START 9613423.2116 0043714 9105L608-WES-07 92

WESTON

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 05-15-91
RFW #: 9105L608
W.O. #: 6168-02-01

INORGANIC NARRATIVE

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

1. All sample holding times as required by 40CFR136 were met for water samples.

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

3. All laboratory control standards (blank spikes) were within the control limits of 80-120%. All %RPD were within the 20% guidance limit.

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

5. 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).

FEB 1996 RECEIVED EDMC

AUG 1991 RECEIVED DATA RECEIPT

Linda R. Hayhurst 6.20.91

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

pas.21\i5-608

1 8/29/94

9613423.2117

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 06/18/91

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

WESTON BATCH #: 9105L608

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BOOX41	Chloride by IC	0.25 u	mg/L	0.25
		Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 u	mg/L	0.25
		Nitrate by IC	0.25 u	mg/L	0.25
		Cyanide, Total	10.0 u	UG/L	10.0
		Phosphate by IC	0.25 u	mg/L	0.25
		Sulfate by IC	0.25 u	mg/L	0.25
		Nitrate Nitrite	0.59	MG/L	0.10

9613423.2118 4A

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE-HANFORD **SAMPLES RECEIVED:** 05-15-91
RFW #: 9105L608, PEST/PCB
W.O. #: 6168-02-01

NARRATIVE

The set of samples consisted of one (1) water sample collected on 05-13-91.

The samples were extracted on 05-16-91 and analyzed according to criteria set forth in the Contract Laboratory Program for Pesticide and PCB target compounds on 06-20-91.

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 on the primary and confirmation columns in standards analyzed prior to sample extracts with the exception of endosulfan II on 06-20-91 at 08:28.

   The calibration data indicated an increase in instrument sensativity, so the ability to identify or confirm target compounds was not impaired.

3. Retention time criteria were met for all compounds on both the primary and confirmation columns in standards analyzed prior to sample extracts.

4. All surrogate recoveries were within EPA QC limits.

5. Two (2) of twelve (12) blank spike recoveries were outside EPA QC limits. The blank spike recoveries for 4,4'-DDT (128% and 132%) exceeded the EPA QC limit of 127%.

WESTON

6. The blank spike samples required two-fold dilutions to maintain the pesticide concentrations within the linear range of the instrument.

7.22.91.

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

Date

1D

PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOX41

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

Sample wt/vol: 890 (g/mL) ML

Lab File ID: 06199103.29

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____ dec.

Date Extracted: 05/16/91

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 06/20/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	0.056	U
319-85-7	Beta-BHC	0.056	U
319-86-8	Delta-BHC	0.056	U
58-89-9	gamma-BHC (Lindane)	0.056	U
76-44-8	Heptachlor	0.056	U
309-00-2	Aldrin	0.056	U
1024-57-3	Heptachlor epoxide	0.056	U
959-98-8	Endosulfan I	0.056	U
60-57-1	Dieldrin	0.11	U
72-55-9	4,4'-DDE	0.11	U
72-20-8	Endrin	0.11	U
33213-65-9	Endosulfan II	0.11	U
72-54-8	4,4'-DDD	0.11	U
1031-07-8	Endosulfan sulfate	0.11	U
50-29-3	4,4'-DDT	0.11	U
72-43-5	Methoxychlor	0.56	U
53494-70-5	Endrin ketone	0.11	U
5103-71-9	alpha-Chlordane	0.56	U
5103-74-2	gamma-Chlordane	0.56	U
8001-35-2	Toxaphene	1.1	U
12674-11-2	Aroclor-1016	0.56	U
11104-28-2	Aroclor-1221	0.56	U
11141-16-5	Aroclor-1232	0.56	U
53469-21-9	Aroclor-1242	0.56	U
12672-29-6	Aroclor-1248	0.56	U
11097-69-1	Aroclor-1254	1.1	U
11096-82-5	Aroclor-1260	1.1	U

DER 7/17/91

FORM 1 PEST 12/88 Rev.

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

RFW Batch Number: 9105L608 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 06/28/91 15:50 Page: 1a

	Cust ID:	BOOX41	SBLK	SBLK BS	SBLK BSD
Sample Information	RFW#:	001	91LE0630-MB1	91LE0630-MB1	91LE0630-MB1
	Matrix:	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	Nitrobenzene-d5	64 %	49 %	48 %	49 %
	2-Fluorobiphenyl	74 %	58 %	58 %	58 %
	p-Terphenyl-d14	90 %	73 %	95 %	99 %
	Phenol-d5	30 %	26 %	26 %	21 %
	2-Fluorophenol	41 %	35 %	45 %	32 %
	2,4,6-Tribromophenol	60 %	44 %	45 %	33 %
Phenol		10 U	10 U	29 %	23 %
bis(2-Chloroethyl)ether		10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	55 %	40 %
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	50 %	50 %
Benzyl alcohol		10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether		10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U
N-Nitroso-Di-n-propylamine		10 U	10 U	39 * %	40 * %
Hexachloroethane		10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U
Benzoic acid		50 U	50 U	50 U	50 U
bis(2-Chloroethoxy)methane		10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	48 %	52 %
Naphthalene		10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	10 U	48 %	36 %
2-Methylnaphthalene		10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

9613423.2121

Cust ID:	BOOX41	SBLK	SBLK BS	SBLK BSD
RFW#:	001	91LE0630-MB1	91LE0630-MB1	91LE0630-MB1
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	50 U	50 U	50 U	50 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U
2-Nitroaniline	50 U	50 U	50 U	50 U
Dimethylphthalate	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U
3-Nitroaniline	50 U	50 U	50 U	50 U
Acenaphthene	10 U	10 U	68 %	69 %
2,4-Dinitrophenol	50 U	50 U	50 U	50 U
4-Nitrophenol	50 U	50 U	0 * %	0 * %
Dibenzofuran	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	10 U	46 %	41 %
Diethylphthalate	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U
4-Nitroaniline	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50 U	50 U	50 U	50 U
N-Nitrosodiphenylamine (1)	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U
Pentachlorophenol	50 U	50 U	19 %	20 %
Phenanthrene	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U
Di-n-Butylphthalate	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	90 %	85 %
Butylbenzylphthalate	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20 U	20 U	20 U	20 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10 U	10 U	10 U	10 U
Di-n-Octyl phthalate	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U

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

9613423.2122

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

RFW Batch Number: 9105L608 Client: WESTINGHOUSE HANFORD Work Order: 6168-02-01-0000 Report Date: 07/15/91 16:13 Page: 1

	Cust ID:	BOOX41	PBLK	PBLK BS	PBLK BSD
Sample Information	RFW#:	001	91LE0631-MB1	91LE0631-MB1	91LE0631-MB1
	Matrix:	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	2.00	2.00
	Units:	ug/L	ug/L	ug/L	ug/L

Surrogate: Di-n-butylchlorendate	115	%	132	%	130	%	141	%
Alpha-BHC	0.056	U	0.050	U	0.10	U	0.10	U
Beta-BHC	0.056	U	0.050	U	0.10	U	0.10	U
Delta-BHC	0.056	U	0.050	U	0.10	U	0.10	U
gamma-BHC (Lindane)	0.056	U	0.050	U	110	%	110	%
Heptachlor	0.056	U	0.050	U	75	%	80	%
Aldrin	0.056	U	0.050	U	75	%	70	%
Heptachlor epoxide	0.056	U	0.050	U	0.10	U	0.10	U
Endosulfan I	0.056	U	0.050	U	0.10	U	0.10	U
Dieldrin	0.11	U	0.10	U	114	%	120	%
4,4'-DDE	0.11	U	0.10	U	0.20	U	0.20	U
Endrin	0.11	U	0.10	U	114	%	120	%
Endosulfan II	0.11	U	0.10	U	0.20	U	0.20	U
4,4'-DDD	0.11	U	0.10	U	0.20	U	0.20	U
Endosulfan sulfate	0.11	U	0.10	U	0.20	U	0.20	U
4,4'-DDT	0.11	U	0.10	U	128 *	%	132 *	%
Methoxychlor	0.56	U	0.50	U	1.0	U	1.0	U
Endrin ketone	0.11	U	0.10	U	0.20	U	0.20	U
alpha-Chlordane	0.56	U	0.50	U	1.0	U	1.0	U
gamma-Chlordane	0.56	U	0.50	U	1.0	U	1.0	U
Toxaphene	1.1	U	1.0	U	2.0	U	2.0	U
Aroclor-1016	0.56	U	0.50	U	1.0	U	1.0	U
Aroclor-1221	0.56	U	0.50	U	1.0	U	1.0	U
Aroclor-1232	0.56	U	0.50	U	1.0	U	1.0	U
Aroclor-1242	0.56	U	0.50	U	1.0	U	1.0	U
Aroclor-1248	0.56	U	0.50	U	1.0	U	1.0	U
Aroclor-1254	1.1	U	1.0	U	2.0	U	2.0	U
Aroclor-1260	1.1	U	1.0	U	2.0	U	2.0	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

9613423.2123

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

RFW Batch Number: 9105L608 | Client: WESTINGHOUSE HANFORD | Work Order: 6168-02-01-0000 | Report Date: 05/22/91 15:51 | Page: 1a

	Cust ID:	BOOX41	VBLK
Sample Information	RFW#:	001	91LVK089-MB1
	Matrix:	WATER	WATER
	D.F.:	1.00	1.00
	Units:	ug/L	ug/L

	Toluene-d8	99	%	101	%
Surrogate Recovery	Bromofluorobenzene	100	%	98	%
	1,2-Dichloroethane-d4	99	%	101	%

Chloromethane	10	U	10	U
Bromomethane	10	U	10	U
Vinyl Chloride	10	U	10	U
Chloroethane	10	U	10	U
Methylene Chloride	7	B	8	
Acetone	10	B	13	
Carbon Disulfide	5	U	5	U
1,1-Dichloroethene	5	U	5	U
1,1-Dichloroethane	5	U	5	U
1,2-Dichloroethene (total)	5	U	5	U
Chloroform	5	U	5	U
1,2-Dichloroethane	5	U	5	U
2-Butanone	10	U	10	U
1,1,1-Trichloroethane	5	U	5	U
Carbon Tetrachloride	5	U	5	U
Vinyl Acetate	10	U	10	U
Bromodichloromethane	5	U	5	U
1,2-Dichloropropane	5	U	5	U
cis-1,3-Dichloropropene	5	U	5	U
Trichloroethene	5	U	5	U
Dibromochloromethane	5	U	5	U
1,1,2-Trichloroethane	5	U	5	U
Benzene	5	U	5	U
Trans-1,3-Dichloropropene	5	U	5	U
Bromoform	5	U	5	U
4-Methyl-2-pentanone	10	U	10	U
2-Hexanone	10	U	10	U
Tetrachloroethene	5	U	5	U
1,1,2,2-Tetrachloroethane	5	U	5	U

*= Outside of EPA CLP QC limits.

