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# HEARTLAND ENVIRONMENTAL SERVICES, INC.

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## REGION II VOA DATA VALIDATION

### NAVAL WEAPONS STATION - COLTSNECK

#### ROY F. WESTON CASE 9103L902

<u>Coltsneck ID</u>	<u>R.F. Weston ID</u>	<u>Coltsneck ID</u>	<u>R.F. Weston ID</u>
Water Samples (all)			
26-001-M001	9103L902-001	26-002-M001	9103L902-002
26-003-M001	9103L902-003	26-003-M001	9103L902-003MS
26-003-M001	9103L902-003MSD	26-004-M001	9103L902-004
26-004-M201	9103L902-005	26-004-M301	9103L902-006

PREPARED BY: Eugene M. Watson  
Eugene M. Watson

DATE: 6-19-91

VERIFIED BY: Paul B. Humburg  
Paul B. Humburg

DATE: 6/17/91



## DATA ASSESSMENT AND NARRATIVE

### General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, GC/MS performance, tuning results, calibration results and internal standard areas. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the U.S. EPA CLP and Region II SOP No. HW-6, Revision 7. All comments made within this report should be considered when examining the analytical results (Form I's).

### Holding Times

All of the holding times were met per the Region II protocol.

### Blanks:

The laboratory did not identify trip or field blanks on the Chain-of-Custody, so Heartland ESI must assume that blanks were not submitted with the VOA samples.

The two method blanks that were analyzed exhibited some contamination. All method blank results were compared to the associated samples.

### Specific findings:

1. For samples 26-001-M001 and 26-002-M001, the method blank 91LVW040-MB1 contained methylene chloride. All methylene chloride results in the sample are flagged as non detect (U) due to the sample concentration being greater than the CRQL and less than 10X the blank value.
2. For sample 26-003-M001, the method blank 91LVW040-MB1 contained methylene chloride and acetone. The methylene chloride and acetone result in the sample is flagged as non detect (U) due to the sample concentration being greater than the CRQL and less than 10X the blank value.
3. For sample 26-004-M001, the method blank 91LVW041-MB1 contained methylene chloride and carbon disulfide. The sample result for methylene chloride and carbon disulfide are rejected and the CRQL is reported since the sample values were less than the CRQL and less than 10X the blank value.



4. For sample 26-004-M201, the method blank 91LVW041-MB1 contained methylene chloride, acetone, and carbon disulfide. The methylene chloride result in the sample is flagged as non detect (U) due to the sample concentration being greater than the CRQL and less than 10X the blank value. The sample result for acetone and carbon disulfide are rejected and the CRQL is reported since the sample values were less than the CRQL and less than 10X the blank value.
5. For sample 26-001-M301, the method blank 91LVW041-MB1 contained methylene chloride and acetone. The methylene chloride result in the sample is flagged as non detect (U) due to the sample concentration being greater than the CRQL and less than 10X the blank value. The sample result for acetone is not flagged since the concentration is greater than 10X the blank value and greater than the CRQL.

#### Tuning

All the BFB tunes met the tuning criteria set forth by Region II and the Functional Guidelines.

#### Calibrations - Relative Response Factors (RRFs)

The response factors for the all the compounds, with the exception of 2-butanone, in all the calibrations were acceptable. In all the calibrations, 2-butanone did not meet the required RRF of 0.05.

#### Specific findings:

6. For all samples, the calibrations did not meet the minimum RRF criteria for 2-butanone. Qualify all positive results (J) and reject (R) all non-detect results.

#### Calibrations - %RSDs and %Ds

All of the calibrations were within the initial and continuing calibration criteria set forth by EPA Region II.

#### Surrogates

All of the surrogate recoveries were within the CLP QA/QC criteria.

#### Internal Standards

All of the internal standard areas and retention times were with the EPA Region II guidelines.



**Compound Identification/Quantitation**

All of the spectra submitted by the laboratory met the Region II guidelines. The laboratory did a good job on producing the data for the samples. The form 1A for sample 26-001-M001DL will not be submitted in the data validation report. The values from this sample will be reported on the form 1A for sample 26-001-M001.

**Matrix Spike/Matrix Spike Duplicate**

The MS/MSD exhibited acceptable recoveries and %RPDs. No action was required from the MS/MSD analysis.

**System Performance and Overall Assessment**

The overall performance of the GC/MS system was very good with the exception of the problem with 2-butanone in the calibrations. The overall quality of the data package was good.



GLOSSARY OF DATA QUALIFIERS

QUALIFICATION CODES

U = Not detected

J = Estimated value

UJ = Reported quantitation limit is qualified as estimated

R = Result is rejected and unusable

NJ = Presumptive evidence for the presence of the material at an estimated value

Heartland ESI specific findings will be noted in numerical form on the Form Is in this data validation report. These specific finding footnotes will reflect the conclusions found in the data validation process that resulted in the qualification of the data.



SUMMARY OF DATA QUALIFICATIONS

<u>SAMPLE ID</u>	<u>ANALYTE ID</u>	<u>DL</u>	<u>QL</u>	<u>SPECIFIC FINDINGS</u>
26-001-M001, 26-002-M001	methylene chloride	+B	U	1
26-003-M001	methylene chloride acetone	+B	U	2
26-004-M001	methylene chloride carbon disulfide	BJ	CRQL	3
26-004-M201	methylene chloride acetone carbon disulfide	+B BJ	U CRQL	4 4
26-004-M301	methylene chloride acetone	+B +B	U +	5 5
All samples	2-butanone	+/-	J/R	6

- \* DL denotes the Form I qualifier supplied by the laboratory
- QL denotes the qualifier used by Heartland ESI
- + in the DL/QL column denotes a positive result
- in the DL/QL column denotes a negative result

1A  
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

0000019

26-001-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L902-001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W031919

Lev 1: (low/med) LOW Date Received: 03/13/91

% Mixture: not dec. \_\_\_\_\_ Date Analyzed: 03/19/91

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

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg)	ug/L
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	1	J
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	44	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	1	J
75-35-4	1,1-Dichloroethene	3	J
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	810	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	660	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	1	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	3	J

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

26-001-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L902-001

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

Lab File ID: W031919

L vel: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/19/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/L

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

1A  
VOLATILE ORGANICS ANALYSIS SHEET **000040**

CLIENT SAMPLE NO.

