N00158.AR.000024
NAS WILLOW GROVE
5090.3a

RESULTS OF ANALYSIS OF THREE SOIL SAMPLES AND FOUR SOURCE WATER SAMPLES COLLECTED AT WILLOW GROVE BETWEEN 10 AND 20 APRIL 1989

Prepared for:

Northern Division
Naval Facilities Enginering Command

Prepared by:

EA Laboratories

July 1989
Rept. #890230

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1. ANALYTICAL SUMMARY

ANALYTICAL SUMMARY

Between 10 and 20 April 1989, EA Engineering, Science, and Technology, Inc. personnel collected three soil samples, four source water samples and two rinsate blanks from the Naval Air Station at Willow Grove. The samples and three trip blanks were taken to EA Laboratories in Sparks, Maryland for analysis. Upon receipt at the laboratory the samples were inspected, compared with the chain-of-custody records, logged, assigned laboratory accession numbers and distributed for analysis.

Results are summarized in the appended data package. Analytical concerns are discussed in the Quality Assurance Summary included at the end of each section. Quality assurance criteria specified in the Plan of Action for Site Inspection NAS Willow Grove, Pennsylvania (Feb. 1988) were not met in that Rinsate Blank, NFF-2 (EA #8901781) and the Trip Blank from 14 April 1989 (EA #8901782) were analyzed for volatile organic compounds 11 days after sample receipt. The analyses were within the 50% control limit.

In accepting analytical work, EA Laboratories, a division of EA Engineering, Science, and Technology, Inc., warrants the test results to be of precision normal for the sample type and methodology employed for each sample as submitted. The methods indicated were employed as stated to the extent permitted by sample and/or matrix limitation, if any. EA disclaims any other warranties, express or implied, including warranty of fitness for a particular purpose and warranty of merchantability. Also, EA accepts no legal responsibility for the purpose for which the client uses test results. EA cannot accept any terms and conditions or purchase orders, work orders, or requests, and any analytical work performed by EA must be governed by the terms and conditions set forth herein.

2. CHAIN OF CUSTODY RECORDS

Chain of Custody Record

EA Laboratories
15 Loveton Circle
Sparks, MD 21152
301-771-4950

Company Name: EA

Project Manager or Contact: Chuck Houlik

Project No.: 10388.03

Project Name: Willow Grove

Special QA Protocols (Circle)

EPA-CLP | TIER I (NJ) | OTHER (SPECIFY) Navy level C

USATHAMA | TIER II (NJ)

Date	Time	Grab	Comp	Sample Identification (I.D. and Matrix)	No. of Containers	Parameters for Analysis: Volatile OP									EA Labs Accession Number	Remarks
4/10/89	1353	X		Source Water NFFW 304	1	X									1703	
4/12/89	—	X		Trip Blank	1	X									1704	

Sampled by: (Signature)	Title:	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Gregg T. Campbell	Geologist II	4/12/89 1712	Gregg T. Campbell	2005 4/12/89	

Relinquished by: (Signature)	Date/Time	Recieved by: (Signature)	Relinquished by: (Signature)	Date/Time	Rec'd. by Lab: (Signature)
				4/15/89 10:00	Karen Hanna

Sample Custody Notes: 8 May 89 8902.30

Sample Shipped by: (Circle) Fed. Ex. Puro. UPS

Other (Specify)

Air Bill Number:

2001

290

Chain of Custody Record

EA Laboratories
15 Loveton Circle
Sparks, MD 21152
301-771-4950

Company Name: EA

Project Manager or Contact: Chuck Houlik

Project No.: 10388.03

Project Name: Willow Grove

Special QA Protocols (Circle): EPA-CLP | TIER I (NJ) | OTHER (SPECIFY) Navy Level C | USATHAMA | TIER II (NJ)

Parameters for Analysis: Volatile Org | TPH | TOC | Base Neutrals

Date	Time	Grab	Comp	Sample Identification (I.D. and Matrix)	No. of Containers	Volatile Org	TPH	TOC	Base Neutrals	EA Labs Accession Number	Remarks
4/12/89	1648	X		Source Water, NFFW-5	1	X				1778	VOA's are in separate
4/12/89	1609	X		NFFW-5, S-2, Soil	1	X	X	X	X	1779	cooler (small)
4/14/89	0953	X		NFFW-6, S-5, Soil	1	X	X	X	X	1780	
4/14/89	1548	X		Rinsate Blank, NFF-2 Water	6	X	X	X	X	1781	
4/14/89	—	X		Trip Blank	1	X				1782	
											SUB into VOA bottles
											For soil samples. They
											only came in with
											1 soil jar.

Sampled by: (Signature)	Title:	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Gregg T. Campbell	Geologist II	4/14/89 1517	Gregg T. Campbell	2035 4/14/89	

Relinquished by: (Signature)	Date/Time	Recieved by: (Signature)	Relinquished by: (Signature)	Date/Time	Rec'd. by Lab: (Signature)
				4/17/89 8.45	Mary E Aspe

Sample Custody Notes: 890320 d. 8 May 89

Sample Shipped by: (Circle) Fed. Ex. Pub. UPS Other (Specify) Hand carried

Air Bill Number:

2002

312

Chain of Custody Record

EA Laboratories
15 Loveton Circle
Sparks, MD 21152
301-771-4950

IRAB

Company Name: EA

Project Manager or Contact: Chuck Houlik

Project No.: 10388.03

Project Name: Willow Grove

Special QA Protocols (Circle): EPA-CLP, USATHAMA, TIER I (NJ), TIER II (NJ), OTHER (SPECIFY) Maryland C

Date	Time	Grab	Comp	Sample Identification (I.D. and Matrix)	No. of Containers	Volatile Org	TPH	TPC	Base Neutrals						EA Labs Accession Number	Remarks
4/19/89	0728	X		Source Water NFFW-6	1	X									1914	
4/19/89	0851	X		NFFW-7, S-4, Soil	2	X	X	X	X						1915	
4/20/89	1539	X		NFF, Rinsate Blank #3	6	X	X	X	X						1916	
4/20/89	—	X		Trip Blank	1	X									1917	
4/19/89	1228	X		Source Water, NFFW-7	1	X									1918	

Sampled by: (Signature)	Title:	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Gregg T. Campbell	Geologist II	4/20/89 1604	Gregg T. Campbell	4/20/89 2041	

Relinquished by: (Signature)	Date/Time	Recieved by: (Signature)	Relinquished by: (Signature)	Date/Time	Rec'd. by Lab. (Signature)
				4/21/89 9:00	Mary E Roper

Sample Custody Notes: 090230 d. 12 May 89

Sample Shipped by: (Circle) Fed. Ex. Puro. UPS Other (Specify) Hand carried.

Air Bill Number:

3. VOLATILES DATA

A. QC Summary

2A

WATER VOLATILE SURROGATE RECOVERY

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
1	VBLK	102	100	104		0
1703 2	NFFW324	101	99	111		0
1703MS 3	NFFW3MS	101	97	103		0
1703MSD 4	NFFW3MSD	102	100	106		0
1704 5	TRIP BL	103	101	104		0
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	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = 1,2-Dichloroethane-d4	(76-114)
S3 (DCE) = Bromofluorobenzene	(86-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2A
WATER VOLATILE SURROGATE RECOVERY

Lab Nam : EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

		EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
1778	1	NFFW5	101	99	110		0
	2	VBLK2	105	103	106		0
1781	3	NFFW2	106	102	104		0
1782	4	TRIP BL	108	108	112		0
1914	5	NFFW6	99	96	105		0
1916	6	RINSE BL	107	95	108		0
1917	7	TRIP BL	102	97	102		0
1918	8	NFFW7	101	98	106		0
1918MS	9	NFFW7MS	101	96	98		0
1918MSD	10	NFFW7MSD	99	95	102		0
	11	VBLK3	99	101	101		0
	12	~~NELW1+2~~	~~97~~	~~99~~	~~110~~		~~0~~
	13	~~NELW1MS~~	~~96~~	~~91~~	~~112~~		~~0~~
	14	~~NELW1MSD~~	~~101~~	~~98~~	~~111~~		~~0~~
	15	~~NELW3~~	~~102~~	~~103~~	~~104~~		~~0~~
	16	~~TRIP BL~~	~~106~~	~~108~~	~~111~~		~~0~~
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JRM 6/22/89

	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

2B
SOIL VOLATILE SURROGATE RECOVERY

Lab Nam : EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Level:(low/med) LOW

	EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#	OTHER	TOT OUT
1	VBLK1	101	102	103		0
7792	NFFW5S2	101	97	115		0
17803	NFFW6S5	104	100	110		0
1780MS4	NFFW6MS	98	99	112		0
1780MSD5	NFFW6MSD	101	99	107		0
19156	NFFW7S4 DL	102	115	99		0
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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

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Matrix Spike - EPA Sample No.: NFFW324

1703 MS/MSD

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethane	50.	0.	71.	142.	61-145
Trichloroethene	50.	0.	57.	114.	71-120
Benzene	50.	0.	58.	117.	76-127
Toluene	50.	0.	59.	118.	75-125
Chlorobenzene	50.	0.	57.	114.	75-130

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethane	50.	69.	138.	4.	14	61-145
Trichloroethene	50.	58.	116.	2.	14	71-120
Benzene	50.	59.	119.	1.	11	76-127
Toluene	50.	59.	117.	1.	13	76-125
Chlorobenzene	50.	59.	118.	3.	13	75-130

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:

3A

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Nam : EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix Spike - EPA Sample No.: NFFW7

1918MS/MSD

COMPOUND	SPIKE ADDED (UG/L)	SAMPLE CONCENTRATION (UG/L)	MS CONCENTRATION (UG/L)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.	0.	59.	118	61-145
Trichloroethene	50.	0.	48.	95	71-120
Benzene	50.	0.	47.	95	76-127
Toluene	50.	0.	50.	101	76-125
Chlorob nzene	50.	0.	49.	98	75-130

COMPOUND	SPIKE ADDED (UG/L)	MSD CONCENTRATION (UG/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.	61.	122	4	14	61-145
Trichloroethene	50.	59.	118	21 *	14	71-120
Benzene	50.	61.	122	25 *	11	76-127
Toluene	50.	59.	118	16 *	13	76-125
Chlorobenzene	50.	58.	116	17 *	13	75-130

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

* Valu s outside of QC limits

RPD: 4 out of 5 outside limits
Spike R covery: 0 out of 10 outside limits

COMMENTS:

3B

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix Spike - EPA Sample No.: NFFW6S5 Level:(low/med) LOW
(1780 MS/MSD)

COMPOUND	SPIKE ADDED (UG/KG)	SAMPLE CONCENTRATION (UG/KG)	MS CONCENTRATION (UG/KG)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	56.	0.	72.	129	59-172
Trichloroethene	56.	0.	64.	114	62-137
Benz ne	56.	0.	61.	110	66-142
Toluene	56.	0.	60.	108	59-139
Chlorobenzene	56.	0.	61.	109	60-133

COMPOUND	SPIKE ADDED (UG/KG)	MSD CONCENTRATION (UG/KG)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	56.	56.	100	25 *	22	59-172
Trichloroethene	56.	55.	98	16	24	62-137
Benzene	56.	52.	92	17	21	66-142
Toluene	56.	56.	100	8	21	59-139
Chlorobenzene	56.	56.	100	9	21	60-133

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

* Valu s outside of QC limits

RPD: 1 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

4A

VOLATILE METHOD BLANK SUMMARY

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Lab File ID: EF342 Lab Sample ID: METHOD BLANK

Date Analyzed: 4/17/89 Time Analyzed: 9:28

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

Instrument ID: 7002EE

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1	NFFW324	EA # 1703	EF351	16:42
2	NFFW3MS	EA # 1703 MS	EF352	17:29
3	NFFW3MSD	EA # 1703 MSD	EF353	18:15
4	TRIP BL	EA # 1704	EF354	13:00
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COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

Lab Nam : EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Lab File ID: EF420 Lab Sample ID: METHOD BLANK

Date Analyzed: 4/27/89 Time Analyzed: 11:53

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

Instrum nt ID: 7002E5

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1	NFFW5	EA# 1978	EF422	13:26
2	NFFW5S2	EA# 1979	EF423	14:12
3	NFFW6S5	EA# 1980	EF424	14:57
4	NFFW6MS	EA# 1980 MS	EF425	15:43
5	NFFW6MSD	EA# 1980 MSD	EF429	21:15
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COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Lab File ID: EF432 Lab Sample ID: METHOD BLANK

Date Analyzed: 4/28/89 Time Analyzed: 11:20

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

Instrument ID: 7002E5

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1	NFFW2	EA# 1981	EF433	12:10
2	TRIP BL	EA# 1982	EF434	12:55
3	NFFW6	EA# 1914	EF435	13:41
4	RINSE BL	EA# 1916	EF436	14:32
5	TRIP BL	EA# 1917	EF437	15:18
6	NFFW7	EA# 1918	EF438	16:03
7	NFFW7MS	EA# 1918 MS	EF439	16:49
8	NFFW7MSD	EA# 1918 MSD	EF440	17:34
9	NFFW7S4 DL	EA# 1915	EF441	18:20
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COMMENTS:

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

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Lab File ID: EE667 BFB Injection Date: 1/24/89

Instrument ID.: 7002E5 BFB Injection Time: 6:53

Matrix:(soil/water) WATER 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	45.1
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	.0 (.0)1
174	Greater than 50.0% of mass 95	86.2
175	5.0 - 9.0% of mass 174	6.3 (7.3)1
176	Greater than 95.0%, but less than 101.0% of mass 174	83.9 (97.4)1
177	5.0 - 9.0% of mass 176	6.2 (7.3)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
1	VSTD200	200 PPB	EE673	1/24/89	12:11
2	VSTD150	150 PPB	EE674	1/24/89	12:59
3	VSTD100	100 PPB	EE675	1/24/89	13:46
4	VSTD50	50 PPB	EE676	1/24/89	14:32
5	VSTD20	20PPB	EE677	1/24/89	15:18
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7					
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22					

5A

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

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Lab File ID: EF340 BFB Injection Date: 4/17/89

Instrument ID.: 7002E5 BFB Injection Time: 7:37

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.8
75	30.0 - 60.0% of mass 95	59.4
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.6
173	Less than 2.0% of mass 174	.0 (.0)1
174	Greater than 50.0% of mass 95	86.9
175	5.0 - 9.0% of mass 174	6.9 (7.9)1
176	Greater than 95.0%, but less than 101.0% of mass 174	85.7 (98.6)1
177	5.0 - 9.0% of mass 176	5.5 (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
1	VSTD50	50 PPB	EF341	4/17/89	8:13
2	VBLK	METHOD BLANK	EF342	4/17/89	9:28
3	NFFW324	EA # 1703	EF351	4/17/89	16:42
4	NFFW3MS	EA # 1703	EF352	4/17/89	17:28
5	NFFW3MSD	EA # 1703	EF353	4/17/89	18:15
6	TRIP BL	EA # ~~1703~~ 1704	EF354	4/17/89	19:00
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5A

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

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Lab File ID: EF374 BFB Injection Date: 4/21/89

Instrument ID.: 7002E5 BFB Injection Time: 12:30

Matrix:(soil/water) WATER 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	53.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	.0 (.0)1
174	Greater than 50.0% of mass 95	82.2
175	5.0 - 9.0% of mass 174	6.9 (8.4)1
176	Greater than 95.0%, but less than 101.0% of mass 174	81.8 (99.4)1
177	5.0 - 9.0% of mass 176	6.1 (7.5)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
1	VSTD20	20PPB	EF375	4/21/89	13:42
2	VSTD50	50PPB	EF376	4/21/89	14:27
3	VSTD100	100PPB	EF377	4/21/89	15:13
4	VSTD150	150PPB	EF378	4/21/89	15:58
5	VSTD200	200PPB	EF379	4/21/89	16:43
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5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Lab File ID: EF418 BFB Injection Date: 4/27/89

Instrument ID.: 7002E5 BFB Injection Time: 9:43

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

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	26.3
75	30.0 - 60.0% of mass 95	56.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.2
173	L ss than 2.0% of mass 174	.0 (.0)1
174	Greater than 50.0% of mass 95	77.6
175	5.0 - 9.0% of mass 174	5.8 (7.5)1
176	Greater than 95.0%, but less than 101.0% of mass 174	75.4 (97.2)1
177	5.0 - 9.0% of mass 176	4.2 (5.6)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
1	VSTD50	50PPB	EF419	4/27/89	10:40
2	VBLK1	METHOD BLANK	EF420	4/27/89	11:53
3	NFFW5	EA#1778	EF422	4/27/89	13:26
4	NFFW5S2	EA#1779	EF423	4/27/89	14:12
5	NFFW6S5	EA#1780	EF424	4/27/89	14:57
6	NFFW6MS	EA#1780	EF425	4/27/89	15:43
7	NFFW6MSD	EA#1780	EF429	4/27/89	21:15
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5A

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

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Lab File ID: EF430 BFB Injection Date: 4/28/89

Instrument ID.: 7002E5 BFB Injection Time: 9:55

Matrix:(soil/water) WATER 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	57.5
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	5.7
173	Less than 2.0% of mass 174	.0 (.0)1
174	Greater than 50.0% of mass 95	75.9
175	5.0 - 9.0% of mass 174	6.6 (8.7)1
176	Greater than 95.0%, but less than 101.0% of mass 174	73.8 (97.3)1
177	5.0 - 9.0% of mass 176	5.3 (7.1)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
1	VSTD50	50 PPB	EF431	4/28/89	10:28
2	VBLK2	METHOD BLANK	EF432	4/28/89	11:20
3	NFFW2	EA# 1981	EF433	4/28/89	12:10
4	TRIP BL	EA# 1982	EF434	4/28/89	12:55
5	NFFW6	EA# 1914	EF435	4/28/89	13:41
6	RINSE BL	EA# 1916	EF436	4/28/89	14:32
7	TRIP BL	EA# 1917	EF437	4/28/89	15:18
8	NFFW7	EA# 1918	EF438	4/28/89	16:03
9	NFFW7MS	EA# 1918	EF439	4/28/89	16:49
10	NFFW7MSD	EA# 1918	EF440	4/28/89	17:34
11	NFFW7S4 DL	EA# 1915	EF441	4/28/89	18:20
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B. Sample Data

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW5S2

Lab Nam : EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: EA # 1779

Sampl wt/vol: 5.0 (g/mL) G Lab File ID: EF423

Level: (low/med) LOW Date Received: 4/17/89

% Moisture: not dec. 17. Date Analyzed: 4/27/89

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	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	120.	
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	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	29.	
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	Xyl ne (total)	6.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

NFFW5S2

Lab Nam : EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: EA#1779

Sample wt/vol: 5.0 (g/mL) G Lab File ID: EF423

L vel: (low/med) LOW Date Received: 4/17/89

% Moisture: not dec. 17. Date Analyzed: 4/27/89

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

Number TICs found: 13

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	67-64-1	2-Propanone (9CI)	6.35	10.	J
2.	- -	UNKNOWN	10.61	8.	J
3.	- -	UNKNOWN	12.32	60.	J
4.	- -	UNKNOWN	14.37	6.	J
5.	- -	UNKNOWN	21.08	6.	J
6.	62016-14-2	Octane, 2,5,6-trimethyl- (9C	21.74	700.	J
7.	- -	UNKNOWN HYDROCARBON	23.13	20.	J
8.	584-94-1	Hexane, 2,3-dimethyl- (8CI9C	23.83	60.	J
9.	592-13-2	Hexane, 2,5-dimethyl- (8CI9C	24.33	60.	J
10.	1071-81-4	Hexane, 2,2,5,5-tetramethyl-	26.08	200.	J
11.	- -	UNKNOWN	26.54	20.	J
12.	- -	UNKNOWN	33.02	7.	J
13.	- -	UNKNOWN	35.07	7.	J
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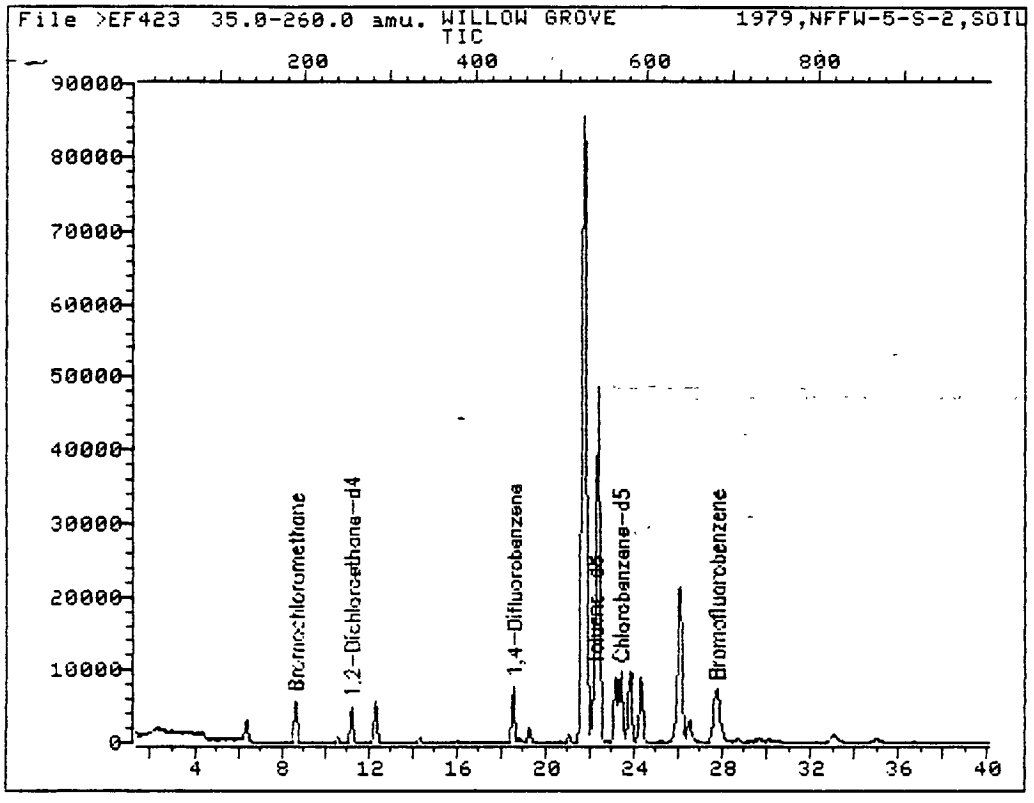
TOTAL ION CHROMATOGRAM



Data File: >EF423::D2 Quant Output File: ^EF423::QT
Name: WILLOW GROVE
Misc: 1979,NFFW-5-S-2,SOIL,5,7002E5

Id File: EVOAS::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 12:28

Operator ID: CARL
Quant Time: 890427 14:53
Injected at: 890427 14:12

QUANT REPORT

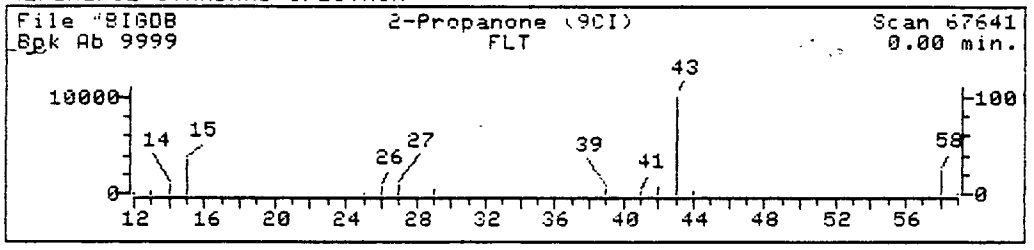
Operator ID: CARL Quant Rev: 6 Quant Time: 890427 14:53
Output File: ^EF423::QT Injected at: 890427 14:12
Data File: >EF423::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1979,NFFW-5-S-2,SOIL,5,7002E5

ID File: EVOAS::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 12:28

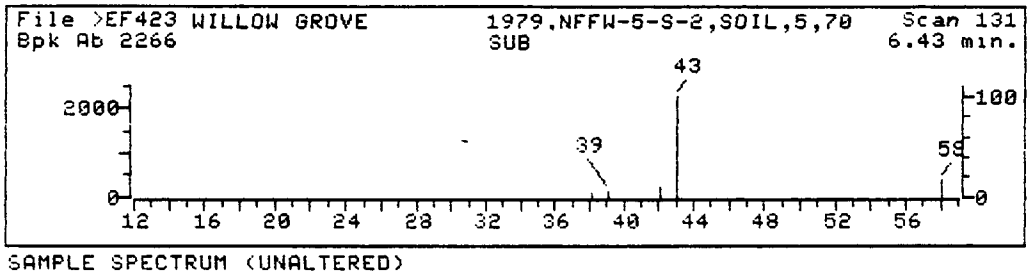
	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.64	128.0	7631	50.00	UG/KG	88
7)	Acetone	6.43	43.0	10495M	103.73	UG/KG	83
13)	1,2-Dichloroethane-d4	11.23	65.0	20564	57.25	UG/KG	77
15)	*1,4-Difluorobenzene	18.56	114.0	29884	50.00	UG/KG	90
29)	*Chlorobenzene-d5	23.40	117.0	26528	50.00	UG/KG	94
30)	4-Methyl-2-Pentanone	19.30	43.0	5556	24.12	UG/KG	78
35)	Toluene-d8	22.20	98.0	29572	50.74	UG/KG	95
40)	Bromofluorobenzene	27.75	95.0	26796	48.73	UG/KG	88

* Compound is ISTD

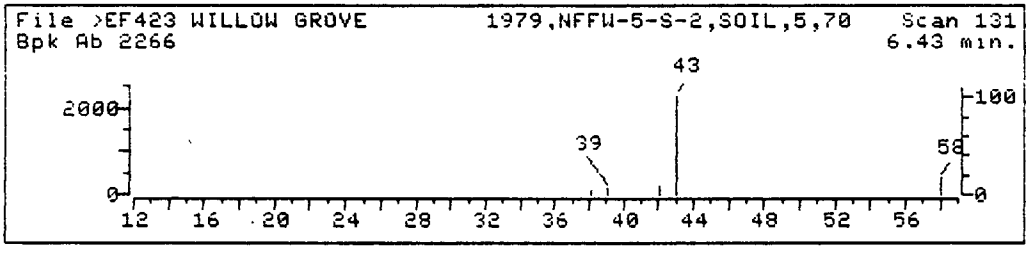
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



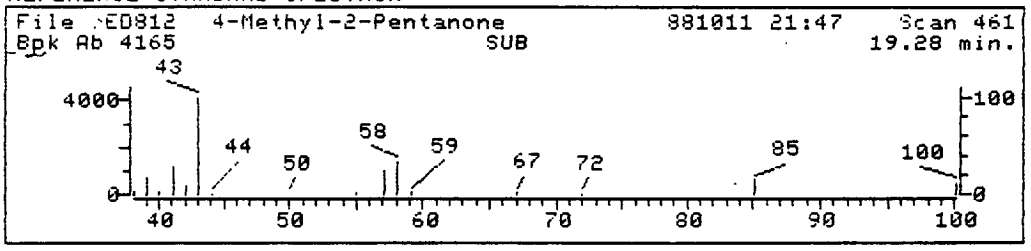
SAMPLE SPECTRUM (UNALTERED)



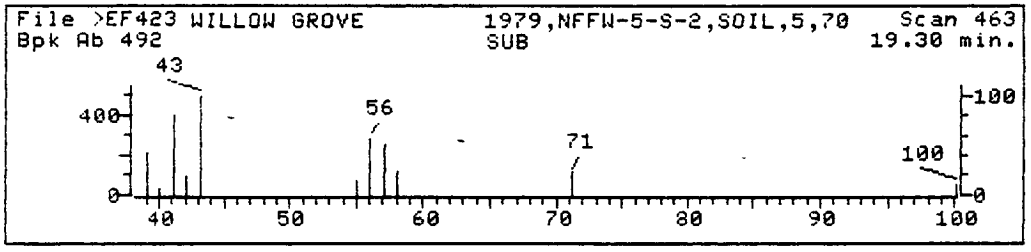
Data File: >EF423::D2 Quant Output File: ^EF423::QT
Name: WILLOW GROVE
Misc: 1979,NFFW-5-S-2,SOIL,5,7002E5
Quant Time: 890427 14:53 Quant ID File: EVOAS::BD
Injected at: 890427 14:12 Last Calibration: 890427 12:28

Compound No: 7
Compound Name: Acetone
Scan Number: 131
Retention Time: 6.43 min.
Quant Ion: 43.0
Area: 21289
Concentration: **103.73** UG/KG
q-value: 83

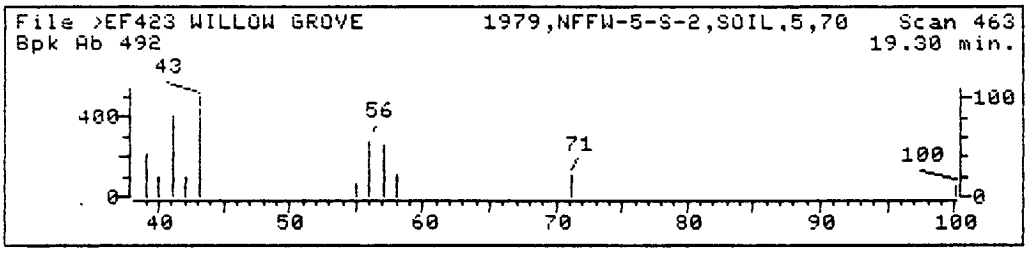
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

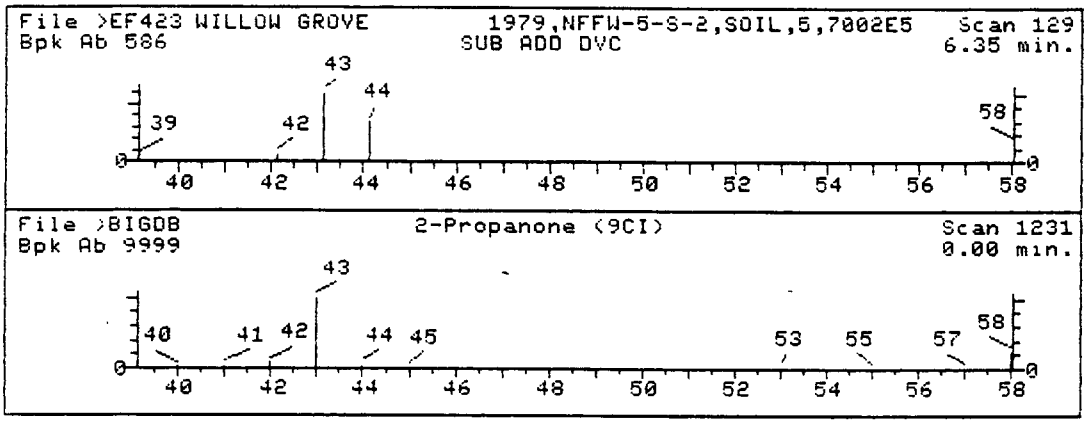


SAMPLE SPECTRUM (UNALTERED)



Data File: >EF423::D2 Quant Output File: ^EF423::QT
Name: WILLOW GROVE
Misc: 1979,NFFW-5-S-2,SOIL,5,7002E5
Quant Time: 890427 14:53 Quant ID File: EVOAS::BD
Injected at: 890427 14:12 Last Calibration: 890427 12:28

Compound No: 30
Compound Name: 4-Methyl-2-Pentanone
Scan Number: 463
Retention Time: 19.30 min.
Quant Ion: 43.0
Area: 5556
Concentration: 24.12 UG/KG
q-value: 78



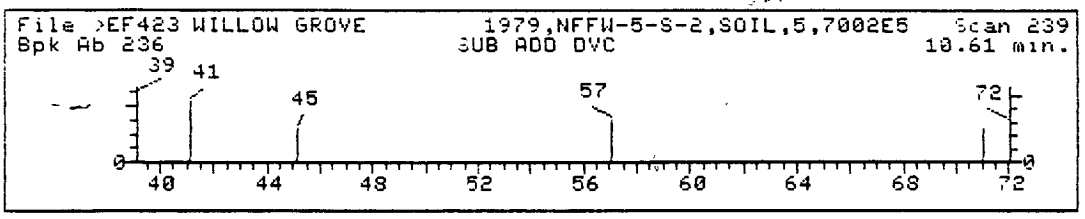
Retention time = 6.35

Area = 13081.00 Tentative Concentration is 12.00

1. 2-Propanone (9CI) 58 C3H6O

Sample file: >EF423 Spectrum #: 129
Search speed: 2 Tilting option: S No. of ion ranges searched: 43

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	42*	67641	1231	"BIGDB	21	50	2	0	100	24	17	13

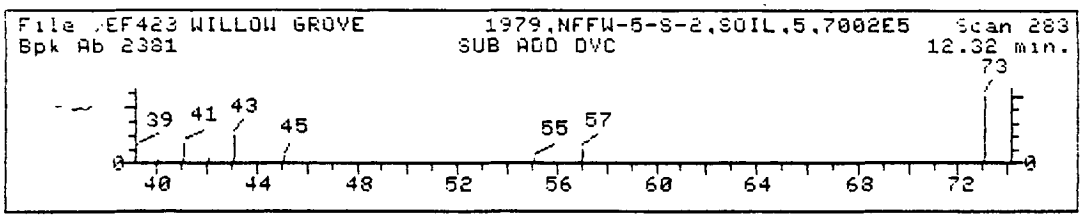


Retention time = 10.61 UNKNOWN

Area = 7956.00 Tentative Concentration is 7.00

Sample file: >EF423 Spectrum #: 239

No data base entries were retrieved.

