

LONGHORN ARMY AMMUNITION PLANT

KARNACK, TEXAS

ADMINISTRATIVE RECORD

VOLUME 4 of 5

1989

**Bate Stamp Numbers
003042 - 003504**

Prepared for:

**Department of the Army
Longhorn Army Ammunition Plant
Marshall, Texas 75671-1059**

1995

**LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD - CHRONOLOGICAL INDEX**

VOLUME 4 of 5

1989

**E. Title: Final Report - Phase I RCRA Facility Investigation (RFI)
Active Burning Ground and Unlined Evaporation Pond
Volume 5 - Quality Assurance / Quality Control (QA / QC)**
Group(s): 2 (Partial)
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Fort Worth District
Author(s): U.S. Army Corps Of Engineers, Fort Worth District
Recipient: U.S. Army Engineer Division, Huntsville Corps Of Engineers
Date: July, 1989
Bate Stamp: 003042 - 003504

July 12, 1995

RCRA FACILITY INVESTIGATION
-FOR-
ACTIVE BURNING GROUND
-AND-
UNLINED EVAPORATION POND

PHASE 1

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

VOLUME 5
QA/QC FINAL REPORT

-PREPARED FOR-
U.S. ARMY ENGINEER DIVISION, HUNTSVILLE
CORPS OF ENGINEERS
HUNTSVILLE, ALABAMA

-PREPARED BY-
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

JULY 1989

003043

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-12-88

SWLO#: 0929EXB2

SAMPLE ID: FBLK4

COMPOUNDS

RESULTS

ug/L

HMX

26.0 U

RDX

22.0 U

TETRYL

26.0 U

TNT

14.0 U

2,4 DNT

10.0 U

U indicates detection limit

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003045

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

5 Name: SWL - TULSAContract: SWCORF
8-1393MS
(miv-6) 18
Lab Code: SWOKCase No.: SWCORF

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: 21380MSSample wt/vol: 5.0 (g/mL) MLLab File ID: 02819Level: (low/med) LOWDate Received: 09/22/88

% Moisture: not dec. _____

Date Analyzed: 09/25/88Column: (pack/cap) CAFDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

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

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	8	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	50	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)	11	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
75-69-4-----	Dichlorodifluoromethane	10	U
95-50-1-----	1,2-Dichlorobenzene	10	U

003046

106-46-7-----1,3-Dichlorobenzene	
547-73-1-----1,4-Dichlorobenzene	

10
10

U
U

003047

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

b Name: SWL - TULSAContract: SWCORP

8-1393MSD

(mw-6)

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: 21380MSDSample wt/vol: 5.0 (g/mL) MLLab File ID: 02620Level: (low/med) LOWDate Received: 09/22/88

% Moisture: not dec. _____

Date Analyzed: 09/25/88Column: (pack/cap) CAFDilution Factor: 1.0

CAS NO.

COMPOUND

CONCENTRATION UNITS:

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

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	2	J
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	51	B
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)	11	
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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

FORM I VOA

1/87 Rev.

003048

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

U. S. ARMY CORPS OF ENGINEERS
SOUTHWESTERN DIVISION LABORATORY
DALLAS, TEXAS 75235

Subject: Quality Control and Quality Assurance Final Report

Project: Longhorn Army Ammunition Plant
Ground-Water Quality Assessment, Phase I

Submitted by: Catherine Hutchins, CESWD-ED-GI

Dates Sampled: 8/28/87, 9/4/87, 9/16/87, 9/25/87, 3/22/88,
3/25/88, 3/30/88, 4/1/88, 4/6/88, 5/13/88,
7/1/88, 7/8/88, 7/15/88, 7/22/88, 7/28/88,
7/28/88, 8/5/88, 8/18/88, 8/31/88, 9/16/88,
9/19/88, 9/20/88, 9/21/88, 9/22/88, 9/25/88,
9/26/88, 9/27/88, 9/28/88

Test Specifications: Volatile Organics, Explosives, Metals,
Nitrate, Chloride, Total Organic Halides,
Barium

Reference: Fort Worth District Reg No. E87890266: 23 May 1989

Report Contents: Discussion

Part A: Sample Receipt Information (10 pages)
Part B: Chain-of-Custody Information (74 pages)
Part C: QA/QC Comparison Tables (21 pages)
Part D: Test Results (51 pages)
Part E: Quality Control Information (281 pages)

HYDRAULIC CONDUCTIVITY CALCULATIONS

Given: $r = .151$ ft.

$L_{C-2 \rightarrow C-6} = 10$ ft.

$L_{C-1} = 20$ ft.

$$Q = FKH$$

$$F = \frac{2\pi L}{\ln \left[\frac{L}{R} + 1 + \left(\frac{L}{R} \right)^2 \right]} \quad (\text{see Hvorslev p. 31 for derivations of } F)$$

for wells C-2 through C-6, where screens are 10 ft. long:

$$F = \frac{2 (10 \text{ ft})}{\ln \left[\frac{10}{.151} + 1 + \left(\frac{10}{.151} \right)^2 \right]} = 12.859 \text{ ft.}$$

for C-1, where screen is 20 ft. long:

$$F = \frac{2 (20 \text{ ft})}{\ln \left[\frac{20}{.151} + 1 + \left(\frac{20}{.151} \right)^2 \right]} = 22.523 \text{ ft.}$$

solving for K, where :

$$K = \frac{A}{FT}$$

A = cross-sectional area of intake (πr^2)
 value for T is taken from curve where $\ln \frac{H_0}{H} = 1.0$

$$C-1: T = 16 \text{ sec} \quad K = 1.99 (10^{-4}) \text{ ft/sec}$$

$$C-2: T = 752 \text{ sec} \quad K = 7.4 (10^{-6}) \text{ ft/sec}$$

$$C-3: T = 108 \text{ sec} \quad K = 5.2 (10^{-5}) \text{ ft/sec}$$

$$C-4: T = 245 \text{ sec} \quad K = 2.3 (10^{-5}) \text{ ft/sec}$$

$$C-5: T = 64 \text{ sec} \quad K = 8.7 (10^{-5}) \text{ ft/sec}$$

$$C-6: T = 215 \text{ sec} \quad K = 2.6 (10^{-5}) \text{ ft/sec}$$

I. DISCUSSION

One-hundred nineteen soil samples were submitted: seventy-four to be analyzed for volatile organics, explosives and metals; forty-two to be analyzed for volatile organics and barium; one field duplicate to be analyzed for explosives and volatile organics; and, two field duplicates to be analyzed for metals, explosives and volatile organics.

Thirty-one water samples were submitted: twenty-five to be analyzed for metals, volatile organics, explosives, chloride, nitrate and total organic halides; two travel blanks to be analyzed for volatile organics; one travel blank to be analyzed for metals; two equipment blanks to be analyzed for metals; and one equipment blank to be analyzed for volatile organics. In addition, three field duplicate samples each of volatile organics, explosives, total organic halides, metals, chloride and nitrate were submitted. Part 'A' of this report lists all of the samples received from this project, field and laboratory numbers, date sampled and parameters tested.

Metals, chloride, and nitrate analyses were done at Southwestern Division Laboratory. Volatile organics, explosives and total organic halides were contracted out to Southwest Laboratories of Oklahoma.

Volatile organics, explosives and total organic halides quality assurance samples were contracted out to Controls for Environmental Pollution Laboratory. Metals, nitrate and chloride quality assurance samples were contracted out to Southwest Laboratories of Oklahoma. Part 'D' of this report contains all the quality assurance test results. Part 'E' of this report contains all available quality control data.

II. QUALITY CONTROL

Volatile Organics:

Three daily instrument/method blanks were found to be contaminated. One (8/25/88) contained 5.0 ppb trichloroethene and two contained methylene chloride in concentrations of 25 ppb (9/29/88) and 10 ppb (9/30/88).

One equipment blank (SWD #8-1462) contained 10 ppb methylene chloride. All travel blanks were free of contamination.

Four surrogate standard recoveries had values outside contract QC limits: SWD #8-480DL had 36% toluene, 33% bromofluorobenzene, and 31% 1,2-dichloroethane; SWD #8-1459 had 116% toluene recovered.

All laboratory duplicates were within the method acceptance range.

One field duplicate (SWD #8-446 and #8-450) was found to have three discrepancies: trichloroethene with 14 and 86 ug/Kg, vinyl chloride with <10 and 51 ug/Kg, and 1,2-dichloroethene with <5 and 3,628 ug/Kg.

Four sets of matrix spike and matrix spike duplicates fell outside the method acceptance ranges:

1. SWD #8-482 for trichloroethene with 50%MS/50%MSD
2. SWD #8-1244 for 1,1-dichloroethene with 54%MS/54%MSD
3. SWD #8-1393 for 1,1-dichloroethene with 21%MS/20%MSD
and for trichloroethene with 32%MS/38%MSD
and for benzene with 66%MS/69%MSD
4. SWD #8-1459 for trichloroethene with 63%MS/70%MSD

No quality control data was supplied for volatile organic analyses performed by Controls for Environmental Pollution.

Explosives:

All method blanks were free of contamination.

One matrix spike and matrix spike duplicate fell outside reasonable ranges: SWD #8-885 for HMX with 46.5%MS/39.6%MSD.

No deviations were found with either laboratory or field duplicate samples.

Metals:

All method and instrument blanks were free of contamination.

Field and laboratory duplicates showed no discrepancies.

Eight soil matrix and matrix spike duplicates fell outside acceptance ranges:

1. SWD #8-575 for chromium with 60%MS/94%MSD
2. SWD #8-575 for lead with 60%MS/94%MSD
3. SWD #8-912 for barium with 70%MS/140%MSD
4. SWD #8-884 for barium with 246%MS/271%MSD
5. SWD #8-1209 for barium with 70%MS/99%MSD
6. SWD #8-1244 for barium with 94%MS/115%MSD
7. SWD #8-1366 for cadmium with 76%MS/101%MSD
8. SWD #8-1366 for chromium with 75%MS/100%MSD

Total Organic Halides:

All method blanks were free of contamination.

All matrix spike and matrix spike duplicates were within acceptance ranges.

Nitrates:

All method blanks were free of contamination.

All matrix spike and matrix spike duplicates were within acceptance ranges.

Chlorides:

All method blanks were free of contamination.

All matrix spike and matrix spike duplicates were within acceptance ranges.

III. QUALITY ASSURANCE

Volatile Organics:

Three quality assurance samples were contracted out to Controls for Environmental Pollution. The QC/QA data comparisons can be found in Part 'C', pages 4, 14 and 15. Three discrepancies were found:

1. SWD #8-1428 for trichloroethene with 61 and <1.9 ug/L
2. SWD #8-1463 for trichloroethene with 9 and <1.9 ug/L
3. SWD #8-1463 for tetrachloroethene with 50 and <4.1 ug/L

Explosives:

Three quality assurance samples were contracted out to Controls for Environmental Pollution. The QC/QA data comparisons can be found in Part 'C', pages 6, 7 and 13. No discrepancies were found.

Total Organic Halides:

Three quality assurance samples were contracted out to Controls for Environmental Pollution. The QC/QA data comparisons can be found in Part 'C', pages 5, 16 and 17. All three samples showed major discrepancies:

1. SWD #8-1392 with 1300 and 3644 mg/L
2. SWD #8-1464 with 30 and <5 mg/L
3. SWD #8-1465 with 3200 and 800 mg/L

Metals:

Three quality assurance samples were contracted out to Southwest Laboratories of Oklahoma. The QC/QA data comparisons can be found in Part 'C', pages 9, 11 and 21. Eight major discrepancies appeared:

1. SWD #8-1416 for chromium with 9.8 and 100 ug/L
2. SWD #8-1420 for chromium with 6.2 and 120 ug/L
3. SWD #8-1483 for barium with 560 and 1200 ug/L
4. SWD #8-1483 for cadmium with 24 and <10 ug/L
5. SWD #8-1483 for chromium with 9.2 and 60 ug/L
6. SWD #8-1483 for lead with 20 and 220 ug/L
7. SWD #8-1483 for mercury with <0.1 and 2.0 ug/L
8. SWD #8-1483 for nickel with 18 and 90 ug/L

Nitrates:

Three quality assurance samples were contracted out to Southwest Laboratories of Oklahoma. The QC/QA data comparisons can be found in Part 'C', pages 8, 18 and 19. No discrepancies were found.

Chlorides:

Three quality assurance samples were contracted out to Southwest Laboratories of Oklahoma. The QC/QA data comparisons can be found in Part 'C', pages 10, 12 and 20. One major discrepancy was found:

1. SWD #8-1421 with 3.9 and 13.8 mg/L

IV. OTHER PROBLEMS:

The Chain-of Custody forms submitted with all the soil samples had numerous errors, including:

1. Time of sample collection not noted
2. Analyses required not noted
3. Samples not identified properly
4. More than one sample on each form
5. Incorrect sample numbers
6. Disagreement between bottle labels and Chain-of-Custody form

The Chain-of-Custody forms submitted for the water samples had numerous errors, including:

1. No Chain-of-Custody form for travel blanks
2. No Chain-of-Custody form for equipment blanks
3. Disagreement between bottle labels and Chain-of-Custody form
4. Disagreement between number of bottles and Chain-of-Custody
5. Duplicate samples not clearly distinguished from samples

Two errors in data reporting were noted. They included:

1. Analytical methods used were not indicated
2. Detection limits for metal QA samples were too high

V. CORRECTIVE ACTION:

All problems were discussed in detail with Fort Worth Corps of Engineer personnel and contract laboratory personnel in an effort to prevent similar problems in the future.

Submitted by:


William R. Tanner
Director, SWD Laboratory

003056

PART A

SAMPLE RECEIPT INFORMATION

PART A
SAMPLE RECEIPT INFORMATION

<u>Customer Sample #</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>SWD Lab #</u>	<u>Assigned Tests</u>
MW-2 2.0'	8/28/87	Soil	7- 528	Metals, Explosives, VOA
MW-2 10.0'	8/28/87	Soil	7- 529	Metals, Explosives, VOA
MW-1 2.0'	9/4/87	Soil	7- 530	Metals, Explosives, VOA
MW-1 10.0'	9/4/87	Soil	7- 531	Metals, Explosives, VOA
MW-3 2.0'	9/16/87	Soil	7- 532	Metals, Explosives, VOA
MW-3 10.0'	9/16/87	Soil	7- 533	Metals, Explosives, VOA
MW-3 15.0'	9/16/87	Soil	7- 534	Metals, Explosives, VOA
MW-4 2.0'	9/16/87	Soil	7- 535	Metals, Explosives, VOA
MW-4 10.0'	9/16/87	Soil	7- 536	Metals, Explosives, VOA
MW-4 10.0'	9/16/87	Soil	7- 536	Field Duplicate: Explosives, VOA
MW-4 15.0'	9/16/87	Soil	7- 537	Metals, Explosives, VOA
MW-5 2.0'	9/25/87	Soil	7- 610	Metals, Explosives, VOA
MW-5 10.0'	9/25/87	Soil	7- 611	Metals, Explosives, VOA
MW-5 17.0'	9/25/87	Soil	7- 612	Metals, Explosives, VOA
MW-6 2.0'	9/25/87	Soil	7- 613	Metals, Explosives, VOA

PART A

<u>Customer Sample #</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>SWD Lab #</u>	<u>Assigned Tests</u>
MW-6 10.0'	9/25/87	Soil	7- 614	Metals, Explosives, VOA
MW-6 18.0'	9/25/87	Soil	7- 615	Metals, Explosives, VOA
8A-906 4.0'	3/22/88	Soil	8- 444	Metals, Explosives, VOA
8A-906 8.0'	3/22/88	Soil	8- 445	Metals, Explosives, VOA
8A-907 4.0'	3/22/88	Soil	8- 446	Metals, Explosives, VOA
8A-907 8.0'	3/22/88	Soil	8- 447	Metals, Explosives, VOA
8A-908 4.0'	3/22/88	Soil	8- 448	Metals, Explosives, VOA
8A-908 8.0'	3/22/88	Soil	8- 449	Metals, Explosives, VOA
8A-907 4.0'	3/22/88	Soil	8- 450	Duplicate: Metals, Explosives, VOA
8A-907 8.0'	3/22/88	Soil	8- 451	Duplicate: Metals, Explosives, VOA
8A-900 4.0'	3/25/88	Soil	8- 462	Metals, Explosives, VOA
8A-900 8.0'	3/25/88	Soil	8- 463	Metals, Explosives, VOA
8A-901 4.0'	3/25/88	Soil	8- 464	Metals, Explosives, VOA
8A-901 8.0'	3/25/88	Soil	8- 465	Metals, Explosives, VOA
8A-903 4.0'	3/25/88	Soil	8- 466	Metals, Explosives, VOA

PART A

<u>Customer</u> <u>Sample #</u>	<u>Date</u> <u>Sampled</u>	<u>Matrix</u>	<u>SWD</u> <u>Lab #</u>	<u>Assigned</u> <u>Tests</u>
8A-903 8.0'	3/25/88	Soil	8- 467	Metals, Explosives, VOA
8A-905 4.0'	3/25/88	Soil	8- 468	Metals, Explosives, VOA
8A-905 8.0'	3/25/88	Soil	8- 469	Metals, Explosives, VOA
8A-902 14.0'	3/30/88	Soil	8- 479	Metals, Explosives, VOA
8A-902 18.0'	3/30/88	Soil	8- 480	Metals, Explosives, VOA
8A-914 4.0'	3/30/88	Soil	8- 481	Metals, Explosives, VOA
8A-914 8.0'	3/30/88	Soil	8- 482	Metals, Explosives, VOA
8A-909 4.0'	4/1/88	Soil	8- 489	Metals, Explosives, VOA
8A-909 8.0'	4/1/88	Soil	8- 490	Metals, Explosives, VOA
8A-911 4.0'	4/1/88	Soil	8- 491	Metals, Explosives, VOA
8A-911 8.0'	4/1/88	Soil	8- 492	Metals, Explosives, VOA
8A-912 4.0'	4/1/88	Soil	8- 493	Metals, Explosives, VOA
8A-912 8.0'	4/1/88	Soil	8- 494	Metals, Explosives, VOA
8A-913 4.0'	4/1/88	Soil	8- 495	Metals, Explosives, VOA
8A-913 8.0'	4/1/88	Soil	8- 496	Metals, Explosives, VOA
8A-898 4.0'	4/6/88	Soil	8- 500	Metals, Explosives, VOA

PART A

<u>Customer Sample #</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>SWD Lab #</u>	<u>Assigned Tests</u>
8A-898 8.0	4/6/88	Soil	8- 501	Metals, Explosives, VOA
8A-912 0-1'	4/1/88	Soil	8- 521	Metals, Explosives
8A-912 1-2'	4/1/88	Soil	8- 522	Metals, Explosives
8A-896 4.0'	5/13/88	Soil	8- 569	Metals, Explosives, VOA
8A-896 8.0'	5/13/88	Soil	8- 570	Metals, Explosives, VOA
8A-897 4.0'	5/13/88	Soil	8- 571	Metals, Explosives, VOA
8A-897 8.0'	5/13/88	Soil	8- 572	Metals, Explosives, VOA
8A-899 4.0'	5/13/88	Soil	8- 573	Metals, Explosives, VOA
8A-899 8.0'	5/13/88	Soil	8- 574	Metals, Explosives, VOA
8A-910 4.0'	5/13/88	Soil	8- 575	Metals, Explosives, VOA
8A-910 8.0'	5/13/88	Soil	8- 576	Metals, Explosives, VOA
8A-915 4.0'	5/13/88	Soil	8- 577	Metals, Explosives, VOA
8A-915 8.0'	5/13/88	Soil	8- 578	Metals, Explosives, VOA
MW-7 2.0'	7/1/88	Soil	8- 763	Metals, Explosives, VOA
MW-7 10.0'	7/1/88	Soil	8- 764	Metals, Explosives, VOA

003061

PART A

<u>Customer Sample #</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>SWD Lab #</u>	<u>Assigned Tests</u>
MW-9 2.0'	7/8/88	Soil	8- 838	Metals, Explosives, VOA
MW-9 10.0'	7/8/88	Soil	8- 839	Metals, Explosives, VOA
MW-8 2.0'	7/15/88	Soil	8- 863	Metals, Explosives, VOA
MW-8 10.0'	7/15/88	Soil	8- 864	Metals, Explosives, VOA
MW-10 2.0'	7/22/88	Soil	8- 884	Metals, Explosives, VOA
MW-10 10.0'	7/22/88	Soil	8- 885	Metals, Explosives, VOA
MW-11 2.0'	7/22/88	Soil	8- 886	Metals, Explosives, VOA
MW-11 10.0'	7/22/88	Soil	8- 887	Metals, Explosives, VOA
MW-12 2.0'	7/28/88	Soil	8- 912	Metals, Explosives, VOA
MW-12 10.0'	7/28/88	Soil	8- 913	Metals, Explosives, VOA
MW-14 2.0'	8/5/88	Soil	8-1004	Metals, Explosives, VOA
MW-14 10.0'	8/5/88	Soil	8-1005	Metals, Explosives, VOA
8A-926 4.0'	8/18/88	Soil	8-1206	VOA, Barium
8A-926 10.0'	8/18/88	Soil	8-1207	VOA, Barium
8A-927 4.0'	8/18/88	Soil	8-1208	VOA, Barium
8A-927 10.0	8/18/88	Soil	8-1209	VOA, Barium
8A-928 4.0'	8/18/88	Soil	8-1210	VOA, Barium

PART A

<u>Customer Sample #</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>SWD Lab #</u>	<u>Assigned Tests</u>
8A-928 10.0'	8/18/88	Soil	8-1211	VOA, Barium
8A-929 4.0'	8/18/88	Soil	8-1212	VOA, Barium
8A-929 10.0'	8/18/88	Soil	8-1213	VOA, Barium
8A-930 4.0'	8/18/88	Soil	8-1214	VOA, Barium
8A-930 10.0'	8/18/88	Soil	8-1215	VOA, Barium
8A-931 4.0'	8/18/88	Soil	8-1216	VOA, Barium
8A-931 10.0'	8/18/88	Soil	8-1217	VOA, Barium
8A-932 4.0'	8/18/88	Soil	8-1218	VOA, Barium
8A-932 10.0'	8/18/88	Soil	8-1219	VOA, Barium
8A-933 4.0'	8/18/88	Soil	8-1220	VOA, Barium
8A-933 10.0'	8/18/88	Soil	8-1221	VOA, Barium
8A-934 4.0'	8/18/88	Soil	8-1222	VOA, Barium
8A-934 10.0'	8/18/88	Soil	8-1223	VOA, Barium
8A-935 4.0'	8/18/88	Soil	8-1224	VOA, Barium
8A-935 10.0'	8/18/88	Soil	8-1225	VOA, Barium
8A-936 4.0'	8/18/88	Soil	8-1226	VOA, Barium
8A-936 10.0'	8/18/88	Soil	8-1227	VOA, Barium
8A-937 4.0'	8/18/88	Soil	8-1228	VOA, Barium
8A-937 10.0'	8/18/88	Soil	8-1229	VOA, Barium
8A-938 4.0'	8/18/88	Soil	8-1230	VOA, Barium
8A-938 10.0'	8/18/88	Soil	8-1231	VOA, Barium
8A-939 4.0'	8/18/88	Soil	8-1232	VOA, Barium
8A-939 10.0'	8/18/88	Soil	8-1233	VOA, Barium
8A-940 4.0'	8/18/88	Soil	8-1234	VOA, Barium

PART A

<u>Customer Sample #</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>SWD Lab #</u>	<u>Assigned Tests</u>
8A-940 10.0'	8/18/88	Soil	8-1235	VOA, Barium
8A-941 4.0'	8/18/88	Soil	8-1236	VOA, Barium
8A-941 10.0'	8/18/88	Soil	8-1237	VOA, Barium
8A-942 4.0'	8/18/88	Soil	8-1238	VOA, Barium
8A-942 10.0'	8/18/88	Soil	8-1239	VOA, Barium
8A-943 4.0'	8/18/88	Soil	8-1240	VOA, Barium
8A-943 10.0'	8/18/88	Soil	8-1241	VOA, Barium
8A-944 4.0'	8/18/88	Soil	8-1242	VOA, Barium
8A-944 10.0'	8/18/88	Soil	8-1243	VOA, Barium
8A-945 4.0'	8/18/88	Soil	8-1244	VOA, Barium
8A-945 10.0'	8/18/88	Soil	8-1245	VOA, Barium
8A-946 4.0'	8/18/88	Soil	8-1246	VOA, Barium
8A-946 10.0'	8/18/88	Soil	8-1247	VOA, Barium
MW-15 2.0'	8/31/88	Soil	8-1299	Metals, Explosives, VOA
MW-15 10.0'	8/31/88	Soil	8-1300	Metals, Explosives, VOA
MW-13 2.0'	9/16/88	Soil	8-1366	Metals, Explosives, VOA
MW-13 10.0'	9/16/88	Soil	8-1367	Metals, Explosives, VOA
MW-1	9/19/88	Water	8-1391	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: VOA
MW-2	9/19/88	Water	8-1392	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: TOX

PART A

<u>Customer Sample #</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>SWD Lab #</u>	<u>Assigned Tests</u>
MW-6	9/19/88	Water	8-1393	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Explosives
MW-15	9/19/88	Water	8-1394	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Explosives
MW-3	9/20/88	Water	8-1415	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Nitrate
MW-4	9/20/88	Water	8-1416	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Metals
MW-5	9/20/88	Water	8-1417	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Chloride
MW-7	9/21/88	Water	8-1418	Metals, Explosives, VOA, Nitrate, TOX, Chloride
Travel Blank	9/21/88	Water	8-1419	VOA
109	9/20/88	Water	8-1420	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Metals
123	9/21/88	Water	8-1421	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Chloride
124	9/21/88	Water	8-1422	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Explosives

003065

PART A

<u>Customer Sample #</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>SWD Lab #</u>	<u>Assigned Tests</u>
125	9/20/88	Water	8-1423	Metals, Explosives, VOA, Nitrate, TOX, Chloride
Travel Blank	9/20/88	Water	8-1424	VOA
129	9/21/88	Water	8-1425	Metals, Explosives, VOA, Nitrate, TOX, Chloride
MW-9	9/22/88	Water	8-1426	Metals, Explosives, VOA, Nitrate, TOX, Chloride
Equip. Blank	9/22/88	Water	8-1427	Metals
MW-10	9/22/88	Water	8-1428	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: VOA
C-2	9/25/88	Water	8-1459	Metals, Explosives, VOA, Nitrate, TOX, Chloride
Travel Blank	9/25/88	Water	8-1460	Metals
C-3	9/25/88	Water	8-1461	Metals, Explosives, VOA, Nitrate, TOX, Chloride
Equip. Blank	9/25/88	Water	8-1462	VOA
C-4	9/26/88	Water	8-1463	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: VOA
C-5	9/26/88	Water	8-1464	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: TOX

PART A

<u>Customer Sample #</u>	<u>Date Sampled</u>	<u>Matrix</u>	<u>SWD Lab #</u>	<u>Assigned Tests</u>
MW-11	9/26/88	Water	8-1465	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: TOX
MW-13	9/26/88	Water	8-1466	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Nitrate
120	9/27/88	Water	8-1479	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Nitrate
MW-8	9/27/88	Water	8-1480	Metals, Explosives, VOA, Nitrate, TOX, Chloride
Equip. Blank	9/27/88	Water	8-1481	Metals
MW-14	9/27/88	Water	8-1482	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Chloride
MW-12	9/28/88	Water	8-1483	Metals, Explosives, VOA, Nitrate, TOX, Chloride Duplicate: Metals

003067

PART B

CHAIN-OF-CUSTODY INFORMATION

003068

7-528
7-529

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION LONG HORN
LOVE STAR AAP
MONITORING WELLS
SITE BURNING GROUND #3

DATE 28 AUG. '87
BORING NO. MW-2

NUMBER OF CONTAINERS IN SHIPMENT 4

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jackie L. Stokes

[Signature]

28 AUG. '87

7:15

003069

~~~~~  
: SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS :  
: 4815 CASS STREET :  
: DALLAS, TEXAS 75235-8011 :  
: (214) 767-2411 :  
: REQUEST FOR ANALYTICAL SERVICES :  
: ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN ARMY AMMUNITION PLANT

FEATURE: INVESTIGATION OF BURNING GROUNDS

SWD REPORT NO.:

REQUIRED COMPLETION DATE: 1 OCTOBER 87  
-----DATE SAMPLES SENT: 31 AUGUST 87  
~~~~~

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

BORING NO.	SWD NO.	DEPTH	DATE SAMPLED
MW-2 CH-1	7- 528	2.0'	27 AUGUST 87
MW-2 CH-2	7- 529	10.0'	27 AUGUST 87

ANALYZE 2 SOIL SAMPLES FOR VOLATILES BY METHOD 8240. REPORT SHOULD INCLUDE QC SUMMARY.

ANALYZE 2 SOIL SAMPLES FOR EXPLOSIVES TNT, 2,4-DNT, 2,6-DNT, RDX, AND TETRYL BY HPLC.

RETURN THIS FORM SIGNED AND DATED.

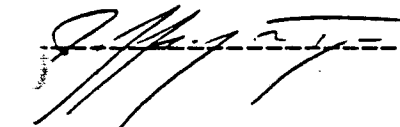
RETURN COOLER TO SWD LAB.

RELINQUISHED BY

RECEIVED BY

DATE

TIME

DHL31 AUG 871400
~~~~~

003070 7-530  
7-531

CHAIN OF CUSTODY  
-----

FORT WORTH DISTRICT

LOCATION Longhorn AAP

DATE 4 Sept '87

SITE MONITORING WELLS

BORING NO. MW-1

NUMBER OF CONTAINERS IN SHIPMENT 4

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jackie L. Hester  
-----  
-----  
-----

[Signature]  
-----  
-----  
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4 Sept '87 1400  
-----  
-----  
-----

~~~~~  
: SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS :
: 4815 CASS STREET :
: DALLAS, TEXAS 75235-8011 :
: (214) 767-2411 :
: REQUEST FOR ANALYTICAL SERVICES :
: ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN ARSENAL

FEATURE: GROUND WATER INVESTIGATION

SWD REPORT NO.:

REQUIRED COMPLETION DATE: 09 OCT 87

DATE SAMPLES SENT: 08 SEPT 87

~~~~~  
TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| BORING NO. | SWD NO. | DEPTH      | DATE SAMPLED |
|------------|---------|------------|--------------|
| MW-1       | 7- 530  | CH-1 2.0'  | 3 SEPT 87    |
| MW-1       | 7- 531  | CH-2 10.0' | 3 SEPT 87    |

ANALYZE 2 SOIL SAMPLES FOR VOLATILE ORGANICS BY METHOD 8240.  
REPORT SHOULD INCLUDE QC SUMMARY.

ANALYZE 2 SOIL SAMPLES FOR EXPLOSIVES TNT, 2,4-DNT, 2,6-DNT, RDX AND  
TETRYL BY HPLC.

RETURN COOLERS TO TINKER AIR FORCE BASE.

| RELINQUISHED BY | RECEIVED BY | DATE | TIME |
|-----------------|-------------|------|------|
|-----------------|-------------|------|------|

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003072

7-532 }
7-533 }
7-534 }
7-535 }
7-536 }
7-537 }

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION Longhorn AAP

DATE 16 SEPT. 87

SITE Monitoring WKUS

BORING NO. MW-3
& MW-4

NUMBER OF CONTAINERS IN SHIPMENT 14

DELIVERED BY

RECEIVED BY

DATE

TIME

Gerard Stuber W. C. Brown
W. C. Brown J. H. J.

16 Sept 87 0820

16 Sept 87 11:45

~~~~~  
 :  
 : SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
 : 4815 CASS STREET  
 : DALLAS, TEXAS 75235-8011  
 : (214) 767-2411  
 :  
 : REQUEST FOR ANALYTICAL SERVICES  
 :  
 : ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA  
 PROJECT: LONGHORN ARMY AMMUNITION PLANT  
 FEATURE: GROUND WATER INVESTIGATION

SWD REPORT NO.:

REQUIRED COMPLETION DATE: 18 OCT 87

DATE SAMPLES SENT: 17 SEPT 87

~~~~~  
 THE FOLLOWING SAMPLES AS INDICATED BELOW:

BORING NO.	SWD NO.	DEPTH
MW-3	7- 532	CH-1 2.0'
MW-3	7- 533	CH-2 10.0'
MW-3	7- 534	CH-3 15.0'
MW-4	7- 535	CH-1 2.0'
MW-4	7- 536	CH-2 10.0'
MW-4	7- 537	CH-3 15.0'
MW-4	7- 536	CH-2 10.0' FIELD REPEAT
MW-4	7- 536	CH-2 10.0' FIELD REPEAT VOA MATRIX SPIKE
MW-4	7- 536	CH-2 10.0' FIELD REPEAT EXP MATRIX SPIKE

ANALYZE 7 SOIL SAMPLES FOR VOLATILE ORGANICS BY METHOD 8240.
 REPORT SHOULD INCLUDE QC SUMMARY.

ANALYZE 7 SOIL SAMPLES FOR EXPLOSIVES TNT, 2,4-DNT, 2,6-DNT, RDX AND
 TETRYL BY HPLC.

ANALYZE LAB MATRIX SPIKES FOR VOAs AND EXPLOSIVES ON 7-536 FIELD REPEAT.
 REPORT ORIGINAL QUANTITIES FOUND, SPIKE AMOUNT AND PERCENT RECOVERY.

RETURN COOLERS TO TINKER AIR FORCE BASE.

INQUIRED BY	RECEIVED BY	DATE	TIME
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003074 7-610  
7-611  
7-612  
7-613  
-614  
-615  
MW

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION Leitchford AAP, MARSHALL, TX DATE 25 SEPT. 87

SITE MONITORING WELLS

BORING NO. MW-5  
& MW-6

NUMBER OF CONTAINERS IN SHIPMENT 12

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jackie R. Stokes  
Thom Smith

Thom Smith  
R. F. Adamson

25 SEPT. 87 0830 HRS

25 SEPT. 87 1230 HRS

003075

~~~~~  
 :
 : SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
 : 4815 CASS STREET
 : DALLAS, TEXAS 75235-8011
 : (214) 767-2411
 :
 : REQUEST FOR ANALYTICAL SERVICES
 :
 ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA  
 PROJECT: LONGHORN ARMY AMMUN. ARSENAL  
 FEATURE: GROUND WATER INVESTIGATION  
 SWD REPORT NO.:

REQUIRED COMPLETION DATE: 26 OCT 87  
 -----

DATE SAMPLES SENT: 25 SEPT 87  
 ~~~~~

ST THE FOLLOWING SAMPLES AS INDICATED BELOW:

BORING NO.	SWD NO.	DEPTH	DATE SAMPLED
CH-1	7- 610	2.0'	21 SEPT 87
CH-2	7- 611	10.0'	21 SEPT 87
CH-3	7- 612	17.0'	21 SEPT 87
CH-1	7- 613	2.0'	21 SEPT 87
CH-2	7- 614	10.0'	21 SEPT 87
CH-3	7- 615	18.0'	21 SEPT 87

ANALYZE 6 SOIL SAMPLES FOR VOA EPA METHOD 8240; EXPLOSIVES.

RETURN COOLER TO SOUTHWEST DIVISION LAB, DALLAS.

RELINQUISHED BY RECEIVED BY DATE TIME

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003076

S-444-451

## CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION LONGHORN AAP. MARSHALL, TX. DATE 22 MAR 88  
SITE GROUND-WATER QUALITY  
ASSESSMENT. (BG#3) BORING NO. 8A-904  
8A-907  
8A-908  
8A-906

NUMBER OF CONTAINERS IN SHIPMENT 16

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jack Stokor  
G.L. Brewer

G.L. Brewer  
J. H. Fry

22 MAR 88 072022 MAR 88 1150

003077

~~~~~  
 :
 : SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS :
 : 4815 CASS STREET :
 : DALLAS, TEXAS 75235-8011 :
 : (214) 905-9130 :
 :
 : REQUEST FOR ANALYTICAL SERVICES :
 :
 : ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN ARMY AMMUNITION PLANT

REQUIRED COMPLETION DATE: 24 APRIL 88

DATE SAMPLES SENT: 23 MARCH 88

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 TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD NO.  | SWD NO. | DEPTH | SAMPLED     |                 |
|------------|---------|-------|-------------|-----------------|
| SA-906     | 8- 444  | 4.0'  | 21 MARCH 88 | VOA, EXPLOSIVES |
| SA-906     | 8- 445  | 8.0'  | 18 MARCH 88 | VOA, EXPLOSIVES |
| SA-907     | 8- 446  | 4.0'  | 18 MARCH 88 | VOA, EXPLOSIVES |
| SA-907     | 8- 447  | 8.0'  | 18 MARCH 88 | VOA, EXPLOSIVES |
| SA-908     | 8- 448  | 4.0'  | 18 MARCH 88 | VOA, EXPLOSIVES |
| SA-908     | 8- 449  | 8.0'  | 21 MARCH 88 | VOA, EXPLOSIVES |
| SA-907 DUP | 8- 450  | 4.0'  | 18 MARCH 88 | VOA, EXPLOSIVES |
| SA-907 DUP | 8- 451  | 8.0'  | 18 MARCH 88 | VOA, EXPLOSIVES |

8 SOIL SAMPLES FOR VOLATILE ORGANICS BY 8240.

8 SOIL SAMPLES FOR EXPLOSIVES TNT, 2,4-DNT, 2,6-DNT, HMX, TETRYL, RDX.

RETURN COOLERS TO TINKER AIR FORCE BASE.

RELINQUISHED BY

RECEIVED BY

DATE

TIME

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003078

Each well  
 Jan 1 # 1A 4.0'  
 Jan 2 # 2A 8.0'

Q-462-900  
 Q-463  
 464-901  
 465

CHAIN OF CUSTODY

466-903

FORT WORTH DISTRICT

467  
 466-905

LOCATION

AAP, MARSHALL, TX.

DATE

25 MAR '88

SITE

GROUND-WATER  
 QUALITY ASSESSMENT

BORING NO.

BA-905

BA-903

BA-900

BA-901

NUMBER OF CONTAINERS IN SHIPMENT 16

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jack Stokes

G L Brecken

25 MAR 88

0720

G L Brecken

J. J. J. J.

25 MAR 88

1200

003079

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
4815 CASS STREET  
DALLAS, TEXAS 75235-8011  
(214) 905-9130

## REQUEST FOR ANALYTICAL SERVICES

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN AAF

REQUIRED COMPLETION DATE: 26 APRIL 88

DATE SAMPLES SENT: 25 MARCH 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD NO. | SWD NO. | DEPTH | DATE SAMPLED |
|-----------|---------|-------|--------------|
| 8A-900    | 8- 462  | 4'    | 24 MARCH 88  |
| 8A-900    | 8- 463  | 8'    | 24 MARCH 88  |
| 8A-901    | 8- 464  | 4'    | 24 MARCH 88  |
| 8A-901    | 8- 465  | 8'    | 24 MARCH 88  |
| 8A-903    | 8- 466  | 4'    | 24 MARCH 88  |
| 8A-903    | 8- 467  | 8'    | 24 MARCH 88  |
| 8A-903    | 8- 468  | 4'    | 24 MARCH 88  |
| 8A-905    | 8- 469  | 8'    | 24 MARCH 88  |

ANALYZE 8 SOIL SAMPLES FOR VOLATILE ORGANICS BY EPA METHOD 8240; AND  
EXPLOSIVES TNT, RDX, TETRYL, HMX, 2,4-DNT, 2,6-DNT.

RETURN COOLERS TO TINKER AIR FORCE BASE.

RELINQUISHED BY

RECEIVED BY

DATE

TIME

003080

1 1/2 1A

8-479 1 1/2 1A GA-902 14' 2JAR

8-480 2 1/2 2A GA-902 18' 2JAR

8-481 1 1/2 1A GA-914 4.0' 2JAR

CHAIN OF CUSTODY

~~8-482~~ 2 1/2 2A GA-914 8.0' 2JAR

FORT WORTH DISTRICT

LOCATION LONGHORN AAP  
GROUND WATER  
SITE QUALITY ASSESSMENT

DATE

30 MAR 88

BORING NO.

GA-902 14'  
GA-914

NUMBER OF CONTAINERS IN SHIPMENT

8

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jack L. Stah Gray with

30 MAR 88 0730

Gray with

Mike Stewart

30 MARCH 1010

003081

~~~~~  
: SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS :
: 4815 CASS STREET :
: DALLAS, TEXAS 75235-3011 :
: (214) 905-9130 :
: REQUEST FOR ANALYTICAL SERVICES :
: ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN AAP

REQUIRED COMPLETION DATE: 1 MAY 88

DATE SAMPLES SENT: 30 MARCH 88

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TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD NO. | SWD NO. | DEPTH | DATE SAMPLED |
|-----------|---------|-------|--------------|
| BA-902    | B- 479  | 14.0' | 30 MARCH 88  |
| BA-902    | B- 480  | 18.0' | 30 MARCH 88  |
| BA-914    | B- 481  | 4.0'  | 30 MARCH 88  |
| BA-914    | B- 482  | 6.0'  | 30 MARCH 88  |

ANALYZE 4 SOIL SAMPLES FOR VOLATILE ORGANICS BY EPA METHOD 8240; AND  
EXPLOSIVES TNT, RDX, TETRYL, HMX, 2,4-DNT, 2,6-DNT.

RETURN COOLERS TO TINKER AIR FORCE BASE.

RELINQUISHED BY

RECEIVED BY

DATE

TIME

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Refrigerator #2 top shelf 003082  
8-459 to 496

CHAIN OF CUSTODY

F. B. I. NORTH DISTRICT

LOCATION LONGHORN AAF  
MARSHALL, TK.  
SITE GROUND-WATER  
QUALITY ASSESSMENT

DATE 1 APRIL 88  
BORING NO. EA-909 ✓  
EA-913 ✓  
EA-912 ✓  
EA-911 ✓

NUMBER OF CONTAINERS IN SHIPMENT 16 ✓

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Joseph R. [Signature] Jerry O. Degett  
Jerry Degett R. F. Adams

1 Apr 88 0956  
1 April 88 14:30

003083

~~~~~  
 : SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS :
 : 4815 CASS STREET :
 : DALLAS, TEXAS 75235-8011 :
 : (214) 905-9130 :
 : :
 : REQUEST FOR ANALYTICAL SERVICES :
 : :
 ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN AAF

REQUIRED COMPLETION DATE: 05 MAY 88

DATE SAMPLES SENT: 04 APRIL 88

~~~~~  
 TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD NO.	SWD NO.	DEPTH	DATE SAMPLED
BA-F08	B- 488	4.0'	1 APRIL 88
BA-F08	B- 490	5.0'	1 APRIL 88
BA-F11	B- 491	4.0'	1 APRIL 88
BA-F11	B- 492	5.0'	1 APRIL 88
BA-F12	B- 493	4.0'	1 APRIL 88
BA-F12	B- 494	5.0'	1 APRIL 88
BA-F13	B- 495	4.0'	1 APRIL 88
BA-F13	B- 496	5.0'	1 APRIL 88

ANALYZE 8 SOIL SAMPLES FOR VOLATILE ORGANICS BY EPA METHOD 8240; AND
 EXPLOSIVES TNT, RDX, TETRYL, HMX, 2,4-DNT, 2,6-DNT.

RETURN COOLERS TO TINKER AIR FORCE BASE.

RELINQUISHED BY

RECEIVED BY

DATE

TIME

003034

8-500
8-501CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION LONGHORN AAP.
SITE GROUND WATER
QUALITY ASSESSMENTDATE 6 APR 88
BORING NO. BA-898NUMBER OF CONTAINERS IN SHIPMENT 4 ✓

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jack R. [Signature]
[Signature][Signature]
Mike Stewart6 APR 8808106 APR 881045

003085

~~~~~  
: SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS :  
: 4815 CASS STREET :  
: DALLAS, TEXAS 75235-8011 :  
: (214) 905-9130 :  
: :  
: REQUEST FOR ANALYTICAL SERVICES :  
: ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN AAP

REQUIRED COMPLETION DATE: 7 MAY 88  
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DATE SAMPLES SENT: 6 APRIL 88

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TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD NO.	SWD NO.	DEPTH	DATE SAMPLED
EA-598	B- 500	4'	6 APRIL 88
EA-598	B- 501	8'	6 APRIL 88

ANALYZE 2 SOIL SAMPLES FOR VOLATILE ORGANICS BY EPA METHOD 8240; AND
EXPLOSIVES TNT, RDX, TETRYL, HMX, 2,4-DNT, 2,6-DNT.

