START 9613457.1892 0000016 9107L158-WES-114 181 2

0044930

WESTON

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 07-13-91
RFW #: 9107L158, GC/MS VOLATILE
W.O. #: 6168-02-01

NARRATIVE

One (1) water sample was collected on 07-11-91.

The sample and its associated QC samples were analyzed according to criteria set forth in CLP SOW 2/88 (rev 5/89) for TCL Volatile target compounds on 07-18-91.

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

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

2. All surrogate recoveries were within EPA QC limits.

3. Matrix spike and spike duplicate samples are associated with RFW lot 9107L112.

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.

8. 6. 91.

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

Date

WESTON TASK #W91-0001

1 of 5

Custody Transfer Record/Lab Work Request

WESTON

WESTON Analytics Use Only
9107L158

WS-Hanford

Client: Westinghouse Hanford/Geosciences
Work Order: 16168-02-01
Date Rec'd.: 7/13/91 Date Due: 8/17/91
RFW Contact: Peg Beaty
Client Contact/Phone: B. H. Ford (509) 376-6465

Refrigerator#	3	3	3	3	4	—	1	3	1
#/Type Container	1,P	1,P	1,G	1,P	3,P	1,P	1,G	1,P	3,G
Volume	1L	1L	500ml	1L	4L	1L	250ml	1L	40ml
Preservative	NaOH	HNO3	H2SO4	--	HNO3	HCl	--	HNO3	--
ANALYSES REQUESTED	** See Additional Information **								
	1	2	3	4	5	6	7	8	9

WA Use Only Lab ID	Client ID/Description	Matrix	Date Collected	1	2	3	4	5	6	7	8	9
001	B00 XN8	W	7/11/91	X	X	X	X	X	X	X		
2	B00 XN9	W	7/11/91								X	
	B00											
	** Additional Information **											
	1. CLP-CN											
	2. CLP-Metal,Bi/Se/Si (unfiltered)											
	3. TOC, NO_2/NO_3											
	4. Anions, TDS, ALK, pH Anions=ICCL, IC SO4, ICFL, IC PO4, IC NO3, IC NO2											
	5. Gross Alpha, Beta, TC-99,Sr-90,Cs-137,Co-60,Pu-238,Pu-239/240											
	6. Total Uranium											
	7. Tritium											
	8. CLP-Metal,Bi/Se/Si (filtered)											
	9. CLP-VOA											

Revision #1 matrix on all samples are waters. /bes 7/16/91

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

Special Instructions: QC/Del:CLP TAT=35day

Item/Reason	Relinquished by	Received by	Date	Time	Item/Reason	Relinquished by	Received by	Date	Time
	Emery	P Beaty	7/13/91	730 PM					

WESTON Analytics Use Only

Samples Were:
1 Shipped or Hand-Delivered
NOTES:

2 Ambient or Chilled
NOTES:

3 Received Broken/Leaking (Improperly Sealed) Y N
NOTES:

4 Properly Preserved Y N
NOTES:

5 Received Within Holding Times Y N
NOTES:

COC Tape Was:
1 Present on Outer Package Y N
2 Unbroken on Outer Package Y N
3 Present on Sample Y N
4 Unbroken on Sample Y N
NOTES:

COC Record Was:
1 Present Upon Receipt of Samples Y N

Discrepancies Between Sample Labels and COC Record? Y N
NOTES:

RFW 21-21-001/A-12/88

BOL #
OPC # W91-0334 #51

7-115

0000002

9613457.1893

Task # 91-0001

WESTON Analytics Use Only
9107L158

Custody Transfer Record/Lab Work Request

WESTON

Client: Westinghouse Hanford
Est. Final Proj. Sampling Date:
Work Order #: 6168-02-01
Project Contact/Phone #: B H Ford 509 376 6465
AD Project Manager:
QC: CLP Del: CLP TAT: 35 day
Date Rec'd: 7/13/91 Date Due: 8/17/91
Account #: WS-Hanford

Refrigerator #:
#/Type Container: Liquid 3, P 1, P 1, G; Solid
Volume: Liquid 4L 1L 250mL; Solid
Preservatives:

ANALYSES REQUESTED →

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓)	Matrix	Date Collected	ORGANIC VOA	BNA	Pest/PCB	Herb	#1 2 3 * See Below	INORG Metal	CN						
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish										ISUD								
	003	B00X57		W	7/11/91													
		* *																
		1) Alpha/Beta, Tc-99, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240										HWO						
		2) Total Uranium	HCl															
		3) Tritium																

Special Instructions:

BOL 247425 1593
OPC W91-0334 #53

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

WESTON Analytics Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
	P97	7/15/91			P97	7/15/91	

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

0000003
9613457.1894

WESTON TASK #W91-0001

3 of 5

WESTON Analytics Use Only
91076158

Custody Transfer Record/Lab Work Request

WESTON

Client: Westinghouse Hanford/Geosciences
Work Order:
Date Rec'd.: Date Due:
RFW Contact: Peg Beaty
Client Contact/Phone: R. H. Ford (509) 376-6465

Refrigerator#										
#/Type Container			1,P	1,P	1,G	1,P	3,P	1,P	1,G	1,P	3,G
Volume			1L	1L	500ml	1L	4L	1L	250ml	1L	40ml
Preservative			NaOH	HNO3	H2SO4	--	HNO3	HCl	--	HNO3	--
ANALYSES REQUESTED			** See Additional Information **								
			1	2	3	4	5	6	7	8	9
WA Use Only Lab ID	Client ID/Description	Matrix	Date Collected								
004	B00 XT8	W	7/11/91	X	X	X	X	X	X	X	
5	B00 XT9	W	7/11/91							X	
	B00										
	** Additional Information **										
	1. CLP-CN										
	2. CLP-Metal,Bi/Se/Si (unfiltered)										
	3. TOC, NO_2/NO_3										
	4. Anions, TDS, ALK, pH										
	5. Gross Alpha, Beta, TC-99,Sr-90,Cs-137,Co-60,Pu-238,Pu-239/240										
	6. Total Uranium										
	7. Tritium										
	8. CLP-Metal,Bi/Se/Si (filtered)										
	9. CLP-VOA										

See pg 1

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

Special Instructions:

Item/Reason	Relinquished by	Received by	Date	Time	Item/Reason	Relinquished by	Received by	Date	Time

WESTON Analytics Use Only

Samples Were:
1 Shipped or Hand-Delivered
NOTES:
2 Ambient or Chilled
NOTES:
3 Received Broken/Leaking (Improperly Sealed) Y N
NOTES:
4 Properly Preserved Y N
NOTES:
5 Received Within Holding Times Y N
NOTES:

COC Tape Was:
1 Present on Outer Package Y N
2 Unbroken on Outer Package Y N
3 Present on Sample Y N
4 Unbroken on Sample Y N
NOTES:

COC Record Was:
1 Present Upon Receipt of Samples Y N

Discrepancies Between Sample Labels and COC Record? Y N
NOTES:

RFW 21-21-001/A-12/88

BOL # 2474251583
OPC # W91-0334 #52

7-115

9613457.1895

0000004

WESTON TASK #W91-0001

4 of 5

WESTON Analytics Use Only
9107L 158

Custody Transfer Record/Lab Work Request

WESTON

Client: Westinghouse Hanford/Geosciences
Work Order:
Date Rec'd.: Date Due:
RFW Contact: Peg Beaty
Client Contact/Phone: B. H. Ford (509) 376-6465

Refrigerator#										
#/Type Container		1,P	1,P	1,G	1,P	3,P	1,P	1,G	1,P	3,G
Volume		1L	1L	500ml	1L	4L	1L	250ml	1L	40ml
Preservative		NaOH	HNO3	H2SO4	--	HNO3	HC1	--	HNO3	--
ANALYSES REQUESTED		** See Additional Information **								
		1	2	3	4	5	6	7	8	9
WA Use Only Lab ID	Client ID/Description	Matrix	Date Collected							
006	B00 XZ0	W	7/11/91	X	X	X	X	X	X	X
7	B00 XZ1	W	7/11/91							X
	B00									
	** Additional Information **									
	1. CLP-CN									
	2. CLP-Metal,Bi/Se/Si (unfiltered)									
	3. TOC, NO_2/NO_3									
	4. Anions, TDS, ALK, pH									
	5. Gross Alpha, Beta, TC-99,Sr-90,Cs-137,Co-60,Pu-238,Pu-239/240									
	6. Total Uranium									
	7. Tritium									
	8. CLP-Metal,Bi/Se/Si (filtered)									
	9. CLP-VOA									

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

Special Instructions:

Item/Reason	Relinquished by	Received by	Date	Time	Item/Reason	Relinquished by	Received by	Date	Time

WESTON Analytics Use Only

Samples Were:
1 Shipped or Hand-Delivered
NOTES:

2 Ambient or Chilled
NOTES:

3 Received Broken/Leaking (Improperly Sealed) Y N
NOTES:

4 Properly Preserved Y N
NOTES:

5 Received Within Holding Times Y N
NOTES:

COC Tape Was:
1 Present on Outer Package Y N
2 Unbroken on Outer Package Y N
3 Present on Sample Y N
4 Unbroken on Sample Y N
NOTES:

COC Record Was:
1 Present Upon Receipt of Samples Y N

Discrepancies Between Sample Labels and COC Record? Y N
NOTES:

RFW 21-21-001/A-12/88

BOL # 2474251593
OPC # W91-0334 #52

7-115

0000005

9613457*1896

Task # W91-0001

5

WESTON Analytics Use Only
9107L158

Custody Transfer Record/Lab Work Request

WESTON

Client: Westinghouse Hanford Company
Est. Final Proj. Sampling Date:
Work Order #: 6168-02-01
Project Contact/Phone #: P.H.Butcher/(509)376-5045
AD Project Manager: Josie King
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #:

#/Type Container																			
Liquid	3,G											1,P	1,P	1,P	1,G				
Solid																			
Volume Liquid	40 ml											1,L	1,L	1,L	250 ml				
Volume Solid																			
Preservatives																			

ANALYSES REQUESTED →

Lab ID	Client ID/Description	Matrix QC Chosen (✓)	Matrix	Date Collected	ORGANIC VOA	BNA	Pest/PCB	Herb	* See Below 1	2	3	4 *	INORG (Metal m)	CN	Metal F	* See Below 5			
008	B00XZ3	XMX	W	7/11/91					X	X	X	X	X	X		X			
9	B00XZ4	XMX	W	7/11/91											X				
10	B00Y15	XMX	W	7/11/91	X														
	*1)TOC,NO_2/NO_3																		
	2)Anions,TDS,Alk,pH																		
	3)Gross Alpha,Beta,Tc-99,Sr-90,Cs-137,Co-60,Pu-238,Pu-239/240																		
	4)Total Uranium																		
	5)Tritium																		

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

Special Instructions:
NOTE: (F) = Filtered
(Un) = Unfiltered

BOL # 2474251593
OPC # W91-0334 #51

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

WESTON Analytics Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N

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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
	PG	7/15/91			PG	7/15/91	

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

9613457.1897

000006

9613457.1898 0000007

CHAIN OF CUSTODY

Company Contact	B.H. FORD	Telephone	509-376-6465		
Sample Collected by	L. WALKER	Date	7/11/91	Time	1230
Sample Locations	200-BP-1				
Ice Chest No.	Dewey	Field Logbook and Page No.	WHC-N-4461 p52		
Remarks	N/A				
Bill of Lading No.	2474851593	Offsite Property No.	W91-0334 #53		
Method of Shipment	EMERY				
Shipped to	WESTON Analytics				