26-001-M001DL

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L902-001 DL

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

Lab File ID: W032004

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 03/20/91

Column: (pack/cap) PACK

Dilution Factor: 10.0

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L

74-87-3	Chloromethane	NA
74-83-9	Bromomethane	NA
75-01-4	Vinyl Chloride	NA
75-00-3	Chloroethane	NA
75-09-2	Methylene Chloride	NA
67-64-1	Acetone	NA
75-15-0	Carbon Disulfide	NA
75-35-4	1,1-Dichloroethene	NA
75-34-3	1,1-Dichloroethane	NA
540-59-0	1,2-Dichloroethene (total)	810
67-66-3	Chloroform	NA
107-06-2	1,2-Dichloroethane	NA
78-93-3	2-Butanone	NA
71-55-6	1,1,1-Trichloroethane	NA
56-23-5	Carbon Tetrachloride	NA
108-05-4	Vinyl Acetate	NA
75-27-4	Bromodichloromethane	NA
78-87-5	1,2-Dichloropropane	NA
10061-01-5	cis-1,3-Dichloropropene	NA
79-01-6	Trichloroethene	660
124-48-1	Dibromochloromethane	NA
79-00-5	1,1,2-Trichloroethane	NA
71-43-2	Benzene	NA
10061-02-6	Trans-1,3-Dichloropropene	NA
75-25-2	Bromoform	NA
108-10-1	4-Methyl-2-pentanone	NA
591-78-6	2-Hexanone	NA
127-18-4	Tetrachloroethene	NA
79-34-5	1,1,2,2-Tetrachloroethane	NA
108-88-3	Toluene	NA
108-90-7	Chlorobenzene	NA
100-41-4	Ethylbenzene	NA
100-42-5	Styrene	NA
1330-20-7	Xylen (total)	NA

*EMM*  
*6-17-91*

1A  
VOLATILE ORGANICS ANALYSIS SHEET **0000048**

CLIENT SAMPLE NO.

26-002-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L902-002

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W031920

Level: (low/med) LOW Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/19/91

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u>	
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	41	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	1	J
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

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

000049

26-002-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L902-002

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

Lab File ID: W031920

Level: (low/med) LOW

Date Received: 03/13/91

% Mixture: not dec.       

Date Analyzed: 03/19/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

1A  
VOLATILE ORGANICS ANALYSIS SHEET **0000057**

CLIENT SAMPLE NO.

26-003-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L902-003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W031921

Level: (low/med) LOW Date Received: 03/13/91

% Moisture: not dec.        Date Analyzed: 03/19/91

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

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/L

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	40	U
67-64-1	Acetone	12	U
75-15-0	Carbon Disulfide	1	J
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

2  
2

6

1E  
VOLATILE ORGANICS ANALYSIS SHEET **000058**  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

26-003-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L902-003

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

Lab File ID: W031921

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 03/19/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

1A  
VOLATILE ORGANICS ANALYSIS SHEET 0000068

CLIENT SAMPLE NO.

26-004-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L902-004

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W032007

Level: (low/med) LOW Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/20/91

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L

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	5	U 3
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U 3
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 6
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

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

26-004-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L902-004

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

Lab File ID: W032007

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/20/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

1A  
VOLATILE ORGANICS ANALYSIS SHEET 0000077

CLIENT SAMPLE NO.

26-004-M201

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L902-005

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W032008

Level: (low/med) LOW Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/20/91

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

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L

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	6	U 4
67-64-1	Acetone	10	U 4
75-15-0	Carbon Disulfide	15	U 4
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	6	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U 6
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

1E  
 VOLATILE ORGANICS ANALYSIS SHEET **0000078**  
 TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

26-004-M201

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L902-005

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W032008

Level: (low/med) LOW Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/20/91

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

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

Number TICs found: 0

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

1A  
VOLATILE ORGANICS ANALYSIS SHEET **0000090**

CLIENT SAMPLE NO.

26-002-M301

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L902-006

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: W032009

Level: (low/med) LOW Date Received: 03/13/91

% Moisture: not dec.        Date Analyzed: 03/20/91

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

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

CAS NO.	COMPOUND	(ug/L or ug/Kg) <u>ug/L</u>	
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	U 5
67-64-1	Acetone	190	U 5
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	4	J
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U 6
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	Xylen (total)	5	U

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0000091

26-002-M301

Lab Name: Roy F. Weston, Inc. Work Ord r: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L902-006

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

Lab File ID: W032009

Lev 1: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 03/20/91

Column: (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 0

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

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

TOTAL REVIEW

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organics Analysis

Case No. 9103L902 SDG No. \_\_\_\_\_ LABORATORY P. I. Weston SITE COLTSNECK

DATA ASSESSMENT:

The current functional guidelines for evaluating organic data have been applied.

All data are valid and acceptable except those analytes which have been qualified with a "J" (estimated), "U" (non-detects), "R" (unusable), or "NJ" (presumptive evidence for the presence of the material at an estimated value). All action is detailed on the attached sheets.

Reviewer's  
Signature: \_\_\_\_\_

Date: 6/12/1991

Verified By: \_\_\_\_\_

Date: 6/17/1991

DATA ASSESSMENT:

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples will be qualified as estimated, "J". The non-detects sample quantitation limits will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

*No Action*

*EMM*  
*6-12-91*



DATA ASSESSMENT:

3. SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure mass resolution, identification of compounds, and to some degree, the instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is bromofluorobenzene and for semi-volatiles is decafluorotriphenyl-phosphine.

If the mass calibration is in error, all associated data will be classified as unusable, "R".

*No Action*

*EMM*  
*6-12-91*

DATA ASSESSMENT:

4. CALIBRATION:

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance in the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) RESPONSE FACTOR:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be  $\geq 0.05$  either in the initial or continuing calibration. A value  $< 0.05$  indicates a serious detection and quantitation problem. Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be qualified as rejected, "R".

\* Initial Calibration - 3/18/91 - no samples associated.

2- butanone - RRT  $< 0.05$

\* Cont. Cal. 3/19/91 - Samples 26-001-M001, 26-002-M001, 26-003-M001

2- butanone RRT = 0.027 - J-pos. results, R-neg. results.

\* Cont. Cal 3/20/91 - Samples 26-001-M001 DL, 26-003-M001 MS,  
26-003-M001 MSD, 26-004-M001, 26-004-M201, 26-004-M301

2- butanone RRT = 0.032 J-pos results R-neg results.

DATA ASSESSMENT:

5. CALIBRATION:

A) PERCENT RELATIVE STANDARD DEVIATION (%RSD) AND PERCENT DIFFERENCE (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be <30% and %D must be <25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If there is a gross deviation of %RSD and %D, the non-detects may be qualified as rejected, "R".

For the PCB/PESTICIDE fraction, %RSD for aldrin, endrin, DDT, and dibutylchloroendate must not exceed 10%. Percent D must be within 15% on the quantitation column and 20% on the confirmation column.

*No Action*

*% D's and % RSD's acceptable*

*EMM*  
*6-12-91*

DATA ASSESSMENT:

6. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation in order to evaluate the laboratory performance and to estimate the efficiency of the analytical technique. If the measured surrogate concentration is outside of the contract specifications, qualifications were applied to the samples and analytes as shown below.

*No Action*

*EMM*  
*6-12-91*

DATA ASSESSMENT:

7. INTERNAL STANDARDS PERFORMANCE:

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated calibration standard. The retention time of the internal standard must not vary more than  $\pm 30$  seconds from the associated calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are to be qualified as estimated, "J", and all non-detects as "UJ" or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction.