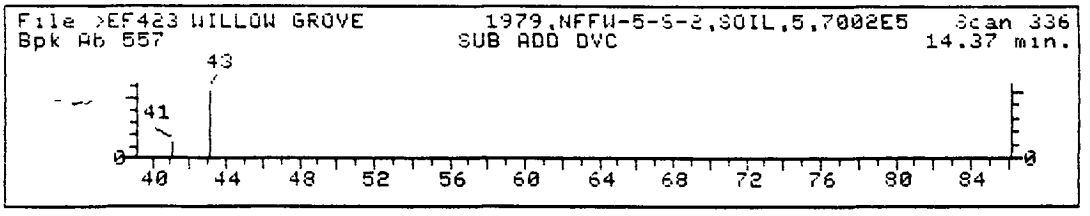


Retention time = 12.32 UNKNOWN

Area = 59071.00 Tentative Concentration is 53.00

Sample file: >EF423 Spectrum #: 283

No data base entries were retrieved.

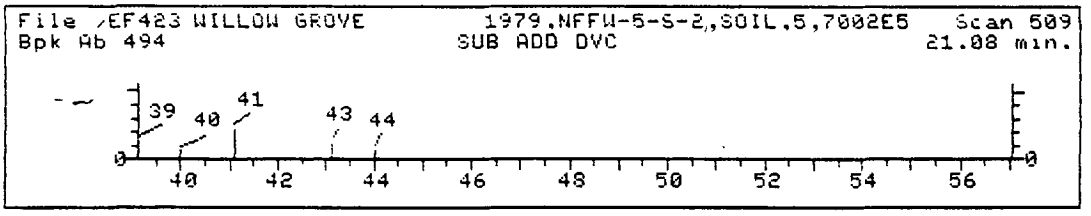


Retention time = 14.37 UNKNOWN

Area = 7878.00 Tentative Concentration is 5.00

Sample file: >EF423 Spectrum #: 336

No data base entries were retrieved.

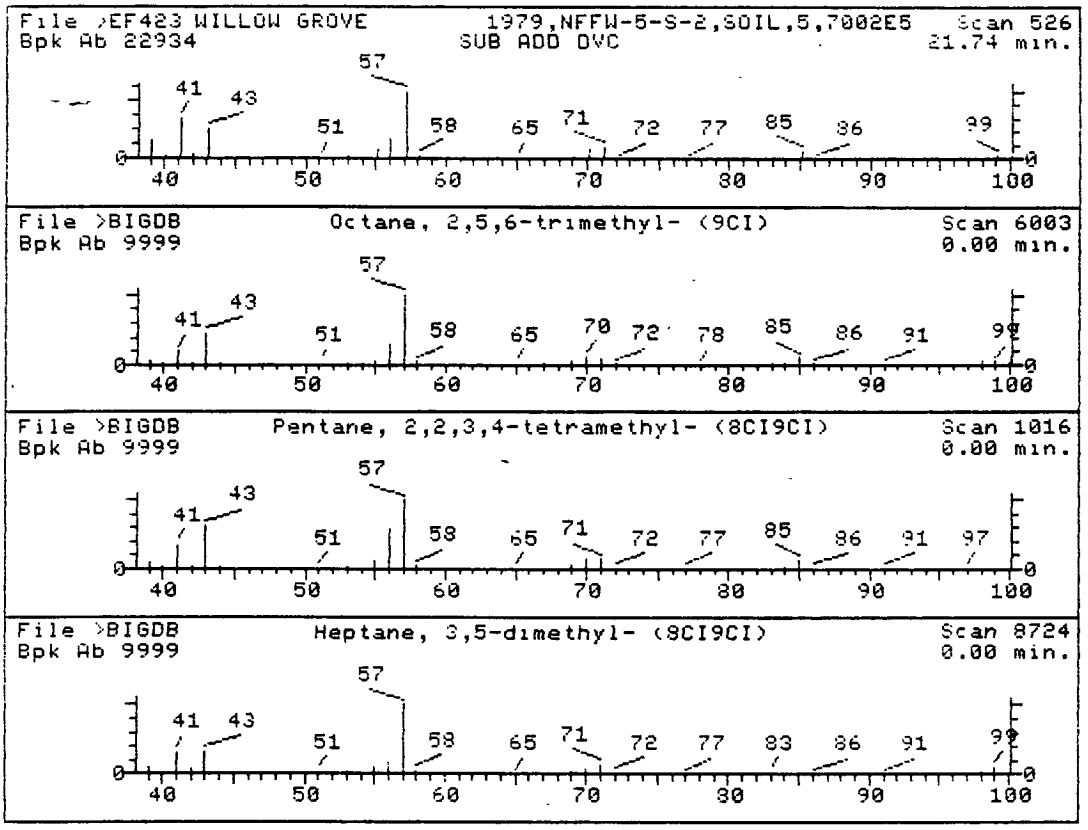


Retention time = 21.08 UNKNOWN

Area = 11768.00 Tentative Concentration is 5.00

Sample file: >EF423 Spectrum #: 509

No data base entries were retrieved.



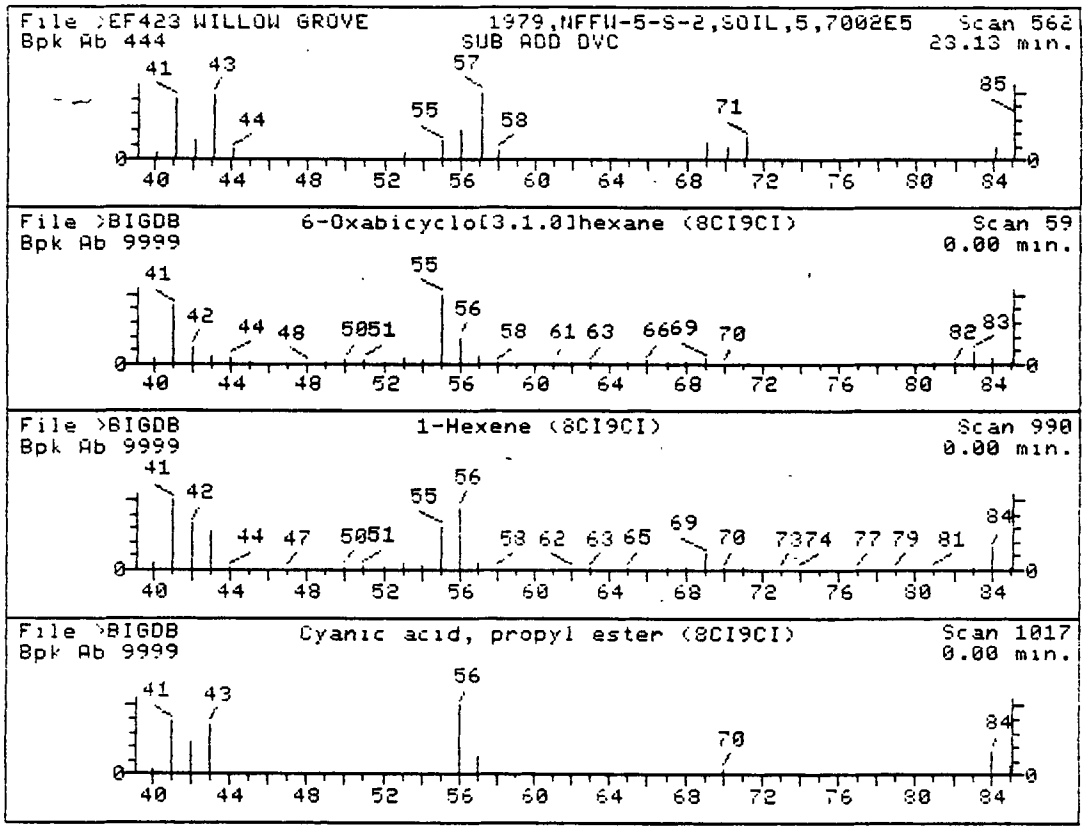
Retention time = 21.74

Area = 1222207. Tentative Concentration is 560.00

1.	Octane, 2,5,6-trimethyl- (9CI)	156	C11H24
2.	Pentane, 2,2,3,4-tetramethyl- (8CI9CI)	128	C9H20
3.	Heptane, 3,5-dimethyl- (8CI9CI)	128	C9H20
4.	Heptane, 2,3,6-trimethyl- (8CI9CI)	142	C10H22
5.	Hexane, 2,2-dimethyl- (8CI9CI)	114	C8H18
6.	Butane, 2,2,3,3-tetramethyl- (8CI9CI)	114	C8H18
7.	Pentane, 2,2,4-trimethyl- (8CI9CI)	114	C8H18

Sample file: >EF423 Spectrum #: 526
Search speed: 2 Tilting option: S No. of ion ranges searched: 52

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	83	62016142	6003	"BIGDB	60	27	2	0	93	3	57	21
2.	52	1186534	1016	"BIGDB	57	29	1	0	70	21	22	24
3.	52	926829	8724	"BIGDB	45	37	2	0	100	20	20	15
4.	52	4032933	3607	"BIGDB	44	38	2	0	100	18	20	14
5.	43	590738	1199	"BIGDB	28	44	0	0	86	25	17	14
6.	43	594821	1200	"BIGDB	28	44	0	0	100	23	17	14
7.	43	540841	1198	"BIGDB	28	46	0	0	85	23	17	14



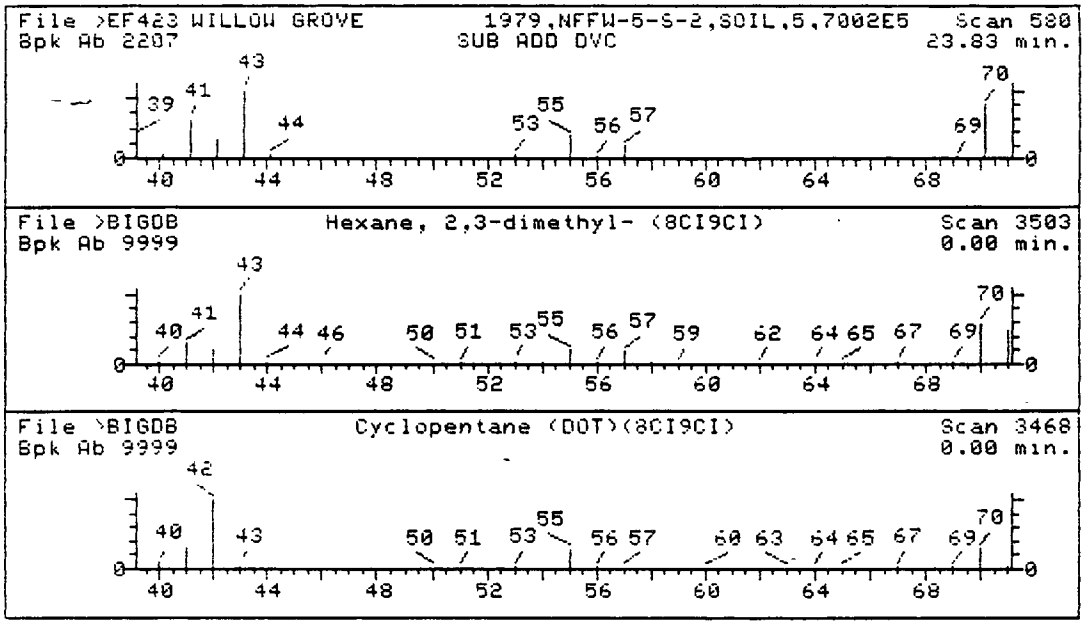
Retention time = 23.13 VNKNOWN HYDROCARBON

Area = 39342.00 Tentative Concentration is 18.00

1.	6-Oxabicyclo[3.1.0]hexane (8CI9CI)	84 C5H8O
2.	1-Hexene (8CI9CI)	84 C6H12
3.	Cyanic acid, propyl ester (8CI9CI)	85 C4H7NO
4.	Aziridine, 2,2-dimethyl- (8CI9CI)	71 C4H9N

Sample file: >EF423 Spectrum #: 562
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	15*	285676	59	"BIGDB	28	77	3	0	107	58	3	13
2.	11*	592416	990	"BIGDB	28	57	2	0	43	63	2	14
3.	11*	1768361	1017	"BIGDB	22	68	0	0	43	62	2	16
4.	11*	2658244	973	"BIGDB	21	73	2	0	42	64	2	13



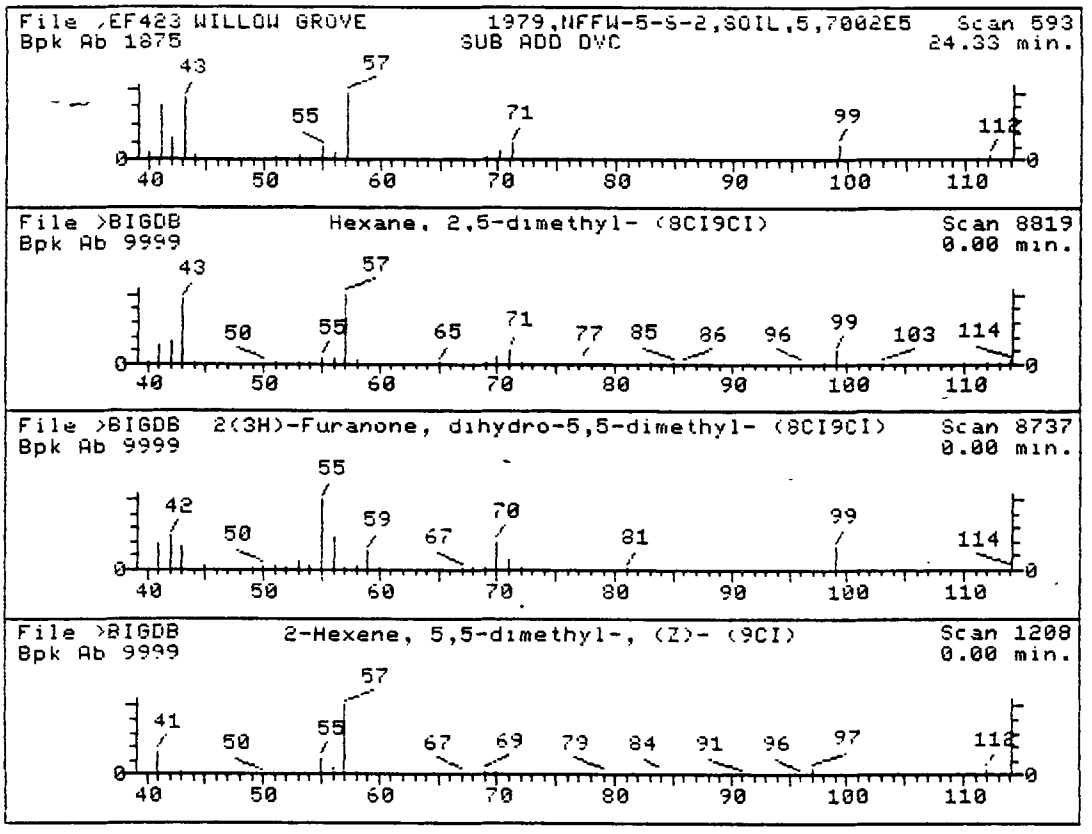
Retention time = 23.83

Area = 112802.0 Tentative Concentration is 51.00

1. Hexane, 2,3-dimethyl- (8CI9CI) 114 C8H18
2. Cyclopentane (DOT)(8CI9CI) 70 C5H10

Sample file: >EF423 Spectrum #: 580
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	78	584941	3503	"BIGDB	40	47	2	0	100	4	55	13
2.	15*	287923	3468	"BIGDB	22	52	3	0	191	59	3	12



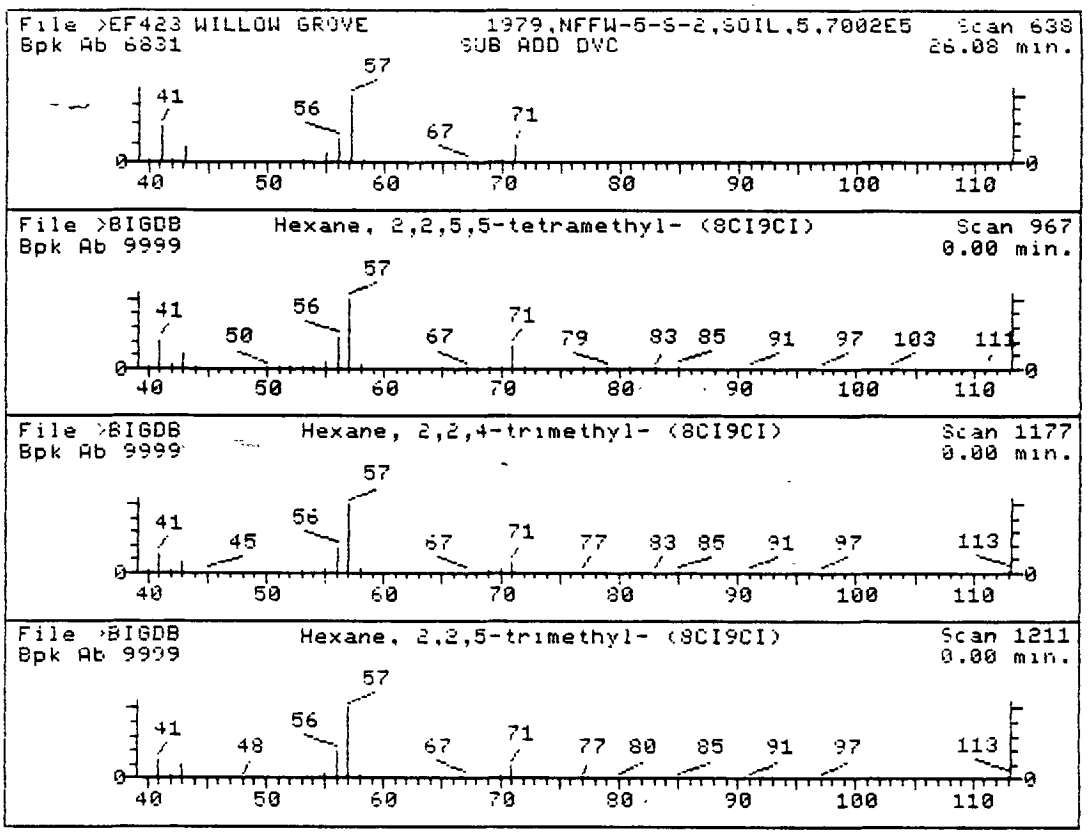
Retention time = 24.33

Area = 103913.0 Tentative Concentration is 47.00

1. Hexane, 2,5-dimethyl- (8CI9CI) 114 C8H18
2. 2(3H)-Furanone, dihydro-5,5-dimethyl- (8CI9CI) 114 C6H10O2
3. 2-Hexene, 5,5-dimethyl-, (Z)- (9CI) 112 C8H16
4. Heptane, 2-methyl- (8CI9CI) 114 C8H18

Sample file: >EF423 Spectrum #: 593
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	64*	592132	8819	"BIGDB	55	35	2	0	99	23	28	41
2.	25*	3123975	8737	"BIGDB	23	83	3	0	65	48	7	12
3.	20*	39761610	1208	"BIGDB	23	51	2	0	82	54	5	13
4.	20*	592278	8820	"BIGDB	32	61	2	0	74	52	5	15



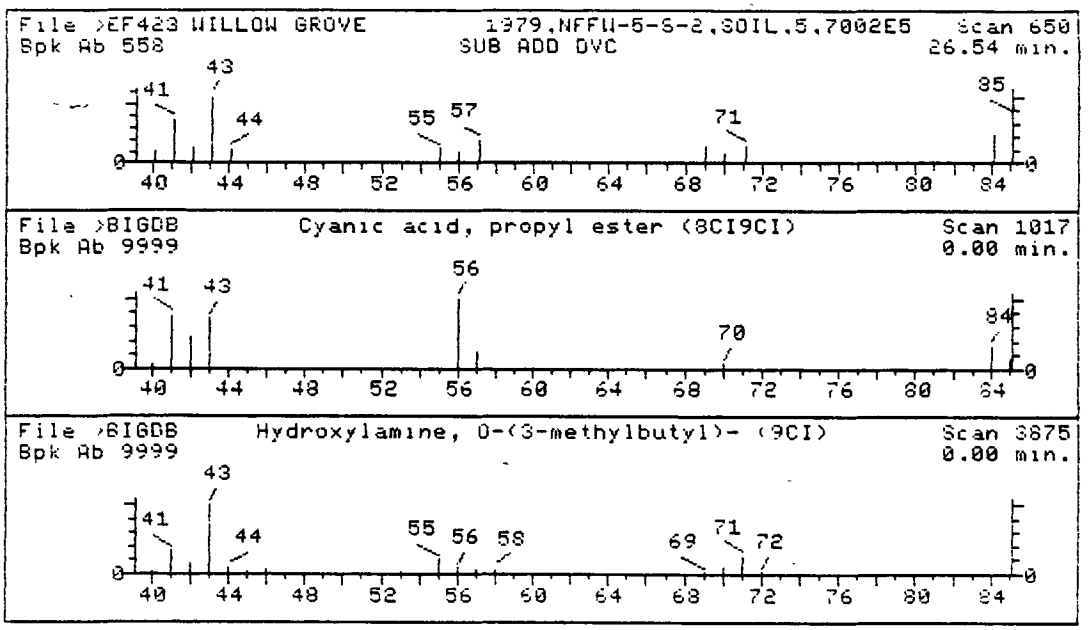
Retention time = 26.08

Area = 320976.0 Tentative Concentration is 150.00

1.	Hexane, 2,2,5,5-tetramethyl- (8CI9CI)	142	C10H22
2.	Hexane, 2,2,4-trimethyl- (8CI9CI)	128	C9H20
3.	Hexane, 2,2,5-trimethyl- (8CI9CI)	128	C9H20
4.	Methane, isocyanato- (9CI)	57	C2H3NO
5.	Heptane, 2,2-dimethyl- (8CI9CI)	128	C9H20
6.	Ethane, isocyanato- (9CI)	71	C3H5NO

Sample file: >EF423 Spectrum #: 638
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	70	1071814	967	"BIGDB	59	20	2	0	78	10	42	19
2.	60	16747265	1177	"BIGDB	36	41	1	0	95	13	30	13
3.	60	3522949	1211	"BIGDB	42	37	1	0	95	13	30	15
4.	38*	624839	948	"BIGDB	27	37	1	0	89	28	14	15
5.	35	1071267	1093	"BIGDB	37	42	2	0	100	26	14	12
6.	11*	109900	3880	"BIGDB	27	32	0	0	34	65	2	19



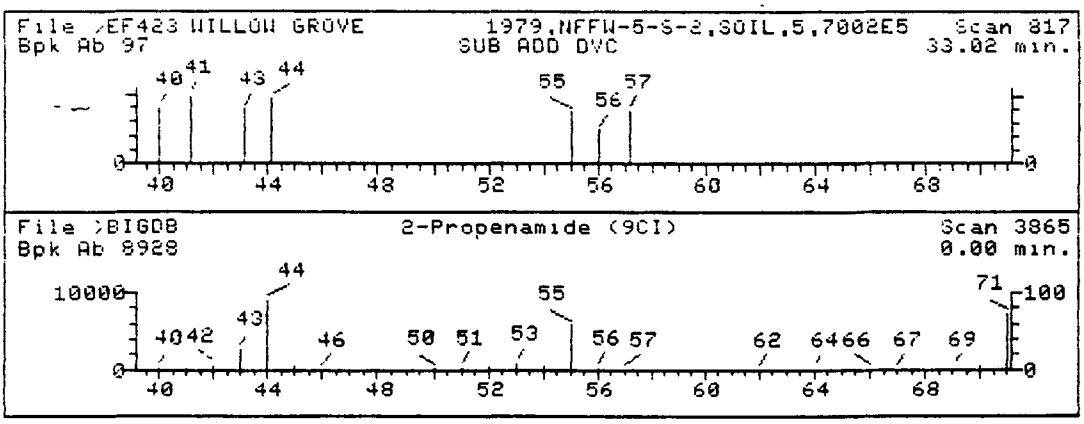
Retention time = 26.54 UNKNOWN

Area = 41400.00 Tentative Concentration is 19.00

1. Cyanic acid, propyl ester (8CI9CI) 85 C4H7NO
2. Hydroxylamine, O-(3-methylbutyl)- (9CI) 103 C5H13NO

Sample file: >EF423 Spectrum #: 650
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	25*	1768361	1017	"BIGDB	24	81	3	0	136	48	7	12
2.	20	19411655	3875	"BIGDB	37	44	2	0	100	51	5	12



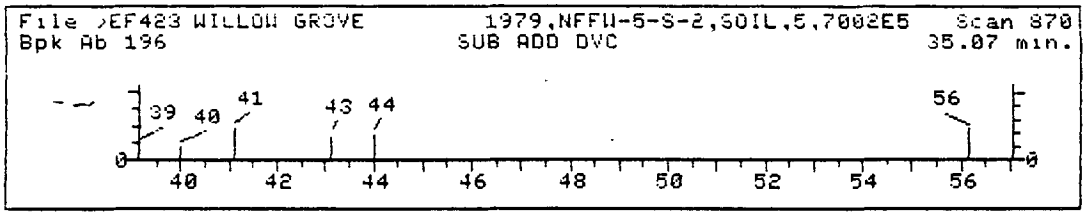
Retention time = 33.02 UNKNOWN

Area = 13022.00 Tentative Concentration is 6.00

1. 2-Propenamide (9CI) 71 C3H5NO

Sample file: >EF423 Spectrum #: 817
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	11*	79061	3865	"BIGDB	23	75	2	0	106	62	2	13



Retention time = 35.07 UNKNOWN

Area = 13452.00 Tentative Concentration is 6.00

Sample file: >EF423 Spectrum #: 870

No data base entries were retrieved.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW6S5

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: EA# 1780

Sample wt/vol: 5.0 (g/mL) G Lab File ID: EF424

Level: (low/med) LOW Date Received: 4/17/89

% Moisture: not dec. 11. Date Analyzed: 4/27/89

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

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	11.	U
74-83-9	Bromomethane	11.	U
75-01-4	Vinyl Chloride	11.	U
75-00-3	Chloroethane	11.	U
75-09-2	Methylene Chloride	6.	U
67-64-1	Acetone	11.	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	11.	U
71-55-6	1,1,1-Trichloroethane	6.	U
56-23-5	Carbon Tetrachloride	6.	U
108-05-4	Vinyl Acetate	11.	U
75-27-4	Bromodichloromethane	6.	U
78-87-5	1,2-Dichloropropane	6.	U
10061-01-5	cis-1,3-Dichloropropene	6.	U
79-01-6	Trichloroethene	6.	U
124-48-1	Dibromochloromethane	6.	U
79-00-5	1,1,2-Trichloroethane	6.	U
71-43-2	Benzene	6.	U
10061-02-6	trans-1,3-Dichloropropene	6.	U
75-25-2	Bromoform	6.	U
108-10-1	4-Methyl-2-Pentanone	11.	U
591-78-6	2-Hexanone	11.	U
127-18-4	Tetrachloroethene	6.	U
79-34-5	1,1,2,2-Tetrachloroethane	6.	U
108-88-3	Toluene	6.	U
108-90-7	Chlorobenzene	6.	U
100-41-4	Ethylbenzene	6.	U
100-42-5	Styrene	6.	U
1330-20-7	Xylene (total)	6.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

NFFW6S5

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: EA# 1780

Sample wt/vol: 5.0 (g/mL) G Lab File ID: EF424

Level: (low/med) LOW Date Received: 4/17/89

% Moisture: not dec. 11. Date Analyzed: 4/27/89

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. - -	UNKNOWN	10.60	8.	J
2. - -	UNKNOWN HYDROCARBON	21.76	7.	J
3.				
4.				
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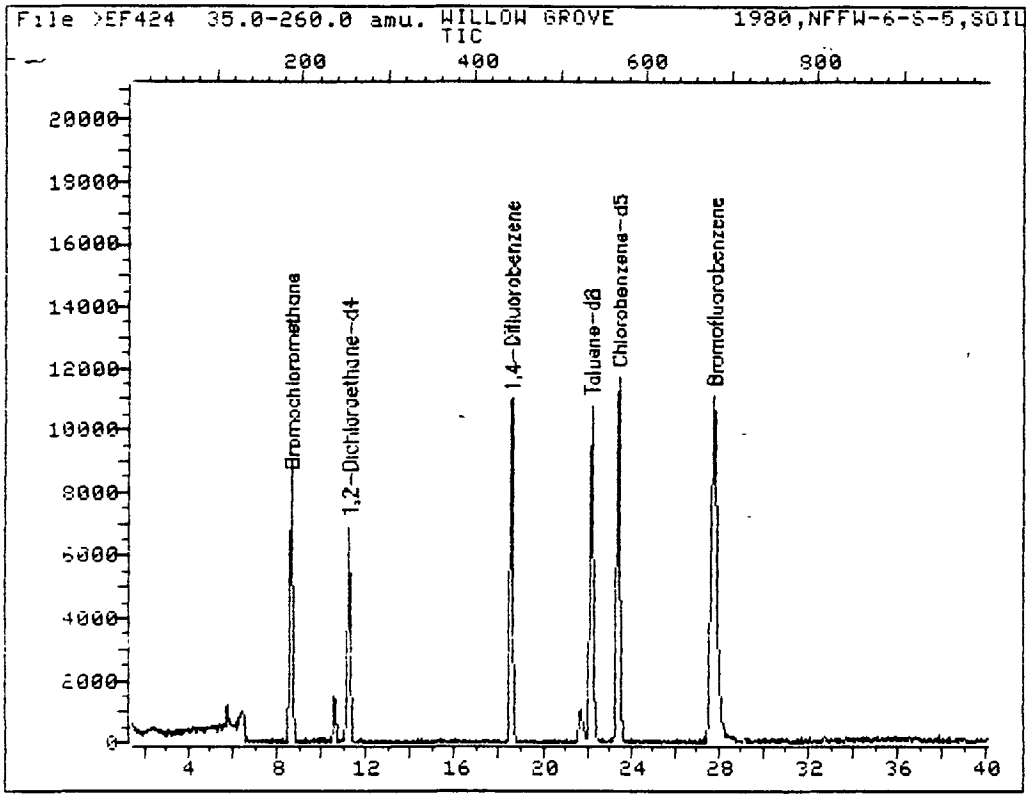
TOTAL ION CHROMATOGRAM