SAMPLE IDENTIFICATION

B00X57

7/12/91 PHB ~~1, 1L, P, WATER, CLP-CN, NaOH~~
~~1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, UNFILTERED~~
~~1, 500ml, G, WATER, TOC, NO2/NO3, H2SO4~~
~~1, 1L, P, WATER, ANIONS, TDS, ALK, pH~~
3, 4L, P, WATER, ALPHA, BETA, Tc-99, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240, HNO3
1, 1L, P, WATER, TOTAL URANIUM, HCl
1, 250ml, G, WATER, TRITIUM

~~B00X58~~

PHB 7/12/91 ~~1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, FILTERED~~

CHAIN OF POSSESSION

Relinquished by: BHFORD	Received by: PHButcher	Date/Time: 7/12/91 0730
Relinquished by: PHButcher	Received by: J. DEMAREST	Date/Time: 7/12/91 1130
Relinquished by: J. DEMAREST	Received by:	Date/Time:
Relinquished by: Emery	Received by: P Bergin	Date/Time: 7/13/91 1 30 AM

9613457.1899 0000008

CHAIN OF CUSTODY

Company Contact	B.H. FORD	Telephone	509-376-6465		
Sample Collected by	L. WALKER	Date	7-11-91	Time	1100.
Sample Locations	200-BP-1				
Ice Chest No.	Delta 2	Field Logbook and Page No.	WHC-N-4461/ pg. 52		
Remarks	N/A				
Bill of Lading No.	2474251593	Offsite Property No.	W91-0334 #51		
Method of Shipment	EMERY				
Shipped to	WESTON Analytics				

SAMPLE IDENTIFICATION

BOO XN8
1, 1L, P, WATER, CLP-CN, NaOH
1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, UNFILTERED
1, 500ml, G, WATER, TOC, NO2/NO3, H2SO4
LW 7-11-91 2 ~~1~~, 1L, P, WATER, ANIONS, TDS, ALK, pH
3, 4L, P, WATER, ALPHA, BETA, Tc-99, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240, HNO3
1, 1L, P, WATER, TOTAL URANIUM, HCl
1, 250ml, G, WATER, TRITIUM

BOO XN9
1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, FILTERED

CHAIN OF POSSESSION

Relinquished by: L.D. Walker	Received by: PH Butcher	Date/Time: 7/12/91 0730
Relinquished by: PH Butcher	Received by: J. DEMAREST	Date/Time: 7/12/91 1130
Relinquished by: J. DEMAREST	Received by:	Date/Time:
Relinquished by: Emery	Received by: P Geiger	Date/Time: 7/13/91 1 30 PM

9613457.1900 0000009

CHAIN OF CUSTODY

Company Contact	B.H. FORD	Telephone	509-376-6465		
Sample Collected by	L. WALKER	Date	7-11-91	Time	1230
Sample Locations	200-BP-1				
Ice Chest No.	SML-75	Field Logbook and Page No.	WHC-N-4461 / pg. 52		
Remarks	N/A				
Bill of Lading No.	2474251593	Offsite Property No.	W91-0334 #52		
Method of Shipment	EMERY				
Shipped to	WESTON Analytics				

SAMPLE IDENTIFICATION

B00 XT8
- 1, 1L, P, WATER, CLP-CN, NaOH
- 1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, UNFILTERED
- 1, 500ml, G, WATER, TOC, NO2/NO3, H2SO4
- 1, 1L, P, WATER, ANIONS, TDS, ALK, pH
- 3, 4L, P, WATER, ALPHA, BETA, Tc-99, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240, HNO3
- 1, 1L, P, WATER, TOTAL URANIUM, HCl
- 1, 250ml, G, WATER, TRITIUM

B00 XT9
- 1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, FILTERED

CHAIN OF POSSESSION

Relinquished by: L.D. Walker L.D. Walker	Received by: P.H. Butcher P.H. Butcher	Date/Time: 7/12/91 0730
Relinquished by: P.H. Butcher P.H. Butcher	Received by: J. DEMAREST J. Demarest	Date/Time: 7/12/91 1130
Relinquished by: J. DEMAREST J. Demarest	Received by:	Date/Time:
Relinquished by: Emery	Received by: P. Geiger	Date/Time: 7/13/91 1 PM

9613457.1901 0000010

CHAIN OF CUSTODY

Company Contact	B.H. FORD	Telephone	509-376-6465		
Sample Collected by	L. WALKER	Date	7/11/91	Time	1230
Sample Locations	200-BP-1				
Ice Chest No.	Beta 5	Field Logbook and Page No.	WHC-N-4461 / pg. 52		
Remarks	N/A				
Bill of Lading No.	2474851593	Offsite Property No.	N91-0374 #52		
Method of Shipment	EMERY				
Shipped to	WESTON Analytics				

SAMPLE IDENTIFICATION

B00 XZ0
- 1, 1L, P, WATER, CLP-CN, NaOH
- 1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, UNFILTERED
- 1, 500ml, G, WATER, TOC, NO2/NO3, H2SO4
- 1, 1L, P, WATER, ANIONS, TDS, ALK, pH
- 3, 4L, P, WATER, ALPHA, BETA, Tc-99, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240, HNO3
- 1, 1L, P, WATER, TOTAL URANIUM, HCl
- 1, 250ml, G, WATER, TRITIUM

B00 XZ1
- 1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, FILTERED

CHAIN OF POSSESSION

Relinquished by: L.D. Walker	Received by: P.H. Butcher	Date/Time: 7/12/91 0730
Relinquished by: P.H. Butcher	Received by: J. DEMAREST	Date/Time: 7/12/91 1130
Relinquished by: J. DEMAREST	Received by:	Date/Time:
Relinquished by: Emery	Received by: P. Hergi	Date/Time: 7/13/91 1 30 PM

9613457.1902 000001

CHAIN OF CUSTODY

Company Contact	B.H. FORD	Telephone	509-376-6465		
Sample Collected by	L. WALKER	Date	7-11-91	Time	1100
Sample Locations	200-BP-1				
Ice Chest No.	Happy	Field Logbook and Page No.	WHC-N-4461 / pg. 52		
Remarks	N/A				
Bill of Lading No.	247425 1593	Offsite Property No.	4191-0334 #51		
Method of Shipment	EMERY				
Shipped to	WESTON Analytics				

SAMPLE IDENTIFICATION

B00 XZ3
- 1, 1L, P, WATER, CLP-CN, NaOH
- 1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, UNFILTERED
- 1, 500ml, G, WATER, TOC, NO2/NO3, H2SO4
- 1, 1L, P, WATER, ANIONS, TDS, ALK, pH
- 3, 4L, P, WATER, ALPHA, BETA, Tc-99, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240, HNO3
- 1, 1L, P, WATER, TOTAL URANIUM, HCl
- 1, 250ml, G, WATER, TRITIUM

B00 XZ4
- 1, 1L, P, WATER, CLP-METAL, Bi/Se/Si, HNO3, FILTERED

B00Y15
- 3, 40ml, G, Water, CLP-VOA

CHAIN OF POSSESSION

Relinquished by: L.D. Walker L.D. Walker	Received by: P.H. Butcher P.H. Butcher	Date/Time: 7/12/91 0730
Relinquished by: P.H. Butcher P.H. Butcher	Received by: J. DEMAREST J. Demarest	Date/Time: 7/12/91 1130
Relinquished by: J. DEMAREST J. Demarest	Received by:	Date/Time:
Relinquished by: Emery	Received by: P. Geiger	Date/Time: 7/13/91 1:30 PM

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

RFW Batch Number: 9107L158 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 07/19/91 15:42 Page: 1a

	Cust ID:	BOOYI5		VBLK	
Sample Information	RFW#:	010		91LVY133-MB1	
	Matrix:	WATER		WATER	
	D.F.:	1.00		1.00	
	Units:	ug/L		ug/L	
Surrogate Recovery	Toluene-d8	92	%	97	%
	Bromofluorobenzene	94	%	94	%
	1,2-Dichloroethane-d4	84	%	90	%
Chloromethane		10	U	10	U
Bromomethane		10	U	10	U
Vinyl Chloride		10	U	10	U
Chloroethane		10	U	10	U
Methylene Chloride		7	B	5	
Acetone		11	B	4	J
Carbon Disulfide		5	U	5	U
1,1-Dichloroethene		5	U	5	U
1,1-Dichloroethane		5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U
Chloroform		5	U	5	U
1,2-Dichloroethane		5	U	5	U
2-Butanone		10	U	10	U
1,1,1-Trichloroethane		5	U	5	U
Carbon Tetrachloride		5	U	5	U
Vinyl Acetate		10	U	10	U
Bromodichloromethane		5	U	5	U
1,2-Dichloropropane		5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U
Trichloroethene		5	U	5	U
Dibromochloromethane		5	U	5	U
1,1,2-Trichloroethane		5	U	5	U
Benzene		5	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U
Bromoform		5	U	5	U
4-Methyl-2-pentanone		10	U	10	U
2-Hexanone		10	U	10	U
Tetrachloroethene		5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U

*= Outside of EPA CLP QC limits.

9613457.1903 0000013

Cust ID:	BOOYI5	VBLK
RFW#:	010	91LVY133-MB1
Toluene	5 U	5 U
Chlorobenzene	5 U	5 U
Ethylbenzene	5 U	5 U
Styrene	5 U	5 U
Xylene (total)	5 U	5 U

*= Outside of EPA CLP QC limits.

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VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOYI5

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9107L158-010

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

Lab File ID: Y071806

Level: (low/med) LOW

Date Received: 07/13/91

% Moisture: not dec. _____

Date Analyzed: 07/18/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
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	B
67-64-1	Acetone	11	B
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

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CLIENT SAMPLE NO.

BOOYI5

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9107L158-010

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

Lab File ID: Y071806

Level: (low/med) LOW

Date Received: 07/13/91

% Moisture: not dec. _____

Date Analyzed: 07/18/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

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ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 07-13-91
RFW #: 9107L158
W.O. #: 6168-02-01

INORGANIC NARRATIVE

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

1. Sample holding times as required by 40CFR136 were met for water samples with the exception of pH, phosphate, nitrite and nitrate.

2. All preparation blanks were analyzed below the required detection limit.

3. Laboratory control standards (blank spikes) were outside the control limits of 80-120% for chloride, fluoride, nitrite, nitrate, phosphate and sulfide. All %RPD were within the 20% guidance limit.

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

5. Matrix spike recoveries are summarized on the Inorganic Accuracy Report contained within this document. All recoveries were within the 75-125% guidance limit.

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

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

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

8.27.91.
Date

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ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 08/16/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BOOXN8	Alkalinity	90.0	MG/L	2.0
		Chloride by IC	9.1	mg/L	0.25
		Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 u	mg/L	0.25
		Nitrate by IC	55.4	mg/L	2.5
		Cyanide, Total	68.9	UG/L	10.0
		Phosphate by IC	0.25 u	mg/L	0.25
		Sulfate by IC	21.0	mg/L	2.5
		Nitrate Nitrite	12.4	MG/L	1.0
		Total Organic Carbon	3.1	MG/L	0.50
		pH	8.5	PH UNITS	0.010
		Total Dissolved Solids	279	MG/L	5.0
-004	BOOXT8	Alkalinity	104	MG/L	2.0
		Chloride by IC	6.8	mg/L	0.25
		Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 u	mg/L	0.25
		Nitrate by IC	78.2	mg/L	2.5
		Cyanide, Total	42.4	UG/L	10.0
		Phosphate by IC	0.25 u	mg/L	0.25
		Sulfate by IC	40.1	mg/L	2.5
		Nitrate Nitrite	17.0	MG/L	1.0
		Total Organic Carbon	0.84	MG/L	0.50
		pH	8.1	PH UNITS	0.010
		Total Dissolved Solids	327	MG/L	5.0

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ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 08/16/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-006	BOOXZ0	Alkalinity	104	MG/L	2.0
		Chloride by IC	6.7	mg/L	0.25
		Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 u	mg/L	0.25
		Nitrate by IC	77.9	mg/L	2.5
		Cyanide, Total	16.7 u	UG/L	16.7
		Phosphate by IC	0.25 u	mg/L	0.25
		Sulfate by IC	38.9	mg/L	2.5
		Nitrate Nitrite	17.3	MG/L	1.0
		Total Organic Carbon	1.1	MG/L	0.50
		pH	8.1	PH UNITS	0.010
		Total Dissolved Solids	316	MG/L	5.0
-008	BOOXZ3	Alkalinity	90.0	MG/L	2.0
		Chloride by IC	9.3	mg/L	0.25
		Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 u	mg/L	0.25
		Nitrate by IC	55.7	mg/L	2.5
		Cyanide, Total	37.0	UG/L	10.0
		Phosphate by IC	0.25 u	mg/L	0.25
		Sulfate by IC	19.5	mg/L	2.5
		Nitrate Nitrite	12.3	MG/L	1.0
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	8.4	PH UNITS	0.010
		Total Dissolved Solids	286	MG/L	5.0

Roy F. Weston, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 7/13/91
RFW #: 9107L158
W.O. #: 6168-02-01

METALS NARRATIVE

The set of samples consisted of eight (8) water samples collected on 7/11/91.

