.

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 and High Purity.

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 with the exceptions of the following for sample 001:

Element	%Difference
Calcium	12.6
Iron	11.2
Magnesium	15.1

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) with the exceptions of the following for sample 001:

Element	%Recovery
Cadmium	179.0
Selenium	74.0
Thallium	67.0

For analytes where the Matrix Spike is out of control, a Post-digestion Matrix Spike and Serial Dilution are performed (exception allowed for Ag).

Matrix spike analyses are not required for Ca, Mg, Na, and K in waters.

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:

Element	Sample #'s
Lead	001,001R,005

14. 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.

15. 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).

16. 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.

17. Solubles and totals were digested within the same digestion batch; therefore, will have the same flags.

18. 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.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

2.18.94
Date

rls/m01-206.clp

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/16/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B093H3	Silver, Total	10.0	u	UG/L	10.0	1.0
		Aluminum, Total	200	u	UG/L	200	1.0
		Arsenic, Total	10.0	u	UG/L	10.0	1.0
		Barium, Total	200	u	UG/L	200	1.0
		Beryllium, Total	5.0	u	UG/L	5.0	1.0
		Calcium, Total	26900		UG/L	5000	1.0
		Cadmium, Total	5.1		UG/L	5.0	1.0
		Cobalt, Total	50.0	u	UG/L	50.0	1.0
		Chromium, Total	13.9		UG/L	10.0	1.0
		Copper, Total	25.0	u	UG/L	25.0	1.0
		Iron, Total	5370		UG/L	100	1.0
		Mercury, Total	0.20	u	UG/L	0.20	1.0
		Potassium, Total	5000	u	UG/L	5000	1.0
		Magnesium, Total	8250		UG/L	5000	1.0
		Manganese, Total	117		UG/L	15.0	1.0
		Sodium, Total	26600		UG/L	5000	1.0
		Nickel, Total	40.0	u	UG/L	40.0	1.0
		Lead, Total	13.0		UG/L	3.0	1.0
		Antimony, Total	60.0	u	UG/L	60.0	1.0
		Selenium, Total	5.0	u	UG/L	5.0	1.0
		Thallium, Total	10.0	u	UG/L	10.0	1.0
		Vanadium, Total	50.0	u	UG/L	50.0	1.0
		Zinc, Total	114		UG/L	20.0	1.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/16/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B093H4	Silver, Soluble	10.0	u	UG/L	10.0	1.0
		Aluminum, Soluble	200	u	UG/L	200	1.0
		Arsenic, Soluble	10.0	u	UG/L	10.0	1.0
		Barium, Soluble	200	u	UG/L	200	1.0
		Beryllium, Soluble	5.0	u	UG/L	5.0	1.0
		Calcium, Soluble	27500		UG/L	5000	1.0
		Cadmium, Soluble	5.0	u	UG/L	5.0	1.0
		Cobalt, Soluble	50.0	u	UG/L	50.0	1.0
		Chromium, Soluble	10.0	u	UG/L	10.0	1.0
		Copper, Soluble	25.0	u	UG/L	25.0	1.0
		Iron, Soluble	222		UG/L	100	1.0
		Mercury, Soluble	0.20	u	UG/L	0.20	1.0
		Potassium, Soluble	5000	u	UG/L	5000	1.0
		Magnesium, Soluble	8540		UG/L	5000	1.0
		Manganese, Soluble	77.3		UG/L	15.0	1.0
		Sodium, Soluble	27300		UG/L	5000	1.0
		Nickel, Soluble	40.0	u	UG/L	40.0	1.0
		Lead, Soluble	3.0	u	UG/L	3.0	1.0
		Antimony, Soluble	60.0	u	UG/L	60.0	1.0
		Selenium, Soluble	5.0	u	UG/L	5.0	1.0
		Thallium, Soluble	10.0	u	UG/L	10.0	1.0
		Vanadium, Soluble	50.0	u	UG/L	50.0	1.0
		Zinc, Soluble	25.1		UG/L	20.0	1.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/16/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B093H6	Silver, Total	10.0	u	UG/L	10.0	1.0
		Aluminum, Total	200	u	UG/L	200	1.0
		Arsenic, Total	10.0	u	UG/L	10.0	1.0
		Barium, Total	200	u	UG/L	200	1.0
		Beryllium, Total	5.0	u	UG/L	5.0	1.0
		Calcium, Total	32300		UG/L	5000	1.0
		Cadmium, Total	5.0	u	UG/L	5.0	1.0
		Cobalt, Total	50.0	u	UG/L	50.0	1.0
		Chromium, Total	18.9		UG/L	10.0	1.0
		Copper, Total	25.0	u	UG/L	25.0	1.0
		Iron, Total	21300		UG/L	100	1.0
		Mercury, Total	0.20	u	UG/L	0.20	1.0
		Potassium, Total	5000	u	UG/L	5000	1.0
		Magnesium, Total	9710		UG/L	5000	1.0
		Manganese, Total	222		UG/L	15.0	1.0
		Sodium, Total	30200		UG/L	5000	1.0
		Nickel, Total	40.0	u	UG/L	40.0	1.0
		Lead, Total	3.3		UG/L	3.0	1.0
		Antimony, Total	60.0	u	UG/L	60.0	1.0
		Selenium, Total	5.0	u	UG/L	5.0	1.0
		Thallium, Total	100	u	UG/L	100	10.0
		Vanadium, Total	50.0	u	UG/L	50.0	1.0
		Zinc, Total	197		UG/L	20.0	1.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/16/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	B093H7	Silver, Soluble	10.0	u	UG/L	10.0	1.0
		Aluminum, Soluble	200	u	UG/L	200	1.0
		Arsenic, Soluble	10.0	u	UG/L	10.0	1.0
		Barium, Soluble	200	u	UG/L	200	1.0
		Beryllium, Soluble	5.0	u	UG/L	5.0	1.0
		Calcium, Soluble	27000		UG/L	5000	1.0
		Cadmium, Soluble	5.0	u	UG/L	5.0	1.0
		Cobalt, Soluble	50.0	u	UG/L	50.0	1.0
		Chromium, Soluble	10.0	u	UG/L	10.0	1.0
		Copper, Soluble	25.0	u	UG/L	25.0	1.0
		Iron, Soluble	197		UG/L	100	1.0
		Mercury, Soluble	0.20	u	UG/L	0.20	1.0
		Potassium, Soluble	5000	u	UG/L	5000	1.0
		Magnesium, Soluble	8580		UG/L	5000	1.0
		Manganese, Soluble	99.2		UG/L	15.0	1.0
		Sodium, Soluble	27200		UG/L	5000	1.0
		Nickel, Soluble	40.0	u	UG/L	40.0	1.0
		Lead, Soluble	3.0	u	UG/L	3.0	1.0
		Antimony, Soluble	60.0	u	UG/L	60.0	1.0
		Selenium, Soluble	5.0	u	UG/L	5.0	1.0
		Thallium, Soluble	100	u	UG/L	100	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0	1.0
		Zinc, Soluble	20.0	u	UG/L	20.0	1.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/16/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B093J2	Silver, Total	10.0	u	UG/L	10.0	1.0
		Aluminum, Total	200	u	UG/L	200	1.0
		Arsenic, Total	10.0	u	UG/L	10.0	1.0
		Barium, Total	200	u	UG/L	200	1.0
		Beryllium, Total	5.0	u	UG/L	5.0	1.0
		Calcium, Total	26500		UG/L	5000	1.0
		Cadmium, Total	7.6		UG/L	5.0	1.0
		Cobalt, Total	50.0	u	UG/L	50.0	1.0
		Chromium, Total	10.0	u	UG/L	10.0	1.0
		Copper, Total	25.0	u	UG/L	25.0	1.0
		Iron, Total	5850		UG/L	100	1.0
		Mercury, Total	0.20	u	UG/L	0.20	1.0
		Potassium, Total	5000	u	UG/L	5000	1.0
		Magnesium, Total	8070		UG/L	5000	1.0
		Manganese, Total	125		UG/L	15.0	1.0
		Sodium, Total	25800		UG/L	5000	1.0
		Nickel, Total	40.0	u	UG/L	40.0	1.0
		Lead, Total	21.6		UG/L	3.0	1.0
		Antimony, Total	60.0	u	UG/L	60.0	1.0
		Selenium, Total	5.0	u	UG/L	5.0	1.0
		Thallium, Total	10.0	u	UG/L	10.0	1.0
		Vanadium, Total	50.0	u	UG/L	50.0	1.0
		Zinc, Total	128		UG/L	20.0	1.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/16/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B093J3	Silver, Soluble	10.0	u	UG/L	10.0	1.0
		Aluminum, Soluble	200	u	UG/L	200	1.0
		Arsenic, Soluble	10.0	u	UG/L	10.0	1.0
		Barium, Soluble	200	u	UG/L	200	1.0
		Beryllium, Soluble	5.0	u	UG/L	5.0	1.0
		Calcium, Soluble	26300		UG/L	5000	1.0
		Cadmium, Soluble	5.0	u	UG/L	5.0	1.0
		Cobalt, Soluble	50.0	u	UG/L	50.0	1.0
		Chromium, Soluble	10.0	u	UG/L	10.0	1.0
		Copper, Soluble	25.0	u	UG/L	25.0	1.0
		Iron, Soluble	201		UG/L	100	1.0
		Mercury, Soluble	0.20	u	UG/L	0.20	1.0
		Potassium, Soluble	5000	u	UG/L	5000	1.0
		Magnesium, Soluble	8070		UG/L	5000	1.0
		Manganese, Soluble	77.3		UG/L	15.0	1.0
		Sodium, Soluble	25900		UG/L	5000	1.0
		Nickel, Soluble	40.0	u	UG/L	40.0	1.0
		Lead, Soluble	3.0	u	UG/L	3.0	1.0
		Antimony, Soluble	60.0	u	UG/L	60.0	1.0
		Selenium, Soluble	5.0	u	UG/L	5.0	1.0
		Thallium, Soluble	10.0	u	UG/L	10.0	1.0
		Vanadium, Soluble	50.0	u	UG/L	50.0	1.0
		Zinc, Soluble	28.2		UG/L	20.0	1.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/16/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B093J5	Silver, Total	10.0	u	UG/L	10.0	1.0
		Aluminum, Total	200	u	UG/L	200	1.0
		Arsenic, Total	10.0	u	UG/L	10.0	1.0
		Barium, Total	200	u	UG/L	200	1.0
		Beryllium, Total	5.0	u	UG/L	5.0	1.0
		Calcium, Total	27800		UG/L	5000	1.0
		Cadmium, Total	5.0	u	UG/L	5.0	1.0
		Cobalt, Total	50.0	u	UG/L	50.0	1.0
		Chromium, Total	13.9		UG/L	10.0	1.0
		Copper, Total	25.0	u	UG/L	25.0	1.0
		Iron, Total	16100		UG/L	100	1.0
		Mercury, Total	0.20	u	UG/L	0.20	1.0
		Potassium, Total	5000	u	UG/L	5000	1.0
		Magnesium, Total	8320		UG/L	5000	1.0
		Manganese, Total	176		UG/L	15.0	1.0
		Sodium, Total	25700		UG/L	5000	1.0
		Nickel, Total	40.0	u	UG/L	40.0	1.0
		Lead, Total	3.0	u	UG/L	3.0	1.0
		Antimony, Total	60.0	u	UG/L	60.0	1.0
		Selenium, Total	5.0	u	UG/L	5.0	1.0
		Thallium, Total	100	u	UG/L	100	10.0
		Vanadium, Total	50.0	u	UG/L	50.0	1.0
		Zinc, Total	157		UG/L	20.0	1.0