Data File: >EF424::D2 Quant Output File: ^EF424::QT
Name: WILLOW GROVE
Misc: 1980,NFFW-6-S-5,SOIL,5,7002E5

Id File: EVOAS::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 12:28

Operator ID: CARL
Quant Time: 890427 15:38
Injected at: 890427 14:57

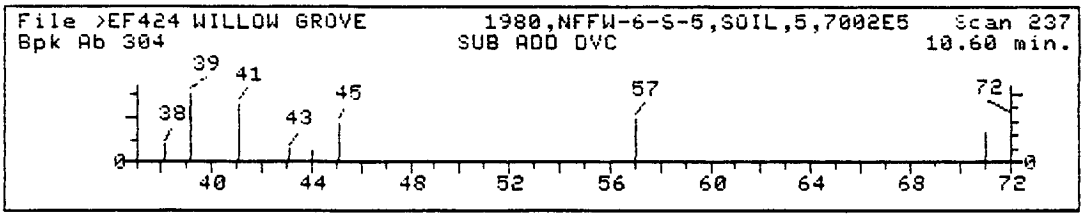
QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890427 15:38
Output File: ^EF424::QT Injected at: 890427 14:57
Data File: >EF424::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1980,NFFW-6-S-5,SOIL,5,7002E5

ID File: EVOAS::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 12:28

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.62	128.0	11931	50.00	UG/KG	90
13)	1,2-Dichloroethane-d4	11.22	65.0	30772	54.79	UG/KG	80
15)	*1,4-Difluorobenzene	18.54	114.0	42180	50.00	UG/KG	90
29)	*Chlorobenzene-d5	23.43	117.0	37756	50.00	UG/KG	98
35)	Toluene-d8	22.19	98.0	42984	51.82	UG/KG	97
40)	Bromofluorobenzene	27.77	95.0	39028	49.87	UG/KG	78

* Compound is ISTD

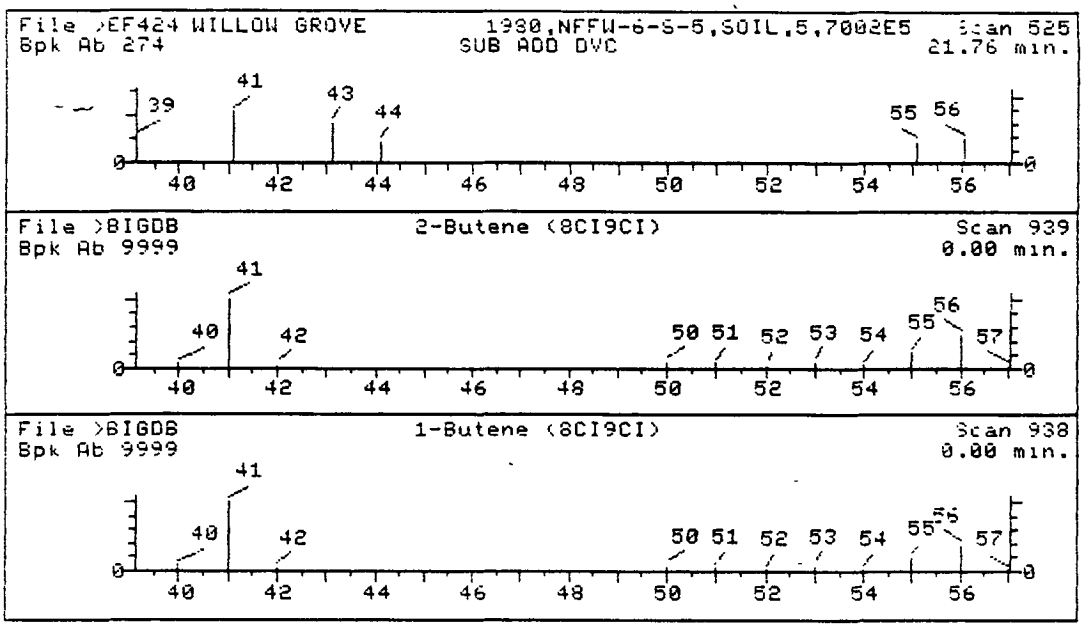


Retention time = 10.60 VNKNOWN

Area = 12350.00 Tentative Concentration is 7.00

Sample file: >EF424 Spectrum #: 237

No data base entries were retrieved.



Retention time = 21.76 UNKNOWN HYDROCARBON

Area = 15582.00 Tentative Concentration is 6.00

1. 2-Butene (8CI9CI) 56 C4H8
2. 1-Butene (8CI9CI) 56 C4H8

Sample file: >EF424 Spectrum #: 525
Search speed: 2 Tilting option: S No. of ion ranges searched: 45

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	25*	107017	939	"BIGDB	21	60	2	0	76	49	7	13
2.	25*	106989	938	"BIGDB	20	59	2	0	76	49	7	13

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW7S4 DL

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: EA # 1916

Sample wt/vol: 1.0 ~~5.0~~ (g/mL) G Lab File ID: EF441

Level: (low/med) LOW Date Received: 4/21/89

% Moisture: not dec. 17. Date Analyzed: 4/28/89

Column: (pack/cap) PACK Dilution Factor: 5.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	60.	U
74-83-9	Bromomethane	60.	U
75-01-4	Vinyl Chloride	60.	U
75-00-3	Chloroethane	60.	U
75-09-2	Methylene Chloride	2300.	E
67-64-1	Acetone	190.	
75-15-0	Carbon Disulfide	30.	U
75-35-4	1,1-Dichloroethene	30.	U
75-34-3	1,1-Dichloroethane	30.	U
540-59-0	1,2-Dichloroethene (total)	30.	U
67-66-3	Chloroform	30.	U
107-06-2	1,2-Dichloroethane	30.	U
78-93-3	2-Butanone	88.	
71-55-6	1,1,1-Trichloroethane	30.	U
56-23-5	Carbon Tetrachloride	30.	U
108-05-4	Vinyl Acetate	60.	U
75-27-4	Bromodichloromethane	30.	U
78-87-5	1,2-Dichloropropane	30.	U
10061-01-5	cis-1,3-Dichloropropene	30.	U
79-01-6	Trichloroethene	30.	U
124-48-1	Dibromochloromethane	30.	U
79-00-5	1,1,2-Trichloroethane	30.	U
71-43-2	Benzene	30.	U
10061-02-6	trans-1,3-Dichloropropene	30.	U
75-25-2	Bromoform	30.	U
108-10-1	4-Methyl-2-Pentanone	60.	U
591-78-6	2-Hexanone	60.	U
127-18-4	Tetrachloroethene	30.	U
79-34-5	1,1,2,2-Tetrachloroethane	30.	U
108-88-3	Toluene	83.	
108-90-7	Chlorobenzene	30.	U
100-41-4	Ethylbenzene	160.	
100-42-5	Styrene	30.	U
1330-20-7	Xylene (total)	1500.	

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

NFFW7S4 DL

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: EA#1915

Sample wt/vol: 5.0 (g/mL) G Lab File ID: EF441

Lev l: (low/med) LOW Date Received: 4/21/89

% Moisture: not dec. 17. Date Analyzed: 4/28/89

Column: (pack/cap) PACK Dilution Factor: 5.00

Numb r TICs found: 12

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN HYDROCARBON	20.29	40.	J
2.	- -	UNKNOWN	21.76	30.	J
3.	7145-20-2	2-Hexene, 2,3-dimethyl- (8CI	23.16	40.	J
4.	- -	UNKNOWN C10H16	23.86	200.	J
5.	69687-85-0	2-Cyclopenten-1-one, 3-amino	24.94	300.	J
6.	4926-78-7	Cyclohexane, 1-ethyl-4-methy	26.50	200.	J
7.	- -	UNKNOWN C9H18	27.27	300.	J
8.	7575-82-8	Tricyclo[3.3.1.13,7]decane,	28.36	300.	J
9.	- -	UNKNOWN C9H18	30.77	100.	J
10.	- -	UNKNOWN	31.39	500.	J
11.	20536-41-8	Bicyclo[2.2.1]heptane, 2,2,3	33.37	500.	J
12.	- -	UNKNOWN	35.31	3000.	J
13.					
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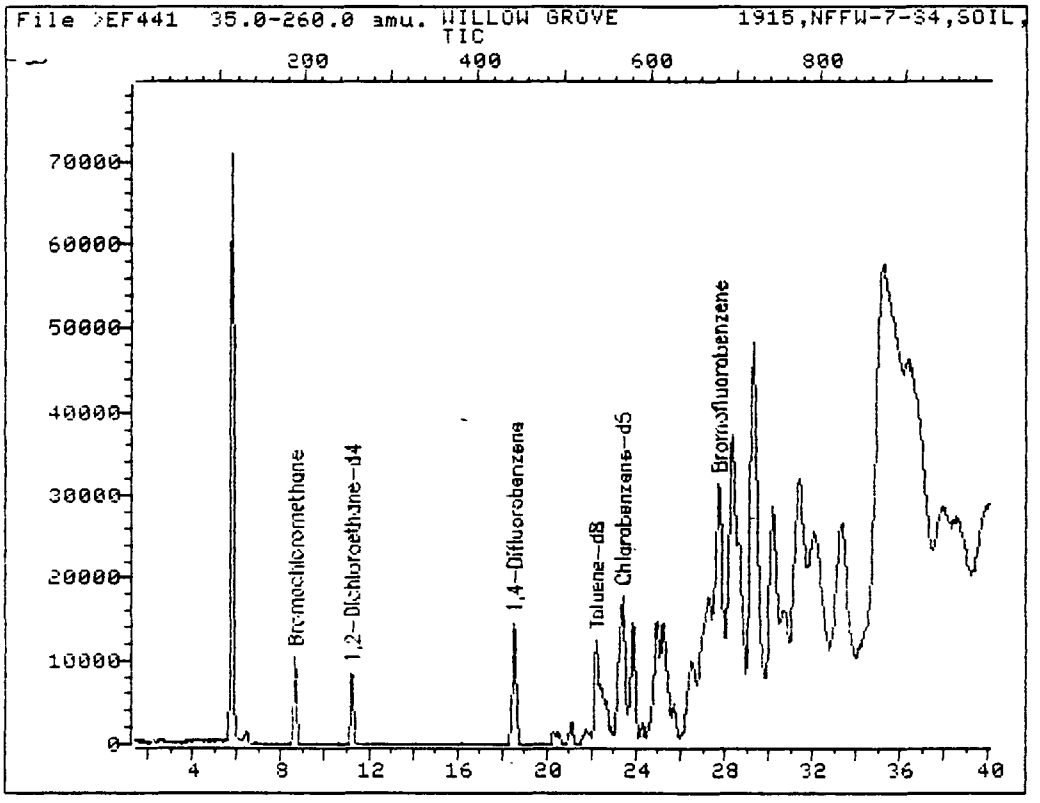
TOTAL ION CHROMATOGRAM



Data File: >EF441::D2 Quant Output File: ^EF441::QT
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,~~P~~ 1gm,7002E5

Id File: EVOAS::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 12:11

Operator ID: CARL
Quant Time: 890428 19:01
Injected at: 890428 18:20

QUANT REPORT

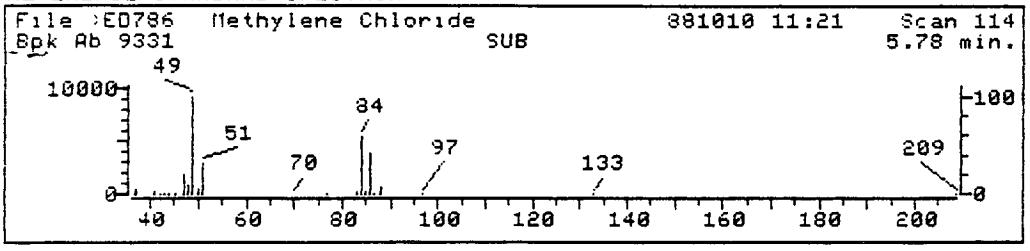
Operator ID: CARL Quant Rev: 6 Quant Time: 890428 19:01
Output File: ^EF441::QT Injected at: 890428 18:20
Data File: >EF441::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,5,7002E5

ID File: EVOAS::8D
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 12:11

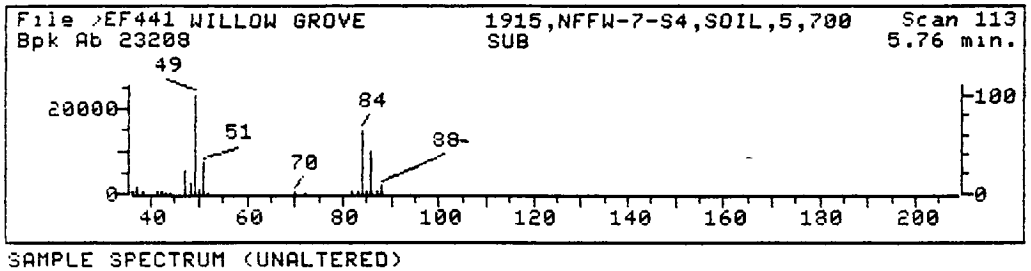
	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.63	128.0	14282	50.00	UG/KG	91
6)	Methylene Chloride	5.76	84.0	132924	379.53	UG/KG	87
7)	Acetone	6.45	43.0	5865	31.26	UG/KG	92
13)	1,2-Dichloroethane-d4	11.22	65.0	35968	49.58	UG/KG	77
15)	*1,4-Difluorobenzene	18.55	114.0	51304	50.00	UG/KG	90
16)	2-Butanone	11.30	72.0	1002	14.58	UG/KG	91
29)	*Chlorobenzene-d5	23.39	117.0	42501	50.00	UG/KG	96
34)	Toluene	22.39	92.0	6915	13.86	UG/KG	93
35)	Toluene-d8	22.19	98.0	46992	51.09	UG/KG	93
37)	Ethylbenzene	25.41	106.0	9167	27.09	UG/KG	99
39)	Xylene (total)	29.33	106.0	117245M	249.19	UG/KG	90
40)	Bromofluorobenzene	27.74	95.0	50849M	57.25	UG/KG	74

* Compound is ISTD

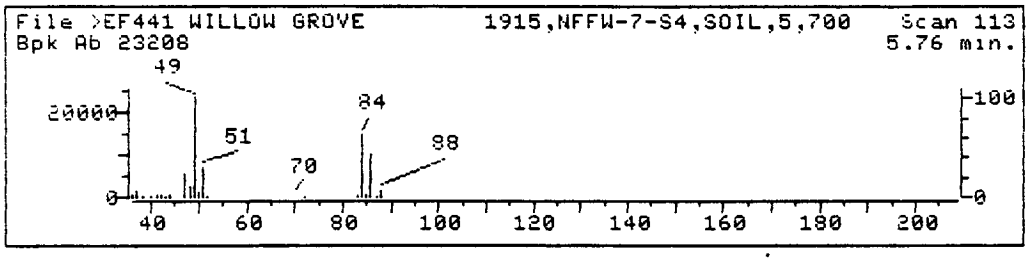
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



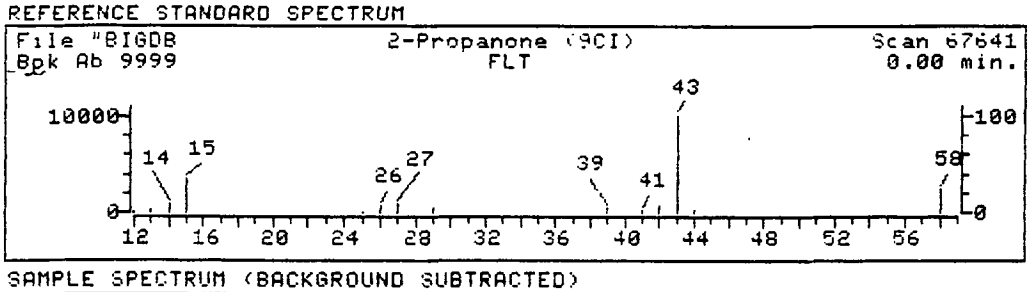
SAMPLE SPECTRUM (UNALTERED)



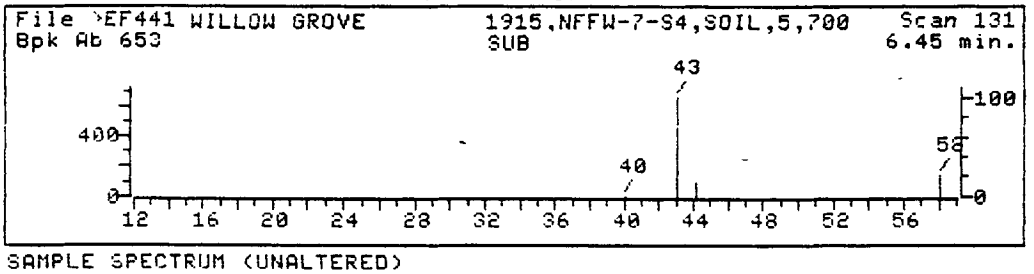
Data File: >EF441::D2 Quant Output File: ^EF441::QT
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,5,7002E5
Quant Time: 890428 19:01 Quant ID File: EVOAS::BD
Injected at: 890428 18:20 Last Calibration: 890428 12:11

Compound No: 6
Compound Name: Methylene Chloride
Scan Number: 113
Retention Time: 5.76 min.
Quant Ion: 84.0
Area: 132924
Concentration: 379.53 UG/KG
q-value: 87

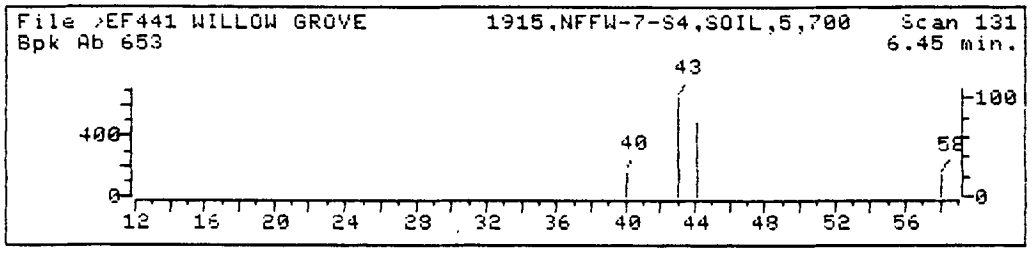
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



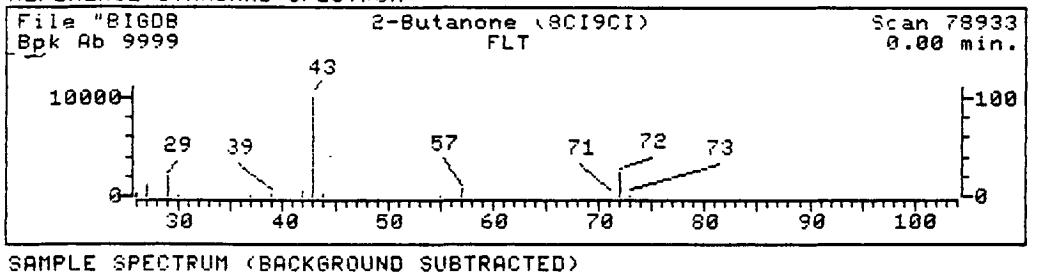
SAMPLE SPECTRUM (UNALTERED)



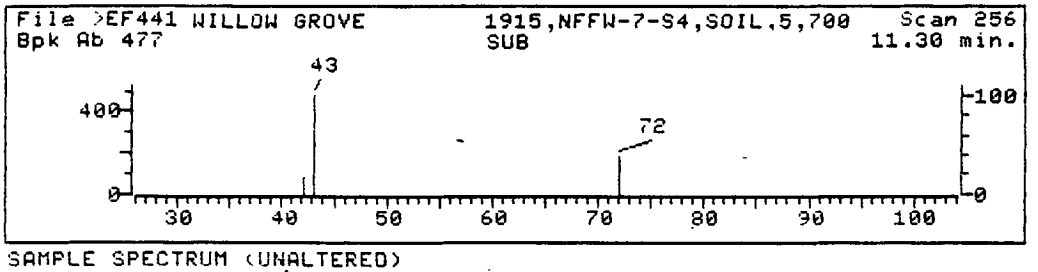
Data File: >EF441::D2 Quant Output File: ^EF441::QT
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,5,7002E5
Quant Time: 890428 19:01 Quant ID File: EVOAS::BD
Injected at: 890428 18:20 Last Calibration: 890428 12:11

Compound No: 7
Compound Name: Acetone
Scan Number: 131
Retention Time: 6.45 min.
Quant Ion: 43.0
Area: 5865
Concentration: 31.26 UG/KG
q-value: 92

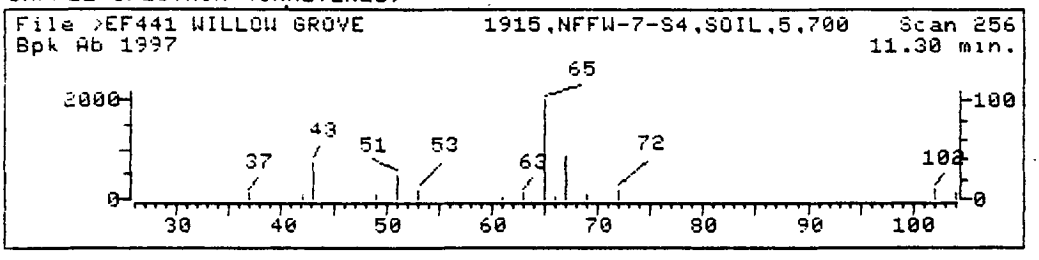
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



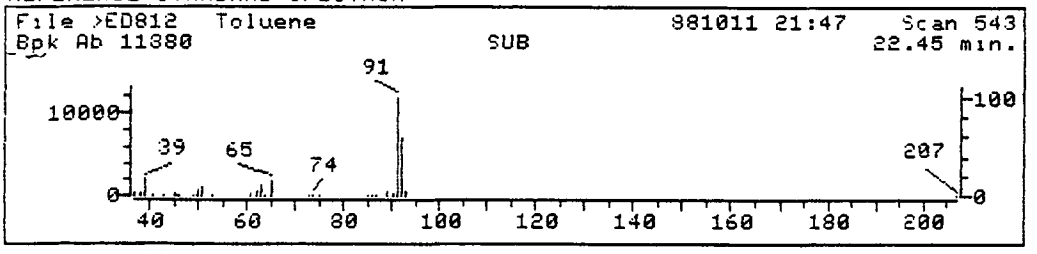
SAMPLE SPECTRUM (UNALTERED)



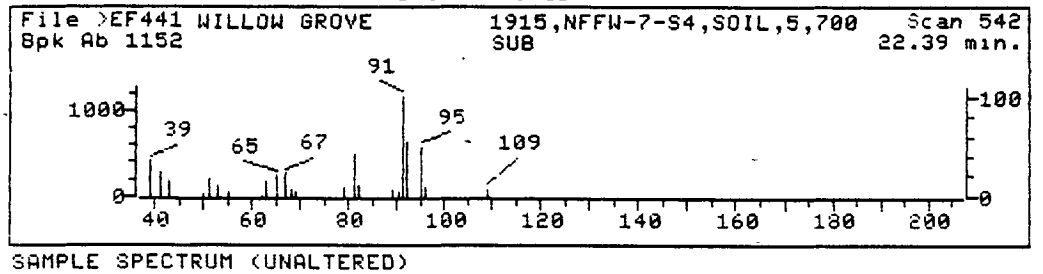
Data File: >EF441::D2 Quant Output File: ^EF441::QT
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,5,7002E5
Quant Time: 890428 19:01 Quant ID File: EVOAS::BD
Injected at: 890428 18:20 Last Calibration: 890428 12:11

Compound No: 16
Compound Name: 2-Butanone
Scan Number: 256
Retention Time: 11.30 min.
Quant Ion: 72.0
Area: 1002
Concentration: 14.58 UG/KG
q-value: 91

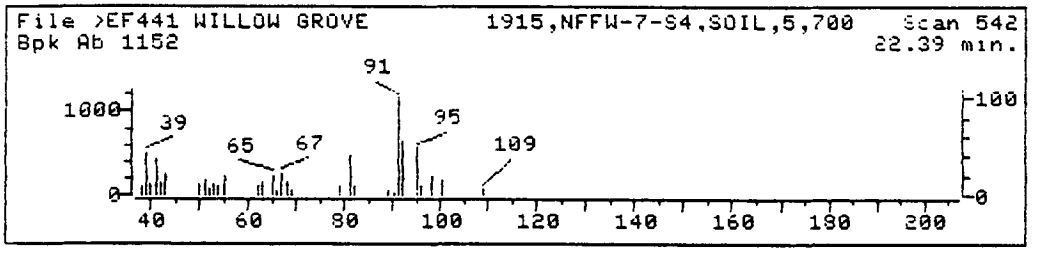
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



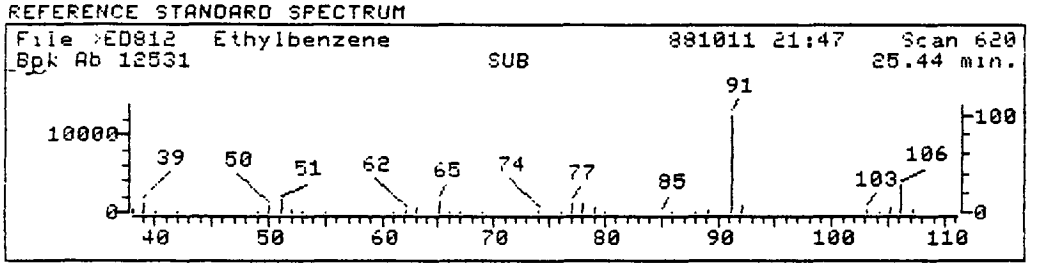
SAMPLE SPECTRUM (UNALTERED)



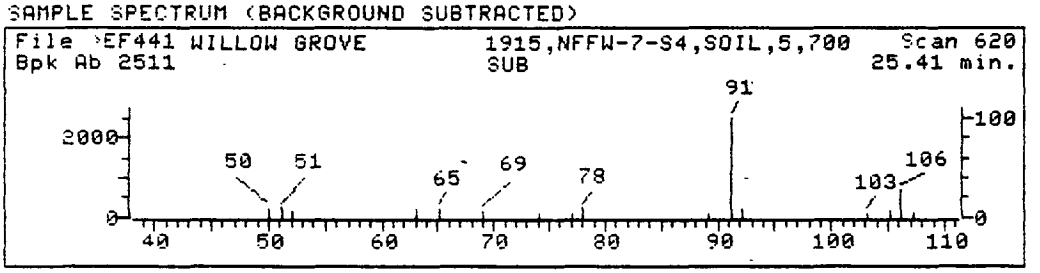
Data File: >EF441::D2 Quant Output File: ^EF441::QT
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,5,7002E5
Quant Time: 890428 19:01 Quant ID File: EVOAS::BD
Injected at: 890428 18:20 Last Calibration: 890428 12:11

Compound No: 34
Compound Name: Toluene
Scan Number: 542
Retention Time: 22.39 min.
Quant Ion: 92.0
Area: 6915
Concentration: 13.86 UG/KG
q-value: 93

REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



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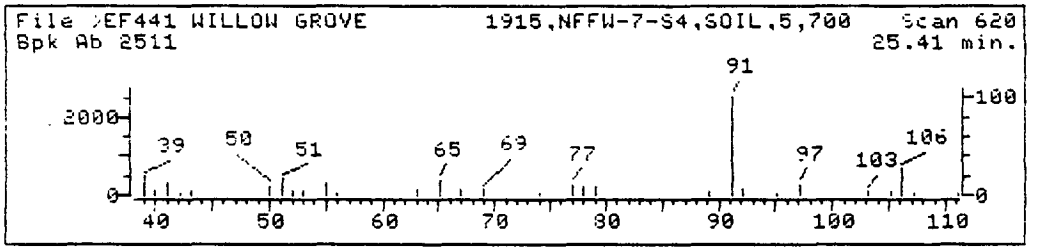
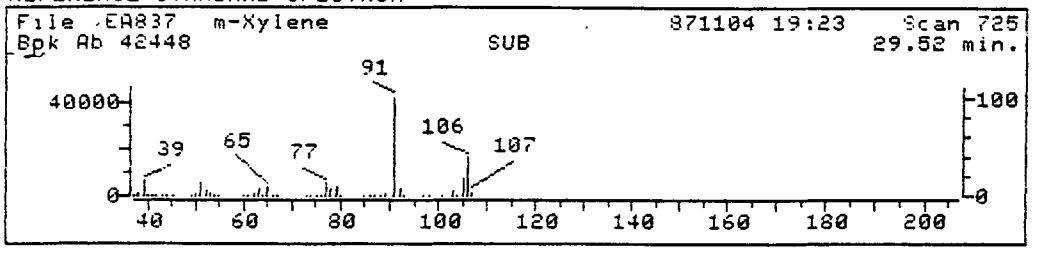


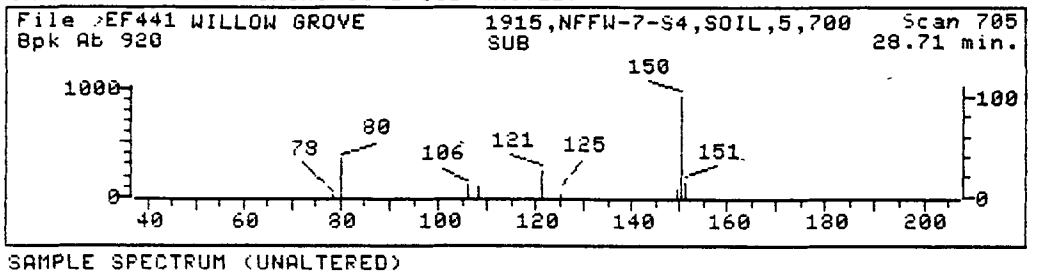
Data File: >EF441::D2 Quant Output File: ^EF441::QT
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,5,7002E5
Quant Time: 890428 19:01 Quant ID File: EVOAS::BD
Injected at: 890428 18:20 Last Calibration: 890428 12:11

Compound No: 37
Compound Name: Ethylbenzene
Scan Number: 620
Retention Time: 25.41 min.
Quant Ion: 106.0
Area: 9167
Concentration: 27.09 UG/KG
q-value: 99

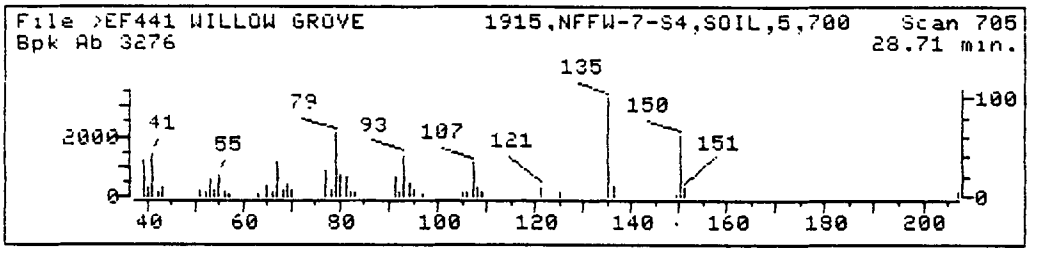
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