RETURN COOLER SOUTHWESTERN DIVISION LAB, DALLAS.

RELINQUISHED BY RECEIVED BY DATE TIME

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~~~~~

003086

~~~~~  
: SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS :  
: 4815 CASS STREET :  
: DALLAS, TEXAS 75235-8011 :  
: (214) 905-9130 :  
: :  
: REQUEST FOR ANALYTICAL SERVICES :  
: :  
~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN AAP

REQUIRED COMPLETION DATE: 22 MAY 88

DATE SAMPLES SENT: 21 APRIL 88

~~~~~  
TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD NO. | BWD NO. | DEPTH    | DATE SAMPLED |
|-----------|---------|----------|--------------|
| 3A-R12    | B-521   | 0.0-1.0' | 31 MARCH 88  |
| 3A-R12    | B-522   | 1.0-2.0' | 31 MARCH 88  |

ANALYZE 2 SOIL SAMPLES FOR EXPLOSIVES TNT, RDX, TETRYL, HMX, 2,4-DNT, 2,6-DNT.

RETURN COOLER TO TINKER AIR FORCE BASE.

RELINQUISHED BY

RECEIVED BY

DATE

TIME

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003087

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION LONGHORN AAP  
GROUND-WATER  
SITE QUALITY ASSESSMENT

DATE 13 MAY '88  
8A-8997  
BORING NO. 8A-8967  
8A-8977  
8A-8107  
8A-9157

NUMBER OF CONTAINERS IN SHIPMENT 20

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jarvis L. Stokes

[Signature]

13 MAY '88

1400

003088

~~~~~  
 :
 : SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS :
 : 4815 CASS STREET :
 : DALLAS, TEXAS 75235-8011 :
 : (214) 905-9130 :
 :
 : REQUEST FOR ANALYTICAL SERVICES :
 :
 ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: ~~TINKER AFB~~ Longhorn AAP

REQUIRED COMPLETION DATE: 17 JUNE 88  
 -----

DATE SAMPLES SENT: 16 MAY 88

~~~~~  
 TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD NO.	BWD NO.	DEPTH	DATE SAMPLED
BA-896	B- 569	4'	11 MAY 88
BA-896	B- 570	8'	11 MAY 88
BA-897	B- 571	4'	11 MAY 88
BA-897	B- 572	8'	11 MAY 88
BA-898	B- 573	4'	11 MAY 88
BA-898	B- 574	8'	11 MAY 88
BA-910	B- 575	4'	11 MAY 88
BA-910	B- 576	8'	11 MAY 88
BA-912	B- 577	4'	11 MAY 88
BA-912	B- 578	8'	11 MAY 88

1. SAMPLES FOR VOLATILE ORGANICS BY GC/MS. PERFORM MS/MS ON SAMPLE OF YOUR CHOOSING. TOTAL 12 ANALYSES.

10 SAMPLES FOR EXPLOSIVES TNT, RDX, PETRYL, HMX, 2,4-DNT, 2,6-DNT.

RETURN COOLER TO TINKER AIR FORCE BASE

RELINQUISHED BY

RECEIVED BY

DATE

TIME

sub
8-763
8-764

023089
8-764

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION Lodestone AFB

DATE 1 July '88

SITE GROUND WATER WELLS

BORING NO. MW-7

NUMBER OF CONTAINERS IN SHIPMENT 4 jars

RELINQUISHED BY	RECEIVED BY	DATE	TIME
<u>Stephen Lacy</u>	<u>[Signature]</u>	<u>1 July 1988</u>	<u>10:20</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

003090

~~~~~  
: SOUTHWESTERN DIVISION LABORATORY. CORPS OF ENGINEERS :  
: 4815 CASS STREET :  
: DALLAS, TEXAS 75235-8011 :  
: (214) 905-9130 :  
: ~~~~~

## REQUEST FOR ANALYTICAL SERVICES

LABORATORY: SOUTHWEST

PROJECT: LONGHORN AAP

DATE RESULTS REQUIRED: 02 AUG 88

DATE SAMPLES SENT: 1 JULY 1988

~~~~~  
TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD NO.	BWD #	DATE SAMPLED	ANALYSES
C-1A, C-1	B- 763	29 JUNE 1988	VOLATILES, EXPLOSIVES
C-2A, C-2	B- 764	29 JUNE 1988	VOLATILES, EXPLOSIVES

TWO SOIL SAMPLES FOR VOLATILE ORGANICS BY EPA METHOD 8240
TWO SOIL SAMPLES FOR EXPLOSIVES

RETURN COOLER TO TINKER AFB

RELINQUISHED BY	RECEIVED BY	DATE	TIME
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SLB

8-838

8-839

003091

8-838
-839

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION LONGHORN AAP
MARSHALL, TX.

DATE 8 July 88

SITE GROUND WATER
QUALITY ASSESSMENT

BORING NO. MW-9

NUMBER OF CONTAINERS IN SHIPMENT 4

Explosives, VOA, As, Ba Cd, Cr, Hg, Ni, Se, Zn, Pb, 17g

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jack R. [Signature]

[Signature]

8 July 88

1400 HRS.

003092

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASS STREET
DALLAS, TEXAS 75235-9011
(214) 905-9130

REQUEST FOR ANALYTICAL SERVICES

LABORATORY: SOUTHWEST LABORATORIES

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 12 AUG 88

DATE SAMPLES SENT: 11 JULY 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD NO.	DEPTH, FT.	SWD NO.	DATE SAMPLED
C-1, C-1A	0.01	B- 333	7 JULY 1988
C-2, C-2A	10.01	B- 334	7 JULY 1988

THE SOIL SAMPLES FOR VOLATILE ORGANICS BY EPA METHOD 8140
THE SOIL SAMPLES FOR EXPLOSIVES

RETURN COOLERS TO SOUTHWEST DIVISION LABORATORY

RELINQUISHED BY	RECEIVED BY	DATE	TIME
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48
8-B63
8-B64

003093
8-863
-864

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION LONGHORN AAP
GROUND - WATER
SITE MONITORING WELLS

DATE 15 JULY '88
BORING NO. MW-8

NUMBER OF CONTAINERS IN SHIPMENT 4

No Parameters

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jack R. Stebbins Jerry O. Dugate
Jerry O. Dugate [Signature]

15 JULY 0915
15 JULY 12130

003094

~~~~~  
SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
4815 CASS STREET  
DALLAS, TEXAS 75235-8011  
(214) 905-9130  
~~~~~

REQUEST FOR ANALYTICAL SERVICES

LABORATORY: SOUTHWEST LABS

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 15 AUG 88

DATE SAMPLES SENT: 15 JULY 88

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TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD NO.  | SWD NO. | DATE SAMPLED | ANALYSES                      |
|------------|---------|--------------|-------------------------------|
| MW-8/2.0'  | 8- 863  | 13 JULY 88   | VOLATILE ORGANICS, EXPLOSIVES |
| MW-8/10.0' | 8- 864  | 13 JULY 88   | VOLATILE ORGANICS, EXPLOSIVES |

ANALYZE TWO SOIL SAMPLES FOR VOLATILE ORGANICS EPA METHOD 8240  
ANALYZE TWO SOIL SAMPLES FOR EXPLOSIVES

RETURN COOLERS TO TINKER AFB

| RELINQUISHED BY | RECEIVED BY | DATE  | TIME  |
|-----------------|-------------|-------|-------|
| -----           | -----       | ----- | ----- |
| -----           | -----       | ----- | ----- |

MW-10 2.0' → 8-885  
MW-10 10.0' → 8-885  
MW-11 2.0' → 8-886  
MW-11 10.0' → 8-887

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION Leakhead AAP  
MARSHALL, TX.  
SITE Monitoring Wells  
BURNING GROUND #3

DATE 22 JULY 88  
MW-10  
BORING NO. MW-11

NUMBER OF CONTAINERS IN SHIPMENT 8

RELINQUISHED BY

RECEIVED BY

DATE

TIME

|                        |                        |                   |                  |
|------------------------|------------------------|-------------------|------------------|
| <u>Jack Stokes</u>     | <u>Jerry O. Degate</u> | <u>21 JULY 88</u> | <u>1500 HRS.</u> |
| <u>Jerry O. Degate</u> | <u>Ken Stokes</u>      | <u>22 JULY 88</u> | <u>1200 HRS.</u> |
| _____                  | _____                  | _____             | _____            |
| _____                  | _____                  | _____             | _____            |

003096

~~~~~  
SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASS STREET
DALLAS, TEXAS 75235-2011
(214) 905-9130
~~~~~

## REQUEST FOR ANALYTICAL SERVICES

LABORATORY: SOUTHWEST LABS

PROJECT: LONGHORN ARMY AMMUNITION PLANT

DATE RESULTS REQUIRED: 26 AUGUST 1988

DATE SAMPLES SENT: 25 JULY 1988

~~~~~  
TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD NO.	SWD NO.	DATE SAMPLED
MW-10 2.0'	8- 884	21 JULY 88
MW-10 10.0'	8- 885	21 JULY 88
MW-11 2.0'	8- 886	21 JULY 88
MW-11 10.0'	8- 887	21 JULY 88

FOUR (4) SOIL SAMPLES FOR VOLATILE ORGANICS BY 8240.

FOUR (4) SOIL SAMPLES FOR EXPLOSIVES TNT, RDX, HMX, 2,4-DNT, 2,6-DNT.

RETURN TINKER AIR FORCE BASE.

RELINQUISHED BY

RECEIVED BY

DATE

TIME

003097

8-912
8-913

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION Longhorn AAP
MARSHALL, TX.
SITE Monitor Wells

DATE 28 July 88
BORING NO. MW-12

NUMBER OF CONTAINERS IN SHIPMENT 4

No Parameters listed

RELINQUISHED BY

RECEIVED BY

DATE

TIME

<u>Jack Stokes</u>	<u>Gerry Olegato</u>	<u>28 July 88</u>	<u>1530</u>
<u>Gerry Olegato</u>	<u>[Signature]</u>	<u>29 July 88</u>	<u>1050</u>
_____	_____	_____	_____
_____	_____	_____	_____

003098

~~~~~  
: SOUTHWESTERN DIVISION LABORATORY. CORPS OF ENGINEERS :  
: 4815 CASS STREET :  
: DALLAS. TEXAS 75235-8011 :  
: (214) 905-9130 :  
: REQUEST FOR ANALYTICAL SERVICES :  
: ~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN ARMY AMMUNITION PLANT

DATE RESULTS REQUIRED: 30 AUG 88

DATE SAMPLES SENT: 29 JULY 1988

~~~~~  
TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD NO.	SWD NO.	DATE SAMPLED	
C-1	8- 912	26 JULY 88	VOA. EXPLOSIVES
C-2	8- 913	26 JULY 88	VOA. EXPLOSIVES

1. TWO SOIL SAMPLES FOR VOLATILE ORGANICS BY 8240.
2. TWO SOIL SAMPLES FOR EXPLOSIVES TNT, 2,4-DNT, 2,6-DNT, RDX, HMX.

RETURN COOLERS TO TINKER AIR FORCE BASE

RELINQUISHED BY	RECEIVED BY	DATE	TIME
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8-100603099
8-1005

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION LONGHORN APP
MARSHALL, TX.
SITE MONITORING WELLS

DATE 5 AUG 88
BORING NO. MW-12

NUMBER OF CONTAINERS IN SHIPMENT 4

RELINQUISHED BY

RECEIVED BY

DATE

TIME

James R. [Signature]

[Signature]

5 AUG 88

1030

003100

~~~~~  
SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
4815 CASS STREET  
DALLAS, TEXAS 75235-8011  
(214) 905-9130  
~~~~~

REQUEST FOR ANALYSES

LABORATORY: SOUTHWEST LABS

PROJECT: LONGHORN ARMY AMMUNITION PLANT

DATE RESULTS REQUIRED: 11 SEPT 88

DATE SAMPLES SENT: 10 AUGUST 88

~~~~~  
TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID |      | SWD NO. | DATE SAMPLED |                 |
|----------|------|---------|--------------|-----------------|
| MW-14    | 2.0' | 8- 1004 | 2 AUGUST 88  | VOA, EXPLOSIVES |
| MW-14    | 10'  | 8- 1005 | 2 AUGUST 88  | VOA, EXPLOSIVES |

1. TWO SOIL SAMPLES FOR VOLATILE ORGANICS BY 8240.
2. TWO SOIL SAMPLES FOR EXPLOSIVES.

RELINQUISHED BY

RECEIVED BY

DATE

TIME

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8-1206 → 8A-926 (4')  
8-1207 → 8A-926 (10')  
8-1208 → 8A-927 (4')  
8-1209 → 8A-928 (10')  
8-1210 → 8A-928 (4')  
8-1211 → 8A-928 (10')  
8-1212 → 8A-929 (4')  
8-1213 → 8A-929 (10')

8-1214 → 8A-930 (4')  
8-1215 → 8A-930 (10')  
8-1216 → 8A-931 (4')  
8-1217 → 8A-931 (10')  
8-1218 → 8A-932 (4')  
8-1219 → 8A-932 (10')  
8-1220 → 8A-933 (4')

8-1221 → 8A-933 (10')  
8-1222 → 8A-934 (4')  
8-1223 → 8A-934 (10')  
8-1224 → 8A-935 (4')  
8-1225 → 8A-935 (10')  
8-1226 → 8A-936 (4')  
8-1227 → 8A-936 (10')  
8-1228 → 8A-937 (4')  
8-1229 → 8A-937 (10')  
8-1230 → 8A-938 (4')  
8-1231 → 8A-938 (10')

003101

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LONGHORN AAF  
LOCATION MARSHALL TX.

DATE 19 AUG '88

SITE GROUND WATER QUALITY  
ASSESSMENT

BORING NO.

| 8A-926 | 8A-932 | 8A-938 | 8A- |
|--------|--------|--------|-----|
| 927    | 933    | 939    |     |
| 928    | 934    | 940    |     |
| 929    | 935    | 941    |     |
| 930    | 936    | 942    |     |
| 931    | 937    | 943    |     |

NUMBER OF CONTAINERS IN SHIPMENT 84

8-1232 → 8A-939 (4')  
8-1233 → 8A-939 (10')  
8-1234 → 8A-940 (4')  
8-1235 → 8A-940 (10')  
8-1236 → 8A-941 (4')  
8-1237 → 8A-941 (10')

8-1238 → 8A-942 (4')  
8-1239 → 8A-942 (10')  
8-1240 → 8A-943 (4')  
8-1241 → 8A-943 (10')  
8-1242 → 8A-944 (4')  
8-1243 → 8A-944 (10')  
8-1244 → 8A-945 (4')

RELINQUISHED BY

RECEIVED BY

DATE

TIME

*Jerry O. Deprat*  
*Jerry O. Deprat*

19 AUG '88

11:30

19 AUG '88

15:15

8-1245 → 8A-945 (10')  
8-1246 → 8A-945 (4')  
8-1247 → 8A-946 (10')

~~8-1248 → 8A-947 (4')~~  
~~8-1249 → 8A-947 (10')~~  
~~8-1250 → 8A-948 (4')~~

~~~~~  
 :
 : SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
 : 4815 CASS STREET
 : DALLAS, TEXAS 75235-8011
 : (214) 905-9100
 :
 : REQUEST FOR ANALYSES
 :
 ~~~~~

LABORATORY: SOUTHWEST LABS

PROJECT: LONGHORN ARMY AMMUNITION PLANT

DATE RESULTS REQUIRED: 22 SEPT 88

DATE SAMPLES SENT: 22 AUG 88

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 TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:
 ~~~~~

| FIELD ID    | SWD NO. | DATE SAMPLED |
|-------------|---------|--------------|
| 8A-926(4')  | 8- 1206 | 18 AUGUST 88 |
| 8A-926(10') | 8- 1207 | 18 AUGUST 88 |
| 8A-927(4')  | 8- 1208 | 18 AUGUST 88 |
| 8A-927(10') | 8- 1209 | 18 AUGUST 88 |
| 8A-928(4')  | 8- 1210 | 18 AUGUST 88 |
| 8A-928(10') | 8- 1211 | 18 AUGUST 88 |
| 8A-929(4')  | 8- 1212 | 18 AUGUST 88 |
| 8A-929(10') | 8- 1213 | 18 AUGUST 88 |
| 8A-930(4')  | 8- 1214 | 18 AUGUST 88 |
| 8A-930(10') | 8- 1215 | 18 AUGUST 88 |
| 8A-931(4')  | 8- 1216 | 18 AUGUST 88 |
| 8A-931(10') | 8- 1217 | 18 AUGUST 88 |
| 8A-932(4')  | 8- 1218 | 18 AUGUST 88 |
| 8A-932(10') | 8- 1219 | 18 AUGUST 88 |
| 8A-933(4')  | 8- 1220 | 18 AUGUST 88 |
| 8A-933(10') | 8- 1221 | 18 AUGUST 88 |
| 8A-934(4')  | 8- 1222 | 18 AUGUST 88 |
| 8A-934(10') | 8- 1223 | 18 AUGUST 88 |
| 8A-935(4')  | 8- 1224 | 18 AUGUST 88 |
| 8A-935(10') | 8- 1225 | 18 AUGUST 88 |
| 8A-936(4')  | 8- 1226 | 18 AUGUST 88 |
| 8A-936(10') | 8- 1227 | 18 AUGUST 88 |
| 8A-937(4')  | 8- 1228 | 18 AUGUST 88 |
| 8A-937(10') | 8- 1229 | 18 AUGUST 88 |
| 8A-938(4')  | 8- 1230 | 18 AUGUST 88 |
| 8A-938(10') | 8- 1231 | 18 AUGUST 88 |
| 8A-939(4')  | 8- 1232 | 18 AUGUST 88 |
| 8A-939(10') | 8- 1233 | 18 AUGUST 88 |
| 8A-940(4')  | 8- 1234 | 18 AUGUST 88 |
| 8A-940(10') | 8- 1235 | 18 AUGUST 88 |
| 8A-941(4')  | 8- 1236 | 18 AUGUST 88 |
| 8A-941(10') | 8- 1237 | 18 AUGUST 88 |
| 8A-942(4')  | 8- 1238 | 18 AUGUST 88 |
| 8A-942(10') | 8- 1239 | 18 AUGUST 88 |
| 8A-943(4')  | 8- 1240 | 18 AUGUST 88 |
| 8A-943(10') | 8- 1241 | 18 AUGUST 88 |
| 8A-944(4')  | 8- 1242 | 18 AUGUST 88 |

003103

~~~~~  
: SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
: 4815 CASS STREET
: DALLAS, TEXAS 75235-8011
: (214) 905-9130
:

REQUEST FOR ANALYSES

~~~~~  
LABORATORY: SOUTHWEST LABS

PROJECT: LONGHORN ARMY AMMUNITION PLANT

DATE RESULTS REQUIRED: 22 SEPT 88

DATE SAMPLES SENT: 22 AUG 88

~~~~~  
TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD ID	BWD NO.	DATE SAMPLED
8A-944(10')	8- 1243	18 AUGUST 88
8A-945(4')	8- 1244	18 AUGUST 88
8A-945(10')	8- 1245	18 AUGUST 88
8A-946(4')	8- 1246	18 AUGUST 88
8A-946(10')	8- 1247	18 AUGUST 88

FOURTY TWO SOIL SAMPLES FOR VOLATILE ORGANICS BY 8240. PERFORM MS/MSD
ON TWO SAMPLES OF YOUR CHOOSING. TOTAL FOURTY SIX ANALYSES.

RELINQUISHED BY

RECEIVED BY

DATE

TIME

SLB
8-1299
8-1300

8-1299
8-1300
MW-15
003104

CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION LONGHORN SAP
MARSHALL, TX.
SITE GROUND WATER QUALITY
ASSESSMENT

DATE 31 AUG 88

BORING NO. MW-15

NUMBER OF CONTAINERS IN SHIPMENT 4

What are these to be tested for?
you must start recording this on these
forms. JT

RELINQUISHED BY

RECEIVED BY

DATE

TIME

Jacob L. [Signature] Jerry O. Dequate
Jerry O. Dequate [Signature]

31 AUG 88

0958

31 AUG 88

1415

003105

~~~~~  
:  
:  
: SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
: 4815 CASS STREET  
: DALLAS, TEXAS 75235-8011  
: (214) 905-9130  
:  
:

REQUEST FOR ANALYSES  
~~~~~

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN ARMY AMMUNITION PLANT

DATE RESULTS REQUIRED: 1 OCT 88

DATE SAMPLES SENT: 31 AUG 88

~~~~~  
TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID | DEPTH | SWD NO. | DATE SAMPLED |
|----------|-------|---------|--------------|
| MW-15    | 2'    | 8- 1299 | 31 AUG 88    |
| MW-15    | 10'   | 8- 1300 | 31 AUG 88    |

TWO SOIL SAMPLES FOR:

VOLATILE ORGANICS  
EXPLOSIVES

RETURN COOLER TO SWD LAB

RELINQUISHED BY

RECEIVED BY

DATE

TIME

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## CHAIN OF CUSTODY

FORT WORTH DISTRICT

LOCATION LONGHORN AAP.  
GROUND WATER QUALITY ASSESSMENT  
SITE BURNING GROUND #3

DATE 16 SEPT. 88BORING NO. MW-13

E-1366 JAR 1 & 1A 2.0'  
E-1367 JAR 2 & 2A 16.0'

NUMBER OF CONTAINERS IN SHIPMENT 4

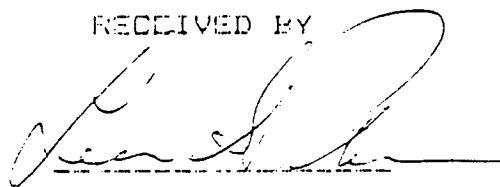
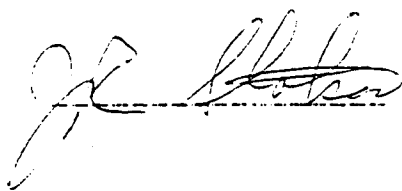
*12/1/88*  
*W.F.*  
*Exp. 1/1/89*

RELINQUISHED BY

RECEIVED BY

DATE

TIME

9/16/881335

003107

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
4815 CASS STREET  
DALLAS, TEXAS 75235-3011  
(214) 905-9130

## REQUEST FOR ANALYSES

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 20 OCT 88

DATE SAMPLES SENT: 19 SEPT 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID  | SWD NO. | DATE SAMPLED | ANALYSES        |
|-----------|---------|--------------|-----------------|
| MW-13(21) | 8- 1366 | 16 SEPT 88   | VDA, EXPLOSIVES |
| MW-13(10) | 8- 1367 | 16 SEPT 88   | VDA, EXPLOSIVES |

*SOIL*  
ANALYZE TWO ~~WATER~~ SAMPLES FOR VOLATILES ORGANICS USING EPA METHOD 8240  
ANALYZE TWO ~~WATER~~ SAMPLES FOR EXPLOSIVES  
*SOIL*

RETURN COOLERS TO TINKER AFB

| RELINQUISHED BY | RECEIVED BY | DATE | TIME |
|-----------------|-------------|------|------|
|-----------------|-------------|------|------|

|       |       |       |       |
|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- |
| ----- | ----- | ----- | ----- |

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONG HOAN Date 9-19-88Site ACTIVE BURNING GROUNDS Well number MW-1

Number of containers in shipment:

Parameters sampled:

|                                                              |          |          |                               |                                     |
|--------------------------------------------------------------|----------|----------|-------------------------------|-------------------------------------|
|                                                              | glass    | plastic  | pH                            | _____                               |
| liter                                                        | <u>4</u> | <u>3</u> | conductivity                  | _____                               |
|                                                              |          |          | TOC                           | _____                               |
| vial                                                         | <u>6</u> | _____    | Hardness as CaCO <sub>3</sub> | _____                               |
|                                                              |          |          | metals, total *               | <input checked="" type="checkbox"/> |
|                                                              |          |          | COD                           | _____                               |
|                                                              |          |          | hexavalent chromium           | _____                               |
|                                                              |          |          | alkalinity                    | _____                               |
|                                                              |          |          | chloride                      | <input checked="" type="checkbox"/> |
|                                                              |          |          | sulfate                       | _____                               |
|                                                              |          |          | TOX                           | <input checked="" type="checkbox"/> |
|                                                              |          |          | nitrate                       | <input checked="" type="checkbox"/> |
| volatile organics                                            |          |          | volatile organics             | <input checked="" type="checkbox"/> |
| -----                                                        |          |          | semi-organics                 | _____                               |
| regular detection limits <input checked="" type="checkbox"/> |          |          | total hydrocarbons            | _____                               |
| 0.5 ppb detection limits _____                               |          |          | BTX                           | _____                               |
|                                                              |          |          | EXPLOSIVES                    | <input checked="" type="checkbox"/> |

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by           | Received by          | Date           | Time        |
|---------------------------|----------------------|----------------|-------------|
| <u>Debra W Fitzgerald</u> | <u>C.R. Kirby</u>    | <u>9/20/88</u> | <u>0730</u> |
| _____                     | <u>For [unclear]</u> | <u>9/20/88</u> | <u>125</u>  |
| _____                     | _____                | _____          | _____       |
| _____                     | _____                | _____          | _____       |

003109

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/19/88Site Active Burning Ground Well number mw-2

Number of containers in shipment:

Parameters sampled:

|       | glass    | plastic    |
|-------|----------|------------|
| liter | <u>6</u> | <u>3</u>   |
| vial  | <u>3</u> | <u>   </u> |

|                               |            |
|-------------------------------|------------|
| pH                            | <u>   </u> |
| conductivity                  | <u>   </u> |
| TOC                           | <u>   </u> |
| Hardness as CaCO <sub>3</sub> | <u>   </u> |
| metals, total *               | <u>✓</u>   |
| COD                           | <u>   </u> |
| hexavalent chromium           | <u>   </u> |
| alkalinity                    | <u>   </u> |
| chloride                      | <u>✓</u>   |
| sulfate                       | <u>   </u> |
| TOX                           | <u>✓</u>   |
| nitrate                       | <u>✓</u>   |
| volatile organics             | <u>✓</u>   |
| semi-organics                 | <u>   </u> |
| total hydrocarbons            | <u>   </u> |
| BTX                           | <u>   </u> |
| EXPLOSIVES                    | <u>✓</u>   |

volatile organics

 -----  
 regular detection limits ✓  
 0.5 ppb detection limits    

 \* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
 Na, Ca, Cu
\*     (all of the above)CUSTODY RECORD  
signature and title

| Relinquished by         | Received by       | Date           | Time        |
|-------------------------|-------------------|----------------|-------------|
| <u>Quinn Fitzgerald</u> | <u>C.L. Kirby</u> | <u>9/20/88</u> | <u>0730</u> |
| <u>   </u>              | <u>   </u>        | <u>   </u>     | <u>   </u>  |
| <u>   </u>              | <u>   </u>        | <u>   </u>     | <u>   </u>  |
| <u>   </u>              | <u>   </u>        | <u>   </u>     | <u>   </u>  |

003110

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN Date 9-19-88Site ACTIVE BURNING GROUNDS Well number MW-6

Number of containers in shipment:

Parameters sampled:

|                                   |          |          |                               |          |
|-----------------------------------|----------|----------|-------------------------------|----------|
|                                   | glass    | plastic  | pH                            | _____    |
| liter                             | <u>6</u> | <u>3</u> | conductivity                  | _____    |
| vial                              | <u>3</u> | _____    | TOC                           | _____    |
|                                   |          |          | Hardness as CaCO <sub>3</sub> | _____    |
|                                   |          |          | metals, total *               | <u>✓</u> |
|                                   |          |          | COD                           | _____    |
|                                   |          |          | hexavalent chromium           | _____    |
|                                   |          |          | alkalinity                    | _____    |
|                                   |          |          | chloride                      | <u>✓</u> |
|                                   |          |          | sulfate                       | _____    |
|                                   |          |          | TOX                           | <u>✓</u> |
|                                   |          |          | nitrate                       | <u>✓</u> |
| volatile organics                 |          |          | volatile organics             | <u>✓</u> |
| -----                             |          |          | semi-organics                 | _____    |
| regular detection limits <u>✓</u> |          |          | total hydrocarbons            | _____    |
| 0.5 ppb detection limits _____    |          |          | BTX                           | _____    |
|                                   |          |          | EXPLOSIVES                    | <u>✓</u> |

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by         | Received by         | Date           | Time        |
|-------------------------|---------------------|----------------|-------------|
| <u>Quinn Fitzgerald</u> | <u>C.L. Kirby</u>   | <u>9/20/88</u> | <u>0730</u> |
| _____                   | <u>Sam Thompson</u> | <u>9/23/88</u> | <u>1155</u> |
| _____                   | _____               | _____          | _____       |
| _____                   | _____               | _____          | _____       |

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

003111

## FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/12/88Site Active Burning Ground Well number MW-15

Number of containers in shipment:

Parameters sampled:

|                                                              |          |          |                               |                                     |
|--------------------------------------------------------------|----------|----------|-------------------------------|-------------------------------------|
|                                                              | glass    | plastic  | pH                            | _____                               |
| liter                                                        | <u>6</u> | <u>3</u> | conductivity                  | _____                               |
|                                                              |          |          | TOC                           | _____                               |
| vial                                                         | <u>3</u> | _____    | Hardness as CaCO <sub>3</sub> | _____                               |
|                                                              |          |          | metals, total *               | <input checked="" type="checkbox"/> |
|                                                              |          |          | COD                           | _____                               |
|                                                              |          |          | hexavalent chromium           | _____                               |
|                                                              |          |          | alkalinity                    | _____                               |
|                                                              |          |          | chloride                      | <input checked="" type="checkbox"/> |
|                                                              |          |          | sulfate                       | _____                               |
|                                                              |          |          | TOX                           | <input checked="" type="checkbox"/> |
|                                                              |          |          | nitrate                       | <input checked="" type="checkbox"/> |
| volatile organics                                            |          |          | volatile organics             | <input checked="" type="checkbox"/> |
| -----                                                        |          |          | semi-organics                 | _____                               |
| regular detection limits <input checked="" type="checkbox"/> |          |          | total hydrocarbons            | _____                               |
| 0.5 ppb detection limits _____                               |          |          | BTX                           | _____                               |
|                                                              |          |          | EXPLOSIVES                    | <input checked="" type="checkbox"/> |

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by          | Received by        | Date           | Time        |
|--------------------------|--------------------|----------------|-------------|
| <u>Deborah Ditzguald</u> | <u>C. L. Kirby</u> | <u>9/20/88</u> | <u>0730</u> |
| _____                    | <u>_____</u>       | <u>9/20/88</u> | <u>143</u>  |
| _____                    | _____              | _____          | _____       |
| _____                    | _____              | _____          | _____       |

003112

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
4815 CASS STREET  
DALLAS, TEXAS 75235-8011  
(214) 905-9130

## REQUEST FOR ANALYSES

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 21 OCT 88

DATE SAMPLES SENT: 21 SEPT 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID | SWD NO. | DATE SAMPLED | ANALYSES             |
|----------|---------|--------------|----------------------|
| MW-1     | 2- 1391 | 19 SEPT 88   | VDA, TOX, EXPLOSIVES |
| MW-2     | 2- 1392 | 19 SEPT 88   | VDA, TOX, EXPLOSIVES |
| MW-6     | 3- 1393 | 19 SEPT 88   | VDA, TOX, EXPLOSIVES |
| MW-15    | 8- 1394 | 19 SEPT 88   | VDA, TOX, EXPLOSIVES |

ANALYZE FOUR WATER SAMPLES FOR VOLATILES ORGANICS USING EPA METHOD 8240  
ANALYZE FOUR WATER SAMPLES FOR TOX  
ANALYZE FOUR WATER SAMPLES FOR EXPLOSIVES

RELINQUISHED BY

RECEIVED BY

DATE

TIME

003113

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
4815 CASS STREET  
DALLAS, TEXAS 75235-8011  
(214) 905-9130

## REQUEST FOR ANALYSES

LABORATORY: CEP

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 21 OCT 88

DATE SAMPLES SENT: 21 SEPT 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID | SWD NO. | DATE SAMPLED | ANALYSES   |
|----------|---------|--------------|------------|
| MW-1     | 8- 1391 | 19 SEPT 88   | VOA        |
| MW-2     | 8- 1392 | 19 SEPT 88   | TOX        |
| MW-6     | 8- 1393 | 19 SEPT 88   | EXPLOSIVES |
| MW-15    | 8- 1394 | 19 SEPT 88   | EXPLOSIVES |

ANALYZE ONE WATER SAMPLES FOR VOLATILES ORGANICS USING EPA METHOD 8240  
ANALYZE ONE WATER SAMPLES FOR TOX  
ANALYZE TWO WATER SAMPLES FOR EXPLOSIVES

RETURN COOLER TO TINKER AFB

RELINQUISHED BY

RECEIVED BY

DATE

TIME

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

E-1415

003114

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/20/88

Site Active Burning Well number mw-3

Number of containers in shipment:

Parameters sampled:

|       |          |            |
|-------|----------|------------|
|       | glass    | plastic    |
| liter | <u>4</u> | <u>4</u>   |
| vial  | <u>3</u> | <u>   </u> |

|                     |            |
|---------------------|------------|
| pH                  | <u>   </u> |
| conductivity        | <u>   </u> |
| TOC                 | <u>   </u> |
| Hardness as CaCO3   | <u>   </u> |
| metals, total *     | <u>✓</u>   |
| COD                 | <u>   </u> |
| hexavalent chromium | <u>   </u> |
| alkalinity          | <u>   </u> |
| chloride            | <u>✓</u>   |
| sulfate             | <u>   </u> |
| TOX                 | <u>✓</u>   |
| nitrate             | <u>✓</u>   |
| volatile organics   | <u>✓</u>   |
| semi-organics       | <u>   </u> |
| total hydrocarbons  | <u>   </u> |
| BTX                 | <u>   </u> |
| EXPLOSIVES          | <u>✓</u>   |

volatile organics

regular detection limits ✓  
0.5 ppb detection limits    

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\*     (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by          | Received by        | Date           | Time        |
|--------------------------|--------------------|----------------|-------------|
| <u>Dennis Fitzgerald</u> | <u>[Signature]</u> | <u>9/22/88</u> | <u>1400</u> |
| <u>   </u>               | <u>   </u>         | <u>   </u>     | <u>   </u>  |
| <u>   </u>               | <u>   </u>         | <u>   </u>     | <u>   </u>  |
| <u>   </u>               | <u>   </u>         | <u>   </u>     | <u>   </u>  |

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

8-1416  
003115

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/20/88

Site Active Burning Ground Well number MW-4

Number of containers in shipment:

Parameters sampled:

|                          |          |          |                               |       |
|--------------------------|----------|----------|-------------------------------|-------|
|                          | glass    | plastic  | pH                            | _____ |
| liter                    | <u>4</u> | <u>4</u> | conductivity                  | _____ |
| vial                     | <u>3</u> | _____    | TOC                           | _____ |
|                          |          |          | Hardness as CaCO <sub>3</sub> | _____ |
|                          |          |          | metals, total *               | ✓     |
|                          |          |          | COD                           | _____ |
|                          |          |          | hexavalent chromium           | _____ |
|                          |          |          | alkalinity                    | _____ |
|                          |          |          | chloride                      | ✓     |
|                          |          |          | sulfate                       | _____ |
|                          |          |          | TOX                           | ✓     |
|                          |          |          | nitrate                       | ✓     |
| volatile organics        |          |          | volatile organics             | ✓     |
| -----                    |          |          | semi-organics                 | _____ |
| regular detection limits |          | ✓        | total hydrocarbons            | _____ |
| 0.5 ppb detection limits |          | _____    | BTX                           | _____ |
|                          |          |          | EXPLOSIVES                    | ✓     |

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by         | Received by        | Date           | Time        |
|-------------------------|--------------------|----------------|-------------|
| <u>Quinn Fitzgerald</u> | <u>[Signature]</u> | <u>9/22/88</u> | <u>9:20</u> |
| _____                   | _____              | _____          | _____       |
| _____                   | _____              | _____          | _____       |
| _____                   | _____              | _____          | _____       |

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

E-1417  
003116

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/20/88

Site Active Burning Ground Well number MW-5

Number of containers in shipment:

Parameters sampled:

|       |          |           |
|-------|----------|-----------|
|       | glass    | plastic   |
| liter | <u>4</u> | <u>4</u>  |
| vial  | <u>3</u> | <u>..</u> |

|                     |                                     |
|---------------------|-------------------------------------|
| pH                  | _____                               |
| conductivity        | _____                               |
| TOC                 | _____                               |
| Hardness as CaCO3   | _____                               |
| metals, total *     | <input checked="" type="checkbox"/> |
| COD                 | _____                               |
| hexavalent chromium | _____                               |
| alkalinity          | _____                               |
| chloride            | <input checked="" type="checkbox"/> |
| sulfate             | _____                               |
| TOX                 | <input checked="" type="checkbox"/> |
| nitrate             | <input checked="" type="checkbox"/> |
| volatile organics   | <input checked="" type="checkbox"/> |
| semi-organics       | _____                               |
| total hydrocarbons  | _____                               |
| BTX                 | _____                               |
| EXPLOSIVES          | <input checked="" type="checkbox"/> |

volatile organics

regular detection limits ☒  
0.5 ppb detection limits \_\_\_\_\_

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by          | Received by        | Date           | Time        |
|--------------------------|--------------------|----------------|-------------|
| <u>Daniel Fitzgerald</u> | <u>[Signature]</u> | <u>9/22/88</u> | <u>1200</u> |
| _____                    | _____              | _____          | _____       |
| _____                    | _____              | _____          | _____       |
| _____                    | _____              | _____          | _____       |

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

8-1418  
003117  
E-1418  
VCA  
BIK

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/21/88

Site Active Burning Ground Well number NW-7

Number of containers in shipment:

Parameters sampled:

|       |          |           |
|-------|----------|-----------|
|       | glass    | plastic   |
| liter | <u>4</u> | <u>3</u>  |
| vial  | <u>6</u> | <u>..</u> |

|                     |                                     |
|---------------------|-------------------------------------|
| pH                  | _____                               |
| conductivity        | _____                               |
| TOC                 | _____                               |
| Hardness as CaCO3   | _____                               |
| metals, total *     | <input checked="" type="checkbox"/> |
| COD                 | _____                               |
| hexavalent chromium | _____                               |
| alkalinity          | _____                               |
| chloride            | <input checked="" type="checkbox"/> |
| sulfate             | <input checked="" type="checkbox"/> |
| TOX                 | <input checked="" type="checkbox"/> |
| nitrate             | <input checked="" type="checkbox"/> |
| volatile organics   | <input checked="" type="checkbox"/> |
| semi-organics       | _____                               |
| total hydrocarbons  | _____                               |
| BTX                 | _____                               |
| EXPLOSIVES          | <input checked="" type="checkbox"/> |

No COC FOR TRACER BIKS  
LAF also traced BIKS

volatile organics

regular detection limits ☒  
0.5 ppb detection limits \_\_\_\_\_

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by           | Received by        | Date           | Time        |
|---------------------------|--------------------|----------------|-------------|
| <u>Deborah Fitzgerald</u> | <u>[Signature]</u> | <u>9/22/88</u> | <u>1200</u> |
| _____                     | _____              | _____          | _____       |
| _____                     | _____              | _____          | _____       |
| _____                     | _____              | _____          | _____       |

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

8-1420  
003118

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/20/88

Site Active Burning Ground Well number 109

Number of containers in shipment:

Parameters sampled:

|       |          |            |
|-------|----------|------------|
|       | glass    | plastic    |
| liter | <u>4</u> | <u>4</u>   |
| vial  | <u>3</u> | <u>   </u> |

|                               |            |
|-------------------------------|------------|
| pH                            | <u>   </u> |
| conductivity                  | <u>   </u> |
| TOC                           | <u>   </u> |
| Hardness as CaCO <sub>3</sub> | <u>   </u> |
| metals, total *               | <u>✓</u>   |
| COD                           | <u>   </u> |
| hexavalent chromium           | <u>   </u> |
| alkalinity                    | <u>   </u> |
| chloride                      | <u>✓</u>   |
| sulfate                       | <u>   </u> |
| TOX                           | <u>✓</u>   |
| nitrate                       | <u>✓</u>   |
| volatile organics             | <u>✓</u>   |
| semi-organics                 | <u>   </u> |
| total hydrocarbons            | <u>   </u> |
| BTX                           | <u>   </u> |
| EXPLOSIVES                    | <u>✓</u>   |

volatile organics

-----  
regular detection limits ✓  
0.5 ppb detection limits    

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\*        (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by          | Received by        | Date           | Time        |
|--------------------------|--------------------|----------------|-------------|
| <u>Debra Chittgerald</u> | <u>[Signature]</u> | <u>9/22/88</u> | <u>1200</u> |
| _____                    | _____              | _____          | _____       |
| _____                    | _____              | _____          | _____       |
| _____                    | _____              | _____          | _____       |

003119

E-1421

GROUND WATER MONITORING WELL  
FIELD DATA FORM

Location Longhorn Date 9/21/88  
 Site Active Burning Ground Type of sample GWQA  
 Well number 123 Csg diameter 2" Csg type PVC  
 Rate of recharge Slow  
 Riser elevation \_\_\_\_\_  
 Depth to water from top of casing 12.7 Time of measurement 1245  
 Depth to water at time of sampling 12.11 Time of sampling 1525  
 Water table \_\_\_\_\_ Measuring device Shpe Indicator 51453  
 pH \* 6-7 Time of measurement 1736  
 Meter type and model pH test strips

Conductivity, unhos/cm 350 uS Time of measurement 1736  
 Meter type and model Cole Parmer 21058 Temperature 22°C  
 Chest # C-22 Strap # — Bus bill —

Notes concerning condition of well, odor, color, and any problems:

Field Values: pH 7.1 Cond. 335 uS Temp 24°C (1525)  
 pH 7.4 Cond. 347 uS Temp 24°C (1655)

Silty during purging & sampling. Cloudy

\* pH meter not working in laboratory. pH paper used instead

Sample collector D Fitzgerald

003120

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
4815 CASS STREET  
DALLAS, TEXAS 75235-8011  
(214) 905-9130

REQUEST FOR ANALYSES

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 29 OCT 88

DATE SAMPLES SENT: 29 SEPT 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID | SWD NO. | DATE SAMPLED | ANALYSES |
|----------|---------|--------------|----------|
| 103      | 8- 1421 | 21 SEPT 88   | CHLORIDE |

ANALYZE ONE WATER SAMPLE FOR CHLORIDE

RETURN COOLERS TO TINKER AIR FORCE BASE

| RELINQUISHED BY | RECEIVED BY | DATE  | TIME  |
|-----------------|-------------|-------|-------|
| -----           | -----       | ----- | ----- |
| -----           | -----       | ----- | ----- |

003121

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/21/88Site Active Burning Ground Well number 124

Number of containers in shipment:

Parameters sampled:

|       | glass    | plastic   |
|-------|----------|-----------|
| liter | <u>6</u> | <u>3</u>  |
| vial  | <u>3</u> | <u>..</u> |

|                               |          |
|-------------------------------|----------|
| pH                            | _____    |
| conductivity                  | _____    |
| TOC                           | _____    |
| Hardness as CaCO <sub>3</sub> | _____    |
| metals, total *               | <u>✓</u> |
| COD                           | _____    |
| hexavalent chromium           | _____    |
| alkalinity                    | _____    |
| chloride                      | <u>✓</u> |
| sulfate                       | _____    |
| TOX                           | <u>✓</u> |
| nitrate                       | <u>✓</u> |
| volatile organics             | <u>✓</u> |
| semi-organics                 | _____    |
| total hydrocarbons            | _____    |
| BTX                           | _____    |
| EXPLOSIVES                    | <u>✓</u> |

volatile organics

regular detection limits ✓

0.5 ppb detection limits \_\_\_\_\_

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by            | Received by        | Date           | Time        |
|----------------------------|--------------------|----------------|-------------|
| <u>Debra A. Fitzgerald</u> | <u>[Signature]</u> | <u>9/22/88</u> | <u>1700</u> |
| _____                      | _____              | _____          | _____       |
| _____                      | _____              | _____          | _____       |
| _____                      | _____              | _____          | _____       |

003122  
E-1423

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

003122  
E-1424 Titled  
B/K

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/20/88

Site Active Burning Ground Well number 125

Number of containers in shipment:

Parameters sampled:

|       |          |             |
|-------|----------|-------------|
|       | glass    | plastic     |
| liter | <u>4</u> | <u>3</u>    |
| vial  | <u>6</u> | <u>    </u> |

|                     |                                     |
|---------------------|-------------------------------------|
| pH                  | _____                               |
| conductivity        | _____                               |
| TOC                 | _____                               |
| Hardness as CaCO3   | _____                               |
| metals, total *     | <input checked="" type="checkbox"/> |
| COD                 | _____                               |
| hexavalent chromium | _____                               |
| alkalinity          | _____                               |
| chloride            | <input checked="" type="checkbox"/> |
| sulfate             | _____                               |
| TOX                 | <input checked="" type="checkbox"/> |
| nitrate             | <input checked="" type="checkbox"/> |
| volatile organics   | _____                               |
| semi-organics       | _____                               |
| total hydrocarbons  | _____                               |
| BTX                 | _____                               |
| KXPLOSIVES          | <input checked="" type="checkbox"/> |

NO COC FOR  
Travel B/KS

LAP Also Travel B/KS

volatile organics

regular detection limits ☒  
0.5 ppb detection limits \_\_\_\_\_

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by           | Received by        | Date           | Time        |
|---------------------------|--------------------|----------------|-------------|
| <u>Deborah Fitzgerald</u> | <u>[Signature]</u> | <u>9/22/88</u> | <u>1200</u> |
| _____                     | _____              | _____          | _____       |
| _____                     | _____              | _____          | _____       |
| _____                     | _____              | _____          | _____       |

003123

8-1475

GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location Longhorn Date 9/21/88Site Active Burning Ground Well number 129

Number of containers in shipment:

Parameters sampled:

|                                   |          |          |                               |          |
|-----------------------------------|----------|----------|-------------------------------|----------|
|                                   | glass    | plastic  | pH                            | _____    |
| liter                             | <u>3</u> | <u>3</u> | conductivity                  | _____    |
|                                   |          |          | TOC                           | _____    |
| vial                              | <u>3</u> | ..       | Hardness as CaCO <sub>3</sub> | _____    |
|                                   |          |          | metals, total *               | <u>✓</u> |
|                                   |          |          | COD                           | _____    |
|                                   |          |          | hexavalent chromium           | _____    |
|                                   |          |          | alkalinity                    | _____    |
|                                   |          |          | chloride                      | <u>✓</u> |
|                                   |          |          | sulfate                       | _____    |
|                                   |          |          | TOX                           | <u>✓</u> |
|                                   |          |          | nitrate                       | <u>✓</u> |
| volatile organics                 |          |          | volatile organics             | <u>✓</u> |
| -----                             |          |          | semi-organics                 | _____    |
| regular detection limits <u>✓</u> |          |          | total hydrocarbons            | _____    |
| 0.5 ppb detection limits _____    |          |          | BTX                           | _____    |
|                                   |          |          | EXPLOSIVES                    | <u>✓</u> |

\* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by           | Received by        | Date           | Time        |
|---------------------------|--------------------|----------------|-------------|
| <u>Debra C Fitzgerald</u> | <u>[Signature]</u> | <u>9/22/88</u> | <u>1200</u> |
| _____                     | _____              | _____          | _____       |
| _____                     | _____              | _____          | _____       |
| _____                     | _____              | _____          | _____       |

003124

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
 4815 CASS STREET  
 DALLAS, TEXAS 75235-8011  
 (214) 905-9130

## REQUEST FOR ANALYSES

LABORATORY: SOUTHWEST LABS

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 23 OCT 88

DATE SAMPLES SENT: 23 SEPT 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID     | SWD NO. | DATE SAMPLED | ANALYSES                       |
|--------------|---------|--------------|--------------------------------|
| MW-3         | 6- 1415 | 22 AUGUST 88 | VOA, TOX, EXPLOSIVES, NITRATE  |
| MW-4         | 6- 1416 | 22 AUGUST 88 | VOA, TOX, EXPLOSIVES, METALS   |
| MW-5         | 6- 1417 | 22 AUGUST 88 | VOA, TOX, EXPLOSIVES, CHLORIDE |
| MW-7         | 6- 1418 | 22 AUGUST 88 | VOA, TOX, EXPLOSIVES           |
| TRAVEL BLANK | 6- 1419 | 22 AUGUST 88 | VOA                            |
|              | 6- 1420 | 22 AUGUST 88 | VOA, TOX, EXPLOSIVES, METALS   |
|              | 6- 1421 | 22 AUGUST 88 | VOA, TOX, EXPLOSIVES           |
| 124          | 6- 1422 | 22 AUGUST 88 | VOA, TOX, EXPLOSIVES           |
| 125          | 6- 1423 | 22 AUGUST 88 | VOA, TOX, EXPLOSIVES           |
| TRAVEL BLANK | 6- 1424 | 22 AUGUST 88 | VOA                            |
| 129          | 6- 1425 | 22 AUGUST 88 | VOA, TOX, EXPLOSIVES           |

ANALYZE ELEVEN WATER SAMPLES FOR VOLATILE ORGANICS USING EPA METHOD 8240  
 ANALYZE NINE WATER SAMPLES FOR TOTAL ORGANIC HALIDES  
 ANALYZE NINE WATER SAMPLES FOR EXPLOSIVES  
 ANALYZE TWO WATER SAMPLES FOR METALS: As, Ba, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn  
 ANALYZE ONE WATER SAMPLE FOR CHLORIDE  
 ANALYZE ONE WATER SAMPLE FOR NITRATE

RETURN COOLERS TO TINKER AFB

| RELINQUISHED BY | RECEIVED BY | DATE | TIME |
|-----------------|-------------|------|------|
|-----------------|-------------|------|------|

|       |       |       |       |
|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- |
| ----- | ----- | ----- | ----- |

003125  
8-14786GROUND WATER MONITORING WELL  
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

8-1427 224  
- Lloyd  
metal boxLocation LONGHORN AAP Date 9/22/88Site ACTIVE BURNING GROUND Well number MW-9

Number of containers in shipment:

Parameters sampled:

|                                                              |          |          |                               |                                     |
|--------------------------------------------------------------|----------|----------|-------------------------------|-------------------------------------|
|                                                              | glass    | plastic  | pH                            | _____                               |
| liter                                                        | <u>4</u> | <u>4</u> | conductivity                  | _____                               |
|                                                              |          |          | TOC                           | _____                               |
| vial                                                         | <u>3</u> | _____    | Hardness as CaCO <sub>3</sub> | _____                               |
|                                                              |          |          | metals, total *               | <input checked="" type="checkbox"/> |
|                                                              |          |          | COD                           | _____                               |
|                                                              |          |          | hexavalent chromium           | _____                               |
|                                                              |          |          | alkalinity                    | _____                               |
|                                                              |          |          | chloride                      | <input checked="" type="checkbox"/> |
|                                                              |          |          | sulfate                       | _____                               |
|                                                              |          |          | TOX                           | <input checked="" type="checkbox"/> |
|                                                              |          |          | nitrate                       | <input checked="" type="checkbox"/> |
| volatile organics                                            |          |          | volatile organics             | <input checked="" type="checkbox"/> |
| -----                                                        |          |          | semi-organics                 | _____                               |
| regular detection limits <input checked="" type="checkbox"/> |          |          | total hydrocarbons            | _____                               |
| 0.5 ppb detection limits _____                               |          |          | BTX                           | _____                               |
|                                                              |          |          | EXPLOSIVES                    | <input checked="" type="checkbox"/> |

\* (As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn) Fe, Mn, Mg, K,  
Na, Ca, Cu

\* \_\_\_\_\_ (all of the above)

CUSTODY RECORD  
signature and title

| Relinquished by       | Received by            | Date           | Time        |
|-----------------------|------------------------|----------------|-------------|
| <u>Clara L. Kirby</u> | <u>Clara L. Kirby</u>  | <u>9/22/88</u> | <u>1014</u> |
| <u>Clara L. Kirby</u> | <u>→</u>               | <u>9/23/88</u> | <u>1200</u> |
| <u>Clara L. Kirby</u> | <u>Cathy H. T. ...</u> | <u>9/23/88</u> | _____       |
| _____                 | _____                  | _____          | _____       |

003126