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 02/16/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	B093J6	Silver, Soluble	10.0	u	UG/L	10.0	1.0
		Aluminum, Soluble	200	u	UG/L	200	1.0
		Arsenic, Soluble	10.0	u	UG/L	10.0	1.0
		Barium, Soluble	200	u	UG/L	200	1.0
		Beryllium, Soluble	5.0	u	UG/L	5.0	1.0
		Calcium, Soluble	25400		UG/L	5000	1.0
		Cadmium, Soluble	5.0	u	UG/L	5.0	1.0
		Cobalt, Soluble	50.0	u	UG/L	50.0	1.0
		Chromium, Soluble	10.0	u	UG/L	10.0	1.0
		Copper, Soluble	25.0	u	UG/L	25.0	1.0
		Iron, Soluble	223		UG/L	100	1.0
		Mercury, Soluble	0.20	u	UG/L	0.20	1.0
		Potassium, Soluble	5000	u	UG/L	5000	1.0
		Magnesium, Soluble	8040		UG/L	5000	1.0
		Manganese, Soluble	98.3		UG/L	15.0	1.0
		Sodium, Soluble	25200		UG/L	5000	1.0
		Nickel, Soluble	40.0	u	UG/L	40.0	1.0
		Lead, Soluble	3.0	u	UG/L	3.0	1.0
		Antimony, Soluble	60.0	u	UG/L	60.0	1.0
		Selenium, Soluble	5.0	u	UG/L	5.0	1.0
		Thallium, Soluble	10.0	u	UG/L	10.0	1.0
		Vanadium, Soluble	50.0	u	UG/L	50.0	1.0
		Zinc, Soluble	25.6		UG/L	20.0	1.0

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093H3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120601

Level (low/med): LOW Date Received: 1/10/94

% 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	104.00	B		P
7440-36-0	Antimony	44.90	B		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	41.90	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	5.10		N	P
7440-70-2	Calcium	26900.00		E	P
7440-47-3	Chromium	13.90			P
7440-48-4	Cobalt	4.00	B		P
7440-50-8	Copper	6.80	B		P
7439-89-6	Iron	5370.00		E	P
7439-92-1	Lead	13.00		S	F
7439-95-4	Magnesium	8250.00		E	P
7439-96-5	Manganese	117.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	9.00	U		P
7440-09-7	Potassium	3830.00	B		P
7782-49-2	Selenium	2.00	U	N	F
7440-22-4	Silver	3.00	U		P
7440-23-5	Sodium	26600.00			P
7440-28-0	Thallium	2.00	U	NW	F
7440-62-2	Vanadium	23.30	B		P
7440-66-6	Zinc	114.00			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093H4

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120602

Level (low/med): LOW Date Received: 1/10/94

% 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	40.70	B		P
7440-36-0	Antimony	39.10	B		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	28.50	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U	N	P
7440-70-2	Calcium	27500.00		E	P
7440-47-3	Chromium	3.00	U		P
7440-48-4	Cobalt	2.00	U		P
7440-50-8	Copper	3.90	B		P
7439-89-6	Iron	222.00		E	P
7439-92-1	Lead	2.00	U		F
7439-95-4	Magnesium	8540.00		E	P
7439-96-5	Manganese	77.30			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	16.60	B		P
7440-09-7	Potassium	3750.00	B		P
7782-49-2	Selenium	2.00	U	N	F
7440-22-4	Silver	3.00	U		P
7440-23-5	Sodium	27300.00			P
7440-28-0	Thallium	2.00	U	NW	F
7440-62-2	Vanadium	16.70	B		P
7440-66-6	Zinc	25.10			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093H6

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120603

Level (low/med): LOW Date Received: 1/10/94

% 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	169.00	B		P
7440-36-0	Antimony	27.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	59.70	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U	N	P
7440-70-2	Calcium	32300.00		E	P
7440-47-3	Chromium	18.90			P
7440-48-4	Cobalt	4.70	B		P
7440-50-8	Copper	4.90	B		P
7439-89-6	Iron	21300.00		E	P
7439-92-1	Lead	3.30			F
7439-95-4	Magnesium	9710.00		E	P
7439-96-5	Manganese	222.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	11.30	B		P
7440-09-7	Potassium	4910.00	B		P
7782-49-2	Selenium	2.00	U	N	F
7440-22-4	Silver	3.00	U		P
7440-23-5	Sodium	30200.00			P
7440-28-0	Thallium	20.00	U	N	F
7440-62-2	Vanadium	29.00	B		P
7440-66-6	Zinc	197.00			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093H7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120604

Level (low/med): LOW Date Received: 1/10/94

% 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	29.20	B		P
7440-36-0	Antimony	27.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	23.60	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U	N	P
7440-70-2	Calcium	27000.00		E	P
7440-47-3	Chromium	3.00	U		P
7440-48-4	Cobalt	2.00	U		P
7440-50-8	Copper	3.90	B		P
7439-89-6	Iron	197.00		E	P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	8580.00		E	P
7439-96-5	Manganese	99.20			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	9.00	U		P
7440-09-7	Potassium	4210.00	B		P
7782-49-2	Selenium	2.00	U	N	F
7440-22-4	Silver	3.00	U		P
7440-23-5	Sodium	27200.00			P
7440-28-0	Thallium	20.00	U	N	F
7440-62-2	Vanadium	11.00	B		P
7440-66-6	Zinc	14.30	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093J2

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120605

Level (low/med): LOW Date Received: 1/10/94

% 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	85.80	B		P
7440-36-0	Antimony	27.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	43.80	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	7.60		N	P
7440-70-2	Calcium	26500.00		E	P
7440-47-3	Chromium	9.60	B		P
7440-48-4	Cobalt	3.10	B		P
7440-50-8	Copper	7.60	B		P
7439-89-6	Iron	5850.00		E	P
7439-92-1	Lead	21.60		S	F
7439-95-4	Magnesium	8070.00		E	P
7439-96-5	Manganese	125.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	9.00	U		P
7440-09-7	Potassium	3960.00	B		P
7782-49-2	Selenium	2.00	U	N	F
7440-22-4	Silver	3.00	U		P
7440-23-5	Sodium	25800.00			P
7440-28-0	Thallium	2.00	U	NW	F
7440-62-2	Vanadium	25.20	B		P
7440-66-6	Zinc	128.00			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093J3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120606

Level (low/med): LOW Date Received: 1/10/94

% 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	42.40	B		P
7440-36-0	Antimony	27.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	28.50	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U	N	P
7440-70-2	Calcium	26300.00		E	P
7440-47-3	Chromium	3.10	B		P
7440-48-4	Cobalt	2.00	U		P
7440-50-8	Copper	3.90	B		P
7439-89-6	Iron	201.00		E	P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	8070.00		E	P
7439-96-5	Manganese	77.30			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	9.60	B		P
7440-09-7	Potassium	3670.00	B		P
7782-49-2	Selenium	2.00	U	NW	F
7440-22-4	Silver	3.00	U		P
7440-23-5	Sodium	25900.00			P
7440-28-0	Thallium	2.00	U	NW	F
7440-62-2	Vanadium	16.80	B		P
7440-66-6	Zinc	28.20			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093J5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120607

Level (low/med): LOW Date Received: 1/10/94

% 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	156.00	B		P
7440-36-0	Antimony	27.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	47.60	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U	N	P
7440-70-2	Calcium	27800.00		E	P
7440-47-3	Chromium	13.90			P
7440-48-4	Cobalt	2.00	U		P
7440-50-8	Copper	5.10	B		P
7439-89-6	Iron	16100.00		E	P
7439-92-1	Lead	2.70	B		F
7439-95-4	Magnesium	8320.00		E	P
7439-96-5	Manganese	176.00			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	9.60	B		P
7440-09-7	Potassium	4240.00	B		P
7782-49-2	Selenium	2.00	U	N	F
7440-22-4	Silver	3.00	U		P
7440-23-5	Sodium	25700.00			P
7440-28-0	Thallium	20.00	U	N	F
7440-62-2	Vanadium	27.70	B		P
7440-66-6	Zinc	157.00			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093J6

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120608

Level (low/med): LOW Date Received: 1/10/94

% 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	34.80	B		P
7440-36-0	Antimony	27.00	U		P
7440-38-2	Arsenic	2.00	U		F
7440-39-3	Barium	22.10	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	3.00	U	N	P
7440-70-2	Calcium	25400.00		E	P
7440-47-3	Chromium	3.00	U		P
7440-48-4	Cobalt	2.00	U		P
7440-50-8	Copper	3.50	B		P
7439-89-6	Iron	223.00		E	P
7439-92-1	Lead	2.00	U		F
7439-95-4	Magnesium	8040.00		E	P
7439-96-5	Manganese	98.30			P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	9.00	U		P
7440-09-7	Potassium	3470.00	B		P
7782-49-2	Selenium	2.00	U	N	F
7440-22-4	Silver	3.00	U		P
7440-23-5	Sodium	25200.00			P
7440-28-0	Thallium	2.00	U	NW	F
7440-62-2	Vanadium	14.30	B		P
7440-66-6	Zinc	25.60			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

VALIDATION SUMMARY

9401L206-WES-1456

MEMORANDUM

MAR 1994 RECEIVED TQO

TO: 200-UP-1 Project QA Record

March 22, 1994

FR: Sandra Schildt, Golder Associates Inc.