9613423.2124

Cust ID:	BOOX41	VBLK
RFW#:	001	91LVK089-MB1
Toluene	5 U	5 U
Chlorobenzene	5 U	5 U
Ethylbenzene	5 U	5 U
Styrene	5 U	5 U
Xylene (total)	5 U	5 U

*= Outside of EPA CLP QC limits.

000005

9613423.2125

Custody Transfer Record/Lab Work Request

WESTON

WESTON Analytics Use Only
9105L608

US HANFORD Project #: 91-019

Client: Westinghouse Hanford Co.
Work Order: ~~EE3E5~~ W. S. Thompson 6/18/91
Date Rec'd.: 5/15/91 Date Due: ~~As specified~~ in SOW
RFW Contact: Peg Beaty/Q King
Client Contact/Phone: W.S.Thompson(509)376-2153

Refrigerator#	1	1	Cooler					
#/Type Container	1 GLASS	1 GLASS	Plastic	Plastic	Plastic	Plastic	Glass	Plastic
Volume	3x40 ml	1 liter	1000	1000	2x250 ml	250	250	1500 ml
Preservative	—	—	NaOH	HNO3	—	H2SO4	—	HNO3
ANALYSES REQUESTED	VOA 1	BNA PCB 2	CN 3	Metals 4	Anion 5	NO2/NO3 6	TR 7	RAD 8

WA Use Only Lab ID	Client ID/Description	Matrix	Date Collected	1	2	3	4	5	6	7	8
C01	[illegible] (10 bottles)	[illegible]	5/13/91	✓	✓	✓	✓	—	✓	✓	✓

*Anion: ICCl, ICFl, ICClO2, ICClO3, ICClO4, ICClO

ANALYSES REQUESTED
1. VOA (CLP)
2. Semi-VOA, PCB's, Pesticides (CLP)
3. Cyanide (CLP)
4. ICP Metals, AA metals, Bismuth (CLP)
5. IC Anions (300.0)
6. NO2/NO3
7. Tritium
8. Total alpha/beta, GEA, Tc-99, 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
	Emery	[illegible]	5/15/91	[illegible]					
RADSCRN	[illegible]	[illegible]	5-15-91	1:45pm					
		SEE WHC C OF C							
STORAGE	[illegible]	[illegible]	5-15-91	4:00pm					

WESTON Analytics Use Only

Samples Were:
1 Shipped or Hand Delivered (X)
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) (X)
NOTES:

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

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

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

Code H HA
Rd H HA

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

7-115

	Cust ID:	BOOX41		VBLK	
Sample Information	RFW#:	001		91LVK089-MB1	
	Matrix:	WATER		WATER	
	D.F.:	1.00		1.00	
	Units:	ug/L		ug/L	
	Toluene-d8	99	%	101	%
Surrogate	Bromofluorobenzene	100	%	98	%
Recovery	1,2-Dichloroethane-d4	99	%	101	%
Chloromethane		10	U	10	U
Bromomethane		10	U	10	U
Vinyl Chloride		10	U	10	U
Chloroethane		10	U	10	U
Methylene Chloride		7	B	8	
Acetone		10	B	13	
Carbon Disulfide		5	U	5	U
1,1-Dichloroethene		5	U	5	U
1,1-Dichloroethane		5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U
Chloroform		5	U	5	U
1,2-Dichloroethane		5	U	5	U
2-Butanone		10	U	10	U
1,1,1-Trichloroethane		5	U	5	U
Carbon Tetrachloride		5	U	5	U
Vinyl Acetate		10	U	10	U
Bromodichloromethane		5	U	5	U
1,2-Dichloropropane		5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U
Trichloroethene		5	U	5	U
Dibromochloromethane		5	U	5	U
1,1,2-Trichloroethane		5	U	5	U
Benzene		5	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U
Bromoform		5	U	5	U
4-Methyl-2-pentanone		10	U	10	U
2-Hexanone		10	U	10	U
Tetrachloroethene		5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U

*= Outside of EPA CLP QC limits.

9613423.2127

Cust ID:	BOOX41	VBLK
RFW#:	001	91LVK089-MB1
Toluene	5 U	5 U
Chlorobenzene	5 U	5 U
Ethylbenzene	5 U	5 U
Styrene	5 U	5 U
Xylene (total)	5 U	5 U

*= Outside of EPA CLP QC limits.

9613423.2128

WESTON

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 05-15-91
RFW #: 9105L608, GC/MS VOLATILE
W.O. #: 6168-02-01

NARRATIVE

One (1) water sample was collected on 05-13-91.

The sample and its associated QC samples were analyzed according to criteria set forth in SW 846 Method 8240 for TCL Volatile target compounds on 05-21-91

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 this sample.

2. All surrogate recoveries were within EPA QC limits.

3. Matrix spike and spike duplicate samples are associated with RFW lot 9105L573.

4. The laboratory blank contained the common contaminants methylene chloride and acetone at levels less than 2x the CRQL.

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

6.27.91.

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

1A

VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOX41

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

Client: WESTINHHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

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

Lab File ID: AK5L07

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____

Date Analyzed: 05/21/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

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

9605423.2131

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOOX41

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

Client: WESTINHHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

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

Lab File ID: AK5L07

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____

Date Analyzed: 05/21/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

9613423.2132 SA

ROY F. WESTON, INC.
Lionville Laboratory

CLIENT: WESTINGHOUSE HANFORD **SAMPLES RECEIVED:** 05-15-91
RFW #: 9105L608, SEMIVOLATILE
W.O. #: 6168-02-01

NARRATIVE

One (1) water sample was collected on 05-13-91.

The sample and its associated QC samples were extracted on 05-16-91 and analyzed according to criteria set forth in CLP SOW 2/88 (rev 5/89) for TCL Semivolatile target compounds on 06-13,15-91.

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. Four (4) of twenty-two (22) blank spike recoveries were outside EPA QC limits.

4. Internal standard areas were outside QC limits for samples 91LE0630-MB1 BS and 91LE0630-MB1 BSD. The original analysis of the laboratory blank fulfilled its re-analysis requirements.

7. 10. 91.

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

Date

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOX41

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

Sample wt/vol: 990 (g/mL) ML

Lab File ID: S061513

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____ dec.

Date Extracted: 05/16/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 06/15/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	50	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

BOOX41

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

Sample wt/vol: 990 (g/mL) ML

Lab File ID: S061513

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____ dec.

Date Extracted: 05/16/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 06/15/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	10	U
117-84-0	Di-n-Octyl phthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenzo(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

9613423.2135

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOOX41

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

Sample wt/vol: 990 (g/mL) ML

Lab File ID: S061513

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____ dec.

Date Extracted: 05/16/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 06/15/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

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

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

9613423.2136

9/0 5L608-WS-072

Science Applications International Corporation
An Employee-Owned Company

0540-PKB.92
May 19, 1992

Mr. Mark A. Buckmaster
Westinghouse Hanford Company
P.O. Box 1970, MSIN H4-55
Richland, WA 9932

Subject: Deliverable for 200-BP-1 Data Validation, Task Order S-92-19, WHC Contract No. MLW-SVV-073750

Dear Mr. Buckmaster:

Enclosed please find a copy of the Data Validation Summary Reports for Data Packages 9105L589, 9105L608, 9105L590 and 9107L114 produced under the referenced task order. This deliverable was prepared by a team of Golder Associates with support from SAIC under the direction of Mr. Kent Angelos.

Should you have any questions, please do not hesitate to contact the following: Mr. Kent Angelos, Golder Associates at (206) 883-0777, Mr. Mike Hoxie or myself at (509) 943-3133.

Sincerely yours,

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

for P. K. Brockman
Program Manager

Enclosure
PKB/kdc

w. enc.
R. Bechtold, WHC
LB/Task S-92-19 Deliv File

w/o enc.
M. Adams, WHC
D. Caldwell, Golder
D. Martin, Albq
D. Wilson, WHC

w/enc. including original data package
T. Tonning, WHC

1845 Terminal Drive, Suite 202, Richland, Washington 99352 • (509) 943-3133
Other SAIC Offices: Albuquerque, Boston, Colorado Springs, Dayton, Huntsville, Las Vegas, Los Angeles, McLean, Oak Ridge, Orlando, Palo Alto, Seattle, Tucson

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9105L608

Lab File ID (Standard): S061502 Date Analyzed: 06/15/91

Instrument ID: 5100SP Time Analyzed: 1058

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	12994	6.32	44823	9.15	26072	13.53
	UPPER LIMIT	25988	6.82	89646	9.65	52144	14.03
	LOWER LIMIT	6497	5.82	22412	8.65	13036	13.03
	CLIENT SAMPLE NO.						
01	BOOX41	15836	6.27	54304	9.13	29929	13.53
02	SBLKLE0630-MB1	13992	6.28	50689	9.13	30259	13.52

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

5/12/92

CALCULATION SUMMARY - FORM B-6

SDG: 608	REVIEWER: [illegible]	DATE: 5/13/92	PAGE 1 OF ___

COMMENTS:

Nitrate + Nitrite

Duplicate $\%R = \frac{S - D}{\left(\frac{S+D}{2}\right)} \times 100$ S = Sample result, D = Duplicate result

$\%R = \frac{.594 - .602}{\left(\frac{.594 + .602}{2}\right)} \times 100 = -1.3\%$

Spike $\%R = \frac{SSR - SR}{SA} \times 100$ SSR = Spiked Sample Result, SR = Sample Result, SA = Spike Amount Added

$\%R = \frac{1.35 - .59}{1.0} \times 100 = 76\%$

Custody Transfer Record Lab Work Request

WESTON

WESTON Analytics Use Only: 9105L608

Project: 91-0[illegible]

Client: Westinghouse Hanford Co.