*No Action*

*Emm*  
*6-12-91*

DATA ASSESSMENT:

8. COMPOUND IDENTIFICATION:

A) VOLATILE AND SEMI-VOLATILE FRACTIONS:

TCL compounds are identified on the GC/MS by using the analytes relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within  $\pm 0.06$  RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary M/E lines within 20% of that in the standard compound. For the tentatively identified compounds, TIC, the ion spectra must match accurately. In the cases where there is not a perfect ion spectrum match, the laboratory may have provided false positive identifications.

B) PESTICIDE FRACTION:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10 ng/uL in the final sample extract.

*No Action*

*EMM*  
*6-12-91*

DATA ASSESSMENT:

9. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for some additional qualification of the data.

*No Action*

*EMM*  
*6-12-91*

DATA ASSESSMENT:

10. OTHER QC DATA OUT OF SPECIFICATION:

*None*

11. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT:

*System performance and package quality was acceptable.*

12. CONTRACT PROBLEMS ~~0~~ NON-COMPLIANCE:

13. This package contains re-extraction, re-analysis or dilution. Upon reviewing the QA results, the following form I(s) are identified to be used.

*26-001-M001 instead of 26-001-M001 DL.*

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO. 9103L902

LABORATORY Loy. F. WESTON - LIONVILLE

SDG NO. \_\_\_\_\_

DATA USER Loy. F. WESTON

SOW 2/88 - REGION II

REVIEW COMPLETION DATE 6-12-91

NO. OF SAMPLES 6 WATER \_\_\_\_\_ SOIL \_\_\_\_\_ OTHER \_\_\_\_\_

REVIEWER  ESD  ESAT  OTHER, CONTRACT/CONTRACTOR HEARTLAND EST

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	<u>0</u>	_____	_____	_____
2. GC-MS TUNE/ GC PERFORMANCE	<u>0</u>	_____	_____	_____
3. INITIAL CALIBRATIONS	<u>0</u>	_____	_____	_____
4. CONTINUING CALIBRATIONS	<u>X</u>	_____	_____	_____
5. FIELD BLANKS (*F* = not applicable)	<u>F</u>	_____	_____	_____
6. LABORATORY BLANKS	<u>X</u>	_____	_____	_____
7. SURROGATES	<u>0</u>	_____	_____	_____
8. MATRIX SPIKE/DUPLICATES	<u>0</u>	_____	_____	_____
9. REGIONAL QC (*F* = not applicable)	<u>F</u>	_____	_____	_____
10. INTERNAL STANDARDS	<u>0</u>	_____	_____	_____
11. COMPOUND IDENTIFICATION	<u>0</u>	_____	_____	_____
12. COMPOUND QUANTITATION	<u>0</u>	_____	_____	_____
13. SYSTEM PERFORMANCE	<u>0</u>	_____	_____	_____
14. OVERALL ASSESSMENT	<u>0</u>	_____	_____	_____

0 = No problems or minor problems that do not affect data usability.  
 X = No more than about 5% of the data points are qualified as either estimated or unusable.  
 M = More than about 5% of the data points are qualified as estimated.  
 Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS: \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

AREAS OF CONCERN: \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

REJECTION SUMMARY FORM  
(No. of Compounds/No. of Fractions (Samples))

SOP NO: HW-6  
Date: February 1989

Type of Review: VOA REGION II DATA VALIDATION Info: 6-12-91

Project: AVAR WEAPONS STATION / COLTS NECK

Case #: 9103L902

Reviewer's Initials: EMM

Lab Name: REV. F. WESTON - LIONVILLE

Number of Samples: 6

Analytes Rejected Due to Exceeding Review Criteria:

	Surrogates	Holding Time	Calibration	Continuation	ID	Other	Total # Samples	Total # Rejected/ Total # in all Samples
Acids (15)								
H/N (50)								
VOA (35)	0	0	6	4	0	0	6	
PEST (20)								10/210
ICM (7)								
TCDD (1)								

Analytes Estimated Due to Exceeding Review Criteria for:

Acids (15)								
H/N (50)								
VOA (35)	0	0	0	6	0	0	6	
PEST (20)								6/210
ICM (7)								
TCDD (1)								

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 9103L902

LAB: ROY. F. WESTON

SITE: NAVAL WEAPONS STATION / COLTSNECK.

1.0 Data Completeness and Deliverables

YES NO N/A

1.1 Have any missing deliverables been received and added to the data package.

ACTION: Call lab for explanation / resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-compliance" section of reviewer narrative.

1.2 Was SMD OCS checklist included with package?

2.0 Cover Letter/Case Narrative

2.1 Is the Narrative or Cover Letter present?

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover Letter?

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any ENA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA data?

ENA data?

Pesticide/PCB data?

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples?

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data?

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be flagged as estimated (J).

ACTION: If both VOA vials for a sample have air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA holding times, determined from date of collection to date of analysis, been exceeded?

If unpreserved, aqueous aromatic volatiles must be analyzed within 7 days of collection and non-aromatic volatiles must be analyzed within 14 days. If preserved with hydrochloric acid and stored at 4°C, then both aromatic and non-aromatic volatiles must be analyzed within 14 days. If uncertain about preservation, contact the sampler to determine whether the samples were preserved.

A ten-day holding time for soil samples is recommended.

Table of Holding Time Violations

Sample	Sample Matrix	Preserved ?	(See Traffic Report)		Date Analyzed
			Date Sampled	Date Lab Received	
_____	_____	_____	_____	_____	_____
_____	_____	_____	6-12-91	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("U"), and document in the narrative that holding times were exceeded.

YES NO N/A

If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").

3.0 Surrogate Recovery (Form II)

3.1 Are the VOA Surrogate Recovery Summaries (Form II) present for each of the following matrices:

- a. Low Water  YES  NO  N/A
- b. Med Water  YES  NO  N/A
- c. Low Soil  YES  NO  N/A
- d. Med Soil  YES  NO  N/A

3.2 Are all the VOA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:

- a. Low Water  YES  NO  N/A
- b. Med Water  YES  NO  N/A
- c. Low Soil  YES  NO  N/A
- d. Med Soil  YES  NO  N/A

ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.

3.3 Were outliers marked correctly with an asterisk?  YES  NO  N/A

ACTION: Circle all outliers in red.

3.4 Was one or more VOA surrogate recovery outside of contract specifications for any sample or method blank?  YES  NO  N/A

If yes, were samples reanalyzed?  YES  NO  N/A

Were method blanks reanalyzed?  YES  NO  N/A

ACTION: If surrogate recoveries are > 10% but all do not meet SOW specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("W").

YES NO N/A

If any surrogate has a recovery of <10% :

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as unusable ("R").

Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.

3.5 Are there any transcription/calculation errors between raw data and Form II?

ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?

4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:

a. Low Water

b. Med Water

c. Low Soil

d. Med Soil

ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.