RE: VOLATILES DATA VALIDATION SUMMARY FOR DATA PACKAGE 9401L206-WES-1456 (923-E417)

INTRODUCTION

This memorandum presents the results of data validation on data package 9401L206-WES-1456 prepared by Roy F. Weston, Inc. (Weston). A list of the samples validated along with the analytes reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B093H3	12/30/93	WATER	SEE NOTE 1
B093H6	12/30/93	WATER	
B093J2	12/30/93	WATER	
B093J5	12/30/93	WATER	

Note 1: The samples were analyzed for CLP volatile target compound list (TCL) organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 to this memo provide the following information:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

RECEIVED 2 1994 VALIDATION DOCUMENTATION SDLA

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

MEMORANDUM

TO: 200-UP-1 Project QA Record April 1, 1994

FR: Sandra Schildt, Golder Associates Inc.

RE: VOLATILES DATA VALIDATION SUMMARY FOR DATA PACKAGE 9401L206-WES-1456 (923-E417)

INTRODUCTION

This memorandum presents the results of data validation on data package 9401L206-WES-1456 prepared by Roy F. Weston, Inc. (Weston). A list of the samples validated along with the analytes reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B093H3	12/30/93	WATER	SEE NOTE 1
B093H6	12/30/93	WATER	
B093J2	12/30/93	WATER	
B093J5	12/30/93	WATER	

Note 1: The samples were analyzed for CLP volatile target compound list (TCL) organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 to this memo provide the following information:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. Four samples (4) were validated in this data set with a total of 132 determinations reported, 16 of which were deemed valid. This results in a completeness of 12% which does not meet normal work plan objectives.

MAJOR DEFICIENCIES

The following major deficiencies were identified during data validation which required qualification of data as unusable.

Holding Time

- Samples were not properly preserved and the maximum holding time (MHT) was exceeded by greater than a factor of two. Therefore all non-detects have been qualified as unusable (UR). Attachments 2 and 5 provide a summary of the samples affected, data qualification applied, and supporting documentation.

MINOR DEFICIENCIES

The following is a summary of the minor deficiencies identified during validation which required qualification of data.

Holding Time

- Samples were not properly preserved and the MHT was exceeded by greater than a factor of two. Therefore all detects have been qualified as estimated (J). Attachments 2 and 5 provide a summary of the samples affected, data qualification applied, and supporting documentation.

Laboratory Blanks

- Methylene chloride and acetone were detected in the method blank. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied, and supporting documentation.

REFERENCES

WHC 1993a, Validation of 200-UP-1 Data, Statement of Work, Analytical Laboratory Data Validation Task Order S-94-17, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993, Westinghouse Hanford Company, Richland, Washington.

Replaced 4/27/94

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UJN- Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected due to associated blank contamination.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

PKG: 9401L206-WES-1456	REVIEWER: S. Schildt	DATE: 4/1/94	PAGE 1 OF 1
COMMENTS: Volatiles			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
ALL	J for detects UR for non-detects	ALL	Holding time exceeded by > 2X maximum
Methylene chloride	J changed to U	ALL	Compound present in method blank
Acetone	J changed to U	ALL	Compound present in method blank

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: 9401L206-WES-1456

	Samp#	B093H3		B093H6		B093J2		B093J5	
	Date	12-30-93		12-30-93		12-30-93		12-30-93	
	Location	---		---		---		---	
	Depth	---		---		---		---	
	Type	---		---		---		---	
	Comments	---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
BROMOMETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
VINYL CHLORIDE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
CHLOROETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
METHYLENE CHLORIDE	UG/L	10.000	U	10.000	U	10.000	U	10.000	U
ACETONE	UG/L	10.000	U	10.000	U	10.000	U	10.000	U
CARBON DISULFIDE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
1,1-DICHLOROETHENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
1,1-DICHLOROETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
1,2-DICHLOROETHENE (TOTAL)	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
CHLOROFORM	UG/L	3.000	J	4.000	J	2.000	J	5.000	J
1,2-DICHLOROETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
2-BUTANONE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
1,1,1-TRICHLOROETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
CARBON TETRACHLORIDE	UG/L	120.000	J	190.000	J	74.000	J	170.000	J
BROMODICHLOROMETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
1,2-DICHLOROPROPANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
CIS-1,3-DICHLOROPROPENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
TRICHLOROETHENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
DIBROMOCHLOROMETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
1,1,2-TRICHLOROETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
BENZENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
TRANS-1,3-DICHLOROPROPENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
BROMOFORM	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
4-METHYL-2-PENTANONE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
2-HEXANONE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
TETRACHLOROETHENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
1,1,2,2-TETRACHLOROETHANE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
TOLUENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
CHLOROBENZENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
ETHYLBENZENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
STYRENE	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR
XYLENES (TOTAL)	UG/L	10.000	UR	10.000	UR	10.000	UR	10.000	UR

Verified 4/1/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B093H3

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011406

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NO.	COMPOUND		Q	
74-87-3	Chloromethane	10	U	UR
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	10.2	~~JB~~	UR
67-64-1	Acetone	10.5	~~JB~~	UR
75-15-0	Carbon Disulfide	10	U	UR
75-35-4	1,1-Dichloroethene	10	U	
75-34-3	1,1-Dichloroethane	10	U	
540-59-0	1,2-Dichloroethene (total)	10	U	
67-66-3	Chloroform	3	J	
107-06-2	1,2-Dichloroethane	10	U	UR
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	10	U	
56-23-5	Carbon Tetrachloride	120	-	J
75-27-4	Bromodichloromethane	10	U	UR
78-87-5	1,2-Dichloropropane	10	U	
10061-01-5	cis-1,3-Dichloropropene	10	U	
79-01-6	Trichloroethene	10	U	
124-48-1	Dibromochloromethane	10	U	
79-00-5	1,1,2-Trichloroethane	10	U	
71-43-2	Benzene	10	U	
10061-02-6	Trans-1,3-Dichloropropene	10	U	
75-25-2	Bromoform	10	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	10	U	
79-34-5	1,1,2,2-Tetrachloroethane	10	U	
108-88-3	Toluene	10	U	
108-90-7	Chlorobenzene	10	U	
100-41-4	Ethylbenzene	10	U	
100-42-5	Styrene	10	U	
1330-20-7	Xylene (total)	10	U	

FORM 1 VOA 3/90

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B093H3

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011406

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC

3/90

3/21/94

~~0036~~

010

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B093H6

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011407

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

CAS NO.	COMPOUND		Q	
74-87-3	Chloromethane	10	U	UR
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	~~10.8~~	~~JB~~	UJ 4/1/94
67-64-1	Acetone	~~10.5~~	~~JB~~	UJ
75-15-0	Carbon Disulfide	10	U	UR
75-35-4	1,1-Dichloroethene	10	U	
75-34-3	1,1-Dichloroethane	10	U	
540-59-0	1,2-Dichloroethene (total)	10	U	
67-66-3	Chloroform	4	J	
107-06-2	1,2-Dichloroethane	10	U	UR
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	10	U	
56-23-5	Carbon Tetrachloride	190		J
75-27-4	Bromodichloromethane	10	U	UR
78-87-5	1,2-Dichloropropane	10	U	
10061-01-5	cis-1,3-Dichloropropene	10	U	
79-01-6	Trichloroethene	10	U	
124-48-1	Dibromochloromethane	10	U	
79-00-5	1,1,2-Trichloroethane	10	U	
71-43-2	Benzene	10	U	
10061-02-6	Trans-1,3-Dichloropropene	10	U	
75-25-2	Bromoform	10	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	10	U	
79-34-5	1,1,2,2-Tetrachloroethane	10	U	
108-88-3	Toluene	10	U	
108-90-7	Chlorobenzene	10	U	~~0044~~ 3/21/94
100-41-4	Ethylbenzene	10	U	
100-42-5	Styrene	10	U	
1330-20-7	Xylene (total)	10	U	

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B093H6

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011407

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

~~0045~~ 3/21/94

FORM 1 VOA-TIC 3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B093J2

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-005

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011408

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q	
74-87-3	Chloromethane	10	U	UR
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	10 ~~7~~	~~JB~~	UJ 4/1/94
67-64-1	Acetone	10 ~~8~~	~~JB~~	UJ
75-15-0	Carbon Disulfide	10	U	UR
75-35-4	1,1-Dichloroethene	10	U	
75-34-3	1,1-Dichloroethane	10	U	
540-59-0	1,2-Dichloroethene (total)	10	U	
67-66-3	Chloroform	2	J	
107-06-2	1,2-Dichloroethane	10	U	UR
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	10	U	
56-23-5	Carbon Tetrachloride	74		J
75-27-4	Bromodichloromethane	10	U	UR
78-87-5	1,2-Dichloropropane	10	U	
10061-01-5	cis-1,3-Dichloropropene	10	U	
79-01-6	Trichloroethene	10	U	
124-48-1	Dibromochloromethane	10	U	
79-00-5	1,1,2-Trichloroethane	10	U	
71-43-2	Benzene	10	U	
10061-02-6	Trans-1,3-Dichloropropene	10	U	
75-25-2	Bromoform	10	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	10	U	
79-34-5	1,1,2,2-Tetrachloroethane	10	U	
108-88-3	Toluene	10	U	
108-90-7	Chlorobenzene	10	U	
100-41-4	Ethylbenzene	10	U	
100-42-5	Styrene	10	U	
1330-20-7	Xylene (total)	10	U	