Work Order: ~~EE3E5~~ W. S. Thompson

Date Rec'd.: 5/15/91 Date Due: ~~As specified~~ in SOW

RFW Contact: Peg Beaty/[illegible] King

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

WA Use Only Lab ID	Client ID/Description	Matrix	Date Collected
C01	[illegible] (10 bottles)	[illegible]	5/13/91

Refrigerator#	1	1	1	1					
Type Container	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Volume	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Preservative	—	—	[illegible]	[illegible]	—	[illegible]	—	[illegible]	
ANALYSES REQUESTED	1	2	3	4	5	6	7	8	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
	✓	✓	✓	✓	—	✓	✓	✓	

*Alkalinity-1C01, 1C02, 1C03, 1C04, 1C05

ANALYSES REQUESTED

1. OA (CLP)
2. Semi-VOA, PCB's, Pesticides (CLP)
3. Cyanide (CLP)
4. ICP Metals, AA metals, Bismuth (CLP)
5. IC Anions (300.0)
6. NO2/NO3
7. Tritium
8. Total alpha/beta, GEA, Tc-99, Sr-90, Cs-137, Co-60, Pu-238, Pu-239/240, Ru-106, Total U

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

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
	Emery	[illegible]	5/15/91	1[illegible]					
RESEND	[illegible]	[illegible]	5-15-91	1:15pm					
		BBR WIC C OF C							
STORAGE	[illegible]	[illegible]	5-15-91	4:00pm					

WESTON Analytics Use Only

Samples Were:
1 Shipped or Hand Delivered (X)
NOTES:

2 Ambient or Chilled
NOTES:

3 Received Broken/Leaking Improperly Sealed
Y N
NOTES:

4 Properly Preserved
Y N
NOTES:

5 Received Within Holding Times
Y N
NOTES:

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

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

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

9613423.2139

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

COC: A HA
KXI 4 HA

7-115

9613123.2150

Report To

Westinghouse Hanford Company
Richland, Washington

Data Validation Report
200-BP-1 RI/FS
Data Package: 9105L608-WES-072
Sample ID: B00X41
Matrix: Water
Analysis Type: Organics/Cyanide/Wet Chemistry

Prepared By

Golder Associates Inc.
Redmond, Washington

Validated by: _____
Susan Winter
Staff Chemist

Reviewed by: _____
Kent Angelos
Associate

May 14, 1992

913-1719

9615423.2141

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	2
3.2.1 Volatile Organics	2
3.2.2 Semivolatile Organics	2
3.2.3 Pesticide/PCB Organics	3
3.2.4 Wet Chemistry	4
4. CONCLUSIONS	4
5. REFERENCES	4

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 9105L608-WES-072 consisting of one (1) water sample for contract laboratory program target compound list (CLP/TCL) volatiles, semivolatiles, pesticides and PCBs, CLP target analyte list (TAL) 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 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 sample volume and dilution factors. However, sample results were reported to within five times the CRQL.

Sample B00X41 was identified as an equipment blank. The results for all fractions were not detected with the exception of heptachlor epoxide at an estimated value of .011 µg/L.

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

2-Butanone was rejected since the relative response factors (RRF) in the initial and continuing calibration were below 0.05.

3.2 Minor Deficiencies

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

3.2.1 Volatile Organics

- Methylene chloride and acetone were detected in the laboratory method blank at concentrations of 8 and 13 µg/L, respectively. Sample concentrations for both compounds were less than ten times the respective blank concentration and therefore were qualified as undetected (U).

3.2.2 Semivolatile Organics

- The initial calibration relative standard deviation (RSD) for hexachlorocyclopentadiene and butylbenzylphthalate were out of the control limits. The associated sample results were qualified as estimated (UJ).

- The continuing calibration percent difference (%D) were out of the control limits for several compounds (see Attachment 4). The associated sample results were qualified as estimated (UJ).

3.2.3 Pesticide/PCB Organics

- Heptachlor epoxide was detected at an estimated value of 0.011 µg/L.

3.2.4 Wet Chemistry

- There were no qualifications required in the validation of the wet chemistry data for this sample.

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 2-butanone and nitrite+nitrite data. 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.

9613423.2145

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

DATA QUALIFICATION SUMMARY - FORM B-7

91C5L608

SDG: 608	REVIEWER: [illegible]	DATE: 5/11/92	PAGE 1 OF 1
COMMENTS: VOA/Semi-VOA/Post/PCB/Wet Chemistry			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON 5/11/92
2-Butanone	R	All	ICV ~~%RSD~~ RRF < 0.05
2-Butanone	R (already qualified)	↓	CCV %D RRF < 0.05
MeCl2	U	All	Present in blank
Acetone	U	↓	↓
Hexachlorocyclopentadiene	UJ	All	ICV %RSD > 30%
Butyl benzyl phthalate	UJ	All	↓
Dibenzofuran	UJ	All	CCV %D > 25%
N-nitrosodiphenylamine	↓	↓	↓
Benzoic acid	↓	↓	↓
4-Chloroaniline	↓	↓	↓
2,4-Dinitrophenol	↓	↓	↓
4-Nitrophenol	↓	↓	↓
4,6-Dinitro-2-methylphenol	↓	↓	↓
2,4-Dinitrotoluene	↓	↓	↓
Heptachlor Epoxide	J	All	1) Cont. check %D > 15% 2) Est. matrix effect
~~[illegible]~~	~~[illegible]~~	~~All~~	~~[illegible]~~ 5/14/92

9613423.2147

ATTACHMENT 3

AS QUALIFIED DATA SUMMARY

Project		200-BP-1																	
Laboratory		WESTON																	
Case		SDG 9105L608																	
Sample Number		B00X41																	
Location		216-B-61A																	
		EQUIPMENT																	
		BLANK																	
Remarks																			
Sample Date		05/13/91																	
Analysis Date		05/21/91																	
Volatile Organic Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	10	U																
Bromomethane	10	10	U																
Vinyl Chloride	10	10	U																
Chloroethane	10	10	U																
Methylene Chloride	5	7	U																
Acetone	10	10	U																
Carbon Disulfide	5	5	U																
1,1-Dichloroethene	5	5	U																
1,1-Dichloroethane	5	5	U																
1,2-Dichloroethene (total)	5	5	U																
Chloroform	5	5	U																
1,2-Dichloroethane	5	5	U																
2-Butanone	10	10	R																
1,1,1-Trichloroethane	5	5	U																
Carbon Tetrachloride	5	5	U																
Vinyl Acetate	10	10	U																
Bromodichloromethane	5	5	U																
1,2-Dichloropropane	5	5	U																
cis-1,3-Dichloropropene	5	5	U																
Trichloroethene	5	5	U																
Dibromochloromethane	5	5	U																
1,1,2-Trichloroethane	5	5	U																
Benzene	5	5	U																
trans-1,3-Dichloropropene	5	5	U																
Bromoform	5	5	U																
4-Methyl-2-pentanone	10	10	U																
2-Hexanone	10	10	U																
Tetrachloroethene	5	5	U																
1,1,2,2-Tetrachloroethane	5	5	U																
Toluene	5	5	U																
Chlorobenzene	5	5	U																
Ethylbenzene	5	5	U																
Styrene	5	5	U																
Xylene (total)	5	5	U																

9613423.2148

Project		200-BP-1																	
Laboratory		WESTON																	
Case		SDG 9105L608																	
Sample Number		B00X41																	
Location		216-B-61A																	
		EQUIPMENT																	
		BLANK																	
Remarks																			
Sample Date		05/13/91																	
Extraction Date		05/16/91																	
Analysis Date		06/15/91																	
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	10	10	U																
bis(2-Chloroethyl)ether	10	10	U																
2-Chlorophenol	10	10	U																
1,3-Dichlorobenzene	10	10	U																
1,4-Dichlorobenzene	10	10	U																
Benzyl alcohol	10	10	U																
1,2-Dichlorobenzene	10	10	U																
2-Methylphenol	10	10	U																
bis(2-Chloroisopropyl)ether	10	10	UJ																
4-Methylphenol	10	10	U																
N-Nitroso-di-n-propylamine	10	10	UJ																
Hexachloroethane	10	10	U																
Nitrobenzene	10	10	U																
Isophorone	10	10	U																
2-Nitrophenol	10	10	U																
2,4-Dimethylphenol	10	10	U																
Benzoic acid	50	50	UJ																
bis(2-Chloroethoxy)methane	10	10	U																
2,4-Dichlorophenol	10	10	U																
1,2,4-Trichlorobenzene	10	10	U																
Naphthalene	10	10	U																
4-Chloroaniline	10	10	U																
Hexachlorobutadiene	10	10	U																
4-Chloro-3-methylphenol	10	10	U																
2-Methylnaphthalene	10	10	U																
Hexachlorocyclopentadiene	10	10	UJ																
2,4,6-Trichlorophenol	10	10	U																
2,4,5-Trichlorophenol	50	50	U																
2-Chloronaphthalene	10	10	U																
2-Nitroaniline	50	50	UJ																
Dimethylphthalate	10	10	U																
Acenaphthylene	10	10	U																
2,6-Dinitrotoluene	10	10	U																
3-Nitroaniline	50	50	U																

9613423.2149

Project		200-BP-1																		
Laboratory		WESTON																		
Case		SDG 9105L608																		
Sample Number		B00X41																		
Location		216-B-61A																		
		EQUIPMENT																		
		BLANK																		
Remarks																				
Sample Date		05/13/91																		
Extraction Date		05/16/91																		
Analysis Date		06/15/91																		
Semivolatile Compound	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Acenaphthene	10	10	U																
2,4-Dinitrophenol	50	50	UJ																
4-Nitrophenol	50	50	UJ																
Dibenzofuran	10	10	U																
2,4-Dinitrotoluene	10	10	U																
Diethylphthalate	10	10	U																
4-Chlorophenyl-phenyl ether	10	10	U																
Fluorene	10	10	U																
4-Nitroaniline	50	50	U																
4,6-Dinitro-2-methylphenol	50	50	UJ																
N-Nitrosodiphenylamine	10	10	U																
4-Bromophenyl-phenylether	10	10	U																
Hexachlorobenzene	10	10	U																
Pentachlorophenol	50	50	U																
Phenanthrene	10	10	U																
Anthracene	10	10	U																
Di-n-butylphthalate	10	10	U																
Fluoranthene	10	10	U																
Pyrene	10	10	U																
Butylbenzylphthalate	10	10	UJ																
3,3'-Dichlorobenzidine	20	20	UJ																
Benz(a)anthracene	10	10	U																
Chrysene	10	10	U																
bis(2-Ethylhexyl)phthalate	10	10	U																
Di-n-octylphthalate	10	10	U																
Benzo(b)fluoranthene	10	10	U																
Benzo(k)fluoranthene	10	10	U																
Benzo(a)pyrene	10	10	U																
Indeno(1,2,3-cd)pyrene	10	10	U																
Dibenz(a,g)anthracene	10	10	U																
Benzo(g,h,i)perylene	10	10	U																