~~~~~  
SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASS STREET
DALLAS, TEXAS 75235-6011
(214) 905-9130
~~~~~

## REQUEST FOR ANALYSES

LABORATORY: SOUTHWEST LABS

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 26 OCT 88

DATE SAMPLES SENT: 26 SEPT 88

~~~~~  
TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD ID	SWD NO.	DATE SAMPLED	ANALYSES
MW-9	8- 1426	22 SEPT 88	VOA, TOX, EXPLOSIVES
MW-10	8- 1426	22 SEPT 88	VOA, TOX, EXPLOSIVES

ANALYZE TWO WATER SAMPLES FOR VOLATILE ORGANICS USING EPA METHOD 8240
ANALYZE TWO WATER SAMPLES FOR TOTAL ORGANIC HALIDES
ANALYZE TWO WATER SAMPLES FOR EXPLOSIVES

RETURN COOLERS TO TINKER AFB

RELINQUISHED BY	RECEIVED BY	DATE	TIME
-----------------	-------------	------	------

-----	-----	-----	-----
-----	-----	-----	-----

003127

GROUND WATER MONITORING WELL
- CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN ADP Date 9/22/88

Site ACTIVE BURNING GROUND Well number MW-10

Number of containers in shipment:

Parameters sampled:

	glass	plastic	pH	_____
liter	<u>4</u>	<u>3</u>	conductivity	_____
vial	<u>6</u>	_____	TOC	_____
			Hardness as CaCO ₃	_____
			metals, total *	<u>✓</u>
			COD	_____
			hexavalent chromium	_____
			alkalinity	_____
			chloride	<u>✓</u>
			sulfate	_____
			TOX	<u>✓</u>
			nitrate	<u>✓</u>
			volatile organics	<u>✓</u>
			semi-organics	_____
			total hydrocarbons	_____
			BTX	_____
			EXPLOSIVES	<u>✓</u>

volatile organics

regular detection limits ✓
0.5 ppb detection limits _____

* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Sb, Ag, Zn, Fe, Mn, Mg, K,
Na, Ca, Cu

* _____ (all of the above)

CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>James R. Hester</u>	<u>Charles L. Kirby</u>	<u>9/22/88</u>	<u>0930</u>
<u>Charles L. Kirby</u>	<u>→</u>	<u>9/23/88</u>	<u>1200</u>
<u>Charles L. Kirby</u>	<u>Cathy Hester</u>	<u>9/23/88</u>	_____
_____	_____	_____	_____

003128

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASS STREET
DALLAS, TEXAS 75235-8011
(214) 905-9130

REQUEST FOR ANALYSES

LABORATORY: CEP LABS

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 26 OCT 88

DATE SAMPLES SENT: 26 SEPT 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD ID	SWD NO.	DATE SAMPLED	ANALYSES
124	8- 1422	22 SEPT 88	EXPLOSIVES
MW-10	8- 1428	22 SEPT 88	VOLATILE ORGANICS

ANALYZE ONE WATER SAMPLE FOR VOLATILE ORGANICS USING EPA METHOD 8240
ANALYZE ONE WATER SAMPLE FOR EXPLOSIVES

RETURN COOLER TO TINKER AFB

RELINQUISHED BY	RECEIVED BY	DATE	TIME
-----	-----	-----	-----
-----	-----	-----	-----

003129-1459

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM8-1460 TR B1
metal only
1 plastic

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-25-88Site ACTIVE BURNING GROUND Well number C-2

Number of containers in shipment:

Parameters sampled:

	glass	plastic
liter	<u>4</u>	<u>4</u>
vial	<u>3</u>	<u> </u>

pH	<u> </u>
conductivity	<u> </u>
TOC	<u> </u>
Hardness as CaCO ₃	<u> </u>
metals, total *	<u>✓</u>
COD	<u> </u>
hexavalent chromium	<u> </u>
alkalinity	<u> </u>
chloride	<u>✓</u>
sulfate	<u> </u>
TOX	<u>✓</u>
nitrate	<u>✓</u>
volatile organics	<u>✓</u>
semi-organics	<u> </u>
total hydrocarbons	<u> </u>
BTX	<u> </u>
KXPLOSIVES	<u>✓</u>

volatile organics

 regular detection limits ✓
 0.5 ppb detection limits

 * As Ba Be, Cd Cr Pb Hg Ni Se Ag Zn Fe, Mn, Mg, K,
 Na, Ca, Cu
* (all of the above)CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Jack R. [Signature]</u>	<u>Clara L. Kirby</u>	<u>9-25-88</u>	<u>1300</u>
<u>Clara L. Kirby</u>	<u>Raymond [Signature]</u>	<u>9-27-88</u>	<u>0600</u>
<u> </u>	<u>Cathy [Signature]</u>	<u>9-27-88</u>	<u>1200</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

003130 8 -1461
-1462 1/0
equipt

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-25-88

Site ACTIVE BURNING Grounds Well number C-3

Number of containers in shipment:

Parameters sampled:

	glass	plastic
liter	<u>4</u>	<u>3</u>
vial	<u>6</u>	<u>"</u>

pH	
conductivity	
TOC	
Hardness as CaCO ₃	
metals, total *	
COD	
hexavalent chromium	
alkalinity	
chloride	
sulfate	
TOX	
nitrate	
volatile organics	
semi-organics	
total hydrocarbons	
BTX	
EXPLOSIVES	

volatile organics

regular detection limits ✓
0.5 ppb detection limits

* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,
Na, Ca, Cu

* (all of the above)

CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Clara L. Kirby</u>	<u>→</u>	<u>9-25-88</u>	<u>1600</u>
<u>Clara L. Kirby</u>	<u>Raymond H. Smith</u>	<u>9-27-88</u>	<u>0600</u>
<u> </u>	<u>P. Hutton</u>	<u>9-27-88</u>	<u>0200</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

003131

8-1463

Dup 1/0

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-26-88Site ACTIVE BURNING GROUND Well number C-4

Number of containers in shipment:

Parameters sampled:

	glass	plastic	pH	
liter	<u>4</u>	<u>3</u>	conductivity	
vial	<u>6</u>		TOC	
			Hardness as CaCO ₃	
			metals, total *	
			COD	
			hexavalent chromium	
			alkalinity	
			chloride	
			sulfate	
			TOX	
			nitrate	
			volatile organics	
			semi-organics	
			total hydrocarbons	
			BTX	
			EXPLOSIVES	

volatile organics

regular detection limits _____

0.5 ppb detection limits _____

* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn Fe, Mn, Mg, K,
Na, Ca, Cu

* _____ (all of the above)

CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Clara L. Kirby</u>	<u>→</u>	<u>9-26-88</u>	<u>1600</u>
<u>Clara L. Kirby</u>	<u>Raymond R. Smith</u>	<u>9-27-88</u>	<u>0600</u>
_____	<u>C. Hutchins</u>	<u>9-27-88</u>	<u>1200</u>
_____	_____	_____	_____

003132

8-1464

Dup TOX

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-26-88Site ACTIVE BURNING GROUND Well number C-5

Number of containers in shipment:

glass
liter 6vial 3

plastic

4

why 3 plastic

Parameters sampled:

pH	_____
conductivity	_____
TOC	_____
Hardness as CaCO ₃	_____
metals, total *	_____✓
COD	_____
hexavalent chromium	_____
alkalinity	_____
chloride	_____✓
sulfate	_____
TOX	_____✓
nitrate	_____✓
volatile organics	_____✓
semi-organics	_____
total hydrocarbons	_____
BTX	_____
EXPLOSIVES	_____✓

volatile organics

regular detection limits ✓

0.5 ppb detection limits _____

* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,
Na, Ca, Cu

* _____ (all of the above)

CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Clara L. Kirby</u>	<u>→</u>	<u>9-26-88</u>	<u>1600</u>
<u>Clara L. Kirby</u>	<u>Raymond Hutchins</u>	<u>9-27-88</u>	<u>0600</u>
_____	<u>C. Hutchins</u>	<u>9-27-88</u>	<u>1200</u>
_____	_____	_____	_____

003133 8-1465

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-26-88Site ACTIVE BURNING GROUND Well number MW-11

Number of containers in shipment:

Parameters sampled:

	glass	plastic
liter	<u>6</u>	<u>3</u>
vial	<u>3</u>	<u>"</u>

pH	_____
conductivity	_____
TOC	_____
Hardness as CaCO ₃	_____
metals, total *	_____
COD	_____
hexavalent chromium	_____
alkalinity	_____
chloride	_____
sulfate	_____
TOX	_____
nitrate	_____
volatile organics	_____
semi-organics	_____
total hydrocarbons	_____
BTX	_____
EXPLOSIVES	_____

volatile organics

 regular detection limits ✓
 0.5 ppb detection limits

 * As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,
 Na, Ca, Cu

* _____ (all of the above)

CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Clara L. Kirby</u>	<u>→</u>	<u>9-26-88</u>	<u>1600</u>
<u>Clara L. Kirby</u>	<u>Raymond Hurdick</u>	<u>9-27-88</u>	<u>0600</u>
_____	<u>J. Hurdick</u>	<u>9-27-88</u>	<u>1200</u>
_____	_____	_____	_____

8-1464

003134

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-26-88Site ACTIVE BURNING GROUND Well number MW-13

Number of containers in shipment:

Parameters sampled:

	glass	plastic	pH	_____
liter	<u>4</u>	<u>4</u>	conductivity	_____
			TOC	_____
vial	<u>3</u>	_____	Hardness as CaCO ₃	_____
			metals, total *	<u>✓</u>
			COD	_____
			hexavalent chromium	_____
			alkalinity	_____
			chloride	<u>✓</u>
			sulfate	_____
			TOX	<u>✓</u>
			nitrate	<u>✓</u>
volatile organics			volatile organics	<u>✓</u>
-----			semi-organics	_____
regular detection limits <u>✓</u>			total hydrocarbons	_____
0.5 ppb detection limits _____			BTX	_____
			EXPLOSIVES	<u>✓</u>

* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,

Na, Ca, Cu

* _____ (all of the above)

CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Clara L. Kirby</u>	<u>→</u>	<u>9-26-88</u>	<u>1600</u>
<u>Clara L. Kirby</u>	<u>Raymond Harduth</u>	<u>9-27-88</u>	<u>0600</u>
_____	<u>P. H. Johnson</u>	<u>9-27-88</u>	<u>1200</u>
_____	_____	_____	_____

003135

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASS STREET
DALLAS, TEXAS 75235-9011
(214) 905-9130

REQUEST FOR ANALYSES

LABORATORY: CEP LABORATORY

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 27 OCT 88

DATE SAMPLES SENT: 27 SEPT 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD ID	SWD NO.	DATE SAMPLED	ANALYSES
1-4	8- 1463	26 SEPT 88	VDA
1-5	8- 1464	26 SEPT 88	TOX
1-11	8- 1465	26 SEPT 88	TOX