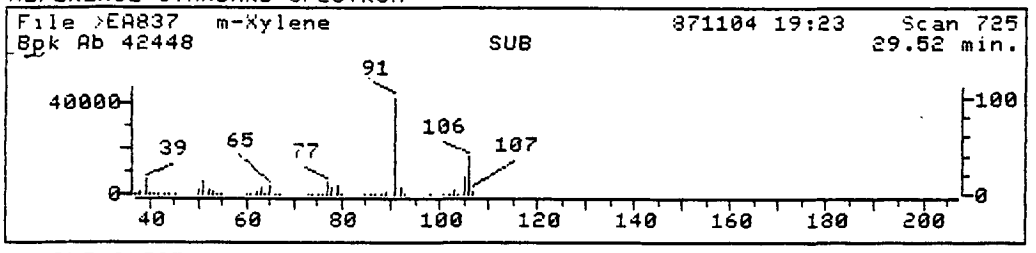
SAMPLE SPECTRUM (UNALTERED)



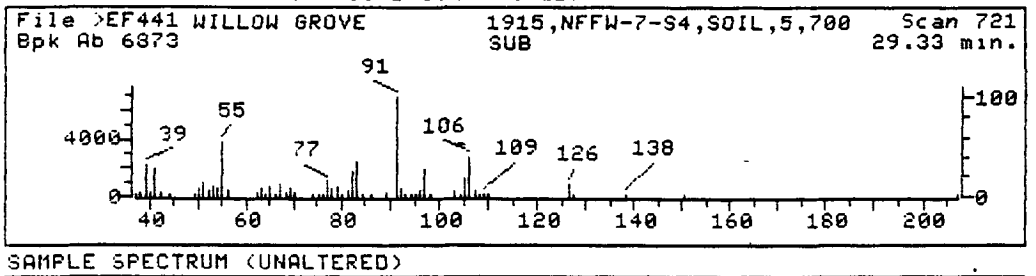
Data File: >EF441::D2 Quant Output File: ^EF441::QT
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,5,7002E5
Quant Time: 890428 19:01 Quant ID File: EVOAS::BD
Injected at: 890428 18:20 Last Calibration: 890428 12:11

Compound No: 39
Compound Name: Xylene (total)
Scan Number: 705
Retention Time: 28.71 min.
Quant Ion: 106.0
Area: 3748
Concentration: 7.97 UG/KG
q-value: 75

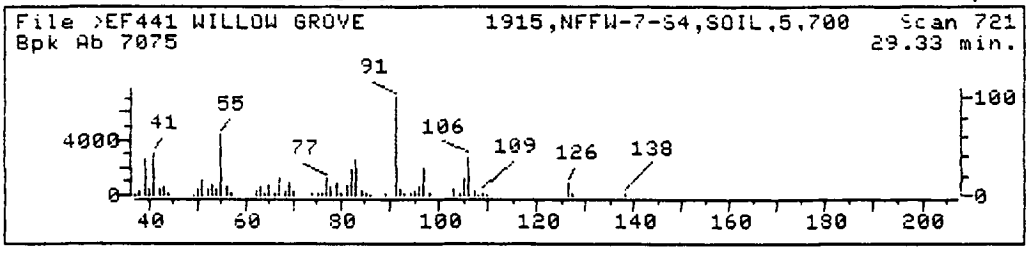
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



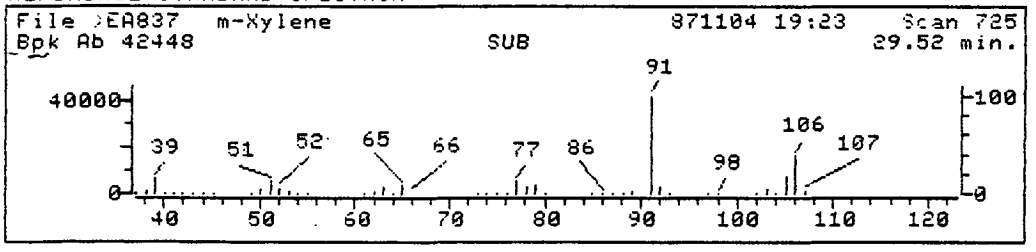
SAMPLE SPECTRUM (UNALTERED)



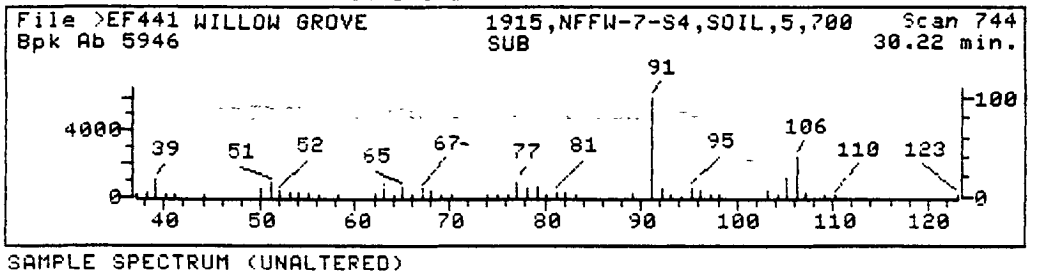
Data File: >EF441::D2 Quant Output File: ^EF441::QT
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,5,7002E5
Quant Time: 890428 19:01 Quant ID File: EVOAS::BD
Injected at: 890428 18:20 Last Calibration: 890428 12:11

Compound No: 39
Compound Name: Xylene (total)
Scan Number: 721
Retention Time: 29.33 min.
Quant Ion: 106.0
Area: 56810
Concentration: 120.74 UG/KG
q-value: 92

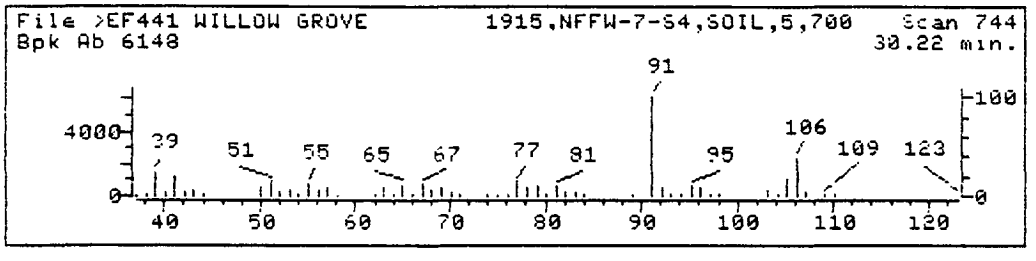
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

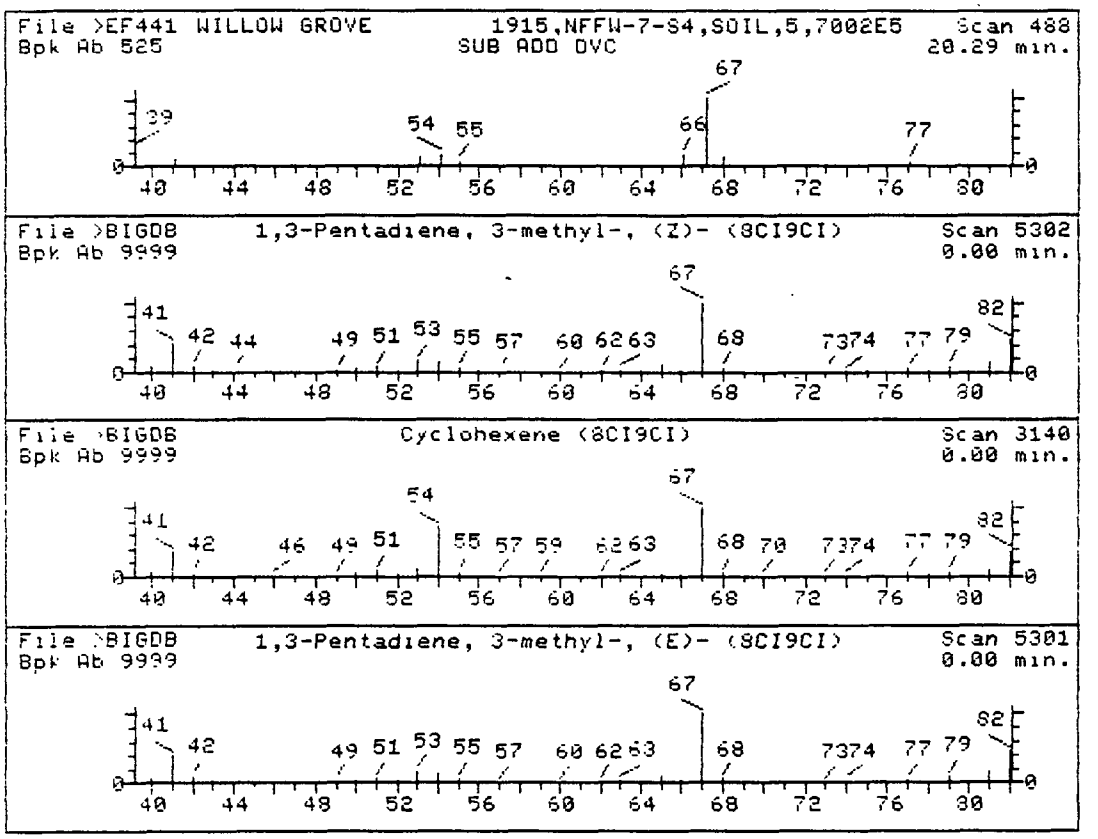


SAMPLE SPECTRUM (UNALTERED)



Data File: >EF441::D2 Quant Output File: ^EF441::QT
Name: WILLOW GROVE
Misc: 1915,NFFW-7-S4,SOIL,5,7002E5
Quant Time: 890428 19:01 Quant ID File: EVOAS::BD
Injected at: 890428 18:20 Last Calibration: 890428 12:11

Compound No: 39
Compound Name: Xylene (total)
Scan Number: 744
Retention Time: 30.22 min.
Quant Ion: 106.0
Area: 55538
Concentration: 118.04 UG/KG
q-value: 90



Retention time = 20.29 UNKNOWN HYDROCARBON

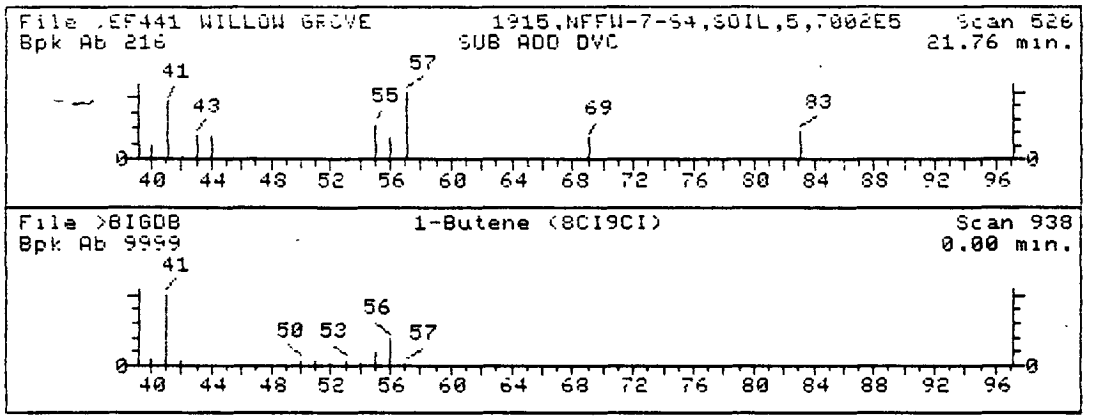
Area = 20329.00 Tentative Concentration is 6.00

1. 1,3-Pentadiene, 3-methyl-, (Z)- (8CI9CI) 82 C6H10
2. Cyclohexene (8CI9CI) 82 C6H10
3. 1,3-Pentadiene, 3-methyl-, (E)- (8CI9CI) 82 C6H10
4. Cyclobutane, ethenyl- (9CI) 82 C6H10
5. 1,5-Hexadiene (8CI9CI) 82 C6H10

Sample file: >EF441 Spectrum #: 488
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	42*	2787453	5302	"BIGDB	28	64	3	0	100	23	17	13
2.	42*	110838	3140	"BIGDB	27	63	3	0	100	23	17	13
3.	42*	2787431	5301	"BIGDB	28	64	3	0	100	23	17	13
4.	42*	2597491	754	"BIGDB	27	66	3	0	100	23	17	13

5.	35*	592427	3136	"BIGDB	24	66	3	0	120	30	14	12



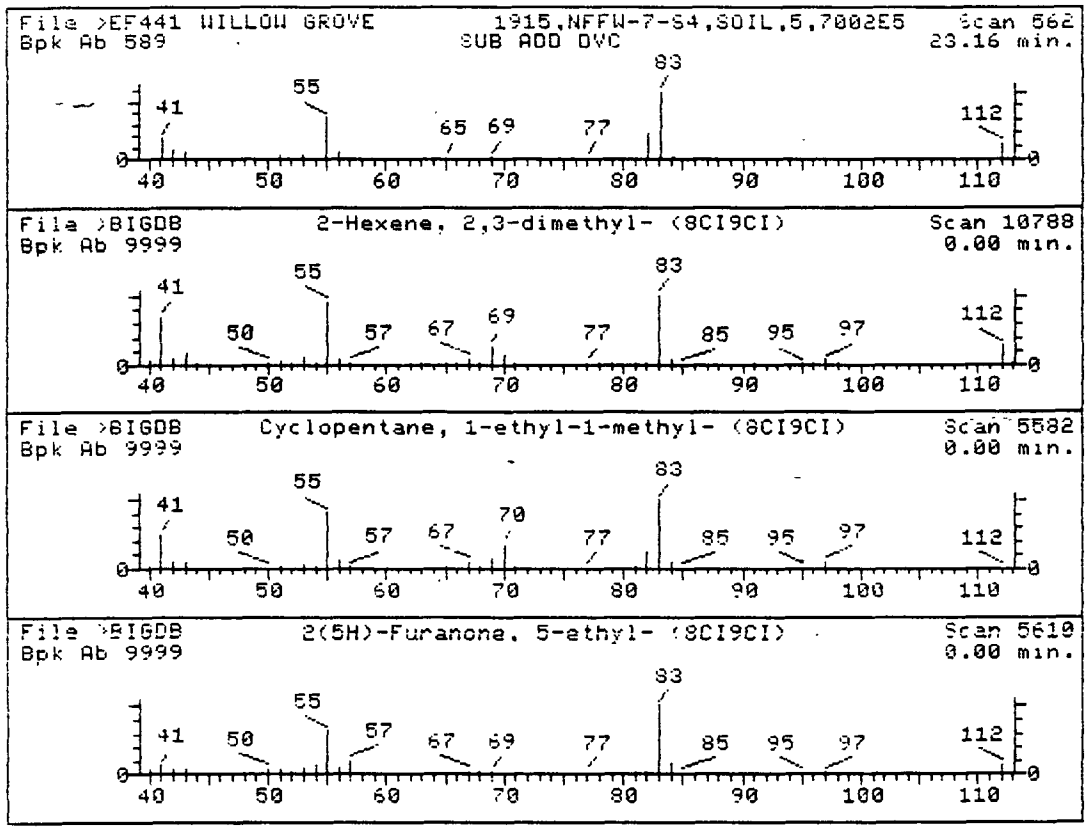
Retention time = 21.76 UNKNOWN

Area = 32833.00 Tentative Concentration is 5.00

1. 1-Butene (8CI9CI) 56 C4H8

Sample file: >EF441 Spectrum #: 526
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	15*	106989	938	"BIGDB	25	54	2	0	85	59	3	14



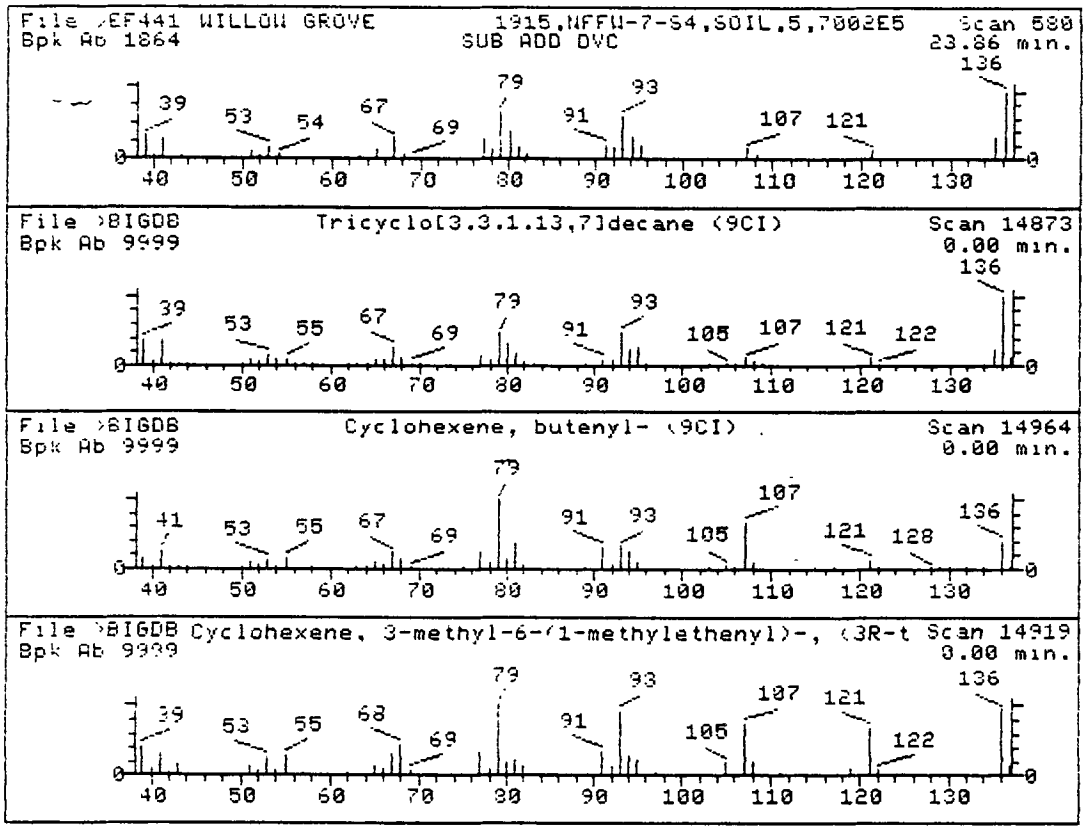
Retention time = 23.16

Area = 46202.00 Tentative Concentration is 7.00

1. 2-Hexene, 2,3-dimethyl- (8CI9CI)	112	C8H16
2. Cyclopentane, 1-ethyl-1-methyl- (8CI9CI)	112	C8H16
3. 2(5H)-Furanone, 5-ethyl- (8CI9CI)	112	C6H8O2
4. 1-Azabicyclo[3.1.0]hexane (8CI9CI)	83	C5H9N
5. 4H-1,2,4-Triazole, 4-methyl- (8CI9CI)	83	C3H5N3
6. 3-Hexene, 2,2-dimethyl-, (Z)- (8CI9CI)	112	C8H16
7. Pyridine, 2,3,4,5-tetrahydro- (8CI9CI)	83	C5H9N

Sample file: >EF441 Spectrum #: 562
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IU
1.	42*	7145202	10788	"BIGDB	40	54	3	0	67	21	17	13
2.	42*	16747505	5582	"BIGDB	26	78	3	0	76	23	17	13
3.	36*	2407434	5610	"BIGDB	21	87	2	0	98	27	14	13
4.	26*	285767	5336	"BIGDB	25	54	2	0	62	44	8	14
5.	25*	10570408	5567	"BIGDB	22	53	2	0	100	48	7	13
6.	25*	690926	10765	"BIGDB	22	77	3	0	62	47	7	12
7.	15*	505180	5562	"BIGDB	30	63	3	0	62	58	3	13



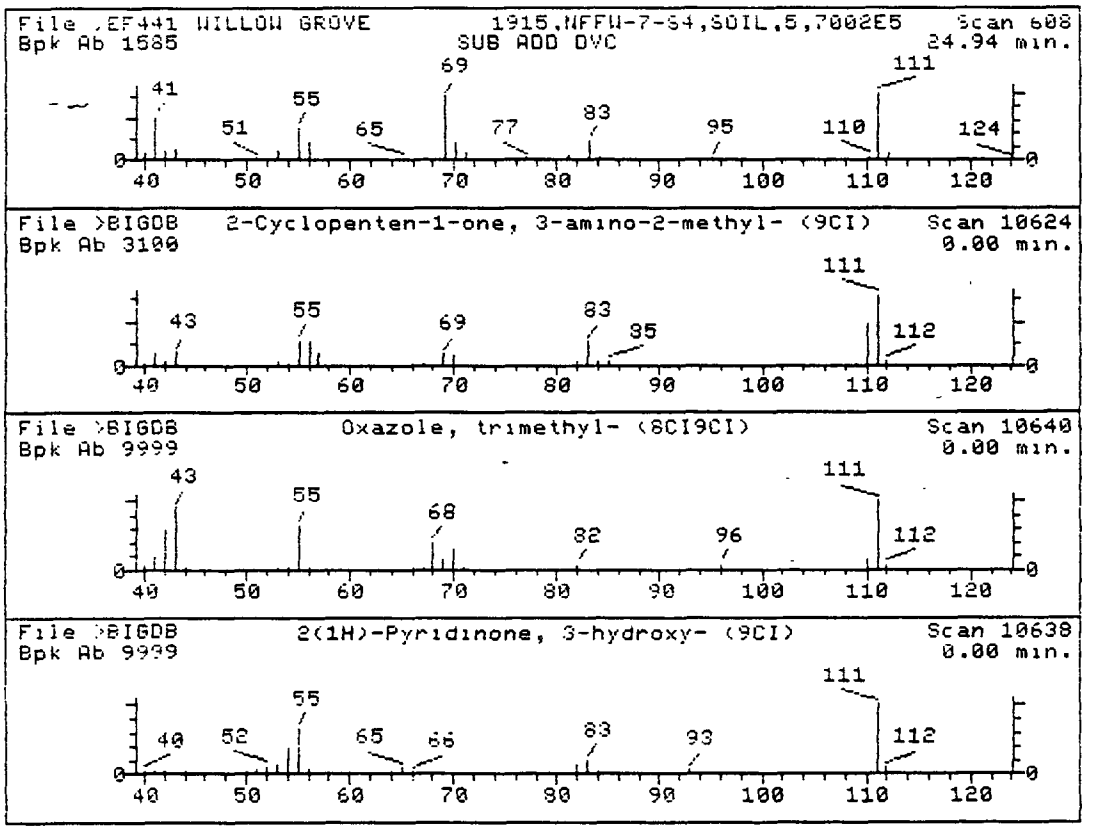
Retention time = 23.86 UNKNOWN

Area = 165506.0 Tentative Concentration is 26.00

1. Tricyclo[3.3.1.13,7]decane (9CI) 136 C10H16
2. Cyclohexene, butenyl- (9CI) 136 C10H16
3. Cyclohexene, 3-methyl-6-(1-methylethenyl)-, (3R-trans)- (9CI) 136 C10H16
4. Bicyclo[3.3.1]non-2-en-9-one (8CI9CI) 136 C9H12O
5. 2,5-Methano-1H-indene, octahydro- (9CI) 136 C10H16
6. Cyclopentane, 2-methyl-1-methylene-3-(1-methylethenyl)- (9CI) 136 C10H16
7. 1,3-Cyclohexadiene, 1,5,5,6-tetramethyl- (8CI9CI) 136 C10H16

Sample file: >EF441 Spectrum #: 580
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	86*	281232	14873	"BIGDB	81	40	1	0	95	6	59	77
2.	42*	74664145	14964	"BIGDB	43	70	3	0	199	24	17	13
3.	36*	5113871	14919	"BIGDB	56	74	3	0	68	34	12	19
4.	31*	4844115	14918	"BIGDB	43	73	2	0	69	31	12	14
5.	30*	19026949	14836	"BIGDB	30	56	0	0	77	46	10	22
6.	30*	56710839	14959	"BIGDB	30	82	3	0	158	31	12	13



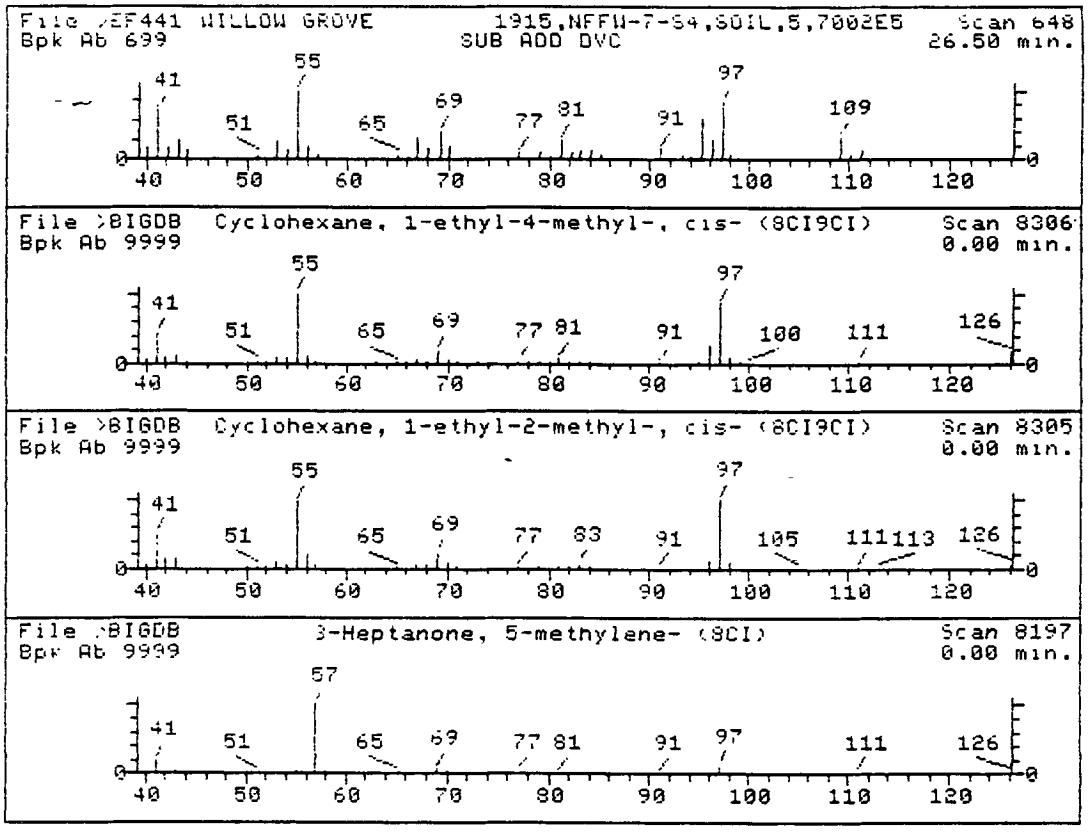
Retention time = 24.94

Area = 310044.0 Tentative Concentration is 48.00

1. 2-Cyclopenten-1-one, 3-amino-2-methyl- (9CI)	111	C6H9NO
2. Oxazole, trimethyl- (8CI9CI)	111	C6H9NO
3. 2(1H)-Pyridinone, 3-hydroxy- (9CI)	111	C5H5NO2
4. Benzenamine, 2-fluoro- (9CI)	111	C6H6FN
5. 2-Fluoroaniline	111	C6H6FN
6. 1,5-Heptadiene, 3,3-dimethyl-, (E)- (9CI)	124	C9H16
7. 1-Heptene, 6-methyl- (8CI9CI)	112	C8H16

Sample file: >EF441 Spectrum #: 608
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	26*	69687850	10624	"BIGDB	25	69	2	0	230	41	8	14
2.	20*	20662844	10640	"BIGDB	29	74	3	0	73	52	5	13
3.	15*	16867042	10638	"BIGDB	32	68	3	0	71	58	3	13
4.	15*	348549	10628	"BIGDB	27	65	3	0	100	56	3	13
5.	15*	441	171	PRIPOL	22	77	3	0	100	58	3	12
6.	11*	67682477	3416	"BIGDB	22	55	2	0	92	64	2	13
7.	11*	5026766	1087	"BIGDB	27	69	3	0	62	64	2	13



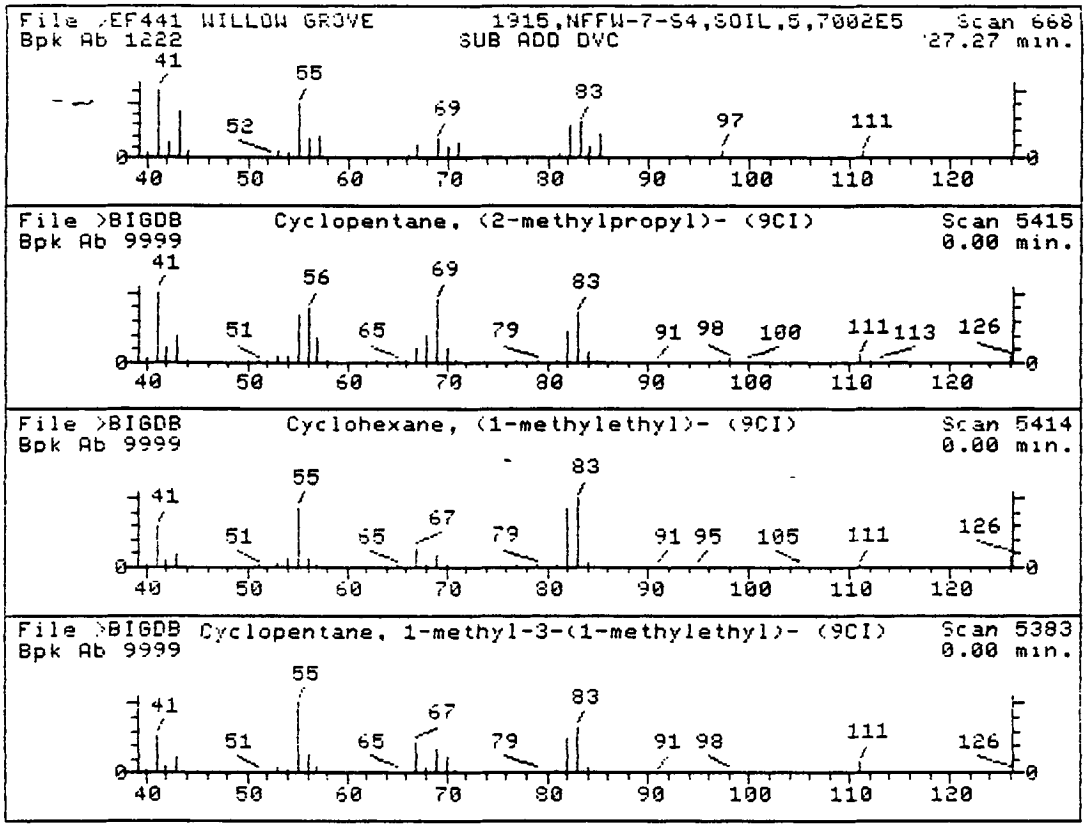
Retention time = 26.50

Area = 229591.0 Tentative Concentration is 35.00

1. Cyclohexane, 1-ethyl-4-methyl-, cis- (8CI9CI)	126	C9H18
2. Cyclohexane, 1-ethyl-2-methyl-, cis- (8CI9CI)	126	C9H18
3. 3-Heptanone, 5-methylene- (8CI)	126	C8H14O
4. Cyclopentane, butyl- (8CI9CI)	126	C9H18
5. 1,5-Hexadiene, 2,5-dimethyl- (8CI9CI)	110	C8H14
6. 1,4-Pentadiene, 2,3,3-trimethyl- (8CI9CI)	110	C8H14
7. 2-Hexene, 3,4,4-trimethyl- (9CI)	126	C9H18