9613423.2150

Project		200-BP-1																					
Laboratory		WESTON																					
Case		SDG 9105L608																					
Sample Number		B00X41																					
Location		216-B-61A																					
		EQUIPMENT																					
		BLANK																					
Remarks																							
Sample Date		05/13/91																					
Extraction Date		05/16/91																					
Analysis Date		06/20/91																					
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	0.05	0.056	U																				
beta-BHC	0.05	0.056	U																				
delta-BHC	0.05	0.056	U																				
gamma-BHC (Lindane)	0.05	0.056	U																				
Heptchlor	0.05	0.056	U																				
Aldrin	0.05	0.056	U																				
Heptachlor epoxide	0.05	0.011	J																				
Endosulfan I	0.05	0.056	U																				
Dieldrin	0.1	0.11	U																				
4,4'-DDE	0.1	0.11	U																				
Endrin	0.1	0.11	U																				
Endosulfan II	0.1	0.11	U																				
4,4'-DDD	0.1	0.11	U																				
Endosulfan sulfate	0.1	0.11	U																				
4,4'-DDT	0.1	0.11	U																				
Methoxychlor	0.5	0.56	U																				
Endrin Ketone	0.1	0.11	U																				
alpha-Chlordane	0.5	0.56	U																				
gamma-Chlordane	0.5	0.56	U																				
Toxaphene	1	1.1	U																				
Arochlor-1016	0.5	0.56	U																				
Arochlor-1221	0.5	0.56	U																				
Arochlor-1232	0.5	0.56	U																				
Arochlor-1242	0.5	0.56	U																				
Arochlor-1248	0.5	0.56	U																				
Arochlor-1254	1	1.1	U																				
Arochlor-1260	1	1.1	U																				

9613423.2151

Project		200-BP-1																		
Laboratory		WESTON																		
Case	SDG	9105L608																		
Sample Number		B00X41																		
Location		216-B-61A																		
		EQUIPMENT																		
		BLANK																		
Remarks																				
Sample Date		05/13/91																		
Inorganic Analytes	CRQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloride	0.5	0.25	U																
Fluoride	0.5	0.5	U																
Nitrite	0.5	0.25	U																
Nitrate	0.5	0.25	U																
Cyanide, ug/L	10	10	U																
Phosphate	0.5	0.25	U																
Sulfate	0.5	0.25	U																
Nitrate+Nitrite	0.5	0.59																	

9613423.2152

9613423.2153

1A

VOLATILE ORGANICS ANALYSIS SHEET

0000016

CLIENT SAMPLE NO.
216-B-61A

BOOX41
Equipment Blank

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

Client: WESTINHHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

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

Lab File ID: AK5L07

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____

Date Analyzed: 05/21/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	7	~~B~~ U
67-64-1	Acetone	10	~~B~~ U
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~~ R
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

FORM 1 V-1 12/88 Rev.

5/1/92

9613423.2154

0000017

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-61A

BOOX41
Equipment Blank

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

Client: WESTINHHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

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

Lab File ID: AK5L07

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____

Date Analyzed: 05/21/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 12/88 Rev.

5/11/92

9613423.2155

0000015

1B

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-61A

BOOX41
Equipment Blank

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

Sample wt/vol: 990 (g/mL) ML

Lab File ID: S061513

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____ dec.

Date Extracted: 05/16/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 06/15/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)ether	10	~~U~~ UJ
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-propylamine	10	~~U~~ UJ
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic acid	50	~~U~~ UJ
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	~~U~~ UJ
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	~~U~~ UJ
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

9613423.2156

0000016

1C

SEMIVOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-B-61A

BOOX41
Equipment Blank

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER Lab Sample ID: 9105L608-001

Sample wt/vol: 990 (g/mL) ML Lab File ID: S061513

Level: (low/med) LOW Date Received: 05/15/91

% Moisture: not dec. _____ dec. Date Extracted: 05/16/91

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 06/15/91

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

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

CAS NO.	COMPOUND			
99-09-2	3-Nitroaniline	50	U	
83-32-9	Acenaphthene	10	U	
51-28-5	2,4-Dinitrophenol	50	~~U~~	UJ
100-02-7	4-Nitrophenol	50	~~U~~	UJ
132-64-9	Dibenzofuran	10	U	
121-14-2	2,4-Dinitrotoluene	10	U	
84-66-2	Diethylphthalate	10	U	
7005-72-3	4-Chlorophenyl-phenylether	10	U	
86-73-7	Fluorene	10	U	
100-01-6	4-Nitroaniline	50	U	
534-52-1	4,6-Dinitro-2-methylphenol	50	~~U~~	UJ
86-30-6	N-Nitrosodiphenylamine (1)	10	U	
101-55-3	4-Bromophenyl-phenylether	10	U	
118-74-1	Hexachlorobenzene	10	U	
87-86-5	Pentachlorophenol	50	U	
85-01-8	Phenanthrene	10	U	
120-12-7	Anthracene	10	U	
84-74-2	Di-n-Butylphthalate	10	U	
206-44-0	Fluoranthene	10	U	
129-00-0	Pyrene	10	U	
85-68-7	Butylbenzylphthalate	10	~~U~~	UJ
91-94-1	3,3'-Dichlorobenzidine	20	~~U~~	UJ
56-55-3	Benzo(a)anthracene	10	U	
218-01-9	Chrysene	10	U	
117-81-7	bis(2-Ethylhexyl)phthalate	10	U	
117-84-0	Di-n-Octyl phthalate	10	U	
205-99-2	Benzo(b)fluoranthene	10	U	
207-08-9	Benzo(k)fluoranthene	10	U	
50-32-8	Benzo(a)pyrene	10	U	
193-39-5	Indeno(1,2,3-cd)pyrene	10	U	
53-70-3	Dibenzo(a,h)anthracene	10	U	
191-24-2	Benzo(g,h,i)perylene	10	U	

(1) - Cannot be separated from Diphenylamine

FORM 1 SV-2 12/88 Rev.

5/12/92

9613423.2157

0000017

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
216-B-61A

BOOX41
Equipment Blank

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

Sample wt/vol: 990 (g/mL) ML

Lab File ID: S061513

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____ dec.

Date Extracted: 05/16/91

Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 06/15/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 SV-TIC

12/88 Rev.

5/12/98

9613423.2158

80

1D
PESTICIDE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.
216-R-61A

BOOX41
Equipment Blank

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 9105L608-001

Sample wt/vol: 890 (g/mL) ML

Lab File ID: 06199103.29

Level: (low/med) LOW

Date Received: 05/15/91

% Moisture: not dec. _____ dec.

Date Extracted: 05/16/91

Extraction: (SepF/Cont/Sonc) CONT

Date Analyzed: 06/20/91

GPC Cleanup: (Y/N) N pH: 7.0

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
319-84-6	Alpha-BHC	0.056	U
319-85-7	Beta-BHC	0.056	U
319-86-8	Delta-BHC	0.056	U
58-89-9	gamma-BHC (Lindane)	0.056	U
76-44-8	Heptachlor	0.056	U
309-00-2	Aldrin	0.056	U
1024-57-3	Heptachlor epoxide	~~0.056~~ .011	~~U~~ J
959-98-8	Endosulfan I	0.056	U
60-57-1	Dieldrin	0.11	U
72-55-9	4,4'-DDE	0.11	U
72-20-8	Endrin	0.11	U
33213-65-9	Endosulfan II	0.11	U
72-54-8	4,4'-DDD	0.11	U
1031-07-8	Endosulfan sulfate	0.11	U
50-29-3	4,4'-DDT	0.11	U
72-43-5	Methoxychlor	0.56	U
53494-70-5	Endrin ketone	0.11	U
5103-71-9	alpha-Chlordane	0.56	U
5103-74-2	gamma-Chlordane	0.56	U
8001-35-2	Toxaphene	1.1	U
12674-11-2	Aroclor-1016	0.56	U
11104-28-2	Aroclor-1221	0.56	U
11141-16-5	Aroclor-1232	0.56	U
53469-21-9	Aroclor-1242	0.56	U
12672-29-6	Aroclor-1248	0.56	U
11097-69-1	Aroclor-1254	1.1	U
11096-82-5	Aroclor-1260	1.1	U

DER 7/17/91

FORM 1 PEST 12/88 Rev.

9613423.2159

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 06/18/91

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

WESTON BATCH #: 9105L608

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-001	BOOX41	Chloride by IC	0.25 u	mg/L	0.25
		Fluoride by IC	0.50 u	mg/L	0.50
		Nitrite by IC	0.25 u	mg/L	0.25
		Nitrate by IC	0.25 u	mg/L	0.25
		Cyanide, Total	10.0 u	UG/L	10.0
		Phosphate by IC	0.25 u	mg/L	0.25
		Sulfate by IC	0.25 u	mg/L	0.25
		~~Nitrate Nitrite~~	~~0.59~~ 0.59	~~MG/L~~	~~0.10~~

216-B-61A
Equipment Blank

ok
5/14/92

9613423.2160

ATTACHMENT 4

DATA REVIEW SUPPORTING DOCUMENTATION

9613423.2161

VOLATILE ORGANIC DATA VALIDATION CHECKLIST - FORM A-1

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/11/92
LABORATORY: Weston	CASE: 9105L608	SDG: 608
SAMPLES/MATRIX: B00X41, water		

1. DATA PACKAGE COMPLETENESS

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

Data Package Item	Present?: Yes	No	N/A
Case Narrative	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

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	
Additional Data			
Moisture/% solids data sheets		X	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

not after blank- adjustment

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

5/11/92

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.

COMMENTS (attach additional sheets as necessary):

MS/MSD was performed on 9105/573, MS/MSD report form III is included in the package.

5/18/92

9613423.2169

Holding Time Summary pg 1 of 1

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

DATE RECEIVED: 05/15/91 RFW LOT # :9105L608

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	
BOOX41	001	W	91LVK089	05/13/91	N/A	05/21/91	8 Days
LAB QC:							
VBLK	MB1	W	91LVK089	N/A	N/A	05/21/91	

AUG 1991
RECEIVED
DATA RECEIPT

5/11/91

9613423.2170

0000023

Calibration Summary

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: 9105L608

Instrument ID: HP-MSD K Calibration Date(s): 05/07/91 05/07/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