~~0053~~ 3/21/94

FORM 1 VOA 3/90

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B093J2

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-005

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011408

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

~~0057~~
3/21/94

FORM 1 VOA-TIC 3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

B093J5

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-007

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011409

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q	
74-87-3	Chloromethane	10	U	UR
74-83-9	Bromomethane	10	U	
75-01-4	Vinyl Chloride	10	U	
75-00-3	Chloroethane	10	U	
75-09-2	Methylene Chloride	~~10~~ 10	~~JB~~ U	UJ AH 4/1/94
67-64-1	Acetone	~~10~~ 10	~~JB~~ U	UJ
75-15-0	Carbon Disulfide	10	U	UR
75-35-4	1,1-Dichloroethene	10	U	
75-34-3	1,1-Dichloroethane	10	U	
540-59-0	1,2-Dichloroethene (total)	10	U	
67-66-3	Chloroform	5	J	
107-06-2	1,2-Dichloroethane	10	U	UR
78-93-3	2-Butanone	10	U	
71-55-6	1,1,1-Trichloroethane	10	U	
56-23-5	Carbon Tetrachloride	170	—	J
75-27-4	Bromodichloromethane	10	U	UR
78-87-5	1,2-Dichloropropane	10	U	
10061-01-5	cis-1,3-Dichloropropene	10	U	
79-01-6	Trichloroethene	10	U	
124-48-1	Dibromochloromethane	10	U	
79-00-5	1,1,2-Trichloroethane	10	U	
71-43-2	Benzene	10	U	
10061-02-6	Trans-1,3-Dichloropropene	10	U	
75-25-2	Bromoform	10	U	
108-10-1	4-Methyl-2-pentanone	10	U	
591-78-6	2-Hexanone	10	U	
127-18-4	Tetrachloroethene	10	U	
79-34-5	1,1,2,2-Tetrachloroethane	10	U	
108-88-3	Toluene	10	U	
108-90-7	Chlorobenzene	10	U	
100-41-4	Ethylbenzene	10	U	
100-42-5	Styrene	10	U	~~0062~~ AH 3/21/94
1330-20-7	Xylene (total)	10	U	

FORM 1 VOA 3/90

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B093J5

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 9401L206-007

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011409

Level: (low/med) LOW

Date Received: 01/10/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

~~0063~~
3/21/94

FORM 1 VOA-TIC 3/90

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L206

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

GC/MS VOLATILE

The set of samples consisted of four (4) water samples collected on 12-30-93.

The samples were analyzed according to criteria set forth in CLP SOW 03/90 for TCL Volatile target compounds on 01-14-94.

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 system monitoring compound (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.

5. All internal standard area and retention time criteria were met.

6. The pH of these samples exceeded 2.0, indicating that they may not have been properly preserved. Sample pH information has been reported in Section XI (Preparation Logs).

Margaret M. Beaty for
J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

2/15/94
Date

sma/voa/01-206v.cn

3/21/94

9401L206

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 12/30/93

Ice Chest No. GWS-120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2519008294

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 9401L206-001

B093H3
- 1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
- 2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2) — One with No Seal AG 1-11-94
- 1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
- 1; 1L; P/G; WATER; Tc-99(HCl pH<2)
- 1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B093H4
- 1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

B093H5
- 3; 40ml; Gs; WATER; CLP-VOA

Did not Rec'd BS 1-11-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BHFord BHFord	1/5/94	0800	RJSimpson RJSIMPSON	1/5/94	0802
RJSimpson RJSIMPSON	1/5/94	0830			
Emery	1-10-94	1650	Brian Hoffe	1-10-94	1650

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Relinquished to refrigerator 1730p 12/30/93 BHFord

temp 4°

A-6000-407 (12/92) WEF061

3/21/94

~~0011~~

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations

Collection Date 12/30/93

Ice Chest No. GWS 120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2519008294

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 94011L206-002

BO 93H6

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

BO 93H7

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

~~BO 93H8~~

~~3; 40ml; Gs; WATER; CLP-VOA~~ 12/30/93

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BHButcher	1/5/94	0800	AJSimpson AJ SIMPSON	1/5/94	0802
AJSimpson AJ SIMPSON	1/5/94	0850			
EMERY	1-10-94	1650		1-10-94	1650

Final Sample Disposition

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

Comments: Relinquished to refrigerator 1720 12/30/93

temp 4.8

A-6000-407 (12/92) WEF061

3/21/94

~~0013~~

020

9401L206

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact: PH BUTCHER

Telephone: (509) 376-5045

Project Designation/Sampling Locations: 200-UP-1

Collection Date: 12/30/93

Ice Chest No.: GWS 120

Field Logbook No.: EFL 1104

Bill of Lading/Airbill No.: 2B900 8294

Offsite Property No.: W914-0-0190-

Method of Shipment: EMERY

Shipped to: WESTON

Possible Sample Hazards/Remarks

Sample Identification: 9401L206-003

B093J2
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B093J3
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

B093J4
3; 40ml; Gs; WATER; CLP-VOA
Did not rec'd BB. 1-11-94

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
PH Butcher	1/5/94	0800	RJ Simpson AJ SIMPSON	1/5/94	0805
RJ Simpson AJ SIMPSON	1/5/94	0830			
Emery	1-10-94	1650	[signature]	1-10-94	1650

Final Sample Disposition

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

Comments: Relinquished to Refrigerator 1720p/12/30/93 [signature]

temp 9.8

A-6000-407 (12/92) WEF061

~~0015~~ AAJ 3/21/94

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Project Designation/Sampling Locations

Ice Chest No. GWS 120

Bill of Lading/Airbill No. 2490058294

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Telephone (509) 376-5045

Collection Date 12/30/93

Field Logbook No. EFL 1104

Offsite Property No. W94-0-0190-11

Sample Identification 94011206-004

B09315
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B09316
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

~~B0~~
~~3; 40ml; Gs; WATER; CLP-VOA~~ DH 12/30/93

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BH Field	1/5/94	0800	AJ Simpson AJ SIMPSON	1/5/94	0800
AJ Simpson AJ SIMPSON	1/5/94	0830			
Emery	1-10-94	1650		1-10-94	1650

Final Sample Disposition

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

Comments: Relinquished to Refrigerator 1720 12/30/93

temp 4.8

A-6000-407 (12/92) WEF061

~~0017~~ 3/21/94

022

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT: 200-UP-1			DATA PACKAGE: 9401L206-WES-1456 ~~2904L20~~ SSS 3/18/94		
VALIDATOR: S. Schilde	LAB: Weston			DATE: 3/18/94	
CASE: NA			SDG: NA		
ANALYSES PERFORMED					
☑ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☐ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐
SAMPLES/MATRIX B093H3, H6, J2, J5 / Water					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes (No) N/A

Comments: Samples were improperly preserved, pH = 4, and the holding time was exceeded by >2x, qualification applied as shown in Attachment 2.

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . Yes No N/A

Are initial calibrations acceptable? . . . . . Yes No N/A

Are continuing calibrations acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Field QC identification was not available at the time of review. TD has been requested and will be evaluated in the final summary report. Acetone and methylene chloride in method blank. Results changed from J (holding time qualification) to U.

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . . Yes No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? Yes No N/A

Were MS/MSD samples analyzed? . . . . . Yes No N/A

Are MS/MSD results acceptable? . . . . . Yes No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: Field QC identification was not available at the time of review. ID has been requested and will be evaluated in the final summary report.

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . Yes No N/A

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

Comments: The primary ion for 2-butanone (m/z=43) was detected in all sample indicating a concentration > 1 µg/L but the laboratory did not report it nor include the RIC to verify the presence of the ~~secondary~~ 11/12/94 ion (m/z=72) which is required for positive identification. No qualification required

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

Has the laboratory properly identified and coded all TIC? . . Yes No N/A

Comments:

L026

HOLDING TIME SUMMARY

PKG ~~SDG:~~ 92042206-WES-1456	VALIDATOR: S. Schulobt	DATE: 3/18/94	PAGE 1 OF 1
COMMENTS: Volatiles			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B093H3,H6,J2,J5	GC/MS	12/30/93	N/A	1/14/94	N/A	15	J for detects UR for undetects

BLANK AND SAMPLE DATA SUMMARY

PKG ~~SDG~~: 94012206-WES-1456	VALIDATOR: S. Schulobt	DATE: 4/4/94	PAGE 1 OF 1
COMMENTS: Volatiles			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
Vblk	Methylene chloride	3	J		µg/L		30	All	J changed to U
Vblk	Acetone	12			µg/L		120	All	J changed to U

Replaced 4/27/94

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

VBLK

Lab Name: Roy F. Weston, Inc. Work Order: 06168002001

Client: WESTINGHOUSE HANFORD

Matrix: (soil/water) WATER

Lab Sample ID: 94LVW004-MB1

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: W011405

Level: (low/med) LOW

Date Received: 01/14/94

% Moisture: not dec.

Date Analyzed: 01/14/94

GC Column: SP1000 ID: 2.00(mm)

Dilution Factor: 1.00

Soil Extract Volume: (uL)

Soil Aliquot Volume: (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	12	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

MEMORANDUM

MAR 1994
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TQO

TO: 200-UP-1 Project QA Record

March 21, 1994

FR: Sandra Schildt, Golder Associates Inc.

RE: GENERAL CHEMISTRY ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE 9401L206-WES-1456 (923-E417)

INTRODUCTION

This memorandum presents the results of data validation on data package 9401L206-WES-1456 prepared by Roy F. Weston, Inc (Weston). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B093H3	12/30/93	WATER	SEE NOTE 1
B093H6	12/30/93	WATER	
B093J2	12/30/93	WATER	
B093J5	12/30/93	WATER	

Note 1: Samples were analyzed for nitrate-nitrite using WHC approved methods.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 to this memo provide the following information:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

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2 . 1994
VALIDATION DOCUMENTATION
SDLA

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. Four samples (4) were validated in this data set with a total of 4 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

No minor deficiencies were identified during data validation which required qualification of the data.

REFERENCES

WHC 1993a, Validation of 200-UP-1 Data, Statement of Work, Analytical Laboratory Data Validation Task Order S-94-17, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the CRDL but greater then the IDL. Due to a minor quality control deficiency identified during data validation, The associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY

DRG ~~SDG:~~ 9401L206-WES-1456	VALIDATOR: A. Schildt	DATE: 3/18/94	PAGE 1 OF 1
COMMENTS: Wet Chemistry			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
None			

006

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: 9401L206-WES-1456

	Samp#	B093H3		B093H6		B093J2		B093J5	
	Date	12-30-93		12-30-93		12-30-93		12-30-93	
	Location	---		---		---		---	
	Depth	---		---		---		---	
	Type	---		---		---		---	
	Comments	---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q
NITRATE+NITRITE	MG-N/L	6.500		6.600		6.800		6.000	

Verified
3/22/94

ROY F. WESTON INC.