Sample file: >EF441 Spectrum #: 648
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	30*	4926787	8306	"BIGDB	44	52	1	0	90	48	10	26
2.	28*	4923777	8305	"BIGDB	37	55	0	0	83	52	8	38
3.	25*	20690704	8197	"BIGDB	36	38	2	0	749	47	7	18
4.	21*	2040951	3710	"BIGDB	64	40	2	-1	32	58	5	30
5.	20*	627587	3267	"BIGDB	39	61	2	1	69	53	5	12
6.	20*	756025	7988	"BIGDB	42	67	1	1	50	53	5	17
7.	20*	53941198	8320	"BIGDB	30	63	2	0	83	53	5	14



Retention time = 27.27

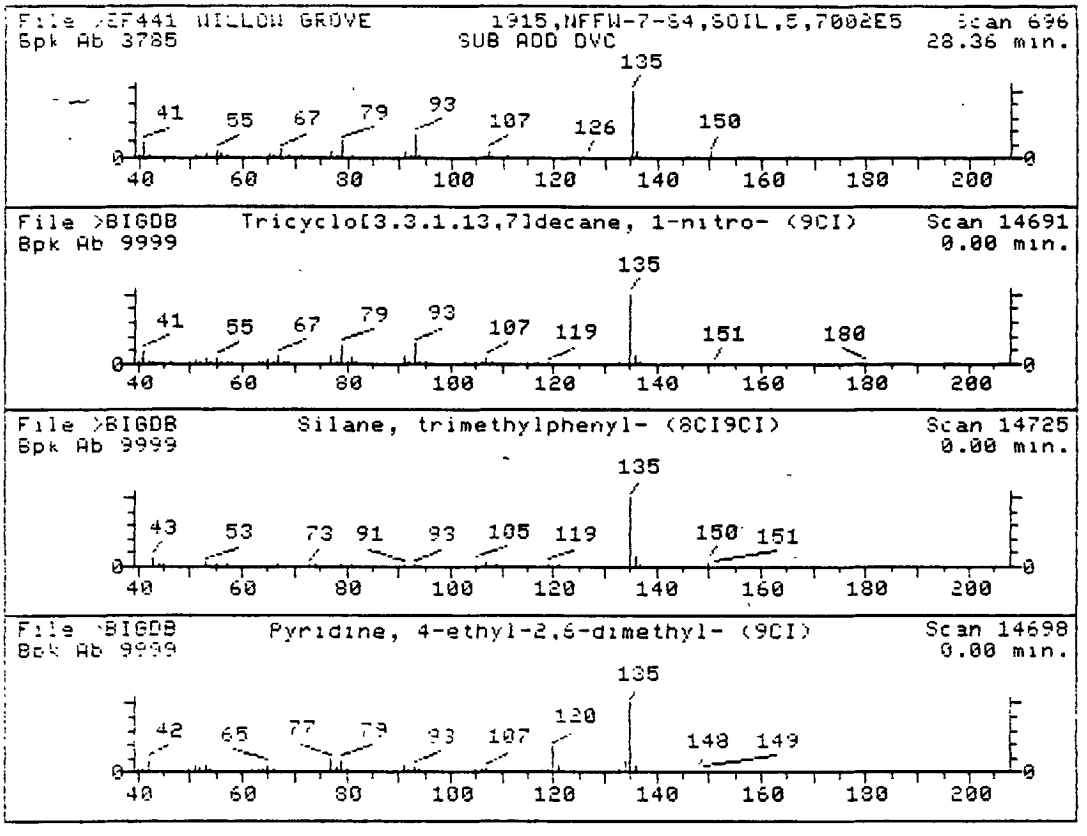
UNKNOWN HYDROCARBON

Area = 277619.0 Tentative Concentration is 43.00

1.	Cyclopentane, (2-methylpropyl)- (9CI)	126 C9H18
2.	Cyclohexane, (1-methylethyl)- (9CI)	126 C9H18
3.	Cyclopentane, 1-methyl-3-(1-methylethyl)- (9CI)	126 C9H18
4.	Cycloheptanone, 4-methyl-, (R)- (9CI)	126 C8H14O
5.	2-Octenal, (E)- (8CI9CI)	126 C8H14O
6.	Cyclopentane, 2-ethyl-1,1-dimethyl- (9CI)	126 C9H18
7.	Cycloheptanone, 3-methyl-, (R)- (9CI)	126 C8H14O

Sample file: >EF441 Spectrum #: 668
Search speed: 2 Tilting option: S No. of ion ranges searched: 50

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	33*	3788327	5415	"BIGDB	53	65	3	0	74	34	12	16
2.	30*	696297	5414	"BIGDB	38	65	1	0	52	44	12	21
3.	27*	53771883	5383	"BIGDB	36	66	3	0	80	38	10	13
4.	26*	13609591	5417	"BIGDB	51	60	3	0	80	45	8	14
5.	20*	2548870	3627	"BIGDB	31	89	3	0	75	52	5	13
6.	15*	54549803	1106	"BIGDB	26	83	3	0	130	60	3	13
7.	15*	13609580	5416	"BIGDB	27	88	3	0	76	57	3	13



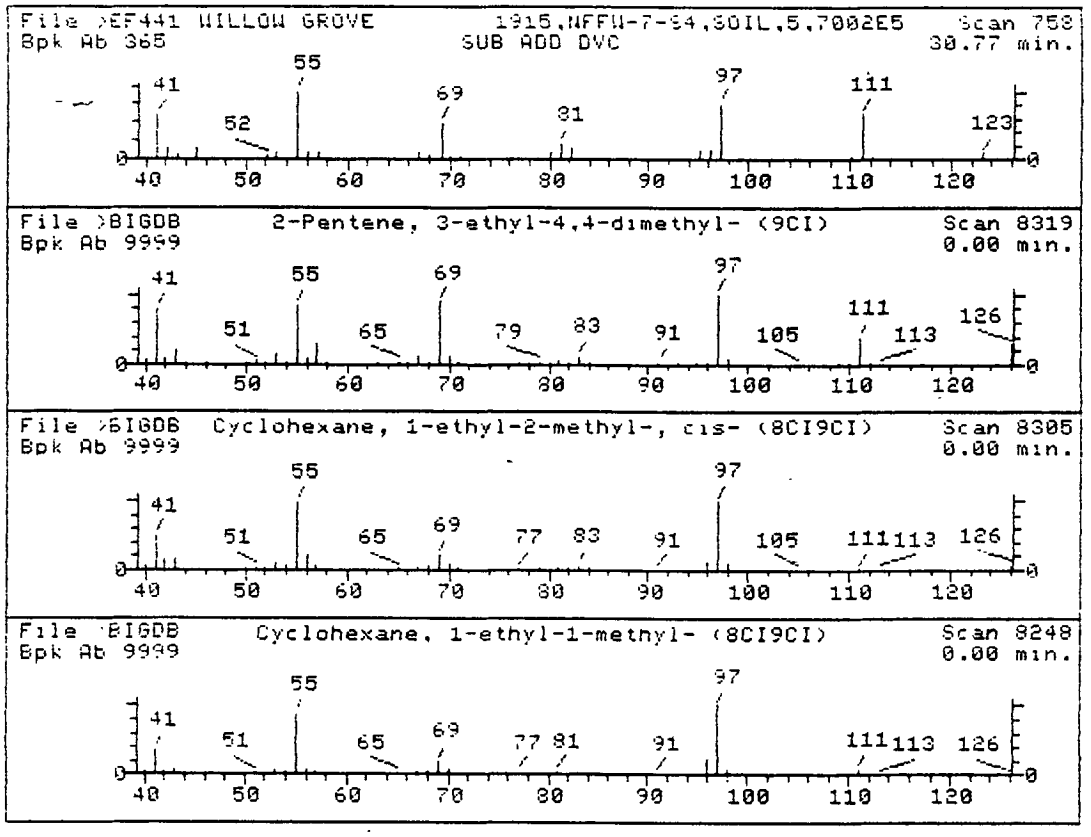
Retention time = 28.36

Area = 311116.0 Tentative Concentration is 48.00

1.	Tricyclo[3.3.1.13,7]decane, 1-nitro- (9CI)	181	C10H15NO2
2.	Silane, trimethylphenyl- (8CI9CI)	150	C9H14Si
3.	Pyridine, 4-ethyl-2,6-dimethyl- (9CI)	135	C9H13N
4.	Benzothiazole (8CI9CI)	135	C7H5NS
5.	Bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene-, (1R)- (9CI)	136	C10H16

Sample file: >EF441 Spectrum #: 696
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	76	7575828	14691	"BIGDB	74	33	2	0	90	9	45	25
2.	39*	768321	14725	"BIGDB	33	47	2	0	83	30	14	16
3.	36*	36917369	14698	"BIGDB	28	79	3	0	100	30	14	13
4.	24*	95169	14708	"BIGDB	23	71	3	0	100	43	8	12
5.	11*	5794036	7798	"BIGDB	39	47	3	0	23	62	2	16



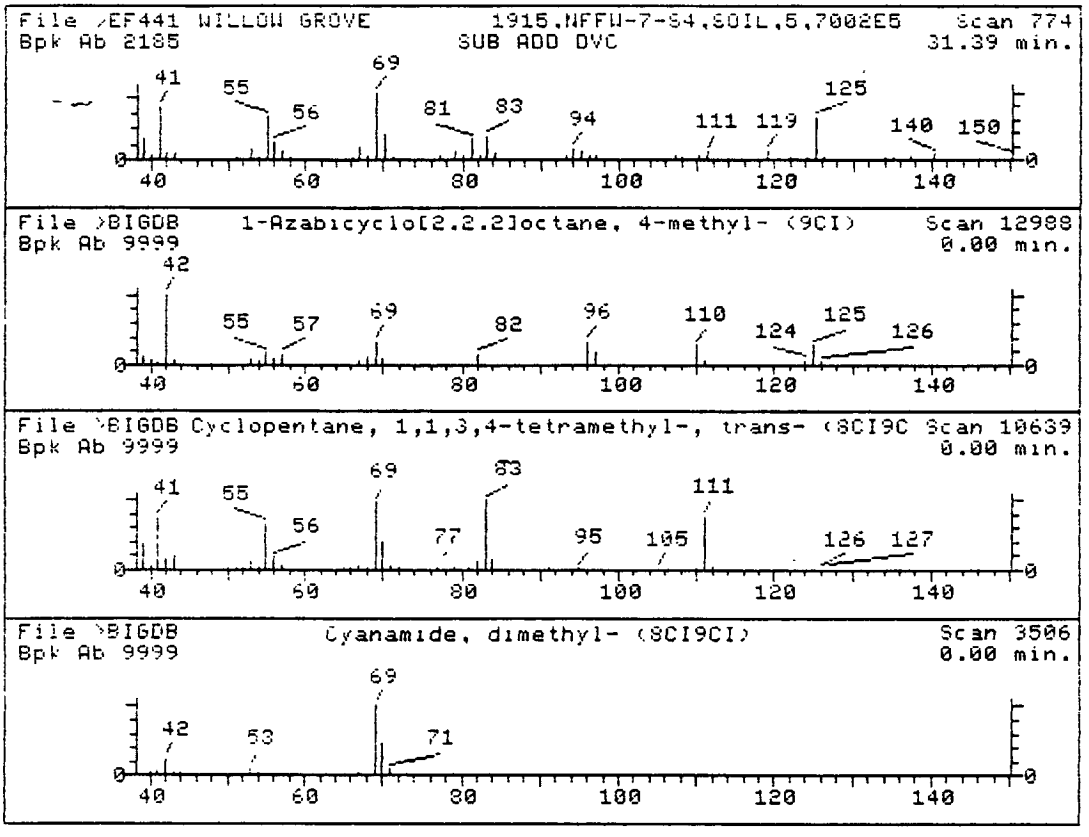
Retention time = 30.77 UNKNOWN

Area = 104857.0 Tentative Concentration is 16.00

1.	2-Pentene, 3-ethyl-4,4-dimethyl- (9CI)	126 C9H18
2.	Cyclohexane, 1-ethyl-2-methyl-, cis- (8CI9CI)	126 C9H18
3.	Cyclohexane, 1-ethyl-1-methyl- (8CI9CI)	126 C9H18
4.	2-Hexene, 3,4,4-trimethyl- (9CI)	126 C9H18
5.	3-Penten-1-ol, 2,2,4-trimethyl- (8CI9CI)	128 C8H16O
6.	4H-1,2,4-Triazole, 4-ethyl- (9CI)	97 C4H7N3
7.	Cyclohexane, 1-ethyl-4-methyl-, cis- (8CI9CI)	126 C9H18

Sample file: >EF441 Spectrum #: 758
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	26*	53907598	8319	"BIGDB	43	66	2	0	59	41	8	14
2.	25*	4923777	8305	"BIGDB	36	56	3	0	81	50	7	13
3.	25*	4926903	8248	"BIGDB	27	64	2	0	65	50	7	14
4.	25*	53941198	8320	"BIGDB	26	67	2	0	68	49	7	14
5.	20	5842535	8212	"BIGDB	47	48	2	0	83	51	5	12
6.	20*	43183557	8226	"BIGDB	33	48	2	0	56	54	5	16
7.	20*	4926787	8306	"BIGDB	31	65	3	0	94	53	5	13



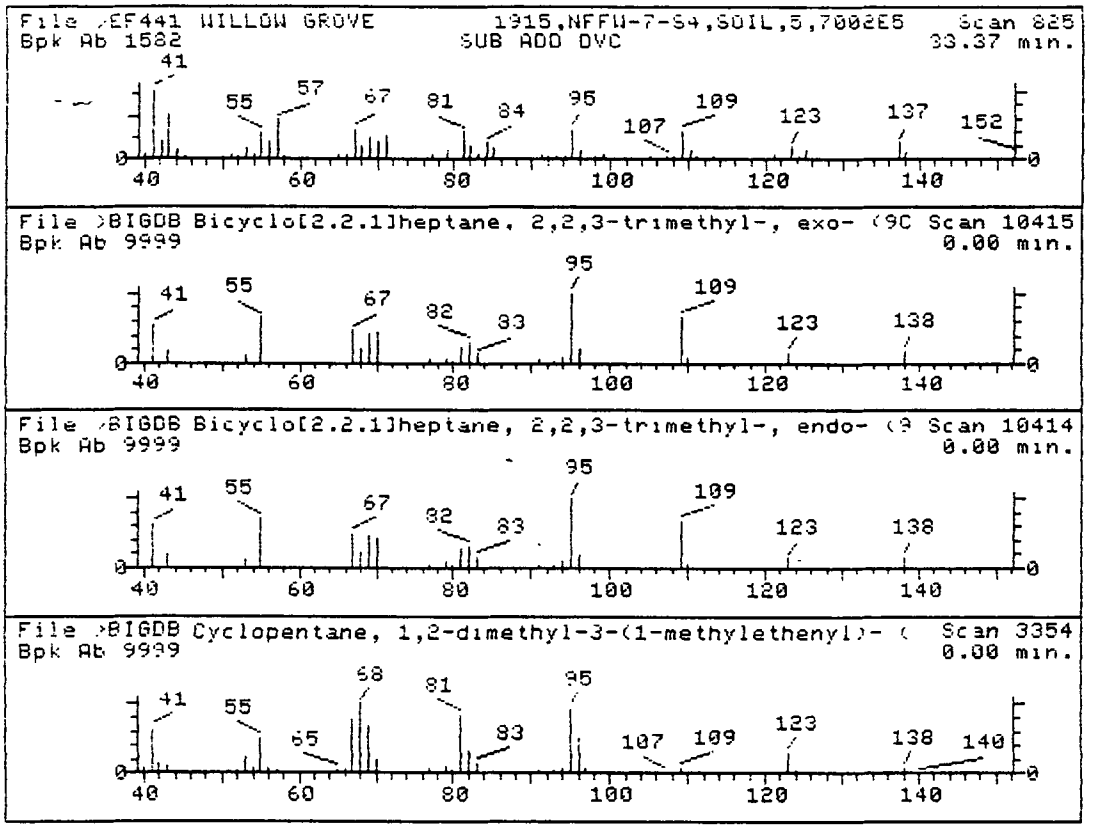
Retention time = 31.39 UNKNOWN

Area = 579287.0 Tentative Concentration is 89.00

1.	1-Azabicyclo[2.2.2]octane, 4-methyl- (9CI)	125	C8H15N
2.	Cyclopentane, 1,1,3,4-tetramethyl-, trans- (8CI9CI)	126	C9H18
3.	Cyanamide, dimethyl- (8CI9CI)	70	C3H6N2
4.	2,4,6-Pyrimidinetriamine (9CI)	125	C4H7N5
5.	4-Octene, 2,6-dimethyl-, [S-(Z)]- (9CI)	140	C10H20
6.	Cyclohexane, 1,1,3-trimethyl- (8CI9CI)	126	C9H18
7.	1-Octene, 3,3-dimethyl- (9CI)	140	C10H20

Sample file: >EF441 Spectrum #: 774
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	35*	45651410	12988	"BIGDB	24	78	3	0	218	26	14	12
2.	27*	20309777	10639	"BIGDB	37	74	3	0	94	40	10	13
3.	26*	1467794	3506	"BIGDB	26	57	2	0	84	41	8	14
4.	25*	1004382	12975	"BIGDB	40	50	2	1	77	42	8	13
5.	24*	62960774	3761	"BIGDB	49	50	1	0	64	52	7	29
6.	24*	3073663	10631	"BIGDB	47	52	2	0	100	53	7	21
7.	24*	74511516	3575	"BIGDB	48	58	1	0	70	54	7	27



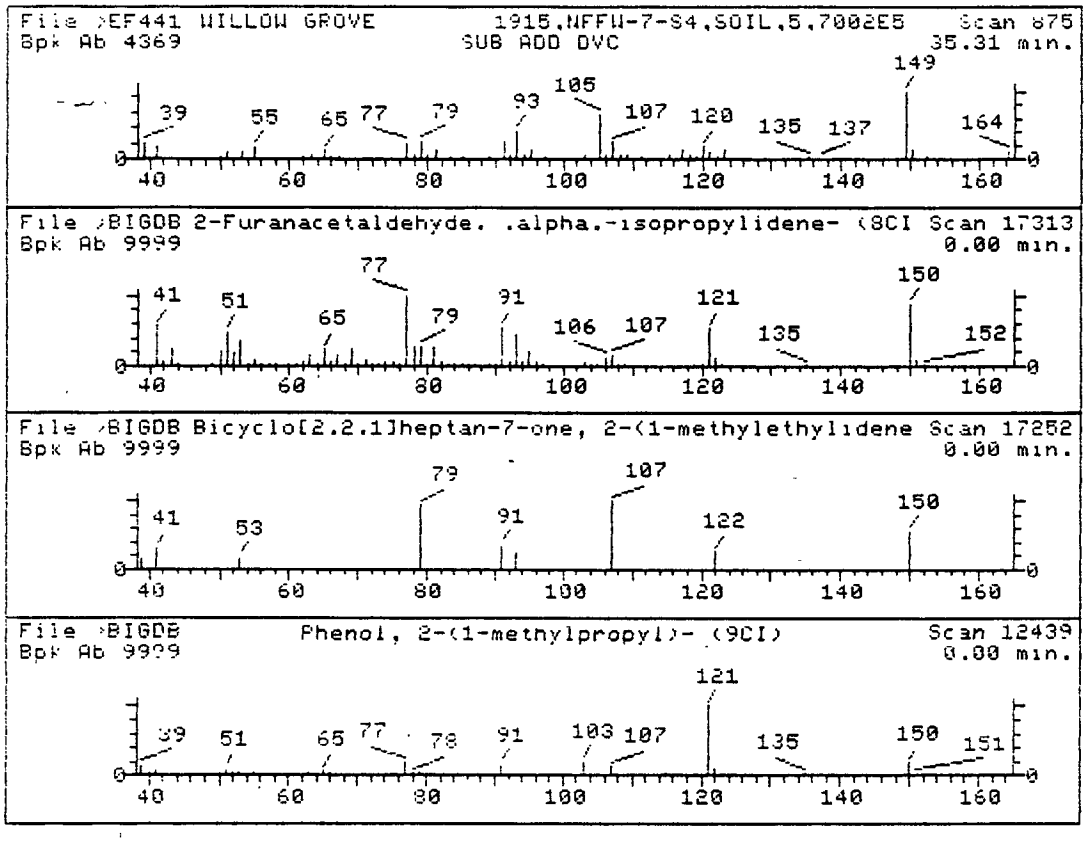
Retention time = 33.37

Area = 517233.0 Tentative Concentration is 80.00

1. Bicyclo[2.2.1]heptane, 2,2,3-trimethyl-, exo- (9CI) 138 C10H18
2. Bicyclo[2.2.1]heptane, 2,2,3-trimethyl-, endo- (9CI) 138 C10H18
3. Cyclopentane, 1,2-dimethyl-3-(1-methylethenyl)- (9CI 138 C10H18
4. 2,6-Octadienal, 3,7-dimethyl-, (Z)- (8CI9CI) 152 C10H16O
5. 2(3H)-Benzofuranone, hexahydro-3-methylene- (9CI) 152 C9H12O2
6. 4H-Cyclopentacyclooctene, decahydro- (8CI) 152 C11H20
7. 2-Cyclohexen-1-one, 4-ethyl-3,4-dimethyl- (8CI) 152 C10H16O

Sample file: >EF441 Spectrum #: 825
Search speed: 2 Tilting option: S No. of ion ranges searched: 59

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	47*	20536418	10415	"BIGDB	55	49	1	0	45	42	16	42
2.	40*	20536407	10414	"BIGDB	62	56	1	1	54	46	13	50
3.	25*	6983035	3354	"BIGDB	45	60	3	0	47	48	7	13
4.	25*	106263	10402	"BIGDB	26	81	3	0	194	44	8	13
5.	25*	53387385	12850	"BIGDB	34	96	3	0	49	48	7	13
6.	20*	6663952	8158	"BIGDB	47	62	3	0	46	53	5	13
7.	20*	17622467	17582	"BIGDB	42	58	3	0	45	54	5	13



Retention time = 35.31 UNKNOWN

Area = 2804946. Tentative Concentration is 430.00

1. 2-Furanacetaldehyde, .alpha.-isopropylidene- (8CI) 150 C9H10O2
2. Bicyclo[2.2.1]heptan-7-one, 2-(1-methylethylidene)- (9CI) 150 C10H14O
3. Phenol, 2-(1-methylpropyl)- (9CI) 150 C10H14O
4. 1,3-Cyclohexadiene-1-carboxaldehyde, 2,6,6-trimethyl - (8CI9CI) 150 C10H14O
5. Silane, 1,3-heptadiynyltrimethyl- (8CI) 164 C10H16Si
6. Pyridinium, 1-(acetylamino)-2,6-dimethyl-, hydroxide , inner salt (9CI) 164 C9H12N2O
7. Acetic acid, 2-phenylhydrazide (8CI9CI) 150 C8H10N2O

Sample file: >EF441 Spectrum #: 875
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_IV
1.	52*	31681284	17313	"BIGDB	44	49	0	1	14	39	19	43
2.	40*	66929962	17252	"BIGDB	33	16	0	3	13	34	16	23
3.	40*	89725	12439	"BIGDB	49	47	2	2	76	35	16	23
4.	30*	116267	17260	"BIGDB	28	53	0	1	15	32	12	13
5.	29*	19024476	17149	"BIGDB	34	56	2	0	69	45	[illegible]	17

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW324

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Matrix: (soil/water) WATER Lab Sample ID: EA# 1703

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF351

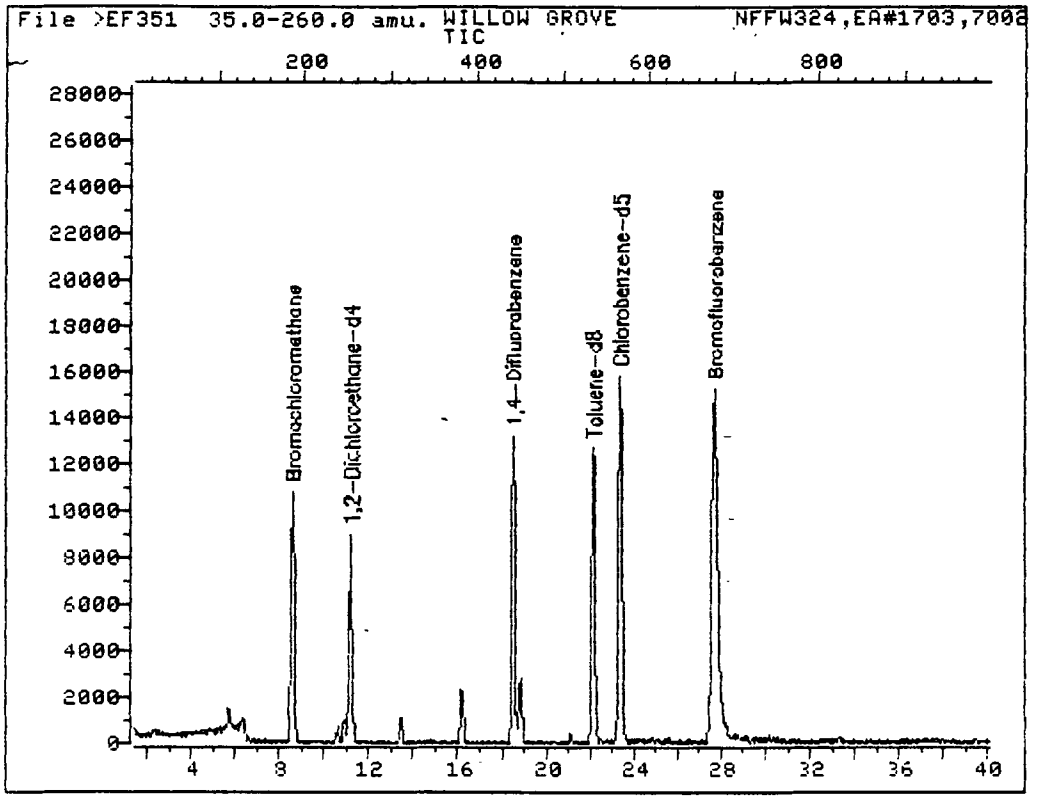
Level: (low/med) LOW Date Received: 4/15/89

% Moisture: not dec. 100. Date Analyzed: 4/17/89

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

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	1.	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	4.	J
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	8.	
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	3.	
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	1.	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

TOTAL ION CHROMATOGRAM



Data File: >EF351::D2 Quant Output File: ^EF351::QT
Name: WILLOW GROVE
Misc: NFFW324,EA#1703,7002E5,WATER,5.0ML

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

Operator ID: CARL
Quant Time: 890417 17:26
Injected at: 890417 16:42

QUANT REPORT

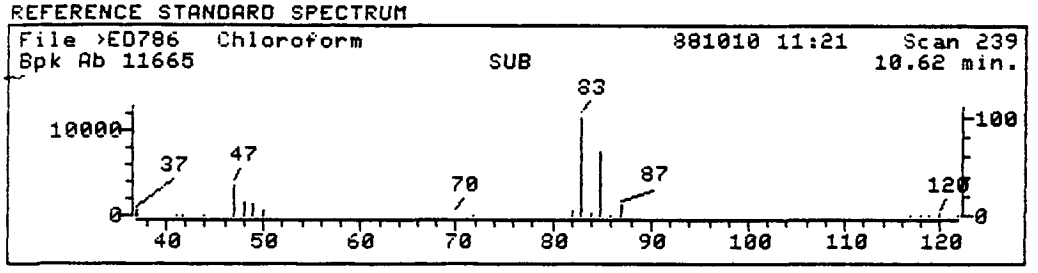
Operator ID: CARL Quant Rev: 6 Quant Time: 890417 17:26
Output File: EF351::OT Injected at: 890417 16:42
Data File: EF351::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: NFFW324,EA#1703,7002E5,WATER,5.0ML

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.62	128.0	13565	50.00	UG/L	98
12)	Chloroform	10.63	83.0	2535	3.02	UG/L	94
13)	1,2-Dichloroethane-d4	11.21	65.0	39448	55.57	UG/L	80
15)	*1,4-Difluorobenzene	18.50	114.0	49861	50.00	UG/L	90
20)	Bromodichloromethane	13.42	83.0	4365	4.27	UG/L	87
24)	Dibromochloromethane	16.17	129.0	7917	7.75	UG/L	99
28)	Bromoform	18.85	173.0	8359	8.84	UG/L	99
29)	*Chlorobenzene-d5	23.38	117.0	47379	50.00	UG/L	96
32)	Tetrachloroethene	21.10	164.0	560	1.21	UG/L	98
35)	Toluene-d8	22.14	98.0	49899	50.66	UG/L	97
40)	Bromofluorobenzene	27.69	95.0	60777	49.26	UG/L	80

* Compound is ISTD

REFERENCE STANDARD SPECTRUM



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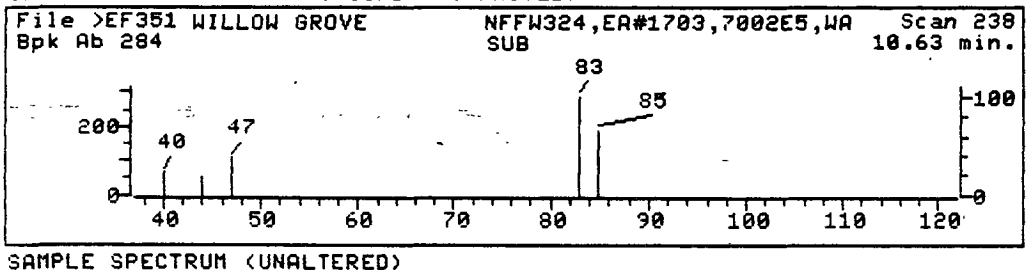
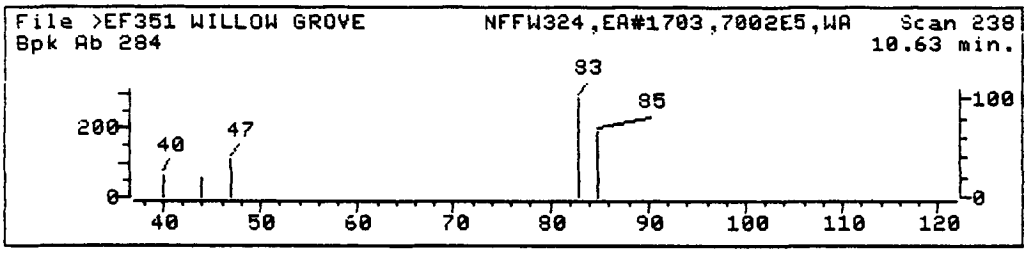


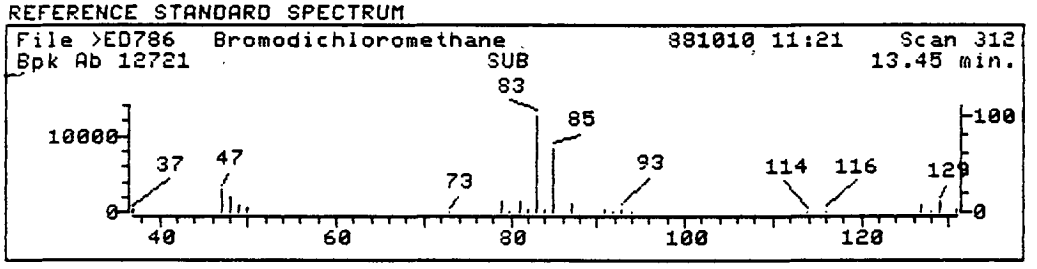
SAMPLE SPECTRUM (UNALTERED)