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

LAB FILE ID: RRF20 = AK5709 RRF50 = AK5704
RRF100= AK5705 RRF150= AK5707 RRF200= AK5708

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
Chloromethane #	0.664	0.699	0.690	0.646	0.675	0.675	3.2#
Bromomethane	0.973	1.032	0.976	0.904	0.926	0.962	5.1
Vinyl Chloride *	0.744	0.808	0.788	0.740	0.766	0.769	3.7*
Chloroethane	0.366	0.406	0.392	0.389	0.396	0.390	3.7
Methylene Chloride	2.028	1.514	1.392	1.141	1.158	1.446	25.0
Acetone	0.303	0.188	0.171	0.175	0.178	0.203	27.7
Carbon Disulfide	2.484	2.644	2.787	2.607	2.131	2.530	9.8
1,1-Dichloroethene *	0.966	1.060	1.014	0.874	0.742	0.931	13.6*
1,1-Dichloroethane #	1.910	2.059	2.051	1.982	2.050	2.010	3.2#
1,2-Dichloroethene (total)	1.115	1.172	1.158	1.117	1.162	1.145	2.3
Chloroform *	2.805	2.635	2.674	2.648	2.575	2.667	3.2*
1,2-Dichloroethane	0.501	0.458	0.457	0.482	0.448	0.469	4.6
2-Butanone	0.040	0.045	0.046	0.050	0.049	0.046	9.1 R
1,1,1-Trichloroethane	2.926	2.766	2.775	2.769	2.703	2.788	3.0
Carbon Tetrachloride	3.334	3.210	3.263	3.349	3.175	3.266	2.3
Vinyl Acetate	1.771	1.810	1.896	1.885	1.993	1.871	4.6
Bromodichloromethane	0.768	0.793	0.740	0.725	0.745	0.754	3.5
1,2-Dichloropropane *	0.271	0.272	0.261	0.257	0.260	0.264	2.5*
cis-1,3-Dichloropropene	0.600	0.595	0.591	0.508	0.601	0.579	6.9
Trichloroethene	0.443	0.436	0.433	0.425	0.420	0.432	2.1
Dibromochloromethane	1.048	0.946	0.944	0.920	0.954	0.963	5.1
1,1,2-Trichloroethane	0.411	0.359	0.341	0.324	0.329	0.353	10.0
Benzene	0.674	0.589	0.575	0.608	0.548	0.599	7.9
Trans-1,3-Dichloropropene	0.416	0.404	0.420	0.423	0.460	0.425	5.0
Bromoform #	0.812	0.744	0.734	0.731	0.782	0.761	4.6#
4-Methyl-2-pentanone	0.282	0.246	0.231	0.240	0.252	0.250	7.7
2-Hexanone	0.189	0.166	0.151	0.154	0.162	0.164	9.1
Tetrachloroethene	0.578	0.538	0.523	0.518	0.536	0.539	4.4
1,1,2,2-Tetrachloroethane #	0.661	0.590	0.564	0.568	0.587	0.594	6.6#
Toluene *	0.576	0.547	0.533	0.521	0.539	0.543	3.8*
Chlorobenzene #	0.905	0.876	0.874	0.853	0.888	0.879	2.2#
Ethylbenzene *	0.371	0.361	0.360	0.352	0.369	0.363	2.1*
Styrene	0.795	0.776	0.763	0.730	0.750	0.763	3.2
Xylene (total)	0.450	0.442	0.432	0.416	0.425	0.433	3.1
Toluene-d8	1.060	1.010	1.025	1.025	1.071	1.038	2.5
Bromofluorobenzene	0.947	0.937	0.905	0.921	0.926	0.927	1.7
1,2-Dichloroethane-d4	0.504	0.435	0.439	0.457	0.421	0.451	7.1

9613423.2171

000004

Calibration Summary

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: 9105L608

Instrument ID: HP-MSD K Calibration Date: 05/21/91 Time: 1123

Lab File ID: AK5L04 Init. Calib. Date(s): 05/07/91 05/07/91

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

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

COMPOUND		$\overline{RRF}$	RRF50	%D	
Chloromethane	#	0.675	0.662	1.9	#
Bromomethane		0.962	1.006	-4.6	
Vinyl Chloride	*	0.769	0.772	-0.4	*
Chloroethane		0.390	0.429	-10.0	
Methylene Chloride		1.446	1.293	10.6	
Acetone		0.203	0.191	5.7	
Carbon Disulfide		2.530	2.795	-10.5	
1,1-Dichloroethene	*	0.931	1.082	-16.3	*
1,1-Dichloroethane	#	2.010	2.078	-3.4	#
1,2-Dichloroethene (total)		1.145	1.203	-5.1	
Chloroform	*	2.667	2.892	-8.5	*
1,2-Dichloroethane		0.469	0.522	-11.2	
2-Butanone		0.046	0.040	13.8	R (already qualified)
1,1,1-Trichloroethane		2.788	3.068	-10.1	
Carbon Tetrachloride		3.266	3.701	-13.3	
Vinyl Acetate		1.871	1.915	-2.3	
Bromodichloromethane		0.754	0.781	-3.6	
1,2-Dichloropropane	*	0.264	0.283	-7.2	*
cis-1,3-Dichloropropene		0.579	0.568	1.8	
Trichloroethene		0.432	0.441	-2.2	
Dibromochloromethane		0.963	0.983	-2.1	
1,1,2-Trichloroethane		0.353	0.365	-3.3	
Benzene		0.599	0.655	-9.4	
Trans-1,3-Dichloropropene		0.425	0.396	6.7	
Bromoform	#	0.761	0.779	-2.4	#
4-Methyl-2-pentanone		0.250	0.267	-6.9	
2-Hexanone		0.164	0.173	-5.3	
Tetrachloroethene		0.539	0.558	-3.6	
1,1,2,2-Tetrachloroethane	#	0.594	0.594	0.0	#
Toluene	*	0.543	0.540	0.6	*
Chlorobenzene	#	0.879	0.848	3.5	#
Ethylbenzene	*	0.363	0.348	4.0	*
Styrene		0.763	0.746	2.2	
Xylene (total)		0.433	0.434	-0.2	
Toluene-d8		1.038	0.968	6.7	
Bromofluorobenzene		0.927	0.946	-2.1	
1,2-Dichloroethane-d4		0.451	0.492	-9.0	

FORM VII VOA

5/88 Rev.

9613423.2172

1A

VOLATILE ORGANICS ANALYSIS SHEET

Blank Summary

0000055 CLIENT SAMPLE NO. Pg 1 of 1

VBLK

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

Client: WESTINGHOUSE HANFORD

Matrix: WATER

Lab Sample ID: 91LVK089-MB1

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

Lab File ID: AK5L05

Level: (low/med) LOW

Date Received: 05/21/91

% Moisture: not dec. _____

Date Analyzed: 05/21/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	8	
67-64-1	Acetone	13	
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=80

x10=130

FORM 1 V-1 12/88 Rev.

5/11/92

9613423.2173

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

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/12/94
LABORATORY: Western	CASE: 9105L608	SDG: 608
SAMPLES/MATRIX: B00X41, ~~soil~~ 5/12/94 water		

1. DATA PACKAGE COMPLETENESS

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

Data Package Item	Present?: Yes	No	N/A
Case Narrative	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		

Data Package Item	Present?: Yes	No	N/A
RIC and quantitation reports for MS/MSD	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

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):

The Acme IS area recoveries were out of the control limits for the Blank Spike and Blank Spike Duplicate.

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Holding Time Summary

Pg 1 of 1

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

DATE RECEIVED: 05/15/91 RFW LOT # :9105L608

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOOX41	001	W	91LE0630	05/13/91	05/16/91 30 Days	06/15/91 30 Days
LAB QC:						
SBLK	MB1	W	91LE0630	N/A	05/16/91	06/15/91
SBLK	MB1 BS	W	91LE0630	N/A	05/16/91	06/13/91
SBLK	MB1 BSD	W	91LE0630	N/A	05/16/91	06/13/91

AUG 1991
RECEIVED
DATA RECEIPT

5/17/92

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Calibration Summary

Pg 1 of 4

6B

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9105L608

Instrument ID: 5100SP Calibration Date(s): 06/08/91 06/08/91

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

LAB FILE ID: RRF20 = S060807 RRF50 = S060803
RRF80 = S060804 RRF120= S060805 RRF160= S060806

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Phenol *	1.268	1.692	1.759	1.917	1.919	1.711	15.6*
bis(2-Chloroethyl)ether	1.396	1.548	1.951	1.458	1.775	1.626	14.3
2-Chlorophenol	1.065	1.276	1.357	1.455	1.463	1.323	12.4
1,3-Dichlorobenzene	1.247	1.365	1.720	1.225	1.447	1.401	14.3
1,4-Dichlorobenzene *	1.546	1.605	1.951	1.404	1.679	1.637	12.4*
Benzyl alcohol	0.356	0.593	0.835	0.643	0.787	0.643	29.4
1,2-Dichlorobenzene	1.329	1.376	1.755	1.253	1.493	1.441	13.6
2-Methylphenol	1.014	1.244	1.327	1.394	1.393	1.274	12.4
bis(2-Chloroisopropyl)ether	1.977	2.251	2.958	2.151	2.544	2.376	16.2
4-Methylphenol	0.952	1.176	1.309	1.381	1.393	1.242	14.8
N-Nitroso-Di-n-propylamine #	0.829	0.972	1.309	0.959	1.161	1.046	18.0#
Hexachloroethane	0.584	0.613	0.795	0.569	0.699	0.652	14.5
Nitrobenzene	0.324	0.374	0.477	0.355	0.429	0.392	15.6
Isophorone	0.581	0.757	0.958	0.720	0.851	0.773	18.3
2-Nitrophenol *	0.136	0.189	0.208	0.222	0.213	0.194	17.8*
2,4-Dimethylphenol	0.230	0.276	0.310	0.336	0.348	0.300	16.0
Benzoic acid		0.109	0.149	0.175	0.189	0.155	22.6
bis(2-Chloroethoxy)methane	0.407	0.464	0.613	0.438	0.534	0.491	16.8
2,4-Dichlorophenol *	0.219	0.278	0.288	0.308	0.308	0.280	13.1*
1,2,4-Trichlorobenzene	0.280	0.302	0.368	0.258	0.304	0.302	13.6
Naphthalene	0.964	1.029	1.281	0.869	1.098	1.048	14.8
4-Chloroaniline	0.276	0.354	0.459	0.320	0.378	0.357	19.2
Hexachlorobutadiene *	0.147	0.152	0.179	0.123	0.146	0.149	13.4*
4-Chloro-3-methylphenol *	0.170	0.227	0.238	0.265	0.277	0.235	17.7*
2-Methylnaphthalene	0.564	0.603	0.760	0.544	0.653	0.625	13.8
Hexachlorocyclopentadiene #	0.064	0.089	0.156	0.110	0.132	0.110	32.6#
2,4,6-Trichlorophenol *	0.235	0.311	0.320	0.315	0.318	0.300	12.1*
2,4,5-Trichlorophenol		0.331	0.347	0.353	0.345	0.344	2.7
2-Chloronaphthalene	0.975	1.124	1.427	0.976	1.179	1.136	16.4
2-Nitroaniline		0.335	0.445	0.333	0.401	0.378	14.4
Dimethylphthalate	0.915	1.114	1.436	0.984	1.164	1.123	17.9
Acenaphthylene	1.503	1.740	2.203	1.476	1.854	1.755	16.9
2,6-Dinitrotoluene	0.217	0.274	0.341	0.247	0.299	0.276	17.3
3-Nitroaniline		0.250	0.328	0.201	0.192	0.243	25.7
Acenaphthene *	0.840	0.930	1.182	0.841	1.012	0.961	14.8*
2,4-Dinitrophenol #		0.070	0.100	0.134	0.135	0.110	28.3#
4-Nitrophenol #		0.092	0.109	0.125	0.124	0.113	13.8#