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

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

1. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory.

2. All ICV and CCV values were within control limits.

3. All ICB and CCB values were within control limits.

4. All preparation blank values were within control limits.

5. All LCS results were within the 80-120% control limits.

6. All matrix spike recoveries were within the 75-125% control limits with the exception of As and Ag. All corresponding samples were flagged with an "N" according to CLP protocol.

7. All duplicate analyses were within the 20% RPD control limit.

8. 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.

WESTON

9. 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).

10. Quarterly Detection Limits for IC2 are included in this package.

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

10.22.91.
Date

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ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/21/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BOOXN8	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Bismuth, Total	200	u	UG/L	200
		Calcium, Total	28300		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	10.0	u	UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	211		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	8440		UG/L	5000
		Magnesium, Total	7910		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	27900		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Silicon, Total	25300		UG/L	100
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/21/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-002	BOOXN9	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Bismuth, Soluble	200	u	UG/L	200
		Calcium, Soluble	28300		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	100	u	UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	8460		UG/L	5000
		Magnesium, Soluble	7930		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	27700		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Silicon, Soluble	25700		UG/L	100
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/21/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-004	BOOXT8	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Bismuth, Total	200	u	UG/L	200
		Calcium, Total	39100		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	10.0	u	UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	100	u	UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	5000	u	UG/L	5000
		Magnesium, Total	14000		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	25100		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Silicon, Total	16600		UG/L	100
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/21/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-005	BOOXT9	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Bismuth, Soluble	200	u	UG/L	200
		Calcium, Soluble	43200		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	100	u	UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	5340		UG/L	5000
		Magnesium, Soluble	15300		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	27900		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Silicon, Soluble	18100		UG/L	100
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/21/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-006	BOOXZ0	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Bismuth, Total	200	u	UG/L	200
		Calcium, Total	43500		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	10.0	u	UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	100	u	UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	5760		UG/L	5000
		Magnesium, Total	15400		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	27900		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Silicon, Total	18300		UG/L	100
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/21/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-007	BOOXZ1	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Bismuth, Soluble	200	u	UG/L	200
		Calcium, Soluble	42900		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	100	u	UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	5530		UG/L	5000
		Magnesium, Soluble	15200		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	27500		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Silicon, Soluble	18000		UG/L	100
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/21/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-008	BOOXZ3	Silver, Total	10.0	u	UG/L	10.0
		Aluminum, Total	200	u	UG/L	200
		Arsenic, Total	10.0	u	UG/L	10.0
		Barium, Total	200	u	UG/L	200
		Beryllium, Total	5.0	u	UG/L	5.0
		Bismuth, Total	200	u	UG/L	200
		Calcium, Total	28000		UG/L	5000
		Cadmium, Total	5.0	u	UG/L	5.0
		Cobalt, Total	50.0	u	UG/L	50.0
		Chromium, Total	10.0	u	UG/L	10.0
		Copper, Total	25.0	u	UG/L	25.0
		Iron, Total	302		UG/L	100
		Mercury, Total	0.20	u	UG/L	0.20
		Potassium, Total	8440		UG/L	5000
		Magnesium, Total	7820		UG/L	5000
		Manganese, Total	15.0	u	UG/L	15.0
		Sodium, Total	28000		UG/L	5000
		Nickel, Total	40.0	u	UG/L	40.0
		Lead, Total	3.0	u	UG/L	3.0
		Antimony, Total	60.0	u	UG/L	60.0
		Selenium, Total	5.0	u	UG/L	5.0
		Silicon, Total	25600		UG/L	100
		Thallium, Total	10.0	u	UG/L	10.0
		Vanadium, Total	50.0	u	UG/L	50.0
		Zinc, Total	20.0	u	UG/L	20.0

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/21/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-009	BOOXZ4	Silver, Soluble	10.0	u	UG/L	10.0
		Aluminum, Soluble	200	u	UG/L	200
		Arsenic, Soluble	10.0	u	UG/L	10.0
		Barium, Soluble	200	u	UG/L	200
		Beryllium, Soluble	5.0	u	UG/L	5.0
		Bismuth, Soluble	200	u	UG/L	200
		Calcium, Soluble	28700		UG/L	5000
		Cadmium, Soluble	5.0	u	UG/L	5.0
		Cobalt, Soluble	50.0	u	UG/L	50.0
		Chromium, Soluble	10.0	u	UG/L	10.0
		Copper, Soluble	25.0	u	UG/L	25.0
		Iron, Soluble	100	u	UG/L	100
		Mercury, Soluble	0.20	u	UG/L	0.20
		Potassium, Soluble	8210		UG/L	5000
		Magnesium, Soluble	7990		UG/L	5000
		Manganese, Soluble	15.0	u	UG/L	15.0
		Sodium, Soluble	27700		UG/L	5000
		Nickel, Soluble	40.0	u	UG/L	40.0
		Lead, Soluble	3.0	u	UG/L	3.0
		Antimony, Soluble	60.0	u	UG/L	60.0
		Selenium, Soluble	5.0	u	UG/L	5.0
		Silicon, Soluble	26100		UG/L	100
		Thallium, Soluble	10.0	u	UG/L	10.0
		Vanadium, Soluble	50.0	u	UG/L	50.0
		Zinc, Soluble	20.0	u	UG/L	20.0

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXN8

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715801

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.00	U		P
7440-36-0	Antimony	55.00	U		P
7440-38-2	Arsenic	2.00	B	N	F
7440-39-3	Barium	77.00	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	28300.00			P
7440-47-3	Chromium	4.00	U		P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	10.80	B		P
7439-89-6	Iron	211.00			P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	7910.00			P
7439-96-5	Manganese	3.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	10.00	U		P
7440-09-7	Potassium	8440.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	7.00	U	N	P
7440-23-5	Sodium	27900.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	28.80	B		P
7440-66-6	Zinc	16.30	B		P
	Cyanide	68.90			C

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.

BOOXN9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715802

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.00	U		P
7440-36-0	Antimony	55.00	U		P
7440-38-2	Arsenic	2.00	U	N	F
7440-39-3	Barium	75.90	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	28300.00			P
7440-47-3	Chromium	4.00	U		P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	6.00	U		P
7439-89-6	Iron	36.00	U		P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	7930.00			P
7439-96-5	Manganese	3.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	10.00	U		P
7440-09-7	Potassium	8460.00			P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	7.00	U	N	P
7440-23-5	Sodium	27700.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	29.00	B		P
7440-66-6	Zinc	9.90	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXT8

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715804

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.00	U		P
7440-36-0	Antimony	55.00	U		P
7440-38-2	Arsenic	6.50	B	N	F
7440-39-3	Barium	26.60	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	39100.00			P
7440-47-3	Chromium	5.00	B		P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	6.00	U		P
7439-89-6	Iron	36.00	U		P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	14000.00			P
7439-96-5	Manganese	3.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	10.00	U		P
7440-09-7	Potassium	4930.00	B		P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	7.00	U	N	P
7440-23-5	Sodium	25100.00			P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	39.80	B		P
7440-66-6	Zinc	9.20	B		P
	Cyanide	42.40			C

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.

BOOXT9

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715805

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.00	U		P
7440-36-0	Antimony	55.00	U		P
7440-38-2	Arsenic	7.00	B	N	F
7440-39-3	Barium	29.50	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	43200.00			P
7440-47-3	Chromium	6.90	B		P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	6.00	U		P
7439-89-6	Iron	36.00	U		P
7439-92-1	Lead	2.00	U		F
7439-95-4	Magnesium	15300.00			P
7439-96-5	Manganese	3.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	10.00	U		P
7440-09-7	Potassium	5340.00			P
7782-49-2	Selenium	2.10	B	W	F
7440-22-4	Silver	7.00	U	N	P
7440-23-5	Sodium	27900.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	42.50	B		P
7440-66-6	Zinc	13.10	B		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.

BOOXZ0

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715806

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.00	U		P
7440-36-0	Antimony	55.00	U		P
7440-38-2	Arsenic	7.10	B	N	F
7440-39-3	Barium	30.30	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	43500.00			P
7440-47-3	Chromium	7.80	B		P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	6.00	U		P
7439-89-6	Iron	36.00	U		P
7439-92-1	Lead	2.00	U		F
7439-95-4	Magnesium	15400.00			P
7439-96-5	Manganese	3.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	10.00	U		P
7440-09-7	Potassium	5760.00			P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	7.00	U	N	P
7440-23-5	Sodium	27900.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	43.90	B		P
7440-66-6	Zinc	5.30	B		P
	Cyanide	16.70			C

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.

BOOXZ1

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715807

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.00	U		P
7440-36-0	Antimony	55.00	U		P
7440-38-2	Arsenic	7.70	B	N	F
7440-39-3	Barium	30.10	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	42900.00			P
7440-47-3	Chromium	7.80	B		P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	6.00	U		P
7439-89-6	Iron	36.00	U		P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	15200.00			P
7439-96-5	Manganese	3.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	10.00	U		P
7440-09-7	Potassium	5530.00			P
7782-49-2	Selenium	2.00	U		F
7440-22-4	Silver	7.00	U	N	P
7440-23-5	Sodium	27500.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	42.50	B		P
7440-66-6	Zinc	5.00	B		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.