Data File: >EF351::D2 Quant Output File: ^EF351::QT
Name: WILLOW GROVE
Misc: NFFW324,EA#1703,7002E5,WATER,5.0ML
Quant Time: 890417 17:26 Quant ID File: EVOA::BD
Injected at: 890417 16:42 Last Calibration: 890417 09:07

Compound No: 12
Compound Name: Chloroform
Scan Number: 238
Retention Time: 10.63 min.
Quant Ion: 83.0
Area: 2535
Concentration: 3.02 UG/L
q-value: 94

REFERENCE STANDARD SPECTRUM



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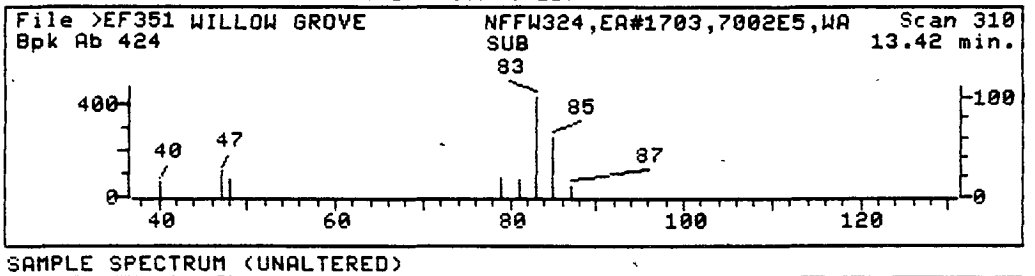

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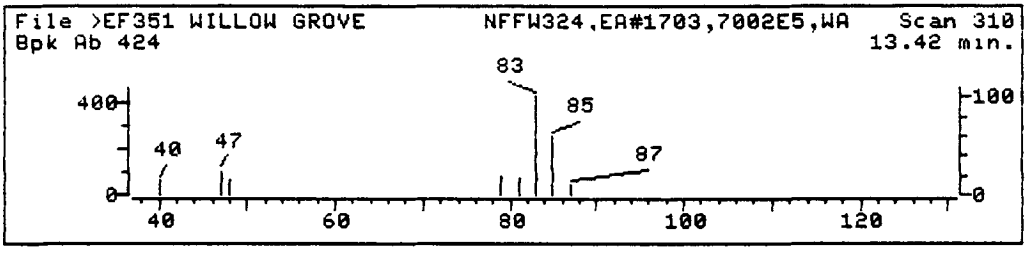
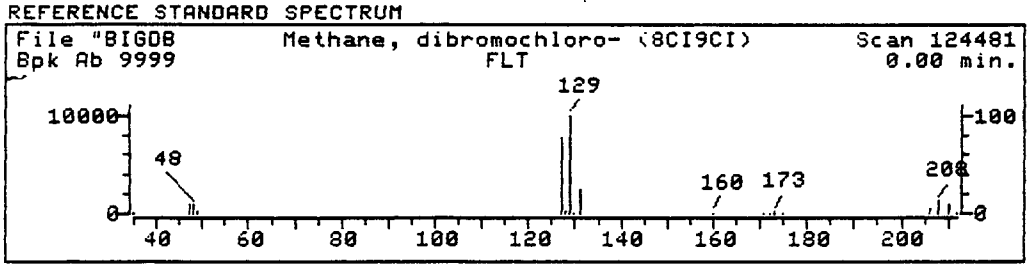


Data File: >EF351::D2 Quant Output File: ^EF351::QT
Name: WILLOW GROVE
Misc: NFFW324,EA#1703,7002E5,WATER,5.0ML
Quant Time: 890417 17:26 Quant ID File: EVOA::BD
Injected at: 890417 16:42 Last Calibration: 890417 09:07

Compound No: 20
Compound Name: Bromodichloromethane
Scan Number: 310
Retention Time: 13.42 min.
Quant Ion: 83.0
Area: 4365
Concentration: 4.27 UG/L
q-value: 87

REFERENCE STANDARD SPECTRUM



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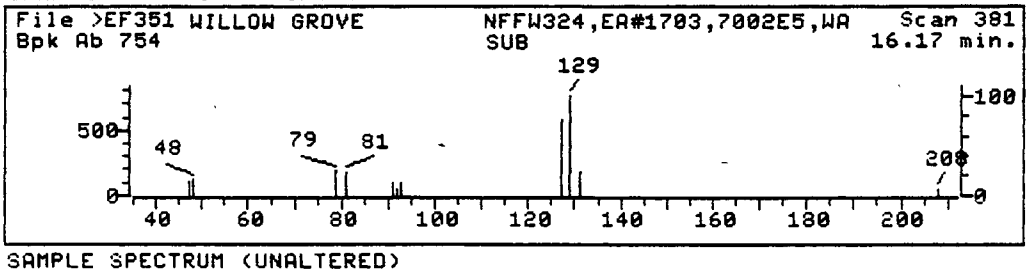

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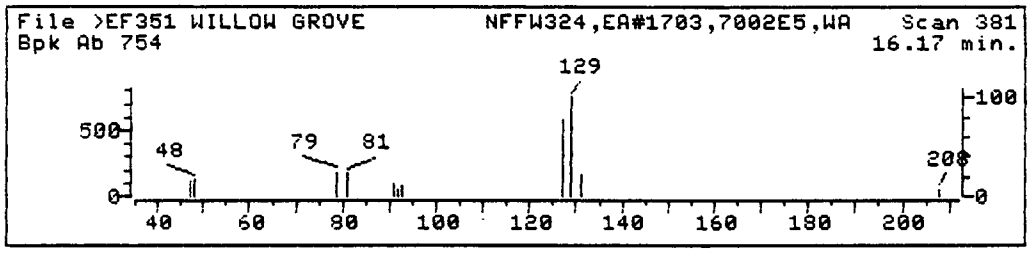
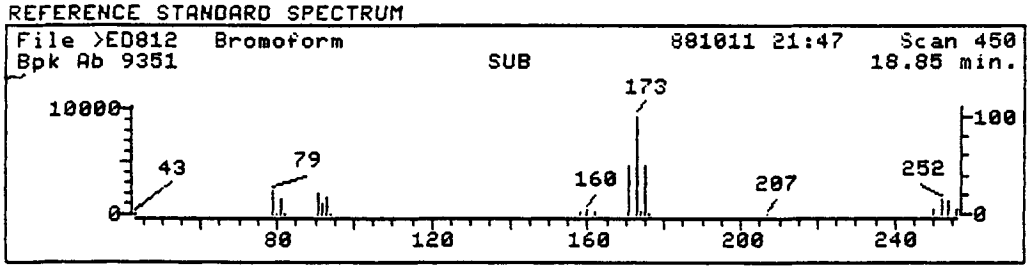


Data File: >EF351::D2 Quant Output File: ^EF351::QT
Name: WILLOW GROVE
Misc: NFFW324,EA#1703,7002E5,WATER,5.0ML
Quant Time: 890417 17:26 Quant ID File: EVOA::BD
Injected at: 890417 16:42 Last Calibration: 890417 09:07

Compound No: 24
Compound Name: Dibromochloromethane
Scan Number: 381
Retention Time: 16.17 min.
Quant Ion: 129.0
Area: 7917
Concentration: 7.75 UG/L
q-value: 98

REFERENCE STANDARD SPECTRUM



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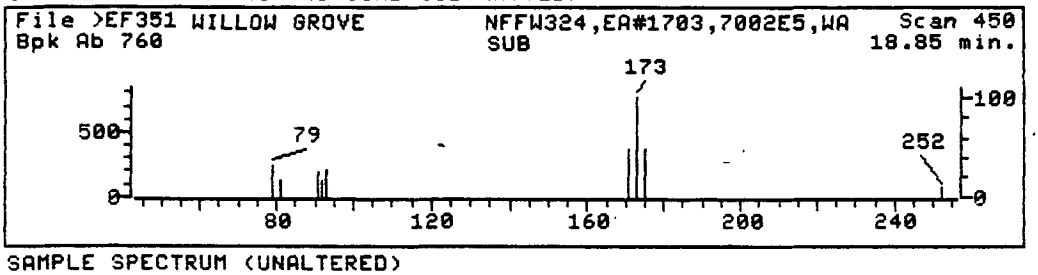

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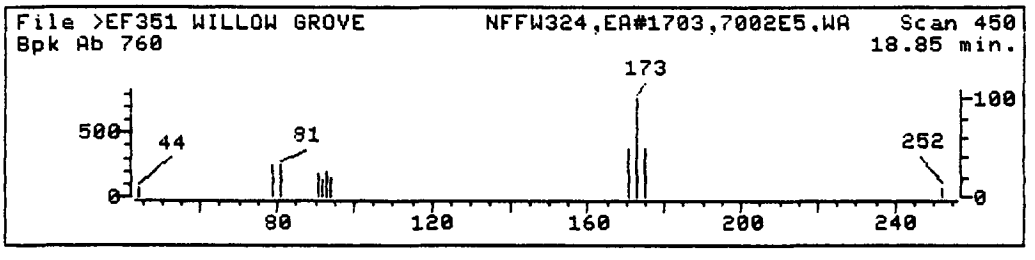

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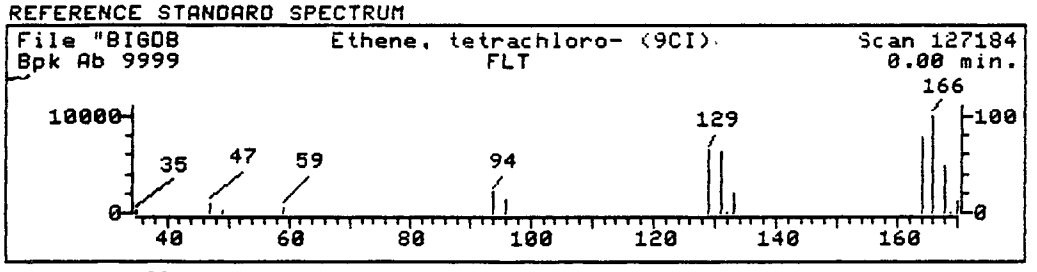
Misc: NFFW324,EA#1703,7002E5,WATER,5.0ML
Quant Time: 890417 17:26 Quant ID File: EVOA::8D
Injected at: 890417 16:42 Last Calibration: 890417 09:07

Compound No: 28
Compound Name: Bromoform
Scan Number: 450
Retention Time: 18.85 min.
Quant Ion: 173.0
Area: 8359
Concentration: 8.64 UG/L
q-value: 99

REFERENCE STANDARD SPECTRUM



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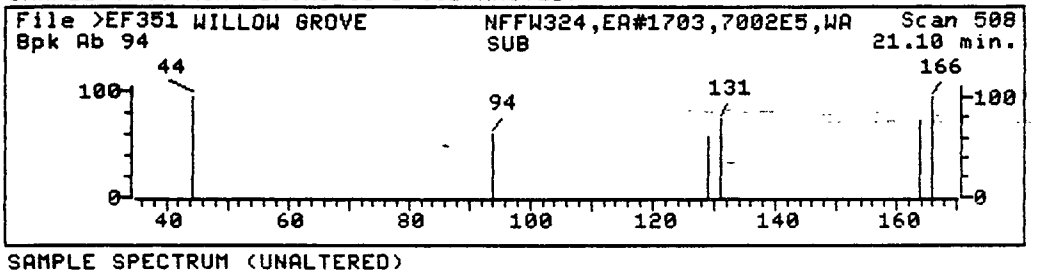

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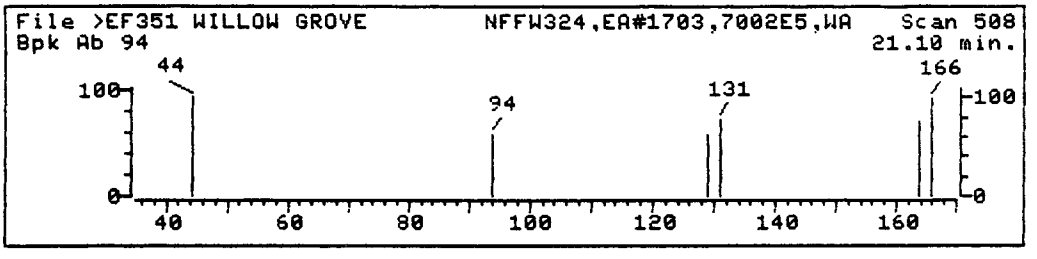

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Misc: NFFW324,EA#1703,7002E5,WATER,5.0ML
Quant Time: 890417 17:26 Quant ID File: EVOA::BD
Injected at: 890417 16:42 Last Calibration: 890417 09:07

Compound No: 32
Compound Name: Tetrachloroethene
Scan Number: 508
Retention Time: 21.10 min.
Quant Ion: 164.0
Area: 560
Concentration: 1.21 UG/L
q-value: 98

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW5

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA#1778

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF422

Lev l: (low/med) LOW Date Received: 4/17/89

% Moisture: not dec. 100. Date Analyzed: 4/27/89

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

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	4.	J
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

NFFW5

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA # 1778

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF422

Level: (low/med) LOW Date Received: 4/17/89

% Moisture: not dec. 100. Date Analyzed: 4/27/89

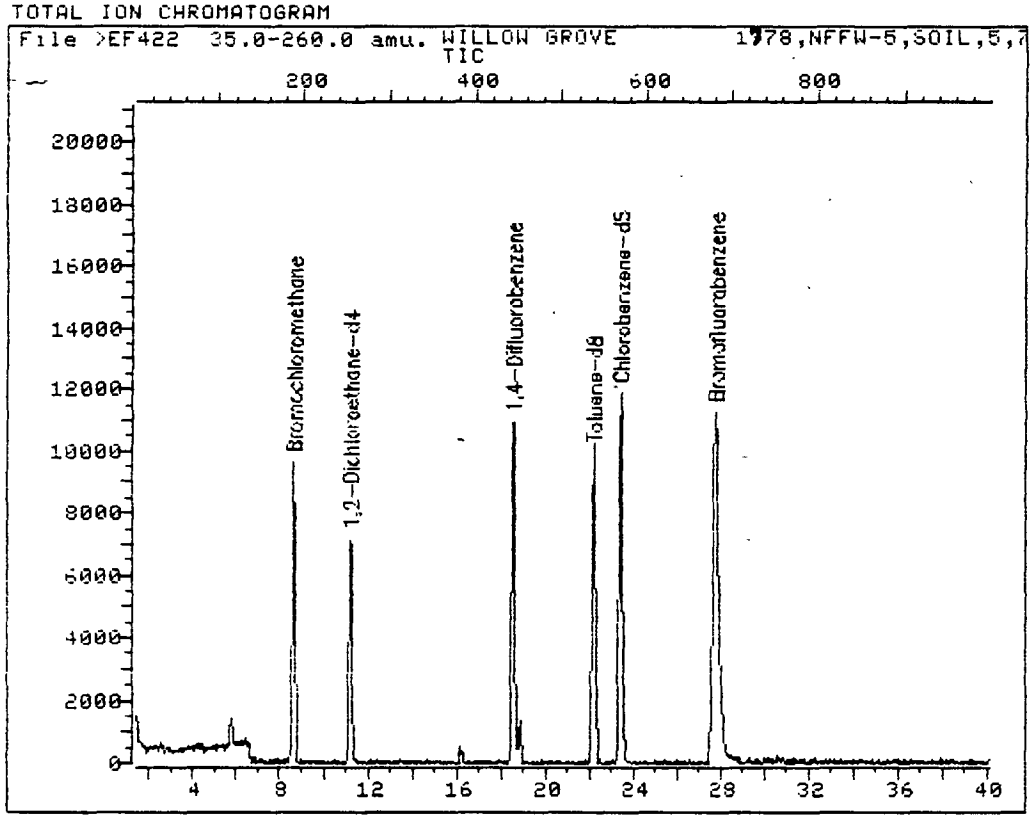
Column: (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

TOTAL ION CHROMATOGRAM



Data File: >EF422::D2 Quant Output File: ^EF422::QT
Name: WILLOW GROVE
Misc: 1178,NFFW-5,SOIL,5,7002E5

Id File: EVOAS::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 12:28

Operator ID: CARL
Quant Time: 890427 14:07
Injected at: 890427 13:26

QUANT. REPORT

Op rator ID: CARL
Output File: ^EF422::QT
Data File: >EF422::D2
Name: WILLOW GROVE
Misc: 1978,NFFW-5,SOIL,5,7002E5

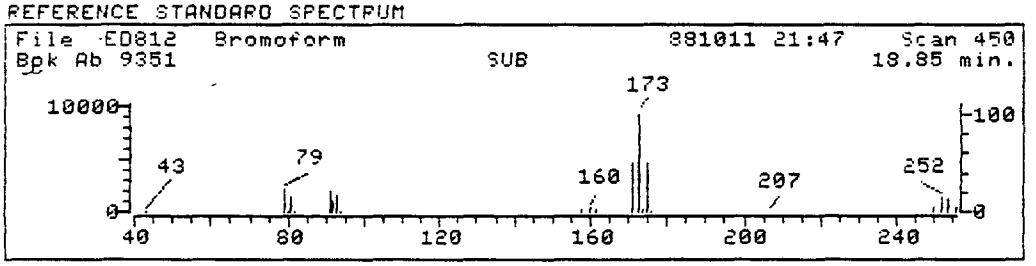
Quant R v: 6
Quant Time: 890427 14:07
Injected at: 890427 13:26
Dilution Factor: 1.00000

ID File: EVOAS::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 12:28

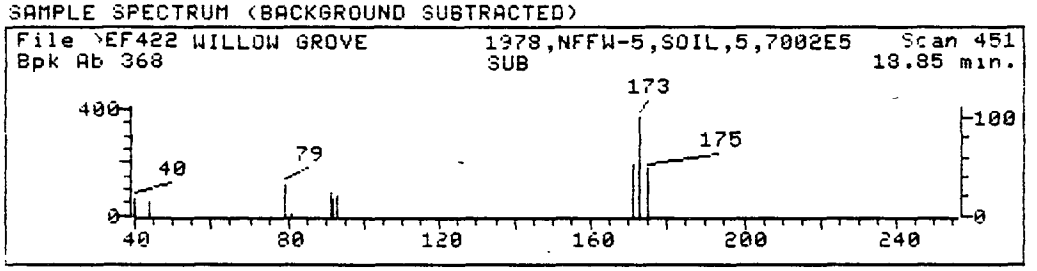
	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.65	128.0	12538	50.00	UG/KG	85
13)	1,2-Dichloroethane-d4	11.21	65.0	32411	54.92	UG/KG	83
15)	*1,4-Difluorobenzene	18.54	114.0	43627	50.00	UG/KG	92
28)	Bromoform	18.85	173.0	3742	4.37	UG/KG	96
29)	*Chlorobenzene-d5	23.42	117.0	38439	50.00	UG/KG	95
35)	Toluene-d8	22.18	98.0	42614	50.46	UG/KG	98
40)	Bromofluorobenzene	27.76	95.0	39477	49.55	UG/KG	78

* Compound is ISTD

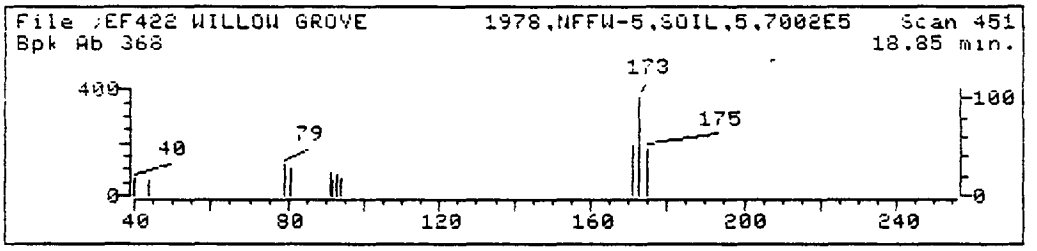
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >EF422::D2 Quant Output File: ^EF422::QT
Name: WILLOW GROVE
Misc: 1978,NFFW-5,SOIL,5,7002E5
Quant Time: 890427 14:07 Quant ID File: EVOAS::BD
Injected at: 890427 13:26 Last Calibration: 890427 12:28

Compound No: 28
Compound Name: Bromoform
Scan Number: 451
Retention Time: 18.85 min.
Quant Ion: 173.0
Area: 3742
Concentration: 4.37 UG/KG
q-value: 96

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW6

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA# 1914

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF435

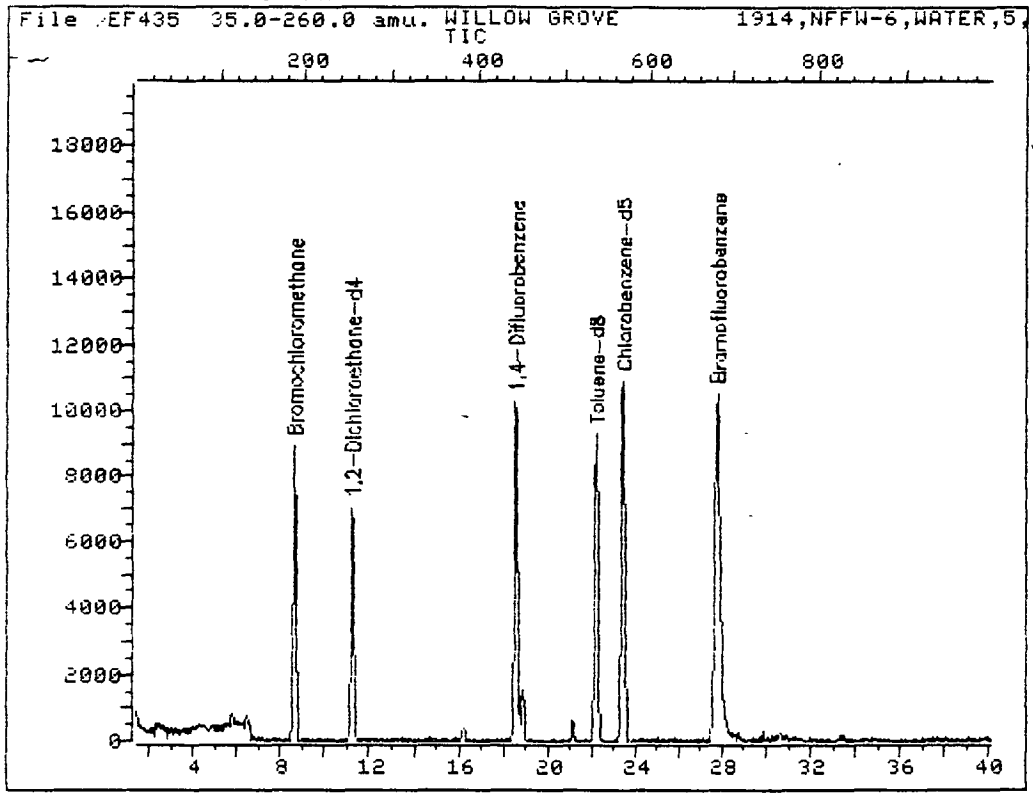
Level: (low/med) LOW Date Received: 4/21/89

% Moisture: not dec. 100. Date Analyzed: 4/28/89

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

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	6.	
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylen (total)	5.	U

TOTAL ION CHROMATOGRAM



Data File: >EF435::D2 Quant Output File: ^EF435::QT
Name: WILLOW GROVE
Misc: 1914,NFFW-6,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

Operator ID: CARL
Quant Time: 890428 14:22
Injected at: 890428 13:41

QUANT REPORT

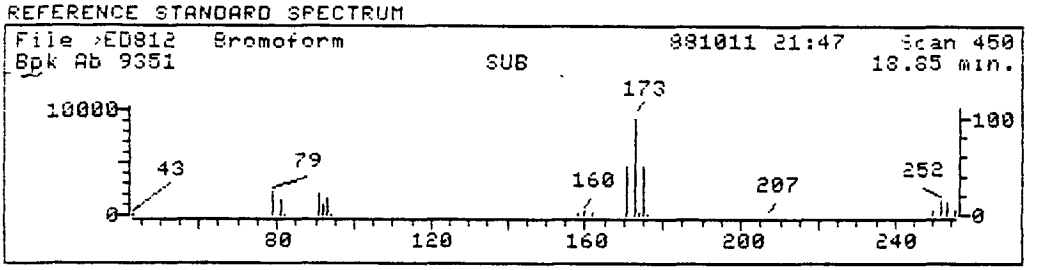
Operator ID: CARL Quant Rev: 6 Quant Time: 890428 14:22
Output File: ^EF435::QT Injected at: 890428 13:41
Data File: >EF435::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1914,NFFW-6,WATER,5,7002E5

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

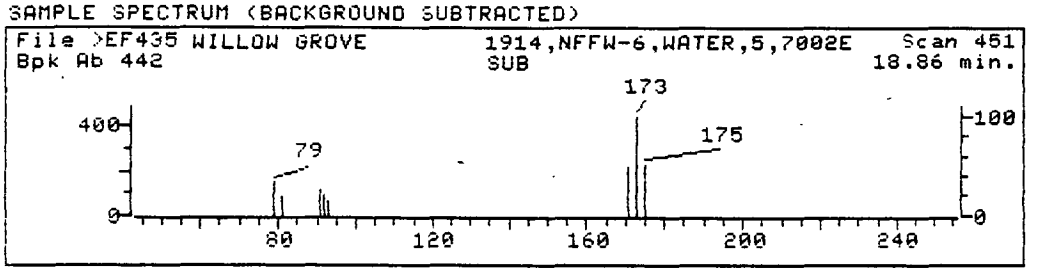
	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.63	128.0	11874	50.00	UG/L	93
13)	1,2-Dichloroethane-d4	11.23	65.0	31537	52.29	UG/L	80
15)	*1,4-Difluorobenzene	18.55	114.0	39308	50.00	UG/L	92
28)	Bromoform	18.86	173.0	4845	6.46	UG/L	98
29)	*Chlorobenzene-d5	23.44	117.0	35881	50.00	UG/L	96
35)	Toluene-d8	22.20	98.0	38251	49.25	UG/L	99
40)	Bromofluorobenzene	27.78	95.0	36007	48.02	UG/L	89

* Compound is ISTD

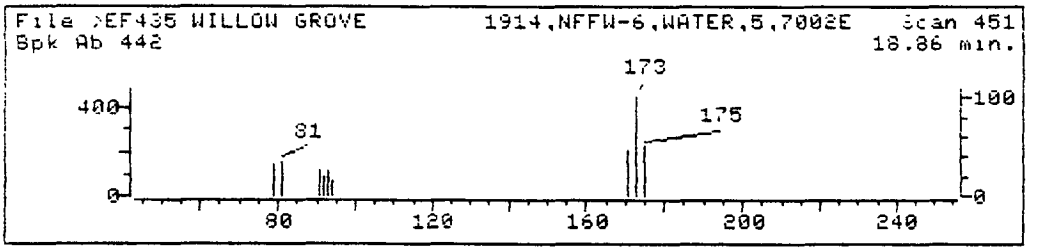
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >EF435::D2 Quant Output File: ^EF435::QT
Name: WILLOW GROVE
Misc: 1914,NFFW-6,WATER,5,7002E5
Quant Time: 890428 14:22 Quant ID File: EVOA::BD
Injected at: 890428 13:41 Last Calibration: 890428 11:20

Compound No: 28
Compound Name: Bromoform
Scan Number: 451
Retention Time: 18.86 min.
Quant Ion: 173.0
Area: 4845
Concentration: 6.46 UG/L
q-value: 98

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW7

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA# 1918

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF438

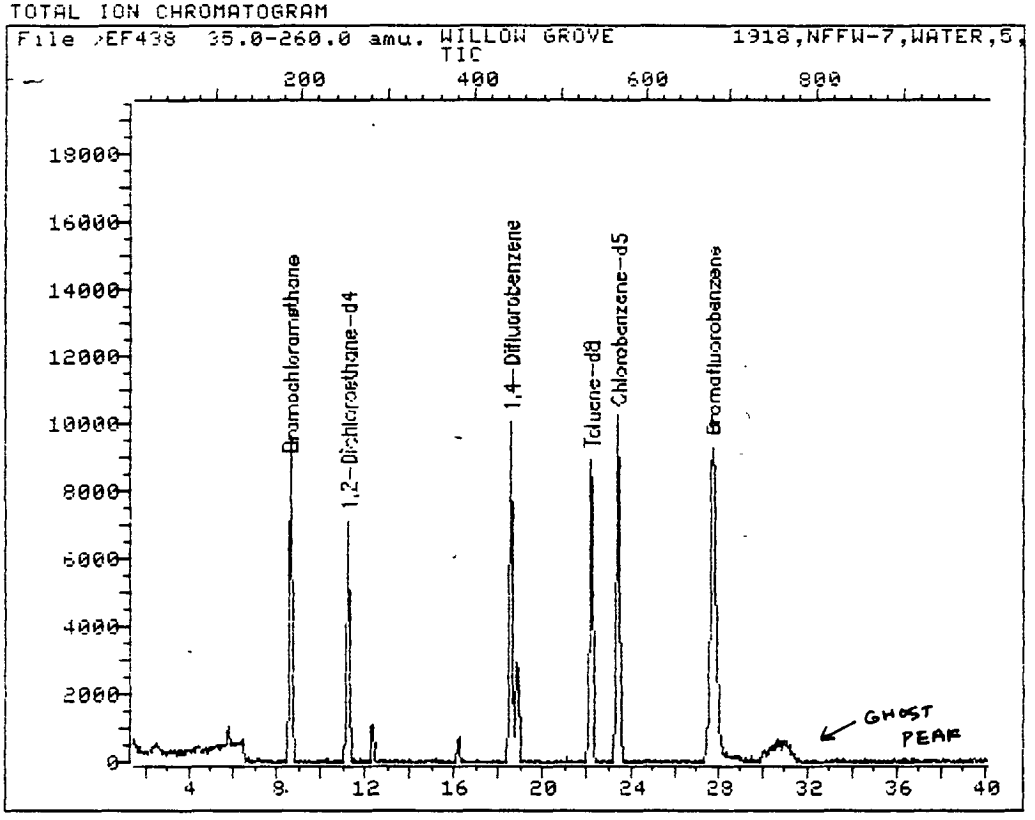
Level: (low/med) LOW Date Received: 4/21/89

% Moisture: not dec. 100. Date Analyzed: 4/28/89

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

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	4.	J
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	12.	
108-10-1	4-Methyl-2-Pentanone	10.	U
591-78-6	2-Hexanone	10.	U
127-18-4	Tetrachloroethene	5.	U
79-34-5	1,1,2,2-Tetrachloroethane	5.	U
108-88-3	Toluene	5.	U
108-90-7	Chlorobenzene	5.	U
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylen (total)	5.	U

TOTAL ION CHROMATOGRAM



Data File: >EF438::D2 Quant Output File: ^EF438::QT
Name: WILLOW GROVE
Misc: 1918,NFFW-7,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

Operator ID: CARL
Quant Time: 890428 16:44
Injected at: 890428 16:03

QUANT REPORT

Operator ID: CARL
Output File: ^EF438::QT
Data File: >EF438::D2
Name: WILLOW GROVE
Misc: 1918,NFFW-7,WATER,5,7002E5