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Calibration Summary

pg 2 of 4

6C

SEMIVOLATILE ORGANICS INTITIAL CALIBRATION DATA

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9105L608

Instrument ID: 5100SP Calibration Date(s): 06/08/91 06/08/91

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

LAB FILE ID: RRF20 = S060807 RRF50 = S060803
RRF80 = S060804 RRF120= S060805 RRF160= S060806

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	$\overline{RRF}$	% RSD
Dibenzofuran	1.309	1.403	1.767	1.260	1.477	1.443	13.8
2,4-Dinitrotoluene	0.254	0.311	0.398	0.295	0.347	0.321	17.0
Diethylphthalate	0.840	1.032	1.339	0.957	1.135	1.061	17.8
4-Chlorophenyl-phenylether	0.507	0.556	0.701	0.489	0.587	0.568	14.8
Fluorene	1.017	1.153	1.431	1.025	1.229	1.171	14.6
4-Nitroaniline		0.158	0.164	0.131	0.169	0.155	10.9
4,6-Dinitro-2-methylphenol		0.095	0.121	0.147	0.154	0.129	20.8
N-Nitrosodiphenylamine (1) *	0.374	0.436	0.571	0.408	0.512	0.460	17.4*
4-Bromophenyl-phenylether	0.196	0.209	0.263	0.179	0.220	0.213	14.8
Hexachlorobenzene	0.226	0.238	0.285	0.195	0.232	0.235	13.8
Pentachlorophenol *		0.115	0.128	0.140	0.141	0.131	9.3*
Phenanthrene	1.020	1.131	1.413	0.990	1.214	1.154	14.8
Anthracene	0.948	1.084	1.416	1.027	1.277	1.150	16.7
Di-n-Butylphthalate	0.786	1.073	1.648	1.161	1.434	1.220	27.3
Fluoranthene *	0.981	1.110	1.505	0.997	1.236	1.166	18.5*
Pyrene	1.568	1.649	2.072	1.325	1.629	1.649	16.4
Butylbenzylphthalate	0.250	0.492	0.742	0.554	0.670	0.542	35.1
3,3'-Dichlorobenzidine	0.099	0.170	0.239	0.174	0.198	0.176	29.0
Benzo(a)anthracene	1.061	1.218	1.509	1.062	1.235	1.217	15.0
Chrysene	1.077	1.224	1.534	1.038	1.245	1.224	16.0
bis(2-Ethylhexyl)phthalate	0.315	0.653	1.053	0.834	1.040	0.779	39.4
Di-n-Octyl phthalate *	0.698	1.118	1.600	1.250	1.516	1.236	29.0*
Benzo(b)fluoranthene	1.450	1.284	1.624	1.139	1.572	1.414	14.3
Benzo(k)fluoranthene	1.162	1.329	1.705	1.109	1.197	1.300	18.5
Benzo(a)pyrene *	1.014	1.091	1.405	0.985	1.222	1.143	15.1*
Indeno(1,2,3-cd)pyrene	0.656	0.760	1.074	0.875	1.068	0.887	20.9
Dibenzo(a,h)anthracene	0.544	0.706	1.022	0.809	0.983	0.813	24.3
Benzo(g,h,i)perylene	0.657	0.804	1.071	0.813	0.972	0.863	18.6
Nitrobenzene-d5	0.372	0.440	0.520	0.392	0.469	0.439	13.6
2-Fluorobiphenyl	1.062	1.152	1.355	0.964	1.135	1.134	12.7
p-Terphenyl-d14	0.924	0.995	1.179	0.816	0.947	0.972	13.7
Phenol-d5	1.153	1.446	1.478	1.675	1.639	1.478	14.0
2-Fluorophenol	0.834	1.257	1.210	1.343	1.289	1.187	17.1
2,4,6-Tribromophenol	0.095	0.110	0.120	0.125	0.121	0.114	10.6

(1) Cannot be separated from Diphenylamine

5/27/92

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pg 3 of 4

Calibration Summary

7B

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9105L608

Instrument ID: 5100SP Calibration Date: 06/15/91 Time: 1058

Lab File ID: S061502 Init. Calib. Date(s): 06/08/91 06/08/91

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

COMPOUND		$\overline{RRF}$	RRF50	%D	
Phenol	*	1.711	1.573	8.1	*
bis(2-Chloroethyl)ether		1.626	1.389	14.6	
2-Chlorophenol		1.323	1.254	5.2	
1,3-Dichlorobenzene		1.401	1.486	-6.1	
1,4-Dichlorobenzene	*	1.637	1.543	5.7	*
Benzyl alcohol		0.643	0.727	-13.1	
1,2-Dichlorobenzene		1.441	1.399	2.9	
2-Methylphenol		1.274	1.155	9.3	
bis(2-Chloroisopropyl)ether		2.376	1.590	33.1	
4-Methylphenol		1.242	1.094	11.9	
N-Nitroso-Di-n-propylamine	#	1.046	0.759	27.4	#
Hexachloroethane		0.652	0.606	7.1	
Nitrobenzene		0.392	0.326	16.8	
Isophorone		0.773	0.663	14.2	
2-Nitrophenol	*	0.194	0.207	-6.7	*
2,4-Dimethylphenol		0.300	0.283	5.7	
Benzoic acid		0.155	0.111	28.4	
bis(2-Chloroethoxy)methane		0.491	0.422	14.1	
2,4-Dichlorophenol	*	0.280	0.271	3.2	*
1,2,4-Trichlorobenzene		0.302	0.307	-1.7	
Naphthalene		1.048	1.050	-0.2	
4-Chloroaniline		0.357	0.312	12.6	
Hexachlorobutadiene	*	0.149	0.146	2.0	*
4-Chloro-3-methylphenol	*	0.235	0.247	-5.1	*
2-Methylnaphthalene		0.625	0.673	-7.7	
Hexachlorocyclopentadiene	#	0.110	0.087	20.9	#
2,4,6-Trichlorophenol	*	0.300	0.286	4.7	*
2,4,5-Trichlorophenol		0.344	0.297	13.7	
2-Chloronaphthalene		1.136	1.055	7.1	
2-Nitroaniline		0.378	0.251	33.6	
Dimethylphthalate		1.123	1.069	4.8	
Acenaphthylene		1.755	1.707	2.7	
2,6-Dinitrotoluene		0.276	0.266	3.6	
3-Nitroaniline		0.243	0.225	7.4	
Acenaphthene	*	0.961	0.938	2.4	*
2,4-Dinitrophenol	#	0.110	0.061	44.5	#
4-Nitrophenol	#	0.113	0.054	52.2	#

FORM VII SV-1

5/88 Rev.

3/18/92

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0000063 4 of 4

Calibration Summary

7C

SEMIVOLATILE CONTINUING CALIBRATION CHECK

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9105L608

Instrument ID: 5100SP Calibration Date: 06/15/91 Time: 1058

Lab File ID: S061502 Init. Calib. Date(s): 06/08/91 06/08/91

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

COMPOUND	RRF	RRF50	%D
Dibenzofuran	1.443	1.408	2.4
2,4-Dinitrotoluene	0.321	0.312	2.8
Diethylphthalate	1.061	1.041	1.9
4-Chlorophenyl-phenylether	0.568	0.530	6.7
Fluorene	1.171	1.167	0.3
4-Nitroaniline	0.155	0.117	24.5
4,6-Dinitro-2-methylphenol	0.129	0.095	26.4
N-Nitrosodiphenylamine (1) *	0.460	0.442	3.9 *
4-Bromophenyl-phenylether	0.213	0.195	8.5
Hexachlorobenzene	0.235	0.211	10.2
Pentachlorophenol *	0.131	0.100	23.7 *
Phenanthrene	1.154	1.107	4.1
Anthracene	1.150	1.097	4.6
Di-n-Butylphthalate	1.220	1.177	3.5
Fluoranthene *	1.166	1.090	6.5 *
Pyrene	1.649	1.925	-16.7
Butylbenzylphthalate	0.542	0.507	6.5
3,3'-Dichlorobenzidine	0.176	0.102	42.0
Benzo(a)anthracene	1.217	1.244	-2.2
Chrysene	1.224	1.159	5.3
bis(2-Ethylhexyl)phthalate	0.779	0.803	-3.1
Di-n-Octyl phthalate *	1.236	1.543	-24.8 *
Benzo(b)fluoranthene	1.414	1.356	4.1
Benzo(k)fluoranthene	1.300	1.344	-3.4
Benzo(a)pyrene *	1.143	1.093	4.4 *
Indeno(1,2,3-cd)pyrene	0.887	0.899	-1.4
Dibenzo(a,h)anthracene	0.813	0.733	9.8
Benzo(g,h,i)perylene	0.863	0.814	5.7
Nitrobenzene-d5	0.439	0.371	15.5
2-Fluorobiphenyl	1.134	1.098	3.2
p-Terphenyl-d14	0.972	1.052	-8.2
Phenol-d5	1.478	1.385	6.3
2-Fluorophenol	1.187	1.220	-2.8
2,4,6-Tribromophenol	0.114	0.097	14.9

(1) Cannot be separated from Diphenylamine

FORM VII SV-2 5/88 Rev

5/12/92

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Internal Standard Area Summary pg 1 of 1

8C

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot: 9105L608

Lab File ID (Standard): M061304 Date Analyzed: 06/13/91

Instrument ID: 5100M Time Analyzed: 1520

	IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
12 HOUR STD	69756	17.53	67441	22.72	49511	26.17
UPPER LIMIT	139512	18.03	134882	23.22	99022	26.67
LOWER LIMIT	34878	17.03	33721	22.22	24756	25.67
CLIENT SAMPLE NO.						
01 SBLKLE0630-MB1 BS	48073	17.53	30851*	22.70	17403*	26.17
02 SBLKLE0630-MB1 BSD	32753*	17.53	21789*	22.70	12356*	26.17

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

These low area recoveries do not directly effect sample results, therefore, no qualification was required.

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pg 1 of 1

Accuracy Data Summary

3C

WATER SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc. Contract: NONE

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9105L608

BLANK Spike - Sample No.: SBLKLE0630-MB1

Since the surrogates were within limits - no qualification was made.

