Westinghouse Hanford Company

START 0043039

CHAIN OF CUSTODY

9107L081-WES-105

/A

Custody Form Initiator Wendy S. Thompson

Project #: 91-019

Company Contact Wendy S. Thompson

Telephone (509) 376-2153

Project Designation/Sampling Locations 200-BP-1 Operable Unit

Collection Date 7/1/91

Boring: 216-B-57 A

Time 1244

Ice Chest No. RM#0 polycooler

Field Logbook No. WHC-N-287-3

Bill of Lading/Airbill No.

Offsite Property No. W9102143

Method of Shipment Air

Shipped to Weston Laboratory, 208 Welsh Pool Rd., Lionville, PA 19341-1313

Possible Sample Hazards/Remarks 4.5 ppm on draeger tube for NH4/3 wet 7/1/91
78 pCi/gm Total beta-gamma activity.

Sample Identification

(1) B00X61

1, 125ml., amber glass; soil; CLP-VOA

1, 950ml. amber glass; soil; CLP-Semivoa; Pest/PCB; TOC; Metals; Bi; Cn; anions

1, 1000ml. glass; soil; Radionuclides; CLP

N/A

N/A

FEB 1996 RECEIVED EDMC

☐ Field Transfer of Custody

CHAIN OF POSSESSION

(Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Wendy S Thompson Wendy S. Thompson	J. DEMAREST J. Demarest	~~7/1/91~~ wet 7-2-91 1100
Relinquished by: J. DEMAREST J. Demarest	Received by:	Date/Time:
Relinquished by: Emery	Received by: P. Geiger	Date/Time: ~~7/2/91~~ 7/3/91 9:50 AM
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

A-6000-407 (12/90)

Data

Custody Transfer Record/Lab Work Request

WESTON

WESTON Analytics Use Only
9107L081

Project #: 91019

Client: ~~Westinghouse Hanford Co~~ Westinghouse Hanford Co (WS-Hanford)

Work Order: 9107L081 EE3E5 W. S. Thompson

Date Rec'd. 7/3/91 Date Due 8/7/91 As specified in SOW

RFW Contact: Peg Beaty

Client Contact/Phone: W.S.Thompson (509)376-2153

Refrigerator#	1	3	Poly Cooler 6						
#/Type Container	← GLASS →								1/G
Volume (ml.)	125	950	1000	950					
Preservative	← 4°C →			NON					
ANALYSES REQUESTED	1	2	3	BNA	PP/PCB	TOC	Metals	CN	Anions

WA Use Only Lab ID	Client ID/Description	Matrix	Date Collected	062444	062445	15012	062554	062554	10CT	~~ICP/MS~~ ICP/OES	ICP/OES	ICP/MS
001	B00Z61 (3 glass bottles)	Soil	7/1/91	X	X	X	✓	✓	✓	✓	✓	✓

Sample is Radioactive

QC/DQ=CLP
TAT=35day

ANALYSES REQUESTED

1. VOA (CLP)
2. Semi-VOA, Pesticides, PCB's, TOC, ICP/AA metals, Bismuth, Cyanide (CLP): NO2/NO3 IC Anions
3. Total alpha/beta, GEA, Sr-90, Cs-137, Co-60, Pu-238, Pu 239/240, Ru-106, Total Uranium

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: Please call to confirm receipt and condition of sample

Item/Reason	Relinquished by	Received by	Date	Time	Item/Reason	Relinquished by	Received by	Date	Time
	[illegible]	[illegible]	[illegible]	[illegible]					
		SEE WHC COC							

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

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

7-115

0000002

9613402.1622

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

RFW Batch Number: 9107L081 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 07/10/91 15:57 Page: 1a

	Cust ID:	B00X61	VBLK
Sample Information	RFW#:	001	91LVQ030-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	105 %	104 %
	Bromofluorobenzene	104 %	103 %
	1,2-Dichloroethane-d4	81 %	85 %
Chloromethane		11 U	10 U
Bromomethane		11 U	10 U
Vinyl Chloride		11 U	10 U
Chloroethane		11 U	10 U
Methylene Chloride		7 B	4 J
Acetone		15 B	7 J
Carbon Disulfide		6 U	5 U
1,1-Dichloroethene		6 U	5 U
1,1-Dichloroethane		6 U	5 U
1,2-Dichloroethene (total)		6 U	5 U
Chloroform		6 U	5 U
1,2-Dichloroethane		6 U	5 U
2-Butanone		11 U	10 U
1,1,1-Trichloroethane		6 U	5 U
Carbon Tetrachloride		6 U	5 U
Vinyl Acetate		11 U	10 U
Bromodichloromethane		6 U	5 U
1,2-Dichloropropane		6 U	5 U
cis-1,3-Dichloropropene		6 U	5 U
Trichloroethene		6 U	5 U
Dibromochloromethane		6 U	5 U
1,1,2-Trichloroethane		6 U	5 U
Benzene		6 U	5 U
Trans-1,3-Dichloropropene		6 U	5 U
Bromoform		6 U	5 U
4-Methyl-2-pentanone		11 U	10 U
2-Hexanone		11 U	10 U
Tetrachloroethene		6 U	5 U
1,1,2,2-Tetrachloroethane		6 U	5 U

*= Outside of EPA CLP QC limits.

000004
9613402.1623

Cust ID:	B00X61	VBLK
RFW#:	001	91LVQ030-MB1
Toluene	6 U	5 U
Chlorobenzene	6 U	5 U
Ethylbenzene	6 U	5 U
Styrene	6 U	5 U
Xylene (total)	6 U	5 U

*= Outside of EPA CLP QC limits.

0000005

9613402.1624

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 07-03-91
RFW #: 9107L081, GC/MS VOLATILE
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected 07-01-91.

The sample and its associated QC sample was analyzed according to criteria set forth in CLP SOW 02/88 (Rev. 05/89) for TCL Volatile target compounds on 07-09-91.

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 9106L011.

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

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

Linda R. Hayhurst 8-1-91

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

9611402.1626

IA

VOLATILE ORGANICS ANALYSIS SHEET

0000015 CLIENT SAMPLE NO.

BOOX61

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9107L081-001

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

Lab File ID: 0070916

Level: (low/med) LOW

Date Received: 07/03/91

% Moisture: not dec. 9

Date Analyzed: 07/09/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	7	B
67-64-1	Acetone	15	B
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

1E

0000016 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOOX61

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9107L081-001

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

Lab File ID: Q070916

Level: (low/med) LOW

Date Received: 07/03/91

% Moisture: not dec. 9

Date Analyzed: 07/09/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

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

RFW Batch Number: 9107L081 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 08/16/91 14:57 Page: 1a

	Cust ID:	B00X61		B00X61		SBLK		SBLK BS	
Sample Information	RFW#:	001		001 MS		91LE0866-MB1		91LE0866-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	111	%	59	%	101	%	56	%
	2-Fluorobiphenyl	93	%	63	%	97	%	57	%
	p-Terphenyl-d14	108	%	84	%	99	%	83	%
	Phenol-d5	102	%	62	%	99	%	58	%
	2-Fluorophenol	99	%	59	%	100	%	58	%
	2,4,6-Tribromophenol	83	%	55	%	107	%	57	%
Phenol		330	U	55	%	330	U	53	%
bis(2-Chloroethyl)ether		330	U	350	U	330	U	330	U
2-Chlorophenol		330	U	59	%	330	U	56	%
1,3-Dichlorobenzene		330	U	350	U	330	U	330	U
1,4-Dichlorobenzene		330	U	60	%	330	U	58	%
Benzyl alcohol		330	U	350	U	330	U	330	U
1,2-Dichlorobenzene		330	U	350	U	330	U	330	U
2-Methylphenol		330	U	350	U	330	U	330	U
bis(2-Chloroisopropyl)ether		330	U	350	U	330	U	330	U
4-Methylphenol		330	U	350	U	330	U	330	U
N-Nitroso-Di-n-propylamine		330	U	58	%	330	U	55	%
Hexachloroethane		330	U	350	U	330	U	330	U
Nitrobenzene		330	U	350	U	330	U	330	U
Isophorone		330	U	350	U	330	U	330	U
2-Nitrophenol		330	U	350	U	330	U	330	U
2,4-Dimethylphenol		330	U	350	U	330	U	330	U
Benzoic acid		1700	U	40	J	1700	U	1700	U
bis(2-Chloroethoxy)methane		330	U	350	U	330	U	330	U
2,4-Dichlorophenol		330	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		330	U	63	%	330	U	58	%
Naphthalene		330	U	350	U	330	U	330	U
4-Chloroaniline		330	U	350	U	330	U	330	U
Hexachlorobutadiene		330	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		330	U	41	%	330	U	54	%
2-Methylnaphthalene		330	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		330	U	350	U	330	U	330	U

*= Outside of EPA CLP QC limits.

0000004
9613402.1628

Cust ID:	B00X61		B00X61		SBLK		SBLK BS	
RFW#:	001		001 MS		91LE0866-MB1		91LE0866-MB1	
2,4,6-Trichlorophenol	330	U	350	U	330	U	330	U
2,4,5-Trichlorophenol	1700	U	1800	U	1700	U	1700	U
2-Chloronaphthalene	330	U	350	U	330	U	330	U
2-Nitroaniline	1700	U	1800	U	1700	U	1700	U
Dimethylphthalate	330	U	350	U	330	U	330	U
Acenaphthylene	330	U	350	U	330	U	330	U
2,6-Dinitrotoluene	330	U	350	U	330	U	330	U
3-Nitroaniline	1700	U	1800	U	1700	U	1700	U
Acenaphthene	330	U	64	%	330	U	59	%
2,4-Dinitrophenol	1700	U	1800	U	1700	U	1700	U
4-Nitrophenol	1700	U	21	%	1700	U	51	%
Dibenzofuran	330	U	350	U	330	U	330	U
2,4-Dinitrotoluene	330	U	64	%	330	U	63	%
Diethylphthalate	330	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	330	U	350	U	330	U	330	U
Fluorene	330	U	350	U	330	U	330	U
4-Nitroaniline	1700	U	1800	U	1700	U	1700	U
4,6-Dinitro-2-methylphenol	1700	U	1800	U	1700	U	1700	U
N-Nitrosodiphenylamine (1)	330	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	330	U	350	U	330	U	330	U
Hexachlorobenzene	330	U	350	U	330	U	330	U
Pentachlorophenol	42	J	70	%	1700	U	64	%
Phenanthrene	330	U	350	U	330	U	330	U
Anthracene	330	U	350	U	330	U	330	U
Di-n-Butylphthalate	420		430		330	U	330	U
Fluoranthene	330	U	350	U	330	U	330	U
Pyrene	330	U	82	%	330	U	80	%
Butylbenzylphthalate	330	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	660	U	700	U	670	U	670	U
Benzo(a)anthracene	330	U	350	U	330	U	330	U
Chrysene	330	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	93	JB	340	JB	49	J	330	U
Di-n-Octyl phthalate	330	U	350	U	330	U	330	U
Benzo(b)fluoranthene	330	U	350	U	330	U	330	U
Benzo(k)fluoranthene	330	U	350	U	330	U	330	U
Benzo(a)pyrene	330	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	350	U	330	U	330	U
Dibenzo(a,h)anthracene	330	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	330	U	350	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

9613402.1629

000005

9613402.1630 6A

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 07-03-91
RFW #: 9107L081, SEMIVOLATILE
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected on 07-01-91.

The sample and its associated QC samples were extracted on 07-08-91 and analyzed according to criteria set forth in CLP SOW 2/88 (rev 5/89) for TCL Semivolatile target compounds on 07-18,26-91.

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

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

2. All surrogate recoveries were within EPA QC limits.

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

4. All matrix spike recoveries were within EPA QC limits. The associated matrix spike duplicate sample was lost during the extraction process.

5. The laboratory blank contained the common contaminant bis(2-ethylhexyl)phthalate at levels less than the CRQL.

6. Internal standard area and retention time criteria were met for all samples and blanks.

Jack R. Tuschall, Ph.D. 8.23.91
Date
Laboratory Manager
Lionville Analytical Laboratory

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOX61

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9107L081-001

Sample wt/vol: 31.9 (g/mL) G

Lab File ID: V071818

Level: (low/med) LOW

Date Received: 07/03/91

% Moisture: not dec. 5 dec.

Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) Y pH: 6.2

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
100-51-6	Benzyl alcohol	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	bis(2-Chloroisopropyl)ether	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
65-85-0	Benzoic acid	1700	U
111-91-1	bis(2-Chloroethoxy)methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
606-20-2	2,6-Dinitrotoluene	330	U

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOX61

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9107L081-001

Sample wt/vol: 31.9 (g/mL) G Lab File ID: V071818

Level: (low/med) LOW Date Received: 07/03/91

% Moisture: not dec. 5 dec. Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) Y pH: 6.2 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	42	J
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	420	
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	93	JB
117-84-0	Di-n-Octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine

1F 0000019

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOOX61

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9107L081-001

Sample wt/vol: 31.9 (g/mL) G Lab File ID: V071818

Level: (low/med) LOW Date Received: 07/03/91

% Moisture: not dec. 5 dec. Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) Y pH: 6.2 Dilution Factor: 1.00

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.10	1000	JA
2.	ALKANE	13.35	700	J
3.	ALKANE	15.03	3000	J
4.	ALKANE	16.33	5000	J
5.	ALKANE	17.65	1000	J
6.	UNKNOWN	19.02	10000	J
7.	ALKANE	19.68	1000	J
8.	UNKNOWN	22.73	400	J
9.	PHTHALATE	22.95	500	J
10.	UNKNOWN	25.50	1000	J

9613402.1031 0000000 003

RADIOACTIVE SAMPLE EVALUATION

I. Sample Custodian: C. PIPER **RFW Batch #** 91071081 **DATE:** 7-3-91

Package received from:

Client: WESTINGHOUSE Location: HANFORD, WA

Mode of Transport: __ UPS __ Fed EX X Other EMERY WORLDWIDE

DOT labels: __ Radioactive White I __ Radioactive Yellow II
__ Radioactive Yellow III __ Other _____

Transport Index: 2474250361 Security Seal: X Yes __ No

II. Package Survey:

Gamma instrument make, model, serial #: LUDLUM MODEL 19 444/15
Calibration date: 8-28-90

Source response check: Th-228
Source type and ID #: 8644-2 Response 1000 microR/hr

Package Survey: (microR/hr) max. reading: 6 Background: 4

III. Sample Container Measurements:

Alpha instrument make, model, serial #: LUDLUM MODEL 43-558660
Calibration Date: 2-21-91 Efficiency factor: 12.56 dpm/cpm

Source Response Check: Th-230
Source type and ID #: Sn-12059 Response: 1800 cpm

Gamma instrument make, model, serial #: LUDLUM MODEL 19 444/15
Calibration Date: 8-28-[illegible] Gamma Background = 4 microR/hr

Source Response Check:
Source type and ID#: Th-228, 8644-2 Response: 1000 microR/hr

Sample ID	Form (liq or sol)	RFW ID Batch	Gamma microR/hr	Alpha cpm	Alpha eff. fact	Alpha dpm	nCi/g	Mass (g)	nCi
B00X61	SOL	001	7	0			0.302	1245.2	376.05

CB 7-3-91

RFW 21-21-013/A-05/91

*RADIOACTIVE CB 7-3-91 ~~3:15 pm~~ 4 7-3-91 15:15 75

Roy F. Weston, Inc. - Lionville Laboratory
Pesticide/PCBs by GC, CLP List

Report Date: 08/10/91 10:53

RFW Batch Number: 9107L081 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000

	Cust ID:	BOOX61	BOOX61	BOOX61	PBLK	PBLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	91LE0867-MB1	91LE0867-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	5.00	5.00	5.00	1.00	4.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg

Surrogate: Di-n-butylchlorendate	I	%	I	%	I	%	147	%	147	%
		fl		fl		fl		fl		fl
Alpha-BHC	42	U	41	U	42	U	8.0	U	32	U
Beta-BHC	42	U	41	U	42	U	2.0	J	32	U
Delta-BHC	42	U	41	U	42	U	8.0	U	32	U
gamma-BHC (Lindane)	42	U	45 *	%	52	%	8.0	U	102	%
Heptachlor	42	U	82	%	98	%	8.0	U	100	%
Aldrin	42	U	92	%	85	%	8.0	U	102	%
Heptachlor epoxide	42	U	41	U	42	U	8.0	U	32	U
Endosulfan I	42	U	41	U	42	U	8.0	U	32	U
Dieldrin	84	U	I	%	I	%	16	U	105	%
4,4'-DDE	84	U	83	U	84	U	16	U	64	U
Endrin	84	U	72	%	86	%	16	U	110	%
Endosulfan II	84	U	83	U	84	U	16	U	64	U
4,4'-DDD	84	U	83	U	84	U	16	U	64	U
Endosulfan sulfate	84	U	83	U	84	U	16	U	64	U
4,4'-DDT	84	U	I	%	I	%	16	U	106	%
Methoxychlor	420	U	410	U	420	U	80	U	320	U
Endrin ketone	84	U	83	U	84	U	16	U	64	U
alpha-Chlordane	420	U	410	U	420	U	80	U	320	U
gamma-Chlordane	420	U	410	U	420	U	80	U	320	U
Toxaphene	840	U	830	U	840	U	160	U	640	U
Aroclor-1016	420	U	410	U	420	U	80	U	320	U
Aroclor-1221	420	U	410	U	420	U	80	U	320	U
Aroclor-1232	420	U	410	U	420	U	80	U	320	U
Aroclor-1242	420	U	410	U	420	U	80	U	320	U
Aroclor-1248	420	U	410	U	420	U	80	U	320	U
Aroclor-1254	770	J	840		870		160	U	640	U
Aroclor-1260	840	U	830	U	840	U	160	U	640	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

000005
9613402.1635

9613402.1636 6A

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 07-03-91
RFW #: 9107L081, PEST/PCB
W.O. #: 6168-02-01

NARRATIVE

One (1) soil sample was collected on 07-01-91.