BOOXZ3

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715808

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.00	U		P
7440-36-0	Antimony	55.00	U		P
7440-38-2	Arsenic	2.00	U	N	F
7440-39-3	Barium	73.00	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	28000.00			P
7440-47-3	Chromium	4.00	U		P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	6.00	U		P
7439-89-6	Iron	302.00			P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	7820.00			P
7439-96-5	Manganese	3.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	10.00	U		P
7440-09-7	Potassium	8440.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	7.00	U	N	P
7440-23-5	Sodium	28000.00			P
7440-28-0	Thallium	2.00	U		F
7440-62-2	Vanadium	29.30	B		P
7440-66-6	Zinc	4.00	U		P
	Cyanide	37.00			C

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXZ4

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715809

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	96.00	U		P
7440-36-0	Antimony	55.00	U		P
7440-38-2	Arsenic	2.00	U	N	F
7440-39-3	Barium	74.10	B		P
7440-41-7	Beryllium	1.00	U		P
7440-43-9	Cadmium	4.00	U		P
7440-70-2	Calcium	28700.00			P
7440-47-3	Chromium	4.00	U		P
7440-48-4	Cobalt	8.00	U		P
7440-50-8	Copper	6.00	U		P
7439-89-6	Iron	36.00	U		P
7439-92-1	Lead	2.00	U	W	F
7439-95-4	Magnesium	7990.00			P
7439-96-5	Manganese	3.00	U		P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	10.00	U		P
7440-09-7	Potassium	8210.00			P
7782-49-2	Selenium	2.00	U	W	F
7440-22-4	Silver	7.00	U	N	P
7440-23-5	Sodium	27700.00			P
7440-28-0	Thallium	2.00	U	W	F
7440-62-2	Vanadium	30.80	B		P
7440-66-6	Zinc	4.00	U		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

9613457.1928

Report To

Westinghouse Hanford Company
Richland, Washington

Data Validation Report
200-BP-1 RI/FS
Data Package: 9107L158-WES-114
SDG No.: CLP158
Analysis Type: Metals/Cyanide/Bi/Si/Volatile Organics/Wet Chemistry

Prepared By

Golder Associates Inc.
Redmond, Washington

Validated by: Sandy Sutton-Schildt
Sandy Sutton-Schildt
Staff Environmental Scientist

Reviewed by: Kent W. Angelos
Kent Angelos
Associate

February 26, 1992

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TABLE OF CONTENTS

	Page No.
1. INTRODUCTION	1
2. DATA QUALITY OBJECTIVES	1
3. QUALIFIED DATA	2
3.1 Major Deficiencies	2
3.2 Minor Deficiencies	2
4. CONCLUSIONS	3
5. REFERENCES	3

LIST OF ATTACHMENTS

1 Glossary of Data Qualifiers
2 Summary of Data Qualifications - Form B-7
3 As-Qualified Data Summary
4 Data Review Supporting Documentation

1. INTRODUCTION

This report presents the results of data validation on case WEST and SDG: CLP158 consisting of eight (8) water samples for contract laboratory program/target analyte list (CLP/TAL) total and dissolved metals, CLP/TAL total cyanide, bismuth, and silicon; one (1) water sample for volatile organics analysis; and four (4) water samples for anions and wet chemistry analysis. Sample identifications, locations, and sample dates are provided in the tabular data summary provided in Attachment 3. The SDG included one set of performance audit samples. The samples were analyzed by the Weston - Lionville laboratory using the 3/90 statement of work (SOW) for metals and cyanide, and bismuth and silicon were analyzed by ICP methods. Anions (chloride, fluoride, nitrite, nitrate, phosphate, and sulfate), were analyzed by ion chromatography (IC), (EPA, 1984); total organic carbon (TOC) was analyzed by method 505.B (APHA, 1985); and total dissolved solids (TDS), pH, alkalinity, and nitrate+nitrite were analyzed using EPA methods (EPA, 1979). Volatile organic compounds were analyzed by gas chromatography/mass spectrometry (GC/MS) according to the 2/88 (Rev. 5/89) CLP SOW for TCL organic compounds. Validation was conducted in accordance with "Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision 0, November 1991" including Revision A, dated December 1991.

2. DATA QUALITY OBJECTIVES

The data packages were complete for all requested analyses and met the data quality objectives of the "RI/FS Work Plan for the 200-BP-1 Operable Unit, Hanford Site, Richland, Washington, DOE/RL 88-32". Data quality objectives for the project specified the use of CLP methods for the TCL volatile organics, TAL metals and cyanide, the use of standard methods for the analysis of silicon, bismuth, and wet chemistry parameters.

Sample quantitation limits were in most samples less than the contract required quantitation limit (CRQL) specified in the QAPjP (DOE, 1989) with the exception of bismuth, cyanide, nitrate, and sulfate. Bismuth was reported to a quantitation limit of 200 µg/L and the estimated detection limit specified in method 3111A (APHA, 1989) is 60 µg/L. Cyanide was reported to a quantitation limit of 16.7 µg/L in one sample (B00XZ0) and the CRQL is 10 µg/L. Nitrate and sulfate were reported to a quantitation limit of 2.5 mg/L and the CRQL specified is 0.5 mg/L. However, all analyses were reported to within five times the CRQL.

The following assumptions regarding standard concentrations were made in order to verify the calibration checks (CCVs) for the IC:

- fluoride 100 mg/L
- chloride 45 mg/L
- nitrite 45 mg/L
- nitrate 50 mg/L
- phosphate 45 mg/L
- sulfate 45 mg/L

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3. QUALIFIED DATA

This section presents a summary of the qualifications required based on validation of the subject data package.

3.1 Major Deficiencies

Nitrate+nitrite results determined by the hydrazine reduction method 353.1 (EPA 1979) are rejected since they do not compare favorably with the IC data. Results for nitrate+nitrite are typically five times lower than the same results determined by IC. This may be due to acid preservation of the nitrate+nitrite samples which causes oxidation of any nitrite present to nitrate. If the samples are not pH adjusted to between 5 and 9 prior to analysis, reduction of nitrate to nitrite during application of the hydrazine reagent may be inhibited, though sodium hydroxide reagent is applied during analysis.

3.2 Minor Deficiencies

The following qualifications were required as a result of the validation. Attachment 2 provides a summary of the samples affected.

- Vanadium and zinc were detected in one or more laboratory blanks. Associated results less than five times the highest blank concentration have been qualified as non-detects (U).

- Matrix spike recoveries for arsenic and silver were not within the control limits of 75 to 125%. Associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

- Analytical spike recoveries for lead, selenium, and thallium were not within the control limits of 85 to 115%. Associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

- Methylene chloride and acetone were detected in the laboratory blank. Methylene chloride and acetone sample results less than ten times the concentrations detected in the blank have been qualified as non-detects (U).

- The relative standard deviation (RSD) for chloromethane and acetone were greater than 30% in the initial calibration. Associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

- The percent difference (%D) for methylene chloride and bromoform were greater than 30% in the continuing calibration. Associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

- The holding times for nitrite, nitrate, and phosphate were exceeded. All associated sample results have been qualified as estimated (J for detects, UJ for non-detects).

- Cyanide percent recoveries for the performance audit samples were 118% and 157% for samples B00XN8 and B00XT8, respectively.

- Though listed on the bottle preparation sheet it appears that samples B00XN8 and B00XT8 were not spiked for nitrate and sulfate.

- A laboratory control sample was performed only for cyanide during the wet chemistry analysis. Therefore, sample results for other parameters may not represent sample conditions.

4. CONCLUSIONS

Sections 1 through 3 present a summary of the data quality for the subject data package. The attachments provide supporting documentation and a tabular summary of the qualified data. The original, as-received, data package is enclosed for submittal to the project QA record.

5. REFERENCES

APHA 1985, Standard Methods for the Examination of Water and Wastewater, 16th Edition. American Public Health Association, Washington, D.C.

APHA 1989, Standard Methods for the Examination of Water and Wastewater, 17th Edition. American Public Health Association, Washington, D.C.

DOE, 1989, Remedial Investigation/Feasibility Study Work Plan for the 200-BP-1 Operable Unit Hanford Site, Richland, Washington, DOE/RL 88-32. United States Department of Energy, Richland, Washington.

EPA 1979, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

EPA 1984, Test Method: The Determination of Inorganic Anions in Water by Ion Chromatography - Method 300.0. U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

WHC, 1991, Westinghouse Hanford Company, Validation of 200-BP-1 Data, Statement of Work, Revision A, November 1991. Westinghouse Hanford Company, Richland, Washington.

9613457.1933

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

U - Indicates the compound or analyte was analyzed for and not detected. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected. Due to identified quality control deficiency identified during data validation the value reported may not accurately reflect the sample quantitation limit.

J - Indicates the compound or analyte was analyzed for and detected. The associated value is estimated but the data are usable for decision making processes.

B - Indicates the compound or analyte was analyzed for and detected. The associated value is less than the CRQL but greater than the IDL.

R - Indicates the compound or analyte was analyzed for and due to an identified quality control deficiency the data are unusable.

NJ - Indicates presumptive evidence of a compound at an estimated value.

N - Indicates presumptive evidence of a compound.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: CLP158	REVIEWER: S Schield	DATE: 2/6/92	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
V	U	all	analyte found in
Zn	U	BOOXN9, XN8, XT8	laboratory blank
↓	↓	XT9, XZ0, XZ1	↓
As	J	BOOXN8, XT8, XT9, XZ0, XZ1	Matrix spike
	UJ	BOOXN9, XZ3, XZ4	recovery <75%
Ag	UJ	all	↓
Pb	UJ	BOOXN8, XN9, XT8,	Analytical spike
↓	↓	XZ3, XZ4	recovery <85 or
Se	UJ	BOOXN8, XN9, XT8	>115%
↓	↓	XZ0, XZ1, XZ3, XZ4	
↓	J	BOOXT9	
Tl	UJ	BOOXT8, XZ3	↓

AJS 2/21/92

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: CLP158	REVIEWER: SSchlott	DATE: 2/13/92	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chloromethane	UJ	BOOY15	RSD >30% in
Acetone	J	BOOY15	initial calibration
Methylene Chloride	J	BOOY15	RSD > 25% in
Bromoform	UJ	BOOY15	continuing calibration
Methylene Chloride	UJ	BOOY15	Compound found
Acetone	UJ	BOOY15	in lab blank

AJS 2/21/92

9613457.1937

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 158	REVIEWER: S Schilb	DATE: 2/20/92	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Nitrite	J	all	Holding time
Nitrate	↓	↓	exceeded
Phosphate	↓	↓	↓
NH_3 / NO_2	R	all	Results disparity

SS 2/21/92

9613457.1938

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

INORGANIC ANALYSIS, WATER MATRIX, (µg/L)

Project	200-BP-1																		
Laboratory	WESTON																		
Case WEST	SDG	CLP158																	
Sample Number		BOOXN8		BOOXN9		BOOXT8		BOOXT9		BOOXZ0		BOOXZ1		BOOXZ3		BOOXZ4			
Location		E33-12		E33-12		E33-13		E33-13		2-33-13		2-33-13		2-33-12		2-33-12			
Remarks		total		dissolved		total		dissolved		total		dissolved		total		dissolved			
Sample Date		7-11-91		7-11-91		7-11-91		7-11-91		7-11-91		7-11-91		7-11-91		7-11-91			
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	200	96	U	96	U	96	U	96	U	96	U	96	U	96	U	96	U		
Antimony	60	55	U	55	U	55	U	55	U	55	U	55	U	55	U	55	U		
Arsenic	10	2	J	2	UJ	6.5	J	7	J	7.1	J	7.7	J	2	UJ	2	UJ		
Barium	200	77	B	75.9	B	26.6	B	29.5	B	30.3	B	30.1	B	73	B	74.1	B		
Beryllium	5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U		
Cadmium	5	4	U	4	U	4	U	4	U	4	U	4	U	4	U	4	U		
Calcium	5000	28300		28300		39100		43200		43500		42900		28000		28700			
Chromium	10	4	U	4	U	5	B	6.9	B	7.8	B	7.8	B	4	U	4	U		
Cobalt	50	8	U	8	U	8	U	8	U	8	U	8	U	8	U	8	U		
Copper	25	10.8	B	6	U	6	U	6	U	6	U	6	U	6	U	6	U		
Iron	100	211		36	U	36	U	36	U	36	U	36	U	302		36	U		
Lead	5	2	UJ	2	UJ	2	UJ	2	U	2	U	2	U	2	UJ	2	UJ		
Magnesium	5000	7910		7930		14000		15300		15400		15200		7820		7990			
Manganese	15	3	U	3	U	3	U	3	U	3	U	3	U	3	U	3	U		
Mercury	0.2	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U		
Nickel	40	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U		
Potassium	5000	8440		8460		4930	B	5340		5760		5530		8440		8210			
Selenium	5	2	UJ	2	UJ	2	UJ	2.1	J	2	UJ	2	UJ	2	UJ	2	UJ		
Silver	10	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ	7	UJ		
Sodium	5000	27900		27700		25100		27900		27900		27500		28000		27700			
Thallium	10	2	U	2	U	2	UJ	2	U	2	U	2	U	2	UJ	2	U		
Vanadium	50	28.8	U	29	U	39.8	U	42.5	U	43.9	U	42.5	U	29.3	U	30.8	U		
Zinc	20	16.3	U	9.9	U	9.2	U	13.1	U	5.3	U	5	U	4	U	4	U		
Cyanide	10	68.9				42.4				16.7				37					
Bismuth		200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U		
Silicon		25300		25700		16600		18100		18300		18000		25600		26100			