4.3 How many VOA spike recoveries are outside QC limits?

<u>Water</u>	<u>Soils</u>
<u>0</u> out of 10	<u>N/A</u> out of 10

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

<u>Water</u>	<u>Soils</u>
<u>0</u> out of 5	<u>N/A</u> out of 5

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for the MS/MSD analysis. Use professional judgement in applying this criterion to other samples in the package.

	YES	NO	N/A
<u>5.0 Blanks (Form IV)</u>			
5.1 Is the Method Blank Summary (Form IV) present?	<input checked="" type="checkbox"/>	___	___
5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	<input checked="" type="checkbox"/>	___	___
5.3 Has a VOA instrument blank been analyzed at least once every twelve hours for each GC/MS system used?	<input checked="" type="checkbox"/>	___	___
ACTION: If any method blank data are missing, call lab for explanation / resubmittal. If not available, reject all associated positive data ("R").			
5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	<input checked="" type="checkbox"/>	___	___
ACTION: Use professional judgement to determine the effect on the data.			
<u>6.0 Contamination</u>			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are <u>not</u> used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	___
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)?	___	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

NOT IDENTIFIED

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

YES NO N/A

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Methylene chloride Acetone Toluene 2-butanone	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample?  YES  NO

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

*Not identified*

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Bromofluorobenzene (BFB)?  YES  NO  N/A

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift?  YES  NO  N/A

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument?  YES  NO  N/A

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

	YES	NO	N/A
DATE			
TIME			
INSTRUMENT			
SAMPLE NUMBERS			

*Handwritten: 2mm 6-12-91*

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundance criteria been met for each instrument used?  YES  NO  N/A

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.

7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)  YES  NO  N/A

7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.)  YES  NO  N/A

ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".

7.7 Are the spectra of the mass calibration compound acceptable?  YES  NO  N/A

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.D Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:

- a. Samples and/or fractions as appropriate  YES  NO  N/A
- b. Matrix spikes and matrix spike duplicates  YES  NO  N/A
- c. Blanks  YES  NO  N/A

	YES	NO	N/A
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	<input checked="" type="checkbox"/>	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	<input checked="" type="checkbox"/>	___	___
c. Blanks	<input checked="" type="checkbox"/>	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	___
8.4 Is chromatographic performance acceptable with respect to:	<i>Quant Ion</i>		
Baseline stability	<input checked="" type="checkbox"/>	___	___
Resolution	<input checked="" type="checkbox"/>	___	___
Peak shape	<input checked="" type="checkbox"/>	___	___
Full-scale graph (attenuation)	<input checked="" type="checkbox"/>	___	___
Other: _____	<input type="checkbox"/>	___	<input checked="" type="checkbox"/>
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	<input checked="" type="checkbox"/>	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	<input checked="" type="checkbox"/>	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	<input checked="" type="checkbox"/>	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	<input checked="" type="checkbox"/>	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
<u>9.0 Tentatively Identified Compounds (TIC)</u>			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	<input checked="" type="checkbox"/>	—	—
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	<input checked="" type="checkbox"/>	—	—
b. Blanks	<input checked="" type="checkbox"/>	—	—
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all <u>identified</u> TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene—a VOA TCL—and should not be reported as a TIC)?	—	<input checked="" type="checkbox"/>	—
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	<input checked="" type="checkbox"/>	—	—
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	<input checked="" type="checkbox"/>	—	—
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
<u>D.0 Compound Quantitation and Reported Detection Limits</u>			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	—	<input checked="" type="checkbox"/>	—
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	<input checked="" type="checkbox"/>	—	—

	YES	NO	N/A
--	-----	----	-----

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

### 11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?




ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

### 12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction?




ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Are response factors stable for volatiles over the concentration range of the calibration (RSD <30%)?




ACTION: Circle all outliers in red.

ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)

12.3 Do any compounds have an average RRF < 0.05?




ACTION: Circle all outliers in red.

ACTION: If any volatile compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

	YES	NO	N/A
--	-----	----	-----

12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)

—	<input checked="" type="checkbox"/>	—
---	-------------------------------------	---

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

### 13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?

<input checked="" type="checkbox"/>	—	—
-------------------------------------	---	---

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?

<input checked="" type="checkbox"/>	—	—
-------------------------------------	---	---

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

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ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any continuing calibration standard compounds have a RRF < 0.05?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	—
-------------------------------------	--------------------------	---

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?

—	<input checked="" type="checkbox"/>	—
---	-------------------------------------	---

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

% DIFFERENCE			YES	NO	N/A
25-50	50-90	>90			
'J' positive results, no action for non detects	'J' positive results, 'U' non detects	'J' positive results, "R" non detects		<input checked="" type="checkbox"/>	

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.)

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

4.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration?

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

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(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard?

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

15.0 Field Duplicates

YES NO N/A

15.1 Were any field duplicates submitted for VOA analysis?

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

*NOT identified if submitted.*



# HEARTLAND ENVIRONMENTAL SERVICES, INC.

P.O. BOX 163 ST. PETERS MO 63376  
(314) 278-8232

## REGION II VOA DATA VALIDATION

NAVAL WEAPONS STATION - COLTSNECK

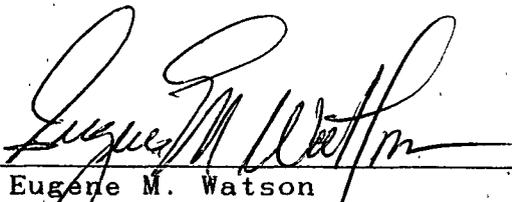
ROY F. WESTON CASE 9103L904

<u>Coltsneck ID</u>	<u>R.F. Weston ID</u>	<u>Coltsneck ID</u>	<u>R.F. Weston ID</u>
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### Water Samples (all)

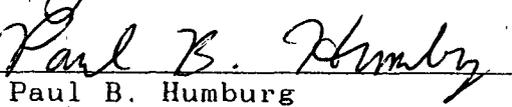
10-001-M001	9103L904-001	10-002-M001	9103L904-002
10-003-M001	9103L904-003	10-004-M001	9103L904-004
10-005-M001	9103L904-005	10-007-M001	9103L904-006
10-007-M201	9103L904-007		

PREPARED BY:

  
Eugene M. Watson

PBH 6  
DATE: 8-16-91

VERIFIED BY:

  
Paul B. Humburg

DATE: 6/17/91

00001



DATA ASSESSMENT AND NARRATIVE

General

The organic findings offered in this screening report assumes that all analytical results are correct as reported and is based upon the examination of the reported holding times, blank analysis results, surrogate and matrix spike recoveries, GC/MS performance, tuning results, calibration results and internal standard areas. This report was prepared in compliance relative to the analytical and deliverable requirements specified in the U.S. EPA CLP and Region II SOP No. HW-6, Revision 7. All comments made within this report should be considered when examining the analytical results (Form I's).

Holding Times

All of the holding times were met per the Region II protocol.