ANALYZE ONE WATER SAMPLE FOR VOLATILE ORGANICS
ANALYZE TWO WATER SAMPLES FOR TOX

RETURN COOLERS TO TINKER AIR FORCE BASE

RELINQUISHED BY

RECEIVED BY

DATE

TIME

003136

~~~~~  
 :  
 : SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS  
 : 4815 CASS STREET  
 : DALLAS, TEXAS 75235-8011  
 : (214) 905-9130  
 :  
 : REQUEST FOR ANALYSES  
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LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 27 OCT 88

DATE SAMPLES SENT: 27 SEPT 88

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 TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD ID	SWD NO.	DATE SAMPLED	ANALYSES
D-2	8- 1459	26 SEPT 88	TOX, EXPLOSIVES, VOA
D-3	8- 1461	26 SEPT 88	TOX, EXPLOSIVES, VOA
EQUIP. BLANK	8- 1462	26 SEPT 88	VOA
D-4	8- 1463	26 SEPT 88	TOX, EXPLOSIVES, VOA
D-5	8- 1464	26 SEPT 88	TOX, EXPLOSIVES, VOA
D-6	8- 1465	26 SEPT 88	TOX, EXPLOSIVES, VOA
D-7	8--1466	26 SEPT 88	TOX, EXPLOSIVES, VOA
			NITRATES

ANALYZE SEVEN WATER SAMPLES FOR VOLATILE ORGANICS
 ANALYZE SIX WATER SAMPLES FOR EXPLOSIVES
 ANALYZE SIX WATER SAMPLES FOR TOX
 ANALYZE ONE WATER SAMPLE FOR NITRATES

RETURN COOLERS TO TINKER AIR FORCE BASE

RELINQUISHED BY	RECEIVED BY	DATE	TIME
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003137479

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-27-88Site ACTIVE BULING GROUND Well number 120

Number of containers in shipment:

	glass	plastic
liter	<u>4</u>	<u>4</u>
vial	<u>3</u>	<u> </u>

Parameters sampled:

volatile organics

regular detection limits ✓0.5 ppb detection limits

pH	<u> </u>
conductivity	<u> </u>
TOC	<u> </u>
Hardness as CaCO ₃	<u> </u>
metals, total *	<u>✓</u>
COD	<u> </u>
hexavalent chromium	<u> </u>
alkalinity	<u> </u>
chloride	<u>✓</u>
sulfate	<u> </u>
TOX	<u>✓</u>
nitrate	<u>✓</u>
volatile organics	<u>✓</u>
semi-organics	<u> </u>
total hydrocarbons	<u> </u>
BTX	<u> </u>
EXPLOSIVES	<u>✓</u>

* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,

Na, Ca, Cu

* (all of the above)CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Clara L. Kirby</u>	<u>→</u>	<u>9-27-88</u>	<u>1600</u>
<u>Clara L. Kirby</u>	<u>R. Audeth</u>	<u>9-29-88</u>	<u>0700</u>
<u> </u>	<u>C. Hitehiser</u>	<u>9/29/88</u>	<u>1200</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

003138/88

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM8-1481
1 plastic
metals

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-27-88Site ACTIVE BURNING GROUND Well number MW-8

Number of containers in shipment:

Parameters sampled:

	glass	plastic		
liter	<u>4</u>	<u>4</u>	pH	<u> </u>
			conductivity	<u> </u>
vial	<u>3</u>	<u> </u>	TOC	<u> </u>
			Hardness as CaCO ₃	<u> </u>
			metals, total *	<u>✓</u>
			COD	<u> </u>
			hexavalent chromium	<u> </u>
			alkalinity	<u> </u>
			chloride	<u>✓</u>
			sulfate	<u> </u>
			TOX	<u>✓</u>
			nitrate	<u>✓</u>
volatile organics			volatile organics	<u>✓</u>
-----			semi-organics	<u> </u>
regular detection limits	<u>✓</u>		total hydrocarbons	<u> </u>
0.5 ppb detection limits	<u> </u>		BTX	<u> </u>
			EXPLOSIVES	<u>✓</u>

* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,
Na, Ca, Cu

* (all of the above)CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Clara L. Kirby</u>	<u>→</u>	<u>9-27-88</u>	<u>1600</u>
<u>Clara L. Kirby</u>	<u>P. H. Smith</u>	<u>9-29-88</u>	<u>0700</u>
<u> </u>	<u>C. H. Smith</u>	<u>9/29/88</u>	<u>1200</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

003139 8-1482

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-27-88
Site ACTIVE BORING GROUND Well number MW-14

Number of containers in shipment:

	glass	plastic
liter	<u>4</u>	<u>#4</u>
vial	<u>4</u>	<u> </u>

Parameters sampled:

pH	_____
conductivity	_____
TOC	_____
Hardness as CaCO ₃	_____
metals, total *	<u>5</u>
COD	_____
hexavalent chromium	_____
alkalinity	_____
chloride	<u>5</u>
sulfate	_____
TOX	<u>5</u>
nitrate	<u>5</u>
volatile organics	<u>5</u>
semi-organics	_____
total hydrocarbons	_____
BTX	_____
EXPLOSIVES	<u>5</u>

volatile organics
-----regular detection limits ✓
0.5 ppb detection limits * As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,
Na, Ca, Cu* (all of the above)CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Clara L. Kiley</u>	<u>→</u>	<u>9-27-88</u>	<u>1600</u>
<u>Clara L. Kiley</u>	<u>R. H. H. H.</u>	<u>9-29-88</u>	<u>0700</u>
<u> </u>	<u>C. H. H. H.</u>	<u>9-29-88</u>	<u>1200</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

003140

8-1483

GROUND WATER MONITORING WELL
CHAIN OF CUSTODY FORM

FORT WORTH DISTRICT, CORPS OF ENGINEERS

Location LONGHORN AAP Date 9-28-88Site ACTIVE BURNING GROUND Well number MW-12

Number of containers in shipment:

Parameters sampled:

	glass	plastic
liter	<u>4</u>	<u>4</u>
vial	<u>3</u>	<u>..</u>

pH	_____
conductivity	_____
TOC	_____
Hardness as CaCO ₃	_____
metals, total *	<u>✓</u>
COD	_____
hexavalent chromium	_____
alkalinity	_____
chloride	<u>✓</u>
sulfate	_____
TOX	<u>✓</u>
nitrate	<u>✓</u>
volatile organics	<u>✓</u>
semi-organics	_____
total hydrocarbons	_____
BTX	_____
EXPLOSIVES	<u>✓</u>

volatile organics

regular detection limits ✓

0.5 ppb detection limits _____

* As, Ba, Be, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn, Fe, Mn, Mg, K,
Na, Ca, Cu

* _____ (all of the above)

CUSTODY RECORD
signature and title

Relinquished by	Received by	Date	Time
<u>Clara L. Kiley</u>	<u>→</u>	<u>9-28-88</u>	<u>1600</u>
<u>Clara L. Kiley</u>	<u>R. Hudette</u>	<u>9-29-88</u>	<u>0700</u>
_____	<u>C. Hudette</u>	<u>9/29/88</u>	<u>1200</u>
_____	_____	_____	_____

003141

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASE STREET
DALLAS, TEXAS 75235-8011
(214) 905-9130

REQUEST FOR ANALYSES

LABORATORY: SOUTHWEST LABS OF OKLAHOMA

PROJECT: LONGHORN

DATE RESULTS REQUIRED: 29 OCT 88

DATE SAMPLES SENT: 29 SEPT 88

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

FIELD ID	SWD NO.	DATE SAMPLED	ANALYSES
120	B- 1479	27 SEPT 88	VDA, TOX, EXP., NITRATES
MW-8	B- 1480	27 SEPT 88	VDA, TOX, EXPLOSIVES
MW-14	B- 1482	27 SEPT 88	VDA, TOX, EXP., CHLORIDE
MW-12	B- 1483	28 SEPT 88	VDA, TOX, EXP., METALS

ANALYZE FOUR WATER SAMPLES FOR VOLATILES ORGANICS USING EPA METHOD 8240
ANALYZE FOUR WATER SAMPLES FOR EXPLOSIVES
ANALYZE FOUR WATER SAMPLES FOR TOX
ANALYZE ONE WATER SAMPLE FOR NITRATES
ANALYZE ONE WATER SAMPLE FOR CHLORIDE
ANALYZE ONE WATER SAMPLE FOR METALS: As, Ba, Cd, Cr, Pb, Hg, Ni, Se, Ag, Zn

RETURN COOLERS TO TINKER AIR FORCE BASE

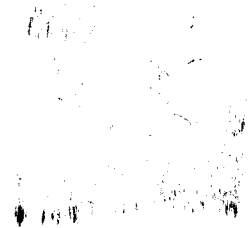
RELINQUISHED BY	RECEIVED BY	DATE	TIME
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003142

PART C

QA/QC DATA COMPARISON TABLES



003143

PART C

QA/QC DATA COMPARISON SUMMARY

Customer Sample #: MW-4 10.0' SWD Sample #: 7-536
Date Sampled: 9/16/87 Matrix: Soil

<u>Analyte(*)</u>	<u>Run #1</u>	<u>Run #2</u>	<u>Det. Limit</u>	<u>RPD</u>
Acetone	38	41	10 ug/Kg	8%

Analyses performed by Southwest Laboratories of Oklahoma

(*): Only analytes with values greater than detection limits are reported for comparison purposes.

PART C

Customer Sample #: 8A-907 4.0'
Date Sampled: 3/22/88

SWD Sample #: 8- 446, 8- 450
Matrix: Soil

Analyte(*)	Run #1	Run #2	Det. Limit	RPD
Arsenic	<1.0	1.3	1.0 mg/Kg	(**)
Barium	71	120	20.0 mg/Kg	51%
Chromium	<5.0	5.4	5.0 mg/Kg	(**)
Lead	11	18	1.0 mg/Kg	48%
Nickel	4.0	2.0	1.0 mg/Kg	67%
Zinc	8.0	11	1.0 mg/Kg	32%
Trichloroethene	14	86	5.0 ug/Kg	144% (D)
Vinyl Chloride	<10.0	51	10.0 ug/Kg	(**) (D)
Acetone	<10.0	40	10.0 ug/Kg	(**)
1,1-Dichloroethene	<5.0	6.0	5.0 ug/Kg	(**)
1,2-Dichloroethene	<5.0	3,628	5.0 ug/Kg	(**) (D)

Metals analyses performed by Southwest Division Laboratory
 Organics analyses performed by Southwest Laboratories of Oklahoma

(*): Only analytes with values greater than detection limits are reported for comparison purposes.

(**): Relative Percent Difference cannot be calculated because one result is below detection limits.

(D): Discrepancy

PART C

Customer Samples #: 8A-907 8.0'

SWD Lab #: 8- 451

Date Sampled: 3/22/88

Matrix: Soil

Analyte(*)	Run #1	Run #2	Det. Limits	RPD
Methylene Chloride	<5.0	59	5.0 ug/Kg	(**)
1,2-Dichloroethene	<5.0	69	5.0 ug/Kg	(**)
Trichloroethene	103	88	5.0 ug/Kg	16%
Styrene	<5.0	17	5.0 ug/Kg	(**)

Analyses performed by Southwest Laboratories of Oklahoma

(*): Only analytes with values greater than detection limits are reported for comparison purposes.

(**): Relative Percent Difference cannot be calculated because one result is below detection limits.

003146

PART C

Customer Sample #: MW-1
Date Sampled: 9/19/88

SWD Lab #: 8-1391
Matrix: Water

Analyte(*)	Lab #1	Lab #2	Units	Comments
Methylene Chloride	4820000	>4200000	ug/L	(**)
Trichloroethene	165000	200000	ug/L	19% RPD

Lab #1 was Controls for Environmental Pollution
Lab #2 was Southwest Laboratories of Oklahoma

(*): Only analytes with values greater than detection limits are reported for comparison purposes.

(**): RPD cannot be calculated because one result is below detection limits.

PART C

Customer Sample #: MW-2

SWD Lab #: 8-1392

Date Sampled: 9/19/88Matrix: Water

<u>Analyte(*)</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
TOX	1300	3644	mg/L	(D)

Lab #1 was Controls for Environmental Pollution

Lab #2 was Southwest Laboratories of Oklahoma

(*): Only analytes with values greater than detection limits are reported for comparison purposes.

(D): Discrepancy

003148

PART C

Customer Sample #: MW-6
Date Sampled: 9/19/88

SWD Lab #: 8-1393
Matrix: Water

Analyte	Lab #1	Lab #2	Units	Comments
HMX	<20	<26	ug/L	
RDX	<20	<22	ug/L	
Tetryl	<50	<26	ug/L	
TNT	<10	<14	ug/L	
2,4-DNT	<10	<10	ug/L	

Lab #1 was Controls for Environmental Pollution
Lab #2 was Southwest Laboratories of Oklahoma

003149

PART C

Customer Sample #: MW-15

SWD Lab #: 8-1394

Date Sampled: 9/19/88

Matrix: Water

Analyte	Lab #1	Lab #2	Units	Comments
HMX	<20	<26	ug/L	
RDX	<20	<22	ug/L	
Tetryl	<50	<26	ug/L	
TNT	<10	<14	ug/L	
2,4-DNT	<10	<10	ug/L	

Lab #1 was Controls for Environmental Pollution

Lab #2 was Southwest Laboratories of Oklahoma

003150

PART C

Customer Sample #: MW-3
Date Sampled: 9/20/88

SWD Lab #: 8-1415
Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Unit</u>	<u>Comments</u>
Nitrates	3.2	<2.0	mg/L	(*)

Lab #1 was Southwest Division Laboratory
Lab #2 was Southwest Laboratories of Oklahoma

(*): RPD cannot be reported because one result is below detection limits.

PART C

Customer Sample #: MW-4

SWD Lab #: 8-1416

Date Sampled: 9/20/88Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
Arsenic	<1.0	<2.0	ug/L	
Barium	270	<1000	ug/L	(*)
Cadmium	<5.0	40	ug/L	(*)
Chromium	9.8	100	ug/L	(D)
Lead	12	<100	ug/L	(*)
Mercury	<0.1	<2.0	ug/L	
Nickel	75	110	ug/L	38% RPD
Selenium	<0.40	<2.0	ug/L	
Silver	<5.0	<50	ug/L	
Zinc	65	60	ug/L	8% RPD

Lab #1 was Southwest Division Laboratory

Lab #2 was Southwest Laboratories of Oklahoma

(*): RPD cannot be calculated because one result was below detection limits.

(D): Discrepancy

PART C

Customer Sample #: MW-5

SWD Lab #: 8-1417

Date Sampled: 9/20/88Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
Chloride	420	490	mg/L	15% RPD

Lab #1 was Southwestern Division Laboratory

Lab #2 was Southwest Laboratories of Oklahoma

PART C

Customer Sample #: 109

SWD Lab #: 8-1420

Date Sampled: 9/20/88

Matrix: Water

Analyte	Lab #1	Lab #2	Units	Comments
Arsenic	<1.0	<2	ug/L	
Barium	1500	2700	ug/L	57% RPD
Cadmium	<5.0	<10	ug/L	
Chromium	6.2	120	ug/L	(D)
Lead	18	<100	ug/L	(*)
Mercury	<0.1	<2	ug/L	
Nickel	5.2	<50	ug/L	
Selenium	<0.4	<2	ug/L	
Silver	<5.0	<50	ug/L	
Zinc	22	40	ug/L	58% RPD

Lab #1 was Southwestern Division Laboratory

Lab #2 was Southwest Laboratories of Oklahoma

(*): RPD cannot be calculated because one result is below detection limits.

(D): Discrepancy

PART C

Customer Sample #: 123

SWD Lab #: 8-1421

Date Sampled: 9/21/88Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
Chloride	3.9	13.8	mg/L	(D)

Lab #1 was Southwestern Division Laboratory

Lab #2 was Southwest Laboratories of Oklahoma

(D): Discrepancy

PART C

Customer Sample #: 124

SWD Lab #: 8-1422

Date Sampled: 9/21/88Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
HMX	<20	<26	ug/L	
RDX	<20	<22	ug/L	
Tetryl	<50	<26	ug/L	
TNT	<10	<14	ug/L	
2,4-DNT	<10	<10	ug/L	

Lab #1 was Controls for Environmental Pollution

Lab #2 was Southwest Laboratories of Oklahoma

PART C

Customer Sample #: 109

SWD Lab #: 8-1420

Date Sampled: 9/20/88Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
Arsenic	<1.0	<2	ug/L	
Barium	1500	2700	ug/L	57% RPD
Cadmium	<5.0	<10	ug/L	
Chromium	6.2	120	ug/L	(D)
Lead	18	<100	ug/L	(*)
Mercury	<0.1	<2	ug/L	
Nickel	5.2	<50	ug/L	
Selenium	<0.4	<2	ug/L	
Silver	<5.0	<50	ug/L	
Zinc	22	40	ug/L	58% RPD

Lab #1 was Southwestern Division Laboratory
Lab #2 was Southwest Laboratories of Oklahoma

(*): RPD cannot be calculated because one result is below detection limits.

(D): Discrepancy

PART C

Customer Sample #: 123

SWD Lab #: 8-1421

Date Sampled: 9/21/88

Matrix: Water

Analyte	Lab #1	Lab #2	Units	Comments
Chloride	3.9	13.8	mg/L	(D)

Lab #1 was Southwestern Division Laboratory

Lab #2 was Southwest Laboratories of Oklahoma

(D): Discrepancy

PART C

Customer Sample #: 124

SWD Lab #: 8-1422

Date Sampled: 9/21/88Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
HMX	<20	<26	ug/L	
RDX	<20	<22	ug/L	
Tetryl	<50	<26	ug/L	
TNT	<10	<14	ug/L	
2,4-DNT	<10	<10	ug/L	

Lab #1 was Controls for Environmental Pollution

Lab #2 was Southwest Laboratories of Oklahoma

PART C

Customer Sample #: MW-10

SWD Lab #: 8-1428

Date Sampled: 9/22/88Matrix: Water

<u>Analyte(*)</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
Trichloroethene	61	<1.9	ug/L	(**) (D)

Lab #1 was Southwest Laboratories of Oklahoma

Lab #2 was Controls for Environmental Pollution

(*): Only analytes with values greater than detection limits are reported for comparison purposes.

(**): RPD cannot be calculated because one result is below detection limits.

(D): Discrepancy

003160

PART C

Customer Sample #: C-4

SWD Lab #: 8-1463

Date Sampled: 9/26/88

Matrix: Water

<u>Analyte(*)</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
Trichloroethene	9	<1.9	ug/L	(**) (D)
Tetrachloroethene	50	<4.1	ug/L	(**) (D)

Lab #1 was Southwest Laboratories of Oklahoma

Lab #2 was Controls for Environmental Pollution

(*): Only analytes with values greater than detection limits are reported for comparison purposes.

(**): RPD cannot be calculated because one result is below detection limits.

(D): Discrepancy

PART C

Customer Sample #: C-5

SWD Lab #: 8-1464

Date Sampled: 9/26/88Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
TOX	30	<5	ug/L	(*) (D)

Lab #1 was Southwest Laboratories of Oklahoma

Lab #2 was Controls for Environmental Pollution

(*): RPD cannot be calculated because one result is below detection limits.

(D): Discrepancy

PART C

Customer Sample #: MW-11
Date Sampled: 9/26/88

SWD Lab #: 8-1465
Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
TOX	3200	800	ug/L	(D)

Lab #1 was Southwest Laboratories of Oklahoma
Lab #1 was Controls for Environmental Pollution

(D): Discrepancy

PART C

Customer Sample #: MW-13

SWD Lab #: 8-1466

Date Sampled: 9/26/88Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
Nitrates	2.4	<2.0	mg/L	(*)

Lab #1 was Southwestern Division Laboratory

Lab #2 was Southwest Laboratories of Oklahoma

(*): RPD cannot be calculated because one result is below detection limits.

003164

PART C

Customer Sample #: 120

SWD Lab #: 8-1479

Date Sampled: 9/27/88

Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
Nitrates	590	735	mg/L	22% RPD

Lab #1 was Southwestern Division Laboratory

Lab #2 was Southwest Laboratories of Oklahoma

PART C

Customer Sample #: MW-14
Date Sampled: 9/27/88

SWD Lab #: 8-1482
Matrix: Water

<u>Analyte</u>	<u>Lab #1</u>	<u>Lab #2</u>	<u>Units</u>	<u>Comments</u>
Chloride	660	1020	mg/L	43% RPD

Lab #1 was Southwestern Division Laboratory
Lab #2 was Southwest Laboratories of Oklahoma

PART C

Customer Sample #: MW-12
Date Sampled: 9/28/88

SWD Lab #: 8-1483
Matrix: Water

Analyte	Lab #1	Lab #2	Units	Comments
Arsenic	<1.0	<2.0	ug/L	
Barium	560	1200	ug/L	(D)
Cadmium	24	<10	ug/L	(D)
Chromium	9.2	60	ug/L	(D)
Lead	20	220	ug/L	(D)
Mercury	<0.1	2.0	ug/L	(D)
Nickel	18	90	ug/L	(D)
Selenium	<0.40	<2.0	ug/L	
Silver	<5.0	<50	ug/L	
Zinc	120	100	ug/L	9% RPD

Lab #1 was Southwestern Division Laboratory
Lab #2 was Southwest Laboratories of Oklahoma

(D): Discrepancy

003167

PART D
TEST RESULTS



003163
Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: JEFF TYE

REPORT: SAP1013.33

DATE: 10-27-87

SUBJECT: SAMPLE FOR ANALYSIS

SAMPLE MATRIX: ~~SOIL~~
SWLO # 14423
DATE SUBMITTED: 09-18-87
DATE ANALYZED: 10-10-87
METHOD REFERENCE: SWB46-B240, EPA METHODOLOGY
CLIENT I.D.: 7-536 (MW-4) CH-2 10.0' 9/15/87 12:41
RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

<u>VOLATILES</u>	<u>RESULTS</u>	<u>VOLATILES</u>	<u>RESULTS</u>
CHLOROMETHANE	10 U	1,1,2,2-TETRACHLOROETHANE	5 U
BROMOMETHANE	10 U	1,2-DICHLOROPROPANE	5 U
VINYL CHLORIDE	10 U	TRANS-1,3-DICHLOROPROPENE	5 U
CHLOROETHANE	10 U	TRICHLOROETHENE	5 U
ETHYLENE CHLORIDE	5 U	DIBROMOCHLOROMETHANE	5 U
ACETONE	38	1,1,2-TRICHLOROETHANE	5 U
CARBON DISULFIDE	5 U	BENZENE	5 U
1,1-DICHLOROETHENE	5 U	CIS-1,3-DICHLOROPROPENE	5 U
1,1-DICHLOROETHANE	5 U	2-CHLOROETHYL VINYLETHER	10 U
TRANS-1,2-DICHLOROETHENE	5 U	BROMOFORM	5 U
CHLOROFORM	5 U	2-HEXANONE	10 U
1,2-DICHLOROETHANE	5 U	4-METHYL-2-PENTANONE	10 U
2-BUTANONE	10 U	TETRACHLOROETHENE	5 U
1,1,1-TRICHLOROETHANE	5 U	TOLUENE	5 U
CARBON TETRACHLORIDE	5 U	CHLOROBENZENE	5 U
VINYL ACETATE	10 U	ETHYLBENZENE	5 U
BROMODICHLOROMETHANE	5 U	STYRENE	5 U
ACROLEIN	100 U	TOTAL XYLENES	5 U
ACRYLONITRILE	100 U	TRICHLOROFLUOROMETHANE	10 U

NOTE: Acetone is a common laboratory contaminant. The normal allowable level of such a contaminant is five times the detection limit reported. Acetone reported in some of the samples was at levels less than five times the detection limit, therefore, the reported number may not be significant.

U indicates the compound was analyzed for but not detected above that level.

Southwest Laboratory of Oklahoma

BY Robert Harris

TULSA BRANCH
10926 E. 55th Pl.
Tulsa, Okla. 74146
(918) 665-0680

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064

003169



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: JEFF TYE

REPORT: SAP1013.33a

DATE: 10-27-87

SUBJECT: SAMPLE FOR ANALYSIS

SAMPLE MATRIX: SOIL
SWLO # 14423
DATE SUBMITTED: 09-18-87
DATE EXTRACTED: 09-28-87
DATE ANALYZED: 10-26-87
CLIENT I.D.: 7-536 (MW-4) CH-2 10.0' 9/15/87 12:41

EXPLOSIVESRESULTS (ug/q)

TNT.....	<0.05
2-4 DNT.....	<0.05
2-6 DNT.....	<0.05
RDX.....	<0.05
HMX.....	<0.05
TETRYL.....	<0.05

NOTE: Samples show a very large, broad peak where tetryl, nitroglycerine, and TNT elute. Broadness of peak would indicate it to be a matrix problem and the analyst will scan to verify. (Does not show on method blanks or standards).

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CUSHING BRANCH
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Cushing, Okla. 74023
(918) 225-1064



003170

Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: JEFF TYE

REPORT: SAF1013.35

DATE: 10-27-87

SUBJECT: SAMPLE FOR ANALYSIS

SAMPLE MATRIX: SOIL
SWLO # 14425
DATE SUBMITTED: 09-18-87
DATE ANALYZED: 10-10-87
METHOD REFERENCE: SW846-8240, EPA METHODOLOGY
CLIENT I.D.: 7-536 FIELD REPEAT (MATRIX SPIKE)
RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

<u>VOLATILES</u>	<u>RESULTS</u>	<u>VOLATILES</u>	<u>RESULTS</u>
CHLOROMETHANE	10 U	1,1,2,2-TETRACHLOROETHANE	5 U
BROMOMETHANE	10 U	1,2-DICHLOROPROPANE	5 U
VINYL CHLORIDE	10 U	TRANS-1,3-DICHLOROPROPENE	5 U
CHLOROETHANE	10 U	TRICHLOROETHENE	5 U
ETHYLENE CHLORIDE	5 U	DIBROMOCHLOROMETHANE	5 U
ACETONE	41	1,1,2-TRICHLOROETHANE	5 U
CARBON DISULFIDE	5 U	BENZENE	5 U
1,1-DICHLOROETHENE	5 U	CIS-1,3-DICHLOROPROPENE	5 U
1,1-DICHLOROETHANE	5 U	2-CHLOROETHYL VINYLETHER	10 U
TRANS-1,2-DICHLOROETHENE	5 U	BROMOFORM	5 U
CHLOROFORM	5 U	2-HEXANONE	10 U
1,2-DICHLOROETHANE	5 U	4-METHYL-2-PENTANONE	10 U
2-BUTANONE	10 U	TETRACHLOROETHENE	5 U
1,1,1-TRICHLOROETHANE	5 U	TOLUENE	5 U
CARBON TETRACHLORIDE	5 U	CHLOROBENZENE	5 U
VINYL ACETATE	10 U	ETHYLBENZENE	5 U
BROMODICHLOROMETHANE	5 U	STYRENE	5 U
ACROLEIN	100 U	TOTAL XYLENES	5 U
ACRYLONITRILE	100 U	TRICHLOROFLUOROMETHANE	10 U

NOTE: Acetone is a common laboratory contaminant. The normal allowable level of such a contaminant is five times the detection limit reported. Acetone reported in some of the samples was at levels less than five times the detection limit, therefore, the reported number may not be significant.

U indicates the compound was analyzed for but not detected above that level.

Southwest Laboratory of Oklahoma

BY Robert Harris

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(918) 665-0680

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CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064

003171



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: JEFF TYE

REPORT: SAP1013.35a

DATE: 10-27-87

SUBJECT: SAMPLE FOR ANALYSIS

SAMPLE MATRIX: SOIL
SWLO # 14425
DATE SUBMITTED: 09-18-87
DATE EXTRACTED: 09-28-87
DATE ANALYZED: 10-26-87
CLIENT I.D.: 7-536 FIELD REPEAT (MATRIX SPIKE)

EXPLOSIVESRESULTS (ug/g)

TNT.....<0.05
2-4 DNT.....<0.05
2-6 DNT.....<0.05
RDX.....<0.05
HMX.....<0.05
TETRYL.....<0.05

NOTE: Samples show a very large, broad peak where tetryl, nitroglycerine, and TNT elute. Broadness of peak would indicate it to be a matrix problem and the analyst will scan to verify. (Does not show on method blanks or standards).

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CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064

TABLE 1

SWDED-GL Report No. 14543

Results of Chemical Analyses of Soil Samples

Longhorn Army Ammunition Plant

BORING NO.	DEPTH FT.	SWD No.	Ag	As	Ba	Cd	Cr	Hg	Pb	Se	Ni	Zn
Minimum Reported Concentration Results reported in mg/Kg			0.5	1.0	20.0	0.5	5.0	0.1	1.0	0.1	1.0	1.0
.....												
8A-906	4.0'	8- 444	<0.5	1.2	56	<0.5	<5.0	<0.1	16	<0.1	3	9
8A-906	8.0'	8- 445	<0.5	<1.0	63	<0.5	<5.0	0.1	2	<0.1	3	18
8A-907	4.0'	8- 446	<0.5	<1.0	71	<0.5	<5.0	<0.1	11	<0.1	4	8
8A-907	8.0'	8- 447	<0.5	1.1	130	0.6	<5.0	<0.1	12	<0.1	7	19
8A-908	4.0'	8- 448	<0.5	<1.0	82	<0.5	<5.0	<0.1	7	<0.1	3	17
8A-908	8.0'	8- 449	<0.5	<1.0	93	<0.5	<5.0	<0.1	10	<0.1	5	21
8A-907 DUP	4.0'	8- 450	<0.5	1.3	120	<0.5	5.4	<0.1	18	<0.1	2	11
8A-907 DUP	8.0'	8- 451	<0.5	<1.0	87	<0.5	<5.0	<0.1	10	<0.1	<1.0	4
8A-900	4'	8- 462	<0.5	1.3	22	<0.5	<5.0	<0.1	14	<0.1	3	5
8A-900	8'	8- 463	<0.5	<1.0	<20	<0.5	<5.0	<0.1	13	<0.1	1	4
8A-901	4'	8- 464	<0.5	1.3	20	<0.5	5.7	<0.1	22	<0.1	3	7
8A-901	8'	8- 465	<0.5	<1.0	<20	<0.5	<5.0	<0.1	13	<0.1	1	4
8A-903	4'	8- 466	<0.5	<1.0	100	<0.5	5.0	<0.1	23	<0.1	3	15
8A-903	8'	8- 467	<0.5	<1.0	26	<0.5	<5.0	<0.1	9	<0.1	2	6
8A-905	4'	8- 468	<0.5	<1.0	1,000	1.7	120	<0.1	200	<0.1	5	160
8A-905	8'	8- 469	<0.5	2.9	290	<0.5	<5.0	<0.1	17	<0.1	2	7
8A-902	14.0'	8- 479	<0.5	2.7	1,500	2.63	130	0.3	190	0.2	3	90
8A-902	18.0'	8- 480	<0.5	<1.0	<20	<0.5	<5.0	<0.1	4	<0.1	4	8
8A-914	4.0'	8- 481	<0.5	<1.0	66	<0.5	<5.0	<0.1	7	<0.1	2	4
8A-914	8.0'	8- 482	<0.5	<1.0	120	<0.5	<5.0	<0.1	<1.0	<0.1	5	19
8A-909	4.0'	8- 489	<0.5	1.2	160	<0.5	5.6	<0.1	24	<0.1	8	38
8A-909	8.0'	8- 490	<0.5	<1.0	420	1.0	7.8	<0.1	31	<0.1	45	96

TABLE 1

SWOED-GL Report No. 14543

Results of Chemical Analyses of Soil Samples

Longhorn Army Ammunition Plant

BORING NO.	DEPTH FT.	SWD No.	Ag	As	Ba	Cd	Cr	Hg	Pb	Se	Ni	Zn
Minimum Reported Concentration			0.5	1.0	20.0	0.5	5.0	0.1	1.0	0.1	1.0	1.0
Results reported in mg/Kg												
BA-911	4.0'	8- 491	<0.5	<1.0	70	<0.5	<5.0	<0.1	21	<0.1	5	11
BA-911	8.0'	8- 492	<0.5	1.6	120	<0.5	<5.0	<0.1	8	<0.1	11	38
BA-912	4.0'	8- 493	<0.5	1.4	57	<0.5	5.7	<0.1	10	<0.1	4	9
BA-912	8.0'	8- 494	<0.5	1.5	49	<0.5	<5.0	<0.1	5	<0.1	7	55
BA-913	4.0'	8- 495	<0.5	<1.0	69	<0.5	<5.0	<0.1	<1.0	<0.1	<1.0	6
BA-913	8.0'	8- 496	<0.5	<1.0	62	<0.5	<5.0	<0.1	<1.0	<0.1	5	18
BA-999	4.0'	8- 500	<0.5	<1.0	<20	<0.5	<5.0	<0.1	<1.0	<0.1	2	4
BA-999	8.0'	8- 501	<0.5	<1.0	<20	<0.5	<5.0	<0.1	<1.0	<0.1	<1.0	5
BA-912	0-1'	8- 521	<0.5	2.5	200	2.4	<5.0	<0.1	13	<0.1	4	42
BA-912	1-2'	8- 522	<0.5	1.6	47	<0.5	<5.0	<0.1	5	0.1	1	10
Mean Percent Recovery of Matrix Spikes			99%	108%	115%	95%	90%	94%	94%	78%	96%	95%
Mean Relative Percent Difference of Matrix Spike Repeats			0%	1%	3.5%	1%	2%	25%	1%	1%	6%	5%

003174

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

8-446

~~8.7.9074~~Matrix: (soil/water) SOILLab Sample ID: 18288Sample wt/vol: 5 GLab File ID: 7370Level: (low/med) LOWDate Received: 03-24-88% Moisture: not dec. 16Date Analyzed: 03-25-88Column: (pack/cap) PACKDilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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	15 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	12 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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-75-1-----	1,4-Dichlorobenzene	10	U

003175

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

8-450

8A907 Duf

Matrix: (soil/water) SOILLab Sample ID: 18292Sample wt/vol: 5gLab File ID: 7374Level: (low/med) LOWDate Received: 03-24-88% Moisture: not dec. 17Date Analyzed: 3-25-88Column: (pack/cap) PACKDilution Factor: 1

CAS NO.

COMPOUND

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

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	51 10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	40 10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	6 5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	3628 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 1	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	86 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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-78-1-----	1,4-Dichlorobenzene	10	U

003175

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: SOUTHWEST LABORATORY OF OKLA.Contract: N/A8-450 DLLab Code: SWOKCase No.: SWCORPSAS No.: N/ASDG No.: N/ABA 907 Dup 40Matrix: (soil/water) SOILLab Sample ID: 18292Sample wt/vol: 0.35 (g/mL) GLab File ID: 7402Level: (low/med) LOWDate Received: 03-24-88% Moisture: not dec. 12Date Analyzed: 03-28-88COLUMN: (PACK/CAP) PACKDilution Factor: 14

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	140	U
74-83-9-----	Bromomethane	140	U
75-01-4-----	Vinyl Chloride	140	U
75-00-3-----	Chloroethane	140	U
75-09-2-----	Methylene Chloride	70	U
67-64-1-----	Acetone	140	U
75-15-0-----	Carbon Disulfide	70	U
75-35-4-----	1,1-Dichloroethene	70	U
75-34-3-----	1,1-Dichloroethane	70	U
540-59-0-----	1,2-Dichloroethene (total)	8395 70	U
67-66-3-----	Chloroform	2 70	U
107-06-2-----	1,2-Dichloroethane	70	U
78-93-3-----	2-Butanone	140	U
71-55-6-----	1,1,1-Trichloroethane	70	U
56-23-5-----	Carbon Tetrachloride	70	U
108-05-4-----	Vinyl Acetate	140	U
75-27-4-----	Bromodichloromethane	70	U
78-87-5-----	1,2-Dichloropropane	70	U
10061-01-5-----	cis-1,3-Dichloropropene	70	U
79-01-6-----	Trichloroethene	226 70	U
124-48-1-----	Dibromochloromethane	70	U
79-00-5-----	1,1,2-Trichloroethane	70	U
71-43-2-----	Benzene	70	U
10061-02-6-----	trans-1,3-Dichloropropene	70	U
75-25-2-----	Bromoform	70	U
108-10-1-----	4-Methyl-2-Pentanone	140	U
591-78-6-----	2-Hexanone	140	U
127-18-4-----	Tetrachloroethene	70	U
79-34-5-----	1,1,2,2-Tetrachloroethane	70	U
108-88-3-----	Toluene	70	U
108-90-7-----	Chlorobenzene	70	U
100-41-4-----	Ethylbenzene	70	U
100-42-5-----	Styrene	70	U
1330-20-7-----	Xylene (total)	70	U
75-69-4-----	TRICHLOROFLUOROMETHANE	70	U
95-50-1-----	1,2-DICHLOROBENZENE	140	U
106-46-9-----	1,3-DICHLOROBENZENE	140	U
547-73-1-----	1,4-DICHLOROBENZENE	140	U

1/87 Re

003177

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 4-21-88

SWLO#: 18288

SAMPLE ID: 8-446 (8A-907)

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
Tetryl	5.5 U
TNT	0.8 U
DNT(2,4)	0.8 U

*U indicates detection limit

003173

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 4-21-88

SWLO#: 18292

SAMPLE ID: 8-450 (8A-907.DUP)

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
Tetryl	5.5 U
TNT	0.8 U
DNT(2,4)	0.8 U

*U indicates detection limit

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

FOR SAMPLE NO.
003179

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

8-447

8A 907 E

Matrix: (soil/water) SOIL

Lab Sample ID: 18229

Sample wt/vol: 5 G

Lab File ID: 7371

Level: (low/med) LOW

Date Received: 03-24-88

% Moisture: not dec. 21

Date Analyzed: 03-25-88

Column: (pack/cap) PACK

Dilution Factor: 1

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

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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	2 T 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	10 3 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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-72-1-----	1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003180
EPA SAMPLE NO

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

8-451

BA 907 Dup E

Matrix: (soil/water) SOIL

Lab Sample ID: 18293

Sample wt/vol: 4g

Lab File ID: 7413

Level: (low/med) LOW

Date Received: 03-24-88

% Moisture: not dec. 18

Date Analyzed: 3-29-88

Column: (pack/cap) PACK

Dilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	10	U
67-64-1-----	Acetone	59 5	U
75-15-0-----	Carbon Disulfide	10	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	69 5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	5	U
71-55-6-----	1,1,1-Trichloroethane	10	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	5	U
75-27-4-----	Bromodichloromethane	10	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	88 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	5	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	10	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)	17 5	U
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	5	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-23-1-----	1,4-Dichlorobenzene	10	U

003181

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 4-21-88

SWLO#: 18289

SAMPLE ID: 8-447 (8A-907)

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
Tetryl	5.5 U
TNT	0.8 U
DNT(2,4)	0.8 U

*U indicates detection limit

003182

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 4-21-88

SWLO#: 18293

SAMPLE ID: 8-451 (8A-907 Dup)

COMPOUNDS	RESULTS
HMX	1.6 U
RDX	1.8 U
Tetryl	5.5 U
TNT	0.8 U
DNT(2,4)	0.8 U

*U indicates detection limit

003183

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SWL - TULSAContract: SWCORP

8-1391(MW-1)

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: 21378Sample wt/vol: 0.5 ^{μL} 0.000 (g/mL) MLLab File ID: C3058Level: (low/med) LOWDate Received: 09/22/88

% Moisture: not dec. _____

Date Analyzed: 10/10/88Column: (pack/cap) CAPDilution Factor: 10000 ~~0.000000~~

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
74-87-3	Chloromethane	100000	U
74-83-9	Bromomethane	100000	U
75-01-4	Vinyl Chloride	100000	U
75-00-3	Chloroethane	100000	U
75-09-2	Methylene Chloride	4200000	E
67-64-1	Acetone	100000	U
75-15-0	Carbon Disulfide	50000	U
75-35-4	1,1-Dichloroethene	50000	U
75-34-3	1,1-Dichloroethane	50000	U
540-59-0	1,2-Dichloroethene (total)	50000	U
67-66-3	Chloroform	38000	BJ
107-06-2	1,2-Dichloroethane	50000	U
78-93-3	2-Butanone	100000	U
71-55-6	1,1,1-Trichloroethane	50000	U
56-23-5	Carbon Tetrachloride	50000	U
108-05-4	Vinyl Acetate	100000	U
75-27-4	Bromodichloromethane	50000	U
78-87-5	1,2-Dichloropropane	50000	U
10061-01-5	cis-1,3-Dichloropropene	50000	U
79-01-6	Trichloroethene	200000	
124-48-1	Dibromochloromethane	50000	U
79-00-5	1,1,2-Trichloroethane	50000	U
71-43-2	Benzene	50000	U
10061-02-6	Trans-1,3-Dichloropropene	50000	U
75-25-2	Bromoform	50000	U
108-10-1	4-Methyl-2-Pentanone	100000	U
591-78-6	2-Hexanone	100000	U
127-18-4	Tetrachloroethene	50000	U
79-34-5	1,1,2,2-Tetrachloroethane	50000	U
108-88-3	Toluene	50000	U
108-90-7	Chlorobenzene	50000	U
100-41-4	Ethylbenzene	50000	U
100-42-5	Styrene	50000	U
1330-20-7	Xylene (total)	50000	U
75-69-4	Dichlorodifluoromethane	100000	U
95-50-1	1,2-Dichlorobenzene	100000	U

106-46-7-----1,3-Dichlorobenzene	100000	U
547-73-1-----1,4-Dichlorobenzene	100000	U

RECEIVED: 07/23/08

Results by Sample

SAMPLE ID HHA-1 8-1391

FRACTION 01A TEST CODE VUA

NAME Volatile Organics EPA-624

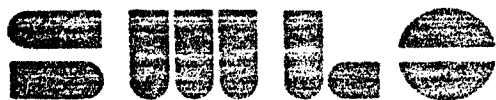
Date & Time Collected 07/17/08

Category WATER

003185

CAS #	Compound name	Result
74-87-3	Chloromethane	<100
74-83-9	Bromomethane	<100
75-01-4	Vinyl Chloride	<100
75-00-3	Chloroethane	<100
75-07-2	Methylene Chloride	4020
75-35-4	1,1-Dichloroethene	<20.0
75-34-3	1,1-Dichloroethane	<47.0
156-60-5	Trans-1,2-Dichloroethene	<16.0
67-66-3	Chloroform	<16.0
107-06-2	1,2-Dichloroethane	<20.0
75-69-4	Trichlorofluoromethane	<50.0
71-55-5	1,1,1-Trichloroethane	<38.0
56-23-5	Carbon Tetrachloride	<20.0
75-27-4	Bromodichloromethane	<22.0
79-34-5	1,1,2,2-Tetrachloroethane	<69.0
70-07-5	1,2-Dichloropropane	<50.0
10061-02-6	Trans-1,3-dichloropropene	<50.0
72-01-6	Trichloroethene	165
124-43-1	Dibromochloromethane	<31.0
75-00-5	1,1,2-Trichloroethane	<50.0
127-10-4	Tetrachloroethene	<41.0
10061-01-5	cis-1,3-Dichloropropene	<50.0
110-75-8	2-Chloroethylvinylether	<50.0
75-35-2	Bromoform	<47.0
71-43-2	Benzene	<41.0
75-50-1	1,2-Dichlorobenzene	<50.0
100-90-7	Chlorobenzene	<60.0
541-73-1	1,3-Dichlorobenzene	<50.0
106-46-7	1,4-Dichlorobenzene	<50.0
100-80-3	Toluene	<60.0
100-41-4	Ethylbenzene	<72.0

003186



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.40b

DATE: 10-14-88

SAMPLE MATRIX: WATER
SWLD # 21379
DATE SUBMITTED: 09-22-88
CLIENT I.D.: 8-1392 (MW-2) 9/19/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	3644.0 mg/L	10-14-88	RY	SW846-9020

U Indicates the compound was analyzed for but not detected
above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

BY Chuck Hanes

TULSA BRANCH
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Broken Arrow, OK 74012
(918) 251-2858

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064

SAMPLE IDENTIFICATION

HNU 1 8-1391

DATE COLLECTED

07/17/88

ug/liter

()

HNU 2 8-1392

07/19/88

Total Organic Halogens

1300

(mg/liter)

HNU 6 8-1393

07/19/88

2,4,6-Trinitrotoluene

<10

2,4-Dinitrotoluene

<10

2,6-Dinitrotoluene

<20

DMX

<20

RDX

<20

Tetryl

<50

HNU 15 8-1394

07/19/88

2,4,6-Trinitrotoluene

<10

2,4-Dinitrotoluene

<10

2,6-Dinitrotoluene

<20

DMX

<20

RDX

<20

Tetryl

<50

003187

003188

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-12-88

SWLO#: 21380 (mw-6)

SAMPLE ID: 8-1393

COMPOUNDS

RESULTS

ug/L

HMX	26.0 U
RDX	22.0 U
TETRYL	26.0 U
TNT	14.0 U
2,4 DNT	10.0 U

U indicates detection limit

003189

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-12-86

SWLO#: 21394 (MW-15)

SAMPLE ID: 8-1394

COMPOUNDS

RESULTS

	ug/L
HMX	26.0 U
RDX	22.0 U
TETRYL	26.0 U
TNT	14.0 U
2,4 DNT	10.0 U

U indicates detection limit

DED-BL Report No. 14543

TABLE 2
Results of Chemical Analyses of Water Samples

Longhorn Water Quality Asses

BORING NO.	SWD NO.	Chloride	Nitrates	pH	Conduct.
Minimum Reported Concentration Results reported in mg/L		5.0	0.2	0 - 14 pH Units	10 umhos/cm
MW-3	8- 1415	540	3.2	6.20	1,264
MW-4	8- 1416	750	<0.2	6.30	3,230
MW-5	8- 1417	420	4.2	5.70	1,517
MW-7	8- 1418	280	0.25	6.50	1,492
109	8- 1420	760	0.26	6.70	2,850
123	8- 1421	3.9	6.3	6.00	350
124	8- 1422	5.9	<0.2	5.00	66
125	8- 1423	19	0.28	6.10	115
129	8- 1425	290	14	6.00	1,051
MW-9	8- 1426	43	0.85	6.00	210
MW-10	8- 1428	310	<0.2	6.50	962
C-2	8- 1459	170	<0.2	6.30	734
C-3	8- 1461	310	2.3	6.20	1,052
C-4	8- 1463	41	<0.2	6.00	202
C-5	8- 1464	64	<0.2	6.70	374
MW-11	8- 1465	40	<0.2	4.30	316
MW-13	8- 1466	240	2.4	6.70	860
120	8- 1479	720	590	6.00	6,300
MW-8	8- 1480	200	6.1	6.50	890
MW-14	8- 1482	660	<0.2	6.50	1,796
MW-12	8- 1483	260	2.0	6.00	1,163



003191

Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.41a

DATE: 10-14-88

SAMPLE MATRIX: WATER
SWLO # 21420
DATE SUBMITTED: 09-24-88
CLIENT I.D.: 8-1415 (MW-3) 8/22/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	259.0 mg/L	10-14-88	RY	SW846-9020
NITRATE	2.0 U mg/L	09-30-88	SM	SM 429

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

BY Chuck Hoover

TULSA BRANCH
1700 W. Albany, Suite C
Broken Arrow, OK 74012
(918) 251-2858

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
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CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064

TABLE 1

SWDED-9L Report No. 14543

Results of Chemical Analyses of ~~Water Samples~~

Longhorn Water Quality Assessment

BORING NO.	SWD NO.	Ag	As	Ba	Cd	Cr	Hg	Pb	Ni	Se
Minimum Reported Concentration Results reported in ug/L		5.0	1.0	5.0	5.0	5.0	0.10	10	5.0	0.40
MW-3	8- 1415	<5.0	<1.0	1,900	<5.0	27	0.42	16	24	<0.40
MW-4	8- 1416	<5.0	<1.0	270	<5.0	9.3	<0.1	12	75	<0.40
MW-5	8- 1417	<5.0	<1.0	2,000	<5.0	18	0.42	10	44	<0.40
MW-7	8- 1418	<5.0	<1.0	110	<5.0	15	0.42	<10	23	<0.40
109	8- 1420	<5.0	<1.0	1,500	<5.0	6.2	<0.1	18	5.2	<0.40
123	8- 1421	<5.0	<1.0	250	<5.0	6.2	<0.1	12	5.9	2.5
124	8- 1422	<5.0	1.1	590	<5.0	5.5	<0.1	47	10	0.4
125	8- 1423	<5.0	<1.0	420	<5.0	8.2	<0.1	20	<5.0	<0.40
129	8- 1425	<5.0	<1.0	680	<5.0	7.5	<0.1	31	21	<0.40
MW-9	8- 1426	<5.0	<1.0	130	<5.0	7.5	<0.1	14	12.8	0.5
EQ. BLANK	8- 1427	<5.0	<1.0	14	<5.0	<5.0	<0.1	<10	<5.0	<0.40
MW-10	8- 1428	<5.0	<1.0	640	24	7.0	<0.1	20	28	<0.40
C-2	8- 1459	<5.0	3.0	540	29	7.8	<0.1	70	5.8	<0.40
TR. BLANK	8- 1460	<5.0	<1.0	<5.0	<5.0	5.0	<0.1	<10	<5.0	<0.40
C-3	8- 1461	<5.0	8.8	730	24	8.0	<0.1	28	7.8	<0.40
C-4	8- 1463	<5.0	2.5	280	<5.0	6.8	<0.1	20	8.5	<0.40
C-5	8- 1464	<5.0	1.6	340	<5.0	5.8	<0.1	21	5.8	<0.40
MW-11	8- 1465	<5.0	<1.0	67	<5.0	8.2	<0.1	13	18	<0.40
MW-13	8- 1466	<5.0	<1.0	280	9.0	6.5	<0.1	13	6.5	<0.40
120	8- 1479	<5.0	4.7	580	5.5	11	<0.1	34	100	0.5
MW-8	8- 1480	<5.0	<1.0	470	<5.0	12	<0.1	16	20	<0.40

003193

TABLE 1

SWDEB-9L Report No. 14543

Results of Chemical Analyses of Water Samples

Longhorn Water Quality Assessment

BORING NO.	SWD NO.	Ag	As	Ba	Cd	Cr	Hg	Pb	Ni	Se
Minimum Reported Concentration Results reported in ug/L		5.0	1.0	5.0	5.0	5.0	0.10	10	5.0	0.40
EQ. BLANK	8- 1481	<5.0	<1.0	<5.0	<5.0	<5.0	<0.1	8.8	11	<0.40
MW-14	8- 1482	<5.0	<1.0	1,300	20	7.5	<0.1	23	16	<0.40
MW-12	8- 1483	<5.0	<1.0	560	24	9.2	<0.1	20	18	<0.40



003194

Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.41b

DATE: 10-14-88

SAMPLE MATRIX: WATER
SWLO # 21421
DATE SUBMITTED: 09-24-88
CLIENT I.D.: 8-1416 (MW-4) 8/22/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	502.5 mg/L	10-14-88	RY	SW846-9020
<u>TOTAL METALS</u>				
ARSENIC	0.002 U mg/L	10-06-88	KS	SM 303E
BARIUM	1.0 U mg/L	10-05-88	KS	SM 303C
CADMIUM	0.04 mg/L	10-04-88	KS	SM 310A
CHROMIUM	0.10 mg/L	10-05-88	KS	SM 312A
LEAD	0.1 U mg/L	10-04-88	KS	SM 316A
MERCURY	0.002 U mg/L	10-06-88	KS	SM 320A
NICKEL	0.11 mg/L	10-05-88	KS	SM 321A
SELENIUM	0.002 U mg/L	10-06-88	KS	SM 323A
SILVER	0.05 U mg/L	10-04-88	KS	SM 324A
ZINC	0.06 mg/L	10-05-88	KS	SM 328A

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

BY Chuck Hoover

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Broken Arrow, OK 74012
(918) 251-2858

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INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064



003195

Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.41c

DATE: 10-14-88

SAMPLE MATRIX: WATER
SWLO # 21422
DATE SUBMITTED: 09-24-88
CLIENT I.D.: 8-1417 (MW-5) 8/22/88

<u>PARAMETER</u>	<u>RESULTS</u>		<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	178.9	mg/L	10-14-88	RY	SW846-9020
CHLORIDE	490.0	mg/L	09-30-88	SM	SM 429

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

BY Chuck Hoover

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1700 W. Albany, Suite C
Broken Arrow, OK 74012
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CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003196
EPA SAMPLE NO.

Lab Name: SWL - TULSA

Contract: SWCORP

8-1419 (TRAVEL)

Lab Code: SWOK

Case No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 21424

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C2877

Level: (low/med) LOW

Date Received: 09/24/88

% Moisture: not dec. _____

Date Analyzed: 09/29/88

Column: (pack/cap) CAP

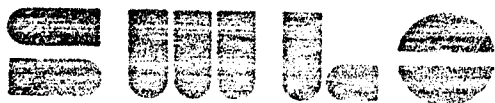
Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
---------	----------	---	---

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	18	B
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	2	BJ
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	10	B
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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003198



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
 U.S. ARMY CORPS OF ENGINEERS
 POST OFFICE BOX 36045
 DALLAS, TEXAS 75235-8011
 ATTN: CATHY HUTCHINS

REPORT: SAP5013.41e

DATE: 10-14-88

SAMPLE MATRIX: WATER
 SWLD # 21425
 DATE SUBMITTED: 09-24-88
 CLIENT I.D.: B-1420 (109) 8/22/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	12.7 mg/L	10-14-88	RY	SW846-9020
<u>TOTAL METALS</u>				
ARSENIC	0.002 U mg/L	10-06-88	KS	SM 303E
BARIUM	2.7 mg/L	10-05-88	KS	SM 303C
CADMIUM	0.01 U mg/L	10-04-88	KS	SM 310A
CHROMIUM	0.12 mg/L	10-05-88	KS	SM 312A
LEAD	0.1 U mg/L	10-04-88	KS	SM 316A
MERCURY	0.002 U mg/L	10-06-88	KS	SM 320A
NICKEL	0.05 U mg/L	10-05-88	KS	SM 321A
SELENIUM	0.002 U mg/L	10-06-88	KS	SM 323A
SILVER	0.05 U mg/L	10-04-88	KS	SM 324A
ZINC	0.04 mg/L	10-05-88	KS	SM 328A

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

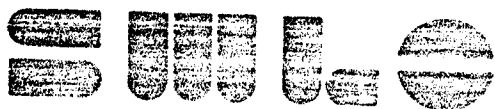
Southwest Laboratory of Oklahoma

BY Chuck Hoover

TULSA BRANCH
 1700 W. Albany, Suite C
 Broken Arrow, OK 74012
 (918) 251-2858

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
 INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
 P.O. Box 368
 Cushing, Okla. 74023
 (918) 225-1064



003199

Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.47e

DATE: 10-27-88

SAMPLE MATRIX: WATER
SWLO # 21542
DATE SUBMITTED: 09-30-88
CLIENT I.D.: 8-1421 (123) 9/21/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
CHLORIDE	13.8 mg/L	10-05-88	SM	SM 429

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

BY Chuck Haver

TULSA BRANCH
1700 W. Albany, Suite C
Broken Arrow, OK 74012
(918) 251-2858

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064

003200

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-12-88

SWLO#: 21427

SAMPLE ID: 8-1422 (124)

COMPOUNDS

RESULTS
ug/g

HMX	26.0 U
RDX	22.0 U
TETRYL	26.0 U
TNT	14.0 U
2,4 DNT	10.0 U

U indicates detection limit

SAMPLE IDENTIFICATION
#124 8-1478

003201
#124 8-1478

DATE COLLECTED
09/22/88

09/22/88

REPORT OF ANALYSIS

TYPE OF ANALYSIS

2,4,6-Trinitrobenzene
2,4-Dinitrobenzene
2,6-Dinitrobenzene
1,3,5-Trinitrobenzene
RDX
Tetryl

Volatile Organics

ug/liter

<10
<10
<20
<20
<20
<30

LAB #

88-09-480

()

003202