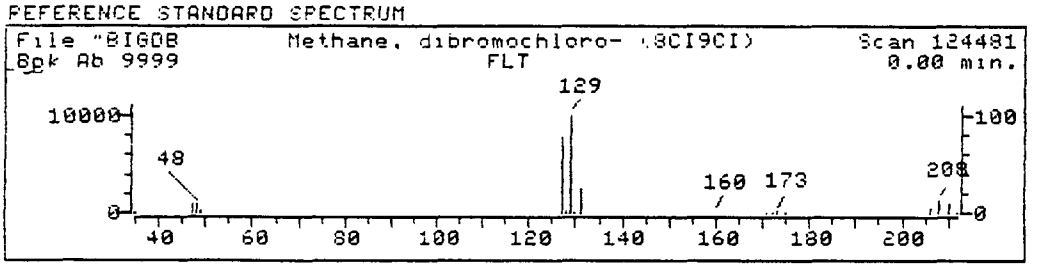
Quant Rev: 6
Quant Time: 890428 16:44
Injected at: 890428 16:03
Dilution Factor: 1.00000

ID File: EVOA::8D
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

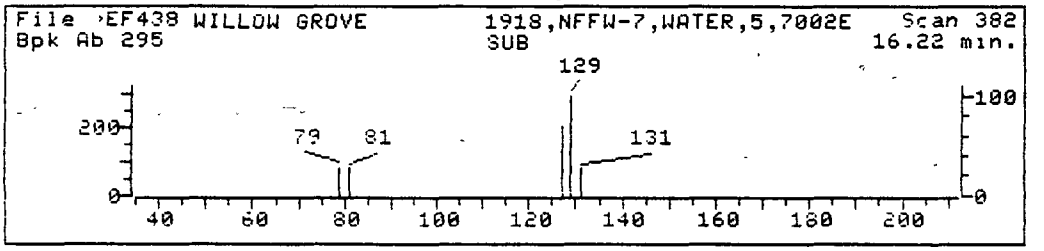
	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.62	128.0	12021	50.00	UG/L	95
13)	1,2-Dichloroethane-d4	11.22	65.0	32320	52.93	UG/L	80
15)	*1,4-Difluorobenzene	18.54	114.0	37559	50.00	UG/L	90
24)	Dibromochloromethane	16.22	129.0	2790	3.84	UG/L	92
28)	Bromoform	18.85	173.0	8872	12.38	UG/L	97
29)	*Chlorobenzene-d5	23.43	117.0	32580	50.00	UG/L	94
35)	Toluene-d8	22.19	98.0	35580	50.46	UG/L	97
40)	Bromofluorobenzene	27.73	95.0	33346	48.98	UG/L	84

* Compound is ISTD

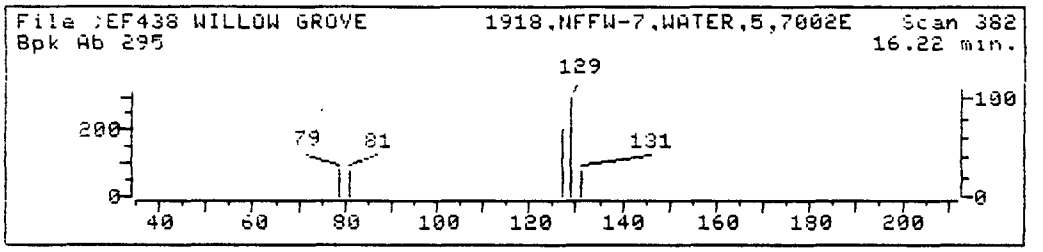
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



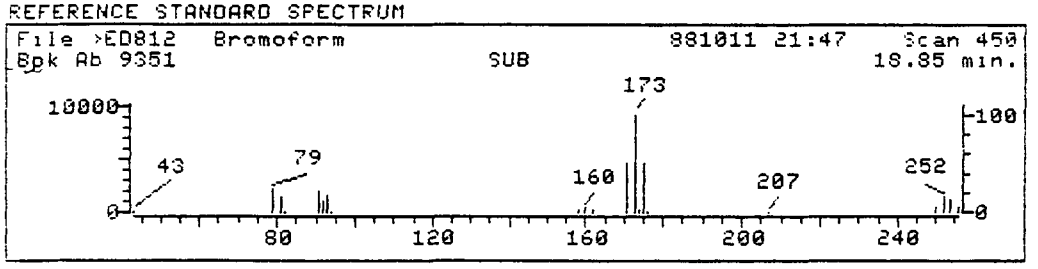
SAMPLE SPECTRUM (UNALTERED)



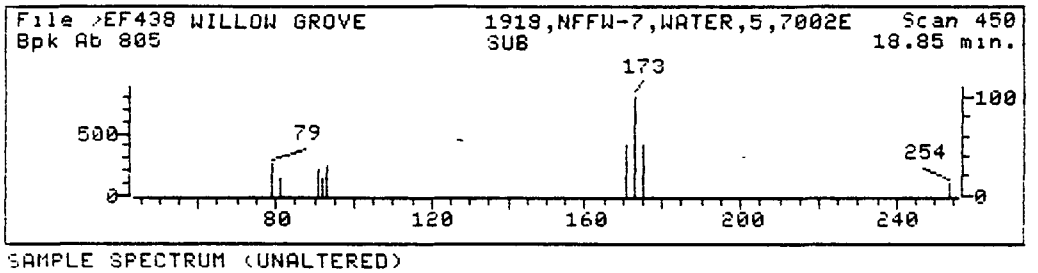
Data File: >EF438::D2 Quant Output File: ^EF438::QT
Name: WILLOW GROVE
Misc: 1918,NFFW-7,WATER,5,7002E5
Quant Time: 890428 16:44 Quant ID File: EVOA::BD
Injected at: 890428 16:03 Last Calibration: 890428 11:20

Compound No: 24
Compound Name: Dibromochloromethane
Scan Number: 382
Retention Time: 16.22 min.
Quant Ion: 129.0
Area: 2790
Concentration: 3.84 UG/L
q-value: 92

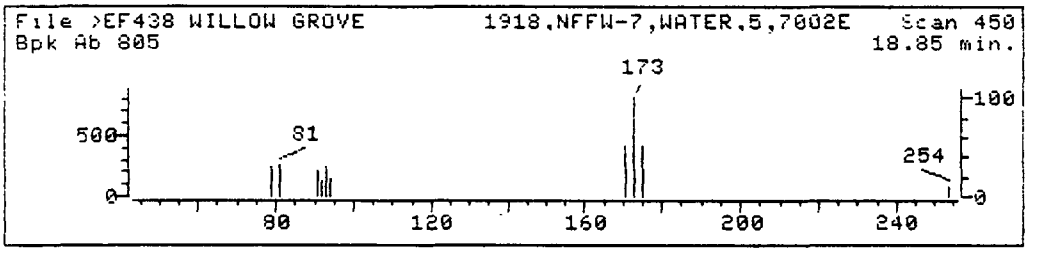
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



Data File: >EF438::D2 Quant Output File: ^EF438::QT
Name: WILLOW GROVE
Misc: 1918,NFFW-7,WATER,5,7002E5
Quant Time: 890428 16:44 Quant ID File: EVOA::BD
Injected at: 890428 16:03 Last Calibration: 890428 11:20

Compound No: 28
Compound Name: Bromoform
Scan Number: 450
Retention Time: 18.85 min.
Quant Ion: 173.0
Area: 8872
Concentration: 12.38 UG/L
q-value: 97

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW2

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA#1781

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF433

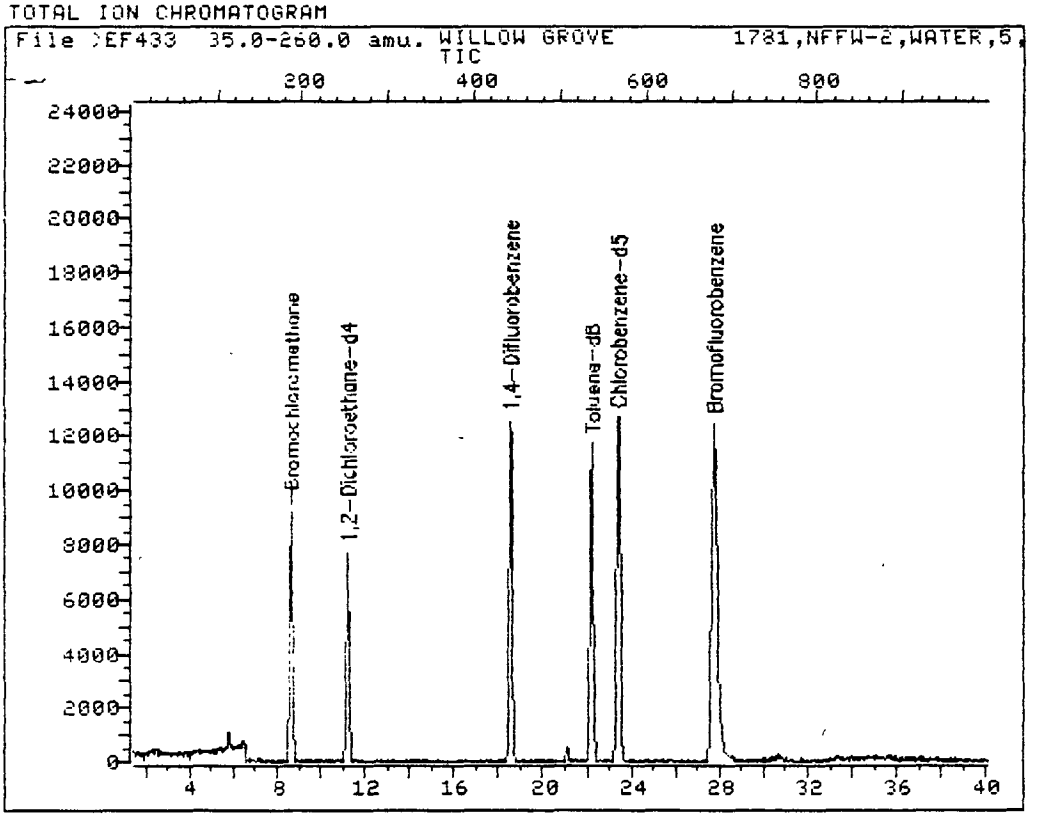
Level: (low/med) LOW Date Received: 4/17/89

% Moisture: not dec. 100. Date Analyzed: 4/28/89

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

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

TOTAL ION CHROMATOGRAM



Data File: >EF433::D2 Quant Output File: ^EF433::QT
Name: WILLOW GROVE
Misc: 1781,NFFW-2,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

Operator ID: CARL
Quant Time: 890428 12:51
Injected at: 890428 12:10

QUANT REPORT

Operator ID: CARL Quant R v: 6 Quant Time: 890428 12:51
Output File: ^EF433::QT Injected at: 890428 12:10
Data File: >EF433::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1781,NFFW-2,WATER,5,7002E5

ID File: EVOA::BD
Titl : CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.63	128.0	13093	50.00	UG/L	92
13)	1,2-Dichloroethane-d4	11.23	65.0	34656	52.11	UG/L	80
15)	*1,4-Difluorobenzene	18.55	114.0	46961	50.00	UG/L	90
29)	*Chlorobenzene-d5	23.40	117.0	40755	50.00	UG/L	97
35)	Toluene-d8	22.20	98.0	46695	52.94	UG/L	99
40)	Bromofluorobenzene	27.74	95.0	43324	50.87	UG/L	92

* Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

RINSE BL

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA# 1916

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF436

Level: (low/med) LOW Date Received: 4/21/89

% Moisture: not dec. 100. Date Analyzed: 4/28/89

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

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

RINSE BL

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA# 1916

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF436

Level: (low/med) LOW Date Received: 4/21/89

% Moisture: not dec. 100. Date Analyzed: 4/28/89

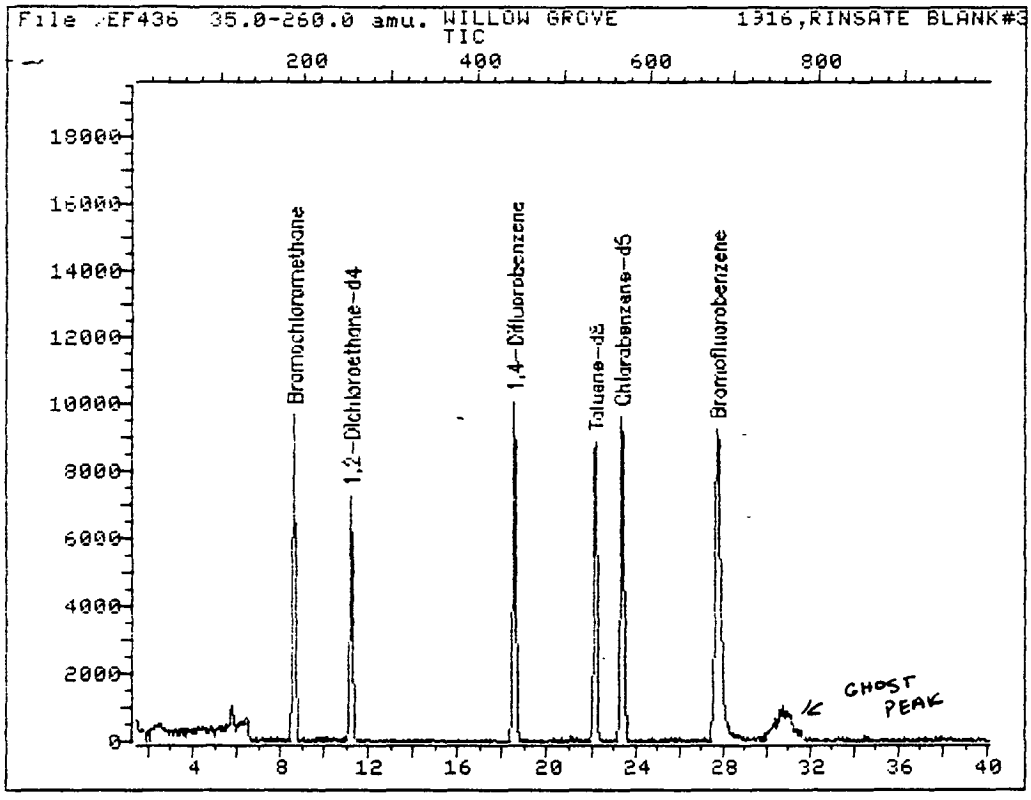
Column: (pack/cap) PACK Dilution Factor: 1.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

TOTAL ION CHROMATOGRAM



Data File: >EF436::D2 Quant Output File: ^EF436::QT
Name: WILLOW GROVE
Misc: 1916,RINSATE BLANK#3,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

Operator ID: CARL
Quant Time: 890428 15:13
Injected at: 890428 14:32

QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890428 15:13
Output File: ^EF436::QT Injected at: 890428 14:32
Data File: >EF436::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1916,RINSATE BLANK#3,WATER,5,7002E5

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.65	128.0	11835	50.00	UG/L	91
13)	1,2-Dichloroethane-d4	11.25	65.0	32375	53.85	UG/L	79
15)	*1,4-Difluorobenzene	18.57	114.0	37990	50.00	UG/L	90
29)	*Chlorobenzene-d5	23.42	117.0	30830	50.00	UG/L	94
35)	Toluene-d8	22.22	98.0	35729	53.54	UG/L	99
40)	Bromofluorobenzene	27.76	95.0	30682	47.63	UG/L	86

* Compound is ISTD

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BL

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Matrix: (soil/water) WATER Lab Sample ID: EA # 1704

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF354

Level: (low/med) LOW Date Received: 4/15/89

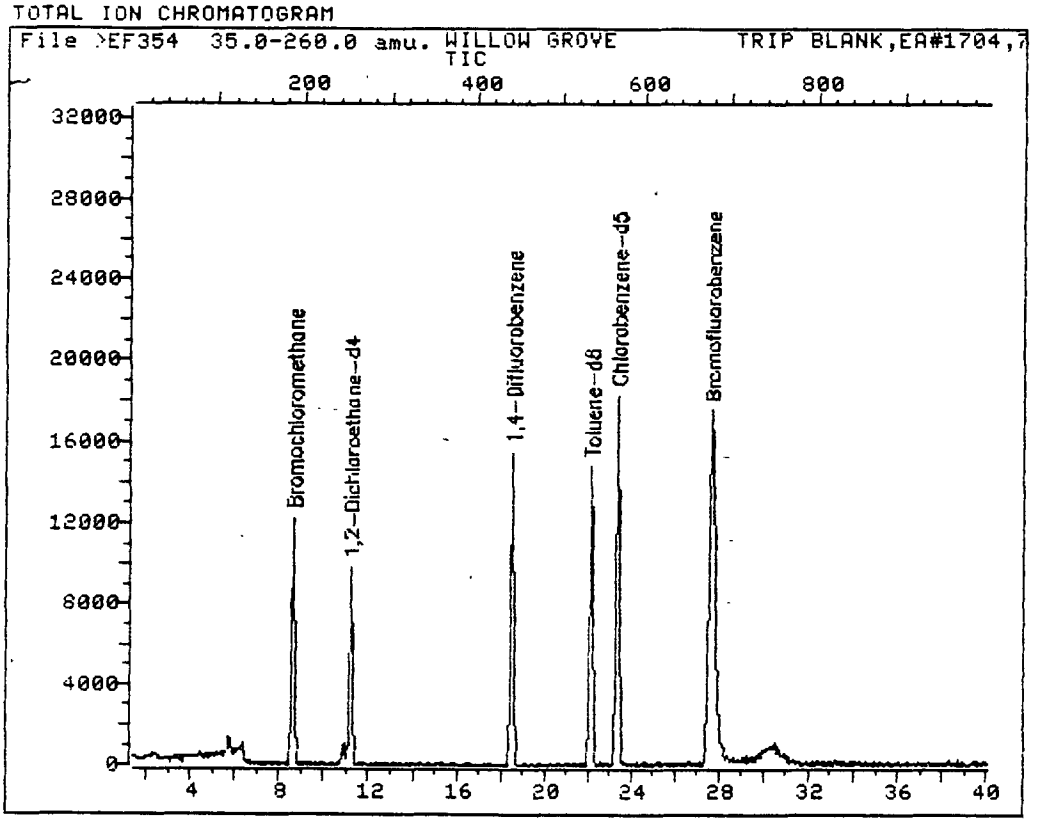
% Moisture: not dec. 100. Date Analyzed: 4/17/89

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

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

FORM I VOA 1/87 Rev.

TOTAL ION CHROMATOGRAM



Data File: >EF354::D2 Quant Output File: ^EF354::QT
Name: WILLOW GROVE
Misc: TRIP BLANK,EA#1704,7002E5,WATER,5.0ML

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

Operator ID: CARL
Quant Time: 890417 19:41
Injected at: 890417 19:00

QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890417 [illegible]
Output File: EF354::QT Injected at: 890417 19:00
Data File: EF354::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: TRIP BLANK,EA#1704,7002E5,WATER,5.0ML

ID File: EVOA::8D
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	6.63	128.0	16019	50.00	ug/L	98
13)	1,2-Dichloroethane-d4	11.19	65.0	43564	51.97	ug/L	80
15)	*1,4-Difluorobenzene	18.52	114.0	56008	50.00	ug/L	90
29)	*Chlorobenzene-d5	23.36	117.0	53981	50.00	ug/L	95
35)	Toluene-d8	22.16	98.0	57565	51.31	ug/L	98
40)	Bromofluorobenzene	27.62	95.0	59599	50.74	ug/L	94

*-Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BL

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA # 1782

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF434

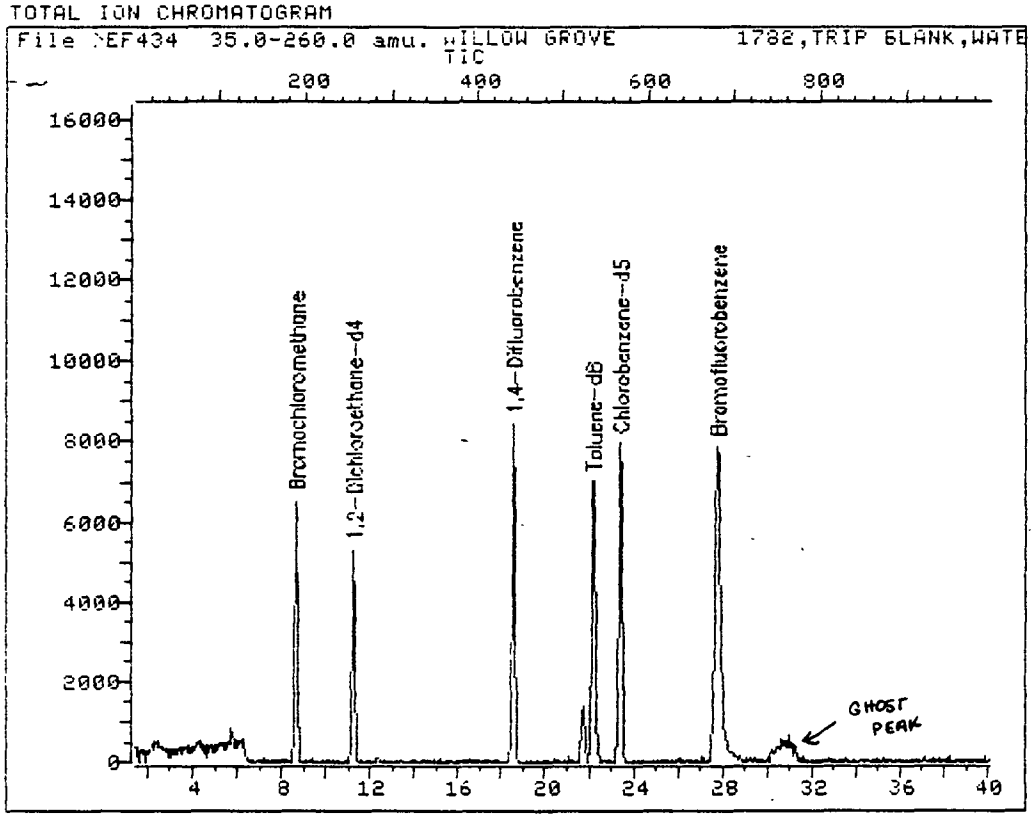
Level: (low/med) LOW Date Received: 4/17/89

% Moisture: not dec. 100. Date Analyzed: 4/28/89

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

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

TOTAL ION CHROMATOGRAM



Data File: >EF434::D2 Quant Output File: ^EF434::QT
Name: WILLOW GROVE
Misc: 1782,TRIP BLANK,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

Operator ID: CARL
Quant Time: 890428 13:39
Injected at: 890428 12:55

QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890428 13:39
Output File: ^EF434::QT Injected at: 890428 12:55
Data File: >EF434::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1782,TRIP BLANK,WATER,5,7002E5

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.65	128.0	8806	50.00	UG/L	94
13)	1,2-Dichloroethane-d4	11.25	65.0	25094	56.10	UG/L	77
15)	*1,4-Difluorobenzene	18.57	114.0	32581	50.00	UG/L	89
29)	*Chlorobenzene-d5	23.41	117.0	24728	50.00	UG/L	97
35)	Toluene-d8	22.17	98.0	28954M	54.10	UG/L	97
40)	Bromofluorobenzene	27.76	95.0	27802	53.80	UG/L	88

* Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP BL

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA #1917

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF437

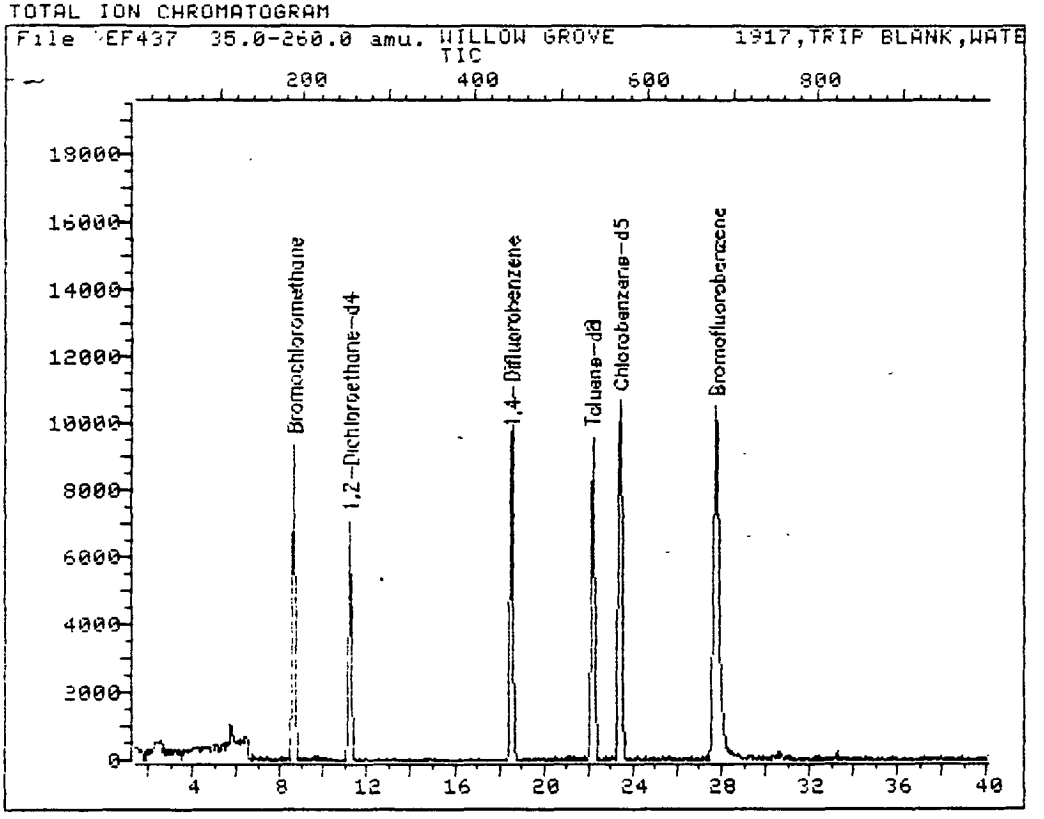
Level: (low/med) LOW Date Received: 4/21/89

% Moisture: not dec. 100. Date Analyzed: 4/28/89

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

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

TOTAL ION CHROMATOGRAM



Data File: >EF437::D2 Quant Output File: ^EF437::QT
Name: WILLOW GROVE
Misc: 1917,TRIP BLANK,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

Operator ID: CARL
Quant Time: 890428 15:59
Injected at: 890428 15:18

QUANT REPORT

Operator ID: CARL
Output File: ^EF437::QT
Data File: >EF437::D2
Name: WILLOW GROVE
Misc: 1917,TRIP BLANK,WATER,5,7002E5

Quant Rev: 6
Quant Time: 890428 15:59
Injected at: 890428 15:18
Dilution Factor: 1.00000

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.65	128.0	12580	50.00	UG/L	96
13)	1,2-Dichloroethane-d4	11.21	65.0	32707	51.18	UG/L	81
15)	*1,4-Difluorobenzene	18.53	114.0	38050	50.00	UG/L	92
29)	*Chlorobenzene-d5	23.41	117.0	35188	50.00	UG/L	95
35)	Toluene-d8	22.17	98.0	38709	50.83	UG/L	99
40)	Bromofluorobenzene	27.76	95.0	35500	48.28	UG/L	94

* Compound is ISTD

C. Standards Data

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Instrument ID: 7002E5 Calibration Date(s): 1/24/89 1/24/89

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

Min $\overline{RRF}$ for SPCC(#) = .300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = EE677 RRF50 = EE676
RRF100= EE675 RRF150= EE674 RRF200= EE673

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	%RSD
Chloromethane #	.727	.772	.750	.771	.715	.747	3.4#
Bromomethane	.919	.936	.467	.533	.464	.633	33.0
Vinyl Chloride *	1.051	1.048	1.014	1.023	.989	1.023	2.5*
Chloroethane	.601	.581	.589	.602	.592	.593	1.5
Methylene Chloride	.861	.795	.769	.763	.734	.784	5.1
Acetone	.473	.283	.232	.215	.184	.278	41.4
Carbon Disulfide	2.915	3.040	3.082	3.156	3.099	3.059	2.0
1,1-Dichloroethene *	1.056	1.120	1.113	1.130	1.079	1.099	2.8*
1,1-Dichloroethane #	2.026	2.069	2.074	2.081	1.971	2.044	2.3#
1,2-Dichloroethene (total)	1.085	1.161	1.170	1.180	1.127	1.145	3.4
Chloroform *	2.576	2.545	2.514	2.545	2.402	2.517	2.7*
1,2-Dichloroethane	1.767	1.767	1.754	1.776	1.645	1.742	3.2
2-Butanone	.036	.034	.034	.033	.027	.033	13.1
1,1,1-Trichloroethane	.596	.620	.610	.596	.547	.584	4.7
Carbon Tetrachloride	.594	.603	.593	.576	.536	.583	4.6
Vinyl Acetate	.487	.535	.571	.605	.557	.551	8.0
Bromodichloromethane	.803	.809	.797	.788	.709	.781	5.3
1,2-Dichloropropane *	.391	.396	.403	.392	.352	.337	5.2*
cis-1,3-Dichloropropene	.674	.739	.744	.741	.669	.713	5.4
Trichloroethene	.507	.518	.513	.489	.442	.494	5.3
Dibromochloromethane	.825	.814	.807	.777	.691	.783	7.0
1,1,2-Trichloroethane	.424	.417	.414	.397	.346	.399	7.9
Benzene	.867	.894	.896	.880	.804	.868	4.4
trans-1,3-Dichloropropene	.312	.342	.349	.344	.301	.323	5.5
Bromoform #	.778	.777	.794	.764	.675	.758	5.3#
4-Methyl-2-Pentanone	.362	.390	.398	.403	.337	.378	7.5
2-Hexanone	.240	.253	.274	.273	.227	.254	8.1
Tetrachloroethene	.525	.537	.523	.510	.470	.513	5.1
1,1,2,2-Tetrachloroethane #	.755	.775	.762	.769	.665	.745	6.1#
Toluene	.664	.695	.684	.680	.620	.669	4.4
Chlorobenzene	.974	.983	.975	.967	.879	.956	4.5
Ethylbenzene *	.414	.424	.423	.420	.385	.413	3.9*
Styrene	.912	.936	.949	.957	.865	.929	4.2
Xylene (total)	.525	.531	.527	.534	.486	.521	3.8
Toluene-d8	1.080	1.080	1.072	1.079	1.067	1.076	.6
1,2-Dichloroethane-d4	1.425	1.460	1.510	1.603	1.637	1.527	5.9
Bromofluorobenzene	.835	.819	.824	.820	.810	.821	1.1

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Instrument ID: 7002E5 Calibration Date(s): 4/21/89 4/21/89

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

Min $\overline{RRF}$ for SPCC(#) = .300 (0.250 for Bromoform) Max %RSD for CCC(*) = 30.0%