Blanks:

The laboratory did not identify trip or field blanks on the Chain-of-Custody, so Heartland ESI must assume that blanks were not submitted with the VOA samples.

The four method blanks that were analyzed exhibited some contamination. All method blank results were compared to the associated samples.

Specific findings:

1. For sample 10-001-M001, the method blank 91LVP023-MB1 contained methylene chloride, acetone, and carbon disulfide. The methylene chloride and acetone results in the sample are flagged as non detect (U) due to the sample concentration being greater than the CRQL and less than 10X the blank value. The sample result for carbon disulfide is rejected and the CRQL is reported since the sample value is less than the CRQL and less than 10X the blank value.
2. For sample 10-002-M001, the method blank 91LVP020-MB1 contained methylene chloride. The sample result for methylene chloride is rejected and the CRQL is reported since the sample value is less than the CRQL and less than 10X the blank value.
3. For sample 10-003-M001, the method blank 91LVP020-MB1 contained methylene chloride and carbon disulfide. The methylene chloride result in the sample is flagged as non detect (U) due to the sample concentration being greater than the CRQL and less than 10X the blank value. The sample result for carbon disulfide is rejected and the CRQL is reported since the sample value is less than the CRQL and less than 10X the blank value.



4. For sample 10-004-M001, the method blank 91LVP0202-MB1 contained methylene chloride and carbon disulfide. The sample result for methylene chloride and carbon disulfide are rejected and the CRQL is reported since the sample values were less than the CRQL and less than 10X the blank value.
5. For sample 10-005-M001, the method blank 91LVP020-MB1 contained methylene chloride and carbon disulfide. The sample result for methylene chloride and carbon disulfide are rejected and the CRQL is reported since the sample values were less than the CRQL and less than 10X the blank value.
6. For sample 10-007-M001, the method blank 91LVP020-MB1 contained methylene chloride and carbon disulfide. The sample result for methylene chloride and carbon disulfide are rejected and the CRQL is reported since the sample values were less than the CRQL and less than 10X the blank value.
7. For sample 10-007-M201, the method blank 91LVP021-MB1 contained methylene chloride and carbon disulfide. The methylene chloride result in the sample is flagged as non detect (U) due to the sample concentration being greater than the CRQL and less than 10X the blank value. The sample result for carbon disulfide is rejected and the CRQL is reported since the sample value is less than the CRQL and less than 10X the blank value.
8. For sample 10-002-M001DL, the method blank 91LVK054-MB1 contained acetone. No action is being taken since the sample result is greater than 10X the blank value and greater than the CRQL.

#### Tuning

All the BFB tunes met the tuning criteria set forth by Region II and the Functional Guidelines.

#### Calibrations - Relative Response Factors (RRFs)

All of the initial and continuing calibrations met the Region II requirements for RRFs.

#### Calibrations - %RSDs and %Ds

The initial and continuing calibrations were very good for the majority of the compounds. However, the laboratory did encounter some difficulties with the calibration of three compounds.



Specific findings:

9. The initial calibration on instrument 1050P on 3/18/91 contained the following compounds above 30% RSD. Samples were not associated with this initial calibration, so action is not required.
  - a) vinyl acetate
10. For sample 10-007-M201, the continuing calibration on instrument 1050P on 3/19/91 at 22:12 contained the following compounds above 25% D, but less than 50% D. Qualify a positive result as estimated (J).
  - a) chloromethane
11. For sample 10-001-M001, the continuing calibration on instrument 1050P on 3/21/91 at 17:10 contained the following compounds above 25% D, but less than 50% D. Qualify a positive result as estimated (J).
  - a) 2-butanone

Surrogates

All of the surrogate recoveries were within the CLP QA/QC criteria.

Internal Standards

All of the internal standard areas and retention times were with the EPA Region II guidelines.

Compound Identification/Quantitation

All of the spectra submitted by the laboratory met the Region II guidelines. The laboratory did a good job on producing the data for the samples. The form 1A for sample 10-002-M001DL will not be submitted in the data validation report. The values from this sample will be reported on the form 1A for sample 10-002-M001.

Matrix Spike/Matrix Spike Duplicate

The MS/MSD exhibited acceptable recoveries and %RPDs. However, the MS/MSD is actually associated with case 9103L902 which was analyzed in conjunction with this case. No action is required for the MS/MSD analysis.

System Performance and Overall Assessment

The overall performance of the GC/MS system was very good with the exception of the problem with calibration %Ds. The overall quality of the data package was good.



GLOSSARY OF DATA QUALIFIERS

QUALIFICATION CODES

U = Not detected

J = Estimated value

UJ = Reported quantitation limit is qualified as estimated

R = Result is rejected and unusable

NJ = Presumptive evidence for the presence of the material at an estimated value.

Heartland ESI specific findings will be noted in numerical form on the Form Is in this data validation report. These specific finding footnotes will reflect the conclusions found in the data validation process that resulted in the qualification of the data.



SUMMARY OF DATA QUALIFICATIONS

<u>SAMPLE ID</u>	<u>ANALYTE ID</u>	<u>DL</u>	<u>QL</u>	<u>SPECIFIC FINDINGS</u>
10-001-M001	methylene chloride	+B	U	1
	acetone			
	carbon disulfide	BJ	CRQL	1
	2-butanone	+	J	11
10-002-M001	methylene chloride	BJ	CRQL	2
10-003-M001	methylene chloride	+B	U	3
	carbon disulfide	BJ	CRQL	3
10-004-M001	methylene chloride carbon disulfide	BJ	CRQL	4
10-005-M001	methylene chloride carbon disulfide	BJ	CRQL	5
10-007-M001	methylene chloride carbon disulfide	BJ	CRQL	6
10-007-M201	methylene chloride	+B	U	7
	carbon disulfide	BJ	CRQL	7
	chloromethane	+	J	10
10-002-M001DL	acetone	B	+	8

\* DL denotes the Form I qualifier supplied by the laboratory  
 QL denotes the qualifier used by Heartland ESI  
 + in the DL/QL column denotes a positive result  
 - in the DL/QL column denotes a negative result

1A  
VOLATILE ORGANICS ANALYSIS SHEET 0000025

CLIENT SAMPLE NO.

10-001-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-001

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

Lab File ID: P032104

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 03/21/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u>	
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	16	BU
67-64-1	Acetone	12	BU
75-15-0	Carbon Disulfide	2	BU 5 V I
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

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

000026

CLIENT SAMPLE NO.

10-001-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-001

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

Lab File ID: P032104

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/21/91

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.				

1A  
VOLATILE ORGANICS ANALYSIS SHEET 0000037

CLIENT SAMPLE NO.

10-002-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-002

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

Lab File ID: P031906

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L	
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	10	U
67-64-1	Acetone	10	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
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

502  
4000 8

1E  
VOLATILE ORGANICS ANALYSIS SHEET 000038  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

10-002-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-002

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

Lab File ID: P031906

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 03/19/91

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.				