The sample and its associated QC samples were extracted on 07-08-91 and analyzed according to criteria set forth in the Contract Laboratory Program for Pesticide and PCB target compounds on 08-08-91.

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

1. Linearity and breakdown criteria were met on the primary column.

2. Continuing calibration criteria were met for all compounds in standards analyzed prior to sample extracts.

3. Retention time criteria were exceeded for endrin ketone on the 2250/2401 column on 08-07-91 at 05:54 and 10:18.

4. All obtainable surrogate recoveries were within EPA QC limits.

5. All blank spike recoveries were within EPA QC limits.

6. One (1) of eight (8) obtainable matrix spike recoveries was outside the EPA QC limits. The matrix spike recovery for gamma-BHC (45%) was outside the EPA QC limit of 46%.

7. Sample BOOX61 and its associated matrix spike samples, required five-fold dilutions because they contained high levels of target compounds.

8. The blank spike sample required a four-fold dilution to maintain the pesticide concentrations within the linear range of the instrument.

9. The laboratory blank contained the target compound beta-BHC at a level less than CRQL.

8.23.91.

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

9613402.1637 0000014

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOX61

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9107L081-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: 08069103.77

Level: (low/med) LOW

Date Received: 07/03/91

% Moisture: not dec. 5 dec.

Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 08/08/91

GPC Cleanup: (Y/N) Y pH: 6.2

Dilution Factor: 5.00

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	42	U
319-85-7	Beta-BHC	42	U
319-86-8	Delta-BHC	42	U
58-89-9	gamma-BHC (Lindane)	42	U
76-44-8	Heptachlor	42	U
309-00-2	Aldrin	42	U
1024-57-3	Heptachlor epoxide	42	U
959-98-8	Endosulfan I	42	U
60-57-1	Dieldrin	84	U
72-55-9	4,4'-DDE	84	U
72-20-8	Endrin	84	U
33213-65-9	Endosulfan II	84	U
72-54-8	4,4'-DDD	84	U
1031-07-8	Endosulfan sulfate	84	U
50-29-3	4,4'-DDT	84	U
72-43-5	Methoxychlor	420	U
53494-70-5	Endrin ketone	84	U
5103-71-9	alpha-Chlordane	420	U
5103-74-2	gamma-Chlordane	420	U
8001-35-2	Toxaphene	840	U
12674-11-2	Aroclor-1016	420	U
11104-28-2	Aroclor-1221	420	U
11141-16-5	Aroclor-1232	420	U
53469-21-9	Aroclor-1242	420	U
12672-29-6	Aroclor-1248	420	U
11097-69-1	Aroclor-1254	770	J
11096-82-5	Aroclor-1260	840	U

NL 8/14/91

9613402.1638

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 07-03-91
RFW #: 9107L081
W.O. #: 6168-02-01-0000

INORGANIC NARRATIVE

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

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

2. Laboratory control standards (blank spikes) were within the control limits of 80-120% with the exception of nitrite. All %RPD were within the 20% guidance limit.

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

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

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

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

10.16.91.

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

OCT 1991 RECEIVED OSM DMO

ncc\i7-081

1 M.H. 4/17/95

9613402.1639

4

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/08/91

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

WESTON BATCH #: 9107L081

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BOOX61	% Solids	97.3	%	0.10
		Nitrite by IC	8.3	MG/KG	1.3
		Nitrate by IC	125	MG/KG	1.3
		Cyanide, Total	1.0 u	MG/KG	1.0
		Total Organic Carbon	1680	MG/KG	156

9613402.1640

8

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 10/08/91

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

WESTON BATCH #: 9107L081

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	% DIFF
-001REP	BOOX61	Cyanide, Total	1.0 u	1.0 u	NC
		Total Organic Carbon	1680	2180	25.6

9613402.1641 4

WESTON

Roy F. Weston, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD COMPANY SAMPLES RECEIVED: 07/03/91
RFW #: 9107L081
W.O.#: 6168-02-01

METALS NARRATIVE

The set of samples consisted of (1) soil sample collected on 07/01/91.

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, CD, PB, SE, 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 with the exception of AL, FE, MG, and MN. All corresponding samples were flagged with a "*" according to CLP protocol.

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).

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

Date

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 08/15/91

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

WESTON BATCH #: 9107L081

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	BOOX61	Silver, Total	2.1	u	MG/KG	2.1
		Aluminum, Total	3300		MG/KG	41.1
		Arsenic, Total	2.1	u	MG/KG	2.1
		Barium, Total	81.6		MG/KG	41.1
		Beryllium, Total	1.0	u	MG/KG	1.0
		Bismuth, Total	41.1	u	MG/KG	41.1
		Calcium, Total	6890		MG/KG	1030
		Cadmium, Total	1.0	u	MG/KG	1.0
		Cobalt, Total	10.3	u	MG/KG	10.3
		Chromium, Total	2.1	u	MG/KG	2.1
		Copper, Total	9.0		MG/KG	5.1
		Iron, Total	8800		MG/KG	20.6
		Mercury, Total	0.10	u	MG/KG	0.10
		Potassium, Total	1030	u	MG/KG	1030
		Magnesium, Total	2290		MG/KG	1030
		Manganese, Total	457		MG/KG	3.1
		Sodium, Total	1030	u	MG/KG	1030
		Nickel, Total	8.2	u	MG/KG	8.2
		Lead, Total	5.5		MG/KG	1.2
		Antimony, Total	12.3	u	MG/KG	12.3
		Selenium, Total	1.0	u	MG/KG	1.0
		Thallium, Total	2.1	u	MG/KG	2.1
		Vanadium, Total	15.3		MG/KG	10.3
		Zinc, Total	31.3		MG/KG	4.1

ROY F. WESTON INC.

INORGANICS PRECISION REPORT 08/15/91

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

WESTON BATCH #: 9107L081

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	% DIFF
-001REP	BOOX61	Silver, Total	2.1 u	2.1 u	NC
		Aluminum, Total	3300	4470	29.9
		Arsenic, Total	2.1 u	2.1 u	NC
		Barium, Total	81.6	74.5	9.1
		Beryllium, Total	1.0 u	1.0 u	NC
		Bismuth, Total	41.1 u	41.1 u	NC
		Calcium, Total	6890	7520	8.7
		Cadmium, Total	1.0 u	1.0 u	NC
		Cobalt, Total	10.3 u	10.3 u	NC
		Chromium, Total	2.1 u	2.5	NC
		Copper, Total	9.0	12.0	28.6
		Iron, Total	8800	12200	32.6
		Potassium, Total	1030 u	1040	NC
		Magnesium, Total	2290	3320	36.5
		Manganese, Total	457	353	25.7
		Sodium, Total	1030 u	1030 u	NC
		Nickel, Total	8.2 u	8.2 u	NC
		Lead, Total	5.5	2.5	75.0
		Antimony, Total	12.3 u	12.3 u	NC
		Selenium, Total	1.0 u	1.0 u	NC
		Thallium, Total	2.1 u	2.1 u	NC
		Vanadium, Total	15.3	19.9	26.1
		Zinc, Total	31.3	35.6	12.9

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOOX61

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

Lab Code: WESTON Case No.: 200BP SAS No.: SDG No.: CLP08

Matrix (soil/water): SOIL Lab Sample ID: 910708101

Level (low/med): LOW Date Received: 7/03/91

% Solids: 97.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3300.00		*	P
7440-36-0	Antimony	3.70	U	N	P
7440-38-2	Arsenic	1.50	B		F
7440-39-3	Barium	81.60			P
7440-41-7	Beryllium	.25	B		P
7440-43-9	Cadmium	.41	U	N	P
7440-70-2	Calcium	6890.00			P
7440-47-3	Chromium	1.20	B		P
7440-48-4	Cobalt	5.30	B		P
7440-50-8	Copper	9.00			P
7439-89-6	Iron	8800.00		*	P
7439-92-1	Lead	5.50		N	F
7439-95-4	Magnesium	2290.00		*	P
7439-96-5	Manganese	457.00		*	P
7439-97-6	Mercury	.10	U		CV
7440-02-0	Nickel	5.60	B		P
7440-09-7	Potassium	818.00	B		P
7782-49-2	Selenium	.41	U	NW	F
7440-22-4	Silver	.82	U	N	P
7440-23-5	Sodium	216.00	B		P
7440-28-0	Thallium	.41	U	W	F
7440-62-2	Vanadium	15.30			P
7440-66-6	Zinc	31.30			P
	Cyanide	.51	U		C

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

9613402.1646

VALIDATION SUMMARY

9613402.1647

9107L081-WES-105

Report To

Westinghouse Hanford Company
Richland, Washington

Data Validation Report
200-BP-1 RI/FS
Data Package: 9107L081-WES-105
Sample ID: B00X61
Matrix: Soil
Analysis Type: Organics/Metals/Wet Chemistry

Prepared By

Golder Associates Inc.
Redmond, Washington

Validated by: Susan Winter
Susan Winter
Staff Chemist

Reviewed by: Kent Angelos
Kent Angelos
Associate

May 8, 1992

913-1719

9613402.1648

TABLE OF CONTENTS

	Page No.
1. INTRODUCTION	1
2. DATA QUALITY OBJECTIVES	1
3. QUALIFIED DATA	1
3.1 Major Deficiencies	1
3.2 Minor Deficiencies	1
3.2.1 Volatile Organics	2
3.2.2 Semivolatile Organics	2
3.2.3 Pesticide/PCB Organics	2
3.2.4 Metals	2
3.2.5 Wet Chemistry	3
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 data package 9107L081-WES-105 consisting of one (1) soil sample for contract laboratory program target compound list (CLP/TCL) volatiles, semivolatiles, pesticides and PCBs, CLP target analyte list (TAL) metals and total cyanide, and wet chemistry parameters. Sample identifications, locations and sample dates are provided in the tabular data summary provided in Attachment 3.

Data validation was conducted in accordance with the statement of work (WHC 1991) and validation procedures (WHC 1992).

2. DATA QUALITY OBJECTIVES

The data package was complete for all requested analyses and met the data quality objectives of the work plan. Data quality objectives for the project specified the use of CLP methods for the TCL volatiles, semivolatiles, pesticides/PCBs and TAL metals and cyanide. EPA methods were used for the analysis of the wet chemistry parameters.

Sample quantitation limits met the CRQL requirement for the project with the exception of minor differences due to moisture content and dilution factors. However, sample results were reported to within five times the CRQL.

With the exception of the deficiencies identified in Section 3, the precision and accuracy goals specified in the work plan and the analytical statement of work were met.

3. QUALIFIED DATA

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

3.1 Major Deficiencies

Aldol condensation products detected in the semivolatile fraction have been rejected since they are a suspected laboratory contaminant.

Mercury data was rejected since the initial and continuing calibration percent recoveries were less than 40%.

3.2 Minor Deficiencies

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

3.2.1 Volatile Organics

- The initial calibration relative standard deviation (RSD) for bromomethane and bromoform were out of the control limits. The continuing calibration percent difference (%D) for bromomethane was also out of the control limits. The associated sample, B00X61, was qualified as estimated (UJ).

- Methylene chloride and acetone were detected in the laboratory method blank at concentrations of 4 and 7 µg/Kg, respectively. Sample concentrations for both compounds in the associated sample were less than ten times the respective blank concentration and were therefore qualified as undetected (U).

3.2.2 Semivolatile Organics

- The initial calibration RSD for benzyl alcohol was out of the control limits. The associated sample, B00X61, was qualified as estimated (UJ).

- The continuing calibration %D for benzoic acid, hexachlorocyclopentadiene, 2,4,5-trichlorophenol, 2,4-dinitrophenol, and benzo(k)fluoranthene were out of the control limits. The associated sample results were qualified as estimated (UJ).

- The continuing calibration %D for the surrogate 2,4,6-tribromophenol was out of the control limit.

- Bis(2-ethylhexyl)phthalate was detected in the laboratory method blank at a concentration of 49 µg/Kg. The concentration in the associated sample was less than ten times the respective blank concentration and was therefore qualified as undetected (U).

- An unknown phthalate compound detected in the semivolatile fraction at a concentration of 500 µg/Kg, has been rejected (R) in accordance with the validation requirements.

3.2.3 Pesticide/PCB Organics

- Beta-BHC was present in the preparation blank at 2 µg/Kg. The result for this compound in sample B00X61 was already below the detection limit and therefore did not require qualification.

3.2.4 Metals

- Several analytes were present in the initial, calibration, and preparation blanks (see Attachment 4). Results for sodium and vanadium were less than five times the respective blank concentration and have been qualified as not detected (U).

- The matrix spike %R for antimony, lead, selenium, and silver were out of the control limits. The associated results were qualified as estimated (J for detects, UJ for non-detects).

- The duplicate RPD for lead as well as the percent recovery in the GFAA analytical spike for selenium were out of the control limits. The associated results were already qualified due to the matrix spike %R and did not require further qualification.

- The sample for mercury was analyzed out of holding time; however, since the data was already rejected, further qualification was not required.

3.2.5 Wet Chemistry

- The samples for nitrate and nitrite were analyzed out of the required holding time. The associated results have been qualified as estimated (J for detects, UJ for non-detects).

- The TOC results cannot be fully validated since no preparation sheet has been provided with the data package. The results and associated QC appear acceptable and recalculation of the available raw data has not resulted in identification of any serious anomalies; however, the laboratory should provide a preparation sheet for future data packages.