9613457.1939

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXN8 Spike/ E33-12

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715801

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	96.00	U		P	
7440-36-0	Antimony	55.00	U		P	
7440-38-2	Arsenic	2.00	~~B~~	N	F	J
7440-39-3	Barium	77.00	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	4.00	U		P	
7440-70-2	Calcium	28300.00			P	
7440-47-3	Chromium	4.00	U		P	
7440-48-4	Cobalt	8.00	U		P	
7440-50-8	Copper	10.80	B		P	
7439-89-6	Iron	211.00			P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	7910.00			P	
7439-96-5	Manganese	3.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	10.00	U		P	
7440-09-7	Potassium	8440.00			P	
7782-49-2	Selenium	2.00	~~U~~	W	F	UJ
7440-22-4	Silver	7.00	~~U~~	N	P	UJ
7440-23-5	Sodium	27900.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	28.80	~~B~~		P	U
7440-66-6	Zinc	16.30	~~B~~		P	U
	Cyanide	68.90			C	~~J~~ SSS 2/6/92

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

2/24/92

2/21/92

9613457.1941 0000029

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXN9
Spike 1
E33-12

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715802

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	96.00	U		P	
7440-36-0	Antimony	55.00	U		P	
7440-38-2	Arsenic	2.00	~~U~~	N	F	UJ
7440-39-3	Barium	75.90	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	4.00	U		P	
7440-70-2	Calcium	28300.00			P	
7440-47-3	Chromium	4.00	U		P	
7440-48-4	Cobalt	8.00	U		P	
7440-50-8	Copper	6.00	U		P	
7439-89-6	Iron	36.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	7930.00			P	
7439-96-5	Manganese	3.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	10.00	U		P	
7440-09-7	Potassium	8460.00			P	
7782-49-2	Selenium	2.00	~~U~~		F	UJ
7440-22-4	Silver	7.00	~~U~~	N	P	UJ
7440-23-5	Sodium	27700.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	29.00	~~B~~		P	U
7440-66-6	Zinc	9.90	~~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

Reviewed 10/2/92 SS 2/21/92

9613457.1942 0000030

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXT8
Spike 2
E33-13

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715804

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	96.00	U		P	
7440-36-0	Antimony	55.00	U		P	
7440-38-2	Arsenic	6.50	~~B~~	N	F	J
7440-39-3	Barium	26.60	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	4.00	U		P	
7440-70-2	Calcium	39100.00			P	
7440-47-3	Chromium	5.00	B		P	
7440-48-4	Cobalt	8.00	U		P	
7440-50-8	Copper	6.00	U		P	
7439-89-6	Iron	36.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	14000.00			P	
7439-96-5	Manganese	3.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	10.00	U		P	
7440-09-7	Potassium	4930.00	B		P	
7782-49-2	Selenium	2.00	~~U~~		F	UJ
7440-22-4	Silver	7.00	~~U~~	N	P	UJ
7440-23-5	Sodium	25100.00			P	
7440-28-0	Thallium	2.00	~~U~~	W	F	UJ
7440-62-2	Vanadium	39.80	~~B~~		P	U
7440-66-6	Zinc	9.20	~~B~~		P	U
	Cyanide	42.40			C	~~J~~ SSS 2/6/92

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

2/21/92

2/21/92

9613457.1943 0000031

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXT9
Spike 2
E33-13

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715805

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	96.00	U		P	
7440-36-0	Antimony	55.00	U		P	
7440-38-2	Arsenic	7.00	~~B~~	N	F	J
7440-39-3	Barium	29.50	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	4.00	U		P	
7440-70-2	Calcium	43200.00			P	
7440-47-3	Chromium	6.90	B		P	
7440-48-4	Cobalt	8.00	U		P	
7440-50-8	Copper	6.00	U		P	
7439-89-6	Iron	36.00	U		P	
7439-92-1	Lead	2.00	U		F	
7439-95-4	Magnesium	15300.00			P	
7439-96-5	Manganese	3.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	10.00	U		P	
7440-09-7	Potassium	5340.00			P	
7782-49-2	Selenium	2.10	~~B~~	W	F	J
7440-22-4	Silver	7.00	~~U~~	N	P	UJ
7440-23-5	Sodium	27900.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	42.50	~~B~~		P	U
7440-66-6	Zinc	13.10	~~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

7/30/92

7/20/92

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXZ0
2-33-13

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715806

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	96.00	U		P	
7440-36-0	Antimony	55.00	U		P	
7440-38-2	Arsenic	7.10	~~B~~	N	F	J
7440-39-3	Barium	30.30	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	4.00	U		P	
7440-70-2	Calcium	43500.00			P	
7440-47-3	Chromium	7.80	B		P	
7440-48-4	Cobalt	8.00	U		P	
7440-50-8	Copper	6.00	U		P	
7439-89-6	Iron	36.00	U		P	
7439-92-1	Lead	2.00	U		F	
7439-95-4	Magnesium	15400.00			P	
7439-96-5	Manganese	3.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	10.00	U		P	
7440-09-7	Potassium	5760.00			P	
7782-49-2	Selenium	2.00	~~U~~		F	UJ
7440-22-4	Silver	7.00	~~U~~	N	P	UJ
7440-23-5	Sodium	27900.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	43.90	~~B~~		P	U
7440-66-6	Zinc	5.30	~~B~~		P	U
	Cyanide	16.70			C	~~J~~ SGS 2/6/92

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

7/24/92

SGS 2/26/92

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXZ1
2-33-13

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715807

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	96.00	U		P	
7440-36-0	Antimony	55.00	U		P	
7440-38-2	Arsenic	7.70	~~B~~	N	F	J
7440-39-3	Barium	30.10	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	4.00	U		P	
7440-70-2	Calcium	42900.00			P	
7440-47-3	Chromium	7.80	B		P	
7440-48-4	Cobalt	8.00	U		P	
7440-50-8	Copper	6.00	U		P	
7439-89-6	Iron	36.00	U		P	
7439-92-1	Lead	2.00	U	W	F	
7439-95-4	Magnesium	15200.00			P	
7439-96-5	Manganese	3.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	10.00	U		P	
7440-09-7	Potassium	5530.00			P	
7782-49-2	Selenium	2.00	~~U~~		F	UJ
7440-22-4	Silver	7.00	~~U~~	N	P	UJ
7440-23-5	Sodium	27500.00			P	
7440-28-0	Thallium	2.00	U		F	
7440-62-2	Vanadium	42.50	~~B~~		P	U
7440-66-6	Zinc	5.00	~~B~~		P	U
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

2/24/92

2/21/92

9613457.1946

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U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXZ3
2-33-12

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715808

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	96.00	U		P	
7440-36-0	Antimony	55.00	U		P	
7440-38-2	Arsenic	2.00	~~U~~	N	F	UJ
7440-39-3	Barium	73.00	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	4.00	U		P	
7440-70-2	Calcium	28000.00			P	
7440-47-3	Chromium	4.00	U		P	
7440-48-4	Cobalt	8.00	U		P	
7440-50-8	Copper	6.00	U		P	
7439-89-6	Iron	302.00			P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	7820.00			P	
7439-96-5	Manganese	3.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	10.00	U		P	
7440-09-7	Potassium	8440.00			P	
7782-49-2	Selenium	2.00	~~U~~	W	F	UJ
7440-22-4	Silver	7.00	~~U~~	N	P	UJ
7440-23-5	Sodium	28000.00			P	
7440-28-0	Thallium	2.00	~~U~~		F	UJ
7440-62-2	Vanadium	29.30	~~B~~		P	U
7440-66-6	Zinc	4.00	U		P	
	Cyanide	37.00			C	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

2/24/92

2/21/92

9613457.1947 0000035

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOXZ4
2-33-12

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

Lab Code: WESTON Case No.: WEST SAS No.: SDG No.: CLP158

Matrix (soil/water): WATER Lab Sample ID: 910715809

Level (low/med): LOW Date Received: 7/13/91

% Solids: 0.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	96.00	U		P	
7440-36-0	Antimony	55.00	U		P	
7440-38-2	Arsenic	2.00	~~U~~	N	F	UJ
7440-39-3	Barium	74.10	B		P	
7440-41-7	Beryllium	1.00	U		P	
7440-43-9	Cadmium	4.00	U		P	
7440-70-2	Calcium	28700.00			P	
7440-47-3	Chromium	4.00	U		P	
7440-48-4	Cobalt	8.00	U		P	
7440-50-8	Copper	6.00	U		P	
7439-89-6	Iron	36.00	U		P	
7439-92-1	Lead	2.00	~~U~~	W	F	UJ
7439-95-4	Magnesium	7990.00			P	
7439-96-5	Manganese	3.00	U		P	
7439-97-6	Mercury	.10	U		CV	
7440-02-0	Nickel	10.00	U		P	
7440-09-7	Potassium	8210.00			P	
7782-49-2	Selenium	2.00	~~U~~	W	F	UJ
7440-22-4	Silver	7.00	~~U~~	N	P	UJ
7440-23-5	Sodium	27700.00			P	
7440-28-0	Thallium	2.00	U	W	F	
7440-62-2	Vanadium	30.80	~~B~~		P	U
7440-66-6	Zinc	4.00	U		P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

FORM I - IN 03/90

2/21/92

2/21/92

VOLATILE ORGANIC ANALYSIS, WATER MATRIX, (µg/L)

Project	200-BP-1		
Laboratory	WESTON		
Case WEST	SDG	CLP158	
Sample Number		B00Y15	
Location		Trip blank	
Remarks			
Sample Date		7-11-91	
Organic Compounds	CRQL		
Chloromethane	10	10	UJ
Bromomethane	10	10	U
Vinyl Chloride	10	10	U
Chloroethane	10	10	U
Methylene Chloride	10	10	UJ
Acetone	10	11	UJ
Carbon Disulfide	5	5	U
1,1-Dichloroethene	5	5	U
1,1-Dichloroethane	5	5	U
1,2-Dichloroethene (total)	5	5	U
Chloroform	5	5	U
1,2-Dichloroethane	5	5	U
2-Butanone	10	10	U
1,1,1-Trichloroethane	5	5	U
Carbon Tetrachloride	5	5	U
Vinyl Acetate	10	10	U
Bromodichloromethane	5	5	U
1,2-Dichloropropane	5	5	U
cis-1,3-Dichloropropene	5	5	U
Trichloroethene	5	5	U
Dibromochloromethane	5	5	U
1,1,2-Trichloroethane	5	5	U
Benzene	5	5	U
Trans-1,3-Dichloropropene	5	5	U
Bromoform	5	5	UJ
4-Methyl-2-pentanone	10	10	U
2-Hexanone	10	10	U
Tetrachloroethene	5	5	U
1,1,2,2-Tetrachloroethane	5	5	U
Toluene	5	5	U
Chlorobenzene	5	5	U
Ethylbenzene	5	5	U
Styrene	5	5	U
Xylene (total)	5	5	U

96134957.1918

1A 9613457 1949 000002 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET

BOOYI5 Day Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9107L158-010

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: Y071806

Level: (low/med) LOW Date Received: 07/13/91

% Moisture: not dec. _____ Date Analyzed: 07/18/91

Column: (pack/cap) PACK Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U UJ
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~~	~~B~~ JU 10
67-64-1	Acetone	11	~~B~~ JU
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	~~U~~ UJ
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

FORM 1 V-1 12/88 Rev.