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	BS % REC #	QC LIMITS REC
Phenol	100	0	28.7	29	12- 89
2-Chlorophenol	100	0	54.9	55	27-123
1,4-Dichlorobenzene	50.0	0	24.8	50	36- 97
N-Nitroso-Di-n-propylamine	50.0	0	19.3	39 *	41-116
1,2,4-Trichlorobenzene	50.0	0	23.8	48	39- 98
4-Chloro-3-methylphenol	100	0	48.2	48	23- 97
Acenaphthene	50.0	0	34.1	68	46-118
4-Nitrophenol	100	0	0	0 *	10- 80
2,4-Dinitrotoluene	50.0	0	23.1	46	24- 96
Pentachlorophenol	100	0	18.7	19	9-103
Pyrene	50.0	0	45.1	90	26-127

COMPOUND	SPIKE ADDED (ug/L)	BSD CONCENTRATION (ug/L)	BSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
Phenol	100	23.5	23	23	42	12- 89
2-Chlorophenol	100	40.1	40	31	40	27-123
1,4-Dichlorobenzene	50.0	25.2	50	0	28	36- 97
N-Nitroso-Di-n-propylamine	50.0	19.8	40 *	2	38	41-116
1,2,4-Trichlorobenzene	50.0	25.8	52	7	28	39- 98
4-Chloro-3-methylphenol	100	35.8	36	28	42	23- 97
Acenaphthene	50.0	34.4	69	1	31	46-118
4-Nitrophenol	100	0	0 *	0	50	10- 80
2,4-Dinitrotoluene	50.0	20.5	41	11	38	24- 96
Pentachlorophenol	100	20.0	20	5	50	9-103
Pyrene	50.0	42.6	85	5	31	26-127

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 4 out of 22 outside limits

COMMENTS:

5/12/92

FORM III SV-1 5/88 Rev.

PESTICIDE/PCB DATA VALIDATION CHECKLIST - FORM A-3

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/12/92
LABORATORY: Weston	CASE: 91C5L608	SDG: 608
SAMPLES/MATRIX: B00X41, water		

1. DATA PACKAGE COMPLETENESS

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

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

5/24/92

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.

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):

9613423.2195

Holding Time Summary

Pg 1 of 1

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

DATE RECEIVED: 05/15/91 RFW LOT # :9105L608

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOOX41	001	W	91LE0631	05/13/91	05/16/91 30 Days	06/20/91 35 Days
LAB QC:						
PBLK	MB1	W	91LE0631	N/A	05/16/91	06/20/91
PBLK	MB1 BS	W	91LE0631	N/A	05/16/91	06/20/91
PBLK	MB1 BSD	W	91LE0631	N/A	05/16/91	06/20/91

AUG 1991
RECEIVED
DATA RECEIPT

9613423.2196

0000008

Accuracy Data Summary

pg 1 of 1

3E

WATER PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

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

Case No.: WESTINGHOUSE HANFORD RFW Lot No.: 9105L608

MATRIX Spike - Sample No.: PBLKLE0631-MB1

No qualification is necessary, All surrogates are within limits,

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC
gamma-BHC (Lindane)	0.200	0	0.220	110	56-123
Heptachlor	0.200	0	0.150	75	40-131
Aldrin	0.200	0	0.150	75	40-120
Dieldrin	0.500	0	0.570	114	52-126
Endrin	0.500	0	0.570	114	56-121
4,4'-DDT	0.500	0	0.640	128 *	38-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC
gamma-BHC (Lindane)	0.200	0.220	110	0	15	56-123
Heptachlor	0.200	0.160	80	6	20	40-131
Aldrin	0.200	0.140	70	6	22	40-120
Dieldrin	0.500	0.600	120	5	18	52-126
Endrin	0.500	0.600	120	5	21	56-121
4,4'-DDT	0.500	0.660	132 *	3	27	38-127

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 6 outside limits
Spike Recovery: 2 out of 12 outside limits

COMMENTS:

5/12/92

9613423.2197

Calibration Summary 9 0000020

pg 1 of 2

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 06199103.27

RFW Lot No.: 9105L608 Associated with sample Book41.

Instrument ID: 03 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 06/19/91 TO: 06/20/91
TIME(S) OF ANALYSIS FROM: 1950 TO: 0015

DATE OF ANALYSIS 06/20/91
TIME OF ANALYSIS 0828
EPA SAMPLE NO. (STANDARD) INDA 24-55

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.90	1.88	1.92	6933093				
Beta-BHC	2.63	2.60	2.66	2503707				
Delta-BHC	3.04	3.02	3.08	2535703				
gamma-BHC (Lindane)	2.35	2.32	2.38	5874005	2.35	6309841	Y	7.4
Heptachlor	2.85	2.82	2.88	6556801	2.85	7032995	Y	7.3
Aldrin	3.41	3.38	3.44	4858959	3.41	5258883	Y	8.2
Heptachlor epoxide	4.94	4.90	4.98	3461629	4.94	3766707	Y	8.8
Endosulfan I	6.17	6.11	6.23	2537383	6.16	2769579	Y	9.2
Dieldrin	7.43	7.36	7.50	2057105	7.43	2245589	Y	9.2
4,4'-DDE	6.91	6.85	6.97	2334447				
Endrin	8.96	8.88	9.04	1628591				
Endosulfan II	10.72	10.60	10.82	1280903	10.70	1489641	Y	16.3
4,4'-DDD	10.34	10.24	10.44	857844				
Endosulfan sulfate	16.56	16.42	16.70	812796				
4,4'-DDT	12.37	12.23	12.51	735811	12.34	788403	Y	7.1
Methoxychlor	22.66	22.40	22.92	282082	22.62	292620	Y	3.7
Endrin ketone	******	******	******	COELUTES *				
alpha-Chlordane	5.92	5.87	5.97	2135479				
gamma-Chlordane	5.46	5.41	5.51	2266125				
Toxaphene	10.92	10.84	11.02	164410				
Aroclor-1016	2.79	2.76	2.82	942135				
Aroclor-1221	1.76	1.74	1.78	307417				
Aroclor-1232	2.79	2.77	2.81	471051				
Aroclor-1242	2.79	2.76	2.82	821365				
Aroclor-1248	2.79	2.76	2.82	1029663				
Aroclor-1254	8.60	8.50	8.68	1021499				
Aroclor-1260	9.60	9.53	9.67	688984				

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.

9613423.2198

Calibration Summary 9 0000022 pg 2 of 2

PESTICIDE/PCB STANDARD SUMMARY

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

Case No.: WESTINGHOUSE HANFORD GC Sample ID: 06199103.49

RFW Lot No.: 9105L608

Instrument ID: 03 GC Column ID: 2250/2401

DATE(S) OF ANALYSIS FROM: 06/19/91 TO: 06/20/91
TIME(S) OF ANALYSIS FROM: 1950 TO: 0015

DATE OF ANALYSIS 06/20/91
TIME OF ANALYSIS 2155
EPA SAMPLE NO. (STANDARD) INDA 24-55

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR	RT	CALIBRATION FACTOR	QNT Y/N	%D
Alpha-BHC	1.90	1.88	1.92	6933093				
Beta-BHC	2.63	2.60	2.66	2503707				
Delta-BHC	3.04	3.02	3.08	2535703				
gamma-BHC (Lindane)	2.35	2.32	2.38	5874005	2.35	7621905	Y	29.8
Heptachlor	2.85	2.82	2.88	6556801	2.85	8363255	Y	27.6
Aldrin	3.41	3.38	3.44	4858959	3.41	6276309	Y	29.2
Heptachlor epoxide	4.94	4.90	4.98	3461629	4.94	4486547	Y	29.6
Endosulfan I	6.17	6.11	6.23	2537383	6.16	3334377	Y	31.4
Dieldrin	7.43	7.36	7.50	2057105	7.42	2696287	Y	31.1
4,4'-DDE	6.91	6.85	6.97	2334447				
Endrin	8.96	8.88	9.04	1628591				
Endosulfan II	10.72	10.60	10.82	1280903	10.70	1747027	Y	36.4
4,4'-DDD	10.34	10.24	10.44	857844				
Endosulfan sulfate	16.56	16.42	16.70	812796				
4,4'-DDT	12.37	12.23	12.51	735811	12.34	1044391	Y	41.9
Methoxychlor	22.66	22.40	22.92	282082	22.62	380343	Y	34.8
Endrin ketone	22.25	22.23	22.27	255869				
alpha-Chlordane	5.92	5.87	5.97	2135479				
gamma-Chlordane	5.46	5.41	5.51	2266125				
Toxaphene	10.92	10.84	11.02	164410				
Aroclor-1016	2.79	2.76	2.82	942135				
Aroclor-1221	1.76	1.74	1.78	307417				
Aroclor-1232	2.79	2.77	2.81	471051				
Aroclor-1242	2.79	2.76	2.82	821365				
Aroclor-1248	2.79	2.76	2.82	1029663				
Aroclor-1254	8.60	8.50	8.68	1021499				
Aroclor-1260	9.60	9.53	9.67	688984				

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.

CALCULATION SUMMARY - FORM B-6

91-SL-608

SDG: 608	REVIEWER: [signature]	DATE: 5/12/92	PAGE 1 OF 1

COMMENTS:

B00X41

Heptachlor Epoxide ug/L = (Response)(C/D Factor)

ug/L = (.001)(11.2) = 0.0112 ≐ 0.011 ug/L

9613423.2200

WHC-SD-EN-SPP-002, Rev. 1

WET CHEMISTRY DATA VALIDATION CHECKLIST - FORM A-7

PROJECT: 200-BP-1	REVIEWER: [illegible]	DATE: 5/13/92
LABORATORY: Weston	CASE: 9105L608	SDG: 608
SAMPLES/MATRIX: B00X41 / water		

1. DATA PACKAGE COMPLETENESS

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

Data Package Item	Present?:	Yes	No	N/A
Case Narrative		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				X
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? NO_3+NO_2	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):

A duplicate and spike were performed on the NO_2/NO_3 sample but were not reported. The percent recoveries are within limits!