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Name: SWL - TULSAContract: SWCORP

8-1424 (TRAVEL)

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: 21429Sample wt/vol: 3.8 (g/mL) MLLab File ID: C2908Level: (low/med) LOWDate Received: 09/24/88

% Moisture: not dec. _____

Date Analyzed: 09/30/88Column: (pack/cap) CAPDilution Factor: 1.0

CAS NO.

COMPOUND

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

Q

74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	2	BJ
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	1	BJ
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	Trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Xylene (total)	7	U
75-69-4	Dichlorodifluoromethane	13	U
95-50-1	1,2-Dichlorobenzene	13	U

003203

106-46-7-----1,3-Dichlorobenzene	
547-73-1-----1,4-Dichlorobenzene	

13	U
13	U

008204

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SWL - TULSAContract: SWCORP

8-1428 (MW=10)

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: 21436Sample wt/vol: 5.0 (g/mL) MLLab File ID: C2911Level: (low/med) LOWDate Received: 09/27/88

% Moisture: not dec. _____

Date Analyzed: 09/30/88Column: (pack/cap) CAPDilution Factor: 1.0

CAS NO.

COMPOUND

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

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	120	B
75-15-0	Carbon Disulfide	10	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	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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	61	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	5	U
591-79-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	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
75-69-4	DICHLORODIFLUOROMETHANE	5	U
95-50-1	1,2-DICHLOROBENZENE	10	U
		10	U

FORM I VOA

1/87 Rev.

000205

106-46-7-----	1,3-DICHLOROBENZENE
547-73-1-----	1,4-DICHLOROBENZENE

10	U
10	U

SAMPLE ID 88-10 B-1478

FRACTION 02A TEST CODE VOA NAME Volatile Organics EPA-624
Date & Time Collected 07/22/88 Category WATER

003200

CON #

Compound name

Result

74-07-3	Chloromethane	<10
74-03-9	Bromomethane	<10
75-01-4	Vinyl Chloride	<10
75-00-3	Chloroethane	<10
75-09-2	Methylene Chloride	<2.0
75-35-4	1,1-Dichloroethene	<2.0
75-34-3	1,1-Dichloroethane	<4.7
156-60-5	Trans-1,2-Dichloroethene	<1.6
67-66-3	Chloroform	<1.6
107-06-2	1,2-Dichloroethane	<2.0
75-69-4	Trichlorofluoromethane	<5.0
71-55-6	1,1,1-Trichloroethane	<3.0
56-23-5	Carbon Tetrachloride	<2.0
75-27-4	Bromodichloromethane	<2.2
77-34-5	1,1,2,2-Tetrachloroethane	<6.7
70-07-5	1,2-Dichloropropane	<6.0
10061-02-6	Trans-1,3-dichloropropene	<5.0
77-01-6	Trichloroethene	<1.7
124-48-1	Dibromochloromethane	<3.1
75-00-5	1,1,2-Trichloroethane	<9.0
127-18-4	Tetrachloroethene	<4.1
10061-01-5	cis-1,3-Dichloropropene	<5.0
110-75-8	2-Chloroethylvinylether	<5.0
75-25-2	Bromoform	<4.7
71-43-2	Benzene	<4.4
95-50-1	1,2-Dichlorobenzene	<5.0
100-90-7	Chlorobenzene	<6.0
541-73-1	1,3-Dichlorobenzene	<5.0
106-46-7	1,4-Dichlorobenzene	<5.0
108-88-3	Toluene	<6.0
100-41-4	Ethylbenzene	<7.2

002207

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SWL - TULSAContract: SWCORP

8-1462 (E08BLK)

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: 21459Sample wt/vol: 5.0 (g/mL) MLLab File ID: C2945Level: (low/med) LOWDate Received: 09/28/88

% Moisture: not dec. _____

Date Analyzed: 10/04/88Column: (pack/cap) CAPDilution Factor: 1.0

CAS NO.

COMPOUND

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

Q

74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	10	U
67-64-1	-----Acetone	10	
75-15-0	-----Carbon Disulfide	10	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	3	BJ
78-93-3	-----2-Butanone	5	U
71-55-6	-----1,1,1-Trichloroethane	10	U
56-23-5	-----Carbon Tetrachloride	5	U
108-05-4	-----Vinyl Acetate	5	U
75-27-4	-----Bromodichloromethane	10	U
78-87-5	-----1,2-Dichloropropane	0.9	J
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	5	U
591-78-6	-----2-Hexanone	10	U
127-18-4	-----Tetrachloroethene	10	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	0.4	J
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Xylene (total)	5	U
75-69-4	-----Dichlorodifluoromethane	5	U
95-50-1	-----1,2-Dichlorobenzene	10	U
		10	U

FORM I VOA

1/87 Rev.

003208

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SWL - TULSAContract: SWCORP

8-1463 (C-4)

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: 21460Sample wt/vol: 5.0 (g/mL) MLLab File ID: C2946Level: (low/med) LOWDate Received: 09/28/88

% Moisture: not dec. _____

Date Analyzed: 10/04/88Column: (pack/cap) CAPDilution Factor: 1.0

CAS NO.

COMPOUND

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

Q

74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	5	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	9	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	50	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
75-69-4	-----Dichlorodifluoromethane	10	U
95-50-1	-----1,2-Dichlorobenzene	10	U

000210

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

RECEIVED: 09/29/88

Results by Sample

SAMPLE ID #C-4 8-1463

FRACTION O1A TEST CODE VOA

NAME Volatile Organics EPA-624

121

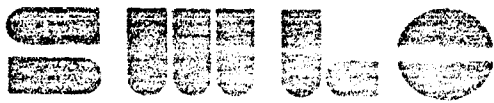
Date & Time Collected 09/26/88

Category WATER

00321

CAS #	Compound name	Result
74-87-3	Chloromethane	<10
74-83-9	Bromomethane	<10
75-01-4	Vinyl Chloride	<10
75-00-3	Chloroethane	<10
75-09-2	Methylene Chloride	<2.8
75-35-4	1,1-Dichloroethene	<2.8
75-34-3	1,1-Dichloroethane	<4.7
156-60-5	Trans-1,2-Dichloroethene	<1.6
67-66-3	Chloroform	<1.6
107-06-2	1,2-Dichloroethane	<2.8
75-69-4	Trichlorofluoromethane	<5.0
71-55-6	1,1,1-Trichloroethane	<3.8
56-23-5	Carbon Tetrachloride	<2.8
75-27-4	Bromodichloromethane	<2.2
79-34-5	1,1,2,2-Tetrachloroethane	<6.9
76-87-5	1,2-Dichloropropane	<6.0
10061-02-6	Trans-1,3-dichloropropene	<5.0
79-01-6	Trichloroethene	<1.9
124-48-1	Dibromochloromethane	<3.1
75-00-5	1,1,2-Trichloroethane	<5.0
127-18-4	Tetrachloroethene	<4.1
10061-01-5	cis-1,3-Dichloropropene	<5.0
110-75-8	2-Chloroethylvinylether	<5.0
75-25-2	Bromoform	<4.7
71-43-2	Benzene	<4.4
95-50-1	1,2-Dichlorobenzene	<5.0
108-90-7	Chlorobenzene	<6.0
541-73-1	1,3-Dichlorobenzene	<5.0
106-46-7	1,4-Dichlorobenzene	<5.0
108-88-3	Toluene	<6.0
100-41-4	Ethylbenzene	<7.2

000212



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.45d

DATE: 10-25-88

SAMPLE MATRIX: WATER
SWLO # 21461
DATE SUBMITTED: 09-28-88
CLIENT I.D.: 8-1464 (C-5) 9/26/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	0.03 mg/L	10-25-88	RY	SW846-9020

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

BY Chuck Hower

TULSA BRANCH
1700 W. Albany, Suite C
Broken Arrow, OK 74012
(918) 251-2858

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
 U.S. ARMY CORPS OF ENGINEERS
 POST OFFICE BOX 36045
 DALLAS, TEXAS 75235-8011
 ATTN: CATHY HUTCHINS

REPORT: SAP5013.45e

DATE: 10-25-88

SAMPLE MATRIX: WATER
 SWLD # 21462
 DATE SUBMITTED: 09-28-88
 CLIENT I.D.: 8-1465 (MW-11) 9/26/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	3.2 mg/L	10-25-88	RY	SW846-9020

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

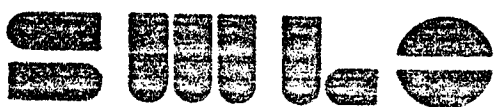
BY Chuck Hoover

TULSA BRANCH
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OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
 INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
 P.O. Box 368
 Cushing, Okla. 74023
 (918) 225-1064

000215



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.45f

DATE: 10-25-88

SAMPLE MATRIX: WATER
SWLO # 21463
DATE SUBMITTED: 09-28-88
CLIENT I.D.: 8-1466 (MW-13) 9/26/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	0.12 mg/L	10-25-88	RY	SW846-9020
NITRATE	2.0 U mg/L	09-30-88	SM	SM 429

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

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003216



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.47a

DATE: 10-27-88

SAMPLE MATRIX: WATER
SWLO # 21538
DATE SUBMITTED: 09-30-88
CLIENT I.D.: 8-1479 (120) 9/27/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	2011.0 mg/L	10-27-88	RY	SW846-9020
NITRATE	735.0 mg/L	10-05-88	SM	SM 429

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

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008217



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CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.47c

DATE: 10-27-88

SAMPLE MATRIX: WATER

SWLO # 21540

DATE SUBMITTED: 09-30-88

CLIENT I.D.: 8-1482 (MW-14) 9/27/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	3.6 mg/L	10-27-88	RY	SW846-9020
CHLORIDE	1020.0 mg/L	10-05-88	SM	SM 429

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

BY Chuck Haver

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000218



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.47d

DATE: 10-27-88

SAMPLE MATRIX: WATER
SWLO # 21541
DATE SUBMITTED: 09-30-88
CLIENT I.D.: 8-1483 (MW-12) 9/28/88

<u>PARAMETER</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>ANALYST</u>	<u>METHOD REFERENCE</u>
TOTAL ORGANIC HALOGENS	1.7 mg/L	10-27-88	RY	SW846-9020
<u>TOTAL METALS</u>				
ARSENIC	0.002 U mg/L	10-21-88	KS	SM 303E
BARIUM	1.2 mg/L	10-19-88	KS	SM 303C
CADMIUM	0.01 U mg/L	10-18-88	KS	SM 310A
CHROMIUM	0.06 mg/L	10-19-88	KS	SM 312A
LEAD	0.22 mg/L	10-18-88	KS	SM 316A
MERCURY	0.002 mg/L	10-23-88	KS	SM 320A
NICKEL	0.09 mg/L	10-18-88	KS	SM 321A
SELENIUM	0.002 U mg/L	10-21-88	KS	SM 323A
SILVER	0.05 U mg/L	10-18-88	KS	SM 324A
ZINC	0.10 mg/L	10-18-88	KS	SM 328A

U Indicates the compound was analyzed for but not detected above that level.

SM STANDARD METHODS, 16TH EDITION

SW846 EPA METHODOLOGY

Southwest Laboratory of Oklahoma

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008219

PART E
QUALITY CONTROL INFORMATION

QUALITY CONTROL SUMMARY

[illegible]

QUALITY CONTROL SUMMARY (METALS)

ANALYTE	:BLANK :RESULT	:SAMPLE :SPIKED	:SAMPLE :RESULT	:SPIKE :AMOUNT	:SPIKE :RESULT	:PERCENT :RECOVERY	:MSD :RESULT	:PERCENT :RECOVERY	:RELATIVE :PERCENT DIFFERENCE
Ag :	0 :MW-10 (2')	0.02 ag/Kg:	52 ag/Kg :	15 ag/Kg :	29% :	14 ag/Kg :	27% :	2%	
:	:	:	:	:	:	:	:	:	
:	:	C-1 :	0 :	29 ag/Kg :	26 ag/Kg :	90% :	26 ag/Kg :	90% :	
:	:	:	:	:	:	:	:	0%	
As :	0 :MW-10 (2')	0.51 ag/Kg:	1:1 2.1 ppa :	1.3 ag/Kg :	100% :	1.3 ag/Kg :	100% :	0%	
:	:	:	:	:	:	:	:	:	
:	0 :	C-1 :0.55 ag/Kg:	1:1 1.14 ppm:	0.86 ag/Kg :	101% :	0.86 ag/Kg:	101% :	0%	
:	:	:	:	:	:	:	:	:	
Ba :	0 :MW-10 (2')	10 ag/Kg :	52 ag/Kg :	138 ag/Kg :	246% :	151 ag/Kg :	271% :	25%	
:	:	:	:	:	:	:	:	:	
:	:	C-1 :180 ag/Kg :	29 ag/Kg :	200 ag/Kg :	70% :	220 ag/Kg :	140% :	70%	
:	:	:	:	:	:	:	:	:	
Cd :	0 :MW-10 (2')	1.7 ag/Kg :	52 ag/Kg :	42 ag/Kg :	79% :	39 ag/Kg :	72% :	7%	
:	:	:	:	:	:	:	:	:	
:	0 :	C-1 :3.3 ag/Kg :	29 ag/Kg :	31 ag/Kg :	95% :	31 ag/Kg :	95% :	0%	
:	:	:	:	:	:	:	:	:	
Cr :	0 :MW-10 (2')	2.1 ag/Kg :	52 ag/Kg :	50 ag/Kg :	92% :	42 ag/Kg :	78% :	14%	
:	:	:	:	:	:	:	:	:	
:	0 :	C-1 :3.0 ag/Kg :	29 ag/Kg :	36 ag/Kg :	96% :	36 ag/Kg :	96% :	0%	
:	:	:	:	:	:	:	:	:	
Hg :	0 :MW-10 (2')	7.3 ppb :	58 ppb :	66 ppb :	101% :	68 ppb :	105% :	4%	
:	:	:	:	:	:	:	:	:	
:	0 :	C-1 : 22 ppb :	34 ppb :	54 ppb :	96% :	57 ppb :	104% :	8%	
:	:	:	:	:	:	:	:	:	
Ni :	0 :MW-10 (2')	0.67 ag/Kg:	52 ag/Kg :	42 ag/Kg :	79% :	39 ag/Kg :	74% :	5%	
:	:	:	:	:	:	:	:	:	
:	0 :	C-1 :5.6 ag/Kg :	29 ag/Kg :	32 ag/Kg :	91% :	31 ag/Kg :	88% :	3%	
:	:	:	:	:	:	:	:	:	
Pb :	0 :MW-10 (2')	7.4 ag/Kg :	52 ag/Kg :	52 ag/Kg :	86% :	48 ag/Kg :	78% :	8%	
:	:	:	:	:	:	:	:	:	
:	0 :	C-1 : 17 ag/Kg :	29 ag/Kg :	43 ag/Kg :	90% :	44 ag/Kg :	93% :	3%	
:	:	:	:	:	:	:	:	:	
Se :	0 :MW-10 (2')	0.07 ag/Kg:	2.1 ag/Kg :	0.96 ag/Kg:	87% :	0.95 ag/Kg:	86% :	1%	
:	:	:	:	:	:	:	:	:	
:	0 :	C-1 :0.24 ag/Kg:	1.1 ag/Kg :	0.71 ag/Kg:	103% :	0.71 ag/Kg:	103% :	0%	
:	:	:	:	:	:	:	:	:	
Zn :	0 :MW-10 (2')	3.4 ag/Kg :	52 ag/Kg :	57 ag/Kg :	103% :	56 ag/Kg :	101% :	2%	
:	:	:	:	:	:	:	:	:	
:	0 :	C-1 : 14 ag/Kg :	29 ag/Kg :	40 ag/Kg :	90% :	42 ag/Kg :	96% :	6%	
:	:	:	:	:	:	:	:	:	

008222

QUALITY CONTROL SUMMARY

ANALYTE	:BLANK :RESULT	:SAMPLE :SPIKED	:SAMPLE :RESULT	:SPIKE :AMOUNT	:SPIKE :RESULT	:PERCENT :RECOVERY	:MSD :RESULT	:PERCENT :RECOVERY	:RELATIVE :PERCENT DIFFERENCE
Ba :	:	8-1209 :	110 ppb :	37 ppb :	135 ppb :	70% :	146 ppb :	99% :	29%
:	:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:	:
Ba :	:	8-1244 :	16 ppb :	33 ppb :	46 ppb :	94% :	53 ppb :	115% :	21%
:	:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:	:
Ba :	:	8-1229 :	60 ppb :	32 ppb :	100 ppb :	120% :	120 ppb :	140% :	20%
:	:	:	:	:	:	:	:	:	:

QUALITY CONTROL SUMMARY

ANALYTE	:BLANK :RESULT	:SAMPLE :SPIKED	:SAMPLE :RESULT	:SPIKE :AMOUNT	:SPIKE :RESULT	:PERCENT :RECOVERY	:MSD :RESULT	:PERCENT :RECOVERY	:RELATIVE :PERCENT DIFFERENCE
Ag :	0 :	Dis. Water:	0 :	250 ppb :	247 ppb :	99% :	247 ppb :	99% :	0%
:	:	:	:	:	:	:	:	:	:
As :	0 :	8-1366 :	0.79 ug/Kg :	50% 1.3ug/Kg :	1.1 ug/Kg :	107% :	1.1 ug/Kg :	107% :	0%
:	:	:	:	:	:	:	:	:	:
Ba :	0 :	8-1244 :	16 ug/Kg :	33 ug/Kg :	46 ug/Kg :	92% :	53 ug/Kg :	116% :	22%
:	:	:	:	:	:	:	:	:	:
Cd :	0 :	8-1366 :	4.8 ug/Kg :	32 ug/Kg :	29 ug/Kg :	76% :	37 ug/Kg :	101% :	25%
:	:	:	:	:	:	:	:	:	:
Cr :	0 :	8-1366 :	6.9 ug/Kg :	32 ug/Kg :	30 ug/Kg :	75% :	40 ug/Kg :	100% :	25%
:	:	:	:	:	:	:	:	:	:
Hg :	0 :	8-1299 :	0.017ug/Kg :	1.04 ug/Kg :	0.081ug/Kg :	116% :	0.078ug/Kg :	112% :	4%
:	:	:	:	:	:	:	:	:	:
Pb :	0 :	8-1366 :	9.9 ug/Kg :	32 ug/Kg :	33 ug/Kg :	73% :	41 ug/Kg :	93% :	20%
:	:	:	:	:	:	:	:	:	:
Se :	0 :	8-1366 :	0.12 ug/Kg :	50% 1.3ug/Kg :	0.62 ug/Kg :	89% :	0.62 ug/Kg :	89% :	0%
:	:	:	:	:	:	:	:	:	:

QUALITY CONTROL SUMMARY

ANALYTE	BLANK RESULT	SAMPLE SPIKED	SAMPLE RESULT	SPIKE AMOUNT	SPIKE RESULT	PERCENT RECOVERY	MSD RESULT	PERCENT RECOVERY	RELATIVE PERCENT DIFFERENCE
Ag :	0 :	Dis. Water :	0 :	250 ppb :	265 ppb :	106% :	265 ppb :	106% :	0% :
:	:	:	:	:	:	:	:	:	:
As :	0 :	8-1418 :	0 :	50% 40 ppb :	19.4 ppb :	97% :	18.5 ppb :	92% :	5% :
:	:	:	:	:	:	:	:	:	:
Ba :	0 :	8-1427 :	14 ppb :	250 ppb :	280 ppb :	105% :	270 ppb :	103% :	2% :
:	:	:	:	:	:	:	:	:	:
Cd :	0 :	8-1427 :	0 :	250 ppb :	260 ppb :	105% :	260 ppb :	105% :	0% :
:	:	:	:	:	:	:	:	:	:
Cr :	0 :	8-1427 :	0 :	250 ppb :	270 ppb :	108% :	270 ppb :	108% :	0% :
:	:	:	:	:	:	:	:	:	:
Hg :	0 :	8-1428 :	.004 ppb :	0.10 ppb :	0.030 ppb :	108% :	0.031 ppb :	112% :	4% :
:	:	:	:	:	:	:	:	:	:
Pb :	0 :	8-1427 :	0 :	250 ppb :	260 ppb :	102% :	250 ppb :	100% :	2% :
:	:	:	:	:	:	:	:	:	:
Se :	0 :	8-1418 :	0.1 ppb :	50% 40 ppb :	20 ppb :	100% :	19 ppb :	92% :	8% :
:	:	:	:	:	:	:	:	:	:
Ni :	0 :	8-1427 :	0 :	250 ppb :	260 ppb :	104% :	260 ppb :	104% :	0% :
:	:	:	:	:	:	:	:	:	:
In :	0 :	8-1427 :	32 ppb :	250 ppb :	290 ppb :	102% :	290 ppb :	102% :	0% :
:	:	:	:	:	:	:	:	:	:
Chloride :	0 :	8-1391 :	930 ppm :	2% 1000ppm :	920 ppm :	98% :	1000 ppm :	106% :	8% :
:	:	:	:	:	:	:	:	:	:
Nitrates :	0 :	8-1394 :	0.1 ppm :	50% 2.0 ppm :	0.97 ppm :	92% :	1.02 ppm :	97% :	5% :
:	:	:	:	:	:	:	:	:	:

QUALITY CONTROL SUMMARY

ANALYTE	BLANK :RESULT	SAMPLE :SPIKED	SAMPLE :RESULT	SPIKE :AMOUNT	SPIKE :RESULT	PERCENT :RECOVERY	MSD :RESULT	PERCENT :RECOVERY	RELATIVE :PERCENT DIFFERENCE
As :	0 :	Dis. Water:	0 :	250 ppb :	265 ppb :	106% :	265 ppb :	106% :	0%
As :	0 :	8-1418 :	0 :	50% 40 ppb :	19.4 ppb :	97% :	18.5 ppb :	92% :	5%
As :	0 :	8-1466 :	0 :	50% 40 ppb :	20.4 ppb :	102% :	20.5 ppb :	102% :	0%
Ba :	0 :	8-1427 :	14 ppb :	250 ppb :	280 ppb :	105% :	270 ppb :	103% :	2%
Ba :	0 :	8-1483 :	560 ppb :	250 ppb :	820 ppb :	102% :	860 ppb :	118% :	16%
Cd :	0 :	8-1427 :	0 :	250 ppb :	260 ppb :	105% :	260 ppb :	105% :	0%
Cd :	0 :	8-1483 :	24 ppb :	250 ppb :	270 ppb :	97% :	280 ppb :	104% :	7%
Cr :	0 :	8-1427 :	0 :	250 ppb :	270 ppb :	108% :	270 ppb :	108% :	0%
Cr :	0 :	8-1483 :	9.2 ppb :	250 ppb :	270 ppb :	105% :	290 ppb :	112% :	7%
Hg :	0 :	8-1428 :	.004 ppb :	0.10 ppb :	0.030 ppb :	108% :	0.031 ppb :	112% :	4%
Hg :	0 :	8-1466 :	0 :	0.10 ppb :	0.024 ppb :	100% :	0.023 ppb :	96% :	4%
Pb :	0 :	8-1427 :	0 :	250 ppb :	260 ppb :	102% :	250 ppb :	100% :	2%
Pb :	0 :	8-1483 :	12 ppb :	250 ppb :	240 ppb :	91% :	260 ppb :	100% :	9%
Se :	0 :	8-1418 :	0.1 ppb :	50% 40 ppb :	20 ppb :	100% :	18 ppb :	92% :	8%
Se :	0 :	8-1466 :	0 :	50% 40 ppb :	18 ppb :	90% :	19 ppb :	95% :	5%
Ni :	0 :	8-1427 :	0 :	250 ppb :	260 ppb :	104% :	260 ppb :	104% :	0%
Ni :	0 :	8-1483 :	20 ppb :	250 ppb :	260 ppb :	103% :	260 ppb :	103% :	0%
Zn :	0 :	8-1427 :	32 ppb :	250 ppb :	290 ppb :	102% :	290 ppb :	102% :	0%
Zn :	0 :	8-1483 :	124 ppb :	250 ppb :	380 ppb :	100% :	400 ppb :	110% :	10%
Chloride :	0 :	8-1426 :	43 ppm :	2% 1000ppm :	59 ppm :	95% :	62 ppm :	100% :	5%
Chloride :	0 :	8-1465 :	40 ppm :	2% 1000ppm :	65 ppm :	108% :	64 ppm :	106% :	2%

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Case No. SWCORP Contract Laboratory SOUTHWEST LAB OF OKLAHOMA Contract No. 68-01-7168

Low _____ Medium _____

Moderna

[illegible]

VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS

ADVISORY LIMITS ONLY

Volatiles:	_____ out of _____	_____ outside of QC limits
Semi-Volatiles:	_____ out of _____	_____ outside of QC limits
Pesticides:	_____ out of _____	_____ outside of QC limits

7185

Comments:

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

002228

Lab Name: SOUTHWEST LABORATORYContract: S.W. DIVISION LABORATORYLab Code: 14423 Case No.: 7-536

U.S. ARMY CORPS OF ENGINEERS

SAS No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Level: (low/med) _____

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50	0	46	92	59-172
Trichloroethene	50	0	51	102	62-137
Benzene	50	0	58	116	66-142
Toluene	50	0	58	116	59-139
Chlorobenzene	50	0	57	114	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene					22	59-172
Trichloroethene					24	62-137
Benzene					21	66-142
Toluene					21	59-139
Chlorobenzene					21	60-133

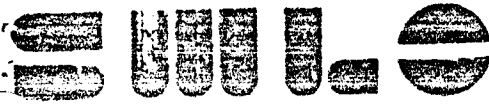
Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: _____ out of _____ outside limits

Spike Recovery: _____ out of _____ outside limits

COMMENTS: _____



003229

Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: JEFF TYE

REPORT: SAP1013.35a-C

DATE: 11-02-87

SUBJECT: SAMPLE FOR ANALYSIS

SAMPLE MATRIX: SOIL
SWLD # 14425
DATE SUBMITTED: 09-18-87
DATE EXTRACTED: 09-28-87
DATE ANALYZED: 10-26-87
CLIENT I.D.: 7-536 FIELD REPEAT (MATRIX SPIKE)

EXPLOSIVES

RESULTS (ug/g)

TNT.....	<0.05
2-4 DNT.....	<0.05
2-6 DNT.....	<0.05
RDX.....	<0.05
HMX.....	<0.05
TETRYL.....	<0.05

NOTE: Samples show a very large, broad peak where tetryl, nitroglycerine, and TNT elute. Broadness of peak would indicate it to be a matrix problem and the analyst will scan to verify. (Does not show on method blanks or standards).

MATRIX SPIKE PERCENT RECOVERIES:

56%	2-4 DNT
68%	2-6 DNT

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BY Robert Habbas

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(918) 225-1064

002230

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 4-21-88

SWLO#: 03318EXB

SAMPLE ID: (PBLK1)

COMPOUNDS

RESULTS

HMX
RDX
Tetryl
TNT
DNT(2,4)

1.6 U
1.8 U
5.5 U
0.8 U
0.8 U

*U indicates detection limit

002231

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 4-21-88

SWLO #: 18286

SAMPLE ID 8-444

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	4475	111.9
RDX	4000	0	4242	106.1
TNT	4000	0	3722	93.1
DNT(2,4)	4000	0	4024	100.6

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RPD
HMX	4000	0	3399	85.0	27.3
RDX	4000	0	3797	94.9	11.1
TNT	4000	0	3438	86.0	7.9
DNT(2,4)	4000	0	3732	93.3	7.5

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 4-21-88

SWLO #: 18291

SAMPLE ID 8-449

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	3914	97.9
RDX	4000	0	3737	93.4
TNT	4000	0	3376	84.4
DNT(2,4)	4000	0	3660	91.5

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RFD
HMX	4000	0	3700	92.5	5.6
RDX	4000	0	3741	93.5	0.1
TNT	4000	0	3412	85.3	1.1
DNT(2,4)	4000	0	3715	92.9	1.5

003233

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 4-21-88

SWLO#: 04018EXB

SAMPLE ID: PBLK2

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
Tetryl	5.5 U
TNT	0.8 U
DNT(2,4)	0.8 U

*U indicates detection limit

003234

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 4-21-88

SWLO #: 18309

SAMPLE ID 8-463

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	3900	97.5
RDX	4000	0	3726	93.2
TNT	4000	0	3402	85.1
DNT(2,4)	4000	0	3743	93.6

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RPD
HMX	4000	0	4446	111.2	13.1
RDX	4000	0	3803	95.1	2.0
TNT	4000	0	3395	84.9	0.2
DNT(2,4)	4000	0	3748	93.7	0.1

003235

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 4-21-88

SWLO #: 18315

SAMPLE ID 8-469

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	3823	95.6
RDX	4000	0	3594	89.9
TNT	4000	0	3228	80.7
DNT(2,4)	4000	124	3510	84.7

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RFD
HMX	4000	0	3893	97.3	1.8
RDX	4000	0	3621	90.5	0.7
TNT	4000	0	3277	81.9	1.5
DNT(2,4)	4000	0	3605	90.1	2.7

003236

EXPLOSIVES BY HFLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 4-24-88

SWLO#: 04078EXB

SAMPLE ID: PBLX3

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
Tetryl	5.5 U
TNT	0.8 U
DNT(2,4)	0.8 U

*U indicates detection limit

002237

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 4-21-88

SWLO #: 16416

SAMPLE ID 8-482

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	3691	92.3
RDX	4000	0	3393	84.8
TNT	4000	0	3091	77.3
DNT(2,4)	4000	0	3407	85.2

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RFD
HMX	4000	0	4072	101.8	9.8
RDX	4000	0	3456	86.4	1.8
TNT	4000	0	3138	78.5	1.3
DNT(2,4)	4000	0	3484	87.1	2.2

003238

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCDE

DATE: 4-21-88

SWLD#: 0407EXBZ

SAMPLE ID: PBLK4

COMPOUNDS

RESULTS

HMX
RDX
Tetryl
TNT
DNT(2,4)

1.6 U
1.8 U
5.5 U
0.8 U
0.8 U

*U indicates detection limit

003239

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 4-21-88

SWLO #: 18449

SAMPLE ID 8-489

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	4051	101.3
RDX	4000	0	3678	92.0
TNT	4000	0	3423	85.6
DNT(2,4)	4000	0	3769	94.2

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RFD
HMX	4000	0	3793	94.8	6.6
RDX	4000	0	3336	82.9	3.4
TNT	4000	0	3294	82.4	3.3
DNT(2,4)	4000	0	3604	90.1	4.5

003240

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 4-21-88

SWLD #: 18456

SAMPLE ID 8-496

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	3767	94.2
RDY	4000	0	3620	90.5
TNT	4000	0	3384	84.6
DNT(2,4)	4000	0	3655	91.4

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RFD
HMX	4000	0	3696	92.4	1.9
RDY	4000	0	3451	86.3	4.8
TNT	4000	0	3257	81.4	3.8
DNT(2,4)	4000	0	3575	89.4	2.2

000241

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 4-22-88

SWLO#: 04148EXB

SAMPLE ID: P8LK5

COMPOUNDS

RESULTS

HMX
RDX
Tetryl
TNT
DNT(2,4)

1.6 U
1.8 U
5.5 U
0.8 U
0.8 U

*U indicates detection limit

2B
SOIL VOLATILE SURROGATE RECOVERY

003242

Lab Name: Southwest LAB OF ORIA Contract: NIA

Lab Code: SWOK Case No.: SWCORP SAS No.: NIA SDG No.: NIA

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	8-444	103	103	112		
02	8-445	100	106	112		
03	8-446	103	104	113		
04	8-447	105	108	111		
05	8-448	105	107	110		
06	8-449	109	106	114		
07	8-450	110	102	111		
08	8-450 DL	101	96	98		
09	8-451	107	109	104		
10	WBK 1	100	102	100		
11	WBK 2	98	102	96		
12	WBK 3	106	106	97		
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30						

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

003243

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 05-13-88

SWLO#: 04258EXB

SAMPLE ID: METHOD BLANK

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
Tetryl	5.5 U
TNT	0.6 U
DNT(2,4)	0.8 U

*U indicates detection limit

4A
VOLATILE METHOD BLANK SUMMARY

003243

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SWC010 SAS No.: N/A SDG No.: N/A
 Lab File ID: 7367 Lab Sample ID: UBLK1
 Date Analyzed: 03-24-88 Time Analyzed: 22:00
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-444		7368	22:38
02	8-445		7369	23:22
03	8-446		7370	00:08
04	8-447		7371	00:53
05	8-448		7372	01:38
06	8-449		7373	02:23
07	8-450		7374	03:08
08				
09				
10				
11				
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30				

COMMENTS:

003244

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
Lab Code: SWOX Case No.: SHC0005 SAS No.: N/A SDG No.: N/A
Lab File ID: 7395 Lab Sample ID: VBLIC 2
Date Analyzed: 03/28/88 Time Analyzed: 16:58
Matrix: (soil/water) SOIL Level: (low/med) LOW
Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-450 DL		7402	23:01
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
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30				

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003245

Lab Name: SOUTHWEST LABORATORY OF OELA Contract: N/A
 Lab Code: SWOK Case No.: SW/Comp SAS No.: N/A SDG No.: N/A
 Lab File ID: 7410 Lab Sample ID: VBK3
 Date Analyzed: 3/29/88 Time Analyzed: 09:39
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-451		7413	11:34
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
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30				

COMMENTS:

003246

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Southwest Polymers Contract: N/A
 Lab Code: SWOK Case No.: SWCorp SAS No.: N/A SDG No.: N/A
 Lab File ID: 7317 BFB Injection Date: 03-21-88
 Instrument ID: 7002D BFB Injection Time: 10:19
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	30.4
75	30.0 - 60.0% of mass 95	59.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.0 (0.0) 1
174	Greater than 50.0% of mass 95	67.3
175	5.0 - 9.0% of mass 174	4.2 (7.2) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	64.2 (95.3) 1
177	5.0 - 9.0% of mass 176	3.9 (6.1) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD 200		7318	03-21-88	10:32
02	VSTD 150		7319		11:11
03	VSTD 100		7320		11:50
04	VSTD 50		7321		12:28
05	VSTD 20		7322	↓	13:07
06					
07					
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21					
22					

003247

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Southwest LAB OF OKIA Contract: NIALab Code: SWOK Case No.: SWCORP SAS No.: NIA SDG No.: NIALab File ID: 7345BFB Injection Date: 03-24-88Instrument ID: 7002DBFB Injection Time: 21:02Matrix: (soil/water) Soil Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.4
75	30.0 - 60.0% of mass 95	47.6
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0) 1
174	Greater than 50.0% of mass 95	74.2
175	5.0 - 9.0% of mass 174	5.7 (7.7) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	74.5 (100.5) 1
177	5.0 - 9.0% of mass 176	5.2 (7.0) 2

1-Value is % mass 174

2-Value is % mass 176

HIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	USTD 50		7366	03-24-88	21:22
02	VBK 1		7367	03-24-88	22:00
03	8-444		7368		22:38
04	8-445		7369		23:23
05	8-446		7370	03-25-88	00:08
06	8-447		7371		00:53
07	8-448		7372		01:38
08	8-449		7373		02:23
09	8-450		7374		03:08
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003248

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Southwest LAB OF OKIA Contract: N/ALab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/ALab File ID: 7393 BFB Injection Date: 03-22-88Instrument ID: 7002D BFB Injection Time: 16:07Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	25.4
75	30.0 - 60.0% of mass 95	51.7
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0) 1
174	Greater than 50.0% of mass 95	61.4
175	5.0 - 9.0% of mass 174	4.7 (7.7) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	59.3 (96.7) 1
177	5.0 - 9.0% of mass 176	4.2 (7.1) 2

1-Value is % mass 174

2-Value is % mass 176

HIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD 50		7394	03-22-88	16:20
02	VBK 2		7395		16:58
03	8-450 DL		7402	↓	23:01
04					
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22					

003249

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Southwest LAB OF OZIA Contract: NIALab Code: SWOK Case No.: SWCORP SAS No.: NIA SDG No.: NIALab File ID: 7408 BFB Injection Date: 03-29-88Instrument ID: 7002D BFB Injection Time: 08:47Matrix: (soil/water) Soil Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	50.5
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0) 1
174	Greater than 50.0% of mass 95	66.6
175	5.0 - 9.0% of mass 174	5.1 (7.6) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	63.9 (96.0) 1
177	5.0 - 9.0% of mass 176	2.1 (6.4) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	USTD 50		7409	03/29/88	09:01
02	VBK 3		7410	↓	09:39
03	8-451		7413	↓	11:34
04					
05					
06					
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003250
EPA SAMPLE NO

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

VBLK1

Matrix: (soil/water) SOIL
Sample wt/vol: 5 G
Level: (low/med) LOW
% Moisture: not dec. N/A
Column: (pack/cap) PACK

Lab Sample ID: N/A
Lab File ID: 7367
Date Received: N/A
Date Analyzed: 03-24-88
Dilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-83-1-----	1,4-Dichlorobenzene	10	U

003251

EPA SAMPLE NO

1A
VOLATILE ORGANICS ANALYSIS DATA SHEETLab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

VBLK22

Matrix: (soil/water) SOILLab Sample ID: N/ASample wt/vol: 5 GLab File ID: 7395Level: (low/med) LOWDate Received: N/A% Moisture: not dec. N/ADate Analyzed: 03-28-88Column: (pack/cap) PACKDilution Factor: 1

CAS NO.

COMPOUND

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

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003252

EPA SAMPLE NO

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

YBLK#3

Matrix: (soil/water) SOIL

Lab Sample ID: N/A

Sample wt/vol: 5 G

Lab File ID: 7410

Level: (low/med) LOW

Date Received: N/A

% Moisture: not dec. N/A

Date Analyzed: 03-29-88

Column: (pack/cap) PACK

Dilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: Southwest LRA OF OKIA Contract: SW CORP

Lab Code: SWOK Case No.: N/A SAS No.: N/A SDG No.: N/A

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	8-462	106	104	102		
02	8-463	102	100	112		
03	8-463 DL	104	106	98		
04	8-464	107	110	101		
05	8-465	108	112	98		
06	8-466	110	104	100		
07	8-467	106	106	102		
08	8-468	109	104	95		
09	8-469	104	111	104		
10	2BLK 1	98	112	96		
11	2BLK 2	106	106	98		
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QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4A
VOLATILE METHOD BLANK SUMMARY

Name: SOUTHWEST LABORATORY OF OKLAHOMA Contract: SWCORP

Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A

Lab File ID: 7395 Lab Sample ID: UBLK1

Date Analyzed: 03/28/88 Time Analyzed: 16:58

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

Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-46.3		7405	01:15
02				
03				
04				
05				
06				
07				
08				
09				
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COMMENTS:

4A

VOLATILE METHOD BLANK SUMMARY

Name: SOUTHWEST LABORATORY OF OKLAHOMA Contract: SWCORP

Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDS No.: N/A

Lab File ID: 7410 Lab Sample ID: VBULK

Date Analyzed: 03/29/88 Time Analyzed: 09:39

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

Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-464		7414	12:19
02	8-466		7415	12:04
03	8-468		7417	14:33
04	8-469		7418	15:17
05	8-463 DL		7422	20:07
06	8-465		7423	20:51
07	8-462		7426	23:06
08	8-467		7427	23:51
09				
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COMMENTS:

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Southwest LAB OF OKIA Contract: SW CORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 7317 BFB Injection Date: 03/21/88
 Instrument ID: 7002D BFB Injection Time: 10:19
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	30.4
75	30.0 - 60.0% of mass 95	59.8
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.23
173	Less than 2.0% of mass 174	0.00 (0.00) 1
174	Greater than 50.0% of mass 95	67.3
175	5.0 - 9.0% of mass 174	4.82 (7.15) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	64.2 (45.3) 1
177	5.0 - 9.0% of mass 176	3.91 (6.09) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	USTD 200		7318	03/21/88	10:32
02	USTD 150		7319	03/21/88	11:11
03	USTD 100		7320	03/21/88	11:50
04	USTD 50		7321	03/21/88	12:28
05	USTD 20		7322	03/21/88	12:07
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003257

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)Lab Name: Southwest LAB OF OKLA Contract: SW CORPLab Code: SWOK Case No.: NIA SAS No.: NIA SDG No.: NIALab File ID: 7393BFB Injection Date: 03/28/88Instrument ID: 7002DBFB Injection Time: 16:07Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	25.3
75	30.0 - 60.0% of mass 95	51.7
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.88
173	Less than 2.0% of mass 174	0.00 (0.00) 1
174	Greater than 50.0% of mass 95	61.3
175	5.0 - 9.0% of mass 174	4.71 (7.68) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	59.3 (96.7) 1
177	5.0 - 9.0% of mass 176	4.19 (7.07) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	25TD 50		7394	03/28/88	16:20
02	25UK 1		7395	03/28/88	16:52
03	8-N63		7405	03/29/88	01:15
04					
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003258

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Southwest LAB OF ORIA Contract: SW CORP
 Lab Code: SW01K Case No.: N/A SAS No.: N/A SDG No.: N/A
 Lab File ID: 7409 BFB Injection Date: 03/29/88
 Instrument ID: 7002D BFB Injection Time: 08:47
 Matrix: (soil/water) Soil Level: (low/med) Low Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	50.5
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.77
173	Less than 2.0% of mass 174	0.00 (0.00) 1
174	Greater than 50.0% of mass 95	66.6
175	5.0 - 9.0% of mass 174	5.05 (7.58) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	63.9 (96.0) 1
177	5.0 - 9.0% of mass 176	4.08 (6.38) 2

1-Value is % mass 174

2-Value is % mass 176

HIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	2STD 50		7409	03/29/88	09.01
02	7BLK 2		7410		09.39
03	8-466		7411		12.19
04	8-466		7415		13.04
05	8-468		7417		14.33
06	8-469		7418		15.17
07	8-463 DL		7422		20.07
08	8-465		7423		20.57
09	8-462		7426		22.06
10	8-467		7427	↓	23.51
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORPUBLK-1
7395Matrix: (soil/water) SOILLab Sample ID: UBLKSample wt/vol: 56Lab File ID: 7395Level: (low/med) LOWDate Received: N/A% Moisture: not dec. 0Date Analyzed: 03/28/88Column: (pack/cap) PACKDilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORPUBLK-2Matrix: (soil/water) SOILLab Sample ID: UBLKSample wt/vol: 56Lab File ID: 7410Level: (low/med) LOWDate Received: N/A% Moisture: not dec. 0Date Analyzed: 03/29/88Column: (pack/cap) PACKDilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORPUBLK-2Matrix: (soil/water) SOILLab Sample ID: UBLKSample wt/vol: 56Lab File ID: 7410Level: (low/med) LOWDate Received: N/A% Moisture: not dec. 0Date Analyzed: 03/29/88Column: (pack/cap) PACKDilution Factor: 1

CAS NO.

COMPOUND

CONCENTRATION UNITS:

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

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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
75-69-4	Trichlorofluoromethane	5	U
95-50-1	1,2-Dichlorobenzene	10	U
106-46-7	1,3-Dichlorobenzene	10	U
547-73-1	1,4-Dichlorobenzene	10	U

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: Southwest Gate of Orla Contract: N/A

Lab Code: SWOK Case No.: SW Corp SAS No.: N/A SDG No.: N/A

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
	-----	-----	-----	-----	-----	-----
01	8-489	110	104	96		
02	8-490	103	103	100		
03	8-491	116	85	98		
04	8-492	106	101	96		
05	8-493	107	106	105		
06	8-494	108	102	102		
07	8-495	108	104	100		
08	8-496	109	101	100		
09	8-490MS	107	102	101		
10	8-490MSD	106	106	101		
11	BLANK1	100	99	109		
12	BLANK2	102	102	98		
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QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

003263

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Southwest Lab of Okla Contract: N/ALab Code: SWOK Case No.: SWComp.SAS No.: N/A SDG No.: N/AMatrix Spike - EPA Sample No.: 8-490 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMIT REC.
1,1-Dichloroethene	50	0	46	92	59-17
Trichloroethene	50	0	40	80	62-13
Benzene	50	0	45	90	66-14
Toluene	50	0	43	86	59-13
Chlorobenzene	50	0	47	94	60-13

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene	50	45	90	2	22	59-17
Trichloroethene	50	43	86	7	24	62-13
Benzene	50	49	98	9	21	66-14
Toluene	50	49	98	13	21	59-13
Chlorobenzene	50	51	102	8	21	60-13

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limitsSpike Recovery: 0 out of 10 outside limits

COMMENTS: _____

4A
VOLATILE METHOD BLANK SUMMARY

003264

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SW CORP. SAS No.: N/A SDG No.: N/A
 Lab File ID: 7604 Lab Sample ID: N/A
 Date Analyzed: 04-08-88 Time Analyzed: 11:16
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-489	18449	7615	16:37
02	8-490	18450	7616	17:22
03	8-491	18451	7617	18:06
04	8-492	18452	7618	18:50
05				
06				
07				
08				
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COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003265

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SW CORP. SAS No.: N/A SDG No.: N/A
 Lab File ID: 7621 Lab Sample ID: N/A
 Date Analyzed: 04-09-88 Time Analyzed: 11:11
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-493	18453	7631	17:42
02	8-494	18454	7632	18:26
03	8-495	18455	7633	19:10
04	8-496	18456	7634	19:54
05	8-490MS	18450MS	7635	20:38
06	8-490MSD	18450MSD	7636	21:22
07				
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09				
10				
11				
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COMMENTS:

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 7317 BFB Injection Date: 03-21-88
 Instrument ID: 7002D BFB Injection Time: 10:19
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	30.4
75	30.0 - 60.0% of mass 95	59.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.0 (0.0) 1
174	Greater than 50.0% of mass 95	67.3
175	5.0 - 9.0% of mass 174	4.8 (7.2) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	64.2 (95.3) 1
177	5.0 - 9.0% of mass 176	3.2 (6.1) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD20		7323	03-21-88	14:01
02	VSTD50		7324		14:40
03	VSTD100		7328		17:23
04	VSTD150		7329		18:09
05	VSTD200		7330	✓	18:48
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033267

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/ALab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/ALab File ID: 7552BFB Injection Date: 04-06-88Instrument ID: 7002DBFB Injection Time: 16:12Matrix: (soil/water) SOIL Level: (low/red) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	25.2
75	30.0 - 60.0% of mass 95	52.3
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.0 (0.0) 1
174	Greater than 50.0% of mass 95	52.3
175	5.0 - 9.0% of mass 174	4.1 (7.1) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	57.7 (98.9) 1
177	5.0 - 9.0% of mass 176	4.2 (7.2) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD20		7553	04-06-88	16:30
02	VSTD200		7554		17:15
03	VSTD150		7555		18:00
04	VSTD100		7556		18:44
05	VSTD50		7557	↓	19:28
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003268

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 7600 BFB Injection Date: 04-08-88
 Instrument ID: 7002D BFB Injection Time: 08:47
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.6
75	30.0 - 60.0% of mass 95	51.4
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.5
173	Less than 2.0% of mass 174	0.0 (0.0)
174	Greater than 50.0% of mass 95	67.7
175	5.0 - 9.0% of mass 174	5.5 (8.2)
176	Greater than 95.0%, but less than 101.0% of mass 174	68.2 (100.8)
177	5.0 - 9.0% of mass 176	4.6 (6.7)

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	YSTD50		7601	04-08-88	09:01
02	BLANK1		7604		11:16
03	8-489	18449	7615		16:37
04	8-490	18450	7616		17:22
05	8-491	18451	7617		18:06
06	8-492	18452	7618	✓	18:50
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003269

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 7619 BFB Injection Date: 04-09-88
 Instrument ID: 7002D BFB Injection Time: 10:08
 Matrix: (soil/water) SOIL Level: (low/hed) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.9
75	30.0 - 60.0% of mass 95	53.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 (0.0) 1
174	Greater than 50.0% of mass 95	65.3
175	5.0 - 9.0% of mass 174	4.6 (7.1) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	65.2 (99.9) 1
177	5.0 - 9.0% of mass 176	4.2 (6.4) 2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD 50		7620	04-09-88	10:26
02	BLANK 2		7621		11:11
03	8-493	18453	7631		17:42
04	8-494	18454	7632		18:26
05	8-495	18455	7633		19:10
06	8-496	18456	7634		19:54
07	8-490MS	18450MS	7635		20:38
08	8-490MSD	18450MSD	7636	↓	21:22
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003270
EPA SAMPLE NO

BLANK 1

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

Matrix: (soil/water) SOIL

Lab Sample ID: N/A

Sample wt/vol: 5 G

Lab File ID: 7604

Level: (low/med) LOW

Date Received: N/A

% Moisture: not dec. N/A

Date Analyzed: 04-08-88

Column: (pack/cap) PACK

Dilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

002271 EPA SAMPLE N

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP.

BLANK 2

Matrix: (soil/water) SOIL

Lab Sample ID: N/A

Sample wt/vol: 5 G

Lab File ID: 7621

Level: (low/med) LOW

Date Received: N/A

% Moisture: not dec. N/A

Date Analyzed: 04-09-88

Column: (pack/cap) PACK

Dilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
542-73-1-----	1,4-Dichlorobenzene	10	U

003272

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

 Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP
8-490MS

 Matrix: (soil/water) SOIL

 Lab Sample ID: 18450MS

 Sample wt/vol: 5 G

 Lab File ID: 7635

 Level: (low/med) LOW

 Date Received: 04-05-88

 % Moisture: not dec. 21

 Date Analyzed: 04-09-88

 Column: (pack/cap) PACK

 Dilution Factor: 1

CAS NO.

COMPOUND

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

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

003273

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

 Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP
8-490MSI

 Matrix: (soil/water) SOIL

 Lab Sample ID: 18450MSI

 Sample wt/vol: 5 G

 Lab File ID: 7636

 Level: (low/med) LOW

 Date Received: 04-05-88

 % Moisture: not dec. 21

 Date Analyzed: 04-09-88

 Column: (pack/cap) PACK

 Dilution Factor: 1

CAS NO.

COMPOUND

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

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	10	U
67-64-1-----	Acetone	5	U
75-15-0-----	Carbon Disulfide	10	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	5	U
71-55-6-----	1,1,1-Trichloroethane	10	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	5	U
75-27-4-----	Bromodichloromethane	10	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	5	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	10	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: Southwest LAB OF OKIN Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	8-479	84	84	71		
02	8-480	98	102	116		
03	8-480 DL	36*	33*	31*		3
04	8-481	102	106	44		