4. CONCLUSIONS

Sections 1 through 3 present a summary of the data quality for the subject data package. The data as qualified are acceptable for use with the exception of mercury and the aldol condensation products detected in the semivolatile fraction. 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

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

WHC, 1992, Westinghouse Hanford Company, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1992. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

B - Indicates the compound or analyte was analyzed for and detected. The value reported is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL).

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. The data are usable for decision making purposes.

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. The data are usable for decision making purposes.

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.

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.

9613402.1653

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9613402.1654

5/7/92

9107L081

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 081	REVIEWER:	DATE: 4/30/92	PAGE 1 OF 3
COMMENTS: Metals/VOA			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Mercury	UJ	B00X61	Analyzed out of hold time
Mercury	R	B00X61	ICV & CCV %R less than 40%
Copper	none	B00X61	Present in blanks
Magnesium	↓	↓	↓
Manganese	↓	↓	↓
Sodium	U	↓	↓
Vanadium	U	↓	↓
Zinc	none	↓	↓
Thallium	none	none	Present in CCB Blanks.
Antimony	UJ	B00X61	MS %R out of control limit
Lead	J	↓	↓
Selenium	UJ	↓	↓
Silver	UJ	↓	↓
Lead	J (already qualified)	B00X61	Dup %RPD out of control limit.
Selenium	UJ (already qualified)	B00X61	GFAA Analytical Spike out of control limit
Bromomethane	UJ	B00X61	ICV & CCV out of control limit
Bromoform	UJ	↓	↓
Bromomethane	UJ (already qualified)	B00X61	CCV %D out of control limit

9613402.1655

5/2/92

9107L081

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: 081	REVIEWER: [illegible]	DATE: 05/01/92	PAGE 2 OF 3
COMMENTS: VOA/Semi-VOA/Pest/PCB			
COMPOUND	**QUALIFIER**	**SAMPLES AFFECTED**	**REASON**
Methylene Chloride	u	B00X61	Present in Blank
Acetone	u	↓	↓
Benzyl Alcohol	UJ	B00X61	ICV %RSD out of control limit
Benzoic Acid	UJ	B00X61	CCV %D out of control limit
Hexachlorocyclopentadiene	UJ		
2,4,5-Trichlorophenol	UJ		
2,4,6-Trichlorophenol	UJ		
Benzo(k)fluoranthene	UJ	↓	↓
2,4,6-Tribromophenol (Surrogate)	none	B00X61	CCV %D out of control limit
bis(2-Ethylhexyl) phthalate	u	B00X61	Present in blank
Aldol Condensate	R	B00X61	Low recovery of control limit
Beta-BHC	none	B00X61	Present in blank
Endrin Ketone	none	none	CCV RT out of window
gamma-BHC	none	~~B00X61~~ 5/01/92 None	CCV %D out of control limit
Alpha BHC	"	none	"
Delta BHC	"	none	"

9613402.1656

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

Project		200-BP-1																	
Laboratory		WESTON																	
Case		SDG 9107L081																	
Sample Number		B00X61																	
Location		216-B-57A																	
		15.0-17.0																	
Remarks																			
Sample Date		07/01/91																	
Analysis Date		07/09/91																	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	11	U																
Bromomethane	10	11	UJ																
Vinyl Chloride	10	11	U																
Chloroethane	10	11	U																
Methylene Chloride	5	7	U																
Acetone	10	15	U																
Carbon Disulfide	5	6	U																
1,1-Dichloroethene	5	6	U																
1,1-Dichloroethane	5	6	U																
1,2-Dichloroethene (total)	5	6	U																
Chloroform	5	6	U																
1,2-Dichloroethane	5	6	U																
2-Butanone	10	11	U																
1,1,1-Trichloroethane	5	6	U																
Carbon Tetrachloride	5	6	U																
Vinyl Acetate	10	11	U																
Bromodichloromethane	5	6	U																
1,2-Dichloropropane	5	6	U																
cis-1,3-Dichloropropene	5	6	U																
Trichloroethene	5	6	U																
Dibromochloromethane	5	6	U																
1,1,2-Trichloroethane	5	6	U																
Benzene	5	6	U																
trans-1,3-Dichloropropene	5	6	U																
Bromoform	5	6	UJ																
4-Methyl-2-pentanone	10	11	U																
2-Hexanone	10	11	U																
Tetrachloroethene	5	6	U																
1,1,2,2-Tetrachloroethane	5	6	U																
Toluene	5	6	U																
Chlorobenzene	5	6	U																
Ethylbenzene	5	6	U																
Styrene	5	6	U																
Xylene (total)	5	6	U																

9613402.1657

Project	200-BP-1																		
Laboratory	WESTON																		
Case	SDG 9107L081																		
Sample Number		B00X61																	
Location		216-B-57A																	
		15.0-17.0																	
Remarks																			
Sample Date		07/01/91																	
Extraction Date		07/08/91																	
Analysis Date		07/18/91																	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	330	330	U																
bis(2-Chloroethyl)ether	330	330	U																
2-Chlorophenol	330	330	U																
1,3-Dichlorobenzene	330	330	U																
1,4-Dichlorobenzene	330	330	U																
Benzyl alcohol	330	330	UJ																
1,2-Dichlorobenzene	330	330	U																
2-Methylphenol	330	330	U																
bis(2-Chloroisopropyl)ether	330	330	U																
4-Methylphenol	330	330	U																
N-Nitroso-di-n-propylamine	330	330	U																
Hexachloroethane	330	330	U																
Nitrobenzene	330	330	U																
Isophorone	330	330	U																
2-Nitrophenol	330	330	U																
2,4-Dimethylphenol	330	330	U																
Benzoic acid	1700	1700	UJ																
bis(2-Chloroethoxy)methane	330	330	U																
2,4-Dichlorophenol	330	330	U																
1,2,4-Trichlorobenzene	330	330	U																
Naphthalene	330	330	U																
4-Chloroaniline	330	330	U																
Hexachlorobutadiene	330	330	U																
4-Chloro-3-methylphenol	330	330	U																
2-Methylnaphthalene	330	330	U																
Hexachlorocyclopentadiene	330	330	UJ																
2,4,6-Trichlorophenol	330	330	U																
2,4,5-Trichlorophenol	1700	1700	UJ																
2-Chloronaphthalene	330	330	U																
2-Nitroaniline	1700	1700	U																
Dimethylphthalate	330	330	U																
Acenaphthylene	330	330	U																
2,6-Dinitrotoluene	330	330	U																

9613402.1658

Project		200-BP-1																	
Laboratory		WESTON																	
Case		SDG 9107L081																	
Sample Number		B00X61																	
Location		216-B-57A																	
		15.0-17.0																	
Remarks																			
Sample Date		07/01/91																	
Extraction Date		07/08/91																	
Analysis Date		07/18/91																	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline	1700	1700	U																
Acenaphthene	330	330	U																
2,4-Dinitrophenol	1700	1700	UJ																
4-Nitrophenol	1700	1700	U																
Dibenzofuran	330	330	U																
2,4-Dinitrotoluene	330	330	U																
Diethylphthalate	330	330	U																
4-Chlorophenyl-phenyl ether	330	330	U																
Fluorene	330	330	U																
4-Nitroaniline	1700	1700	U																
4,6-Dinitro-2-methylphenol	1700	1700	U																
N-Nitrosodiphenylamine	330	330	U																
4-Bromophenyl-phenylether	330	330	U																
Hexachlorobenzene	330	330	U																
Pentachlorophenol	1700	42	J																
Phenanthrene	330	330	U																
Anthracene	330	330	U																
Di-n-butylphthalate	330	420																	
Fluoranthene	330	330	U																
Pyrene	330	330	U																
Butylbenzylphthalate	330	330	U																
3,3'-Dichlorobenzidine	660	660	U																
Benz(a)anthracene	330	330	U																
Chrysene	330	330	U																
bis(2-Ethylhexyl)phthalate	330	330	U																
Di-n-octylphthalate	330	330	U																
Benzo(b)fluoranthene	330	330	U																
Benzo(k)fluoranthene	330	330	UJ																
Benzo(a)pyrene	330	330	U																
Indeno(1,2,3-cd)pyrene	330	330	U																
Dibenz(a,g)anthracene	330	330	U																
Benzo(g,h,i)perylene	330	330	U																
Aldol Condensate @ 7.10		1000	R																

9613402.1659

Project		200-BP-1																	
Laboratory		WESTON																	
Case		SDG 9107L081																	
Sample Number		B00X61																	
Location		216-B-57A																	
		15.0-17.0																	
Remarks																			
Sample Date		07/01/91																	
Extraction Date		07/08/91																	
Analysis Date		07/18/91																	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alkane @ 13.35		700	NJ																
Alkane @ 15.03		3000	NJ																
Alkane @ 16.33		5000	NJ																
Alkane @ 17.65		1000	NJ																
Phosphate @ 19.02		10000	NJ																
Alkane @ 19.68		1000	NJ																
Unknown @ 22.73		400	NJ																
Phthalate @ 22.95		500	R																
Unknown @ 25.50		1000	NJ																

9613402.1660

Project		200-BP-1																					
Laboratory		WESTON																					
Case		SDG 9107L081																					
Sample Number		B00X61																					
Location		216-B-57A																					
		15.0-17.0																					
Remarks																							
Sample Date		07/01/91																					
Extraction Date		07/08/91																					
Analysis Date		08/08/91																					
Pesticide/PCB	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
alpha-BHC	8.0	42	U																				
beta-BHC	8.0	42	U																				
delta-BHC	8.0	42	U																				
gamma-BHC (Lindane)	8.0	42	U																				
Heptchlor	8.0	42	U																				
Aldrin	8.0	42	U																				
Heptachlor epoxide	8.0	42	U																				
Endosulfan I	8.0	42	U																				
Dieldrin	16.0	84	U																				
4,4'-DDE	16.0	84	U																				
Endrin	16.0	84	U																				
Endosulfan II	16.0	84	U																				
4,4'-DDD	16.0	84	U																				
Endosulfan sulfate	16.0	84	U																				
4,4'-DDT	16.0	84	U																				
Methoxychlor	80.0	420	U																				
Endrin Ketone	16.0	84	U																				
alpha-Chlordane	80.0	420	U																				
gamma-Chlordane	80.0	420	U																				
Toxaphene	160.0	840	U																				
Arochlor-1016	80.0	420	U																				
Arochlor-1221	80.0	420	U																				
Arochlor-1232	80.0	420	U																				
Arochlor-1242	80.0	420	U																				
Arochlor-1248	80.0	420	U																				
Arochlor-1254	160.0	770	J																				
Arochlor-1260	160.0	840	U																				

9613402.1661

Project		200-BP-1																	
Laboratory		WESTON																	
Case		SDG CLP081																	
Sample Number		B00X61																	
Location		216-B-57A																	
		15.0-17.0																	
Remarks																			
Sample Date		07/01/91																	
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	40	3300																	
Antimony	12	3.7	UJ																
Arsenic	2	1.5	B																
Barium	40	81.6																	
Beryllium	1	0.25	B																
Cadmium	1	0.41	U																
Calcium	1000	6890																	
Chromium	2	1.2	B																
Cobalt	10	5.3	B																
Copper	5	9																	
Iron	20	8800																	
Lead	1	5.5	J																
Magnesium	1000	2290																	
Manganese	3	457																	
Mercury	0.04	0.1	R																
Nickel	8	5.6	B																
Potassium	1000	818	B																
Selenium	1	0.41	UJ																
Silver	2	0.82	UJ																
Sodium	1000	216	U																
Thallium	2	0.41	U																
Vanadium	10	15.3	U																
Zinc	4	31.3																	
Cyanide	0.5	0.51	U																
Bismuth	40	41.1	U																
Percent Solids	0.1	97.3																	
Nitrate	4	125	J																
Nitrite	4	8.3	J																
Cyanide	0.5	1	U																
Total Organic Carbon	50	1680																	

9613402.1662

9613402.1663

1A
VOLATILE ORGANICS ANALYSIS SHEET

0000015

CLIENT SAMPLE NO.
216-B-57A, 15.0-17.0

BOOX61
Soil

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9107L081-001

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

Lab File ID: 0070916

Level: (low/med) LOW

Date Received: 07/03/91

% Moisture: not dec. 9

Date Analyzed: 07/09/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	~~U~~
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	7	~~B~~
67-64-1	Acetone	15	~~B~~
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	11	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	~~U~~
108-10-1	4-Methyl-2-pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U

FORM 1 V-1 12/88 Rev.

9613402.1664 0000001

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-57A, 15.0-17.0

BOOX61
Soil

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9107L081-001

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

Lab File ID: 0070916

Level: (low/med) LOW

Date Received: 07/03/91

% Moisture: not dec. 9

Date Analyzed: 07/09/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

Allinton 5/01/92

9613402.1665

1B 0000017

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-57A, 15.0-17.0

BOOX61
Soil

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9107L081-001

Sample wt/vol: 31.9 (g/mL) G Lab File ID: V071818

Level: (low/med) LOW Date Received: 07/03/91

% Moisture: not dec. 5 dec. Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) Y pH: 6.2 Dilution Factor: 1.00

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

CAS NO.	COMPOUND			
108-95-2	Phenol	330	U	
111-44-4	bis(2-Chloroethyl)ether	330	U	
95-57-8	2-Chlorophenol	330	U	
541-73-1	1,3-Dichlorobenzene	330	U	
106-46-7	1,4-Dichlorobenzene	330	U	
100-51-6	Benzyl alcohol	330	~~U~~	5J
95-50-1	1,2-Dichlorobenzene	330	U	
95-48-7	2-Methylphenol	330	U	
108-60-1	bis(2-Chloroisopropyl)ether	330	U	
106-44-5	4-Methylphenol	330	U	
621-64-7	N-Nitroso-Di-n-propylamine	330	U	
67-72-1	Hexachloroethane	330	U	
98-95-3	Nitrobenzene	330	U	
78-59-1	Isophorone	330	U	
88-75-5	2-Nitrophenol	330	U	
105-67-9	2,4-Dimethylphenol	330	U	
65-85-0	Benzoic acid	1700	~~U~~	5J
111-91-1	bis(2-Chloroethoxy)methane	330	U	
120-83-2	2,4-Dichlorophenol	330	U	
120-82-1	1,2,4-Trichlorobenzene	330	U	
91-20-3	Naphthalene	330	U	
106-47-8	4-Chloroaniline	330	U	
87-68-3	Hexachlorobutadiene	330	U	
59-50-7	4-Chloro-3-methylphenol	330	U	
91-57-6	2-Methylnaphthalene	330	U	
77-47-4	Hexachlorocyclopentadiene	330	~~U~~	5J
88-06-2	2,4,6-Trichlorophenol	330	U	
95-95-4	2,4,5-Trichlorophenol	1700	~~U~~	5J
91-58-7	2-Chloronaphthalene	330	U	
88-74-4	2-Nitroaniline	1700	U	
131-11-3	Dimethylphthalate	330	U	
208-96-8	Acenaphthylene	330	U	
606-20-2	2,6-Dinitrotoluene	330	U	

5/01/92

9613402.1666 0000010

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-57A 15.0-17.0

BOOX61
Soil

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9107L081-001

Sample wt/vol: 31.9 (g/mL) G

Lab File ID: V071818

Level: (low/med) LOW

Date Received: 07/03/91

% Moisture: not dec. 5 dec.

Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) Y pH: 6.2

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1700	~~U~~ UJ
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	42	J
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	420	
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	660	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	~~93~~ 330	~~J~~ U
117-84-0	Di-n-Octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	~~U~~ UJ
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

3/01/92

9613402.1667 1F 0000019

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-57A 15.0-17.0

BOOX61
Soil

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 9107L081-001

Sample wt/vol: 31.9 (g/mL) G Lab File ID: V071818

Level: (low/med) LOW Date Received: 07/03/91

% Moisture: not dec. 5 dec. Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) Y pH: 6.2 Dilution Factor: 1.00

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	~~ALDOL CONDENSATE~~	~~7.10~~	~~1000~~	~~JA~~ R
2.	ALKANE	13.35	700	~~J~~
3.	ALKANE	15.03	3000	~~J~~
4.	ALKANE	16.33	5000	~~J~~
5.	ALKANE	17.65	1000	~~J~~
6.	~~UNKNOWN~~ Phosphate	19.02	10000	~~J~~
7.	ALKANE	19.68	1000	~~J~~
8.	UNKNOWN	22.73	400	~~J~~
~~9.~~	~~PHTHALATE~~	~~22.95~~	~~500~~	~~J~~ R
10.	UNKNOWN	25.50	1000	~~J~~

silica gel

FORM 1 SV-TIC 12/88 Rev.

5/01/92

9613402.1668

0000014

1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-57A, 15.0-17.0

BOOX61
Soil

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 9107L081-001

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: 08069103.77

Level: (low/med) LOW

Date Received: 07/03/91

% Moisture: not dec. 5 dec.

Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed: 08/08/91

GPC Cleanup: (Y/N) Y pH: 6.2

Dilution Factor: 5.00

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	42	U
319-85-7	Beta-BHC	42	U
319-86-8	Delta-BHC	42	U
58-89-9	gamma-BHC (Lindane)	42	U
76-44-8	Heptachlor	42	U
309-00-2	Aldrin	42	U
1024-57-3	Heptachlor epoxide	42	U
959-98-8	Endosulfan I	42	U
60-57-1	Dieldrin	84	U
72-55-9	4,4'-DDE	84	U
72-20-8	Endrin	84	U
33213-65-9	Endosulfan II	84	U
72-54-8	4,4'-DDD	84	U
1031-07-8	Endosulfan sulfate	84	U
50-29-3	4,4'-DDT	84	U
72-43-5	Methoxychlor	420	U
53494-70-5	Endrin ketone	84	U
5103-71-9	alpha-Chlordane	420	U
5103-74-2	gamma-Chlordane	420	U
8001-35-2	Toxaphene	840	U
12674-11-2	Aroclor-1016	420	U
11104-28-2	Aroclor-1221	420	U
11141-16-5	Aroclor-1232	420	U
53469-21-9	Aroclor-1242	420	U
12672-29-6	Aroclor-1248	420	U
11097-69-1	Aroclor-1254	770	J
11096-82-5	Aroclor-1260	840	U

8/13/91

FORM 1 PEST 12/88 Rev.

5/01/92

9613402.1669

0000015

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

4/30/92 216-B-57A, 15.0-17.0

BOOX61

Soil

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

Lab Code: WESTON Case No.: 200BP SAS No.: SDG No.: CLP08

Matrix (soil/water): SOIL Lab Sample ID: 910708101

Level (low/med): LOW Date Received: 7/03/91

% Solids: 97.3

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	3300.00		*	P	
7440-36-0	Antimony	3.70	U	N	P	UJ
7440-38-2	Arsenic	1.50	B		F	
7440-39-3	Barium	81.60			P	
7440-41-7	Beryllium	.25	B		P	
7440-43-9	Cadmium	.41	U	N	P	
7440-70-2	Calcium	6890.00			P	
7440-47-3	Chromium	1.20	B		P	
7440-48-4	Cobalt	5.30	B		P	
7440-50-8	Copper	9.00			P	
7439-89-6	Iron	8800.00		*	P	
7439-92-1	Lead	5.50		N	F	J
7439-95-4	Magnesium	2290.00		*	P	
7439-96-5	Manganese	457.00		*	P	
~~7439-97-6~~	~~Mercury~~	~~.10~~	~~U~~		~~CV~~	~~UJ~~ R
7440-02-0	Nickel	5.60	B		P	
7440-09-7	Potassium	818.00	B		P	
7782-49-2	Selenium	.41	U	NW	F	UJ
7440-22-4	Silver	.82	U	N	P	UJ
7440-23-5	Sodium	216.00	B		P	
7440-28-0	Thallium	.41	U	W	F	
7440-62-2	Vanadium	15.30			P	U
7440-66-6	Zinc	31.30			P	
	Cyanide	.51	U		C	
7440-69-9	Bismuth	41.1	U		P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

FORM I - IN 103/9

4/30/92

9613402.1670

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 10/08/91

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

WESTON BATCH #: 91071081

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BOOX61	% Solids	97.3	%	0.10
		Nitrite by IC	8.3	MG/KG	1.3
	216-B-57A	Nitrate by IC	125	MG/KG	1.3
	15.0-17.0	Cyanide, Total	1.0 u	MG/KG	1.0
		Total Organic Carbon	1680	MG/KG	156

9613402.1671

ATTACHMENT 4

DATA REVIEW SUPPORTING DOCUMENTATION

9613402.1672

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/01/92
LABORATORY: Watson	CASE: 9107L081	SDG: 081
SAMPLES/MATRIX: B00X61, Soil		

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	X		
Data Summary	X		
Chain-of-Custody	X		
QC Summary			
Surrogate report	X		
MS/MSD report	X		
Blank summary report	X		
GC/MS tuning report	X		
Internal standard summary report	X		
Sample Data			
Sample reports	X		
TIC reports for each sample	X		
RIC reports for all samples	X		
Raw and corrected spectra for all detected results	X		
Raw and corrected library search data for all reported TIC			X
Quantitation and calculation data for all TIC			X
Standards Data			
Initial calibration report	X		
RIC and quantitation reports for initial calibration	X		
Continuing calibration reports	X		
RIC and quantitation reports for cont. calibrations	X		
Internal standard summary report	X		
Raw QC Data			
Tuning report, spectra and mass lists	X		
Blank analysis reports	X		
TIC reports for all blanks	X		X 05/11/92
RIC and quantitation reports for blanks	X		
Raw and corrected spectra for all detected results in blanks	X		
Raw and corrected library search data for all reported TIC			X

Data Package Item	Present?: Yes	No	N/A
Quantitation and calculation data for all TIC	—	—	X
MS/MSD report forms	X	—	—
RIC and quantitation reports for MS/MSD	—	X	X
Additional Data			
Moisture/% solids data sheets	—	X	—
Reduction formulae	—	X	—
Instrument time logs	X	—	—
Chemist notebook pages	—	X	—
Sample preparation sheets	X	—	—

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, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a bromofluorobenzene tune report present for each applicable 12-h 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

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 nondetects). 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% (2/88 SOW)? Yes (No) N/A

Are all RRF values ≥0.05 (2/88 SOW)? (Yes) No N/A

Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	N/A
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all applicable RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed?	Yes	No	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	Yes	No	N/A
Are all %D values ≤25% (2/88 or 3/90 SOW)?	Yes	No	N/A
Are all %D values ≤40% (3/90 SOW)?	Yes	No	N/A
Are all RRF values within SOW limits (3/90 SOW)?	Yes	No	N/A
Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)?	Yes	No	N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to two TCL compounds, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to two TCL compounds, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every 12-h 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 ≤10 time the highest blank concentration for the common laboratory contaminants, as nondetects (U) or at the SQL if the result is <CRQL. Qualify all remaining sample results ≤5 times the blank concentration in similar fashion.

4.2. FIELD BLANKS

Are TCL compounds present in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results ≤5 times the amount in any valid field blank as nondetects (U) and note the field blank results in the validation narrative.

5. ACCURACY

5.1 SURROGATE/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries <10%? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated sample results as estimated (J for detects or UJ for nondetects) for surrogates out of specification but >10%. Qualify all associated positive sample results as estimated (J) and all nondetect results as unusable (R) for all surrogates below 10%. If method blank surrogates are out of specification and the associated sample surrogates are acceptable no qualification is necessary, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/MSD analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

Are RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects or UJ for nondetects). If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	N/A
Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra?	Yes	No	N/A
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	N/A
Have all ions > 10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	N/A
Are molecular ions present in the reference specrum present in the sample spectrum?	Yes	No	N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R). Note the results in the validation narrative.

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standard(s) for quantitation?	Yes	No	N/A
Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	Yes	No	N/A

ACTION: If the results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS (TIC)

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	Yes	No	N/A
Has the laboratory properly identified and coded all TIC?	Yes	No	N/A

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 nondetects (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 nondetects (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 10.0 of the data validation requirements.

9613402.1679

COMMENTS (attach additional sheets as necessary):

MS/MSD performed in RFW lot # 9106L011 and results acceptable

9613402.1680

Holding Time Summary

Page 1 of 1

OCT 1991
RECEIVED
OSM DMO

Roy F. Weston, Inc. - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 07/03/91

RFW LOT # :9107L081

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
BOOX61	001	S	91LVQ030	07/01/91	N/A	07/09/91	8 Days
LAB QC:							
VBLK	MB1	S	91LVQ030	N/A	N/A	07/09/91	

no qualification necessary

5/01/92

Calibration S9613402.1681

0000025

Pg 1 of 2

6A

VOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9107L081

Instrument ID: 10500 Calibration Date(s): 07/09/91 07/09/91

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

Min $\overline{RRF}$ for SPCC(#) = 0.300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = 0070909 RRF50 = 0070910
RRF100= 0070911 RRF150= 0070912 RRF200= 0070913

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
Chloromethane #	1.763	1.878	2.015	1.885	1.829	1.874	4.9#
Bromomethane	1.069	1.140	1.634	2.142	1.977	1.592	30.3
Vinyl Chloride *	1.134	1.071	1.389	1.565	1.670	1.366	19.1*
Chloroethane	0.784	0.691	0.794	0.997	1.081	0.869	18.7
Methylene Chloride	1.718	1.594	1.680	1.863	1.886	1.748	7.1
Acetone	1.118	1.033	1.335	1.688	1.567	1.348	20.8
Carbon Disulfide	1.290	1.221	1.283	1.435	1.522	1.350	9.2
1,1-Dichloroethene *	0.941	0.923	0.929	0.943	0.973	0.942	2.1*
1,1-Dichloroethane #	2.274	2.080	2.037	2.140	2.291	2.164	5.3#
1,2-Dichloroethene (total)	0.718	0.673	0.646	0.671	0.665	0.675	3.9
Chloroform *	2.341	2.231	2.162	2.236	2.285	2.251	3.0*
1,2-Dichloroethane	1.919	1.759	1.822	1.958	2.020	1.896	5.5
2-Butanone	0.065	0.080	0.100	0.115	0.109	0.094	22.2
1,1,1-Trichloroethane	0.620	0.648	0.646	0.726	0.767	0.681	9.1
Carbon Tetrachloride	0.469	0.508	0.531	0.606	0.647	0.552	13.2
Vinyl Acetate	0.535	0.576	0.657	0.766	0.788	0.664	16.9
Bromodichloromethane	0.575	0.637	0.672	0.756	0.806	0.689	13.4
1,2-Dichloropropane *	0.403	0.406	0.400	0.457	0.492	0.432	9.5*
cis-1,3-Dichloropropene	0.449	0.498	0.540	0.640	0.701	0.566	18.3
Trichloroethene	0.402	0.416	0.415	0.479	0.496	0.442	9.7
Dibromochloromethane	0.403	0.519	0.630	0.752	0.809	0.623	26.7
1,1,2-Trichloroethane	0.304	0.339	0.393	0.466	0.501	0.401	20.7
Benzene	0.829	0.845	0.870	0.971	1.050	0.913	10.3
Trans-1,3-Dichloropropene	0.305	0.383	0.449	0.558	0.623	0.464	27.7
Bromoform #	0.248	0.369	0.498	0.588	0.607	0.462	32.9#
4-Methyl-2-pentanone	0.335	0.404	0.471	0.541	0.506	0.451	18.3
2-Hexanone	0.272	0.302	0.378	0.426	0.383	0.352	18.0
Tetrachloroethene	0.325	0.346	0.360	0.389	0.411	0.366	9.3
1,1,2,2-Tetrachloroethane #	0.428	0.526	0.624	0.724	0.726	0.606	21.3#
Toluene *	0.510	0.528	0.530	0.565	0.599	0.546	6.5*
Chlorobenzene #	0.715	0.740	0.726	0.735	0.753	0.734	2.0#
Ethylbenzene *	0.368	0.368	0.371	0.371	0.380	0.372	1.3*
Styrene	0.727	0.742	0.760	0.788	0.795	0.762	3.8
Xylene (total)	0.388	0.396	0.399	0.413	0.415	0.402	2.9
Toluene-d8	0.896	0.882	0.912	0.960	1.019	0.934	6.0
Bromofluorobenzene	0.600	0.571	0.602	0.600	0.612	0.597	2.6
1,2-Dichloroethane-d4	1.789	1.661	1.662	1.729	1.768	1.722	3.4

Calibration Summary 9613402.1682 000002E pg 2 of 2

7A

VOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9107L081

Instrument ID: 1050Q Calibration Date: 07/09/91 Time: 1719

Lab File ID: Q070910 Init. Calib. Date(s): 07/09/91 07/09/91

Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform Max %D for CCC(*) = 25.0%

COMPOUND		RRF	RRF50	%D	
Chloromethane	#	1.874	1.878	-0.2	#
Bromomethane		1.592	1.140	28.4	UJ
Vinyl Chloride	*	1.366	1.071	21.6	*
Chloroethane		0.869	0.691	20.5	
Methylene Chloride		1.748	1.594	8.8	
Acetone		1.348	1.033	23.4	
Carbon Disulfide		1.350	1.221	9.6	
1,1-Dichloroethene	*	0.942	0.923	2.0	*
1,1-Dichloroethane	#	2.164	2.080	3.9	#
1,2-Dichloroethene (total)		0.675	0.673	0.3	
Chloroform	*	2.251	2.231	0.9	*
1,2-Dichloroethane		1.896	1.759	7.2	
2-Butanone		0.094	0.080	14.9	
1,1,1-Trichloroethane		0.681	0.648	4.8	
Carbon Tetrachloride		0.552	0.508	8.0	
Vinyl Acetate		0.664	0.576	13.3	
Bromodichloromethane		0.689	0.637	7.5	
1,2-Dichloropropane	*	0.432	0.406	6.0	*
cis-1,3-Dichloropropene		0.566	0.498	12.0	
Trichloroethene		0.442	0.416	5.9	
Dibromochloromethane		0.623	0.519	16.7	
1,1,2-Trichloroethane		0.401	0.339	15.5	
Benzene		0.913	0.845	7.4	
Trans-1,3-Dichloropropene		0.464	0.383	17.5	
Bromoform	#	0.462	0.369	20.1	#
4-Methyl-2-pentanone		0.451	0.404	10.4	
2-Hexanone		0.352	0.302	14.2	
Tetrachloroethene		0.366	0.346	5.5	
1,1,2,2-Tetrachloroethane	#	0.606	0.526	13.2	#
Toluene	*	0.546	0.528	3.3	*
Chlorobenzene	#	0.734	0.740	-0.8	#
Ethylbenzene	*	0.372	0.368	1.1	*
Styrene		0.762	0.742	2.6	
Xylene (total)		0.402	0.396	1.5	
Toluene-d8		0.934	0.882	5.6	
Bromofluorobenzene		0.597	0.571	4.4	
1,2-Dichloroethane-d4		1.722	1.661	3.5	

5/7/92

Blank 96[3402.1603 Summary

Pg 1 of 1

1A
VOLATILE ORGANICS ANALYSIS SHEET

000005 CLIENT SAMPLE NO.

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL

Lab Sample ID: 91LV0030-MB1

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

Lab File ID: 0070915

Level: (low/med) LOW

Date Received: 07/09/91

% Moisture: not dec. 0

Date Analyzed: 07/09/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

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

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	4	J
67-64-1	Acetone	7	J
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

x10 = 40 ppb
~~x5 = 20 ppb~~ 5/01/92
~~x5 = 35 ppb~~
x10 = 70 ppb

FORM 1 V-1 12/88 Rev.