1A  
VOLATILE ORGANICS ANALYSIS SHEET **000047**

CLIENT SAMPLE NO.

10-002-M001DL

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-002 DL

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

Lab File ID: AK3M07

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/22/91

Column: (pack/cap) CAP

Dilution Factor: 20.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u>
74-87-3	Chloromethane	NA
74-83-9	Bromomethane	NA
75-01-4	Vinyl Chloride	NA
75-00-3	Chloroethane	NA
75-09-2	Methylene Chloride	NA
67-64-1	Acetone	4000
75-15-0	Carbon Disulfide	NA
75-35-4	1,1-Dichloroethene	NA
75-34-3	1,1-Dichloroethane	NA
540-59-0	1,2-Dichloroethene (total)	NA
67-66-3	Chloroform	NA
107-06-2	1,2-Dichloroethane	NA
78-93-3	2-Butanone	NA
71-55-6	1,1,1-Trichloroethane	NA
56-23-5	Carbon Tetrachloride	NA
108-05-4	Vinyl Acetate	NA
75-27-4	Bromodichloromethane	NA
78-87-5	1,2-Dichloropropane	NA
10061-01-5	cis-1,3-Dichloropropene	NA
79-01-6	Trichloroethene	NA
124-48-1	Dibromochloromethane	NA
79-00-5	1,1,2-Trichloroethane	NA
71-43-2	Benzene	NA
10061-02-6	Trans-1,3-Dichloropropene	NA
75-25-2	Bromoform	NA
108-10-1	4-Methyl-2-pentanone	NA
591-78-6	2-Hexanone	NA
127-18-4	Tetrachloroethene	NA
79-34-5	1,1,2,2-Tetrachloroethane	NA
108-88-3	Toluene	NA
108-90-7	Chlorobenzene	NA
100-41-4	Ethylbenzene	NA
100-42-5	Styrene	NA
1330-20-7	Xylene (total)	NA

*EMM*  
*6-17-91*

1A  
VOLATILE ORGANICS ANALYSIS SHEET **0000052**

CLIENT SAMPLE NO.

10-003-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L904-003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: P031907

Level: (low/med) LOW Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/19/91

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u>	
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	10	BU 3
67-64-1	Acetone	38	
75-15-0	Carbon Disulfide	<del>5</del> 5	BU 3
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

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0000053

10-003-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-003

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

Lab File ID: P031907

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/19/91

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.				

1A  
VOLATILE ORGANICS ANALYSIS SHEET **0700064**

CLIENT SAMPLE NO.

10-004-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER Lab Sample ID: 9103L904-004

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: P031908

Level: (low/med) LOW Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_ Date Analyzed: 03/19/91

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

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u>	
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	45	U 4
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	75	U 4
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

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0000065

10-004-M001

Lab Nam : Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-004

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

Lab File ID: P031908

L vel: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

Number TICs found: 0

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

1A  
VOLATILE ORGANICS ANALYSIS SHEET 0000074

CLIENT SAMPLE NO.

10-005-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-005

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

Lab File ID: P031909

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u>	
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	25	U 5
67-64-1	-----Acetone	10	U
75-15-0	-----Carbon Disulfide	25	U 5
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

1E  
VOLATILE ORGANICS ANALYSIS SHEET **0000075**  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

10-005-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-005

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

Lab File ID: P031909

Lev 1: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/19/91

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.				

1A  
VOLATILE ORGANICS ANALYSIS SHEET 0000084

CLIENT SAMPLE NO.

10-007-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-006

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

Lab File ID: P031910

Lev 1: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 03/19/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L

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	35	78U 6
67-64-1	-----Acetone	22	
75-15-0	-----Carbon Disulfide	25	78U 6
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

1E  
VOLATILE ORGANICS ANALYSIS SHEET **0700085**  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

10-007-M001

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-006

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

Lab File ID: P031910

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/19/91

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.				

1A  
VOLATILE ORGANICS ANALYSIS SHEET 000096

CLIENT SAMPLE NO.

10-007-M201

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-007

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

Lab File ID: P031920

Lev 1: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec. \_\_\_\_\_

Date Analyzed: 03/20/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

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

CAS NO.

COMPOUND

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/L</u>	
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	19	U 7
67-64-1	-----Acetone	160	
75-15-0	-----Carbon Disulfide	25	U 7
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	
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

1E  
VOLATILE ORGANICS ANALYSIS SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0000097

10-007-M201

Lab Name: Roy F. Weston, Inc. Work Order: 1771-15-03-0000

Client: NAVAL WEAPONS/COLTSNECK

Matrix: WATER

Lab Sample ID: 9103L904-007

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

Lab File ID: P031920

Level: (low/med) LOW

Date Received: 03/13/91

% Moisture: not dec.       

Date Analyzed: 03/20/91

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.				

TOTAL REVIEW

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organics Analysis

Case No. 91032907 SDG No. \_\_\_\_\_ LABORATORY A.F. WESTER SITE COLTSNECK

DATA ASSESSMENT:

The current functional guidelines for evaluating organic data have been applied.

All data are valid and acceptable except those analytes which have been qualified with a "J" (estimated), "U" (non-detects), "R" (unusable), or "NJ" (presumptive evidence for the presence of the material at an estimated value). All action is detailed on the attached sheets.

Reviewer's  
Signature: [Signature] Date: 6/12/1991

Verified By: [Signature] Date: 6/17/1991

DATA ASSESSMENT:

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples will be qualified as estimated, "J". The non-detects sample quantitation limits will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

*No Action*

*EMM*  
*6-12-91*

ATTACHMENT 1  
SOP NO. HW-6

## DATA ASSESSMENT:

## 2. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip field, rinse and water blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field blanks measure cross-contamination of samples during field operations. Water blanks measure potential contamination of the distilled water used used during decontamination of field equipment. If the concentration of the analyte is less than 5 times (10 times for the common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the samples shown were qualified with "U" for these reasons:

## A) Method blank contamination

- \* 91LVP023-MBI - 10-001-M001 - CH<sub>2</sub>Cl<sub>2</sub>, acetone, reject CS<sub>2</sub>  
 \* 91LVP020-MBI - 10-002-M001 reject ~~CH<sub>2</sub>Cl<sub>2</sub>~~ <sup>Elim 6-12-91</sup> CH<sub>2</sub>Cl<sub>2</sub> ~~acetone~~ <sup>6-12-91</sup>  
 10-003-M001 - CH<sub>2</sub>Cl<sub>2</sub> - CS<sub>2</sub> reject, 10-004-M001 - reject CH<sub>2</sub>Cl<sub>2</sub>, CS<sub>2</sub>  
 10-005-M001 - reject CH<sub>2</sub>Cl<sub>2</sub>, CS<sub>2</sub>, 10-007-M001 - ~~reject~~ reject CH<sub>2</sub>Cl<sub>2</sub>, CS<sub>2</sub>  
 \* 91LVP021-MBI - 10-007-M201 - CH<sub>2</sub>Cl<sub>2</sub> - reject CS<sub>2</sub>  
 \* 91LVP054-MBI - ~~10-002-M001~~ DL - No action on acetone due to dilution.