05	8-482	104	104	58		
06	8-482 MS	106	100	98		
07	8-482 MSD	104	102	100		
08	8-500	98	96	98		
09	8-801	102	100	97		
10	✓ BLANK 1	100	96	90		
11	✓ BLANK 2	102	104	98		
12	✓ BLANK 3	100	96	102		
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QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3B
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Southwest LAB OF OKIA Contract: SW CORP

Lab Code: SWOK Case No.: — SAS No.: — SDG No.: —

Matrix Spike - EPA Sample No.: 8-482 Level: (low/med) —

7613

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMIT REC.
1,1-Dichloroethene	50	0	43	86	59-17
Trichloroethene	↓	30	55	50	62-13
Benzene	↓	0	53	106	66-14
Toluene	↓	0	50	100	59-13
Chlorobenzene	↓	0	51	102	60-13

7614

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
1,1-Dichloroethene	50	43	86	0	22	59-17
Trichloroethene	↓	55	50	0	24	62-13
Benzene	↓	53	106	0	21	66-14
Toluene	↓	50	100	0	21	59-13
Chlorobenzene	↓	51	102	0	21	60-13

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003276

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SW CORP. SAS No.: N/A SDG No.: N/A
 Lab File ID: 7558 Lab Sample ID: 7/BLK1
 Date Analyzed: 04/06/88 Time Analyzed: 20:12
 Matrix: (soil/water) Soil Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-480		756d	00:38
02				
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05				
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COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003277

Name: SOUTHWEST LABORATORY OF OKLAHOMA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 7604 Lab Sample ID: UBLK 2
 Date Analyzed: 04/08/88 Time Analyzed: 09:46
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-479		7609	12:12
02	8-480		7610	12:56
03	8-481		7611	13:40
04	8-482		7612	14:25
05	8-482 MS		7613	15:09
06	8-482 MSD		7614	15:53
07				
08				
09				
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COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003278

Name: SOUTHWEST LABORATORY OF OKLAHOMA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 7659 Lab Sample ID: UBAK 3
 Date Analyzed: 04/12/88 Time Analyzed: 20:45
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-500		7664	02:36
02	8-801		7665	03:20
03				
04				
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COMMENTS:

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003279

Lab Name: SOUTHWEST LAB. OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: S W CORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 7317 BFB Injection Date: 03/21/88
 Instrument ID: 7002D BFB Injection Time: 18:19
 Matrix: (soil/water) Soil Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	30.4
75	30.0 - 60.0% of mass 95	59.0
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.23
173	Less than 2.0% of mass 174	0.00 (0.00) 1
174	Greater than 50.0% of mass 95	67.3
175	5.0 - 9.0% of mass 174	4.82 (7.15) 2
176	Greater than 95.0%, but less than 101.0% of mass 174	64.2 (95.3) 1
177	5.0 - 9.0% of mass 176	3.91 (6.09) 2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	USTD 20		7323	03/21/88	14:01
02	USTD 50		7324	03/21/88	14:40
03	USTD 100		7328	03/21/88	17:23
04	USTD 150		7329	03/21/88	18:09
05	USTD 200		7330	03/21/88	18:48
06					
07					
08					
09					
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22					

003280

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Southwest LAB OF OKIA Contract: NIA
 Lab Code: SWOK Case No.: SWCORP SAS No.: NIA SDG No.: NIA
 Lab File ID: 7552 BFB Injection Date: 04/06/88
 Instrument ID: 7002D BFB Injection Time: 16:12
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	
75	30.0 - 60.0% of mass 95	25.2
95	Base peak, 100% relative abundance	52.3
96	5.0 - 9.0% of mass 95	100.
173	Less than 2.0% of mass 174	7.12
174	Greater than 50.0% of mass 95	0.00 (0.00) 1
175	5.0 - 9.0% of mass 174	58.3
176	Greater than 95.0%, but less than 101.0% of mass 174	4.13 (7.09) 1
177	5.0 - 9.0% of mass 176	52.7 (98.9) 1
		4.18 (7.24) 2

1-Value is % mass 174

2-Value is % mass 176

HIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	USTD 20		7553	04/06/88	16:30
02	USTD 200		7554		17:15
03	USTD 150		7555		18:00
04	USTD 100		7556		18:44
05	USTD 50		7557		19:28
06	UOLK 1		7558		20:12
07	8-480		7560	04/07/88	00:38
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003281

Lab Name: SOUTHWEST LAB. OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: S W CORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 7600 BFB Injection Date: 04/08/88
 Instrument ID: 7002D BFB Injection Time: 08:47
 Matrix: (soil/water) Soil Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.6
75	30.0 - 60.0% of mass 95	51.4
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.49
173	Less than 2.0% of mass 174	0.00 (0.00) 1
174	Greater than 50.0% of mass 95	67.7
175	5.0 - 9.0% of mass 174	5.54 (8.18) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	68.2 (100.) 1
177	5.0 - 9.0% of mass 176	460 (4.74) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	USTD 50		7601	04/08/88	09:01
02	DBLK 2		7602	04/08/88	09:46
03	8-479		7609	04/08/88	12:12
04	8-480		7610	04/08/88	12:56
05	8-481		7611	04/08/88	13:40
06	8-482		7612	04/08/88	14:25
07	8-482 MS		7613	04/08/88	15:09
08	8-482 MSD		7614	04/08/88	15:53
09					
10					
11					
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13					
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19					
20					
21					
22					

003282

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SOUTHWEST LAB. OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: S W CORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 7657 BFB Injection Date: 04/12/88
 Instrument ID: 7002D BFB Injection Time: 19:54
 Matrix: (soil/water) Soil Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.7
75	30.0 - 60.0% of mass 95	56.0
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.40
173	Less than 2.0% of mass 174	0.00 (0.00) 1
174	Greater than 50.0% of mass 95	125.4
175	5.0 - 9.0% of mass 174	4.51 (6.90) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	65.5 (100.) 1
177	5.0 - 9.0% of mass 176	4.74 (7.24) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	25TD 50		7658	04/12/88	20:06
02	2BLK 3		7659	04/12/88	20:45
03	2-500		7664	04/12/88	22:36
04	8-801		7665	04/12/88	23:20
05					
06					
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20					
21					
22					

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO
003283

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

BLANK 2

Matrix: (soil/water) SOIL

Sample wt/vol: 5 g

Level: (low/med) LOW

% Moisture: not dec. ✓

Column: (pack/cap) PACK

Lab Sample ID: _____

Lab File ID: 7602

Date Received: _____

Date Analyzed: 4-8-88

Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>ug/kg</u>	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	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	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	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
75-69-4	Trichlorofluoromethane	5	U
95-50-1	1,2-Dichlorobenzene	10	U
106-46-7	1,3-Dichlorobenzene	10	U
547-73-1	1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003284 EPA SAMPLE 1

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

BLANK

Matrix: (soil/water) SOIL

Lab Sample ID: _____

Sample wt/vol: 5g

Lab File ID: 7558

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. -

Date Analyzed: 4-6-88

Column: (pack/cap) PACK

Dilution Factor: 1

CAS NO.

COMPOUND

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

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	U
75-15-0	Carbon Disulfide	10	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	5	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	5	U
75-27-4	Bromodichloromethane	10	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	Dibromochloroethane	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	5	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	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
75-69-4	Trichlorofluoromethane	5	U
95-50-1	1,2-Dichlorobenzene	10	U
106-46-7	1,3-Dichlorobenzene	10	U
547-73-1	1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003285
EPA SAMPLE N

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

BLANK

Matrix: (soil/water) SOIL

Sample wt/vol: 5g

Level: (low/med) LOW

% Moisture: not dec. -

Column: (pack/cap) PACK

Lab Sample ID: _____

Lab File ID: 7659

Date Received: _____

Date Analyzed: 4-12-88

Dilution Factor: 1

CAS NO.

COMPOUND

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

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

8-4.82ms

Matrix: (soil/water) SOIL

Sample wt/vol: 57

Level: (low/med) LOW

* Moisture: not dec. 2.0

Column: (pack/cap) PACK

Lab Sample ID: 18416 MS

Lab File ID: 7613

Date Received: 03-31-88

Date Analyzed: 4-8-88

Dilution Factor: 1

CAS NO.

COMPOUND

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

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	10	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethane	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethane (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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

003287

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE 1

 Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: SWCORP

8-482 ME

Matrix: (soil/water) SOILSample wt/vol: 5gLevel: (low/med) LOW% Moisture: not dec. 20Column: (pack/cap) PACKLab Sample ID: 18416MSLab File ID: 7614Date Received: 03-31-88Date Analyzed: 4-8-88Dilution Factor: 1

CAS NO.

COMPOUND

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

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	10	U
67-64-1-----	Acetone	5	U
75-15-0-----	Carbon Disulfide	10	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	5	U
71-55-6-----	1,1,1-Trichloroethane	10	U
56-23-5-----	Carbon Tetrachloride	5	U
108-05-4-----	Vinyl Acetate	5	U
75-27-4-----	Bromodichloromethane	10	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	5	U
591-78-6-----	2-Hexanone	10	U
127-18-4-----	Tetrachloroethene	10	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

003288

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 6-10-88

SWLO#: 06018EXB

SAMPLE ID: PBLK1

COMPOUNDS	RESULTS
HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2.4 DNT	0.8 U
2.6 DNT	0.8 U

U indicates detection limit

003289

SOIL MATRIX SPIKE / MATRIX SPIKE DUPLICATE PERCENT REC

CLIENT: SWCOE

DATE: 6-10-88

SAMPLE ID 8-578

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	6077	151.9
RDX	4000	0	3888	97.2
TNT	4000	0	4343	108.6
2,4 DNT	4000	0	4508	112.7

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RPD
HMX	4000	0	7114	177.9	15.7
RDX	4000	0	3792	94.8	2.5
TNT	4000	0	4215	105.4	3.0
2,4 DNT	4000	0	4501	112.5	0.2

003280

SOIL MATRIX SPIKE / MATRIX SPIKE DUPLICATE PERCENT REC

CLIENT: SWCOE

DATE: 6-10-88

SAMPLE ID 8-573

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	Z REC.
HMX	4000	0	4915	122.9
RDX	4000	0	4779	119.5
TNT	4000	0	5024	125.6
2,4 DNT	4000	0	6877	171.9

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	Z REC.	Z RPD
HMX	4000	0	4199	105.0	15.7
RDX	4000	0	4387	109.7	8.6
TNT	4000	0	6648	166.2	27.8
2,4 DNT	4000	0	5607	140.2	20.3

2B
SOIL VOLATILE SURROGATE RECOVERY

003291

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
01	8-569 (8A-896) 4'	94	100	106		0
02	8-570 (8A-896) 8'	90	106	98		0
03	8-571 (8A-897) 4'	100	98	92		0
04	8-572 (8A-897) 8'	100	98	96		0
05	8-573 (8A-899) 4'	100	100	94		0
06	8-574 (8A-899) 8'	100	100	98		0
07	8-575 (8A-910) 4'	102	96	94		0
08	8-576 (8A-910) 8'	98	96	98		0
09	8-577 (8A-915) 4'	100	96	94		0
10	8-578 (8A-915) 8'	104	88	100		0
11	8-576 ms. (8A-910)	100	90	94		0
12	8-576 ms. (8A-910)	100	94	100		0
13	UBLIC 1	106	106	102		0
14	UBLIC 2	98	96	98		0
15						
16						
17						
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19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S1 (TOL) = Toluene-d8
 S2 (BFB) = Bromofluorobenzene
 S3 (DCE) = 1,2-Dichloroethane-d4

QC LIMITS
 (81-117)
 (74-121)
 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3B
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY 033292

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Matrix Spike - EPA Sample No.: 8-576 Level: (low/med) LOW

8351
8-576 8354

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50	0	49	98	59-17
Trichloroethene	↓	0	51	102	62-13
Benzene	↓	0	50	100	66-14
Toluene	↓	0	52	104	59-13
Chlorobenzene	✓	0	51	102	60-13

8355

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	REC.
1,1-Dichloroethene	50	46	92	6	22	59-17
Trichloroethene	↓	52	104	2	24	62-13
Benzene	↓	50	100	0	21	66-14
Toluene	↓	51	102	2	21	59-13
Chlorobenzene	✓	51	102	0	21	60-13

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

4A
VOLATILE METHOD BLANK SUMMARY

003293

b Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A

Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A

Lab File ID: 8268 Lab Sample ID: UBLK-1

Date Analyzed: 05-20-88 Time Analyzed: 18:18

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

Instrument ID: 7002.D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-569(8A-896)u	19027	8283	04:03
02	8-570(8A-896)u	19028	8284	04:48
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
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28				
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30				

COMMENTS:

page ___ of ___

FORM IV VOA

1/87

4A
VOLATILE METHOD BLANK SUMMARY

003294

Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A

Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A

Lab File ID: 8345 Lab Sample ID: 11BLK 2

Date Analyzed: 05-25-88 Time Analyzed: 18:30

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

Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-571(8A-897)4'	19029	8346	19:14
02	8-572(8A-897)8'	19030	8347	19:59
03	8-573(8A-899)4'	19031	8348	20:42
04	8-574(8A-899)8'	19032	8349	21:27
05	8-575(8A-910)4'	19033	8350	22:11
06	8-576(8A-910)8'	19034	8351	22:55
07	8-577(8A-915)4'	19035	8352	23:39
08	8-578(8A-915)8'	19036	8353	00:23
09	8-576MS(8A-910)	19034	8354	01:07
10	8-576MSD(8A-910)	19034	8355	01:51
11				
12				
13				
14				
15				
16				
17				
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29				
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COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003295

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 8345 Lab Sample ID: 11BLK 2
 Date Analyzed: 05-25-88 Time Analyzed: 18:30
 Matrix: (soil/water) SOIL Level: (low/hed) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-571(8A-897)u'	19029	8346	19:14
02	8-572(8A-897)8'	19030	8347	19:59
03	8-573(8A-899)u'	19031	8348	20:42
04	8-574(8A-899)8'	19032	8349	21:27
05	8-575(8A-910)u'	19033	8350	22:11
06	8-576(8A-910)8'	19034	8351	22:55
07	8-577(8A-915)u'	19035	8352	23:39
08	8-578(8A-915)8'	19036	8353	00:23
09	8-576MS(8A-910)	19034	8354	01:07
10	8-576MSD(8A-910)	19034	8355	01:51
11				
12				
13				
14				
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COMMENTS:

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: Southwest LAB OF OK/In Contract: _____

Lab Code: S60012 Case No.: _____ SAS No.: _____ SDG No.: _____

Lab File ID: 7888

BFB Injection Date: 4-28-88

Instrument ID: 7002D

BFB Injection Time: 09:43

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.6
75	30.0 - 60.0% of mass 95	50.8
95	Base peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	7.27
173	Less than 2.0% of mass 174	0.00 (0.00)
174	Greater than 50.0% of mass 95	127.5
175	5.0 - 9.0% of mass 174	5.40 (8.00)
176	Greater than 95.0%, but less than 101.0% of mass 174	67.9 (101)
177	5.0 - 9.0% of mass 176	2.39 (6.47)

1-Value is % mass 174

2-Value is % mass 176

HIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	USTD 20		7889	4-28-88	12:06
02	USTD 150		7890		12:50
03	USTD 110		7891		11:34
04	USTD 21		7892		12:18
05	USTD 20		7893	✓	12:02
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 8266 BFB Injection Date: 05-20-88
 Instrument ID: 7002D BFB Injection Time: 17:21
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PAC16

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	35.3
75	30.0 - 60.0% of mass 95	59.5
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.32
173	Less than 2.0% of mass 174	0.00 (0.00) 1
174	Greater than 50.0% of mass 95	75.5
175	5.0 - 9.0% of mass 174	51.61 (7.42) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	74.8 (99.1) 1
177	5.0 - 9.0% of mass 176	5.67 (6.77) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD 50		8267	5-20-88	17:23
02	UBLK 1		8268	✓	18:18
03	8-569(8A-816)41	14027	8283	5-21-88	04:03
04	8-570(8A-806)81	14028	8284	✓	04:02
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003298

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A
 Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A
 Lab File ID: 8339 BFB Injection Date: 5-25-88
 Instrument ID: 7002D BFB Injection Time: 14:37
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.4
75	30.0 - 60.0% of mass 95	54.4
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.74
173	Less than 2.0% of mass 174	0.00 (0.00) 1
174	Greater than 50.0% of mass 95	71.9
175	5.0 - 9.0% of mass 174	5.16 (7.17) 1
176	Greater than 95.0%, but less than 101.0% of mass 174	71.7 (99.7) 1
177	5.0 - 9.0% of mass 176	8.71 (6.56) 2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	11STD 200		8340	5-25-88	14:49
02	11STD 150		8341		15:33
03	11STD 100		8342		16:18
04	11STD 50		8343		17:02
05	11STD 20		8344		17:46
06	11BLK 2		8345		18:30
07	8-571(8A-897)W	19029	8346		19:14
08	8-572(8A-897)R	19030	8347		19:59
09	8-573(8A-897)W	19031	8348		20:42
10	8-574(8A-897)R	19032	8349		21:27
11	8-575(8A-910)W	19033	8350		22:11
12	8-576(8A-910)R	19034	8351		22:55
13	8-577(8A-915)W	19035	8352	✓	23:39
14	8-578(8A-915)R	19036	8353	5-26-88	00:23
15	8-576(8A-910)	19034	8354	✓	01:07
16	8-576msd (8A 910)	19034	8355	✓	01:51
17					
18					
19					
20					
21					
22					

Initial Calibration Data
 20A HSL Compounds

Case No: SWCORP

Instrument ID: HP 5970-0

Contractor: SOUTHWEST LABORATORY

Calibration Date: 04/28/88

Contract No: 68-7168 (VOLATILES)

Minimum RF for SPCC is 0.300

Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >7893 >7892 >7891 >7890 >7889					RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF				
	20.00	50.00	100.00	150.00	200.00				
C010 CHLOROMETHANE	.50836	.62488	.51704	.77056	.66495	.61716	17.701	**	(Conc=23.0,57.5,115.0,172.5,230
C015 BROMOMETHANE	.72407	.90644	.82505	.68115	.60318	.74798	15.967		
DICHLOROFLUOROMETHANE	-	-	-	.01375	.00971	.01173	24.401		
C020 VINYL CHLORIDE	.81787	1.03445	.87962	.96851	.85058	.91021	9.804	*	
C025 CHLOROETHANE	.50427	.61286	.58772	.59183	.56589	.57251	7.272		
C030 METHYLENE CHLORIDE	1.35563	1.50321	1.46523	1.50520	1.45553	1.45696	4.176		
ACROLEIN	-	-	-	-	-	-	-		(Conc=600.0,1500.0,2500.0,3750.
C035 ACETONE	.47653	.80824	.68298	.65162	.78264	.68040	19.331		
ACRYLONITRILE	-	-	-	-	-	-	-		(Conc=600.0,1500.0,2500.0,3750.
C040 CARBON DISULFIDE	3.13249	3.76979	3.73293	3.88947	3.74323	3.65358	8.154		
TRICHLOROFLUOROMETHANE	3.02301	3.66260	3.57233	3.54104	3.26319	3.41244	7.734		
C045 1,1-DICHLOROETHENE	1.17936	1.42515	1.36741	1.37916	1.37888	1.34599	7.114	*	(Conc=18.0,45.0,90.0,135.0,180.
C050 1,1-DICHLOROETHANE	3.13927	3.54695	3.39891	3.54334	3.32784	3.39126	4.999	**	
C053 1,2-DICHLOROETHENE (TOTAL	1.19011	1.39878	1.38130	1.45426	1.39538	1.36396	7.412		
C060 CHLOROFORM	3.33819	3.62770	3.45846	3.60400	3.39879	3.48543	3.635	*	
C065 1,2-DICHLOROETHANE	2.51141	2.73425	2.67545	2.69223	2.58293	2.63925	3.423		
CS15 1,2-DICHLOROETHANE-D4	2.18519	2.26987	2.36453	2.37454	2.27600	2.29403	3.391		
C110 2-BUTANONE	.16702	.22734	.27991	.23134	.28506	.23814	20.103		
C115 1,1,1-TRICHLOROETHANE	.53360	.59247	.61068	.60695	.59779	.58830	5.340		
C120 CARBON TETRACHLORIDE	.63902	.73065	.75105	.73532	.71778	.71476	6.153		
C125 VINYL ACETATE	.21103	.19837	.26018	.25074	.23835	.23173	11.327		
C130 BROMODICHLOROMETHANE	.83730	.90613	.94180	.93450	.88948	.90184	4.639		
C140 1,2-DICHLOROPROPANE	.48382	.53839	.55053	.54711	.51748	.52747	5.228	*	
C172 TRANS-1,3-DICHLOROPROPENE	.48860	.55994	.59252	.58953	.56475	.55907	7.507		(Conc=23.0,57.5,115.0,172.5,23
C150 TRICHLOROETHENE	.40817	.45032	.46131	.45475	.44001	.44291	4.721		
C155 DIBROMOCHLOROMETHANE	.73830	.81643	.85809	.84759	.81857	.81580	5.754		
C160 1,1,2-TRICHLOROETHANE	.33912	.38871	.39216	.37181	.36153	.37066	5.829		
C165 BENZENE	.89070	.97646	.96641	.94778	.88983	.93424	4.436		
C143 CIS-1,3-DICHLOROPROPENE	.56090	.65007	.67211	.67812	.64304	.64085	7.339		(Conc=28.0,70.0,140.0,210.0,28
2-CHLOROETHYL VINYL ETHER	.59468	.67563	.63345	.65744	.63507	.63925	4.753		
C180 BROMOFORM	.41618	.48460	.52401	.50614	.51240	.48867	8.795	**	
C210 2-HEXANONE	.67199	.68578	.83717	.58751	.55791	.66807	16.320		

RF - Response Factor (Subscript is amount in ng/ml)

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

003000

Initial Calibration Data
UoA HSL Compounds

Case No: SW Corp Instrument ID: HP 5970-0

Contractor: SOUTHWEST LABORATORY Calibration Date: 04/28/88

Contract No: 68-7168 (VOLATILES)

Minimum RF for SPCC is 0.300 Maximum % RSD for CCC is 30.0%

Compound	Laboratory ID: >7893 >7892 >7891 >7890 >7889					RF	% RSD	CCC	SPCC
	RF	RF	RF	RF	RF				
	20.00	50.00	100.00	150.00	200.00				
C205 4-METHYL-2-PENTANONE	.81972	.90332	.92218	.82783	.76897	.84841	7.458		
C220 TETRACHLOROETHENE	.46327	.51626	.50978	.52660	.50433	.50405	4.812		
C225 1,1,2,2-TETRACHLOROETHANE	.77827	.87802	.89517	.84013	.81288	.84089	5.651	**	
C230 TOLUENE	.74428	.82447	.80651	.82314	.79373	.79843	4.110	*	
C235 CHLOROBENZENE	.98764	1.09021	1.09725	1.10492	1.06214	1.06843	4.489	**	
C240 ETHYLBENZENE	.49866	.53465	.55387	.54878	.53616	.53442	4.042	*	
C245 STYRENE	1.01202	1.13322	1.15325	1.17283	1.07888	1.11004	5.860		
C250 XYLENES (TOTAL)	.57206	.66573	.69589	.70335	.64833	.65707	7.991		(Conc=12.0,30.0,60.0,90.0,120.0)
o-CHLOROTOLUENE	-	-	-	-	-	-	-		
m,3-DICHLOROBENZENE	1.18574	1.36883	1.41499	1.35415	1.30390	1.32552	6.610		
m,2-DICHLOROBENZENE	1.28851	1.37685	1.35690	1.39135	1.24223	1.33117	4.766		
1,4-DICHLOROBENZENE	1.25456	1.43755	1.55673	1.44072	1.40637	1.41919	7.637		
1,2,4-TRICHLOROBENZENE	-	-	-	-	-	-	-		
CS05 TOLUENE-08	1.29936	1.30116	1.37800	1.34501	1.31929	1.32856	2.497		
CS10 BROMOFLUOROBENZENE	.97943	.98080	1.10100	1.05789	1.03895	1.03161	5.052		

RF - Response Factor (Subscript is amount in ng/ml)

RF - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

003301

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/A UBLK1

Lab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/A

Matrix: (soil/water) SOIL Lab Sample ID: BLANK1

Sample wt/vol: 5 (g/mL) G Lab File ID: 8268

Level: (low/med) LOW Date Received: N/A

% Moisture: not dec. Date Analyzed: 5-20-88

COLUMN: (PACK/CAP) PACK Dilution Factor: 1

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

CAS NO.	COMPOUND	Q
---------	----------	---

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

FORM 1 VOA

1/87 Re

003302

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SOUTHWEST LABORATORY OF OKLA.Contract: N/AUBLK 2Lab Code: SWOKCase No.: SWCORPSAS No.: N/ASDG No.: N/AMatrix: (soil/water) SOILLab Sample ID: BLANK 2Sample wt/vol: 5 (g/mL) GLab File ID: 8345Level: (low/med) LOWDate Received: 5-18-88% Moisture: not dec. Date Analyzed: 5-25-88COLUMN: (PACK/CAP) PACKDilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

FORM I VOA

1/87 Re

003303

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SOUTHWEST LABORATORY OF OKLA.Contract: N/A8-57675Lab Code: SWOKCase No.: SWCORPSAS No.: N/ASDG No.: N/A(8A-910)Matrix: (soil/water) SOILLab Sample ID: 1903dSample wt/vol: 5 (g/mL) GLab File ID: 8354Level: (low/med) LOWDate Received: 5-18-88

% Moisture: not dec. _____

Date Analyzed: 5-26-88COLUMN: (PACK/CAP) PACKDilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

FORM I VOA

1/87 Re

003304

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8-576MSD

(8A-910)

Lab Name: SOUTHWEST LABORATORY OF OKLA. Contract: N/ALab Code: SWOK Case No.: SWCORP SAS No.: N/A SDG No.: N/AMatrix: (soil/water) WATER Lab Sample ID: 19034Sample wt/vol: 5 (g/mL) ML Lab File ID: 8355Level: (low/med) LOW Date Received: 5-18-88% Moisture: not dec. Date Analyzed: 5-26-88COLUMN: (PACK/CAP) PACK Dilution Factor: 1

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

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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
75-69-4-----	Trichlorofluoromethane	5	U
95-50-1-----	1,2-Dichlorobenzene	10	U
106-46-7-----	1,3-Dichlorobenzene	10	U
547-73-1-----	1,4-Dichlorobenzene	10	U

FORM 1 VOA

1/87 Rev.

2B
SOIL VOLATILE SURROGATE RECOVERY

003305

Name: SWL - TULSA Contract: _____
 b Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Level: (low/med) LOW

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
01	8-763(C-1A,C-1)	104	96	95		0
02	8-764(C-2A,C-2)	103	100	96		0
03	VBK1	102	100	98		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4A
VOLATILE METHOD BLANK SUMMARY

003306

Name: SWL - TULSA Contract: _____
 Code: SWDK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: 9107 Lab Sample ID: VELK1
 Date Analyzed: 07/06/88 Time Analyzed: 1621
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	=====	=====	=====	=====
01	8-763(C-1A,C-1)	19832	9110	1829
02	8-764(C-2A,C-2)	19833	9111	1912

COMMENTS:

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003307

Name: SWL - TULSA Contract: _____
Lab Code: SWDK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 8983 BFB Injection Date: 06/28/88
Instrument ID: 7002D BFB Injection Time: 1736
Matrix: (soil/water) SOIL Level: (low/med) LDW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.6
75	30.0 - 60.0% of mass 95	55.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	72.7
175	5.0 - 9.0% of mass 174	5.4 (7.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	71.1 (97.8)1
177	5.0 - 9.0% of mass 176	4.8 (6.7)2

1-Value is % mass 174

2-Value is % mass 176

IS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS. MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD200	VSTD200	8984	06/28/88	1748
02 VSTD130	VSTD130	8985	06/28/88	1830
03 VSTD100	VSTD100	8986	06/28/88	1913
04 VSTD50	VSTD50	8987	06/28/88	1953
05 VSTD20	VSTD20	8988	06/28/88	2038

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003308

Lab Name: SWL - TULSA Contract: _____
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 9105 BFB Injection Date: 07/06/88
Instrument ID: 7002D BFB Injection Time: 1519
Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.3
75	30.0 - 60.0% of mass 95	53.7
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	75.2
175	5.0 - 9.0% of mass 174	5.2 (6.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	71.5 (95.1)1
177	5.0 - 9.0% of mass 176	4.9 (6.8)2

1-Value is % mass 174

2-Value is % mass 176

MS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	9106	07/06/88	1539
02 VBLK1	VBLK1	9107	07/06/88	1621
03 8-763(C-1A,C-1)	19832	9110	07/06/88	1829
04 8-764(C-2A,C-2)	19833	9111	07/06/88	1912

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

003309

VBK1

Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: VBK1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 9107

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 07/06/88

Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

G

CAS NO.

COMPOUND

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-13-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-89-0	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
78-87-3	1,2-Dichloropropene	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
79-34-3	1,1,2,2-Tetrachloroethane	10	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
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

FORM I VOA

1/87 Rev.

003310

106-46-7-----1,3-Dichlorobenzene	
547-73-1-----1,4-Dichlorobenzene	

10
10

U
U

003311

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: PBLK1

SAMPLE ID: 07128EXB

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2.4 DNT	0.8 U
2.6 DNT	0.8 U

U indicates detection limit

003312

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: 19833MS

SAMPLE ID: 8-764MS

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2.4 DNT	0.8 U
2.6 DNT	0.8 U

U indicates detection limit

003313

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: 19833MSD

SAMPLE ID: 8-764MSD

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2,4 DNT	0.8 U
2,6 DNT	0.8 U

U indicates detection limit

28
SOIL VOLATILE SURROGATE RECOVERY

Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Level: (low/med) LDW

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
	=====	=====	=====	=====	=====	=====
01	8-838(c-1,c-1A)20'	102	97	104		0
02	8-839(c-2,c-2A)20'	101	100	104		0
03	VBK1	100	100	97		0
04	VBK2	101	102	101		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4A
VOLATILE METHOD BLANK SUMMARY

Name: SWL - TULSA Contract: _____
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 9185 Lab Sample ID: VBK1
Date Analyzed: 07/14/88 Time Analyzed: 0736
Matrix: (soil/water) SOIL Level: (low/med) LOW
Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-838(C-1,C-4A) 2.0	20028	9200	1758

COMMENTS:

003316

4A
VOLATILE METHOD BLANK SUMMARY

Name: SWL - TULSA Contract: _____
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 9338 Lab Sample ID: VELK2
Date Analyzed: 07/20/88 Time Analyzed: 2349
Matrix: (soil/water) SOIL Level: (low/med) LOW
Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-835(c-2,c-2a)MSD	20029	9339	0031

COMMENTS:

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: 8983 BFB Injection Date: 06/28/88
 Instrument ID: 7002D BFB Injection Time: 1736
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.6
75	30.0 - 60.0% of mass 95	55.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	72.7
175	5.0 - 9.0% of mass 174	5.4 (7.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	71.1 (97.8)1
177	5.0 - 9.0% of mass 176	4.8 (6.7)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS. MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01:VSTD200	VSTD200	8984	06/28/88	1748
02:VSTD150	VSTD150	8985	06/28/88	1830
03:VSTD100	VSTD100	8986	06/28/88	1913
04:VSTD50	VSTD50	8987	06/28/88	1955
05:VSTD20	VSTD20	8988	06/28/88	2038

003318

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Lab File ID: 8983BFB Injection Date: 06/28/88Instrument ID: 7002DBFB Injection Time: 1736Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.6
75	30.0 - 60.0% of mass 95	55.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	72.7
175	5.0 - 9.0% of mass 174	5.4 (7.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	71.1 (97.8)1
177	5.0 - 9.0% of mass 176	4.8 (6.7)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD200	VSTD200	8984	06/28/88	1748
02 VSTD150	VSTD150	8985	06/28/88	1830
03 VSTD100	VSTD100	8986	06/29/88	1913
04 VSTD50	VSTD50	8987	06/28/88	1955
05 VSTD20	VSTD20	8988	06/28/88	2038

003319

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VELK1

Lab Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: VELK1Sample wt/vol: 5.0 (g/mL) 6Lab File ID: 9185Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 07/14/88Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/KG

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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
71-35-6	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
10061-01-3	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
79-34-3	1,1,2,2-Tetrachloroethane	10	U
108-38-3	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
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003320

106-46-7-----1,3-Dichlorobenzene	
547-73-1-----1,4-Dichlorobenzene	

10	U
10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VELK2

Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAG No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: VELK2Sample wt/vol: 5.0 (g/mL) 6Lab File ID: 9356Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 07/20/88Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

CAS NO.

COMPOUND

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	7	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
67-56-3	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
78-37-6	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	10	U
108-28-3	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
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003322

106-46-7-----1,3-Dichlorobenzene

10 U

547-73-1-----1,4-Dichlorobenzene

10 U

003323

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: PBLK1

SAMPLE ID: 07128EXB

COMPOUNDS

RESULTS

HMX
RDX
TETRYL
TNT
2.4 DNT
2.6 DNT

1.6 U
1.8 U
5.5 U
0.8 U
0.8 U
0.8 U

U indicates detection limit

003324

28
SOIL VOLATILE SURROGATE RECOVERY

Name: SWL - TULSA Contract: _____
Lab Code: SWDK Case No.: SWCDFF SAS No.: _____ SDG No.: _____
Level: (low/med) LOW

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
01	8-863(mw-8/20)	102	99	100		0
02	8-864(mw-8/10.0)	99	96	104		0
03	VBLK1	98	98	102		0
04	VBLK2	102	100	99		0

QC LIMITS
S1 (TOL) = Toluene-d8 (81-117)
S2 (BFB) = Bromofluorobenzene (74-121)
S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4A
VOLATILE METHOD BLANK SUMMARY

003325

Name: SWL - TULSA Contract: _____
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 9458 Lab Sample ID: VBLK1
Date Analyzed: 07/25/88 Time Analyzed: 1924
Matrix: (soil/water) SOIL Level: (low/med) LOW
Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-564(mw-8/10-0)	20154	9469	0326

COMMENTS:

003326

4A
VOLATILE METHOD BLANK SUMMARY

Name: SWL - TULSA Contract: _____
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 9475 Lab Sample ID: VBLK2
Date Analyzed: 07/26/98 Time Analyzed: 1101
Matrix: (soil/water) SOIL Level: (low/med) LOW
Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 8-863(MW-8/2.0)	20153	9479	1359

COMMENTS:

SA
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003327

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWQK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID: 8983

BFB Injection Date: 06/28/88

Instrument ID: 7002D

BFB Injection Time: 1736

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.6
75	30.0 - 60.0% of mass 95	55.0
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	72.7
175	5.0 - 9.0% of mass 174	5.4 (7.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	71.1 (97.8)1
177	5.0 - 9.0% of mass 176	4.8 (6.7)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD200	VSTD200	8984	06/28/88	1748
02 VSTD150	VSTD150	8985	06/28/88	1830
03 VSTD100	VSTD100	8986	06/28/88	1913
04 VSTD50	VSTD50	8987	06/28/88	1953
05 VSTD20	VSTD20	8988	06/28/88	2038

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORF SAS No.: _____ SDS No.: _____

Lab File ID: 9455 BFB Injection Date: 07/25/88

Instrument ID: 7002D BFB Injection Time: 1645

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.0
75	30.0 - 60.0% of mass 95	50.3
95	Base peak. 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	69.3
175	5.0 - 9.0% of mass 174	5.1 (7.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	67.0 (96.7)1
177	5.0 - 9.0% of mass 176	4.5 (6.7)2

1-Value is % mass 174

2-Value is % mass 176

MS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	VSTD50	9456	07/25/88	1710
02	VBLK1	VBLK1	9458	07/25/88	1924
03	8-364(mw-3/2.0)	20154	9469	07/26/88	0326

003329

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Lab File ID: 9473BFB Injection Date: 07/26/98Instrument ID: 7002DBFB Injection Time: 0950Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.2
75	30.0 - 60.0% of mass 95	53.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	75.0
175	5.0 - 9.0% of mass 174	5.3 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	75.0 (100.0)1
177	5.0 - 9.0% of mass 176	4.9 (6.5)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	9474	07/26/98	1013
02 VBLK2	VBLK2	9475	07/26/98	1101
03 8-263(mw-8/2.0)	20153	9479	07/26/98	1359

003380

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK1

Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: VBLK1Sample wt/vol: 5.0 (g/mL) gLab File ID: 9458Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 07/25/88Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/KG

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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	10	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
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003331

106-46-7-----1,3-Dichlorobenzene	
547-73-1-----1,4-Dichlorobenzene	

10	U
10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003332
EPA SAMPLE NO.

VBLK2

Name: SWL - TULSA

Contract: _____

Lab Code: SWOK

Case No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SDIL

Lab Sample ID: VBLK2

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: 9475

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 07/26/88

Column: (pack/cap) PACK

Dilution Factor: 1.0

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

CAS NO.

COMPOUND

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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
73-25-2	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	10	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
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

106-46-7-----1,3-Dichlorobenzene_____
547-73-1-----1,4-Dichlorobenzene_____

10003333
10

003334

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: PBLK2

SAMPLE ID: 07218EXB

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2.4 DNT	0.8 U
2.6 DNT	0.8 U

U indicates detection limit

003335

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: 8-864MS(mw-8/10.0)

SAMPLE ID: 20154MS

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2.4 DNT	0.8 U
2.6 DNT	0.8 U

U indicates detection limit

003336

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: 8-864MSD (mw-8/10.0)

SAMPLE ID: 20154MD

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2.4 DNT	0.8 U
2.6 DNT	0.8 U

U indicates detection limit

28
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: SWL - TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Level: (low/med) LOW

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
	=====	=====	=====	=====	=====	=====
01	8-884(mw-10)2.0	88	77	81		0
02	8-885(mw-10)10.0	89	85	86		0
03	8-886(mw-11)2.0	91	85	84		0
04	8-887(mw-11)10.0	87	83	84		0
05	8-886MS(mw-11)2.0	89	87	92		0
06	8-886MS(mw-11)20	88	85	88		0
07	VBLK1	91	90	92		0
08	VBLK2	92	89	87		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix Spike - EPA Sample No.: 8-886(mw-11)2.0 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	63.3	0	79.0	125	59-172
Trichloroethene	63.3	0	75.7	120	62-137
Benzene	63.3	0	76.7	121	66-142
Toluene	63.3	0	77.5	122	59-139
Chlorobenzene	63.3	0	79.2	125	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RFD #	QC LIMITS RFD	REC.
1,1-Dichloroethene	63.3	83.8	132	-5	22	59-172
Trichloroethene	63.3	79.7	126	-5	24	62-137
Benzene	63.3	78.4	124	-2	21	66-142
Toluene	63.3	79.4	125	-2	21	59-139
Chlorobenzene	63.3	80.6	127	-2	21	60-133

Column to be used to flag recovery and RFD values with an asterisk

* Values outside of QC limits

RFD: 0 out of 5 outside limitsSpike Recovery: 0 out of 10 outside limits

COMMENTS:

003339

38

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix Spike - EPA Sample No.: 8-886(MW-11)2.0 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	63.3	0	79.0	125	59-172
Trichloroethene	63.3	0	75.7	120	62-137
Benzene	63.3	0	76.7	121	66-142
Toluene	63.3	0	77.5	122	59-139
Chlorobenzene	63.3	0	79.2	125	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RFD #	QC LIMITS RFD	REC.
1,1-Dichloroethene	63.3	83.8	132	-3	22	59-172
Trichloroethene	63.3	79.7	126	-3	24	62-137
Benzene	63.3	78.4	124	-2	21	66-142
Toluene	63.3	79.4	125	-2	21	59-139
Chlorobenzene	63.3	80.6	127	-2	21	60-133

Column to be used to flag recovery and RFD values with an asterisk

* Values outside of QC limits

RFD: 0 out of 5 outside limitsSpike Recovery: 0 out of 10 outside limits

COMMENTS:

003340

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSA Contract: SWCORP

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID: 9554 Lab Sample ID: VBK1

Date Analyzed: 08/03/88 Time Analyzed: 1736

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

Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-886MS(mw-11)20	20275MS	9562	2331
02	8-886MSD(mw-11)20	20275MSD	9563	0016

COMMENTS:

003341

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Lab File ID: 9584Lab Sample ID: VELK2Date Analyzed: 08/04/88Time Analyzed: 2334Matrix: (soil/water) SOILLevel: (low/med) LOWInstrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	=====	=====	=====	=====
01	B-884(mw-10)2.0	20273	9589	0314
02	B-885(mw-10)10.0	20274	9590	0359
03	B-886(mw-11)2.0	20275	9591	0443
04	B-887(mw-11)10.0	20276	9592	0527

REMARKS:

003342

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: 9524 BFB Injection Date: 08/02/88
 Instrument ID: 7002D BFB Injection Time: 0910
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.6
75	30.0 - 60.0% of mass 95	50.9
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	71.8
175	5.0 - 9.0% of mass 174	5.0 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	69.9 (97.3)1
177	5.0 - 9.0% of mass 176	4.6 (6.6)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	9525	08/02/88	0940
02 VSTD100	VSTD100	9527	08/02/88	1113
03 VSTD150	VSTD150	9528	08/02/88	1159
04 VSTD200	VSTD200	9529	08/02/88	1243
05 VSTD20	VSTD20	9530	08/02/88	1411

003343

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: 9552 BFB Injection Date: 08/03/88
 Instrument ID: 7002D BFB Injection Time: 1458
 Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	51.8
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	70.5
175	5.0 - 9.0% of mass 174	4.7 (6.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	69.4 (98.5)1
177	5.0 - 9.0% of mass 176	4.5 (6.5)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	VSTD50	9553	06/03/88	1513
02	VBLK1	VBLK1	9554	06/03/88	1736
03	8-886MS(mw+1)20	20275MS	9562	06/03/88	2331
04	8-886MSD(mw+1)20	20275MSD	9563	06/04/88	0016

003344

SA
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: 9582 BFB Injection Date: 08/04/88
 Instrument ID: 7002D BFB Injection Time: 2107
 Matrix:(soil/water) SOIL Level:(low/med) LOW Column:(pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.0
75	30.0 - 60.0% of mass 95	52.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	70.2
175	5.0 - 9.0% of mass 174	4.8 (6.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	68.3 (97.3)1
177	5.0 - 9.0% of mass 176	4.6 (6.7)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	9583	08/04/88	2129
02 VBLK2	VBLK2	9584	08/04/88	2334