5/01/92

SEMI-VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-2

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/01/92
LABORATORY: Weston	CASE: 9107L081	SDG: 081
SAMPLES/MATRIX: 8000x61 / Soil		

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	X		
Data Summary	X		
Chain-of-Custody	X		
QC Summary			
Surrogate report	X		
MS/MSD report	X		
Blank summary report	X		
GC/MS tuning report	X		
Internal standard summary report	X		
Sample Data			
Sample reports	X		
TIC reports for each sample	X		
RIC reports for all samples	X		
Raw and corrected spectra for all detected results	X		
Raw and corrected library search data for all reported TIC	X		
Quantitation and calculation data for all TIC	X		
Standards Data			
Initial calibration report	X		
RIC and quantitation reports for initial calibration	X		
Continuing calibration reports	X		
RIC and quantitation reports for cont. calibrations	X		
Internal standard summary report	X		
Raw QC Data			
Tuning report, spectra and mass lists	X		
Blank analysis reports	X		
TIC reports for all blanks	X		
RIC and quantitation reports for blanks	X		
Raw and corrected spectra for all detected results in blanks	X		
Raw and corrected library search data for all reported TIC	X		
Quantitation and calculation data for all TIC	X		
MS/~~MSD~~ report forms	X		

05/11/92

Data Package Item	Present?: Yes	No	N/A
RIC and quantitation reports for MS/~~MSD~~ 5/1/92	X	—	—
Additional Data			
Moisture/% solids data sheets	—	X	—
Reduction formulae	—	X	—
Instrument time logs	X	—	—
Chemist notebook pages	—	X	—
Sample preparation sheets	X	—	—

2. HOLDING TIMES

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

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT CALIBRATION, TUNING AND PERFORMANCE CHECKS

3.1 GC/MS TUNING AND PERFORMANCE CHECKS

Is a DFTPP 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

ACTION: If the mass calibration is out of specification but within the expanded criteria, qualify associated data as estimated (J for detects and UJ for nondetects). If all tuning criteria are not met, 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% (2/88 SOW)?	Yes	(No)	N/A
Are all RRF values ≥0.05 (2/88 SOW)?	(Yes)	No	N/A
Are all applicable RSD values ≤20.5% (3/90 SOW)?	Yes	No	(N/A)
Are all applicable RSD values ≤40% (3/90 SOW)?	Yes	No	(N/A)

Are all applicable RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all detected results for the particular compound as estimated (J) and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any RSD value is out of specification qualify all associated data as estimated (J for detects or UJ for nondetects).

3.3. CONTINUING CALIBRATION

Is a continuing calibration report present for all 12-h periods in which associated samples were analyzed? Yes No N/A

Are all RRF values ≥0.05 (2/88 SOW)? Yes No N/A

Are all %D values ≤25% (2/88 or 3/90 SOW)? Yes No N/A

Are all %D values ≤40% (3/90 SOW)? Yes No N/A

Are all RRF values within SOW limits (3/90 SOW)? Yes No N/A

Are all erratic performance compound RRF values ≥0.01 (3/90 SOW)? Yes No N/A

ACTION: With the exception of compounds that exhibit erratic performance and making allowances for up to four TCL compounds or surrogates, if any RRF value is out of specification qualify all associated detected results as estimated and all nondetects as unusable (R). Making allowances for up to four TCL compounds or surrogates, if any %D is out of specification, qualify all associated results as estimated (J for detects or UJ for nondetects).

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory conducted a method blank analysis per matrix for every extraction batch? Yes No N/A

Are compounds reported in the laboratory blanks? Yes No N/A

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

4.2. FIELD BLANKS

Are compounds reported in the field blanks? Yes No N/A

ACTION: Qualify all detected sample results ≤5 times the amount in any valid field blank as nondetects (U) and note the results of the field blanks in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY/SYSTEM MONITORING COMPOUND RECOVERY

Are any surrogate recoveries out of specification? Yes No N/A

Are any surrogate recoveries < 10%? Yes No N/A

Are any method blank surrogate recoveries out of specification? Yes No N/A

ACTION: Qualify all associated data as estimated (J for detects and UJ for nondetects) if at least two semivolatile surrogates are out of specification. If any surrogate is below 10% recovery qualify associated detected results as estimated (J) and associated nondetect results as unusable (R). If method blank surrogates are out of specification and associated sample surrogates are acceptable no qualification is required, however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has an MS/~~MSD~~ analysis been conducted per matrix in the sample group? Yes No N/A

Are MS/MSD recoveries within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: If an MS/MSD analysis has not been conducted contact the laboratory for an explanation. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

MSD was not performed.

Are all RPD values within specification? Yes No N/A

Are there any calculation errors? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPDs are out of specification and sample results are >5xCRQL qualify positive results for the specific class of compound (aromatics and non-aromatics) as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. SYSTEM PERFORMANCE

7.1 INTERNAL STANDARDS PERFORMANCE

Are any internal standard area counts outside the acceptance limits? Yes No N/A

Are retention times for any internal standard outside the ±30 second windows established by the most recent calibration check? Yes No N/A

ACTION: If the area counts are outside the acceptance limits qualify all associated results as estimated (J for detects and UJ for nondetects. If it is determined from the review that out of specification area counts and relative retention times are indicative of systematic problems within the laboratory the reviewer may consider rejection of all affected sample data (R).

8. COMPOUND IDENTIFICATION AND QUANTITATION

8.1 COMPOUND IDENTIFICATION

Are detected compounds within ±0.06 relative retention time units of the associated calibration standard?	Yes	No	N/A
Are all ions at a relative intensity of ≥10% in the standard spectra present in the sample spectra?	Yes	No	N/A
Do the relative intensities between the standard and sample spectra agree within 20%?	Yes	No	N/A
Have all ions >10% in the sample spectra that are not present in the standard spectra been reviewed for possible background contamination?	Yes	No	N/A
Are molecular ions in the reference spectrum present in the sample spectrum?	Yes	No	N/A

ACTION: If compound identification is in error and retention time and mass spectral criteria are exceeded qualify all affected positive results as unusable (R). If cross-contamination between analyses is suspected, qualify affected data as unusable (R).

8.2 REPORTED RESULTS AND QUANTITATION LIMITS

Has the laboratory used the correct RRF values and internal standards for quantitation?	Yes	No	N/A
Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	Yes	No	N/A

ACTION: If the quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8.3 TENTATIVELY IDENTIFIED COMPOUNDS

Has the laboratory conducted a spectral library search on all candidate TIC peaks in accordance with the analytical SOW?	Yes	No	N/A
Has the laboratory properly identified and coded all TIC?	Yes	No	N/A

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 nondetects (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 nondetects (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 and complete the data validation narrative as specified in Section 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

A Matrix spike was performed and is within limits; as a Matrix Spike Duplicate was not performed however. A Blank Matrix Spike was performed with the sample MS. All MS recoveries and surrogate recoveries were within control limits. The MSD sample was lost during extraction.

MJK
5/7/92

9613402.1692 Holding Time Summary

Pg 1 of 1

OCT 1991
RECEIVED
OSM DMO

Roy F. Weston, Inc. - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 07/03/91 RFW LOT # :9107L081

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOOX61	001	S	91LE0866	07/01/91	07/08/91 7 Days	07/18/91 10 Days
BOOX61	001 MS	S	91LE0866	07/01/91	07/08/91	07/26/91
LAB QC:						
SBLK	MB1	S	91LE0866	N/A	07/08/91	07/18/91
SBLK	MB1 BS	S	91LE0866	N/A	07/08/91	07/26/91

No qualification necessary

5/01/92

6B
SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9107L081

Instrument ID: 4500V Calibration Date(s): 07/16/91 07/16/91

Min $\overline{RRF}$ for SPCC(#) = 0.050 Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = V071606 RRF50 = V071602
RRF80 = V071603 RRF120= V071604 RRF160= V071605

BCL 8/16/91

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
15 Phenol *	2.611	2.706	3.519	3.172	2.913	2.984	12.3#
16 bis(2-Chloroethyl)ether	2.244	2.200	2.808	2.120	2.396	2.354	11.6
2-Chlorophenol	1.460	1.564	1.971	1.806	1.629	1.686	12.0
1,3-Dichlorobenzene	1.393	1.488	1.864	1.341	1.534	1.524	13.4
1,4-Dichlorobenzene *	1.539	1.614	1.990	1.458	1.679	1.656	12.3*
Benzyl alcohol	0.376	0.824	1.045	0.786	0.972	0.801	32.5
1,2-Dichlorobenzene	1.379	1.498	1.827	1.342	1.545	1.518	12.6
2-Methylphenol	1.519	1.654	2.102	1.930	1.811	1.803	12.7
bis(2-Chloroisopropyl)ether	5.094	5.494	6.839	5.043	5.163	5.527	13.6
4-Methylphenol	1.534	1.623	2.157	1.970	1.861	1.829	13.9
N-Nitroso-Di-n-propylamine #	1.816	2.042	2.584	1.909	2.175	2.105	14.3#
Hexachloroethane	0.642	0.733	0.899	0.667	0.757	0.740	13.6
Nitrobenzene	0.553	0.574	0.716	0.522	0.556	0.584	13.0
Isophorone	1.062	1.084	1.320	0.972	0.942	1.076	13.8
2-Nitrophenol *	0.156	0.179	0.227	0.203	0.183	0.190	14.1*
2,4-Dimethylphenol	0.377	0.396	0.513	0.457	0.414	0.431	12.6
Benzoic acid		0.121	0.240	0.217	0.186	0.191	27.0
bis(2-Chloroethoxy)methane	0.565	0.621	0.791	0.569	0.627	0.635	14.5
2,4-Dichlorophenol *	0.221	0.245	0.326	0.285	0.267	0.269	14.9*
1,2,4-Trichlorobenzene	0.230	0.255	0.311	0.223	0.260	0.256	13.6
Naphthalene	1.053	1.042	1.256	0.922	0.867	1.028	14.6
4-Chloroaniline	0.362	0.311	0.458	0.325	0.419	0.375	16.6
Hexachlorobutadiene *	0.105	0.117	0.140	0.102	0.114	0.116	13.0*
4-Chloro-3-methylphenol *	0.334	0.326	0.458	0.407	0.375	0.380	14.3*
2-Methylnaphthalene	0.624	0.648	0.808	0.599	0.662	0.668	12.2
Hexachlorocyclopentadiene #	0.158	0.205	0.265	0.187	0.215	0.206	19.2#
2,4,6-Trichlorophenol *	0.245	0.263	0.340	0.307	0.282	0.287	13.0*
2,4,5-Trichlorophenol		0.294	0.410	0.361	0.335	0.350	13.9
2-Chloronaphthalene	0.971	1.073	1.298	0.982	1.078	1.080	12.2
2-Nitroaniline		0.573	0.809	0.610	0.722	0.678	15.9
Dimethylphthalate	1.083	1.109	1.450	1.064	1.184	1.178	13.5
Acenaphthylene	1.714	1.785	2.070	1.542	1.626	1.747	11.6
2,6-Dinitrotoluene	0.235	0.255	0.340	0.254	0.301	0.277	15.4
3-Nitroaniline		0.217	0.344	0.248	0.323	0.283	21.3
Acenaphthene *	0.999	1.025	1.270	0.940	1.069	1.061	11.9*
2,4-Dinitrophenol #		0.071	0.143	0.124	0.133	0.118	27.3#
4-Nitrophenol #		0.102	0.195	0.170	0.174	0.160	25.2#

Calibration Summary 9013102.1694 0000080 Pg 2 of 3

7B
SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9107L081

Instrument ID: 4500V Calibration Date: 07/18/91 Time: 1621

Lab File ID: V071811 Init. Calib. Date(s): 07/16/91 07/16/91

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Phenol	*	2.984	2.587	13.3	
bis(2-Chloroethyl)ether		2.354	2.169	7.9	
2-Chlorophenol		1.686	1.420	15.8	
1,3-Dichlorobenzene		1.524	1.261	17.3	
1,4-Dichlorobenzene	*	1.656	1.524	8.0	*
Benzyl alcohol		0.801	0.902	-12.6	
1,2-Dichlorobenzene		1.518	1.339	11.8	
2-Methylphenol		1.803	1.615	10.4	
bis(2-Chloroisopropyl)ether		5.527	5.910	-6.9	
4-Methylphenol		1.829	1.586	13.3	
N-Nitroso-Di-n-propylamine	#	2.105	2.157	-2.5	#
Hexachloroethane		0.740	0.721	2.6	
Nitrobenzene		0.584	0.570	2.4	
Isophorone		1.076	1.071	0.5	
2-Nitrophenol	*	0.190	0.155	18.4	*
2,4-Dimethylphenol		0.431	0.333	22.7	
Benzoic acid		0.191	0.118	38.2	
bis(2-Chloroethoxy)methane		0.635	0.588	7.4	
2,4-Dichlorophenol	*	0.269	0.207	23.0	*
1,2,4-Trichlorobenzene		0.256	0.209	18.4	
Naphthalene		1.028	0.928	9.7	
4-Chloroaniline		0.375	0.340	9.3	
Hexachlorobutadiene	*	0.116	0.097	16.4	*
4-Chloro-3-methylphenol	*	0.380	0.299	21.3	*
2-Methylnaphthalene		0.668	0.554	17.1	
Hexachlorocyclopentadiene	#	0.206	0.137	33.5	#
2,4,6-Trichlorophenol	*	0.287	0.230	19.9	*
2,4,5-Trichlorophenol		0.350	0.251	28.3	
2-Chloronaphthalene		1.080	0.941	12.9	
2-Nitroaniline		0.678	0.594	12.4	
Dimethylphthalate		1.178	0.976	17.1	
Acenaphthylene		1.747	1.513	13.4	
2,6-Dinitrotoluene		0.277	0.225	18.8	
3-Nitroaniline		0.283	0.214	24.4	
Acenaphthene	*	1.061	0.913	13.9	*
2,4-Dinitrophenol	#	0.118	0.076	35.6	#
4-Nitrophenol	#	0.160	0.133	16.9	#

BKE 8/16/91

5/01/92

Calibration Summary 000008 Pg 3 of 3

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9107L081

Instrument ID: 4500V Calibration Date: 07/18/91 Time: 1621

Lab File ID: V071811 Init. Calib. Date(s): 07/16/91 07/16/91

Min RRF50 for SPCC(#) = 0.050 Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Dibenzofuran		1.414	1.138	19.5	
2,4-Dinitrotoluene		0.330	0.258	21.8	
Diethylphthalate		1.243	1.029	17.2	
4-Chlorophenyl-phenylether		0.532	0.406	23.7	
Fluorene		1.200	0.924	23.0	
4-Nitroaniline		0.170	0.156	8.2	
4,6-Dinitro-2-methylphenol		0.130	0.102	21.5	
N-Nitrosodiphenylamine (1)	*	0.573	0.503	12.2	*
4-Bromophenyl-phenylether		0.204	0.170	16.7	
Hexachlorobenzene		0.199	0.176	11.6	
Pentachlorophenol	*	0.112	0.087	22.3	*
Phenanthrene		1.132	0.996	12.0	
Anthracene		1.212	0.976	19.5	
Di-n-Butylphthalate		1.559	1.445	7.3	
Fluoranthene	*	1.045	0.794	24.0	*
Pyrene		1.712	1.664	2.8	
Butylbenzylphthalate		0.986	0.974	1.2	
3,3'-Dichlorobenzidine		0.325	0.301	7.4	
Benzo(a)anthracene		1.247	1.089	12.7	
Chrysene		1.169	0.948	18.9	
bis(2-Ethylhexyl)phthalate		1.423	1.329	6.6	
Di-n-Octyl phthalate	*	2.836	2.636	7.1	*
Benzo(b)fluoranthene		1.334	1.201	10.0	
Benzo(k)fluoranthene		1.261	0.898	28.8	
Benzo(a)pyrene	*	1.139	0.955	16.2	*
Indeno(1,2,3-cd)pyrene		0.939	0.962	-2.4	
Dibenzo(a,h)anthracene		0.908	0.790	13.0	
Benzo(g,h,i)perylene		0.871	0.875	-0.5	
Nitrobenzene-d5		0.612	0.576	5.9	
2-Fluorobiphenyl		1.113	0.960	13.7	
p-Terphenyl-d14		1.040	0.945	9.1	
Phenol-d5		2.449	2.141	12.6	
2-Fluorophenol		1.554	1.225	21.2	
2,4,6-Tribromophenol		0.102	0.068	33.3	

(1) Cannot be separated from Diphenylamine

BKR 8/16/91

FORM VII SV-2 5/88 Rev.