2/24/92

2/21/92

1E 9613457.1950 0000027 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOOYI5
Day Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 6168-02-01-0000

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9107L158-010

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

Lab File ID: Y071806

Level: (low/med) LOW

Date Received: 07/13/91

% Moisture: not dec. _____

Date Analyzed: 07/18/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

2/24/92

2/21/92

WET CHEMISTRY ANALYSIS, WATER MATRIX, (mg/L)

Project	200-BP-1																				
Laboratory	WESTON																				
Case WEST	SDG	CLP158																			
Sample Number		B00XN8		B00XT8		B00XZ0		B00XZ3													
Location		E33-12		E33-13		2-33-13		2-33-12													
Remarks																					
Sample Date		7-11-91		7-11-91		7-11-91		7-11-91													
Wet Chemistry Analytes	CRQL																				
Alkalinity	2.0	90		104		104		90													
Chloride	0.5	9.1		6.8		6.7		9.3													
Fluoride	0.5	0.5	U	0.5	U	0.5	U	0.5	U												
Nitrite	0.5	0.25	UJ	0.25	UJ	0.25	UJ	0.25	UJ												
Nitrate	0.5	55.4	J	78.2	J	77.9	J	55.7	J												
Cyanide (total)	10 µg/L	68.9		42.4		16.7		37													
Phosphate	0.5	0.25	UJ	0.25	UJ	0.25	UJ	0.25	UJ												
Sulfate	0.5	21		40.1		38.9		19.5													
Nitrate Nitrite	1.0	12.4	R	17	R	17.3	R	12.3	R												
Total Organic Carbon	0.5	3.1		0.84		1.1		0.5	U												
pH	0.01 unit	8.5		8.1		8.1		8.4													
Total Dissolved Solids	5.0	279		327		316		286													

9613457.1951

9613457.1952

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 08/16/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BOOXN8	Alkalinity	90.0	MG/L	2.0
	E 33-12	Chloride by IC	9.1	mg/L	0.25
	Spike 1	Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 ~~u~~	mg/L	0.25 u J
		Nitrate by IC	55.4	mg/L	2.5 J
		Cyanide, Total	68.9	UG/L	10.0
		Phosphate by IC	0.25 ~~u~~	mg/L	0.25 u J
		Sulfate by IC	21.0	mg/L	2.5
		Nitrate Nitrite	~~12.4~~	MG/L	1.0 R
		Total Organic Carbon	3.1	MG/L	0.50
		pH	8.5	PH UNITS	0.010
		Total Dissolved Solids	279	MG/L	5.0
-004	BOOXT8	Alkalinity	104	MG/L	2.0
	E 33-13	Chloride by IC	6.8	mg/L	0.25
	Dup 2	Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 ~~u~~	mg/L	0.25 u J
		Nitrate by IC	78.2	mg/L	2.5 J
		Cyanide, Total	42.4	UG/L	10.0
		Phosphate by IC	0.25 ~~u~~	mg/L	0.25 u J
		Sulfate by IC	40.1	mg/L	2.5
		Nitrate Nitrite	~~17.0~~	MG/L	1.0 R
		Total Organic Carbon	0.84	MG/L	0.50
		pH	8.1	PH UNITS	0.010
		Total Dissolved Solids	327	MG/L	5.0

2/24/92

2/24/92

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ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 08/16/91

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

WESTON BATCH #: 9107L158

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-006	BOOXZ0	Alkalinity	104	MG/L	2.0
	2-33-13	Chloride by IC	6.7	mg/L	0.25
		Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 u	mg/L	0.25 uJ
		Nitrate by IC	77.9	mg/L	2.5 J
		Cyanide, Total	16.7 u	UG/L	16.7
		Phosphate by IC	0.25 u	mg/L	0.25 uJ
		Sulfate by IC	38.9	mg/L	2.5
		Nitrate Nitrite	~~17.3~~	MG/L	1.0 R
		Total Organic Carbon	1.1	MG/L	0.50
		pH	8.1	PH UNITS	0.010
		Total Dissolved Solids	316	MG/L	5.0
-008	BOOXZ3	Alkalinity	90.0	MG/L	2.0
	2-33-12	Chloride by IC	9.3	mg/L	0.25
		Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 u	mg/L	0.25 uJ
		Nitrate by IC	55.7	mg/L	2.5 J
		Cyanide, Total	37.0	UG/L	10.0
		Phosphate by IC	0.25 u	mg/L	0.25 uJ
		Sulfate by IC	19.5	mg/L	2.5
		Nitrate Nitrite	12.3	MG/L	1.0 R
		Total Organic Carbon	0.50 u	MG/L	0.50
		pH	8.4	PH UNITS	0.010
		Total Dissolved Solids	286	MG/L	5.0

2/21/92

2/21/92

9613457.1954

ATTACHMENT 4

DATA REVIEW SUPPORTING DOCUMENTATION

DRAFT 7/91

INORGANIC ANALYSIS DATA REVIEW CHECKLIST - FORM A-6

PROJECT: 913-1719	REVIEWER: S Schulz	DATE: 2/20/92
LABORATORY: Weston	CASE: West	SDG: CLP158
SAMPLES/MATRIX: B00XN8, B00XN9, B00XT8, B00XT9, B00XZ0, B00XZ1, B00XZ3, B00XZ4/Water		

1. COMPLETENESS AND CONTRACT COMPLIANCE

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓	—	—
Cover Page	✓	—	—
Traffic Reports	✓	—	—
Sample Data			
Inorganic Analysis Data Sheets	✓	—	—
Standards Data			
Initial and Continuing Calibration Verification	✓	—	—
CRDL Standard for AA and ICP	✓	—	—
QC Summary			
Blanks	✓	—	—
ICP Interference Check Summary	✓	—	—
Spike Sample Recovery	✓	—	—
Post-Digestion Spike Sample Recovery	—	—	✓
Duplicate	✓	—	—
Laboratory Control Sample	✓	—	—
Standard Addition Results	—	—	✓
ICP Serial Dilutions	✓	—	—
Instrument Detection Limits	✓	—	—
ICP Interelement Correction Factors	✓	—	—
ICP Linear Ranges	✓	—	—
Preparation Log	✓	—	—
Analysis Run Log	✓	—	—

2/21/92

Data Package Item	Present?: Yes	No	N/A
Raw Data			
ICP Raw Data	✓		
Furnace AA Raw Data	✓		
Mercury Raw Data	✓		
Cyanide Raw Data	✓		
Additional Data			
Internal laboratory chain-of-custody		✓	
Laboratory Sample Preparation Records	✓		
Percent Solids Analysis Records			✓
Reduction Formulae		✓	
Instrument Run Logs	✓		
Chemist Notebook Pages	✓		

2. HOLDING TIMES

Have all samples been analyzed within holding times? (Yes) No N/A

ACTION: If any holding times have been exceeded qualify all affected results as estimated (J for detects and UJ for non-detects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? (Yes) No N/A

Are the correlation coefficients ≥0.995? (Yes) No N/A

Was a midrange CN standard distilled? (Yes) No N/A

ACTION: Qualify all data as unusable if reported from an analysis in which an instrument was not calibrated or was calibrated with less than the minimum number of standards. Qualify associated sample results > IDL as estimated (J) and results < IDL as estimated (UJ), if the correlation coefficient is < 0.995 or the laboratory did not distill the midrange CN standard.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? (Yes) No N/A

Are there calculation errors? Yes (No) N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

2/21/92

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5. ICP INTERFERENCE CHECK SAMPLE

Has an ICS sample been analyzed at the proper frequency? Yes No N/A

Are the AB solution %R values within control? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify all affected data in accordance with Section 8.3 of the validation requirements. If calculation errors are noted, contact the laboratory for clarification.

6. LABORATORY BLANKS

Are target analytes present in the ~~field~~ lab blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5X the amount in any laboratory blank as non-detected (U).

7. FIELD BLANKS

Are target analytes present in the field blanks? Yes No N/A

ACTION: Qualify all sample results for any analyte <5X the amount in any valid field blank as non-detected (U).

8. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the control limits? Yes No N/A

ACTION: Qualify the affected sample data according to the following requirements:

If spike recovery is >125% and sample results are <IDL no qualification is required. If spike recovery is >125% or <75% qualify all positive results as estimated (J). If spike recovery is 30% to 74% qualify all non-detects as estimated (UJ). If spike recovery is <30%, reject all non-detects (R).

2/21/92

9613457.1958

9. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the sample data according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS result is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

10. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No N/A

ACTION: Note the results of the performance audit sample analyses in the data validation narrative.

11. DUPLICATE SAMPLE ANALYSIS

Are RPD values acceptable? Yes No N/A

ACTION: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD results fall outside the appropriate control limits.

12. ICP SERIAL DILUTION

Are the serial dilution results acceptable? Yes No N/A

Is there evidence of negative interference? Yes No N/A

ACTION: Qualify the associated data as estimated (J) for those analytes in which the %D is outside the control limits. If evidence of negative interference is found, use professional judgment to qualify the data.

2/21/92

9613457.1959

13. FIELD DUPLICATE SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

14. FIELD SPLIT SAMPLES

Do the RPD values exceed the control limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

15. FURNACE ATOMIC ABSORPTION QUALITY CONTROL

Do all applicable analyses have duplicate injections?	Yes	No	N/A
Are applicable duplicate injection RSD values within control?	Yes	No	N/A
If no, were samples rerun once as required?	Yes	No	N/A
Does the RSD for the rerun fall within the control limits?	Yes	No	N/A
Were analytical spike recoveries within the control limits?	Yes	No	N/A
If no, were MSA analyses performed when required?	Yes	No	N/A
Are MSA correlation coefficients $\geq$0.995?	Yes	No	N/A
If no, was a second MSA analysis performed?	Yes	No	N/A

ACTION: If duplicate injections are outside the acceptance limits and the sample has not been reanalyzed or the reanalysis is outside the acceptance limits, qualify the associated data as estimated (J for detects and UJ for non-detects). If the analytical spike recovery is less than 40 percent qualify detects as estimated (J). If the analytical spike recovery is greater than or equal to 10% but less than 40 percent, qualify all non-detects as estimated (UJ) and if the analytical spike recovery is less than 10 percent, reject all non-detects (R). If the sample absorbance is less than 50% of the analytical spike absorbance and the analytical spike recovery is less than 85% or greater than 115%, qualify all results as estimated (J for detects and UJ for non-detects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was less than 0.995, qualify the associated detected results as estimated (J).