03 8-884(mw-10)2.0	20273	9589	08/05/88	0314
04 8-885(mw-10)10.0	20274	9590	08/05/88	0359
05 8-886(mw-11)2.0	20275	9591	08/05/88	0443
06 8-887(mw-11)10.0	20276	9592	08/05/88	0527

003345

8A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: SWL - TULSA Contract: SWCORP

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID (Standard): 9553 Date Analyzed: 08/03/88

Instrument ID: 7002D Time Analyzed: 1513

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

	IS1(BCM)		IS2(DFB)		IS3(CBZ)	
	AREA #	RT	AREA #	RT	AREA #	RT
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	45500	8.77	166000	18.62	132000	23.30
=====	=====	=====	=====	=====	=====	=====
UPPER LIMIT	91000		332000		264000	
=====	=====	=====	=====	=====	=====	=====
LOWER LIMIT	22750		83000		66000	
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01: 8-886MS(mw-11)2.4	35000	8.77	127000	18.60	99800	23.29
02: 8-886MSD(mw-11)2.0	38500	8.79	138000	18.59	106000	23.29
03: VBLK1	43900	8.77	161000	18.62	130000	23.30
=====	=====	=====	=====	=====	=====	=====

IS1 (BCM) = Bromochloromethane
 IS2 (DFB) = 1,4-Difluorobenzene
 IS3 (CBZ) = Chlorobenzene

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

Column used to flag internal standard area values with an asterisk

003346

3A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Name: SWL - TULSA Contract: SWCORP

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID (Standard): 9583 Date Analyzed: 08/04/88

Instrument ID: 7002D Time Analyzed: 2129

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

	IS1(BCM)		IS2(DFB)		IS3(CBZ)	
	AREA #	RT	AREA #	RT	AREA #	RT
=====	=====	=====	=====	=====	=====	=====
12 HOUR STD	36100	8.77	137000	18.60	108000	23.29
=====	=====	=====	=====	=====	=====	=====
UPPER LIMIT	72200		274000		216000	
=====	=====	=====	=====	=====	=====	=====
LOWER LIMIT	18050		68500		54000	
=====	=====	=====	=====	=====	=====	=====
EPA SAMPLE NO.						
=====	=====	=====	=====	=====	=====	=====
01 8-884(mw-10)2.0	22000	8.77	80400	18.60	59700	23.29
02 8-885(mw-10)10.0	35900	8.75	137000	18.59	107000	23.32
03 8-886(mw-11)2.0	35900	8.79	131000	18.59	99600	23.29
04 8-887(mw-11)10.0	36700	8.79	139000	18.60	108000	23.29
05 VBLK2	42000	8.80	153000	18.62	121000	23.30
=====	=====	=====	=====	=====	=====	=====

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene

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

Column used to flag internal standard area values with an asterisk

003347

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: VBLK1Sample wt/vol: 5.0 (g/mL) GLab File ID: 9554Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/03/88Column: (pack/cap) PACKDilution Factor: 1.0

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

Q

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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	0.2	J
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
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003348

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003349

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK2

Lab Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: VBLK2Sample wt/vol: 5.0 (g/mL) GLab File ID: 9584Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/04/88Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003350

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003351

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SWL - TULSAContract: SWCORP
8-886MS
(mw-11) 2.0
Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: 20275MSSample wt/vol: 5.0 (g/mL) GLab File ID: 9562Level: (low/med) LOWDate Received: 07/27/88% Moisture: not dec. 21Date Analyzed: 08/03/88Column: (pack/cap) PACKDilution Factor: 1.0

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	13	U
74-83-9-----	Bromomethane	13	U
75-01-4-----	Vinyl Chloride	13	U
75-00-3-----	Chloroethane	13	U
75-09-2-----	Methylene Chloride	6	U
67-64-1-----	Acetone	13	U
75-15-0-----	Carbon Disulfide	6	U
75-35-4-----	1,1-Dichloroethene	6	U
75-34-3-----	1,1-Dichloroethane	6	U
540-59-0-----	1,2-Dichloroethene (total)	6	U
67-66-3-----	Chloroform	6	U
107-06-2-----	1,2-Dichloroethane	6	U
78-93-3-----	2-Butanone	13	U
71-55-6-----	1,1,1-Trichloroethane	6	U
56-23-5-----	Carbon Tetrachloride	6	U
108-05-4-----	Vinyl Acetate	13	U
75-27-4-----	Bromodichloromethane	6	U
78-87-5-----	1,2-Dichloropropane	6	U
10061-01-5-----	cis-1,3-Dichloropropene	6	U
79-01-6-----	Trichloroethene	6	U
124-48-1-----	Dibromochloromethane	6	U
79-00-5-----	1,1,2-Trichloroethane	6	U
71-43-2-----	Benzene	6	U
10061-02-6-----	Trans-1,3-Dichloropropene	6	U
75-25-2-----	Bromoform	6	U
108-10-1-----	4-Methyl-2-Pentanone	13	U
591-78-6-----	2-Hexanone	13	U
127-18-4-----	Tetrachloroethene	6	U
79-34-5-----	1,1,2,2-Tetrachloroethane	6	U
108-88-3-----	Toluene	6	U
108-90-7-----	Chlorobenzene	6	U
100-41-4-----	Ethylbenzene	6	U
100-42-5-----	Styrene	6	U
1330-20-7-----	Xylene (total)	6	U
75-69-4-----	Trichlorofluoromethane	13	U
95-50-1-----	1,2-Dichlorobenzene	13	U

003352

106-46-7-----1,3-Dichlorobenzene	13	1U
547-73-1-----1,4-Dichlorobenzene	13	1U

003353

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SWL - TULSAContract: SWCORP

8-886MSD

(mu-11) 2.0Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: 20275MSDSample wt/vol: 5.0 (g/mL) GLab File ID: 9563Level: (low/med) LOWDate Received: 07/27/88% Moisture: not dec. 21Date Analyzed: 08/04/88Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.

COMPOUND

74-87-3	-----Chloromethane	13	U
74-83-9	-----Bromomethane	13	U
75-01-4	-----Vinyl Chloride	13	U
75-00-3	-----Chloroethane	13	U
75-09-2	-----Methylene Chloride	6	U
67-64-1	-----Acetone	13	U
75-15-0	-----Carbon Disulfide	6	U
75-35-4	-----1,1-Dichloroethene	6	U
75-34-3	-----1,1-Dichloroethane	6	U
540-59-0	-----1,2-Dichloroethene (total)	6	U
67-66-3	-----Chloroform	6	U
107-06-2	-----1,2-Dichloroethane	6	U
78-93-3	-----2-Butanone	13	U
71-55-6	-----1,1,1-Trichloroethane	6	U
56-23-5	-----Carbon Tetrachloride	6	U
108-05-4	-----Vinyl Acetate	13	U
75-27-4	-----Bromodichloromethane	6	U
78-87-5	-----1,2-Dichloropropane	6	U
10061-01-5	-----cis-1,3-Dichloropropene	6	U
79-01-6	-----Trichloroethene	6	U
124-48-1	-----Dibromochloromethane	6	U
79-00-5	-----1,1,2-Trichloroethane	6	U
71-43-2	-----Benzene	6	U
10061-02-6	-----Trans-1,3-Dichloropropene	6	U
75-25-2	-----Bromoform	6	U
108-10-1	-----4-Methyl-2-Pentanone	13	U
591-78-6	-----2-Hexanone	13	U
127-18-4	-----Tetrachloroethene	6	U
79-34-5	-----1,1,2,2-Tetrachloroethane	6	U
108-88-3	-----Toluene	6	U
108-90-7	-----Chlorobenzene	6	U
100-41-4	-----Ethylbenzene	6	U
100-42-5	-----Styrene	6	U
1330-20-7	-----Xylene (total)	6	U
75-69-4	-----Trichlorofluoromethane	13	U
95-50-1	-----1,2-Dichlorobenzene	13	U

003354

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: PBLK3

SAMPLE ID: 07288EXB

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2.4 DNT	0.8 U
2.6 DNT	0.8 U

U indicates detection limit

003355

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: 8-885MS(mw-10)10.0'

SAMPLE ID: 20274MS

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2.4 DNT	0.8 U
2.6 DNT	0.8 U

U indicates detection limit

003356

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 07-29-88

SWLO#: 8-885MSD (mw-10) 10.0'

SAMPLE ID: 20274MD

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2.4 DNT	0.8 U
2.6 DNT	0.8 U

U indicates detection limit

003357

SOIL MATRIX SPIKE / MATRIX SPIKE DUPLICATE PERCENT REC

CLIENT: SWCOE

DATE: 07-29-88

SAMPLE ID: 8-885

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	Z REC.
HMX	4000	0	1859	46.5
RDX	4000	0	3816	95.4
TNT	4000	0	3878	97.0
2,4 DNT	4000	0	3312	82.8

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	Z REC.	Z RPD
HMX	4000	0	1583	39.6	16.0
RDX	4000	0	3574	89.4	6.5
TNT	4000	0	3991	99.8	2.9
2,4 DNT	4000	0	3290	82.3	0.7

003358

2B

SOIL VOLATILE SURROGATE RECOVERY

Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORF SAS No.: _____ SDG No.: _____
 Level: (low/med) LOW

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
	=====	=====	=====	=====	=====	=====
01	8-912(C-1)	98	82	93		0
02	8-913(C-2)	100	97	103		0
03	VELK1	100	99	96		0
04	VELK2	97	94	99		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

003359

4A

VOLATILE METHOD BLANK SUMMARY

Name: SWL - TULSA Contract: _____
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 7606 Lab Sample ID: VBLK1
Date Analyzed: 08/08/88 Time Analyzed: 1348
Matrix: (soil/water) SOIL Level: (low/med) LOW
Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-912(C-1)	20351	9618	2147

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003360

Name: SWL - TULSA Contract: _____
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 9623 Lab Sample ID: VBK2
Date Analyzed: 08/09/88 Time Analyzed: 1017
Matrix: (soil/water) SOIL Level: (low/med) LOW
Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	=====	=====	=====	=====
01	8-913(C-2)	20352	9628	1407

COMMENTS:

003361

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID: 9524 BFB Injection Date: 06/02/88

Instrument ID: 7002D BFB Injection Time: 0910

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.6
75	30.0 - 60.0% of mass 95	50.9
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	71.8
175	5.0 - 9.0% of mass 174	5.0 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	69.9 (97.3)1
177	5.0 - 9.0% of mass 176	4.6 (6.6)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	9525	06/02/88	0940
02 VSTD100	VSTD100	9527	06/02/88	1113
03 VSTD150	VSTD150	9528	06/02/88	1159
04 VSTD200	VSTD200	9529	06/02/88	1243
05 VSTD20	VSTD20	9530	06/02/88	1411

003862

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID: 9604 BFB Injection Date: 08/08/88

Instrument ID: 7002D BFB Injection Time: 1157

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.4
75	30.0 - 60.0% of mass 95	51.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	72.6
175	5.0 - 9.0% of mass 174	5.1 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	71.5 (98.5)1
177	5.0 - 9.0% of mass 176	4.8 (6.7)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	9605	08/08/88	1223
02 VBLK1	VBLK1	9606	08/08/88	1348
03 8-912(C-1)	20351	9618	08/08/88	2147

003363

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)Lab Name: SWL - TULSA Contract: _____Lab Code: SWOK Case No.: SWCORF SAS No.: _____ SDG No.: _____Lab File ID: 9621 BFB Injection Date: 08/09/88Instrument ID: 7002D BFB Injection Time: 0904Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.0
75	30.0 - 60.0% of mass 95	56.7
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	74.4
175	5.0 - 9.0% of mass 174	5.1 (6.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	72.5 (97.5)1
177	5.0 - 9.0% of mass 176	4.6 (6.3)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	VSTD50	9622	08/09/88	0930
02	VBLK2	VBLK2	9623	08/09/88	1017
03	8-913(C-2)	20352	9628	08/09/88	1407

003364

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VELK1

Lab Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORF

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: VELK1Sample wt/vol: 5.0 (g/mL) GLab File ID: 9606Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/08/88Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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
106-10-1	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
106-88-3	Toluene	5	U
106-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

106-46-7-----1,3-Dichlorobenzene
547-73-1-----1,4-Dichlorobenzene

1003365

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003368
EPA SAMPLE NO.

VBLK2

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORF SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: VBLK2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 9623

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 06/09/88

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) <u>UG/KG</u>	<u>Q</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	5	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
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003367

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK2

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: VBLK2

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 9623

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 08/09/88

Column: (pack/cap) PACK Dilution Factor: 1.0

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

CAS NO.

COMPOUND

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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
75-69-4	Trichlorofluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003368

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003369

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 08-22-89

SWLC#: 08018EXB

SAMPLE ID: PBLK1

COMPOUNDS

RESULTS

HMX	1.6 U
EDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2,4 DNT	0.8 U
2,6 DNT	0.8 U

U indicates detection limit

CB
SOIL VOLATILE SURROGATE RECOVERY

003370

Lab Name: SWL + TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDS No.: _____
 Level: (low/med) LOW

EPA	S1	S2	S3	OTHER	TOT
SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
01 B-1004(MV-4.20)	100	100	99		0
02 B-1005(MV-4.10)	100	99	98		0
03 B-1005DL(MV-4.10)	98	99	97		0
04 VBLK3	100	101	96		0
05 VBLK2	99	101	99		0

GC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required GC limits

D Surrogates diluted out

003371

2B
SOIL VOLATILE SURROGATE RECOVERY

b Name: SWL - TULSA Contract: SWCORP

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Level: (low/med) MED

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
01	B-1005 (nw-H 10')	101	107	111		0
02	VBLK4	98	93	97		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4A
VOLATILE METHOD BLANK SUMMARY

003372

Job Name: SWL - TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: 9761 Lab Sample ID: VBLK3
 Date Analyzed: 08/16/88 Time Analyzed: 1813
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1004(MW-14 2.0')	8-1004(MW-14 2.0')	9767	2210
02	8-1005(MW-14 10')	8-1005(MW-14 10')	9762	2250

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003373

Lab Name: SWL - TULSA Contract: SWCORP
 Lab Code: SWCK Case No.: SWCORP SAB No.: _____ SDG No.: _____
 Lab File ID: 9779 Lab Sample ID: VBLK2
 Date Analyzed: 06/17/88 Time Analyzed: 1434
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 8-1005DL(MW-14 D)	8-1005DL(MW-14 D)	9780	1534

COMMENTS:

003374

VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSA Contract: SWCORP
Lab Code: SWCK Case No.: SWCORP GAS No.: _____ SDG No.: _____
Lab File ID: 02320 Lab Sample ID: UBLK4
Date Analyzed: 08/23/88 Time Analyzed: 0954
Matrix: (soil/water) SOIL Level: (low/med) MED
Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1005 (MW-14 10')	8-1005 (MW-14 10')	02335	2004

COMMENTS:

003375

SA
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SML - TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP GAS No.: _____ SDG No.: _____
 Lab File ID: 9725 BFB Injection Date: 08/15/88
 Instrument ID: 7002D BFB Injection Time: 1747
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	54.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	73.6
175	5.0 - 9.0% of mass 174	5.4 (7.1)1
176	Greater than 95.0% but less than 101.0% of mass 174	73.3 (96.9)1
177	5.0 - 9.0% of mass 176	4.8 (6.5)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	9726	08/15/88	1804
02 VSTD200	VSTD200	9727	08/15/88	1811
03 VSTD150	VSTD150	9728	08/15/88	1924
04 VSTD100	VSTD100	9729	08/15/88	2005
05 VSTD20	VSTD20	9730	08/15/88	2045

003376

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Name: SML - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORF SAS No.: _____ SDG No.: _____
 Lab File ID: 9183 BFB Injection Date: 07/14/88
 Instrument ID: 7002D BFB Injection Time: 0642
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.0
75	30.0 - 60.0% of mass 95	35.9
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	70.6
175	5.0 - 9.0% of mass 174	5.2 (7.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	70.0 (99.2)1
177	5.0 - 9.0% of mass 176	4.3 (6.1)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS. MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	9184	07/14/88	0634
02 VBLK1	VBLK1	9185	07/14/88	0736
03 8-BSE(c4,c4A)2.0	2002B	9200	07/14/88	1738

003377

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWIL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWOORF SAS No.: _____ SDG No.: _____

Lab File ID: 9356

BFB Injection Date: 07/20/88

Instrument ID: 7002D

BFB Injection Time: 2147

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.6
75	30.0 - 60.0% of mass 95	53.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	72.5
175	5.0 - 9.0% of mass 174	5.4 (7.5)1
176	Greater than 95.0%, but less than 101.0% of mass 174	73.1 (100.8)1
177	5.0 - 9.0% of mass 176	4.2 (6.5)2

1-Value is % mass 174

2-Value is % mass 176

IS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01:VSTD50	VSTD50	9357	07/20/88	2308
02:VBLK2	VBLK2	9358	07/20/88	2349
03:B-80P(C-2C-2A)100%	20029	9359	07/21/88	0031

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003378

Lab Name: SWL - TULSA Contract: SWCORP
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 9759 BFB Injection Date: 08/16/88
Instrument ID: 7002D BFB Injection Time: 1724
Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.2
75	30.0 - 60.0% of mass 95	53.8
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 30.0% of mass 95	77.6
175	5.0 - 9.0% of mass 174	5.2 (7.2)1
176	Greater than 53.0%, but less than 101.0% of mass 174	76.7 (98.8)1
177	5.0 - 9.0% of mass 176	4.6 (6.0)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01: VSTD50	VSTD50	9760	08/16/88	1735
02: VBLK3	VBLK3	9761	08/16/88	1815
03: E-1004(MW-14 20')	E-1004(MW-14 20')	9767	08/16/88	2210
04: E-1005(MW-14 10')	E-1005(MW-14 10')	9768	08/16/88	2250

003379

SA
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: SWCORP
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 9777 BFB Injection Date: 06/17/88
Instrument ID: 7002D BFB Injection Time: 1358
Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	25.0
75	30.0 - 60.0% of mass 95	55.1
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	77.0
175	5.0 - 9.0% of mass 174	5.2 (6.2)1
176	Greater than 95.0% but less than 101.0% of mass 174	73.7 (98.3)1
177	5.0 - 9.0% of mass 176	4.9 (6.3)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MED, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VETD50	VETD50	9778	06/17/88	1414
02 VELKE	VELKE	9779	06/17/88	1434
03 E-1005DL(MW-14.10)	E-1005DL(MW-14.10)	9780	06/17/88	1504

003380

SA
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

b Name: SWL - TULSA Contract: SWCORP

Lab Code: SWOW Case No.: SWCORP SAS No.: _____ SDS No.: _____

Lab File ID: C2174 BFB Injection Date: 08/13/88

Instrument ID: C BFB Injection Time: 1115

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.2
75	30.0 - 60.0% of mass 95	56.6
95	Base peak. 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	66.6
175	5.0 - 9.0% of mass 174	4.7 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	64.1 (96.3)1
177	5.0 - 9.0% of mass 176	4.4 (6.6)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	C2189	08/13/88	2059
02 VSTD20	VSTD20	C2190	08/13/88	2123
03 VSTD100	VSTD100	C2191	08/13/88	2151
04 VSTD150	VSTD150	C2192	08/13/88	2217
05 VSTD200	VSTD200	C2193	08/13/88	2243

003381

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: SWCORP
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 02316 BFB Injection Date: 08/23/88
Instrument ID: C BFB Injection Time: 0750
Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) CAF

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.5
75	30.0 - 60.0% of mass 95	59.7
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	76.0
175	5.0 - 9.0% of mass 174	4.4 (5.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	76.1 (100.1)1
177	5.0 - 9.0% of mass 176	4.1 (5.4)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01:VSTD50	VSTD50	02319	08/23/88	0926
02:VELK4	VELK4	02320	08/23/88	0934
03:S-1005(MW-14 10')	S-1005(MW-14 10')	02325	08/23/88	2004

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: EWL - TULSA Contract: SWCORP

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ GDE No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: VELK2

Sample wt/vol: 5.0 (g/mL) 5 Lab File ID: 8779

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 06/17/88

Column: (pack/cap) PACK Dilution Factor: 1.0

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	R
74-87-3	Chloromethane	10	10
74-83-9	Bromomethane	10	10
75-01-4	Vinyl Chloride	10	10
75-00-3	Chloroethane	10	10
75-09-2	Methylene Chloride	10	10
67-64-1	Acetone	10	10
75-15-0	Carbon Disulfide	10	10
75-33-4	1,1-Dichloroethane	10	10
75-34-3	1,1-Dichloroethane	10	10
540-89-0	1,1-Dichloroethane (total)	10	10
67-66-3	Chloroform	10	10
107-06-2	1,2-Dichloroethane	10	10
75-35-3	2-Butanone	10	10
71-55-6	1,1,1-Trichloroethane	10	10
76-15-3	Carbon Tetrachloride	10	10
102-05-4	Vinyl Acetate	10	10
75-27-3	Bromodichloromethane	10	10
75-37-5	1,2-Dichloropropane	10	10
10061-01-3	cis-1,3-Dichloropropene	10	10
75-01-2	Trichloroethene	10	10
124-48-1	Dibromochloromethane	10	10
79-00-3	1,1,2-Trichloroethane	10	10
71-43-2	Benzene	10	10
10061-02-6	Trans-1,3-Dichloropropene	10	10
75-35-3	Bromoform	10	10
102-10-1	4-Methyl-2-Pentanone	10	10
591-78-6	2-Hexanone	10	10
127-18-4	Tetrachloroethene	10	10
75-34-5	1,1,2,2-Tetrachloroethane	10	10
108-88-3	Toluene	10	10
108-90-7	Chlorobenzene	10	10
100-41-4	Ethylbenzene	10	10
100-42-5	Styrene	10	10
1330-20-7	Xylene (total)	10	10
75-69-4	Dichlorodifluoromethane	10	10
95-50-1	1,2-Dichlorobenzene	10	10

003383

106-44-7-----1,3-Dichlorobenzene	10	10
547-73-1-----1,4-Dichlorobenzene	10	10

003384
EPA SAMPLE NO.1A
VOL-TILE ORGANICS ANALYSIS DATA SHEET

Lab Name: EWL - TULSA Contract: EWGDRF
Lab Code: ENGR Case No.: EWGDRF SPS No.: _____ EDG No.: _____
Matrix: (soil/water) SOIL Lab Sample ID: UPLMT
Sample wt/vol: 5.0 (g/mL) 5 Lab File ID: 5131
Level: (low/med) LOW Date Received: _____
% Moisture: not dec. _____ Date Analyzed: 05/16/88
Column: (pack/cap) PACK Dilution Factor: 1

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG 0

74-87-3	Chloromethane	10	10
74-83-9	Bromomethane	10	10
75-01-4	Vinyl Chloride	10	10
75-00-3	Chloroethane	10	10
75-06-2	Methylene Chloride	5	10
67-64-1	Acetone	10	10
75-15-0	Carbon Disulfide	5	10
75-35-4	1,1-Dichloroethene	5	10
75-34-3	1,1-Dichloroethane	5	10
540-39-0	1,2-Dichloroethene (total)	5	10
67-66-3	Chloroform	5	10
107-06-1	1,2-Dichloroethane	10	10
75-55-3	2-Butanone	5	10
71-55-6	1,1,1-Trichloroethane	5	10
56-23-3	Carbon Tetrachloride	10	10
108-05-4	Vinyl Acetate	5	10
73-27-4	Bromodichloromethane	5	10
78-87-6	1,2-Dichloropropane	5	10
10061-01-3	cis-1,3-Dichloropropene	5	10
75-01-6	Trichloroethene	5	10
124-48-1	Dibromochloromethane	5	10
75-00-5	1,1,2-Trichloroethane	10	10
71-43-2	Benzene	10	10
10061-02-5	Trans-1,3-Dichloropropene	5	10
75-25-2	Bromoform	10	10
108-10-1	4-Methyl-2-Pentanone	10	10
391-79-1	2-Hexanone	5	10
127-18-4	Tetrachloroethene	5	10
75-34-3	1,1,2,2-Tetrachloroethane	5	10
105-88-3	Toluene	5	10
106-90-7	Chlorobenzene	5	10
100-41-4	Ethylbenzene	5	10
100-42-5	Styrene	5	10
1330-20-7	Xylene (total)	10	10
75-68-4	Dichlorodifluoromethane	10	10
95-50-1	1,2-Dichlorobenzene		

003385

10 10
10 10

106-46-7-----1,3-Dichlorobenzene
547-77-1-----1,4-Dichlorobenzene

013386 SAMPLE NO.

VOLATILE ORGANIC ANALYSIS DATA SHEET

VELWA

Lab Name: SWL - TULSAContract: EWCOFFLab Code: EWOKCase No.: EWCOFF

SAS No.: _____

SDS No.: _____

Matrix: (soil/water) SOILLab Sample ID: VELWASample wt/vol: 4.0 (g/mL) GLab File ID: 00000Level: (low/med) MED

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/13/98Column: (pack/cap) CAPDilution Factor: 1.0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

74-87-3	Chloromethane	1500	10
74-83-9	Bromomethane	1500	10
75-01-4	Vinyl Chloride	1500	10
75-00-3	Chloroethane	600	10
75-09-2	Methylene Chloride	1500	10
67-64-1	Acetone	600	10
75-15-0	Carbon Disulfide	600	10
75-35-4	1,1-Dichloroethene	600	10
75-34-3	1,1-Dichloroethane	600	10
540-55-0	1,2-Dichloroethene (total)	600	10
67-66-3	Chloroform	600	10
107-06-2	1,2-Dichloroethane	1500	10
75-93-3	2-Butanone	600	10
71-35-6	1,1,1-Trichloroethane	600	10
55-27-3	Carbon Tetrachloride	1500	10
108-05-4	Vinyl Acetate	600	10
75-27-4	Bromodichloromethane	600	10
75-27-5	1,2-Dichloropropane	600	10
10061-01-3	cis-1,3-Dichlorocyclopentane	600	10
79-01-6	Trichloroethane	600	10
124-46-1	Dibromochloromethane	600	10
79-00-5	1,1,2-Trichloroethane	600	10
71-43-2	Benzene	600	10
10061-02-6	Trans-1,3-Dichlorocyclopentane	600	10
75-25-2	Bromoform	1500	10
108-10-1	4-Methyl-2-Pentanone	1500	10
591-78-6	2-Hexanone	600	10
127-18-4	Tetrachloroethene	1500	10
79-34-3	1,1,2,2-Tetrachloroethane	600	10
106-95-3	Toluene	600	10
108-90-7	Chlorobenzene	600	10
100-41-4	Ethylbenzene	600	10
100-42-3	Styrene	600	10
1330-20-7	Xylene (total)	1500	10
75-69-1	Dichlorodifluoromethane	1500	10
95-50-1	1,2-Dichlorobenzene		

FORM 1 VOA

1/27 Rc

003387

106-46-7-----1,3-Dichlorobenzene
547-73-1-----1,4-Dichlorobenzene

1500 10
1500 10

003388

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 08-22-88

SWLO#: 08152EXB

SAMPLE ID: PBLK2

COMPOUNDS

RESULTS

HMX	1.6 U
RDX	1.8 U
TETRYL	5.3 U
TNT	0.8 U
2,4 DNT	0.8 U
2,6 DNT	0.8 U

U indicates detection limit

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EA 003985 NO.

8-1206MS
(38-926)4

Job Name: SWL - TULSA

Contract: _____

Lab Code: SWOK

Case No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOIL

Lab Sample ID: 20829MS

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: 9976

Level: (low/med) LOW

Date Received: 08/23/88

% Moisture: not dec. 19

Date Analyzed: 08/26/88

Column: (pack/cap) PACK

Dilution Factor: 1.0

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

CAS NO.

COMPOUND

Q

74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	6	U
67-64-1	Acetone	12	U
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	0.9	J
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U
75-69-4	Dichlorodifluoromethane	12	U
95-50-1	1,2-Dichlorobenzene	12	U

003390

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET8-1206MS
(88-226)4Site Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: 20829MSSample wt/vol: 5.0 (g/mL) GLab File ID: 9976Level: (low/med) LOWDate Received: 08/23/88% Moisture: not dec. 19Date Analyzed: 08/26/88Column: (pack/cap) PACKDilution Factor: 1.0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

CAS NO.

COMPOUND

74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	6	U
75-09-2	Methylene Chloride	12	U
67-64-1	Acetone	6	U
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	0.9	J
67-66-3	Chloroform	6	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	6	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	12	U
106-05-4	Vinyl Acetate	6	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	6	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	12	U
75-69-4	Dichlorodifluoromethane	12	U
95-50-1	1,2-Dichlorobenzene		

003391

12 U
12 U

106-46-7-----1,3-Dichlorobenzene
547-73-1-----1,4-Dichlorobenzene

003392

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET8-1207MS
(8A-926)10'Lab Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORF

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: 20830MSSample wt/vol: 5.0 (g/mL) 6Lab File ID: 9978Level: (low/med) LOWDate Received: 08/23/88% Moisture: not dec. 24Date Analyzed: 08/26/88Column: (pack/cap) PACKDilution Factor: 1.0

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

74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	7	U
75-09-2	Methylene Chloride	13	U
67-64-1	Acetone	7	U
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	7	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	13	U
108-05-4	Vinyl Acetate	7	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	Trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	7	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Xylene (total)	13	U
75-69-4	Dichlorodifluoromethane	13	U
95-50-1	1,2-Dichlorobenzene		

FORM I VOA

1/87 Rev.

1003393
13 U

106-46-7-----1,3-Dichlorobenzene
547-73-1-----1,4-Dichlorobenzene

003394

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

Job Name: SWL - TULSA

Contract: _____

8-1244MS
(88-045) 4'Lab Code: SWCKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: 20867MSSample wt/vol: 4.0 (g/mL) GLab File ID: C2412Level: (low/med) MEDDate Received: 08/23/88% Moisture: not dec. 12Date Analyzed: 08/31/88Column: (pack/cap) CAFDilution Factor: 1.0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Q

CAS NO.

COMPOUND

74-87-3	Chloromethane	1400	U
74-83-9	Bromomethane	1400	U
75-01-4	Vinyl Chloride	1400	U
75-00-3	Chloroethane	1400	U
75-09-2	Methylene Chloride	1600	
67-64-1	Acetone	5000	
75-15-0	Carbon Disulfide	710	U
75-35-4	1,1-Dichloroethene	710	U
75-34-3	1,1-Dichloroethane	710	U
540-59-0	1,2-Dichloroethene (total)	710	U
67-66-3	Chloroform	230	BJ
107-06-2	1,2-Dichloroethane	710	U
78-93-3	2-Butanone	1400	U
71-55-6	1,1,1-Trichloroethane	710	U
56-23-5	Carbon Tetrachloride	710	U
108-05-4	Vinyl Acetate	1400	U
75-27-4	Bromodichloromethane	710	U
78-87-5	1,2-Dichloropropane	710	U
10061-01-5	cis-1,3-Dichloropropene	710	U
79-01-6	Trichloroethene	710	U
124-48-1	Dibromochloromethane	710	U
79-00-5	1,1,2-Trichloroethane	710	U
71-43-2	Benzene	710	U
10061-02-6	Trans-1,3-Dichloropropene	710	U
75-25-2	Bromoform	710	U
108-10-1	4-Methyl-2-Pentanone	1400	U
591-78-6	2-Hexanone	1400	U
127-18-4	Tetrachloroethene	60	U
79-34-5	1,1,2,2-Tetrachloroethane	1400	U
108-88-3	Toluene	710	U
108-90-7	Chlorobenzene	710	U
100-41-4	Ethylbenzene	710	U
100-42-5	Styrene	710	U
1330-20-7	Xylene (total)	710	U
75-69-4	Dichlorodifluoromethane	1400	U
95-50-1	1,2-Dichlorobenzene	1400	U

003395

106-46-7-----1,3-Dichlorobenzene	55	J
547-75-1-----1,4-Dichlorobenzene	1400	U

003396
EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: SWL - TULSA

Contract: _____

8-1206MSD
(8A-926)4Lab Code: SWOKCase No.: SWCORF

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: 20829MSDSample wt/vol: 5.0 (g/mL) GLab File ID: 9977Level: (low/med) LOWDate Received: 08/23/88% Moisture: not dec. 10Date Analyzed: 08/26/88Column: (pack/cap) PACKDilution Factor: 1.0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.

COMPOUND

74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	6	U
67-64-1	Acetone	12	U
75-15-0	Carbon Disulfide	6	U
75-35-4	1,1-Dichloroethene	6	U
75-34-3	1,1-Dichloroethane	6	U
540-59-0	1,2-Dichloroethene (total)	6	U
67-66-3	Chloroform	0.9	J
107-06-2	1,2-Dichloroethane	6	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	6	U
56-23-5	Carbon Tetrachloride	6	U
108-05-4	Vinyl Acetate	12	U
75-27-4	Bromodichloromethane	6	U
78-87-5	1,2-Dichloropropane	6	U
10061-01-5	cis-1,3-Dichloropropene	6	U
79-01-6	Trichloroethene	6	U
124-48-1	Dibromochloromethane	6	U
79-00-5	1,1,2-Trichloroethane	6	U
71-43-2	Benzene	6	U
10061-02-6	Trans-1,3-Dichloropropene	6	U
75-25-2	Bromoform	6	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	6	U
79-34-5	1,1,2,2-Tetrachloroethane	6	U
108-88-3	Toluene	6	U
108-90-7	Chlorobenzene	6	U
100-41-4	Ethylbenzene	6	U
100-42-5	Styrene	6	U
1330-20-7	Xylene (total)	6	U
75-69-4	Dichlorodifluoromethane	12	U
95-50-1	1,2-Dichlorobenzene	12	U

106-46-7-----1,3-Dichlorobenzene

547-72-----1,4-Dichlorobenzene

003397

12

U

003398

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

B-1207MSD
(8A-926)10

Lab Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: 20830MSDSample wt/vol: 5.0 (g/mL) GLab File ID: 9979Level: (low/med) LOWDate Received: 08/23/88% Moisture: not dec. 24Date Analyzed: 08/26/88Column: (pack/cap) PACKDilution Factor: 1.0

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

74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	7	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	7	U
75-35-4	1,1-Dichloroethene	7	U
75-34-3	1,1-Dichloroethane	7	U
540-59-0	1,2-Dichloroethene (total)	7	U
67-66-3	Chloroform	7	U
107-06-2	1,2-Dichloroethane	7	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	7	U
56-23-5	Carbon Tetrachloride	7	U
108-05-4	Vinyl Acetate	13	U
75-27-4	Bromodichloromethane	7	U
78-87-5	1,2-Dichloropropane	7	U
10061-01-5	cis-1,3-Dichloropropene	7	U
79-01-6	Trichloroethene	7	U
124-48-1	Dibromochloromethane	7	U
79-00-5	1,1,2-Trichloroethane	7	U
71-43-2	Benzene	7	U
10061-02-6	Trans-1,3-Dichloropropene	7	U
75-25-2	Bromoform	7	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	7	U
79-34-5	1,1,2,2-Tetrachloroethane	7	U
108-88-3	Toluene	7	U
108-90-7	Chlorobenzene	7	U
100-41-4	Ethylbenzene	7	U
100-42-5	Styrene	7	U
1330-20-7	Xylene (total)	7	U
75-69-4	Dichlorodifluoromethane	13	U
95-50-1	1,2-Dichlorobenzene	13	U

003399

106-46-7-----1,3-Dichlorobenzene	
547-73-1-----1,4-Dichlorobenzene	

13	U
13	U

003400

106-46-7-----1,3-Dichlorobenzene

15 U

547-73-1-----1,4-Dichlorobenzene

15 U

003401

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8-1244MSD
(2A-945)4

Lab Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Matrix: (soil/water) SOIL Lab Sample ID: 20867MSD
 Sample wt/vol: 4.0 (g/mL) G Lab File ID: C2413
 Level: (low/med) MED Date Received: 08/23/86
 % Moisture: not dec. 12 Date Analyzed: 09/01/88
 Column: (pack/cap) CAP Dilution Factor: 1.0

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

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	1400	U
74-83-9	Bromomethane	1400	U
75-01-4	Vinyl Chloride	1400	U
75-00-3	Chloroethane	1400	U
75-09-2	Methylene Chloride	760	
67-64-1	Acetone	3500	
75-15-0	Carbon Disulfide	710	U
75-35-4	1,1-Dichloroethene	710	U
75-34-3	1,1-Dichloroethane	710	U
540-59-0	1,2-Dichloroethene (total)	710	U
67-66-3	Chloroform	270	BJ
107-06-2	1,2-Dichloroethane	710	U
78-93-3	2-Butanone	1400	U
71-55-6	1,1,1-Trichloroethane	710	U
56-23-5	Carbon Tetrachloride	710	U
108-05-4	Vinyl Acetate	1400	U
75-27-4	Bromodichloromethane	710	U
78-87-5	1,2-Dichloropropane	710	U
10061-01-5	cis-1,3-Dichloropropene	710	U
79-01-6	Trichloroethene	710	U
124-48-1	Dibromochloromethane	710	U
79-00-5	1,1,2-Trichloroethane	710	U
71-43-2	Benzene	710	U
10061-02-6	Trans-1,3-Dichloropropene	710	U
75-25-2	Bromoform	710	U
108-10-1	4-Methyl-2-Pentanone	1400	U
591-78-6	2-Hexanone	1400	U
127-18-4	Tetrachloroethene	130	J
79-34-5	1,1,2,2-Tetrachloroethane	1400	U
108-88-3	Toluene	710	U
108-90-7	Chlorobenzene	710	U
100-41-4	Ethylbenzene	710	U
100-42-5	Styrene	350	J
1330-20-7	Xylene (total)	710	U
75-69-4	Dichlorodifluoromethane	1400	U
95-50-1	1,2-Dichlorobenzene	1400	U

003402

106-46-7-----1,3-Dichlorobenzene	110	J
547-73-1-----1,4-Dichlorobenzene	1400	U

003403

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORF SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: VBLK1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 9930

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 08/23/88

Column: (pack/cap) PACK Dilution Factor: 1.0

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

CAS NO.

COMPOUND

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-1	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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003404

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003405

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VELK2

Lab Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: VELK2Sample wt/vol: 5.0 (g/mL) GLab File ID: 9949Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/24/88Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	5	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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003406

106-46-7-----1,3-Dichlorobenzene	10	10
547-73-1-----1,4-Dichlorobenzene	10	10

003407

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK3

Lab Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: VBLK3Sample wt/vol: 5.0 (g/mL) 6Lab File ID: 9966Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/25/88Column: (pack/cap) PACKDilution Factor: 1.0

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

CAS NO. COMPOUND

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u>	Q
74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	5	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
75-69-4	-----Dichlorodifluoromethane	10	U
95-50-1	-----1,2-Dichlorobenzene	10	U

003408

106-46-7-----1,3-Dichlorobenzene	
347-73-1-----1,4-Dichlorobenzene	

10	U
10	U

003409

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VELK4

Site Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Matrix: (soil/water) SOIL Lab Sample ID: VELK4
 Sample wt/vol: 5.0 (g/mL) G Lab File ID: 9984
 Level: (low/med) LOW Date Received: _____
 % Moisture: not dec. _____ Date Analyzed: 08/26/88
 Column: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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	10	U
78-93-3	2-Butanone	5	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	10	U
108-05-4	Vinyl Acetate	5	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	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	5	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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003410

106-46-7-----1,3-Dichlorobenzene

547-73-1-----1,4-Dichlorobenzene

003411

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK5

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORF SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: VBLK5

Sample wt/vol: 4.0 (g/mL) G Lab File ID: C2361

Level: (low/med) MED Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 08/25/88

Column: (pack/cap) CAP Dilution Factor: 1.0

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

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	1300	U
74-83-9	Bromomethane	1300	U
75-01-4	Vinyl Chloride	1300	U
75-00-3	Chloroethane	1300	U
75-09-2	Methylene Chloride	630	U
67-64-1	Acetone	1300	U
75-15-0	Carbon Disulfide	630	U
75-35-4	1,1-Dichloroethene	630	U
75-34-3	1,1-Dichloroethane	630	U
540-39-0	1,2-Dichloroethene (total)	630	U
67-66-3	Chloroform	100	U
107-06-3	1,2-Dichloroethane	630	U
78-93-3	2-Butanone	1300	U
71-55-6	1,1,1-Trichloroethane	630	U
56-23-5	Carbon Tetrachloride	630	U
108-05-4	Vinyl Acetate	1300	U
75-27-4	Bromodichloromethane	630	U
78-87-5	1,2-Dichloropropane	630	U
10061-01-5	cis-1,3-Dichloropropene	630	U
79-01-6	Trichloroethene	630	U
124-48-1	Dibromochloromethane	630	U
79-00-5	1,1,2-Trichloroethane	630	U
71-43-2	Benzene	630	U
10061-02-6	Trans-1,3-Dichloropropene	630	U
75-25-2	Bromoform	630	U
108-10-1	4-Methyl-2-Pentanone	1300	U
591-78-6	2-Hexanone	1300	U
127-18-4	Tetrachloroethene	630	U
79-34-5	1,1,2,2-Tetrachloroethane	1300	U
108-88-3	Toluene	630	U
108-90-7	Chlorobenzene	630	U
100-41-4	Ethylbenzene	630	U
100-42-5	Styrene	630	U
1330-20-7	Xylene (total)	630	U
75-69-4	Dichlorodifluoromethane	1300	U
95-50-1	1,2-Dichlorobenzene	1300	U

106-46-7-----	1,3-Dichlorobenzene
547-73-1-----	1,4-Dichlorobenzene

0-08412
1300 U

003413

EPA SAMPLE NO.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK6

SND Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) SOILLab Sample ID: VBLK6Sample wt/vol: 4.0 (g/mL) GLab File ID: C2403Level: (low/med) MED

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 08/31/88Column: (pack/cap) CAPDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

(ug/L or ug/Kg) UG/KG

G

74-87-3	Chloromethane	1300	U
74-83-9	Bromomethane	1300	U
75-01-4	Vinyl Chloride	1300	U
75-00-3	Chloroethane	1300	U
75-09-2	Methylene Chloride	630	U
67-64-1	Acetone	1300	U
75-15-0	Carbon Disulfide	630	U
75-33-4	1,1-Dichloroethene	630	U
75-34-3	1,1-Dichloroethane	630	U
540-59-0	1,2-Dichloroethene (total)	630	U
67-66-3	Chloroform	130	U
107-06-2	1,2-Dichloroethane	630	U
78-93-3	2-Butanone	1300	U
71-55-6	1,1,1-Trichloroethane	630	U
56-23-5	Carbon Tetrachloride	630	U
108-05-4	Vinyl Acetate	1300	U
75-27-4	Bromodichloromethane	630	U
78-97-5	1,2-Dichloropropane	630	U
10061-01-5	cis-1,3-Dichloropropene	630	U
79-01-6	Trichloroethene	630	U
124-48-1	Dibromochloromethane	630	U
79-00-5	1,1,2-Trichloroethane	630	U
71-43-2	Benzene	630	U
10061-02-6	Trans-1,3-Dichloropropene	630	U
75-25-2	Bromoform	630	U
108-10-1	4-Methyl-2-Pentanone	1300	U
591-78-6	2-Hexanone	1300	U
127-18-4	Tetrachloroethene	630	U
79-34-5	1,1,2,2-Tetrachloroethane	1300	U
108-88-3	Toluene	630	U
108-90-7	Chlorobenzene	630	U
100-41-4	Ethylbenzene	630	U
100-42-5	Styrene	630	U
1330-20-7	Xylene (total)	630	U
75-69-4	Dichlorodifluoromethane	1300	U
95-50-1	1,2-Dichlorobenzene	1300	U

003414

106-46-7-----1,3-Dichlorobenzene	1500	10
547-73-1-----1,4-Dichlorobenzene	1500	10

2B
SOIL VOLATILE SURROGATE RECOVERY

Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Level: (low/med) LOW

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
=====	=====	=====	=====	=====	=====	=====
01	8-1206(8A-926)4'101		100	95		0
02	8-1207(8A-924)4'101		100	95		0
03	8-1208(8A-927)4'100		100	95		0
04	8-1209(8A-927)4'100		100	97		0
05	8-1210(8A-928)4' 99		101	96		0
06	8-1211(8A-922)4'100		95	97		0
07	8-1212(8A-923)4'100		100	95		0
08	8-1213(8A-929)4'100		99	95		0
09	8-1214(8A-930)4'101		98	95		0
10	8-1215(8A-930)4'102		97	95		0
11	8-1216(8A-931)4' 97		103	98		0
12	8-1217(8A-931)4'102		97	92		0
13	8-1217DL(2A-931)4' 101		100	98		0
14	8-1218(8A-932)4' 95		107	101		0
15	8-1219(8A-932)4' 98		104	98		0
16	8-1220(8A-933)4'102		96	94		0
17	8-1221(8A-933)4'101		97	96		0
18	8-1222(8A-934)4'100		95	96		0
19	8-1223(8A-934)4' 99		98	99		0
20	8-1224(8A-935)4'101		92	98		0
21	8-1225(8A-935)4'102		96	97		0
22	8-1226(8A-936)4'101		96	98		0
23	8-1227(8A-936)4'102		96	99		0
24	8-1228(8A-937)4'105		94	97		0
25	8-1229(8A-937)4' 99		101	101		0
26	8-1230(8A-938)4' 97		100	98		0
27	8-1231(8A-938)4'100		103	99		0
28	8-1232(8A-939)4'104		97	97		0
29	8-1232DL(2A-939)4' 96		105	101		0
30	8-1232RE(2A-939)4' 93		104	94		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

003416

28
SOIL VOLATILE SURROGATE RECOVERY

Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Level: (low/med) LOW

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
	=====	=====	=====	=====	=====	=====
01	8-1233(8A-939)10'	98	98	98		0
02	8-1236(8A-941)4'	99	97	95		0
03	8-1236RE(2A-941)4'	95	92	91		0
04	8-1237(8A-941)10'	103	96	94		0
05	8-1238(8A-942)4'	102	102	93		0
06	8-1239(8A-942)10'	104	97	94		0
07	8-1240(8A-943)4'	100	100	95		0
08	8-1241(8A-943)10'	99	100	96		0
09	8-1242(8A-944)4'	93	96	93		0
10	8-1244(8A-945)4'	93	113	94		0
11	8-1246(8A-946)4'	102	97	94		0
12	8-1247(8A-946)10'	99	99	96		0
13	8-1206MS(2A-926)4'	100	96	95		0
14	8-1206MSD(2A-926)4'	101	96	92		0
15	8-1207MS(3A-926)10'	101	96	93		0
16	8-1207MSD(2A-926)10'	102	96	94		0
17	VBLK1	101	101	96		0
18	VBLK2	99	98	98		0
19	VBLK3	99	100	100		0
20	VBLK4	94	95	93		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

38

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