## B) Field or rinse blank contamination

*None identified*

## C) Water blank contamination

*See above*

## D) Trip blank contamination

*None identified*

DATA ASSESSMENT:

3. SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure mass resolution, identification of compounds, and to some degree, the instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is bromofluorobenzene and for semi-volatiles is decafluorotriphenyl-phosphine.

If the mass calibration is in error, all associated data will be classified as unusable, "R".

*No Action*

*gmm*  
*6-12-91*

DATA ASSESSMENT:

4. CALIBRATION:

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance in the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) RESPONSE FACTOR:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be  $\geq 0.05$  either in the initial or continuing calibration. A value  $< 0.05$  indicates a serious detection and quantitation problem. Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be qualified as rejected, "R".

*All RRF OK. No Action'*

*EMM*  
*6-12-91*

DATA ASSESSMENT:

5. CALIBRATION:

A) PERCENT RELATIVE STANDARD DEVIATION (%RSD) AND PERCENT DIFFERENCE (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be <30% and %D must be <25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If there is a gross deviation of %RSD and %D, the non-detects may be qualified as rejected, "R".

For the PCB/PESTICIDE fraction, %RSD for aldrin, endrin, DDT, and dibutylchloroendate must not exceed 10%. Percent D must be within 15% on the quantitation column and 20% on the confirmation column.

- \* Initial Calibration - Inst. 1050P - 3/18/91 - No Samples associated with initial calibration  
vinyl acetate - 37.9% RSD.
- \* Cont. Cal. Inst. 1050P - 3/19/91 22:12 - Sample 10-007-M201  
J pos. Results - >25.0% - <50.0% - Chloro methane.
- \* Cont. Cal - Inst. 1050P - 3/21/91 17:10 Sample 10-001-M001  
J pos Results - >25.0% - <50.0% - 2-butanone

DATA ASSESSMENT:

6. SURROGATES:

All samples are spiked with surrogate compounds prior to sample preparation in order to evaluate the laboratory performance and to estimate the efficiency of the analytical technique. If the measured surrogate concentration is outside of the contract specifications, qualifications were applied to the samples and analytes as shown below.

*No Action*

*2mm  
6-12-91*

DATA ASSESSMENT:

7. INTERNAL STANDARDS PERFORMANCE:

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated calibration standard. The retention time of the internal standard must not vary more than  $\pm 30$  seconds from the associated calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are to be qualified as estimated, "J", and all non-detects as "UJ" or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgment to determine either partial or total rejection of the data for that sample fraction.

*No Action*

*[Signature]*  
6-12-91

DATA ASSESSMENT:

8. COMPOUND IDENTIFICATION:

A) VOLATILE AND SEMI-VOLATILE FRACTIONS:

TCL compounds are identified on the GC/MS by using the analytes relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within  $\pm 0.06$  RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary M/E lines within 20% of that in the standard compound. For the tentatively identified compounds, TIC, the ion spectra must match accurately. In the cases where there is not a perfect ion spectrum match, the laboratory may have provided false positive identifications.

B) PESTICIDE FRACTION:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10 ng/uL in the final sample extract.

*No action*

*gmmj*  
*6-12-91*

DATA ASSESSMENT:

9. MATRIX SPIKE/SPIKE DUPLICATE, MS/MSD:

The MS/MSD data are generated to determine the long-term precision and accuracy of the analytical method in various matrices. The MS/MSD may be used in conjunction with other QC criteria for some additional qualification of the data.

*No Action - MS/MSD that was analyzed was with R.T. Weston Case 9103L902.*

*[Signature]*  
6-12-91

DATA ASSESSMENT:

10. OTHER QC DATA OUT OF SPECIFICATION:

*None.*

11. SYSTEM PERFORMANCE AND OVERALL ASSESSMENT:

*System performance was very good. Data package was complete.*

12. CONTRACT PROBLEMS ~~OR~~ NON-COMPLIANCE:

13. This package contains re-extraction, re-analysis or dilution. Upon reviewing the QA results, the following form I(s) are identified to be used.

*Sample 10-002-m001 instead of 10-002-m001DL.*

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO. 9103L904

LABORATORY ROY. F. WESTON

SDG NO. \_\_\_\_\_

DATA USER ROY. F. WESTON

SOW 2/88 / REGION II

REVIEW COMPLETION DATE 6-12-91

NO. OF SAMPLES 7 WATER \_\_\_\_\_ SOIL \_\_\_\_\_ OTHER \_\_\_\_\_

REVIEWER  ESD  ESAT  OTHER, CONTRACT/CONTRACTOR HEARTLAND ESI

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	<u>0</u>	_____	_____	_____
2. GC-MS TUNE/ GC PERFORMANCE	<u>0</u>	_____	_____	_____
3. INITIAL CALIBRATIONS	<u>0</u>	_____	_____	_____
4. CONTINUING CALIBRATIONS	<u>X</u>	_____	_____	_____
5. FIELD BLANKS ("F" = not applicable)	<u>F</u>	_____	_____	_____
6. LABORATORY BLANKS	<u>X</u>	_____	_____	_____
7. SURROGATES	<u>0</u>	_____	_____	_____
8. MATRIX SPIKE/DOPLICATES	<u>0</u>	_____	_____	_____
9. REGIONAL QC ("F" = not applicable)	<u>F</u>	_____	_____	_____
10. INTERNAL STANDARDS	<u>0</u>	_____	_____	_____
11. COMPOUND IDENTIFICATION	<u>0</u>	_____	_____	_____
12. COMPOUND QUANTITATION	<u>0</u>	_____	_____	_____
13. SYSTEM PERFORMANCE	<u>0</u>	_____	_____	_____
14. OVERALL ASSESSMENT	<u>0</u>	_____	_____	_____

O = No problems or minor problems that do not affect data usability.  
 X = No more than about 5% of the data points are qualified as either estimated or unusable.  
 M = More than about 5% of the data points are qualified as estimated.  
 Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS: No Action

AREAS OF CONCERN: None

9mm  
6-12-91

REJECTION SUMMARY FORM  
(No. of Compounds/No. of Fractions (Samples))

SOP NO: HW-6  
Date: February 1989

Type of Review: VOA REGION II DATA VALIDATION

Date: 6-12-91

Case #: 91031904

Project: NAVAL WEAPONS STATION/COLTSNECK

Lab Name: Dr F. WESTON - LIONVILLE

Reviewer's Initials: SMW

Number of Samples: 7

Analytes Rejected Due to Exceeding Review Criteria:

	Surrogates	Holding Time	Calibration	Contamination	ID	Other	Total # Samples	Total # Rejected/ Total # in all Samples
Acids (15)								
H/N (50)								
VOA (35)	0	0	0	10	0	0	7	10/35
PEST (20)								
ICR (7)								
TCDD (1)								

Analytes Estimated Due to Exceeding Review Criteria for:

Acids (15)								
H/N (50)								
VOA (35)	0	0	2	5	0	0	7	7/35
PEST (20)								
ICR (7)								
TCDD (1)								

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 9103L904

LAB: ROY F WESTON

SITE: NAVAL WEAPONS STATION - COLTS NECK.