Blank Summary 9613402.1696 1C 0000113 Pg 1 of 1

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

SBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 91LE0866-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V071815

Level: (low/med) LOW Date Received: 07/08/91

% Moisture: not dec. 0 dec. Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 07/18/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	670	U
56-55-3	Benzo(a)anthracene	330	U
218-01-9	Chrysene	330	U
117-81-7	bis(2-Ethylhexyl)phthalate	49	J
117-84-0	Di-n-Octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	330	U
207-08-9	Benzo(k)fluoranthene	330	U
50-32-8	Benzo(a)pyrene	330	U
193-39-5	Indeno(1,2,3-cd)pyrene	330	U
53-70-3	Dibenzo(a,h)anthracene	330	U
191-24-2	Benzo(g,h,i)perylene	330	U

X10 = 490 ppb

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

5/01/92

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/01/92
LABORATORY: Western	CASE: 9107L081	SDG: 081
SAMPLES/MATRIX: B00K61, Soil		

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 resubmittal.

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		X		
Data Summary		X		
Chain-of-Custody		X		
QC Summary				
Surrogate report		X		
MS/MSD report		X		
Blank summary report		X		
Sample Data				
Sample reports		X		
Chromatograms		X		
GC integration reports		X		
Worksheets	5/1/92	X	X	
UV traces from GPC			X	
GC/MS confirmation spectra				X
Standards Data				
Pesticides Evaluation Standards Summary		X		
Pesticides/PCB Standards Summary		X		
Pesticides/PCB identification		X		
Pesticides standard chromatograms		X		
Raw QC Data				
Blank analysis report forms and chromatograms		X		
MS/MSD report forms and chromatograms		X		

Data Package Item	Present?: Yes	No	N/A
Additional Data			
Moisture/% solids data sheets	—	X	—
Reduction formulae	—	X	—
Instrument time logs	X	—	—
Chemist notebook pages	—	X	—
Sample preparation sheets	X	—	—

2. HOLDING TIMES

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

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

ACTION: If any holding times were exceeded, but not by greater than a factor of two, qualify associated samples as estimated (J for detects or UJ for nondetects), otherwise reject all nondetects (R) and qualify all associated detects as estimated (J).

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

3.1 INSTRUMENT PERFORMANCE (2/88 SOW)

Are DDT retention times greater than 12 minutes? (Yes) No N/A

ACTION: If DDT retention time is $\leq$12 minutes and resolution is <25% qualify associated data as unusable (R).

Is resolution between DDT peaks acceptable? (Yes) No N/A

ACTION: If resolution between DDT peaks is unacceptable qualify associated data as unusable (R).

Do all pesticide standards elute within the established retention time windows? Yes (No) N/A

ACTION: If the standards do not meet the retention time criteria and peaks are not present near or within the retention time windows no sample qualification is necessary. If peaks are near or within the retention time windows and the standards and matrix spikes do not fall within the expanded retention time windows calculated according to the validation requirements, qualify all associated sample results from the last in-control point as unusable (R).

Are DDT breakdowns $\leq$20%? (Yes) No N/A

ACTION: If the DDT percent breakdown exceeds 20%, qualify all detected results for DDT as estimated (J) and all nondetects as unusable (R) if DDD and DDE are detected. In addition qualify all results for DDD or DDE as presumptive and estimated (NJ).

Are endrin breakdowns $\leq$20%? (Yes) No N/A

ACTION: If the endrin breakdown exceeds 20%, qualify all detected results for endrin as estimated (J) and all nondetects as unusable (R) if endrin aldehyde or endrin ketone are detected. In addition, qualify all results for endrin ketone as presumptive and estimated (NJ).

Are DBC retention time differences within specification? Yes No N/A

ACTION: If DBC %D values are outside the limits and the shift is ocurring repeatedly in samples and standards, qualify affected sample results as unusable (R).

3.2 CALIBRATIONS (2/88 SOW)

Are RSD values for aldrin, endrin, DDT and DBC ≤10%? Yes No N/A

Have all standards been analyzed within 72 h of any sample? Yes No N/A

Has a 3-point calibration been conducted for DDT or toxaphene? Yes No N/A

Have all standards been analyzed at the start of each 72-h sequence? Yes No N/A

Have evaluation standards A, B, and C been analyzed within 72 h of any sample? Yes No N/A

Has the confirmation standard mix been analyzed after every five samples? Yes No N/A

Has evaluation standard B analyzed every 10 samples? Yes No N/A

Are %D values for initial and subsequent standards ≤15% for quantitation standards and ≤20% for confirmation standards? Yes No N/A

ACTION: If the RSD criteria were exceeded or three point calibrations not conducted qualify associated detects as estimated (J). If all standards were not analyzed at the beginning of each 72-h sequence qualify associated data as unusable (R). If the confirmation standards were not analyzed properly qualify associated detects as estimated (J). If the continuing calibration criteria were not met qualify associated quantitation data as estimated (J).

3.3 INSTRUMENT PERFORMANCE AND INITIAL CALIBRATION (3/90 SOW)

Is peak resolution acceptable? Yes No N/A

ACTION: If the resolution criteria are not met, reject positive sample results generated after initial calibration (R).

Are DDT and endrin breakdowns ≤20.0% Yes No N/A

ACTION: If the breakdown criteria are not met qualify sample results as described in Section 5.3.1 of the validation requirements.

Are single component target compounds in the PEMs, INDA, INDB and the calibration standards within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the retention time window a review is made of the raw data to determine expanded retention time windows (see Section 5.3.1 of the validation requirements). If all standards and matrix spikes fall within the expanded windows then no qualification of sample results is necessary. If all standards and matrix spikes do not fall within the expanded windows then all affected sample results are qualified as unusable (R).

Are the RPDs acceptable for the PEMs? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are the RSDs for the calibration factors < 10.0% (< 15.0% for the BHC series, DDT, endrin, and methoxychlor)? Yes No N/A

ACTION: If the RSD criteria are not met qualify associated positive sample results as estimated (J).

3.4 CALIBRATION VERIFICATION (3/90 SOW)

Have the analytical sequence requirements been met for the analysis of instrument blanks, PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the analytical sequence requirements are not followed and any of the resolution or retention time criteria listed below are exceeded, reject associated positive results (R).

Is peak resolution acceptable for PEMs, INDA and INDB mixes? Yes No N/A

ACTION: If the resolution criteria are not met reject positive sample results generated after a noncompliant standard analysis (R).

Are single component target compounds in the PEMs, INDA and INDB mixes within the retention time windows? Yes No N/A

ACTION: If the retention time criteria are not met and no peaks are present in the samples analyzed after the noncompliant standard within two times the retention time windows (±0.04, ±0.05 for methoxychlor), no qualification is necessary. If peaks are present in samples within the expanded windows rejected associated positive and nondetect results (R).

Are RPDs between the calculated and true amounts in the PEMs, INDA and INDB mixes ≤25.0%? Yes No N/A

ACTION: If the RPD criteria are not met qualify associated positive sample results as estimated (J).

Are DDT and endrin breakdowns in the PEMs ≤20.0% (≤30.0% total combined)? Yes No N/A

ACTION: If the breakdown criteria are not met qualify associated positive sample results in accordance with the criteria specified in Section 5.3.1.

4. BLANKS

4.1 LABORATORY BLANKS

Has the laboratory analyzed the method blanks at the required frequency? Yes No N/A

Has the laboratory analyzed a sulfur clean-up blank if required? Yes No N/A

Has the laboratory analyzed instrument blanks at the required frequency? Yes No N/A

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

ACTION: Qualify all associated positive results as nondetects (U) that are <5 times the highest concentration in any acceptable blank.

4.2 FIELD BLANKS

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

ACTION: If target compounds are present in the field blanks qualify all positive sample results <5 times the highest valid field blank concentrations as nondetects (U) and note the results in the validation narrative.

5. ACCURACY

5.1 SURROGATE RECOVERY

Are any surrogate recoveries out of specification?	Yes	(No)	N/A
Do any samples show nondetects for surrogates?	Yes	(No)	N/A
Are any method blank surrogates out of specification?	Yes	(No)	N/A

ACTION: Qualify all associated sample results as estimated (J for detects and UJ for nondetects) for surrogates out of specification. If the surrogate was not detected (0% recovery) in the sample qualify associated nondetects as unusable (R). If method blank surrogates are out of specification and sample surrogates are acceptable, no qualification is required however, the laboratory should be contacted for an explanation.

5.2 MATRIX SPIKE RECOVERY

Has the laboratory analyzed a MS/MSD per matrix for the the sample group?	(Yes)	No	N/A
Are MS/MSD recoveries within specification?	Yes	(No)	N/A
Are there any calculation or transcription errors?	Yes	(No)	N/A

ACTION: If MS/MSD analyses have not been conducted contact the laboratory for clarification. Review the MS/MSD recoveries in conjunction with other QC data such as surrogate recoveries and note the results in the validation narrative. If MS/MSD recoveries are out of specification and sample concentration is >5 times the spike concentration, no qualification is required, otherwise qualify results as follows: Qualify positive results as estimated (J) in all samples if associated surrogates are also out of specification. The qualification shall only be done on samples of similar matrix as the MS/MSD samples. If it is determined from the review that only the spiked samples are affected by the low recoveries, qualify only the results for the spiked sample as described above. If it is determined from the review that out of specification MS/MSD recoveries are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

5.3 PERFORMANCE AUDIT SAMPLES

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

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

6. PRECISION

6.1 MATRIX SPIKE/MATRIX SPIKE DUPLICATE SAMPLES

Are the RPD values within specification? Yes No N/A

ACTION: Review the MS/MSD results in conjunction with other QC data such as field duplicates and note the results in the validation narrative. If MS/MSD RPD values are out of specification and sample results are >5xCRQL qualify positive results as estimated (J). If it is determined from the review that out of specification MS/MSD results are indicative of systematic problems in the laboratory such as sample preparation or sample-specific matrix interferences this must be noted in the validation narrative along with the potential affect on the sample results.

6.2 FIELD DUPLICATE SAMPLES

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

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

6.3 FIELD SPLIT SAMPLES

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

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

7. COMPOUND IDENTIFICATION AND QUANTITATION

7.1 COMPOUND IDENTIFICATION

Do positive results meet the retention time window criteria? Yes No N/A

Were positive results analyzed on disimilar columns? Yes No N/A

If dieldrin and DDE were reported was a 3% OV-1 column used for confirmation (2/88 SOW data only)? Yes No N/A

Do retention times and relative peak height ratios match the expected patterns for multipeak compounds (PCB, toxaphene or chlordane)? Yes No N/A

Has GC/MS confirmation been conducted on sample extract concentrations > 10 ppm? Yes No N/A

ACTION: If positive results do not meet the retention time criteria qualify all detected results as nondetects as follows: If the misidentified peak is outside the retention time windows and no interferences are noted report the CRQL and if the misidentified peak interferes with a target peak then the report value is qualified as estimated and nondetected (UJ). If positive results were not confirmed on disimilar columns, reject affected results (R). If a 3% OV-1 was used to confirm dieldrin and DDE, reject the affected data (R). If PCB, chlordane or toxaphene identification is questionable qualify the results as presumptive and estimated (NJ). If GC/MS confirmation was not conducted contact the laboratory for explanation and note in the validation narrative.

7.2 REPORTED RESULTS AND QUANTITATION LIMITS

Are results and quantitation limits calculated properly?	Yes	No	N/A
Has the laboratory reported the sample quantitation limits within 5xCRQL values?	Yes	No	N/A

ACTION: If results and quantitation limits are in error contact the laboratory for clarification and note in the validation narrative.

8. 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 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

9613402.1706

Holding Time Summary

OCT 1991
RECEIVED
OSM DMO

Roy F. Weston, Inc. - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 07/03/91 RFW LOT # :9107L081

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOOX61	001	S	91LE0867	07/01/91	07/08/91 7 Days	08/08/91 31 Days
BOOX61	001 MS	S	91LE0867	07/01/91	07/08/91	08/08/91
BOOX61	001 MSD	S	91LE0867	07/01/91	07/08/91	08/08/91
LAB QC:						
PBLK	MB1	S	91LE0867	N/A	07/08/91	08/08/91
PBLK	MB1 BS	S	91LE0867	N/A	07/08/91	08/08/91

No qualification Necessary

[illegible] 5/01/92

Calibration Summary 9615402.1707 0000034 pg 1 of 3

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 08069103.48

RFW Lot No.: 9107L081

No qualification necessary associated with this cal check.