INORGANIC DATA SUMMARY REPORT 01/27/94

CLIENT: WESTINGHOUSE HANFORD

WESTON BATCH #: 9401L206

WORK ORDER: 06168-002-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B093H3	Nitrate Nitrite	6.5	MG-N/L	2.0	20.0
-003	B093H6	Nitrate Nitrite	6.6	MG-N/L	1.0	10.0
-005	B093J2	Nitrate Nitrite	6.8	MG-N/L	1.0	10.0
-007	B093J5	Nitrate Nitrite	6.0	MG-N/L	1.0	10.0

3/21/94

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

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

Client : WESTINGHOUSE HANFORD
RFW# : 9401L206

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

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. The result was 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).

FEB 1994
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2.1.94
Date

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

pas/i01-206

CONFORMED COPY

3/21/94

0001 011

9401L206

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 12/30/93

Ice Chest No. GWS-120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2519005294

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 9401L206-001

B093H3
- 1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
- 2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2) — One with no Seal AG 1-11-94
- 1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
- 1; 1L; P/G; WATER; Tc-99(HCl pH<2)
- 1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B093H4
- 1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

B093H5
- 3; 40ml; Gs; WATER; CLP-VOA

Did not Rec'd BS 1-11-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BHEmes	1/5/94	0800	AJSimpson AJSIMPSON	1/5/94	0802
AJSimpson AJSIMPSON	1/5/94	0830			
Emery	1-10-94	1650	Brian Hoffa	1-10-94	1650

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Relinquished to refrigerator 1730p 12/30/93 BHEmes

temp 4.8

A-6000-407 (12/92) WEF061

3/21/94

0004 012

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations

Collection Date 12/30/93

Ice Chest No. GWS 120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2519008294

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 94011L206-002

BO 93H6
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

BO 93H7
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

~~BO 93H8~~
~~3; 40ml; Gs; WATER; CLP-VOA~~ 12/30/93

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
PH Butcher	1/5/94	0800	AJ Simpson	1/5/94	0802
AJ Simpson	1/5/94	0850			
Emery	1-10-94	1650		1-10-94	1650

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Relinquished to refrigerator 1720 12/30/93

temp 4.8

A-6000-407 (12/92) WEF061

3/21/94

~~0005~~

013

9401L206

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Project Designation/Sampling Locations 200-UP-1

Ice Chest No. GWS 120

Bill of Lading/Airbill No. 2B900 8294

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Telephone (509) 376-5045

Collection Date 12/30/93

Field Logbook No. EFL 1104

Offsite Property No. W914-0-0190-

Sample Identification 9401L206-003

B0 93J2
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B0 93J3
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

B0 93J4
3; 40ml; Gs; WATER; CLP-VOA
Did not rec'd B.B. 1-11-94

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
[illegible] Bilfield	1/5/94	0800	[illegible] AJ Simpson	1/5/94	0805
[illegible] AJ Simpson	1/5/94	0830			
[illegible]	1-10-94	1650	[illegible]	1-10-94	1650

Final Sample Disposition

Disposal Method: Disposed by: Date/Time:

Comments: Relinquished to Refrigerator 1720p/12/30/93 [illegible]

temp 4.8

A-6000-407 (12/92) WEF061

[illegible] 3/21/94

~~0006~~ 014

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations

Collection Date 12/30/93

Ice Chest No. GWS 120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2590082944

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 94011206-004

B09315
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B09316
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

~~B0~~
~~3; 40ml; Gs; WATER; CLP-VOA~~ BH 12/30/93

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BH Finch BH Finch	1/5/94	0800	AJ Simpson AJ SIMPSON	1/5/94	0800
AJ Simpson AJ Simpson	1/5/94	0830			
B Murphy	1-10-94	1650	[signature]	1-10-94	1650

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Relinquished to Refrigerator 1720 [signature] 12/30/93

temp 4.8

A-6000-407 (12/92) WEF061

3/21/94

~~0007~~ 015

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	(D)	E
PROJECT: 200-UP-1			DATA PACKAGE: 9401L206-WES-1456		
VALIDATOR: S. Schildt		LAB: Weston		DATE: 3/18/94	
CASE: N/A			SDG: N/A		

ANALYSES PERFORMED

☒ ~~Ammonia~~ SSS 3/18/94	☐ TOC	☐ TOX	☐ TPH-418.1	Oil and Grease	Alkalinity
☐ Ammonia	☐ BOD/COD	☐ Chloride	☐ Chromium-VI	☐ pH	☒ NO_3/NO_2
☐ Sulfate	☐ TDS	☐ TKN	☐ Phosphate	☐	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX B093H3, H6, J2, J5 / Water

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

017

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

Was initial calibration performed for all applicable analyses? Yes No N/A

Are initial calibration results acceptable? . . . . . Yes No N/A

Was a calibration check performed for all applicable analyses? Yes No N/A

Are calibration check results acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were laboratory blanks analyzed? . . . . . Yes No N/A

Are laboratory blank results acceptable? . . . . . Yes No N/A

Were field/trip blanks analyzed? . . . . . Yes No N/A

Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Field QC identification was not available at the time of review. ID has been requested and will be evaluated ~~at~~ in the final summary report. 4/29/94

5. ACCURACY

Were spike samples analyzed at the required frequency? . . . . Yes No N/A

Are spike recoveries acceptable? . . . . . Yes No N/A

Were LCS analyses performed at the required frequency? . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments:

6. PRECISION

Were laboratory duplicate samples analyzed at the required frequency? . . . . . Yes No N/A

Are laboratory duplicate sample RPD values acceptable? . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments: Field QC identification was not available at the time of review. It has been requested and will be evaluated in the final summary report.

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . (Yes) No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . (Yes) No N/A

Are results supported in the raw data? . . . . . (Yes) No N/A

Are results calculated properly? . . . . . (Yes) No N/A

Do results meet the CRDLs? . . . . . (Yes) No N/A

Comments:

HOLDING TIME SUMMARY

PKG ~~SDG~~: 9401L206-WES-1456	VALIDATOR: S. Schulte	DATE: 3/18/94	PAGE 1 OF 1
COMMENTS: Wet Chemistry			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B093H3,H6,J2,J5	NO_3/NO_2	12/30/93	1/25/94	1/25/94	26	26	none

MEMORANDUM

MAR 1994
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TO: 200-UP-1 Project QA Record March 22, 1994

FR: Sandra Schildt, Golder Associates Inc.

RE: METALS ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE 9401L206-WES-1456 (923-E417)

INTRODUCTION

This memorandum presents the results of data validation on data package 9401L206-WES-1456 prepared by Roy F. Weston, Inc. (Weston). A list of the samples validated along with the analytes reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B093H3	12/30/93	WATER,UNFILTERED	SEE NOTE 1
B093H4	12/30/93	WATER,FILTERED	
B093H6	12/30/93	WATER,UNFILTERED	
B093H7	12/30/93	WATER,FILTERED	
B093J2	12/30/93	WATER,UNFILTERED	
B093J3	12/30/93	WATER,FILTERED	
B093J5	12/30/93	WATER,UNFILTERED	
B093J6	12/30/93	WATER,FILTERED	

Note 1: All samples were analyzed for CLP Target Analyte List (TAL) metals.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 to this memo provide the following information:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

RECEIVED
2 4 1994
VALIDATION DOCUMENTATION
SDLA

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met with the exception of the minor deficiencies identified below.

Accuracy. Goals for accuracy were met with the exception of the minor deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all analyses with the exception of thallium for samples B093H6, B093H7, B093J5 which exceeded the CRDL of 10 µg/L. These samples required a 10X dilution due to matrix interference and a detection limit of 20 µg/L was reported, however no qualification was required.

Completeness. The data package was complete for all requested analyses. Eight samples (8) were validated in this data set with a total of 184 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of the data as unusable.

MINOR DEFICIENCIES

The following is a summary of the minor deficiencies identified during validation which required qualification of data.

Holding Time

- The holding time was exceeded for mercury analysis. Attachment 2 provides a summary of the samples and data qualification applied.

Laboratory Blanks

Positive Blanks. Aluminum, barium, cobalt, vanadium, zinc, and chromium were detected at positive concentrations in the initial calibration and preparation blanks. Attachment 2 provides a summary of the samples and data qualification applied.

Negative Blanks. Arsenic and thallium were detected at negative concentrations in the calibration blanks. Attachment 2 provides a summary of the samples and data qualification applied.

Laboratory Spikes

- The matrix spike recovery was unacceptable for cadmium, selenium, and thallium. Attachment 2 and 5 provide a summary of the samples, data qualifications applied, and supporting documentation.

- Analytical spike recovery was unacceptable for lead, selenium, and thallium. Attachment 2 and 5 provide a summary of the samples, data qualifications applied and supporting documentation.

replaced page 4/4/94

Serial Dilution

- The percent difference (%D) of the ICP serial dilution was unacceptable for iron, calcium, and magnesium. Attachment 2 provides a summary of the samples and data qualification applied.

REFERENCES

WHC 1993a, Validation of 200-UP-1 Data, Statement of Work, Analytical Laboratory Data Validation Task Order S-94-17, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993, Westinghouse Hanford Company, Richland, Washington.