2/21/92

2/24/92

9613457.1960

16. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly?	Yes	No	N/A
Are results within the calibrated range of the instruments and within the linear range of the ICP?	Yes	No	N/A
Are all detection limits below the CRQL?	Yes	No	N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

17. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

2/21/92

9613457.1961

COMMENTS (attach additional sheets as necessary):

1. Performance audit used for laboratory matrix spike analysis

2. Performance audit analysis within control limit: ~~95%~~, 118%
157%
SSS 2/21/92

MM 2/21/92

AH 2/21/92

HOLDING TIME SUMMARY - FORM B-1

SDG: CLP158	REVIEWER: S Schulat	DATE: 3/6/92	PAGE 1 OF 4
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B00XN8,9	CN	7/11/91	7/19/91	7/19/91	8	8	none
B00XT8,9	↓	7/11/91	↓	↓	↓	↓	↓
B00XZ0,1	↓	7/11/91	↓	↓	↓	↓	↓
B00XZ3,4	↓	7/11/91	↓	↓	↓	↓	↓

Work Order 21 Apr 92

9613457.1962

HOLDING TIME SUMMARY - FORM B-1

SDG: CLP158	REVIEWER: S Schildt	DATE: 2/6/92	PAGE 2 OF 4
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B00XN8,9	CV	7/11/91	7/25/91	7/26/91	14	15	none
B00XT8,9	↓	7/11/91	↓	↓	↓	↓	↓
B00XZ0,1	↓	7/11/91	↓	↓	↓	↓	↓
B00XZ3,4	↓	7/11/91	↓	↓	↓	↓	↓

2/21/92

2/21/92

9613457.1963

HOLDING TIME SUMMARY - FORM B-1

SDG: CLP158 | REVIEWER: S Schildt | DATE: 2/6/92 | PAGE 3 OF 4

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B00XN8,9	GFAA-As	7/11/91	7/22/91	7/25/91	11	14	none
B00XT8,9	↓	7/11/91	↓	↓	↓	↓	↓
B00XZ0,1	↓	7/11/91	↓	↓	↓	↓	↓
B00XZ3,4	↓	7/11/91	↓	↓	↓	↓	↓
B00XN8,9	GFAA-Pb	↓	↓	7/24/91	↓	13	↓
B00XT8,9	↓	↓	↓	↓	↓	↓	↓
B00XZ0,1	↓	↓	↓	↓	↓	↓	↓
B00XZ3,4	↓	↓	↓	↓	↓	↓	↓
B00XN8,9	GFAA-Se	↓	↓	8/7/91	↓	27	↓
B00XT8,9	↓	↓	↓	↓	↓	↓	↓
B00XZ0,1	↓	↓	↓	↓	↓	↓	↓
B00XZ3,4	↓	↓	↓	↓	↓	↓	↓
B00XN8,9	GFAA-Tl	↓	↓	7/24/91	↓	13	↓
B00XT8,9	↓	↓	↓	↓	↓	↓	↓
B00XZ0,1	↓	↓	↓	↓	↓	↓	↓
B00XZ3,4	↓	↓	↓	↓	↓	↓	↓

2/21/92
2/21/92

9613457.1964

HOLDING TIME SUMMARY - FORM B-1

SDG: CLP158	REVIEWER: S Schilolt	DATE: 2/6/92	PAGE 4 OF 4
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B00XN8,9	ICP	7/11/91	7/22/91	8/5/91	11	25	none
B00XT8,9	↓	7/11/91	↓	↓	↓	↓	↓
B00XZ0,1	↓	7/11/91	↓	↓	↓	↓	↓
B00XZ3,4	↓	7/11/91	↓	↓	↓	↓	↓

2/6/92

2/6/92

9613457.1965

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: CLP158	REVIEWER: S Schulbert	DATE: 2/6/92	PAGE 1 OF 2

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
PBlk	Be	-1.1	B		µg/L	-5.5		none	
CCB1	Mg	122.4	B			612.0		none	
CCB2		158.2	B			791.0			
CCB3		124.8	B			624.0			
ICB	K	1078.0	B			5390.0		none	
CCB1	V	15.2	B			76.0		B00XN8	28.8 U
CCB2		15.8	B			79.0		B00XN9	29.0 U
CCB3		17.6	B			88.0		B00XT8	39.8 U
Pblk		12.9	B			64.5		B00XT9	42.5 U
								B00XZ0	43.9 U
								B00XZ1	42.5 U
								B00XZ3	29.3 U
								B00XZ4	30.8 U
CCB1	Zn	7.1	B		µg/L	35.5		B00XN9	9.9 U
CCB2		12.8	B			64.0		B00XN8	16.3 U
CCB3		7.4	B			37.0		B00XT8	9.2 U
PBlk		6.0	B			30.0		B00XT9	13.1 U

2/21/92

2/21/92

9613457.1966

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: CLP158	REVIEWER: S Schildt	DATE: 2/6/92	PAGE 2 OF 2
COMMENTS:			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
	Zn							B00XZ0	5.3 U
								B00XZ1	5.0 U

9613457.1967

ACCURACY DATA SUMMARY - FORM B-4

SDG: CLP158	REVIEWER: S Schubert	DATE: 2/6/92	PAGE 1 OF ___	
COMMENTS: Spike Sample Recovery				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B00XN8S	As	69.5	B00XN8, XT8, XT9	UJ
			XZ0, XZ1	↓
			B00XN9, XZ3, XZ4	UJ
	Ag	68.0	All	UJ
	~~CN~~	~~677.3~~	~~B00XN8, XT8, XZ0~~	~~J~~
			~~XZ3~~	~~J~~ GGS 2/6/92

9613457.1968

1/92

2/21/92

ACCURACY DATA SUMMARY - FORM B-4

SDG: CLP158	REVIEWER: S Sulinbolt	DATE: 2/20/92	PAGE 1 OF 1	
COMMENTS: Performance audit (Full matrix spike				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B00XN8	CN	118		
B00XT8	↓	95		

B-4

1/92

9613457.1969

Sulinbolt 2/21/92
2/21/92

ACCURACY DATA SUMMARY - FORM B-4

SDG: CLP 158	REVIEWER: S Schildt	DATE: 2/6/92	PAGE 1 OF 1	
COMMENTS: Analytical Spike Recovery				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B00XN8	Pb	73.9		UJ
B00XN9		77.2		
B00XT8		81.1		
B00XZ3		74.7		
B00XZ4		74.8		
B00XN8	Se	62.7		UJ
B00XN9		70.2		
B00XT8		76.4		
B00XT9		71.3		J
B00XZ0		73.5		UJ
B00XZ1		76.4		
B00XZ3		70.7		
B00XZ4		69.8		
B00XT8	Tl	116.3		UJ
B00XZ3		116.6		UJ

9613457.1970

9613457.1971

TELEPHONE CONTACT SUMMARY - FORM B-8

REVIEWER: S Schildt	DATE: 2/7/92	TIME: 2:30	PAGE 1 OF 1
COMPANY: Westinghouse			
ADDRESS: Richland			
PERSON CONTACTED: Becky Bechtold			
TELEPHONE: (509) 376-9017	FAX: (509) 376-6476		
PROJECT/CASE/SDG: 913-1719 / CLP158 / 200-BP-1			
REMARKS: Called regarding sample spike concentrations in field spikes.			
ACTION: She will fax necessary information.			

2/7/92

Westinghouse
Hanford Company

P.O. Box 1970
Richland, Washington 99352

Environmental Division

Date: 2/12

To: Sandy Schildt Fax: 206-882-5498

Location: Golder Associates Phone: 206-883-0777

From: Becky Beckstrand Phone 509-376-9017 MSIN H4-55

Fax 376-6476 Verify 376-7775

This Fax Consists of 2 pages including cover sheet

Message: This is all I've been able to obtain regarding spikes for samples. WHC meeting will address traceability, etc. and if I get any more info, at that time, I'll ~~left~~ let you know.

Sent 2/21/92

9613457.1973

[3] From: Parley H (Dusty) Butcher at ~WHC250 2/11/92 1:28PM (1015 bytes: 14 ln)
To: Mark A Buckmaster at ~WHC68
Receipt Requested
Subject: POLY BOTTLES PREPARED FOR SAMPLING TEAM
---------- Forwarded ----------
From: SUSAN K FLINT at ~WHC32 2/10/92 1:50PM (800 bytes: 14 ln)
To: Parley H (Dusty) Butcher at ~WHC250
Subject: POLY BOTTLES PREPARED FOR SAMPLING TEAM
---------- Message Contents ----------

ON 7/11/91 THE FOLLOWING BOTTLES WERE PREPARED BY THE
STANDARDS LABORATORY AT 222-SA FOR THE SAMPLING TEAM (R.S.):

2 - 1 LITER POLY BOTTLES
0.300 ML CN + 0.700 ML H2O = 27 PPM CN

2 - 8 OZ BOTTLES
0.050 ML OF NO3 + 0.200 ML H2O = 345 PPM NO3

2 - 1 LITER POLY BOTTLES
0.200 ML OF SO4 + 0.800 ML H2O = 1406 PPM SO4

THIS HAS BEEN RECORDED IN OUR LOGBOOK, 5S4.
IF WE CAN BE OF FURTHER SERVICE, PLEASE LET US KNOW.

Becky
Here are the
200-BP-1 spike samples
you requested
Mark 2/12

2/21/92

9613457.1974

CALCULATION SUMMARY - FORM B-6

SDG: 40158	REVIEWER: [illegible]	DATE: 2/24/92	PAGE 1 OF ___

COMMENTS: Performance Audit Samples.
Actual concentrations in µg/L spiked
Cyanide: 22 µg/L
Sulfate: 1406 µg/L
Nitrate: 1440 µg/L
BOTX018 / BOOX23

	SSR	SR	SA	%R	
Cyanide	29	37	27	118	
Sulfate	21	19.5	1406	0.1	*
Nitrate	55.4	55.7	1440	-0.02	*

BOTX18 / BOOXBC [illegible]

	SSR	SR	SA	%R	
Cyanide	42.4	16.7 u ~~16.7 u~~	27	157	
Sulfate	40.1	38.9	1406 [illegible]	0.08	*
Nitrate	78.2	77.9	1440	0.02	*

* Nitrate and sulfate appear to have not been spiked properly

[illegible] 2/24/92

9613457.1975

VOLATILE ORGANIC DATA REVIEW CHECKLIST - FORM A-1

PROJECT: 913-1719	REVIEWER: S Schulob	DATE: 2/13/92
LABORATORY: Weston	CASE: Westinghouse	SDG: CLP158
SAMPLES/MATRIX: B00Y15 / water		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Data Summary	✓		
Chain-of-Custody	✓		
QC Summary			
Surrogate report	✓		
MS/MSD report			✓
Blank summary report	✓		
GC/MS tuning report	✓		
Internal standard summary report	✓		
Sample Data			
Sample reports	✓		
TIC reports for each sample	✓		
RIC reports for all samples	✓		
Raw and corrected spectra for all detected results	✓		
Raw and corrected library search data for all reported TIC			✓
Quantitation and calculation data for all TIC			✓
Standards Data			
Initial calibration report	✓		
RIC and quantitation reports for initial calibration	✓		
Continuing calibration reports	✓		
RIC and quantitation reports for cont. calibrations	✓		
Internal standard summary report	✓		

2/21/92

9613457.1976

Data Package Item	Present?: Yes	No	N/A
Raw QC Data			
Tuning report, spectra and mass lists	✓		
Blank analysis reports	✓		
TIC reports for all blanks	✓		
RIC and quantitation reports for blanks	✓		
Raw and corrected spectra for all detected results in blanks	✓		
Raw and corrected library search data for all reported TIC	✓		
Quantitation and calculation data for all TIC			✓
MS/MSD report forms			✓
RIC and quantitation reports for MS/MSD			✓
Additional Data			
Moisture/% solids data sheets			✓
Reduction formulae		✓	
Instrument time logs		✓	
Chemist notebook pages		✓	
Sample preparation sheets	✓		

2. HOLDING TIMES

Complete the holding time summary form listing all samples and dates of collection and analysis.

Were all samples analyzed within holding time? (Yes) No N/A

ACTION: If any holding times were exceeded, qualify associated samples as estimated (J for detects or UJ for non-detects).

3. INSTRUMENT CALIBRATION AND TUNING

3.1 GC/MS TUNING

Is a BFB tune report present for each applicable 12h period? (Yes) No N/A

Do all tunes on all instruments meet the tuning criteria? (Yes) No N/A

Do all tunes on all instruments meet the expanded criteria? Yes No (N/A)

Has the laboratory made any calculation or transciption errors? Yes (No) N/A

Have the proper significant figures been reported? (Yes) No N/A

2/21/92

9613457.1977

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects or UJ for non-detects). If all tuning criteria are missed, qualify all associated data as unusable (R).