Instrument ID: 03 Sample BOOKD not GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 08/06/91 TO: 08/06/91
TIME(S) OF ANALYSIS FROM: 1006 TO: 1433

DATE OF ANALYSIS 08/07/91
TIME OF ANALYSIS 1018
EPA SAMPLE NO. (STANDARD) INDB 25-56

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.95	1.93	1.97	9585565	1.95	9559921	Y	0.3
Beta-BHC	2.70	2.67	2.73	4259667	2.69	4233015	Y	0.6
Delta-BHC	3.12	3.10	3.16	4506021	3.12	4544067	Y	0.8
gamma-BHC (Lindane)	2.42	2.39	2.45	8135977				
Heptachlor	2.94	2.91	2.97	8795865				
Aldrin	3.51	3.48	3.54	6750783	3.50	6949401	Y	2.9
Heptachlor epoxide	5.09	5.05	5.13	4785841				
Endosulfan I	6.34	6.28	6.40	3680059				
Dieldrin	7.65	7.58	7.72	2972209				
4,4'-DDE	7.12	7.06	7.18	3488683	7.10	3503555	Y	0.4
Endrin	9.22	9.14	9.30	1792819	9.21	1833735	Y	2.3
Endosulfan II	11.02	10.91	11.13	1989741				
4,4'-DDD	10.63	10.53	10.73	1386371	10.61	1407999	Y	1.6
Endosulfan sulfate	17.01	16.87	17.15	1107759	16.97	1141657	Y	3.1
4,4'-DDT	12.73	12.59	12.87	1265017				
Methoxychlor	23.40	23.14	23.66	435301				
Endrin ketone	22.93	22.91	22.95	452090	22.88	477087	Y	5.5
alpha-Chlordane	6.10	6.05	6.15	3271503	6.08	3268133	Y	0.1
gamma-Chlordane	5.61	5.56	5.66	3643889	5.60	3672877	Y	0.8
Toxaphene	11.23	11.14	11.32	257741				
Aroclor-1016	2.87	2.84	2.90	1276745				
Aroclor-1221	1.81	1.79	1.83	387175				
Aroclor-1232	2.87	2.85	2.89	652978				
Aroclor-1242	2.87	2.84	2.90	1129041				
Aroclor-1248	2.87	2.84	2.90	1434907				
Aroclor-1254	8.85	8.76	8.94	1363533				
Aroclor-1260	9.88	9.81	9.95	1169673				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
%D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

9613402.1708 Calibration Summary Pg 2 of 3

0000048

9

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 08069104.88

RFW Lot No.: 9107L081

Instrument ID: 04 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 08/06/91 TO: 08/06/91
TIME(S) OF ANALYSIS FROM: 1009 TO: 1501

DATE OF ANALYSIS 08/08/91
TIME OF ANALYSIS 1701
EPA SAMPLE NO. (STANDARD) INDA 26-55

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	2.17	2.15	2.19	829491				
Beta-BHC	2.31	2.29	2.33	1279105				
Delta-BHC	2.58	2.56	2.60	809174				
gamma-BHC (Lindane)	2.50	2.48	2.52	1500475	2.50	1978017	N	31.8
Heptachlor	3.84	3.82	3.86	1866359	3.85	1987805	N	6.5
Aldrin	4.68	4.66	4.70	1318529	4.69	1421059	N	7.8
Heptachlor epoxide	5.60	5.57	5.63	1298801	5.61	1304559	N	0.4
Endosulfan I	6.87	6.84	6.90	887620	6.89	907912	N	2.3
Dieldrin	7.92	7.87	7.97	708857	7.95	719661	N	1.5
4,4'-DDE	7.74	7.69	7.79	675813				
Endrin	8.82	8.76	8.88	448100				
Endosulfan II	8.99	8.94	9.04	669446	9.02	672275	N	0.4
4,4'-DDD	9.64	9.57	9.71	287850				
Endosulfan sulfate	11.34	11.28	11.42	254618				
4,4'-DDT	12.37	12.27	12.47	198142	12.41	169281	N	14.6
Methoxychlor	17.67	17.56	17.78	208244	17.73	181407	N	12.9
Endrin ketone	14.42	14.32	14.52	385998				
alpha-Chlordane	6.96	6.91	7.01	983278				
gamma-Chlordane	6.34	6.29	6.39	1081185				
Toxaphene	9.59	9.29	9.89	93273				
Aroclor-1016	3.38	3.35	3.41	408863				
Aroclor-1221	2.18	2.16	2.20	155330				
Aroclor-1232	2.18	2.16	2.20	218300				
Aroclor-1242	3.38	3.36	3.40	351856				
Aroclor-1248	3.38	3.35	3.41	414667				
Aroclor-1254	6.63	6.58	6.68	442779				
Aroclor-1260	11.00	10.91	11.09	293940				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
%D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 08069104.93

RFW Lot No.: 9107L081

Instrument ID: 04 GC Column ID: SP2100

DATE(S) OF ANALYSIS FROM: 08/06/91 TO: 08/06/91
TIME(S) OF ANALYSIS FROM: 1009 TO: 1501

DATE OF ANALYSIS 08/08/91
TIME OF ANALYSIS 1947
EPA SAMPLE NO. (STANDARD) INDB 25-56

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	2.17	2.15	2.19	829491	2.17	1427897	N	72.1
Beta-BHC	2.31	2.29	2.33	1279105	2.32	1316747	N	2.9
Delta-BHC	2.58	2.56	2.60	809174	2.58	1236707	N	52.8
gamma-BHC (Lindane)	2.50	2.48	2.52	1500475				
Heptachlor	3.84	3.82	3.86	1866359				
Aldrin	4.68	4.66	4.70	1318529	4.68	1520021	N	15.3
Heptachlor epoxide	5.60	5.57	5.63	1298801				
Endosulfan I	6.87	6.84	6.90	887620				
Dieldrin	7.92	7.87	7.97	708857				
4,4'-DDE	7.74	7.69	7.79	675813	7.75	698132	N	3.3
Endrin	8.82	8.76	8.88	448100	8.83	482851	N	7.8
Endosulfan II	8.99	8.94	9.04	669446				
4,4'-DDD	9.64	9.57	9.71	287850	9.66	317788	N	10.4
Endosulfan sulfate	11.34	11.28	11.42	254618	11.38	277894	N	9.1
4,4'-DDT	12.37	12.27	12.47	198142				
Methoxychlor	17.67	17.56	17.78	208244				
Endrin ketone	14.42	14.32	14.52	385998	14.46	393604	N	2.0
alpha-Chlordane	6.96	6.91	7.01	983278	6.98	1029759	N	4.7
gamma-Chlordane	6.34	6.29	6.39	1081185	6.36	1153493	N	6.7
Toxaphene	9.59	9.29	9.89	93273				
Aroclor-1016	3.38	3.35	3.41	408863				
Aroclor-1221	2.18	2.16	2.20	155330				
Aroclor-1232	2.18	2.16	2.20	218300				
Aroclor-1242	3.38	3.36	3.40	351856				
Aroclor-1248	3.38	3.35	3.41	414667				
Aroclor-1254	6.63	6.58	6.68	442779				
Aroclor-1260	11.00	10.91	11.09	293940				

Under QNT Y/N: enter Y if quantitation was performed, N if not performed.
%D must be less than or equal to 15.0% for quantitation, and less than or equal to 20.0% for confirmation.

Note: Determining that no compounds were found above the CRQL is a form of quantitation, and therefore at least one column must meet the 15.0% criteria.

For multicomponent analytes, the single largest peak that is characteristic of the component should be used to establish retention time and %D. Identification of such analytes is based primarily on pattern recognition.

Blank- 9613902.1/10 ID 0000178 CLIENT SAMPLE NO.

Page 1 of 1

PESTICIDE ORGANICS ANALYSIS SHEET

PBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: SOIL Lab Sample ID: 91LE0867-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 08069103.75

Level: (low/med) LOW Date Received: 07/08/91

% Moisture: not dec. 0 dec. Date Extracted: 07/08/91

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 08/08/91

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	8.0	U
319-85-7	Beta-BHC	2.0	J
319-86-8	Delta-BHC	8.0	U
58-89-9	gamma-BHC (Lindane)	8.0	U
76-44-8	Heptachlor	8.0	U
309-00-2	Aldrin	8.0	U
1024-57-3	Heptachlor epoxide	8.0	U
959-98-8	Endosulfan I	8.0	U
60-57-1	Dieldrin	16	U
72-55-9	4,4'-DDE	16	U
72-20-8	Endrin	16	U
33213-65-9	Endosulfan II	16	U
72-54-8	4,4'-DDD	16	U
1031-07-8	Endosulfan sulfate	16	U
50-29-3	4,4'-DDT	16	U
72-43-5	Methoxychlor	80	U
53494-70-5	Endrin ketone	16	U
5103-71-9	alpha-Chlordane	80	U
5103-74-2	gamma-Chlordane	80	U
8001-35-2	Toxaphene	160	U
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	80	U
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	80	U
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254	160	U
11096-82-5	Aroclor-1260	160	U

xs = 10 ppb

8/17/91

FORM 1 PEST 12/88 Rev.

9613402.1711

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST - FORM A-6

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 4/30/92
LABORATORY: Weston	CASE: 9107L081	SDG: 081
SAMPLES/MATRIX: B00X61 / Soil		

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		X		
Cover Page		X		
Traffic Reports		X		
Sample Data				
Inorganic Analysis Data Sheets		X		
Standards Data				
Initial and Continuing Calibration Verification		X		
CRDL Standard for AA and ICP		X		
QC Summary				
Blanks		X		
ICP Interference Check Summary		X		
Spike Sample Recovery		X		
Post-Digestion Spike Sample Recovery		X		
Duplicate		X		
Laboratory Control Sample		X		
Standard Addition Results		X		
ICP Serial Dilutions		X		
Instrument Detection Limits		X		
ICP Interelement Correction Factors		X		
ICP Linear Ranges		X		
Preparation Log		X		
Analysis Run Log		X		
Raw Data				
ICP Raw Data		X		
Furnace AA Raw Data		X		
Mercury Raw Data		X		
Cyanide Raw Data		X		
Additional Data				
Internal laboratory chain-of-custody	4/30/92	X	X	
Laboratory Sample Preparation Records		X		

Data Package Item	Present?: Yes	No	N/A
Percent Solids Analysis Records	X		
Reduction Formulae		X	
Instrument Run Logs	X		
Chemist Notebook Pages		X	

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 nondetects).

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 cyanide 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 cyanide 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.

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 laboratory blanks? Yes No N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (U). If analyte concentrations in the blank are >CRDL or below the negative CRDL, verify the laboratory has redigested and reanalyzed associated samples with analyte concentrations <10 times the blank concentration. If the laboratory has not redigested and reanalyzed the samples, note in the validation narrative.

7. FIELD BLANKS

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

ACTION: Qualify all sample results for any analyte <5 times the amount in any valid field blank as nondetected (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 nondetects as estimated (UJ). If spike recovery is <30%, reject all nondetects (R). If the field blank has been used for spike analysis, note in the validation narrative.

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. If field blanks were used for laboratory duplicates, note in the validation narrative.

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.

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.

1516. 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 ≥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 nondetects). If the analytical spike recovery is <40% qualify detects as estimated (J). If the analytical spike recovery is ≥10% but <40%, qualify all nondetects as estimated (UJ) and if the analytical spike recovery is <10%, reject all nondetects (R). If the sample absorbance is <50% of the analytical spike absorbance and the analytical spike recovery is <85% or >115%, qualify all results as estimated (J for detects and UJ for nondetects). If method of standard additions (MSA) was required but was not performed, the MSA samples were spiked incorrectly, or the MSA correllation coefficient was <0.995, qualify the associated detected results as estimated (J).

17. 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? B. Smith 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).

18. 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 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

9613402.1717

Holding Time Summary

OCT 1991
RECEIVED
OSM DMO

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 07/03/91 RFW LOT # :9107L081

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	# of Days
BOOX61							
SILVER, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	25
SILVER, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
SILVER, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
ALUMINUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
ALUMINUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
ALUMINUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
ARSENIC, TOTAL	001	S	91L1326	07/01/91	07/12/91	07/16/91	15
ARSENIC, TOTAL	001 REP	S	91L1326	07/01/91	07/12/91	07/16/91	
ARSENIC, TOTAL	001 MS	S	91L1326	07/01/91	07/12/91	07/16/91	
BARIUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	25
BARIUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
BARIUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
BERYLLIUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
BERYLLIUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
BERYLLIUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
BISMUTH, TOTAL	001	S	91L1327	07/01/91	07/12/91	08/01/91	31
BISMUTH, TOTAL REP	001 REP	S	91L1327	07/01/91	07/12/91	08/01/91	
BISMUTH, TOTAL DUP S	001 MSD	S	91L1327	07/01/91	07/12/91	08/01/91	
CALCIUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	25
CALCIUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
CALCIUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
CADMIUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
CADMIUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
CADMIUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
COBALT, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
COBALT, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
COBALT, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
CHROMIUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
CHROMIUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
CHROMIUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
COPPER, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
COPPER, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
COPPER, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
IRON, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
IRON, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
IRON, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
MERCURY, TOTAL	001	S	91C233B	07/01/91	08/08/91	08/12/91	42

9613402.0718 Holding Time Summary

Page 2 of 2

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 07/03/91 RFW LOT # :9107L081

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
POTASSIUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	25
POTASSIUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
POTASSIUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
MAGNESIUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
MAGNESIUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
MAGNESIUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
MANGANESE, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
MANGANESE, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
MANGANESE, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
SODIUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
SODIUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
SODIUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
NICKEL, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
NICKEL, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
NICKEL, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
LEAD, TOTAL	001	S	91L1326	07/01/91	07/12/91	07/17/91	16
LEAD, TOTAL	001 REP	S	91L1326	07/01/91	07/12/91	07/17/91	
LEAD, TOTAL	001 MS	S	91L1326	07/01/91	07/12/91	07/17/91	
ANTIMONY, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	25
ANTIMONY, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
ANTIMONY, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
SELENIUM, TOTAL	001	S	91L1326	07/01/91	07/12/91	07/16/91	15
SELENIUM, TOTAL	001 REP	S	91L1326	07/01/91	07/12/91	07/16/91	
SELENIUM, TOTAL	001 MS	S	91L1326	07/01/91	07/12/91	07/16/91	
THALLIUM, TOTAL	001	S	91L1326	07/01/91	07/12/91	07/16/91	
THALLIUM, TOTAL	001 REP	S	91L1326	07/01/91	07/12/91	07/16/91	
THALLIUM, TOTAL	001 MS	S	91L1326	07/01/91	07/12/91	07/16/91	
VANADIUM, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	25
VANADIUM, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
VANADIUM, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	
ZINC, TOTAL	001	S	91L1327	07/01/91	07/12/91	07/26/91	
ZINC, TOTAL	001 REP	S	91L1327	07/01/91	07/12/91	07/26/91	
ZINC, TOTAL	001 MS	S	91L1327	07/01/91	07/12/91	07/26/91	

LAB QC:

SILVER LABORATORY	LC1 BS	S	91L1327	N/A	07/12/91	07/26/91
ALUMINUM LABORTORY	LC1 BS	S	91L1327	N/A	07/12/91	07/26/91
BARIUM LABORATORY	LC1 BS	S	91L1327	N/A	07/12/91	07/26/91
BERYLLIUM LABORATORY	LC1 BS	S	91L1327	N/A	07/12/91	07/26/91

4/30/92

9613402.1719 0000010 Page 1 of 1

Calibration Data Summary

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

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

Lab Code: WESTON Case No.: 200BP SAS No.: SDG No.: CLP08

Initial Calibration Source: IV

Continuing Calibration Source: IV

Concentration Units: ug/L

Analyte	Initial Calibration True	Initial Calibration Found	Initial Calibration %R(1)	Continuing Calibration True	Continuing Calibration Found	Continuing Calibration %R(1)	Continuing Calibration Found	Continuing Calibration %R(1)	M
Aluminum	5000.0	5008.40	100.2	5000.0	4943.70	98.9	4760.10	95.2	P
Antimony	3000.0	2740.40	91.3	3000.0	2739.30	91.3	2748.80	91.6	P
Arsenic	40.0	42.30	105.7	40.0	42.40	106.0	41.30	103.3	F
Barium	5000.0	4893.40	97.9	5000.0	4812.30	96.2	4663.30	93.3	P
Beryllium	250.0	232.60	93.0	250.0	231.80	92.7	234.30	93.7	P
Cadmium	250.0	241.80	96.7	250.0	228.40	91.4	236.80	94.7	P
Calcium	25000.0	24859.20	99.4	25000.0	24842.60	99.4	24945.60	99.8	P
Chromium	500.0	473.50	94.7	500.0	466.70	93.3	459.20	91.8	P
Cobalt	2500.0	2323.50	92.9	2500.0	2283.70	91.3	2320.20	92.8	P
Copper	1250.0	1164.80	93.2	1250.0	1144.90	91.6	1134.10	90.7	P
Iron	5000.0	4701.30	94.0	5000.0	4706.90	94.1	4606.10	92.1	P
Lead	40.0	38.30	95.8	40.0	40.30	100.7	42.40	106.0	F
Magnesium	25000.0	24558.50	98.2	25000.0	24605.50	98.4	24350.30	97.4	P
Manganese	750.0	699.90	93.3	750.0	689.00	91.9	690.10	92.0	P
Mercury	5.0	1.91	38.2	5.0	1.89	37.8	1.89	37.9	CV
Nickel	2000.0	1856.50	92.8	2000.0	1839.80	92.0	1846.80	92.3	P
Potassium	25000.0	24961.90	99.8	25000.0	24086.10	96.3	22635.00	90.5	P
Selenium	40.0	38.90	97.2	40.0	37.30	93.3	36.30	90.8	F
Silver	500.0	468.20	93.6	500.0	458.60	91.7	462.40	92.5	P
Sodium	25000.0	24715.00	98.9	25000.0	25202.90	100.8	23752.10	95.0	P
Thallium	40.0	40.20	100.5	40.0	38.40	96.0	39.70	99.3	F
Vanadium	2500.0	2352.30	94.1	2500.0	2313.90	92.6	2338.70	93.5	P
Zinc	1000.0	962.00	96.2	1000.0	963.80	96.4	960.40	96.0	P
Cyanide	100.0	97.67	97.7	100.0	96.50	96.5			C