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater then the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and was not detected. Due to a minor quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the CRDL but greater then the IDL. Due to a minor quality control deficiency identified during data validation, The associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY

PKG ~~SDG~~: 9401L206-WES-1456	VALIDATOR: A. Schildt	DATE: 3/18/94	PAGE 1 OF 1
COMMENTS: Inorganics			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Hg	UJ	all	Holding time exceeded
Al	U	~~B093H4, H7, J2, J3, J6~~ All SSS 3/23/94	Analyte found
Ba	U	B093H7, J6	in blanks
Co	U	B093H3, H6, J2	
V	U	All	
Zn	U	B093H7	
Cr	U	B093H6, J2, J3, J5	
As	UJ	All	Negative values
Tl	UJ	B093H3	in blanks
Cd	J	B093H3 J2	Matrix spike
Se	UJ	All	recovery <75 or >125%
Tl	UJ	All	
Fe	J	All	Serial dilution
Ca	J	All	RPD >10%
Mg	J	All	
Pb	J/UJ	B093H6, J3, H7	Analytical spike
Se	UJ	B093H4, J2, J5, H6	recovery <85%
Tl	UJ	B093H3, H4 J2, J3, J6	

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: 9401L206-WES-1456

	Samp#	B093H3		B093H4		B093H6		B093H7		B093J2		B093J3	
	Date	12-30-93		12-30-93		12-30-93		12-30-93		12-30-93		12-30-93	
	Location	---		---		---		---		---		---	
	Depth	---		---		---		---		---		---	
	Type	---		---		---		---		---		---	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	UG/L	104.000	U	40.700	U	169.000	U	29.200	U	85.800	U	42.400	U
ANTIMONY	UG/L	44.900	B	39.100	B	27.000	U	27.000	U	27.000	U	27.000	U
ARSENIC	UG/L	2.000	UJ	2.000	UJ	2.000	UJ	2.000	UJ	2.000	UJ	2.000	UJ
BARIUM	UG/L	41.900	B	28.500	B	59.700	B	23.600	U	43.800	B	28.500	B
BERYLLIUM	UG/L	1.000	U	1.000	U	1.000	U	1.000	U	1.000	U	1.000	U
CADMIUM	UG/L	5.100	J	3.000	U	3.000	U	3.000	U	7.600	J	3.000	U
CALCIUM	UG/L	26900.000	J	27500.000	J	32300.000	J	27000.000	J	26500.000	J	26300.000	J
CHROMIUM	UG/L	13.900		3.000	U	18.900	U	3.000	U	9.600	U	3.100	U
COBALT	UG/L	4.000	U	2.000	U	4.700	U	2.000	U	3.100	U	2.000	U
COPPER	UG/L	6.800	B	3.900	B	4.900	B	3.900	B	7.600	B	3.980	B
IRON	UG/L	5370.000	J	222.000	J	21300.000	J	197.000	J	5850.000	J	201.000	J
LEAD	UG/L	13.000		2.000	U	3.300	J	2.000	UJ	21.600		2.000	UJ
MAGNESIUM	UG/L	8250.000	J	8540.000	J	9710.000	J	8580.000	J	8070.000	J	8070.000	J
MANGANESE	UG/L	117.000		77.300		222.000		99.200		125.000		77.300	
MERCURY	UG/L	0.100	UJ	0.100	UJ	0.100	UJ	0.100	UJ	0.100	UJ	0.100	UJ
NICKEL	UG/L	9.000	U	16.600	B	11.300	B	9.000	U	9.000	U	9.600	B
POTASSIUM	UG/L	3830.000	B	3750.000	B	4910.000	B	4210.000	B	3960.000	B	3670.000	B
SELENIUM	UG/L	2.000	UJ	2.000	UJ	2.000	UJ	2.000	UJ	2.000	UJ	2.000	UJ
SILVER	UG/L	3.000	U	3.000	U	3.000	U	3.000	U	3.000	U	3.000	U
SODIUM	UG/L	26600.000		27300.000		30200.000		27200.000		25800.000		25900.000	
THALLIUM	UG/L	2.000	UJ	2.000	UJ	20.000	UJ	20.000	UJ	2.000	UJ	2.000	UJ
VANADIUM	UG/L	23.300	U	16.700	U	29.000	U	11.000	U	25.200	U	16.800	U
ZINC	UG/L	114.000		25.100		197.000		14.300	U	128.000		28.200	

Verified and revised [illegible] 5/23/94

Validated Data Summary, Data Package: 9401L206-WES-1456

	Samp#	B093J5		B093J6	
	Date	12-30-93		12-30-93	
	Location	---		---	
	Depth	---		---	
	Type	---		---	
	Comments	---		---	
Parameter	Units	Result	Q	Result	Q
ALUMINUM	UG/L	156.000	U	34.800	U
ANTIMONY	UG/L	27.000	U	27.000	U
ARSENIC	UG/L	2.000	UJ	2.000	UJ
BARIUM	UG/L	47.600	B	22.100	U
BERYLLIUM	UG/L	1.000	U	1.000	U
CADMIUM	UG/L	3.000	U	3.000	U
CALCIUM	UG/L	27800.000	J	25400.000	J
CHROMIUM	UG/L	13.900	U	3.000	U
COBALT	UG/L	2.000	U	2.000	U
COPPER	UG/L	5.100	B	3.500	B
IRON	UG/L	16100.000	J	223.000	J
LEAD	UG/L	2.700	B	2.000	U
MAGNESIUM	UG/L	8320.000	J	8040.000	J
MANGANESE	UG/L	176.000		98.300	
MERCURY	UG/L	0.100	UJ	0.100	UJ
NICKEL	UG/L	9.600	B	9.000	U
POTASSIUM	UG/L	4240.000	B	3470.000	B
SELENIUM	UG/L	2.000	UJ	2.000	UJ
SILVER	UG/L	3.000	U	3.000	U
SODIUM	UG/L	25700.000		25200.000	
THALLIUM	UG/L	20.000	UJ	2.000	UJ
VANADIUM	UG/L	27.700	U	14.300	U
ZINC	UG/L	157.000		25.600	

Verified 3/2/94

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093H3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120601

Level (low/med): LOW Date Received: 1/10/94

% 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	104.00	B		P	U
7440-36-0	Antimony	44.90	B		P	
7440-38-2	Arsenic	2.00	U		F	UJ
7440-39-3	Barium	41.90	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	5.10	-	N	P	J
7440-70-2	Calcium	26900.00	-	E	P	J
7440-47-3	Chromium	13.90			P	
7440-48-4	Cobalt	4.00	B		P	U
7440-50-8	Copper	6.80	B		P	
7439-89-6	Iron	5370.00	-	E	P	J
7439-92-1	Lead	13.00		S	F	
7439-95-4	Magnesium	8250.00	-	E	P	J
7439-96-5	Manganese	117.00			P	
7439-97-6	Mercury	.10	U		CV	UJ
7440-02-0	Nickel	9.00	U		P	
7440-09-7	Potassium	3830.00	B		P	
7782-49-2	Selenium	2.00	U	N	F	UJ
7440-22-4	Silver	3.00	U		P	
7440-23-5	Sodium	26600.00			P	
7440-28-0	Thallium	2.00	U	NW	F	UJ
7440-62-2	Vanadium	23.30	B		P	U
7440-66-6	Zinc	114.00			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093H4

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120602

Level (low/med): LOW Date Received: 1/10/94

% 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	40.70	~~B~~		P	U
7440-36-0	Antimony	39.10	B		P	
7440-38-2	Arsenic	2.00	~~U~~		F	UJ
7440-39-3	Barium	28.50	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U	N	P	
7440-70-2	Calcium	27500.00	—	E	P	J
7440-47-3	Chromium	3.00	U		P	
7440-48-4	Cobalt	2.00	U		P	
7440-50-8	Copper	3.90	B		P	
7439-89-6	Iron	222.00	—	E	P	J
7439-92-1	Lead	2.00	U		F	
7439-95-4	Magnesium	8540.00	—	E	P	J
7439-96-5	Manganese	77.30			P	
7439-97-6	Mercury	.10	~~U~~		CV	UJ
7440-02-0	Nickel	16.60	B		P	
7440-09-7	Potassium	3750.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	3.00	U		P	
7440-23-5	Sodium	27300.00			P	
7440-28-0	Thallium	2.00	~~U~~	NW	F	UJ
7440-62-2	Vanadium	16.70	~~B~~		P	U
7440-66-6	Zinc	25.10			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

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3/21/94

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093H6

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120603

Level (low/med): LOW Date Received: 1/10/94

% 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	169.00	~~B~~		P	U
7440-36-0	Antimony	27.00	U		P	
7440-38-2	Arsenic	2.00	~~U~~		F	UJ
7440-39-3	Barium	59.70	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U	N	P	
7440-70-2	Calcium	32300.00	—	E	P	J
7440-47-3	Chromium	18.90	—		P	U
7440-48-4	Cobalt	4.70	~~B~~		P	U
7440-50-8	Copper	4.90	B		P	
7439-89-6	Iron	21300.00	—	E	P	J
7439-92-1	Lead	3.30	—		F	J
7439-95-4	Magnesium	9710.00	—	E	P	J
7439-96-5	Manganese	222.00			P	
7439-97-6	Mercury	.10	~~U~~		CV	UJ
7440-02-0	Nickel	11.30	B		P	
7440-09-7	Potassium	4910.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	3.00	U		P	
7440-23-5	Sodium	30200.00			P	
7440-28-0	Thallium	20.00	~~U~~	N	F	UJ
7440-62-2	Vanadium	29.00	~~B~~		P	U
7440-66-6	Zinc	197.00			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093H7

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120604

Level (low/med): LOW Date Received: 1/10/94

% 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	29.20	~~B~~		P	U
7440-36-0	Antimony	27.00	U		P	
7440-38-2	Arsenic	2.00	~~U~~		F	UJ
7440-39-3	Barium	23.60	~~B~~		P	&U 3/17/94
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U	N	P	
7440-70-2	Calcium	27000.00	—	E	P	J
7440-47-3	Chromium	3.00	U		P	
7440-48-4	Cobalt	2.00	U		P	
7440-50-8	Copper	3.90	B		P	
7439-89-6	Iron	197.00	—	E	P	J
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	8580.00	—	E	P	J
7439-96-5	Manganese	99.20			P	
7439-97-6	Mercury	.10	~~U~~		CV	UJ
7440-02-0	Nickel	9.00	U		P	
7440-09-7	Potassium	4210.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	3.00	U		P	
7440-23-5	Sodium	27200.00			P	
7440-28-0	Thallium	20.00	~~U~~	N	F	UJ
7440-62-2	Vanadium	11.00	~~B~~		P	U
7440-66-6	Zinc	14.30	~~B~~		P	U
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093J2