b Name: SWL - TULSA

Contract: _____

Lab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix Spike - EPA Sample No.: 8-1206(8A-926)4 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	61.7	0	44.6	72	59-172
Trichloroethene	61.7	0	44.9	73	62-137
Benzene	61.7	0	54.0	88	66-142
Toluene	61.7	0	54.0	88	59-139
Chlorobenzene	61.7	0	57.8	94	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	61.7	48.6	79	-9	22 59-172
Trichloroethene	61.7	45.7	74	-1	24 62-137
Benzene	61.7	54.9	89	-1	21 66-142
Toluene	61.7	55.4	90	-2	21 59-139
Chlorobenzene	61.7	58.6	95	-1	21 60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limitsSpike Recovery: 0 out of 10 outside limits

COMMENTS:

2B
SOIL VOLATILE SURROGATE RECOVERY

Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Level: (low/med) MED

EPA	S1	S2	S3	OTHER	TOT
SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
01: 8-1234 (8A-940) 4'	106	97	99		0
02: 8-1235 (8A-940) 6'	102	106	90		0
03: 8-1243 (8A-940) 6'	97	102	104		0
04: 8-1244 (8A-945) 4'	96	103	91		0
05: 8-1245 (8A-945) 6'	95	98	94		0
06: 8-1244MS (8A-945) 4'	95	98	94		0
07: 8-1244MSD (8A-945) 4'	95	94	91		0
08: VBLK5	102	101	97		0
09: VBLK6	99	100	96		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

b Name: SWL - TULSA Contract: _____Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____Matrix Spike - EPA Sample No.: 8-1207(8A-926)10' Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	65.8	0	52.5	80	59-172
Trichloroethene	65.8	0	49.9	76	62-137
Benzene	65.8	0	56.6	86	66-142
Toluene	65.8	0	57.9	88	59-139
Chlorobenzene	65.8	0	61.2	93	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	65.8	55.9	85	-6	22 59-172
Trichloroethene	65.8	50.8	77	-1	24 62-137
Benzene	65.8	59.1	90	-5	21 66-142
Toluene	65.8	60.4	92	-4	21 59-139
Chlorobenzene	65.8	63.3	96	-3	21 60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limitsSpike Recovery: 0 out of 10 outside limitsCOMMENTS: 8-1207 SWCORP
SWL 20830 INST:7002D

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Name: SWL - TULSA Contract: _____Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____Matrix Spike - EPA Sample No.: 8-1244(8A-945)4 Level: (low/med) MED

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	7100	0	3820	54 *	59-172
Trichloroethene	7100	0	5470	77	62-137
Benzene	7100	0	5370	76	66-142
Toluene	7100	43.3	6050	85	59-139
Chlorobenzene	7100	0	6340	89	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	7100	3860	54 *	0	22 59-172
Trichloroethene	7100	5700	80	-4	24 62-137
Benzene	7100	5500	77	-1	21 66-142
Toluene	7100	5950	83	2	21 59-139
Chlorobenzene	7100	6080	86	3	21 60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limitsSpike Recovery: 2 out of 10 outside limitsCOMMENTS: 8-1244 SWCORP
SWL # 20867 INST:C

4A
VOLATILE METHOD BLANK SUMMARY

b Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID: 9930 Lab Sample ID: VELK1

Date Analyzed: 08/23/88 Time Analyzed: 1759

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

Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01:8-1206(8A-9204)	20829	9931	1839
02:8-1207(8A-9206)	20830	9932	1919
03:8-1208(8A-9207)	20831	9933	1959
04:8-1209(8A-9208)	20832	9934	2038
05:8-1210(8A-9209)	20833	9935	2118
06:8-1211(8A-9210)	20834	9936	2158
07:8-1212(8A-9211)	20835	9937	2238
08:8-1213(8A-9212)	20836	9938	2318
09:8-1214(8A-9304)	20837	9939	2358
10:8-1215(8A-9306)	20838	9940	0038
11:8-1216(8A-9311)	20839	9941	0117
12:8-1217(8A-9311)	20840	9942	0157
13:8-1218(8A-9324)	20841	9943	0237
14:8-1219(8A-9326)	20842	9944	0317
15:8-1220(8A-9334)	20843	9945	0357
16:8-1221(8A-9336)	20844	9946	0437

COMMENTS:

003422

24

VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORF SAS No.: _____ SDG No.: _____

Lab File ID: 9949 Lab Sample ID: VELK2

Date Analyzed: 08/24/88 Time Analyzed: 0710

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

Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01: 8-1222 (8A-934) 20845		9950	0750
02: 8-1223 (8A-934) 20846		9951	0830
03: 8-1224 (8A-934) 20847		9952	0910
04: 8-1225 (8A-934) 20848		9953	0950
05: 8-1226 (8A-934) 20849		9954	1030
06: 8-1227 (8A-934) 20850		9955	1110
07: 8-1228 (8A-934) 20851		9956	1150
08: 8-1229 (8A-934) 20852		9957	1240
09: 8-1230 (8A-934) 20853		9958	1330
10: 8-1231 (8A-934) 20854		9959	1415
11: 8-1232 (8A-934) 20855		9960	1455

COMMENTS:

AA
VOLATILE METHOD BLANK SUMMARY

003423

Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: 9966 Lab Sample ID: VBK3
 Date Analyzed: 08/25/88 Time Analyzed: 1809
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1217DL(8A-931)16' 20840	9967	1849
02	8-1232DL(8A-939)14' 20855	9968	1929
03	8-1233(8A-939)16' 20856	9969	2008
04	8-1236(8A-941)14' 20859	9980	0328
05	8-1237(8A-941)16' 20860	9970	2049
06	8-1238(8A-942)14' 20861	9981	0503
07	8-1239(8A-942)16' 20862	9971	2129
08	8-1240(8A-943)14' 20863	9972	2208
09	8-1241(8A-943)16' 20864	9973	2249
10	8-1246(8A-946)14' 20869	9974	2329
11	8-1247(8A-946)16' 20870	9975	0008
12	8-1206MS(2A-926)14' 20829MS	9976	0049
13	8-1206MSD(2A-926)14' 20829MSD	9977	0129
14	8-1207MS(2A-926)16' 20830MS	9978	0208
15	8-1207MSD(2A-926)16' 20830MSD	9979	0248

COMMENTS:

VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID: 9984 Lab Sample ID: VBLK4

Date Analyzed: 08/26/88 Time Analyzed: 0957

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

Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	=====	=====	=====	=====
01	8-1232RE(8A-930)4'	20855RE	9985	1036
02	8-1236RE(2A-940)4'	20859RE	9986	1117
03	8-1242(2A-944)4'	20865	9987	1213
04	8-1244(3A-945)4'	20867	9992	2012

REMARKS:

4A
VOLATILE METHOD BLANK SUMMARY

003425

Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID: C2361 Lab Sample ID: VBLK5

Date Analyzed: 08/25/88 Time Analyzed: 0845

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

Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1234(8A-940)	20857	C2377	1803
02	8-1235(8A-940)	20858	C2378	1829

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003426

Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: C2403 Lab Sample ID: VELK6
 Date Analyzed: 08/31/88 Time Analyzed: 1953
 Matrix: (soil/water) SOIL Level: (low/med) MED
 Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1243 (8A-944)W	20866	C2409	2230
02	8-1244 (8A-945)W	20867	C2410	2256
03	8-1245 (8A-945)W	20868	C2411	2322
04	8-1244MS (8A-945)W	20867MS	C2412	2348
05	8-1244MSD (8A-945)W	20867MSD	C2413	0014

REMARKS:

VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003427

Lab Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: 9725 BFB Injection Date: 08/15/88
 Instrument ID: 7002D BFB Injection Time: 1747
 Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	54.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	75.6
175	5.0 - 9.0% of mass 174	5.4 (7.1)1
176	Greater than 95.0%, but less than 101.0% of mass 174	73.3 (96.9)1
177	5.0 - 9.0% of mass 176	4.8 (6.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	9726	08/15/88	1804
02 VSTD200	VSTD200	9727	08/15/88	1844
03 VSTD150	VSTD150	9728	08/15/88	1924
04 VSTD100	VSTD100	9729	08/15/88	2005
05 VSTD20	VSTD20	9730	08/15/88	2045

003428

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID: 9928 BFB Injection Date: 08/23/88

Instrument ID: 7002D BFB Injection Time: 1706

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.7
75	30.0 - 60.0% of mass 95	53.8
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	72.3
175	5.0 - 9.0% of mass 174	4.9 (6.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	72.3 (100.0)1
177	5.0 - 9.0% of mass 176	4.6 (6.3)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA	LAB	LAB	DATE	TIME
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
01:VSTD50	VSTD50	9939	08/23/88	1719
02:VELK1	VELK1	9930	08/23/88	1759
03:8-1206(8A-9204)20829		9931	08/23/88	1839
04:8-1207(8A-9206)20830		9932	08/23/88	1919
05:8-1208(8A-9204)20831		9933	08/23/88	1959
06:8-1209(8A-9210)20832		9934	08/23/88	2038
07:8-1210(8A-9204)20833		9935	08/23/88	2118
08:8-1211(8A-9210)20834		9936	08/23/88	2158
09:8-1212(8A-9204)20835		9937	08/23/88	2238
10:8-1213(8A-9210)20836		9938	08/23/88	2318
11:8-1214(8A-9304)20837		9939	08/23/88	2358
12:8-1215(8A-9306)20838		9940	08/24/88	0038
13:8-1216(8A-9310)20839		9941	08/24/88	0117
14:8-1217(8A-9310)20840		9942	08/24/88	0157
15:8-1218(8A-9304)20841		9943	08/24/88	0237
16:8-1219(8A-9306)20842		9944	08/24/88	0317
17:8-1220(8A-9304)20843		9945	08/24/88	0357
18:8-1221(8A-9306)20844		9946	08/24/88	0437

003429

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)Lab Name: SWL - TULSA Contract: _____Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____Lab File ID: 9947 BFB Injection Date: 08/24/88Instrument ID: 7002D BFB Injection Time: 0615Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.1
75	30.0 - 60.0% of mass 95	52.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.1
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	78.0
175	5.0 - 9.0% of mass 174	5.8 (7.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	78.0 (100.0)1
177	5.0 - 9.0% of mass 175	5.0 (6.4)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA	LAB	LAB	DATE	TIME
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
01:VSTD50	VSTD50	9948	08/24/88	0630
02:VELK2	VELK2	9949	08/24/88	0710
03:8-1222(8A-9344)20845		9950	08/24/88	0750
04:8-1223(8A-9344)20846		9951	08/24/88	0830
05:8-1224(8A-9344)20847		9952	08/24/88	0910
06:8-1225(8A-9344)20848		9953	08/24/88	0950
07:8-1226(8A-9344)20849		9954	08/24/88	1030
08:8-1227(8A-9344)20850		9955	08/24/88	1110
09:8-1228(8A-9344)20851		9956	08/24/88	1150
10:8-1229(8A-9344)20852		9957	08/24/88	1240
11:8-1230(8A-9344)20853		9958	08/24/88	1330
12:8-1231(8A-9344)20854		9959	08/24/88	1415
13:8-1232(8A-9344)20855		9960	08/24/88	1455

003430

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Lab File ID: 9964 BFB Injection Date: 08/25/88

Instrument ID: 7002D BFB Injection Time: 1713

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.1
75	30.0 - 60.0% of mass 95	52.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	76.9
175	5.0 - 9.0% of mass 174	5.6 (7.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	77.2 (100.4)1
177	5.0 - 9.0% of mass 176	5.2 (6.7)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01: VSTD50	VSTD50	9965	08/25/88	1729
02: VBLK3	VBLK3	9966	08/25/88	1809
03: 8-1217DL(2A-931)10'	20840	9967	08/25/88	1849
04: 8-1232DL(2A-937)4'	20855	9968	08/25/88	1929
05: 8-1233(8A-931)10'	20856	9969	08/25/88	2008
06: 8-1237(8A-941)10'	20860	9970	08/25/88	2049
07: 8-1239(8A-942)10'	20862	9971	08/25/88	2129
08: 8-1240(8A-943)4'	20863	9972	08/25/88	2208
09: 8-1241(8A-943)10'	20864	9973	08/25/88	2249
10: 8-1246(8A-946)4'	20869	9974	08/25/88	2329
11: 8-1247(8A-946)10'	20870	9975	08/26/88	0008
12: 8-1206MS(2A-926)10'	20829MS	9976	08/26/88	0049
13: 8-1206MSD(2A-926)4'	20829MSD	9977	08/26/88	0129
14: 8-1207MS(2A-926)10'	20830MS	9978	08/26/88	0208
15: 8-1207MSD(2A-926)10'	20830MSD	9979	08/26/88	0248
16: 8-1236(8A-941)4'	20859	9980	08/26/88	0328
17: 8-1238(8A-942)4'	20861	9981	08/26/88	0503

003431

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)Lab Name: SWL - TULSA Contract: _____Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____Lab File ID: 9982 BFB Injection Date: 08/26/88Instrument ID: 7002D BFB Injection Time: 0901Matrix: (soil/water) SOIL Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.3
75	30.0 - 60.0% of mass 95	50.8
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	73.4
175	5.0 - 9.0% of mass 174	5.1 (6.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	72.7 (99.0)1
177	5.0 - 9.0% of mass 176	4.9 (6.8)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD50	VSTD50	9983	08/26/88	0917
02	VBLK4	VBLK4	9984	08/26/88	0957
03	8-1232RE(2A-939)4'	20855RE	9985	08/26/88	1036
04	8-1236RE(2A-941)4'	20859RE	9986	08/26/88	1117
05	8-1242(8A-944)4'	20865	9987	08/26/88	1213
06	8-1244(8A-945)4'	20867	9992	08/26/88	2012

SA
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: C2174 BFB Injection Date: 08/13/88
 Instrument ID: C BFB Injection Time: 1115
 Matrix:(soil/water) SOIL Level:(low/med) MED Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	24.2
75	30.0 - 60.0% of mass 95	56.6
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	66.6
175	5.0 - 9.0% of mass 174	4.7 (7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	64.1 (96.3)1
177	5.0 - 9.0% of mass 176	4.4 (6.8)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	C2189	08/13/88	2059
02 VSTD20	VSTD20	C2190	08/13/88	2125
03 VSTD100	VSTD100	C2191	08/13/88	2151
04 VSTD150	VSTD150	C2192	08/13/88	2217
05 VSTD200	VSTD200	C2193	08/13/88	2245

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003433

Lab Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: C2359 BFB Injection Date: 08/25/88
 Instrument ID: C BFB Injection Time: 0801
 Matrix:(soil/water) SOIL Level:(low/med) MED Column:(pack/cap) CAF

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.6
75	30.0 - 60.0% of mass 95	51.7
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	96.2
175	5.0 - 9.0% of mass 174	6.9 (7.2)1
176	Greater than 95.0%, but less than 101.0% of mass 174	96.0 (99.8)1
177	5.0 - 9.0% of mass 176	6.0 (6.3)2

1-Value is % mass 174

2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01:VSTD50	VSTD50	C2360	08/25/88	0817
02:VBLK5	VBLK5	C2361	08/25/88	0845
03:18-1234(8A-940)4	20857	C2377	08/25/88	1803
04:18-1235(8A-940)6	20858	C2378	08/25/88	1829

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

003434

Lab Name: SWL - TULSA Contract: _____
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: C2396 BFB Injection Date: 08/31/88
Instrument ID: C BFB Injection Time: 1347
Matrix: (soil/water) SOIL Level: (low/med) MED Column: (pack/cap) CAF

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.4
75	30.0 - 60.0% of mass 95	48.8
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	98.6
175	5.0 - 9.0% of mass 174	7.5 (7.6)1
176	Greater than 95.0%, but less than 101.0% of mass 174	98.4 (99.8)1
177	5.0 - 9.0% of mass 176	6.5 (6.6)2

1-Value is % mass 174

2-Value is % mass 176

IS TUNE APPLIED TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD50	VSTD50	C2397	08/31/88	1607
02 VSTD100	VSTD100	C2399	08/31/88	1659
03 VSTD150	VSTD150	C2400	08/31/88	1725
04 VSTD200	VSTD200	C2401	08/31/88	1751
05 VSTD20	VSTD20	C2402	08/31/88	1906
06 VELK6	VELK6	C2403	08/31/88	1953
07 8-1243(8A-94) 20866		C2409	08/31/88	2230
08 8-1244(8A-94) 20867		C2410	08/31/88	2256
09 8-1245(8A-94) 20868		C2411	08/31/88	2322
10 8-1244MS(2P-94) 20867MS		C2412	08/31/88	2348
11 8-1244MSD(2P-94) 20867MSD		C2413	09/01/88	0014

003435

28
SOIL VOLATILE SURROGATE RECOVERY

Lab Name: SWL - TULSA Contract: _____Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____Level: (low/med) LOW

EPA	S1	S2	S3	OTHER	TOT
SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
01 8-1299 (MW-15) 2' 102	102	102	98		0
02 8-1300 (MW-15) 2' 106	100	100	98		0
03 VBLK1	99	95	92		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)

S2 (BFB) = Bromofluorobenzene (74-121)

S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4A
VOLATILE METHOD BLANK SUMMARY

003436

Lab Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCQRF SAS No.: _____ SDG No.: _____
 Lab File ID: 10111 Lab Sample ID: VBLK1
 Date Analyzed: 09/08/98 Time Analyzed: 1029
 Matrix: (soil/water) SOIL Level: (low/med) LOW
 Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1299(MW-15)2	21055	10117	1324
02	8-1300(MW-15)2	21056	10118	1353

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

003437

VBK1

Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: VBK1

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 10111

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/08/88

Column: (pack/cap) CAP Dilution Factor: 1.0

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

CAS NO. COMPOUND Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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	0.6	J
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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003438

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003439

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-10-88

SWLO#: 09268EXB

SAMPLE ID: PBLK1

COMPOUNDS

RESULTS
ug/Kg

HMX

1.6 U

RDX

1.8 U

TETRYL

5.5 U

TNT

0.8 U

2,4 DNT

0.8 U

U indicates detection limit

2B
SOIL VOLATILE SURROGATE RECOVERY

003440

Job Name: SWL - TULSA Contract: _____
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Level: (low/med) LOW

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
01	8-1366(MW-13/p)	103	90	96		0
02	8-1367(MW-13/w)	98	99	101		0
03	VBLK1	100	97	99		0

QC LIMITS

S1 (TOL) = Toluene-d8 (81-117)
 S2 (BFB) = Bromofluorobenzene (74-121)
 S3 (DCE) = 1,2-Dichloroethane-d4 (70-121)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

003411

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSA Contract: _____
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 10323 Lab Sample ID: VELK1
Date Analyzed: 09/21/88 Time Analyzed: 2040
Matrix: (soil/water) SOIL Level: (low/med) LOW
Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01: 8-1366(MW-13/2)	21316	10337	0324
02: 8-1367(MW-13/1c)	21317	10338	0353

COMMENTS: VELK
INST:7002D 5 ML

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003442
EPA SAMPLE NO.

VELK1

Name: SWL - TULSA Contract: _____

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: VELK1

Sample wt/vol: 5.0 (g/mL) 6 Lab File ID: 10323

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/21/88

Column: (pack/cap) CAP Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/Kg)	UG/KG	
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	
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	
75-69-4	Dichlorodifluoromethane	10	U	
95-50-1	1,2-Dichlorobenzene	10	U	

106-46-7-----1,3-Dichlorobenzene
547-73-1-----1,4-Dichlorobenzene

003443
10 10

003444

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-10-88

SWLO#: 09268EXB

SAMPLE ID: PBLK1

COMPOUNDS

RESULTS
ug/Kg

HMX	1.6 U
RDX	1.8 U
TETRYL	5.5 U
TNT	0.8 U
2,4 DNT	0.8 U

U indicates detection limit

2A
WATER VOLATILE SURROGATE RECOVERY

003445

Lab Name: SWL - TULSA

Contract: SWCORP

Lab Code: SWOK

Case No.: SWCORP

SAS No.: _____

SDG No.: _____

EPA	S1	S2	S3	OTHER	TOT
SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
=====	=====	=====	=====	=====	=====
01: 8-1391(MW-1)	90	92	92		0
02: 8-1392(MW-2)	99	99	100		0
03: 8-1393(MW-6)	94	102	106		0
04: 8-1394(MW-15)	102	104	103		0
05: 8-1393MS(MW-6)	110	108	110		0
06: 8-1393MSD(MW-6)	110	110	112		0
07: VBLK1	95	98	99		0
08: VBLK2	102	98	102		0
09: VBLK3	91	97	88		0
10: VBLK4	95	102	96		0

QC LIMITS

S1 (TOL) = Toluene-d8 (88-110)
 S2 (BFB) = Bromofluorobenzene (86-115)
 S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

003446

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: SWL - TULSAContract: SWCORPCode: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix Spike - EPA Sample No.: 8-1393(MW-6)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.0	0	10.6	21 *	61-145
Trichloroethene	50.0	90.8	107	32 *	71-120
Benzene	50.0	0	32.9	66 *	76-127
Toluene	50.0	0.312	41.9	83	76-125
Chlorobenzene	50.0	0	42.8	86	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	50.0	9.90	20 *	5	14 61-145
Trichloroethene	50.0	110	38 *	-17 *	14 71-120
Benzene	50.0	34.6	69 *	-4	11 76-127
Toluene	50.0	42.6	85	-2	13 76-125
Chlorobenzene	50.0	43.9	88	-2	13 75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 5 outside limitsSpike Recovery: 6 out of 10 outside limitsCOMMENTS: 8-1393 SWCORP
SWL #21380 INST:

4A
VOLATILE METHOD BLANK SUMMARY

003447

Lab Name: SWL - TULSA Contract: SWCORP
 Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: C2789 Lab Sample ID: VBLK1
 Date Analyzed: 09/24/88 Time Analyzed: 1622
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1393(MW-6)	21380	C2793	1812

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003448

Lab Name: SWL - TULSA Contract: SWCORP
 Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: C2789 Lab Sample ID: VBLK1
 Date Analyzed: 09/24/88 Time Analyzed: 1622
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1393(MW-6)	21380	C2793	1812

COMMENTS:

003449

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSA Contract: SWCORP
Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: C2816 Lab Sample ID: VBLK2
Date Analyzed: 09/25/88 Time Analyzed: 1104
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1393MS(<u>mw-4</u>)	21380MS	C2819	1227
02	8-1393MSD(<u>mw-4</u>)	21380MSD	C2820	1254

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003450

Lab Name: SWL - TULSA Contract: SWCORP
 Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: C3057 Lab Sample ID: VBLK3
 Date Analyzed: 10/10/88 Time Analyzed: 1202
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1391(MW-1)	21378	C3058	1451
02	8-1392(MW-2)	21379	C3059	1518

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003451

Lab Name: SWL - TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: C3090 Lab Sample ID: VBLK4
 Date Analyzed: 10/13/88 Time Analyzed: 1656
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 8-1394 (MW-15)	21381	C3094	1849

COMMENTS:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003452
EPA SAMPLE NO.

VBLK1

Site Name: SWL - TULSA Contract: SWCORP

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: VBLK1

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C2769

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/24/88

Column: (pack/cap) CAF Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/Kg) <u>UG/L</u>	<u>Q</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	2	J
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	2	J
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
106-88-3	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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

106-46-7-----1,3-Dichlorobenzene
547-73-1-----1,4-Dichlorobenzene

10
10

003453

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003454

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK2

Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: VBLK2Sample wt/vol: 5.0 (g/mL) MLLab File ID: C2816Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/25/82Column: (pack/cap) CAPDilution Factor: 1.0

CONCENTRATION UNITS:

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

Q

CAS NO.

COMPOUND

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/L</u>	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	4	J
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	2	J
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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

FORM I VOA

1/87 Rev.

003455

106-46-7-----1,3-Dichlorobenzene
547-73-1-----1,4-Dichlorobenzene

10
10

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VOLATILE ORGANICS ANALYSIS DATA SHEET

003456 SAMPLE NO.

VBLKZ

Lab Name: SWL - TULSA

Contract: SWCORP

Code: SWOK

Case No.: SWCORP

SAS No.: _____

EDS No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: VBLKZ

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: 03057

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 10/10/88

Column: (pack/cap) CAF

Dilution Factor: 1.0

CONCENTRATION UNITS:

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

Q

CAS NO.

COMPOUND

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

FORM I VOA

1/87 Rev.

003457



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.40e

DATE: 10-14-88

SWLO # 21378 - 21381
DATE SUBMITTED: 09-22-88

TOTAL ORGANIC HALOGEN QA/QC DATA

<u>DESCRIPTION</u>	<u>RESULTS</u>
CALIBRATION STANDARD	99.6%
ABSORPTION EFFICIENCY	94.5%

Southwest Laboratory of Oklahoma

BY Chuck Hoover

TULSA BRANCH
1700 W. Albany, Suite C
Broken Arrow, OK 74012
(918) 251-2858

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1064

003458

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-12-88

SWLO#: 09298EXB

SAMPLE ID: PBLK3

COMPOUNDS

RESULTS

ug/L

HMX

26.0 U

RDX

22.0 U

TETRYL

26.0 U

TNT

14.0 U

2,4 DNT

10.0 U

U indicates detection limit

003459

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-12-88

SWLO#: 0929EXB2

SAMPLE ID: PBLK4

COMPOUNDS

RESULTS

ug/L

HMX

26.0 U

RDX

22.0 U

TETRYL

26.0 U

TNT

14.0 U

2,4 DNT

10.0 U

U indicates detection limit

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003460 SAMPLE NO.

VELK1

Name: SWL - TULSA

Contract: SWCORP

Lab Code: SWOK

Case No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: VELK1

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C2866

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/29/88

Column: (pack/cap) CAP

Dilution Factor: 1.0

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

Q

CAS NO.

COMPOUND

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	25	
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	J
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	1	J
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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003461

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

6033462 SAMPLE NO.

VBLK2

Lab Name: SWL - TULSA

Contract: SWCORP

Code: SWOK

Case No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: VBLK2

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C2896

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/30/88

Column: (pack/cap) CAF

Dilution Factor: 1.0

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

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	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	2	J
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
591-79-6	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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

FORM I VOA

1/87 Rev.

003463

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

VELK2

Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: VELK2Sample wt/vol: 5.0 (g/mL) MLLab File ID: C2896Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 09/30/88Column (pack/cap) CAFDilution Factor: 1.0Number TICs found: 0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

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

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VELK3

Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: VELK3Sample wt/vol: 5.0 (g/mL) MLLab File ID: C2933Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 10/04/88Column: (pack/cap) CAPDilution Factor: 1.0

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

CAS NO.

COMPOUND

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003465

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

2A

WATER VOLATILE SURROGATE RECOVERY

Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
01	8-1426(MW-9)	93	102	109		0
02	8-1428(MW-10)	102	107	112		0
03	VBLK2	91	102	92		0
04	VBLK1	96	98	103		0

QC LIMITS

S1 (TOL) = Toluene-d8

(88-110)

S2 (BFB) = Bromofluorobenzene

(86-115)

S3 (DCE) = 1,2-Dichloroethane-d4

(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

4A
VOLATILE METHOD BLANK SUMMARY

Name: SWL - TULSA Contract: SWCORP
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: C2896 Lab Sample ID: VBLK2
Date Analyzed: 09/30/88 Time Analyzed: 1236
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA	LAB	LAB	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
01	8-1428(MW-10)	21436	C2911	1917

COMMENTS:

003468

4A
VOLATILE METHOD BLANK SUMMARY

SA Name: SWL - TULSA Contract: SWCORP
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: C2933 Lab Sample ID: VBLK1
Date Analyzed: 10/04/88 Time Analyzed: 1430
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1426(MW-9)	21435	C2937	1637

COMMENTS:

003469

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VELK1

Lab Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: VELK1Sample wt/vol: 5.0 (g/mL) MLLab File ID: C2933Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 10/04/88Column: (pack/cap) CAFDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO.

COMPOUND

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

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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
75-69-4	DICHLORODIFLUOROMETHANE	10	U
95-50-1	1,2-DICHLOROBENZENE	10	U

003470

106-46-7-----1,3-DICHLOROBENZENE	10	U
547-73-1-----1,4-DICHLOROBENZENE	10	U

003471

2A

WATER VOLATILE SURROGATE RECOVERY

Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
	=====	=====	=====	=====	=====	=====
01	8-1459(C-2)	93	104	111		0
02	8-1461(C-3)	92	102	113		0
03	8-1462(EQBLK)	95	103	110		0
04	8-1463(C-4)	93	103	109		0
05	8-1464(C-5)	95	103	112		0
06	8-1465(MW-11)	96	99	110		0
07	8-1466(MW-13)	96	104	108		0
08	8-1459MS(C-2)	116 *	102	108		1
09	8-1459MSD(C-2)	90	103	109		0
10	VBLK1	96	98	103		0
11	VBLK2	95	99	103		0

QC LIMITS

S1 (TOL) = Toluene-d8 (88-110)
 S2 (BFB) = Bromofluorobenzene (86-115)
 S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix Spike - EPA Sample No.: 8-1459(C-2)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.0	0	50.5	101	61-145
Trichloroethene	50.0	17.4	49.1	63 *	71-120
Benzene	50.0	0	45.2	90	76-127
Toluene	50.0	0.751	51.2	101	76-125
Chlorobenzene	50.0	0	44.4	89	75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD REC.
1,1-Dichloroethene	50.0	52.4	105	-4	14 61-145
Trichloroethene	50.0	52.3	70 *	-11	14 71-120
Benzene	50.0	47.6	95	-5	11 76-127
Toluene	50.0	39.7	78	26 *	13 76-125
Chlorobenzene	50.0	46.8	94	-5	13 75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 5 outside limitsSpike Recovery: 2 out of 10 outside limitsCOMMENTS: 8-1459
SWL# 21457SWCORP
INST:C

4A
VOLATILE METHOD BLANK SUMMARY

003476

Name: SWL - TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Lab File ID: C2933 Lab Sample ID: VBLK1
 Date Analyzed: 10/04/88 Time Analyzed: 1430
 Matrix: (soil/water) WATER Level: (low/med) LOW
 Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01:8-1459(C-2)	21457	C2943	1917
02:8-1461(C-3)	21458	C2944	1944
03:8-1462(EQBLK)	21459	C2945	2011
04:8-1463(C-4)	21460	C2946	2037
05:8-1464(C-5)	21461	C2947	2104
06:8-1459MS(C-2)	21457MS	C2954	0010
07:8-1459MSD(C-2)	21457MSD	C2955	0036

COMMENTS:

003474

4A

VOLATILE METHOD BLANK SUMMARY

Name: SWL - TULSA Contract: SWCORPLab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____Lab File ID: C3144Lab Sample ID: VBLK2Date Analyzed: 10/19/88Time Analyzed: 1119Matrix: (soil/water) WATERLevel: (low/med) LOWInstrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1465(MW-11)	21462	C3148	1315
02	8-1466(MW-13)	21463	C3146	1220

COMMENTS:

003475

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

VELK1

Lab Name: SWL - TULSAContract: SWCORPLab Code: SWDKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: VELK1Sample wt/vol: 5.0 (g/mL) MLLab File ID: 02933Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 10/04/88Column: (pack/cap) CAPDilution Factor: 1.0CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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	3	J
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	3	J
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	0.5	J
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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	0.4	J

003476

106-46-7-----1,3-Dichlorobenzene	0.61J
547-75-1-----1,4-Dichlorobenzene	0.61J

EPA SAMPLE NO.

VFLK2

Contract: SWCORP

Matrix: (soil/water) WATER

Lab Sample ID: VBLK2

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C3144

Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 10/19/88

Column: (pack/cap) CAF

Dilution Factor: 1.0

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

Q

FORM I VOA

003478

106-46-7-----1,3-Dichlorobenzene	
547-73-1-----1,4-Dichlorobenzene	

10	U
10	U

003473

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8-1457MS(C-2)

Lab Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: 21457MSSample wt/vol: 5.0 (g/mL) MLLab File ID: C2954Level: (low/med) LOWDate Received: 09/28/88

% Moisture: not dec. _____

Date Analyzed: 10/05/88Column: (pack/cap) CAFDilution Factor: 1.0

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	3	J
67-64-1-----	Acetone	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
75-69-4-----	Dichlorodifluoromethane	10	U
95-50-1-----	1,2-Dichlorobenzene	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

003450

EPA SAMPLE NO.

8-1459MS(C-2)

Lab Name: SWL - TULSA

Contract: SWCORP

Lab Code: SWOK

Case No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATER

Lab Sample ID: 21457MS

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C2954

Level: (low/med) LOW

Date Received: 09/28/88

% Moisture: not dec. _____

Date Analyzed: 10/05/88

Column: (pack/cap) CAF

Dilution Factor: 1.0

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

CAS NO.

COMPOUND

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J
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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003481

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003482

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

8-1459MSD(C-2)

Lab Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: 21457MSDSample wt/vol: 5.0 (g/mL) MLLab File ID: C2955Level: (low/med) LOWDate Received: 09/28/88

% Moisture: not dec. _____

Date Analyzed: 10/05/88Column: (pack/cap) CAFDilution Factor: 1.0

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

Q

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	3	J
67-64-1	Acetone	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	3	J
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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003483

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003484

2A

WATER VOLATILE SURROGATE RECOVERY

Name: SWL - TULSAContract: SWCORPCode: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
	=====	=====	=====	=====	=====	=====
01	8-1479(120)	102	94	94		0
02	8-1480(MW-8)	98	94	97		0
03	8-1482(MW-14)	99	95	95		0
04	8-1483(MW-12)	103	93	96		0
05	VBLK1	100	93	96		0

QC LIMITS

S1 (TOL) = Toluene-d8 (88-110)

S2 (BFB) = Bromofluorobenzene (86-115)

S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

003485

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSA Contract: SWCORP
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: 10502 Lab Sample ID: VBLK1
Date Analyzed: 10/08/88 Time Analyzed: 1112
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: 7002D

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	=====	=====	=====	=====
01	8-1479(120)	21538	10503	1138
02	8-1480(MW-8)	21539	10506	1255
03	8-1482(MW-14)	21540	10507	1320
04	8-1483(MW-12)	21541	10508	1346

COMMENTS:

003486

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

VBLK1

Name: SWL - TULSAContract: SWCORPLab Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

Matrix: (soil/water) WATERLab Sample ID: VBLK1Sample wt/vol: 5.0 (g/mL) MLLab File ID: 10502Level: (low/med) LOW

Date Received: _____

% Moisture: not dec. _____

Date Analyzed: 10/08/88Column: (pack/cap) CAPDilution Factor: 1.0

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

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	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	2	J
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
75-69-4-----	Dichlorodifluoromethane	10	U
95-50-1-----	1,2-Dichlorobenzene	10	U

003487

106-46-7-----1,3-Dichlorobenzene	10	U
547-73-1-----1,4-Dichlorobenzene	10	U

003488

2A
WATER VOLATILE SURROGATE RECOVERY

ab Name: SWL - TULSAContract: SWCORPJ Code: SWOKCase No.: SWCORP

SAS No.: _____

SDG No.: _____

	EPA	S1	S2	S3	OTHER	TOT
	SAMPLE NO.	(TOL)#	(BFB)#	(DCE)#		OUT
01	8-1415(MW-3)	98	103	103		0
02	8-1416(MW-4)	100	101	109		0
03	8-1417(MW-5)	99	104	110		0
04	8-1418(MW-7)	95	102	105		0
05	8-1419(TRAVER)	101	110	105		0
06	8-1420(109)	98	101	107		0
07	8-1421(123)	99	105	108		0
08	8-1422(124)	91	105	109		0
09	8-1423(125)	95	101	107		0
10	8-1424(TRAVER)	102	105	111		0
11	8-1425(129)	95	103	112		0
12	VELK1	97	108	108		0
13	VELK2	91	102	92		0
14	VELK3	96	98	103		0

QC LIMITS

S1 (TOL) = Toluene-d8

(88-110)

S2 (BFB) = Bromofluorobenzene

(86-115)

S3 (DCE) = 1,2-Dichloroethane-d4

(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

003489

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSA Contract: SWCORP
Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: C2866 Lab Sample ID: VELK1
Date Analyzed: 09/29/88 Time Analyzed: 1223
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
018-1419 (TRAVE	21424	C2877	1717

COMMENTS:

003430

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: SWL - TULSA Contract: SWCORP
Code: SWCK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: C2896 Lab Sample ID: VBLK2
Date Analyzed: 09/30/88 Time Analyzed: 1236
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 8-1415(MW-3)	21420	C2900	1423
02 8-1416(MW-4)	21421	C2901	1450
03 8-1417(MW-5)	21422	C2902	1517
04 8-1420(109)	21425	C2904	1610
05 8-1421(123)	21426	C2905	1637
06 8-1422(124)	21427	C2906	1703
07 8-1424(TRAVER)	21429	C2908	1757

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

003491

Lab Name: SWL - TULSA Contract: SWCORP
Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
Lab File ID: C2933 Lab Sample ID: VELK3
Date Analyzed: 10/04/88 Time Analyzed: 1430
Matrix: (soil/water) WATER Level: (low/med) LOW
Instrument ID: C

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	8-1418(MW-7)	21423	C2934	1517
02	8-1423(125)	21428	C2935	1544
03	8-1425(129)	21430	C2936	1610

COMMENTS:



003492

Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.41J

DATE: 10-14-88

SWLO # 21420 - 21430
DATE SUBMITTED: 09-24-88

TOTAL ORGANIC HALOGEN QA/QC DATA

<u>DESCRIPTION</u>	<u>RESULTS</u>
CALIBRATION STANDARD	99.5%
ABSORPTION EFFICIENCY	104.3%

Southwest Laboratory of Oklahoma

BY

TULSA BRANCH
1700 W. Albany, Suite C
Broken Arrow, OK 74012
(918) 251-2858

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023

003493



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.42c

DATE: 10-14-88

SWLO # 21435 - 21436
DATE SUBMITTED: 09-27-88

TOTAL ORGANIC HALOGEN QA/QC DATA

DESCRIPTION	RESULTS
CALIBRATION STANDARD	99.5%
ABSORPTION EFFICIENCY	104.3%

DESCRIPTION	(A) OBSERVED CONCENTRATION (ug/L)	(B) OBSERVED CONCENTRATION (ug/L)	RELATIVE PERCENT DIFFERENCE
SAMPLE ID: 8-1426 (MW-9) 9/22/88			
DUPLICATE ANALYSIS	9.2	9.3	1.1%
SAMPLE ID: 8-1428 (MW-10) 9/22/88			
DUPLICATE ANALYSIS	2.0	1.7	16%

Southwest Laboratory of Oklahoma

BY Chuck Hoover

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INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023
(918) 225-1061

003494

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-12-88

SWLO#: 09298EXB

SAMPLE ID: FBLK3

COMPOUNDS

RESULTS
ug/L

HMX

26.0 U

RDX

22.0 U

TETRYL

26.0 U

TNT

14.0 U

2,4 DNT

10.0 U

U indicates detection limit

003495



Southwest Laboratory of Oklahoma

CLIENT: SOUTHWESTERN DIVISION LABORATORY
U.S. ARMY CORPS OF ENGINEERS
POST OFFICE BOX 36045
DALLAS, TEXAS 75235-8011
ATTN: CATHY HUTCHINS

REPORT: SAP5013.474

DATE: 10-27-88

SWLO # 21538 - 21541
DATE SUBMITTED: 09-30-88

TOTAL ORGANIC HALOGEN QA/QC DATA

<u>DESCRIPTION</u>	<u>RESULTS</u>
CALIBRATION STANDARD	91.7%
ABSORPTION EFFICIENCY	98.3%

Southwest Laboratory of Oklahoma

BY Chuck Hoover

TULSA BRANCH
1700 W. Albany, Suite C
Broken Arrow, OK 74012
(918) 251-2858

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY
INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS.

CUSHING BRANCH
P.O. Box 368
Cushing, Okla. 74023

003490

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-10-88

SWLO#: 1003EXB

SAMPLE ID: PBLK 2

COMPOUNDS

RESULTS
ug/L

HMX	14.0 U
RDX	22.0 U
TETRYL	26.0 U
TNT	26.0 U
2,4 DNT	10.0 U

U indicates detection limit

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-12-88

SWLO#: 09298EXB

SAMPLE ID: PBLK3

COMPOUNDS	RESULTS ug/L
HMX	26.0 U
RDX	22.0 U
TETRYL	26.0 U
TNT	14.0 U
2,4 DNT	10.0 U

U indicates detection limit

003498

EXPLOSIVES BY HPLC
SOIL (ug/g)

CLIENT: SWCOE

DATE: 10-12-88

SWLO#: 0929EXB2

SAMPLE ID: PBLK4

COMPOUNDS

RESULTS

ug/L

HMX

26.0 U

RDX

22.0 U

TETRYL

26.0 U

TNT

14.0 U

2,4 DNT

10.0 U

U indicates detection limit

003499

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 10-10-88

SWLD #: 21420

SAMPLE ID 8-1415 (mw-3)

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	1449	36.2
RDX	4000	0	4562	114.1
TNT	4000	0	1774	44.4
DNT(2,4)	4000	0	2842	71.1

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RPD
HMX	4000	0	1384	34.6	4.6
RDX	4000	0	3992	99.8	13.3
TNT	4000	0	1461	36.5	19.4
DNT(2,4)	4000	0	1360	34.0	70.5

003500

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 10-11-88

SWLO #: 21462

SAMPLE ID 8-1465

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	1631	40.8
RDX	4000	0	6182	154.6
TNT	4000	0	415	10.4
DNT(2,4)	4000	0	2294	57.4

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RPD
HMX	4000	0	1640	41.0	0.6
RDX	4000	0	6172	154.3	0.2
TNT	4000	0	469	11.7	12.2
DNT(2,4)	4000	0	2430	60.8	5.8

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

023501
SAMPLE NO.

VELK4

Lab Name: SWL - TULSA Contract: SWCORP

Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: VELK4

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 03090

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 10/13/88

Column: (pack/cap) CAP Dilution Factor: 1.0

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

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	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	4	J
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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

003502

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: SWL - TULSA Contract: SWCORP
 Lab Code: SWOK Case No.: SWCORP SAS No.: _____ SDG No.: _____
 Matrix: (soil/water) WATER Lab Sample ID: VELK4
 Sample wt/vol: 5.0 (g/mL) ML Lab File ID: 03090
 Level: (low/med) LOW Date Received: _____
 % Moisture: not dec. _____ Date Analyzed: 10/13/88
 Column: (pack/cap) CAF Dilution Factor: 1.0

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

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
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	4	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
75-69-4	Dichlorodifluoromethane	10	U
95-50-1	1,2-Dichlorobenzene	10	U

FORM I VOA

1/87 Rev.

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

CLIENT: SWCOE

DATE: 10-11-88

SWLO #: 21462

SAMPLE ID 8-1465

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MS	% REC.
HMX	4000	0	1631	40.8
RDX	4000	0	6182	154.6
TNT	4000	0	415	10.4
DNT(2,4)	4000	0	2294	57.4

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE RESULT	CONC. MSD	% REC.	% RPD
HMX	4000	0	1640	41.0	0.6
RDX	4000	0	6172	154.3	0.2
TNT	4000	0	469	11.7	12.2
DNT(2,4)	4000	0	2430	60.8	5.8