1.0 Data Completeness and Deliverables

YES NO N/A

1.1 Have any missing deliverables been received and added to the data package.

ACTION: Call lab for explanation / resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-compliance" section of reviewer narrative.

1.2 Was SMD OCS checklist included with package?

2.0 Cover Letter/Case Narrative

2.1 Is the Narrative or Cover Letter present?

2.2 Are Case Number and/or SAS number contained in the Narrative or Cover Letter?    *Letter*

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any ENA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA data?

ENA data?

Pesticide/PCB data?

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples?

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data?

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be flagged as estimated (J).

ACTION: If both VOA vials for a sample have air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA holding times, determined from date of collection to date of analysis, been exceeded?

If unpreserved, aqueous aromatic volatiles must be analyzed within 7 days of collection and non-aromatic volatiles must be analyzed within 14 days. If preserved with hydrochloric acid and stored at 4°C, then both aromatic and non-aromatic volatiles must be analyzed within 14 days. If uncertain about preservation, contact the sampler to determine whether the samples were preserved.

A ten-day holding time for soil samples is recommended.

Table of Holding Time Violations

Sample	Sample Matrix	Preserved ?	(See Traffic Report)		Date Analyzed
			Date Sampled	Date Lab Received	
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

*[Handwritten signature and date 6-12-91 are present over the table]*

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("U"), and document in the narrative that holding times were exceeded.

YES NO N/A

If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").

3.0 Surrogate Recovery (Form II)

3.1 Are the VOA Surrogate Recovery Summaries (Form II) present for each of the following matrices:

- a. Low Water
- b. Med Water
- c. Low Soil
- d. Med Soil

<input checked="" type="checkbox"/>	—	—
<input type="checkbox"/>	—	✓
<input type="checkbox"/>	—	✓
<input type="checkbox"/>	—	✓

3.2 Are all the VOA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:

- a. Low Water
- b. Med Water
- c. Low Soil
- d. Med Soil

<input checked="" type="checkbox"/>	—	—
<input type="checkbox"/>	—	✓
<input type="checkbox"/>	—	✓
<input type="checkbox"/>	—	✓

ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.

3.3 Were outliers marked correctly with an asterisk?

<input type="checkbox"/>	—	✓
--------------------------	---	---

ACTION: Circle all outliers in red.

3.4 Was one or more VOA surrogate recovery outside of contract specifications for any sample or method blank?

—	<input checked="" type="checkbox"/>	—
---	-------------------------------------	---

If yes, were samples reanalyzed?

<input type="checkbox"/>	—	✓
--------------------------	---	---

Were method blanks reanalyzed?

<input type="checkbox"/>	—	✓
--------------------------	---	---

ACTION: If surrogate recoveries are > 10% but all do not meet SOW specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("W").

YES NO N/A

5.0 Blanks (Form IV)

5.1 Is the Method Blank Summary (Form IV) present?

5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?

5.3 Has a VOA instrument blank been analyzed at least once every twelve hours for each GC/MS system used?

ACTION: If any method blank data are missing, call lab for explanation / resubmittal. If not available, reject all associated positive data ("R").

5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.

Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.

6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)?

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

YES NO N/A

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Methylene chloride Acetone Toluene 2-butanone	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample?

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

*No + identified.*

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Bromofluorobenzene (BFB)?

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift?

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument?

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

	YES	NO	N/A
DATE			
TIME			
INSTRUMENT			
SAMPLE NUMBERS			

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ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundance criteria been met for each instrument used?  YES  NO  N/A

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.

7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)  YES  NO  N/A

7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.)  YES  NO  N/A

ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".

7.7 Are the spectra of the mass calibration compound acceptable?  YES  NO  N/A

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:

- a. Samples and/or fractions as appropriate  YES  NO  N/A
- b. Matrix spikes and matrix spike duplicates  YES  NO  N/A
- c. Blanks  YES  NO  N/A

	YES	NO	N/A
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	<input checked="" type="checkbox"/>	—	—
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	<input checked="" type="checkbox"/>	—	—
c. Blanks	<input checked="" type="checkbox"/>	—	—
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	—
8.4 Is chromatographic performance acceptable with respect to:	<i>Quant ion</i>		
Baseline stability	<input checked="" type="checkbox"/>	—	—
Resolution	<input checked="" type="checkbox"/>	—	—
Peak shape	<input checked="" type="checkbox"/>	—	—
Full-scale graph (attenuation)	<input checked="" type="checkbox"/>	—	—
Other: _____	<input type="checkbox"/>	—	<input checked="" type="checkbox"/>
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	<input checked="" type="checkbox"/>	—	—
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	<input checked="" type="checkbox"/>	—	—
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	<input checked="" type="checkbox"/>	—	—
8.8 Do sample and standard relative ion intensities agree within 20%?	<input checked="" type="checkbox"/>	—	—
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
<u>9.0 Tentatively Identified Compounds (TIC)</u>			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	<input checked="" type="checkbox"/>	—	—
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	<input checked="" type="checkbox"/>	—	—
b. Blanks	<input checked="" type="checkbox"/>	—	—
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all <u>identified</u> TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene—a VOA TCL—and should not be reported as a TIC)?	—	<input checked="" type="checkbox"/>	—
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	<input checked="" type="checkbox"/>	—	—
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	<input checked="" type="checkbox"/>	—	—
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			

10.0 Compound Quantitation and Reported Detection Limits

- 10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?
- 10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?

—  —  
 —

*Dilutions OK*

YES NO N/A

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

### 11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

### 12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction?

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Are response factors stable for volatiles over the concentration range of the calibration (RSD <30%)?

ACTION: Circle all outliers in red.

ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)

12.3 Do any compounds have an average RRF < 0.05?

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

YES NO N/A

12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)

\_\_\_  \_\_\_

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?

\_\_\_ \_\_\_

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?

\_\_\_ \_\_\_

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

~~\_\_\_\_\_~~  
~~\_\_\_\_\_~~  
~~\_\_\_\_\_~~

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ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any continuing calibration standard compounds have a RRF < 0.05?

\_\_\_  \_\_\_

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?

\_\_\_

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

% DIFFERENCE			YES	NO	N/A
25-50	50-90	>90			
'J' positive results, no action for non detects	'J' positive results, 'U' non detects	'J' positive results, "R" non detects			

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.)

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

4.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration?

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

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(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard?

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

---

15.0 Field Duplicates

YES NO N/A

15.1 Were any field duplicates submitted for VOA analysis?   

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

*None identified.*

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.