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

FORM II (PART 1) - IN

103/9

Reject (R) Mercury data
5/7/92

4/30/92

9613402.1720

Blank and Sample Data Summary

0000025

Page 1 of 2

U.S. EPA - CLP

3
BLANKS

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

Lab code: WESTON Case No.: 200BP SAS No.: SDG No.: CLP08

Preparation Blank Matrix (soil/water): SOIL

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

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
	5X		5X		5X		5X		5X		
Aluminum	84.0	U	84.0	U	84.0	U	84.0	U	16.800	U	UP
Antimony	18.0	U	18.0	U	18.0	U	18.0	U	3.600	U	UP
Arsenic	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Barium	5.0	U	5.0	U	5.0	U	5.0	U	1.000	U	P
Beryllium	1.0	U	1.0	U	1.0	U	1.0	U	.200	U	P
Cadmium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	P
Calcium	91.0	U	91.0	U	91.0	U	91.0	U	18.200	U	P
Chromium	3.0	U	3.0	U	3.0	U	3.0	U	.600	U	P
Cobalt	3.0	U	3.0	U	3.0	U	3.0	U	.600	U	P
Copper	2.0	U	17.5 3.5	B	40.5 8.1	B	29 5.8	B	.400	U	P
Iron	36.0	U	36.0	U	36.0	U	36.0	U	7.200	U	P
Lead	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Magnesium	76.0	U	838 167.6	B	1403 280.6	B	1571 314.2	B	103.5 20.700	B	P
Manganese	1.0	U	1.0	U	1.4	B	7 1.4	B	2.9 .580	B	P
Mercury	.2	U	.2	U	.2	U			.100	U	CV
Nickel	6.0	U	6.0	U	6.0	U	6.0	U	1.200	U	P
Potassium	955.0	U	955.0	U	955.0	U	955.0	U	191.000	U	P
Selenium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Silver	4.0	U	1575 4.0	U	23 4.6	B	32.5 6.5	B	.800	U	P
Sodium	66.5 133.3	B	271.5	B	2087 401.3	B	2189 437.8	B	2085 41.700	B	P
Thallium	2.0	U	2.0	U	2.0	U	2.0	U	.400	U	F
Vanadium	520 10.4	B	88 17.6	B	173.5 34.7	B	190 38.0	B	12 2.400	B	P
Zinc	2.0	U	2.0		16 3.2	B	2.0	U	9 1.800	B	P
Cyanide	10.0	U							.500	U	C

FORM III - IN 103/9

4/30/92

Blank and Sample Data Summary 0000085 page 2 of 2

Analysis Report Fri 07-26-91 09:46:56 AM page 1

Method: HSLONLY Sample Name: 9107L081-001 Operator: MLD
Run Time: 07/26/91 09:44:34
Comment:
Mode: CONC Corr. Factor: 1

Elem	Ag3281	Al3082	Ba4934	Be3130	Ca3179	Cd2288	Co2286
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	3.014	16070.	397.0	1.248	33530.	.8782	25.67
SDev	.584	113.	3.0	.000	336.	.0000	1.30
%RSD	19.37	.7059	.7588	.0000	1.002	.0000	5.077
#1	3.324	16000.	395.3	1.248	33250.	.8782	26.08
#2	2.340	16200.	400.5	1.248	33900.	.8782	26.71
#3	3.377	16010.	395.3	1.248	33440.	.8782	24.20

Elem	Cr2677	Cu3247	Fe2599	K-7664	Mg2790	Mn2576	Na5889
Units	ppb	ppb OK	ppb	ppb	ppb OK	ppb OK	ppb
Avge	5.680	43.80	42810.	3979.	11160.	2224.	1054. U
SDev	1.967	1.78	347.	518.	101.	20.	11.
%RSD	34.64	4.056	.8101	13.02	.9059	.9147	1.002
#1	6.511	44.15	42510.	4360.	11080.	2206.	1043.
#2	7.095	45.37	43190.	4189.	11270.	2246.	1064.
#3	3.433	41.87	42720.	3389.	11130.	2220.	1055.

Elem	Ni2316	Sb2068	V-2924	Zn2138	Pb2203
Units	ppb	ppb	ppb	ppb OK	ppb
Avge	27.41	-26.87	74.30 U	152.2	24.38
SDev	6.94	14.57	.60	1.3	5.04
%RSD	25.32	-54.24	.8096	.8469	20.68
#1	29.10	-11.27	73.77	150.9	18.83
#2	33.34	-40.14	74.96	153.5	28.69
#3	19.78	-29.19	74.18	152.2	25.61

OK = Does not require qualification
concentration in sample is higher than
5x respective blank concentration

4/30/92

Accuracy Data Summary 000003 Page 1 of 1

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

BOOX61S

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

Lab Code: WESTON Case No.: 200BP SAS No.: SDG No.: CLP08

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 97.3

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	74.4000		3.6990	U	102.80	72.4	N	P
Arsenic	75-125	8.6000		1.5000	B	8.20	86.6 ~~104.5~~		F
Barium	75-125	468.5000		81.6000		411.00	94.1		P
Beryllium	75-125	9.8000		.2500	B	10.30	92.7 ~~95.2~~		P
Cadmium	75-125	7.7000		.4110	U	10.30	75.0		P
Calcium									NR
Chromium	75-125	40.0000		1.2000	B	41.10	94.4 ~~97.3~~		P
Cobalt	75-125	98.7000		5.3000	B	102.80	90.9		P
Copper	75-125	55.8000		9.0000		51.40	91.1		P
Iron									NR
Lead	75-125	19.0000		5.5000		4.10	329.2	N	F
Magnesium									NR
Manganese	75-125	372.8999		457.0000		102.80	82.0		P
Mercury									NR
Nickel	75-125	102.0000		5.6000	B	102.80	93.8 ~~99.3~~		P
Potassium									NR
Selenium	75-125	1.2000		.4110	U	2.10	59.0	N	F
Silver	75-125	3.9000		.8220	U	10.30	38.2	N	P
Sodium									NR
Thallium	75-125	8.7000		.4110	U	10.30	84.2		F
Vanadium	75-125	109.0000		15.3000		102.80	91.2		P
Zinc	75-125	128.4000		31.3000		102.80	94.6		P
Cyanide	75-125	4.7180		.5140	U	5.14	90.7		C

Comments:

FORM V (Part 1) - IN 103/9

4/30/92

Precision Data Summary 9613402.1723 0000030 Page 1 of 1

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

BOOX61D

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

Lab Code: WESTON Case No.: 200BP SAS No.: SDG No.: CLP08

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

% Solids for Sample: 97.3 % Solids for Duplicate:

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	%RPD	Q	M
Aluminum		3303.1000		4465.8980		29.9	*	P
Antimony		3.6990	U	3.6990	U			P
Arsenic	2.1	1.5000	B	1.2000	B	21.9		F
Barium	41.1	81.6000		74.5000		9.1		P
Beryllium	1.0	.2500	B	.3900	B	45.2	OK	P
Cadmium		.4110	U	.4110	U			P
Calcium		6889.8980		7518.1020		8.7		P
Chromium	2.1	1.2000	B	2.5000		73.3	OK	P
Cobalt	10.3	5.3000	B	6.9000	B	26.6		P
Copper	5.1	9.0000		12.0000		28.7		P
Iron		8796.6020		12221.9000		32.6	*	P
Lead	.6	5.5000		2.5000		74.9		F
Magnesium	1027.5	2293.5000		3316.3000		36.5	OK *	P
Manganese		457.0000		353.0000		25.7	*	P
Mercury								NR
Nickel	8.2	5.6000	B	7.2000	B	23.8		P
Potassium	1027.5	817.8000	B	1036.9000		23.6		P
Selenium		.4110	U	.4110	U			F
Silver		.8220	U	.8220	U			P
Sodium	1027.5	216.5000	B	278.8000	B	25.2		P
Thallium		.4110	U	.4110	U			F
Vanadium	10.3	15.3000		19.9000		26.3		P
Zinc		31.3000		35.6000		12.8		P
Cyanide		.5140	U	.5140	U			C

FORM VI - IN

103/9

4/30/92

GF AA Analytical Spikes 000020

QC sample is within range [illegible] - 60.0 page 1 of 1

~~~~~~

Se ID: CCV Seq. No.: 00066 A/S Pos.: 38 Date: 07/17/9

Replicate 1 Time: 04:06
Concentration (ug/L): 35.0

Replicate 2 Time: 04:08
Concentration (ug/L): 37.5

Mean Conc (ug/L): 36.3 SD: 1.74 RSD(%): 4.80

QC sample is within range 35.8 - 44.1

~~~~~~

Se ID: CCB Seq. No.: 00067 A/S Pos.: 39 Date: 07/17/9

Replicate 1 Time: 04:11
Concentration (ug/L): 0.3

Replicate 2 Time: 04:14
Concentration (ug/L): -0.0

Mean Conc (ug/L): 0.1 SD: 0.20 RSD(%): 152.2

QC sample is within range -5.0 - 5.0

~~~~~~

Se ID: 9107L081-001 Seq. No.: 00068 A/S Pos.: 17 Date: 07/17/

Replicate 1 Time: 04:17
Concentration (ug/L): 0.5

Replicate 2 Time: 04:19
Concentration (ug/L): 0.5

Mean Conc (ug/L): 0.5 SD: 0.05 RSD(%): 10.89

~~~~~~

Se ID: 9107L081-001 Seq. No.: 00069 A/S Pos.: 17 Date: 07/17/

Replicate 1 Time: 04:22
Concentration (ug/L): 8.3

Replicate 2 Time: 04:25
Concentration (ug/L): 7.9

Mean Conc (ug/L): 8.1 SD: 0.29 RSD(%): 3.53

Recovery is 76.2% outside of specified limits!

~~~~~~

Se ID: 9107L081-001P Seq. No.: 00070 A/S Pos.: 18 Date: 07/17/

Replicate 1 Time: 04:28
Concentration (ug/L): 0.5

Replicate 2 Time: 04:30

[illegible] 4/30/03
~~~~~~

CALCULATION SUMMARY - FORM B-6

SDG: 081	REVIEWER: [signature]	DATE: 4/30/92	PAGE 1 OF 1

COMMENTS:

Spike Sample Recovery

$\%R = \frac{SSR - SR}{SA} \times 100 = \frac{8.6 - 1.5}{8.2} \times 100 = 86.6\%$ Arsenic

Beryllium $\frac{9.8 - .25}{10.3} \times 100 = 92.7\%$

Chromium $\frac{40.0 - 1.2}{41.1} \times 100 = 94.4\%$

Nickel $\frac{102 - 5.6}{102.8} \times 100 = 93.8\%$

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/01/92
LABORATORY: Weston	CASE: 9107L081	SDG: 081
SAMPLES/MATRIX: B00X61, Soil		

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	X		
Cover Page	X		
Traffic Reports/Chain-of-Custody	X		
Sample Analysis Data Report Forms	X		
Standards Data	X		
QC Summary			
Blanks Summary Report Forms	X		
Spike Sample Recovery Report Forms	X		
Duplicate Sample Analysis Report Forms	X		
Laboratory Control Sample Report Forms	X		
Raw Data			
Ion Chromatograph Chromatograms	X		
TOC and TOX Instrument Printouts		TOC	TOX
Laboratory Bench Sheets		X	
Additional Data			
Laboratory Sample Preparation Logs	X		
Instrument Run Logs	X		
Internal Laboratory Chain-of-Custory		X	
Percent Solids Analysis Records	X		
Reduction Formulae		X	
Chemist Notebook Pages		X	

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 nondetects).

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

Have ICV and CCV been analyzed at the proper frequency?	Yes	No	N/A
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 laboratory blanks?	Yes	No	N/A

ACTION: Qualify all associated sample results for any analyte <5 times the amount in any laboratory blank as nondetected (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 <5 times the amount in any valid field blank as nondetected (U).

7. MATRIX SPIKE SAMPLE ANALYSIS

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

ACTION: If the sample concentration exceeds the spike concentration by a factor of 4 or more, and spike recoveries are outside the acceptance limits, no qualification is necessary. If spike recovery is outside the control limits and the sample results are >CRQL, qualify the data as estimated (J). If the spike recovery is <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

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.

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 10.0 of the data validation requirements.

COMMENTS (attach additional sheets as necessary):

9613402.1731

Holding Time Summary

Page 1 of 1

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
WESTINGHOUSE HANFORD

DATE RECEIVED: 07/03/91 RFW LOT # :9107L081

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	# of Days
BOOX61							
% SOLIDS	001	S	91LRS058	07/01/91	07/16/91	07/17/91	16
NITRITE BY IC	001	S	91LIC133	07/01/91	08/14/91	08/19/91	49
NITRATE BY IC	001	S	91LIC133	07/01/91	08/14/91	08/19/91	49
TOTAL CYANIDE	001	S	91LC232	07/01/91	07/15/91	07/15/91	14
TOTAL CYANIDE	001 REP	S	91LC232	07/01/91	07/15/91	07/15/91	14
TOTAL CYANIDE	001 MS	S	91LC232	07/01/91	07/15/91	07/15/91	14
TOTAL ORGANIC CARBON	001	S	91LTZ013	07/01/91	07/22/91	07/22/91	21
TOTAL ORGANIC CARBON	001 REP	S	91LTZ013	07/01/91	07/22/91	07/22/91	21
TOTAL ORGANIC CARBON	001 MS	S	91LTZ013	07/01/91	07/22/91	07/22/91	21
SUB-OUT TEST FOR SUB	001	S		07/01/91			

LAB QC:

FLUORIDE BY IC	MB1	S	91LIC133	N/A	08/15/91	08/19/91
FLUORIDE BY IC	MB1 BS	S	91LIC133	N/A	08/15/91	08/19/91
NITRITE BY IC	MB1	S	91LIC133	N/A	08/14/91	08/19/91
NITRITE BY IC	MB1 BS	S	91LIC133	N/A	08/14/91	08/19/91
NITRATE BY IC	MB1	S	91LIC133	N/A	08/14/91	08/19/91
NITRATE BY IC	MB1 BS	S	91LIC133	N/A	08/14/91	08/19/91
PHOSPHATE BY IC	MB1	S	91LIC133	N/A	08/14/91	08/19/91
PHOSPHATE BY IC	MB1 BS	S	91LIC133	N/A	08/14/91	08/19/91
SULFATE BY IC	MB1	S	91LIC133	N/A	08/15/91	08/19/91
SULFATE BY IC	MB1 BS	S	91LIC133	N/A	08/15/91	08/19/91
TOTAL CYANIDE	LC1 L	S	91LC232	N/A	07/15/91	07/15/91
TOTAL CYANIDE	LC2 L	S	91LC232	N/A	07/15/91	07/15/91
TOTAL CYANIDE	MB1	S	91LC232	N/A	07/15/91	07/15/91
TOTAL ORGANIC CARBON	MB1	W	91LTZ013	N/A	07/22/91	07/22/91
TOTAL ORGANIC CARBON	MB1 BS	W	91LTZ013	N/A	07/22/91	07/22/91
TOTAL ORGANIC CARBON	MB2	W	91LTZ013	N/A	07/22/91	07/22/91
TOTAL ORGANIC CARBON	MB2 BS	W	91LTZ013	N/A	07/22/91	07/22/91

5/1/92