3.2 INITIAL CALIBRATION

Is an initial calibration report provided for all instruments?	Yes	No	N/A
Are all RSD values ≤30%?	Yes	No	N/A
Are all RRF values ≥0.05?	Yes	No	N/A

ACTION: If any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all non-detects as unusable (R). If any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for non-detects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12h periods in which associated samples were analyzed ?	Yes	No	N/A
Are all RRF values ≥0.05?	Yes	No	N/A
Are all %D values ≤25%?	Yes	No	N/A

ACTION: If any RRF value is out of specification qualify all associated detected results as estimated and all non-detects as unusable (R). If any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for non-detects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12h period in which samples were analyzed?	Yes	No	N/A
Are TCL compounds present in the laboratory blanks?	Yes	No	N/A

ACTION: Qualify all sample results <10X the highest blank concentration for the common laboratory contaminants, as non-detects (U) or at the SQL if the result is < CRQL. Qualify all remaining sample results <5X the blank concentration in similar fashion.

2/21/92

BLANKS

npounds present in the field blanks? Yes No N/A

)ualify all detected sample results less than or equal to five times the amount in ld blank as non-detects (U) and note the field blank results in the validation

.CY

GATE RECOVERY

ɔgate recoveries out of specification? Yes No N/A

ɔgate recoveries less than 10%? Yes No N/A

ıod blank surrogate recoveries out n? Yes No N/A

ıalify all associated sample results as estimated (J for detects or UJ for non-ırrogates out of specification but greater than 10%. Qualify all associated le results as estimated (J) and all non-detect results as unusable (R) for all ;ow 10%. If method blank surrogates are out of specification and the associated ;ates are acceptable no qualification is necessary, however, the laboratory should 'or an explanation.

SPIKE RECOVERY

SD analysis been conducted per matrix group? Yes No N/A

·ecoveries within specification? Yes No N/A

calculation errors? Yes No N/A

ı MS/MSD analysis has not been conducted contact the laboratory for an .eview the MS/MSD recoveries in conjunction with other QC data such as /eries and note the results in the validation narrative. If it is determined from : out of specification MS/MSD recoveries are indicative of systematic problems ry such as sample preparation or sample-specific matrix interferences this must · validation narrative along with the potential affect on the sample results.

2/21/92 2/21/92

9613457.1979

ACTION: If the laboratory has failed to search the minimum number of TIC peaks in the chromatogram contact the laboratory for submittal of the required data. Qualify as non-detects (U) all TIC compounds present in samples and blanks using the review criteria specified in the validation requirements. If TIC identification is in error sample results should be qualified as non-detects (U) or unusable (R). If TIC identifications are judged valid, qualify the results as presumptive and estimated (JN).

9. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW?	Yes	No	N/A
Were project specific data quality objectives met for this analysis?	Yes	No	N/A

ACTION: Summarize all the data qualifications recommended in the foregoing sections, and complete the data validation narrative according to the requirements of Section 10 of the data validation requirements.

2/21/92

9613457.1980

COMMENTS (attach additional sheets as necessary):

no comments

2/21/92

HOLDING TIME SUMMARY - FORM B-1

SDG: CLP158	REVIEWER: S Schildt	DATE: 2/13/92	PAGE 1 OF 1

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0EY15	VOA	7/11/91	7/18/91	7/18/91	7	7	none

2/21/92

9613457.1981

CALIBRATION DATA SUMMARY - FORM B-2

SDG: CLP158	REVIEWER: S Schulist	DATE: 2/13/92	PAGE 1 OF 1		
COMMENTS:					
CALIB. TYPE:	(INITIAL) CONTINUING	INSTRUMENT:			
CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
6/28/91	Chloromethane		34.7	BOOY15	UJ
↓	Acetone		31.5	↓	J

Mark 11/92
JAA 2/21/92

2861.1962
96134567

CALIBRATION DATA SUMMARY - FORM B-2

SDG: CLP158	REVIEWER: S Schlicht	DATE: 2/13/92	PAGE 1 OF 1
COMMENTS:			
CALIB. TYPE: INITIAL / CONTINUING		INSTRUMENT:	

CALIB. DATE	COMPOUND	RF	RSD/%D/%R	SAMPLES AFFECTED	QUALIFIER
2/18/91	Methylene Chloride		32	BCDY15	J
↓	Bromoform		35.8	↓	UJ
	Acetone		29.9	none	

2/21/92

2/21/92

9613457.1983

BLANK AND SAMPLE DATA SUMMARY - FORM B-3

SDG: CLP158	REVIEWER: S Schmidt	DATE: 2/13/92	PAGE 1 OF 1

COMMENTS:

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
VBLK	Methylene Chloride	5			µg/L		50	B00Y15	10 UJ
↓	Acetone	4	J		↓		40	↓	11 UJ

B-3

2/21/92

2/21/92

9613457.1984

1/92

9613457.1985

WET CHEMISTRY DATA REVIEW CHECKLIST - FORM A-7

PROJECT: 913-1719	REVIEWER: S Schiola	DATE: 2/19/92
LABORATORY: Weston	CASE: 9107L158	SDG: 9107L158
SAMPLES/MATRIX: B00XN8, B00XT8, B00XZ0, B00XZ3, Water		

1. DATA PACKAGE COMPLETENESS

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal of the omitted data.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Cover Page		✓	
Traffic Reports/Chain-of-Custody	✓		
Sample Analysis Data Report Forms	✓		
Standards Data	✓		
QC Summary			
Blanks Summary Report Forms	✓		
Spike Sample Recovery Report Forms	✓		
Duplicate Sample Analysis Report Forms	✓		
Laboratory Control Sample Report Forms	✓		
Raw Data			
Ion Chromatograph Chromatograms	✓		
TOC and TOX Instrument Printouts	✓	X SSS 2/19/92	
Laboratory Bench Sheets	✓		
Additional Data			
Laboratory Sample Preparation Logs	✓		
Instrument Run Logs	✓		
Internal Laboratory Chain-of-Custory	✓		
Percent Solids Analysis Records			✓
Reduction Formulae		✓	
Chemist Notebook Pages	✓		

2/21/92

9613457.1986

2. HOLDING TIMES

Were all samples analyzed within holding times? Yes **(No)** N/A

Action: If any holding times were exceeded qualify all affected results as estimated (J for detects and UJ for non-detects).

3. INITIAL CALIBRATIONS

Were all instruments calibrated daily, each set-up time and were the proper number of standards used? **(Yes)** No N/A

Are the correlation coefficients ≥0.995? **(Yes)** No N/A

Was a balance check conducted prior to the TDS analysis? **(Yes)** No N/A

Was the titrant normality checked? **(Yes)** No N/A

ACTION: Qualify all data as unusable (R) if reported from an analysis in which the above criteria were not met.

4. INITIAL AND CONTINUING CALIBRATION VERIFICATION

Are ICV and CCV percent recoveries within control? **(Yes)** No N/A

Are there calculation errors? Yes **(No)** N/A

ACTION: Qualify all affected data in accordance with the validation requirements.

5. LABORATORY BLANKS

Are target analytes present in the ~~field~~ lab blanks? ~~Yes~~ **(No)** N/A

SSS 2/19/92

ACTION: Qualify all associated sample results for any analyte <5X the amount in any laboratory blank as non-detected (U) and list the affected samples and analytes below.

6. FIELD BLANKS

Are target analytes present in the field blanks? Yes No **(N/A)**

ACTION: Qualify all sample results for any analyte <5X the amount in any valid field blank as non-detected (U).

2/21/92

7. MATRIX SPIKE SAMPLE ANALYSIS

Are spike recoveries within the acceptance limits? Yes No N/A

ACTION: If spike recovery is outside the control limits and the sample results are greater than the CRQL, qualify the data as estimated (J). If the spike recovery is less than 30% and the sample results are less then the IDL qualify the data as unusable (R).

8. LABORATORY CONTROL SAMPLE

Are percent recoveries within the acceptance limits? Yes No N/A

Are there calculation errors? Yes No N/A

ACTION: Qualify the affected results according to the following requirements:

AQUEOUS LCS - Qualify as estimated (J), all sample results > IDL, for which the LCS %R falls within the range 50-79% or > 120%. Qualify as estimated (UJ), all sample results < IDL, for which the LCS falls within the range of 50-79%. Qualify as unusable (R) all sample results, for which the LCS %R <50%.

SOLID LCS - Qualify as estimated (J), all sample results > IDL for which the LCS %R is outside the established control limits. Qualify as estimated (UJ), all sample results < IDL for which the LCS %R are lower than the established control limits.

9. PERFORMANCE AUDIT ANALYSES

Are the performance audit sample results within the acceptance limits? Yes No ~~N/A~~ SSS 2/20/92

ACTION: Note the results of the performance audit samples in the validation narrative.

10. DUPLICATE SAMPLE ANALYSIS

Are RPD values within the acceptance limits? Yes No N/A

Action: Qualify the results for all associated samples of the same matrix as estimated (J) if the RPD falls outside the acceptance limits.

9613457.1988

11. FIELD DUPLICATE SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field duplicate samples in the validation narrative.

12. FIELD SPLIT SAMPLES

Do RPD values exceed the acceptance limits? Yes No N/A

ACTION: Note the results of the field split samples in the validation narrative.

13. ANALYTE QUANTITATION AND DETECTION LIMITS

Have results been reported and calculated correctly? Yes No N/A

Are instrument detection limits below the CRDL? Yes No N/A

Action: If analyte quantitation is in error, contact the laboratory for explanation. If errors or deficiencies can not be resolved with the laboratory, qualify associated data as unusable (R).

14. OVERALL ASSESSMENT AND SUMMARY

Has the laboratory conducted the analysis in accordance with the analytical SOW? Yes No N/A

Were project specific data quality objectives met for this analysis? Yes No N/A

ACTION: Summarize all the data qualifications and complete the data validation narrative as specified in Section 10 of the data validation requirements.

9613457.1989

COMMENTS (attach additional sheets as necessary):

1. Assume standards used for ICV + CCV
   F 100 mg/L
   Cl 45
   NO_2 45
   NO_3 50
   PO_4 45
   SO_4 45

2. Field spike recoveries:
   Spike 1 118%
   Spike 2 157%

3. Suspect improper method for hydrazine reduction of NO_3.

2/21/96
AHS 2/21/96

HOLDING TIME SUMMARY - FORM B-1

SDG: 158	REVIEWER: S Schulz	DATE: 2/19/92	PAGE 1 OF 2

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B00XN8	TOC	7/11/91		7/26/91			none
	NO_2/NO_3			7/22/91		11	
	TDS			7/17/91		6	
	Alk			7/17/91		6	
	pH			7/13/91		7	
	Cl			7/29/91		18	
	F						
	NO_3						J
	NO_2						J
	PO_4						J
	SO_4			✓		✓	none
✓	CN	✓	7/19/91	7/19/91		8	↓

2/21/92

2/26/92

09134457.1990

HOLDING TIME SUMMARY - FORM B-1

SDG: 158	REVIEWER: S Schildt	DATE: 2/19/92	PAGE 2 OF 2
COMMENTS:			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
GOUXTS,XZOXZ3	TOC	7/11/91		7/30/91		19	none
	NO_2/NO_3			7/22/91		11	
	TDS			7/17/91		6	
	Alk			7/17/91		6	
	pH			7/18/91		7	
	Cl			7/29/91		18	
	F						
	NO_3						J
	NO_2						J
	PO_4						J
	SO_4						none
	CN		7/19/91	7/19/91		8	

2/21/92

2/21/92

9613457.1991

ACCURACY DATA SUMMARY - FORM B-4

SDG: 158	REVIEWER: S Schibelt	DATE: 2/21/92	PAGE 1 OF 1	
COMMENTS: Field spike				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B00XN8	Cyanide	118	none	
B00XT8	↓	157	none	

Mod 92
2/21/92
4/21/92

9613457.1992