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120605

Level (low/med): LOW Date Received: 1/10/94

% 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	85.80	~~B~~		P	U
7440-36-0	Antimony	27.00	U		P	
7440-38-2	Arsenic	2.00	~~U~~		F	UJ
7440-39-3	Barium	43.80	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	7.60	—	N	P	J
7440-70-2	Calcium	26500.00	—	E	P	J
7440-47-3	Chromium	9.60	~~B~~		P	U
7440-48-4	Cobalt	3.10	~~B~~		P	U
7440-50-8	Copper	7.60	B		P	
7439-89-6	Iron	5850.00	—	E	P	J
7439-92-1	Lead	21.60		S	F	
7439-95-4	Magnesium	8070.00	—	E	P	J
7439-96-5	Manganese	125.00			P	
7439-97-6	Mercury	.10	~~U~~		CV	UJ
7440-02-0	Nickel	9.00	U		P	
7440-09-7	Potassium	3960.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	3.00	U		P	
7440-23-5	Sodium	25800.00			P	
7440-28-0	Thallium	2.00	~~U~~	NW	F	UJ
7440-62-2	Vanadium	25.20	~~B~~		P	U
7440-66-6	Zinc	128.00			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093J3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120606

Level (low/med): LOW Date Received: 1/10/94

% 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	42.40	~~B~~		P	U
7440-36-0	Antimony	27.00	U		P	
7440-38-2	Arsenic	2.00	~~U~~		F	UJ
7440-39-3	Barium	28.50	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U	N	P	
7440-70-2	Calcium	26300.00		E	P	J
7440-47-3	Chromium	3.10	~~B~~		P	U
7440-48-4	Cobalt	2.00	U		P	
7440-50-8	Copper	3.90	B		P	
7439-89-6	Iron	201.00		E	P	J
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	8070.00		E	P	J
7439-96-5	Manganese	77.30			P	
7439-97-6	Mercury	.10	~~U~~		CV	UJ
7440-02-0	Nickel	9.60	B		P	
7440-09-7	Potassium	3670.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	NW	F	UJ
7440-22-4	Silver	3.00	U		P	
7440-23-5	Sodium	25900.00			P	
7440-28-0	Thallium	2.00	~~U~~	NW	F	UJ
7440-62-2	Vanadium	16.80	~~B~~		P	U
7440-66-6	Zinc	28.20			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093J5

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120607

Level (low/med): LOW Date Received: 1/10/94

% 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	156.00	~~B~~		P	U
7440-36-0	Antimony	27.00	U		P	
7440-38-2	Arsenic	2.00	~~U~~		F	UJ
7440-39-3	Barium	47.60	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U	N	P	
7440-70-2	Calcium	27800.00	—	E	P	J
7440-47-3	Chromium	13.90	—		P	U
7440-48-4	Cobalt	2.00	U		P	
7440-50-8	Copper	5.10	B		P	
7439-89-6	Iron	16100.00	—	E	P	J
7439-92-1	Lead	2.70	B		F	
7439-95-4	Magnesium	8320.00	—	E	P	J
7439-96-5	Manganese	176.00			P	
7439-97-6	Mercury	.10	~~U~~		CV	UJ
7440-02-0	Nickel	9.60	B		P	
7440-09-7	Potassium	4240.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	3.00	U		P	
7440-23-5	Sodium	25700.00			P	
7440-28-0	Thallium	20.00	~~U~~	N	F	UJ
7440-62-2	Vanadium	27.70	~~B~~		P	U
7440-66-6	Zinc	157.00			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

B093J6

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Lab Sample ID: 940120608

Level (low/med): LOW Date Received: 1/10/94

% 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	34.80	~~B~~		P	U
7440-36-0	Antimony	27.00	U		P	
7440-38-2	Arsenic	2.00	~~U~~		F	UJ
7440-39-3	Barium	22.10	~~B~~		P	U
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	3.00	U	N	P	
7440-70-2	Calcium	25400.00	—	E	P	J
7440-47-3	Chromium	3.00	U		P	
7440-48-4	Cobalt	2.00	U		P	
7440-50-8	Copper	3.50	B		P	
7439-89-6	Iron	223.00	—	E	P	J
7439-92-1	Lead	2.00	U		F	
7439-95-4	Magnesium	8040.00	—	E	P	J
7439-96-5	Manganese	98.30			P	
7439-97-6	Mercury	.10	~~U~~		CV	UJ
7440-02-0	Nickel	9.00	U		P	
7440-09-7	Potassium	3470.00	B		P	
7782-49-2	Selenium	2.00	~~U~~	N	F	UJ
7440-22-4	Silver	3.00	U		P	
7440-23-5	Sodium	25200.00			P	
7440-28-0	Thallium	2.00	~~U~~	NW	F	UJ
7440-62-2	Vanadium	14.30	~~B~~		P	U
7440-66-6	Zinc	25.60			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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3/21/94

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

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

Client: WESTINGHOUSE HANFORD
RFW #: 9401L206

W.O. #: 06168-002-001-9999-00
Date Received: 01-10-94

CLP METALS

1. This narrative covers the analysis of eight (8) water samples.

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 and High Purity.

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 with the exceptions of the following for sample 001:

Element	%Difference
Calcium	12.6
Iron	11.2
Magnesium	15.1

3/21/94

~~0010~~
-020

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) with the exceptions of the following for sample 001:

Element	%Recovery
Cadmium	179.0
Selenium	74.0
Thallium	67.0

For analytes where the Matrix Spike is out of control, a Post-digestion Matrix Spike and Serial Dilution are performed (exception allowed for Ag).

Matrix spike analyses are not required for Ca, Mg, Na, and K in waters.

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:

Element	Sample #'s
Lead	001,001R,005

14. 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.

15. 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).

16. 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.

17. Solubles and totals were digested within the same digestion batch; therefore, will have the same flags.

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18. 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.

J. Peter Hershey, Ph.D.
Laboratory Manager
Lionville Analytical Laboratory

2.18.94
Date

rls/m01-206.clp

3/21/94

94011206

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 12/30/93

Ice Chest No. GWS-120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2519008294

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 9401L206-001

B093H3
- 1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
- 2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2) — One with no Seal AJS 1-11-94
- 1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
- 1; 1L; P/G; WATER; Tc-99(HCl pH<2)
- 1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B093H4
- 1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

B093H5
- 3; 40ml; Gs; WATER; CLP-VOA

Did not Rec'd BS 1-11-94

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BHEmery	1/5/94	0800	AJSimpson AJSIMPSON	1/5/94	0802
AJSimpson AJSIMPSON	1/5/94	0830			
Emery	1-10-94	1650	Brian Allen	1-10-94	1650

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Relinquished to refrigerator 1730p 12/30/93 BHE

temp 4°C

A-6000-407 (12/92) WEF061

3/21/94

0004-023

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations

Collection Date 12/30/93

Ice Chest No. GWS 120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 2519008294

Offsite Property No. W94-0-0190-11

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 94011L206-002

BO 93H6

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

BO 93H7

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

~~BO 93H8~~

~~3; 40ml; Gs; WATER; CLP-VOA~~ 12/30/93

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
PH Butcher	1/5/94	0800	AJ Simpson	1/5/94	0802
AJ Simpson	1/5/94	0850			
Emery	1-10-94	1650		1-10-94	1650

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Relinquished to refrigerator 1720 12/30/93

temp 4.8

A-6000-407 (12/92) WEF061

3/21/94

0005

-024

9401L206

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Telephone (509) 376-5045

Project Designation/Sampling Locations 200-UP-1

Collection Date 12/30/93

Ice Chest No. GWS120

Field Logbook No. EFL 1104

Bill of Lading/Airbill No. 25900 8294

Offsite Property No. W94-0-0190-

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Sample Identification 9401L206-003

B093J2
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B093J3
1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

B093J4
3; 40ml; Gs; WATER; CLP-VOA
Did not rec'd BB. 1-11-94

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BHButcher	1/5/94	0900	AJSimpson AJSimpson	1/5/94	0805
AJSimpson AJSimpson	1/5/94	0830			
Emery	1-10-94	1650		1-10-94	1650

Final Sample Disposition

Disposal Method: Disposed by: Date/Time:

Comments: Relinquished to Refrigerator 1720p /12/30/93

temp 4.8

A-6000-407 (12/92) WEF061

3/21/94

0006

-025

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator

Company Contact PH BUTCHER

Project Designation/Sampling Locations

Ice Chest No. GWS 120

Bill of Lading/Airbill No. 2590082944

Method of Shipment EMERY

Shipped to WESTON

Possible Sample Hazards/Remarks

Telephone (509) 376-5045

Collection Date 12/30/93

Field Logbook No. EFL 1104

Offsite Property No. W94-0-0190-1

Sample Identification 94011206-004

B09315

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) UNFILTERED
2; 40ml; Gs; WATER; CLP-VOA(HCl pH<2)
1; 500ml; P/G; WATER; NO2/NO3(H2SO4 pH<2)
1; 1L; P/G; WATER; Tc-99(HCl pH<2)
1; 1L; P/G; WATER; TOTAL URANIUM(HNO3 pH<2)

B09316

1; 1L; P; WATER; CLP-ICP/AA METALS & Hg(HNO3 pH<2) FILTERED

~~B0~~

~~3; 40ml; Gs; WATER; CLP-VOA~~ BH 12/30/93

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished By	Date	Time	Received By	Date	Time
BH Field BH Field	1/5/94	0800	AJ Simpson AJ SIMPSON	1/5/94	0800
AJ Simpson AJ Simpson	1/5/94	0830			
Emery	1-10-94	1650		1-10-94	1650

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments: Relinquished to Refrigerator 1720 BH 12/30/93

temp 4.8

A-6000-407 (12/92) WEF061

3/21/94

~~0007~~

026

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-UP-1			DATA PACKAGE: 9401L206-WES-1456		
VALIDATOR: S. Schildt		LAB: Weston		DATE: 3/17/94	
CASE: West			SDG: CLP206		
ANALYSES PERFORMED					
☑ CLP/ICP	☑ CLP/GFAA	☑ CLP/Hg	~~☐ CLP/Cyanide~~ SDS 3/18/94	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐
SAMPLES/MATRIX B093H3, H4, H6, H7, J2, J3, J5, J6 / Water					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes (No) N/A

Comments: Holding time exceeded for mercury.

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A
Are initial calibrations acceptable? . . . . . Yes No N/A
Are ICP interference checks acceptable? . . . . . Yes No N/A
Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A
Are ICV and CCV checks acceptable? . . . . . Yes No N/A
Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? . . . . . Yes No N/A
Were preparation blanks analyzed? . . . . . Yes No N/A
Are preparation blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A
Comments: Sample information was not supplied. It is unknown what QC sample may have been included in the sample group. Will be requested for final summary report. See blank summary for analyte found in blanks.