5/18/91

9613423.2205

Holding Time Summary

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

DATE RECEIVED: 05/15/91 RFW LOT # :9105L608

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	# of Days
BOOX41							
CHLORIDE BY IC	001	W	91LIC58	05/13/91	05/15/91	05/15/91	2
FLUORIDE BY IC	001	W	91LIC58	05/13/91	05/15/91	05/15/91	2
NITRITE BY IC	001	W	91LIC58	05/13/91	05/15/91	05/15/91	2
NITRATE BY IC	001	W	91LIC58	05/13/91	05/15/91	05/15/91	2
TOTAL CYANIDE	001	W	91LC182	05/13/91	05/22/91	05/22/91	9
PHOSPHATE BY IC	001	W	91LIC58	05/13/91	05/15/91	05/15/91	2
SULFATE BY IC	001	W	91LIC58	05/13/91	05/15/91	05/15/91	2
NITRATE NITRITE	001	W	91LNO168	05/13/91	05/30/91	05/30/91	17
SUB-OUT TEST FOR SUB	001	W		05/13/91			

LAB QC:

CHLORIDE BY IC	MB1	W	91LIC58	N/A	05/15/91	05/15/91
CHLORIDE BY IC	MB1 BS	W	91LIC58	N/A	05/15/91	05/15/91
FLUORIDE BY IC	MB1	W	91LIC58	N/A	05/15/91	05/15/91
FLUORIDE BY IC	MB1 BS	W	91LIC58	N/A	05/15/91	05/15/91
NITRITE BY IC	MB1	W	91LIC58	N/A	05/15/91	05/15/91
NITRITE BY IC	MB1 BS	W	91LIC58	N/A	05/15/91	05/15/91
NITRATE BY IC	MB1	W	91LIC58	N/A	05/15/91	05/15/91
NITRATE BY IC	MB1 BS	W	91LIC58	N/A	05/15/91	05/15/91
PHOSPHATE BY IC	MB1	W	91LIC58	N/A	05/15/91	05/15/91
PHOSPHATE BY IC	MB1 BS	W	91LIC58	N/A	05/15/91	05/15/91
SULFATE BY IC	MB1	W	91LIC58	N/A	05/15/91	05/15/91
SULFATE BY IC	MB1 BS	W	91LIC58	N/A	05/15/91	05/15/91
TOTAL CYANIDE	LC1 L	W	91LC182	N/A	05/22/91	05/22/91
TOTAL CYANIDE	LC2 L	W	91LC182	N/A	05/22/91	05/22/91
TOTAL CYANIDE	MB1	W	91LC182	N/A	05/22/91	05/22/91
NITRATE NITRITE	MB1	W	91LNO168	N/A	05/30/91	05/30/91
NITRATE NITRITE	MB1 BS	W	91LNO168	N/A	05/30/91	05/30/91
NITRATE	MB1	W	91LNO168	N/A	05/30/91	05/30/91
NITRATE	MB1 BS	W	91LNO168	N/A	05/30/91	05/30/91
NITRATE	MB1 BSD	W	91LNO168	N/A	05/30/91	05/30/91

9613473.2206

Calibration Summary Pg 1 of 2

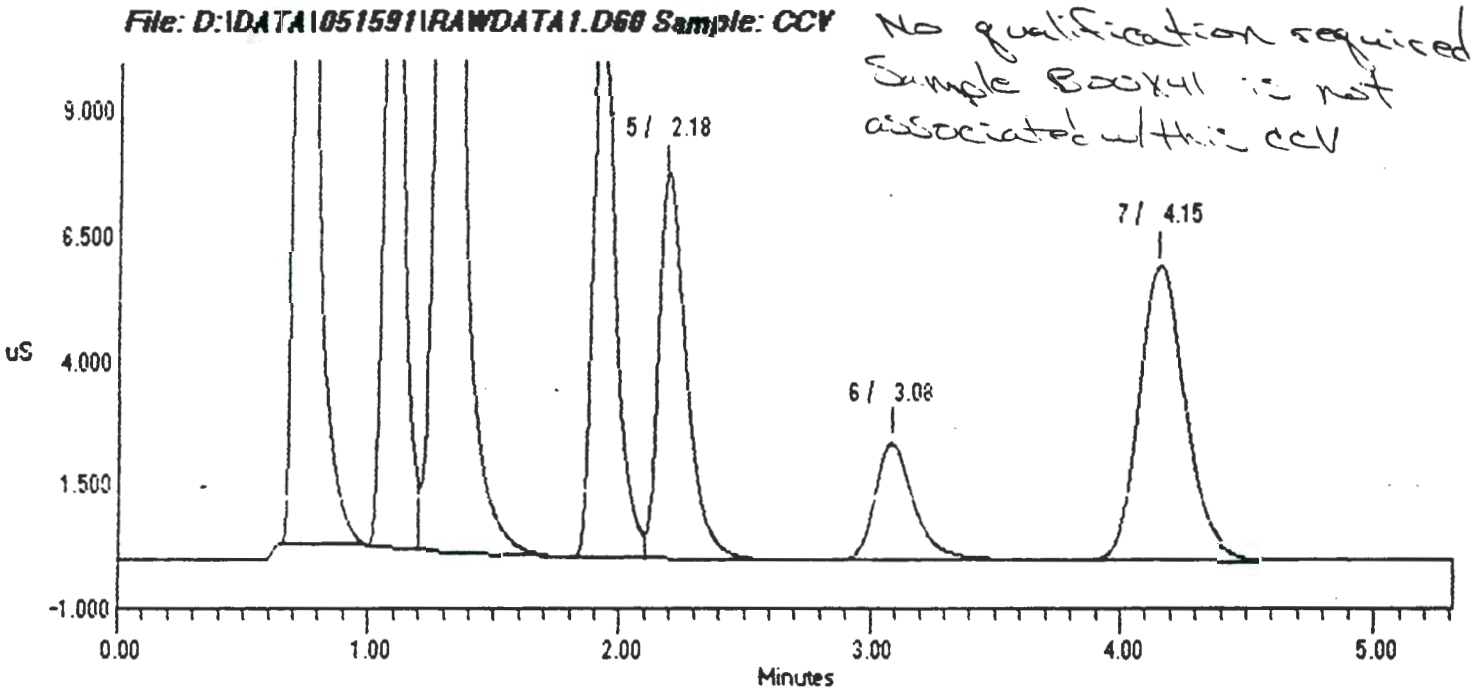
Sample Name: CCV			Date: Thu May 16 11:35:23 1991
Data File : D:\DATA\051591\RAWDATA1.D60			
Method : C:\DX\METHOD\AS4A7B.met			
ACI Address: 1	System : 1	Inject#: 60	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	1595	5Hz	0.00	5.32	300

Pk. Num	Ret Time	Component Name	Concentration	Height	Area	Bl. Code	%Delta
1	0.73	FLUORIDE	9.241	35309	165650	1	0.00
2	1.08	CHLORIDE	4.422	21174	99616	2	0.00
3	1.30	NITRITE	4.523	41637	230995	2	-1.27
4	1.92	BROMIDE	6.688	11383	70767	2	3.60
5	2.18	NITRATE	4.419	7604	59636	2	4.80
6	3.08	PHOSPHATE	4.656	2318	25420	1	2.21
7	4.15	SULFATE	4.559	5871	75491	1	2.89

%R = 88%

No qualification required
Sample B00X41 is not associated w/this CCV



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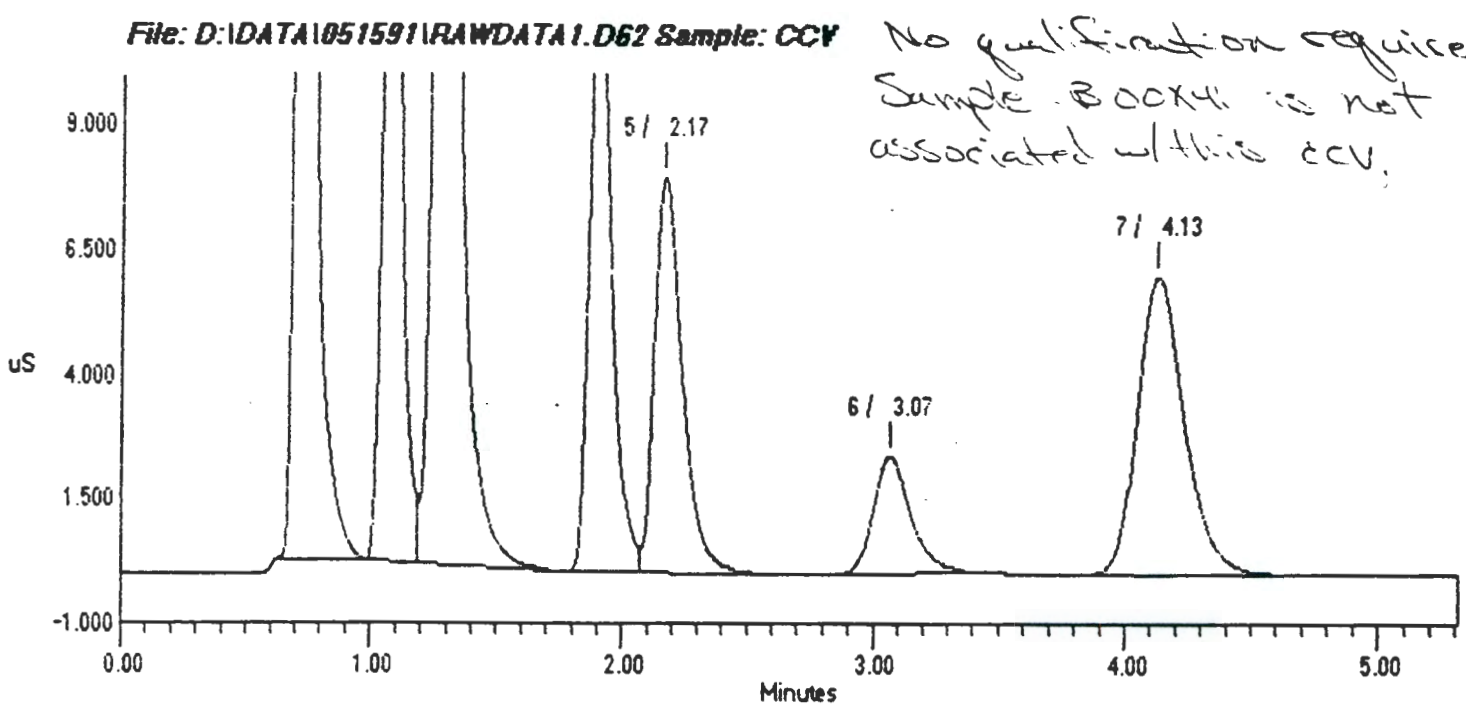
Calibration Summary Pg 2 of 2

Sample Name: CCV			Date: Thu May 16 11:50:08 1991
Data File : D:\DATA\051591\RAWDATA1.D62			
Method : C:\DX\METHOD\AS4A7B.met			
ACI Address: 1	System : 1	Inject#: 62	Detector: CDM-1

REPORT	VOLUME	DILUTION	POINTS	RATE	START	STOP	AREA REJ
External	1	1	1595	5Hz	0.00	5.32	300

Pk. Num	Ret Time	Component Name		Concentration	Height	Area	Bl. Code	%Delta
1	0.72	FLUORIDE		9.191	34429	164758	1	0.00
2	1.07	CHLORIDE	%R=88%	4.437	20381	99961	2	0.75
3	1.28	NITRITE		4.528	42338	231231	2	-0.26
4	1.90	BROMIDE		6.852	11667	72588	2	5.09
5	2.17	NITRATE		4.541	7874	61363	2	6.42
6	3.07	PHOSPHATE		4.566	2340	24902	1	4.02
7	4.13	SULFATE		4.562	5952	75534	1	4.86

No qualification required Sample B0CX4 is not associated with this CCV.



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