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A
Are spike sample recoveries acceptable? . . . . . Yes No N/A
Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A
Comments: Cd, Se, Tl recovery <75 or >125%.

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A

Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A

Were ICP serial dilution samples analyzed? . . . . . Yes No N/A

Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: Sample information was not provided. It is unknown what QC samples may have been included in the sample groups. Will be requested for final summary report. Fe, Ca, Mg RPDs >10% in serial dilution.

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A

Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A

Were analytical spikes performed as required? . . . . . Yes No N/A

Are analytical spike recoveries acceptable? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are MSA results acceptable? . . . . . Yes No N/A

Comments: Pb, Se, Tl recovery <85%.

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Are results calculated properly? . . . . . Yes No N/A

Do results meet the CRDLs? . . . . . Yes No N/A

Comments: Thallium reported >CRDL in samples B093H6, H7, H5 due to dilution

HOLDING TIME SUMMARY

PKG ~~SDG:~~ 9401L206-WES-1456	VALIDATOR: A. Schilde	DATE: 3/17/94	PAGE 1 OF 1
COMMENTS: Inorganics			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
All	ICP	12/30/93	2/1/94	2/9/94	33	41	none
All	GFAA-As		2/1/94	2/4/94		36	
B093H4,H6,J3,J5,J6	GFAA-Pb			2/7/94		39	
B093H2,H3,J2	GFAA-Pb			2/8/94		40	
All	GFAA-Se			2/4/94		36	
All	GFAA-Tl			2/7/94		39	
B093H3,H4,H6,H7,J2	CV		2/1/94	2/1/94		33	J
B093J3,J5,J6	CV			2/2/94		34	J

BLANK AND SAMPLE DATA SUMMARY

PKG ~~SDG~~: 9401L206-WES-1456	VALIDATOR: A. Schilabt	DATE: 3/17/94	PAGE 1 OF 2
COMMENTS: Inorganics			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
ICB	Al	17.4	B		mg/L	87		B093H4	40.7 U
								B093H7	29.2 U
								B093J2	85.8 U
								B093J3	42.4 U
								B093J6	34.8 U
	As	-2.1	B					All	UJ
	BA	4.9	B			24.5		B093H7	23.6 U
								B093J6	22.1 U
	Co	2.8	B			14		B093H3	4 U
								B093H6	4.7 U
								B093J2	3.1 U
	V	7.2	B			36		B093H3	23.3 U
								B093H4	16.7 U
								B093H6	29 U
								B093H7	11 U
								B093J2	25.2 U
								B093J3	16.8 U
								B093J5	27.7 U

BLANK AND SAMPLE DATA SUMMARY

PKG ~~SDG~~: 9401L206-WES-1456	VALIDATOR: S. Schlobt	DATE: 3/17/94	PAGE 2 OF 2

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
ICB	V	7.2	B		µg/L	36		B093J6	14.3 U
CCB1	Tl	-2.2	B					B093H3	UJ
CCB2	Zn	4.8	B			24		B093H7	14.3 U
CCB2	Al	28.6	B		µg/L	143		B093H3	104 U
CCB3	Al	35.1	B			175.5		B093H6 B093J5	169 U 156 U
	Cr	3.8	B			19.		B093H6	18.9 U
								B093J2	9.6 U
								B093J3	3.1 U
								B093J5	13.9 U

ACCURACY DATA SUMMARY

PKG ~~SDG~~: 9401L206-WES-1456	VALIDATOR: A. Schulodt	DATE: 3/17/94	PAGE 1 OF 1	
COMMENTS: Inorganics Matrix Spike				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B093H3S	Cd	179	B093H3, J2	J
	Se	74	All	UJ
	Tl	67	All	UJ

PRECISION DATA SUMMARY

PKG: ~~SDG:~~ 9401L206-WES-1456	VALIDATOR: A. Schilabt	DATE: 3/17/94	PAGE 1 OF 1
COMMENTS: Inorganics ICP Serial Dilution			

COMPOUND	SAMPLE ID: ~~B0~~	SAMPLE ID:	RPD	SAMPLES AFFECTED	QUALIFIER
Iron	B093H3L	B093H3	11.2	all	J
Calcium	↓	↓	12.6	all	J
Magnesium	↓	↓	15.1	all	J

ACCURACY DATA SUMMARY

PKG ~~SDG~~: 9401L206-WES-1456	VALIDATOR: A. Schildt	DATE: 3/18/94	PAGE 1 OF 1	
COMMENTS: GFAA Analytical Spike				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B093H6	Pb	84.9	B093H6	J
B093J3	"	58.9	B093J3	UJ
B093H4	Se	78.4	B093H4	UJ
B093J2	"	78.2	B093J2	UJ
B093J5	"	79.4	B093J5	UJ
B093H6	"	84.6	B093H6	UJ
B093H3	Tl	69.7	B093H3	UJ
B093H4	"	67.6	B093H4	UJ
B093J2	"	56.9	B093J2	UJ
B093J3	"	57.8	B093J3	UJ
B093J6		49	B093J6	UJ
B093H7	Pb	71.2	B093H7	UJ

U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	17.4	B	18.8	B	28.6	B	35.1	B	15.100	B	P
Antimony	27.0	U	27.0	U	27.0	U	27.0	U	27.000	U	P
Arsenic	-2.1	B	-3.5	B	-4.0	B	-4.7	B	-2.800	B	F
Barium	4.9	B	4.6	B	4.6	B	4.6	B	3.000	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	1.000	U	P
Cadmium	3.0	U	3.0	U	3.0	U	3.0	U	3.000	U	P
Calcium	23.9	B	27.2	B	30.7	B	29.8	B	24.200	B	P
Chromium	3.0	U	3.0	U	3.0	U	3.8	B	3.000	U	P
Cobalt	2.8	B	2.8	B	4.0	B	5.0	B	2.200	B	P
Copper	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	P
Iron	6.0	U	7.6	B	6.0	U	6.0	U	25.000	B	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Magnesium	53.4	B	55.6	B	58.9	B	77.3	B	47.000	U	P
Manganese	3.0	U	3.0	U	3.0	U	3.0	U	3.000	U	P
Mercury	.1	U	.1	U	.1	U			.100	U	CV
Nickel	9.0	U	9.0	U	9.0	U	9.0	U	9.000	U	P
Potassium	666.0	U	666.0	U	666.0	U	666.0	U	666.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	2.000	U	F
Silver	3.0	U	3.0	U	3.0	U	3.0	U	3.000	U	P
Sodium	73.2	B	58.6	B	67.8	B	84.0	B	27.000	U	P
Thallium	2.0	U	-2.2	B	2.0	U	2.0	U	2.000	U	F
Vanadium	1.2	B	-5.5	B	7.0	B	9.0	B	4.000	U	P
Zinc	3.0	U	3.9	B	4.8	B	4.3	B	3.000	U	P
Cyanide											NR

B093H3
B093H4
ICP

B093H6
B093H7
B093J2
B093J3
B093J5
B093J6

FORM III - IN

03/90

B093H3
As

B093H4
B093H6
B093H7
B093J2

B093J3
B093J5
B093J6

B093H3
Yl

B093H4
B093J2

B093J3
B093J6

~~0045~~
3/21/94

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B093H3S

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix: WATER Level (low/med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	1935.7000		103.8000	B	2000.00	91.6		P
Antimony	75-125	488.0000		44.9000	B	500.00	88.6		P
Arsenic	75-125	35.2000		2.0000	U	40.00	88.0		F
Barium	75-125	1839.9000		41.9000	B	2000.00	89.9		P
Beryllium	75-125	46.5000		1.0000	U	50.00	93.0		P
Cadmium	75-125	94.6000		5.1000		50.00	179.0	N	P
Calcium									NR
Chromium	75-125	184.7000		13.9000		200.00	85.4		P
Cobalt	75-125	445.3000		4.0000	B	500.00	88.3		P
Copper	75-125	227.0000		6.8000	B	250.00	88.1		P
Iron	75-125	6623.1020		5373.1020		1000.00	125.0		P
Lead	75-125	31.2000		13.0000		20.00	91.0		F
Magnesium									NR
Manganese	75-125	578.2000		117.4000		500.00	92.2		P
Mercury	75-125	.9930		.1000	U	1.00	99.3		CV
Nickel	75-125	451.3000		9.0000	U	500.00	90.3		P
Potassium									NR
Selenium	75-125	7.4000		2.0000	U	10.00	74.0	N	F
Silver	75-125	44.4000		3.0000	U	50.00	88.8		P
Sodium									NR
Thallium	75-125	33.5000		2.0000	U	50.00	67.0	N	F
Vanadium	75-125	487.1001		23.3000	B	500.00	92.8		P
Zinc	75-125	566.3999		113.7000		500.00	90.5		P
Cyanide									NR

Comments:

FORM V (Part 1) - IN 03/90

~~0049~~
3/21/94
038

U.S. EPA - CLP

9

ICP SERIAL DILUTIONS

EPA SAMPLE NO.

B093H3L

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP206

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	103.80	B	109.50	B	5.5		P
Antimony	44.90	B	135.00	U	100.0		P
Arsenic							
Barium	41.90	B	47.50	B	13.4		P
Beryllium	1.00	U	5.00	U			P
Cadmium	5.10		15.00	U	100.0		P
Calcium	26900.40		30276.99		12.6	E	P
Chromium	13.90		24.00	B	72.7		P
Cobalt	4.00	B	10.00	U	100.0		P
Copper	6.80	B	10.00	U	100.0		P
Iron	5373.10		5972.50		11.2	E	P
Lead							
Magnesium	8254.80		9498.50	B	15.1	E	P
Manganese	117.40		129.00		9.9		P
Mercury							
Nickel	9.00	U	45.00	U			P
Potassium	3828.40	B	3330.00	U	100.0		P
Selenium							
Silver	3.00	U	15.00	U			P
Sodium	26603.70		29086.99		9.3		P
Thallium							
Vanadium	23.30	B	62.50	B	168.2		P
Zinc	113.70		151.50		33.2		P

FORM IX - IN

03/90

3/21/94

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