LAB FILE ID: RRF20 = EF375 RRF50 = EF376
RRF100= EF377 RRF150= EF378 RRF200= EF379

COMPOUND	RRF20	RRF50	RRF100	RRF150	RRF200	$\overline{RRF}$	% RSD
Chloromethane #	.283	.556	.558	.593	.614	.521	25.9#
Bromom thane	.791	1.045	1.089	.943	.916	.957	12.2
Vinyl Chloride *	.603	.869	.918	.913	.778	.816	16.1*
Chloroethane	.437	.547	.581	.604	.609	.556	12.7
Methylene Chloride	1.262	1.417	1.379	1.240	1.288	1.317	5.9
Acetone	.084	.485	.458	.345	.367	.348	45.7
Carbon Disulfide	2.923	3.178	3.258	3.203	3.351	3.183	5.0
1,1-Dichloroethene *	.996	1.116	1.134	1.075	1.144	1.093	5.5*
1,1-Dichloroethane #	2.072	2.430	2.531	2.345	2.502	2.376	7.8#
1,2-Dichloroethene (total)	.963	1.220	1.289	1.237	1.276	1.197	11.2
Chloroform *	3.381	3.815	3.927	3.515	3.693	3.666	6.0*
1,2-Dichloroethane	2.579	3.335	3.407	3.112	3.158	3.118	10.4
2-Butanone	.045	.027	.031	.026	.027	.031	25.7
1,1,1-Trichloroethane	.792	1.063	1.011	.938	.928	.946	10.8
Carbon Tetrachloride	1.003	1.199	1.112	1.010	.999	1.065	8.3
Vinyl Acetate	.584	.614	.712	.608	.685	.640	8.6
Bromodichloromethane	.914	1.177	1.149	1.063	1.059	1.073	9.6
1,2-Dichloropropane *	.299	.356	.388	.331	.372	.349	10.0*
cis-1,3-Dichloropropene	.529	.704	.734	.650	.688	.661	12.1
Trichloroethene	.468	.504	.537	.457	.498	.493	6.4
Dibromochloromethane	.978	1.105	1.113	.977	1.000	1.035	6.6
1,1,2-Trichloroethane	.392	.417	.448	.373	.405	.407	6.9
Benzene	.640	.815	.844	.748	.796	.769	10.4
trans-1,3-Dichloropropene	.447	.572	.604	.540	.562	.545	10.9
Bromoform #	.842	1.002	1.046	.933	.960	.957	8.0#
4-Methyl-2-Pentanone	.411	.347	.389	.312	.359	.364	10.5
2-Hexanone	.277	.239	.276	.211	.240	.249	11.2
Tetrachloroethene	.513	.576	.575	.498	.540	.541	6.5
1,1,2,2-Tetrachloroethane #	.620	.731	.755	.657	.696	.692	7.9#
Toluene *	.520	.651	.659	.584	.606	.604	9.3*
Chlorobenzene #	.919	1.015	1.025	.885	.948	.958	6.3#
Ethylbenzene *	.333	.431	.455	.400	.419	.408	11.4*
Styrene	.857	.982	1.024	.877	.939	.936	7.5
Xylene (total)	.542	.625	.643	.553	.588	.590	7.4
Toluene-d8	1.045	1.061	1.050	1.044	1.045	1.049	.7
Bromofluorobenzene	1.052	1.064	1.075	1.007	1.063	1.052	2.5
1,2-Dichloroethane-d4	2.400	2.632	2.761	2.765	2.879	2.687	6.8

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Instrument ID: 7002EE Calibration Date: 4/17/89 Time: 8:13

Lab File ID: EF341 Init. Calib. Date(s): 1/24/89 1/24/89

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

Min RRF50 for SPCC(#) = .300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

COMPOUND	RRF	RRF50	%D
Chloromethane #	.747	.623	15.8 #
Bromomethane	.638	.989	52.0
Vinyl Chloride *	1.025	.846	17.3 *
Chloroethane	.593	.552	6.8
Methylene Chloride	.784	1.238	57.9
Acetone	.278	.825	197.0
Carbon Disulfide	3.058	2.790	8.8
1,1-Dichloroethene *	1.099	.934	15.0 *
1,1-Dichloroethane #	2.044	2.070	1.3 #
1,2-Dichloroethene (total)	1.145	1.030	10.0
Chloroform *	2.517	3.094	22.9 *
1,2-Dichloroethane	1.742	2.915	67.3
2-Butanone	.033	.036	9.9
1,1,1-Trichloroethane	.594	.991	50.1
Carbon Tetrachloride	.581	1.003	72.7
Vinyl Acetate	.551	.699	25.1
Bromodichloromethane	.781	1.026	31.3
1,2-Dichloropropane *	.387	.295	23.8 *
cis-1,3-Dichloropropene	.713	.727	2.0
Trichloroethene	.494	.461	6.7
Dibromochloromethane	.783	1.024	30.8
1,1,2-Trichloroethane	.399	.392	1.8
Benzene	.868	.680	21.7
trans-1,3-Dichloropropene	.329	.416	26.4
Bromoform #	.758	.870	28.0 #
4-Methyl-2-Pentanone	.378	.449	18.8
2-Hexanone	.254	.334	31.6
Tetrachloroethene	.513	.490	4.5
1,1,2,2-Tetrachloroethane #	.745	.720	3.4 #
Toluene	.669	.550	17.8
Chlorobenzene	.956	.877	8.2
Ethylbenzene *	.413	.377	8.8 *
Styrene	.926	.850	8.2
Xylene (total)	.521	.530	1.8
Toluene-d8	1.076	1.039	3.4
1,2-Dichloroethane-d4	1.527	2.617	71.4
Bromofluorobenzene	.921	1.068	32.4

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Instrument ID: 7002E5 Calibration Date: 4/27/89 Time: 10:40

Lab File ID: EF419 Init. Calib. Date(s): 4/21/89 4/21/89

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

Min RRF50 for SPCC(#) = .300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

COMPOUND		RRF	RRF50	%D	
Chloromethane	#	.521	.541	4.0	#
Bromomethane		.957	.883	7.7	
Vinyl Chloride	*	.816	.725	11.2	*
Chloroethane		.556	.545	2.0	
Methylene Chloride		1.317	1.345	2.1	
Acetone		.348	.663	90.6	
Carbon Disulfide		3.183	2.800	12.0	
1,1-Dichloroethene	*	1.093	.995	9.0	*
1,1-Dichloroethane	#	2.376	2.200	7.4	#
1,2-Dichloroethene (total)		1.197	1.123	6.2	
Chloroform	*	3.666	3.296	10.1	*
1,2-Dichloroethane		3.118	2.898	7.1	
2-Butanone		.031	.040	26.5	
1,1,1-Trichloroethane		.946	.892	5.7	
Carbon Tetrachloride		1.065	.982	7.7	
Vinyl Acetate		.640	.707	10.4	
Bromodichloromethane		1.073	1.060	1.2	
1,2-Dichloropropane	*	.349	.341	2.4	*
cis-1,3-Dichloropropene		.661	.676	2.3	
Trichloroethene		.493	.482	2.3	
Dibromochloromethane		1.035	1.029	.6	
1,1,2-Trichloroethane		.407	.414	1.7	
Benzene		.769	.785	2.1	
trans-1,3-Dichloropropene		.545	.562	3.0	
Bromoform	#	.957	.982	2.7	#
4-Methyl-2-Pentanone		.364	.434	19.4	
2-Hexanone		.249	.319	28.4	
Tetrachloroethene		.541	.559	3.5	
1,1,2,2-Tetrachloroethane	#	.692	.780	12.7	#
Toluene	*	.604	.641	6.1	*
Chlorobenzene	#	.958	1.024	6.8	#
Ethylbenzene	*	.408	.421	3.2	*
Styrene		.936	.988	5.5	
Xylene (total)		.590	.602	2.0	
Toluene-d8		1.049	1.098	4.7	
Bromofluorobenzene		1.052	1.036	1.5	
1,2-Dichloroethane-d4		2.687	2.354	12.4	

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Instrum nt ID: 7002E5 Calibration Date: 4/28/89 Time: 10:28

Lab File ID: EF431 Init. Calib. Date(s): 4/21/89 4/21/89

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

Min RRF50 for SPCC(#) = .300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

COMPOUND		$\overline{RRF}$	RRF50	%D	
Chloromethane	#	.521	.533	2.4	#
Bromomethane		.957	.817	14.7	
Vinyl Chloride	*	.816	.562	31.1	*
Chloroethane		.556	.476	14.3	
Methylene Chloride		1.317	1.226	6.9	
Acetone		.348	.657	88.9	
Carbon Disulfide		3.183	2.547	20.0	
1,1-Dichloroethene	*	1.093	.905	17.2	*
1,1-Dichloroethane	#	2.376	2.028	14.7	#
1,2-Dichloroethene (total)		1.197	1.026	14.3	
Chloroform	*	3.666	3.162	13.8	*
1,2-Dichloroethane		3.118	2.917	6.5	
2-Butanone		.031	.067	113.7	
1,1,1-Trichloroethane		.946	.839	11.3	
Carbon Tetrachloride		1.065	.929	12.8	
Vinyl Acetate		.640	.622	2.8	
Bromodichloromethane		1.073	1.007	6.1	
1,2-Dichloropropane	*	.349	.312	10.6	*
cis-1,3-Dichloropropene		.661	.635	3.9	
Trichloroethene		.493	.466	5.4	
Dibromochloromethane		1.035	.966	6.6	
1,1,2-Trichloroethane		.407	.400	1.7	
Benzene		.769	.711	7.5	
trans-1,3-Dichloropropene		.545	.520	4.6	
Bromoform	#	.957	.954	.3	#
4-Methyl-2-Pentanone		.364	.426	17.1	
2-Hexanone		.249	.338	36.1	
Tetrachloroethene		.541	.508	6.0	
1,1,2,2-Tetrachloroethane	#	.692	.708	2.4	#
Toluene	*	.604	.587	2.9	*
Chlorobenzene	#	.958	.931	2.8	#
Ethylbenzene	*	.408	.398	2.3	*
Styrene		.936	.909	2.9	
Xylene (total)		.590	.554	6.2	
Toluene-d8		1.049	1.082	3.2	
Bromofluorobenzene		1.052	1.045	.7	
1,2-Dichloroethane-d4		2.687	2.540	5.5	

FORM VII VOA 1/87 Rev.

3A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EPENG Contract: 68-01-7436

Lab Code: EPENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Lab File ID (Standard): EF341 Date Analyzed: 4/17/89

Instrument ID: 7002E5 Time Analyzed: 8:13

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

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	17870.	8.60	63190.	18.52	57858.	23.37
	UPPER LIMIT	35740.	9.10	126380.	19.02	115716.	23.87
	LOWER LIMIT	8935.	8.10	31595.	18.02	28929.	22.87
	EPA SAMPLE NO.						
1	VBLK	16230.	8.63	58299.	18.51	55104.	23.40
1703 2	NFFW324	13565.	8.62	49861.	18.50	47379.	23.38
1703MS 3	NFFW3MS	15432.	8.63	58305.	18.51	54305.	23.35
1703MSD 4	NFFW3MSD	15702.	8.61	58168.	18.53	54519.	23.38
1704 5	TRIP BL	16019.	8.63	56008.	18.52	53981.	23.36
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IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

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

page 1 of 1

FORM VIII VOA

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Lab File ID (Standard): EF419 Date Analyzed: 4/27/89

Instrument ID: 7002E5 Time Analyzed: 10:40

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

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	14771.	8.63	50254.	18.55	44271.	23.40
	UPPER LIMIT	29542.	9.13	100508.	19.05	88542.	23.90
	LOWER LIMIT	7386.	8.13	25127.	18.05	22136.	22.90
	EPA SAMPLE NO.						
1	VBLK1	15076.	8.65	52780.	18.57	45941.	23.42
1778 2	NFFW5	12538.	8.65	43627.	18.54	38439.	23.42
1779 3	NFFW5S2	7631.	8.64	29884.	18.56	26528.	23.40
1780 4	NFFW6S5	11931.	8.62	42180.	18.54	37756.	23.43
1780MS 5	NFFW6MS	12441.	8.63	43899.	18.51	41023.	23.39
1780MSD 6	NFFW6MSD	14057.	8.65	47676.	18.57	41402.	23.42
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22							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

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

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Lab File ID (Standard): EF431 Date Analyzed: 4/28/89

Instrument ID: 7002E5 Time Analyzed: 10:28

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

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	12 HOUR STD	15331.	8.67	54070.	18.56	47725.	23.41
	UPPER LIMIT	30662.	9.17	108140.	19.06	95450.	23.91
	LOWER LIMIT	7666.	8.17	27035.	18.06	23863.	22.91
	EPA SAMPLE NO.						
1	VBLK2	13633.	8.66	50724.	18.58	42053.	23.42
1781 2	NFFW2	13093.	8.63	46961.	18.55	40755.	23.40
1782 3	TRIP BL	8806.	8.65	32581.	18.57	24728.	23.41
1914 4	NFFW6	11874.	8.63	39308.	18.55	35881.	23.44
1916 5	RINSE BL	11835.	8.65	37990.	18.57	30830.	23.42
1917 6	TRIP BL	12580.	8.65	38050.	18.53	35188.	23.41
1918 7	NFFW7	12021.	8.62	37559.	18.54	32580.	23.43
1918MS 8	NFFW7MS	11018.	8.65	36063.	18.57	31722.	23.42
1918MSD 9	NFFW7MSD	10615.	8.63	33755.	18.55	32100.	23.39
1915 10	NFFW7S4 DL	14282.	8.63	51304.	18.55	42501.	23.39
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21							
22							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

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

D. Raw QC Data

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK

Lab Name: EAENG Contract: 88-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF342

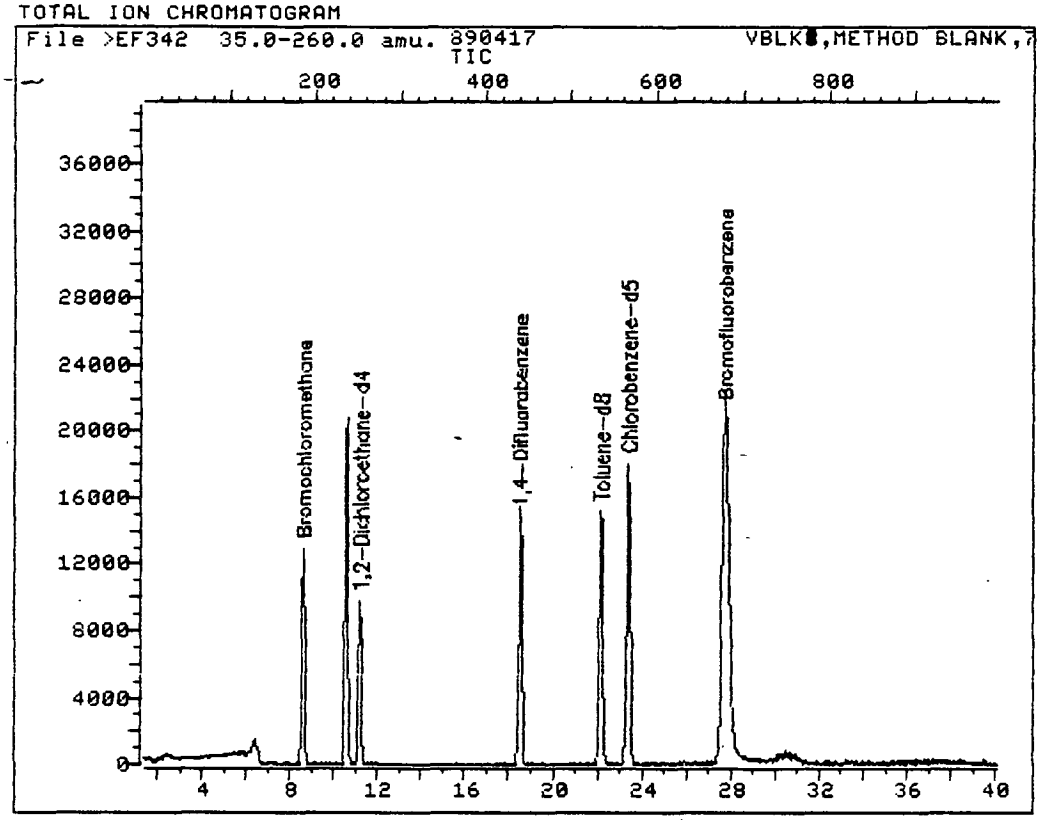
Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 4/17/89

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

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

TOTAL ION CHROMATOGRAM



Data File: >EF342::D2 Quant Output File: ^EF342::QT
Name: 890417
Misc: VBLK,METHOD BLANK,7002E5,WATER,5.0ML

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

Operator ID: CARL
Quant Time: 890417 10:09
Injected at: 890417 09:28

QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890417 10:09
Output File: EF342::QT Injected at: 890417 09:26
Data File: EF342::D2 Dilution Factor: 1.00000
Name: 890417
Misc: VBLK[illegible],METHOD BLANK,7002E5,WATER,5.0ML

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.63	128.0	16230	50.00	UG/L	92
13)	1,2-Dichloroethane-d4	11.23	65.0	43987	51.79	UG/L	79
15)	*1,4-Difluorobenzene	18.51	114.0	89299	50.00	UG/L	90
29)	*Chlorobenzene-d5	23.40	117.0	55104	50.00	UG/L	95
35)	Toluene-d8	22.16	98.0	53150	50.77	UG/L	99
40)	Bromofluorobenzene	27.70	95.0	60148	50.17	UG/L	86

* Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.0 (g/mL) G Lab File ID: EF420

L vel: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 4/27/89

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

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

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK1

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.0 (g/mL) G Lab File ID: EF420

L v l: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 4/27/89

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

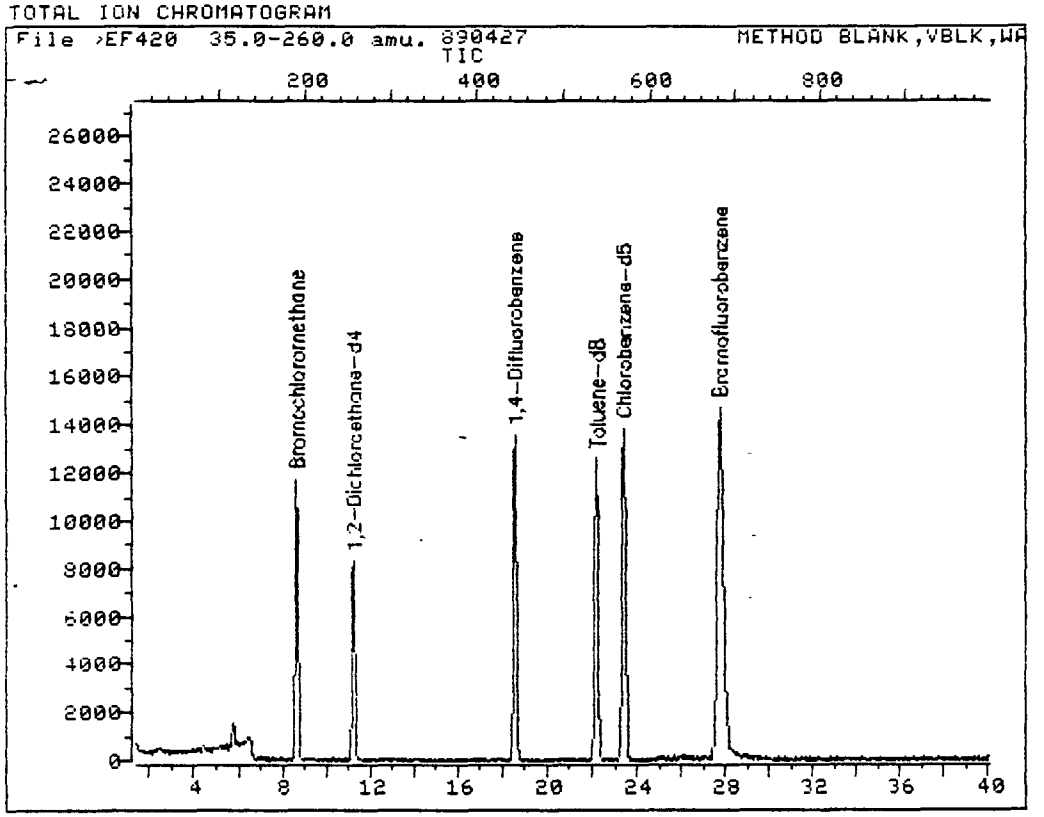
Number TICs found: 0

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

FORM I VOA-TIC 1/87 Rev.

TOTAL ION CHROMATOGRAM



Data File: >EF420::D2 Quant Output File: ^EF420::QT
Name: 890427
Misc: METHOD BLANK,VBLK,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 11:36

Operator ID: CARL
Quant Time: 890427 12:34
Injected at: 890427 11:53

QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890427 12:34
Output File: ^EF420::QT Injected at: 890427 11:53
Data File: >EF420::D2 Dilution Factor: 1.00000
Name: 890427
Misc: METHOD BLANK,VBLK,WATER,5,7002E5

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 11:36

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.65	128.0	15076	50.00	UG/L	97
6)	Methylene Chloride	5.78	84.0	~~1753~~	~~4.32~~	UG/L	84
13)	1,2-Dichloroethane-d4	11.25	65.0	36377	51.26	UG/L	81
15)	*1,4-Difluorobenzene	18.57	114.0	52780	50.00	UG/L	88
29)	*Chlorobenzene-d5	23.41	117.0	45941	50.00	UG/L	97
35)	Toluene-d8	22.21	98.0	51181	50.71	UG/L	97
40)	Bromofluorobenzene	27.76	95.0	48561	51.00	UG/L	87

* Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK2

Lab Nam : EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF432

L v l: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 4/28/89

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

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

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK2

Lab Name: EAENG Contract: 68-01-7436

Lab Cod : EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: METHOD BLANK

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF432

L vel: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 100. Date Analyzed: 4/28/89

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

Number TICs found: 2

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	- -	UNKNOWN	2.45	7.	J
2.	- -	UNKNOWN	6.45	6.	J
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
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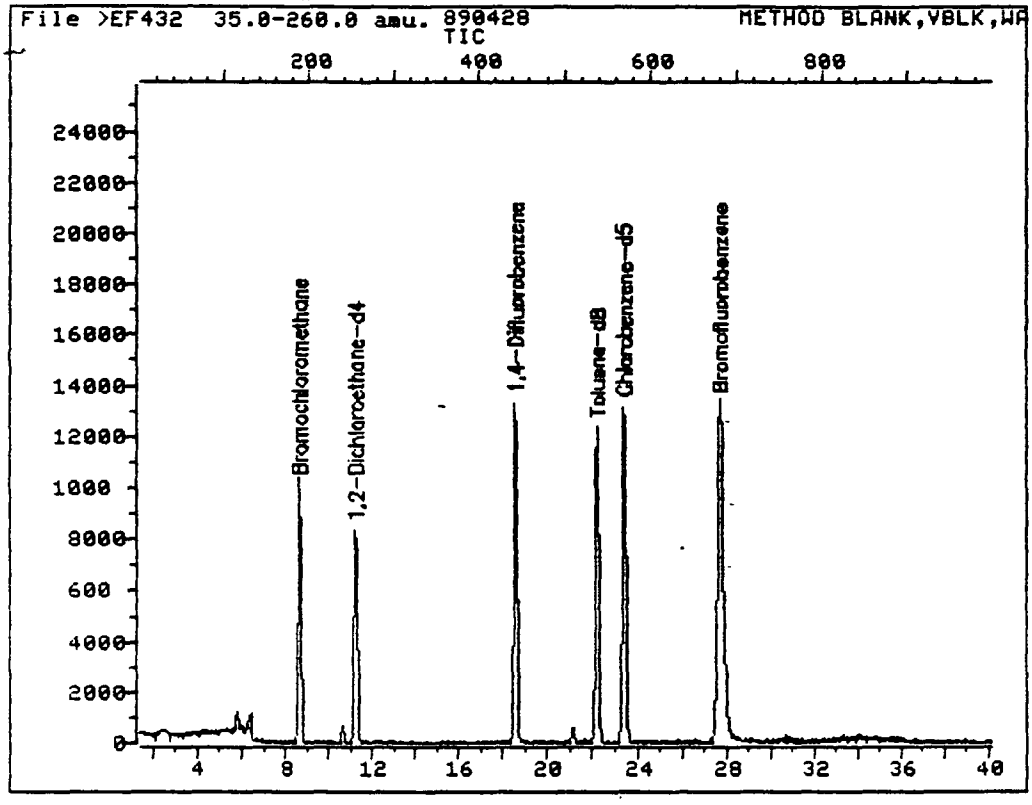
29.					
30.					

FORM I VOA-TIC 1/87 Rev.

TOTAL ION CHROMATOGRAM



Data File: >EF432::D2 Quant Output File: ^EF432::QT
Name: 890428
Misc: METHOD BLANK,VBLK,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

Operator ID: CARL
Quant Time: 890428 12:01
Injected at: 890428 11:20

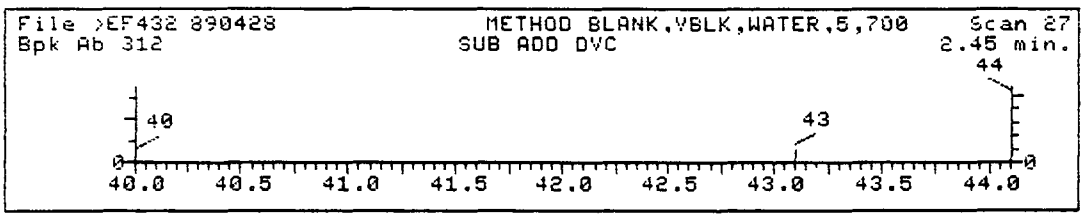
QUANT REPORT

Op rator ID: CARL Quant Rev: 6 Quant Time: 890503 08:39
Output File: ^EF432::QT Injected at: 890428 11:20
Data File: >EF432::D2 Dilution Factor: 1.00000
Name: 890428
Misc: METHOD BLANK,VBLK,WATER,5,7002E5

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890503 08:26

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.66	128.0	13633	50.00	UG/L	96
13)	1,2-Dichloroethane-d4	11.25	65.0	36802	53.14	UG/L	79
15)	*1,4-Difluorobenzene	18.58	114.0	50724	50.00	UG/L	90
29)	*Chlorobenzene-d5	23.42	117.0	42053	50.00	UG/L	96
35)	Toluene-d8	22.22	98.0	47793	52.51	UG/L	98
40)	Bromofluorobenzene	27.72	95.0	45185	51.42	UG/L	86

* Compound is ISTD

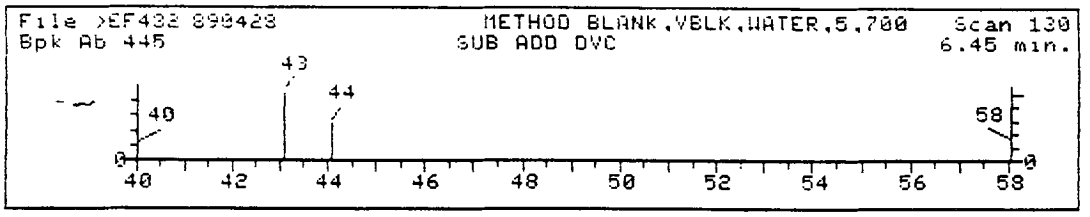


Retention time = 2.45 UNKNOWN

Area = 13203.00 Tentative Concentration is 7.00

Sample file: >EF432 Spectrum #: 27

No data base entries were retrieved.



Retention time = 6.45 UNKNOWN

Area = 12777.00 Tentative Concentration is 6.00

Sample file: >EF432 Spectrum #: 130

No data base entries were retrieved.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW3MS

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Matrix: (soil/water) WATER Lab Sample ID: EA # 1703

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF352

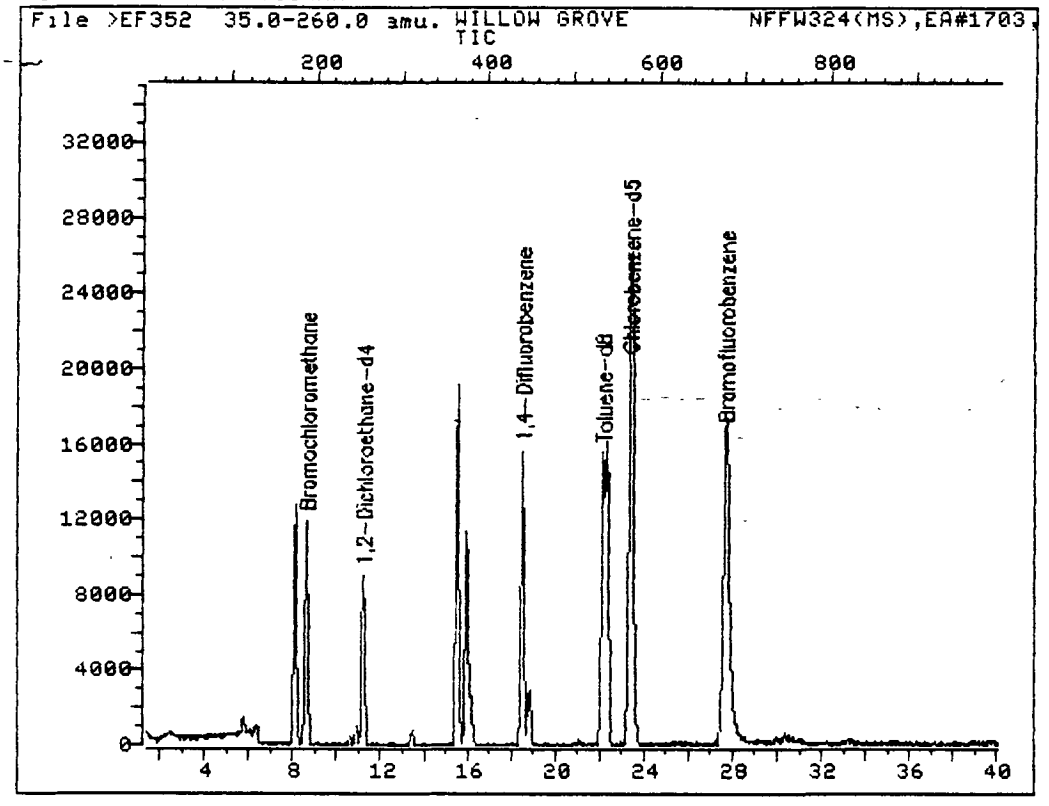
Level: (low/med) LOW Date Received: 4/15/89

% Moisture: not dec. 100. Date Analyzed: 4/17/89

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

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	71.	
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	3.	J
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	57.	
124-48-1	Dibromochloromethane	7.	
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	58.	
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	8.	
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	59.	
108-90-7	Chlorobenzene	57.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

TOTAL ION CHROMATOGRAM



Data File: >EF352::D2 Quant Output File: ^EF352::QT
Name: WILLOW GROVE
Misc: NFFW324(MS),EA#1703,7002E5,WATER,5.0ML

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

Operator ID: CARL
Quant Time: 890417 18:09
Injected at: 890417 17:28

QUANT REPORT

Operator ID: CARL Quant Rev: 5 Quant Time: 890417 18:09
Output File: EF352::QT Injected at: 890417 17:28
Data File: EF352::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: NFFW324(MS),EA#1703,7002E5,WATER,5.0ML

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.63	128.0	15432	50.00	UG/L	97
9)	1,1-Dichloroethene	8.12	96.0	20583	71.40	UG/L	97
12)	Chloroform	10.64	83.0	1825	1.91	UG/L	97
13)	1,2-Dichloroethane-d4	11.22	65.0	41642	51.55	UG/L	78
15)	*1,4-Difluorobenzene	13.51	114.0	59305	50.00	UG/L	91
20)	Bromodichloromethane	13.43	83.0	3948	3.30	UG/L	90
23)	Trichloroethene	15.52	130.0	30507	53.75	UG/L	92
24)	Dibromochloromethane	16.16	129.0	8154	6.33	UG/L	93
28)	Benzene	15.99	78.0	46359	53.47	UG/L	87
29)	Bromoform	18.86	173.0	8631	7.63	UG/L	99
29)	*Chlorobenzene-d5	23.35	117.0	54305	50.00	UG/L	97
34)	Toluene	22.35	92.0	35491	53.46	UG/L	95
35)	Toluene-d8	22.15	98.0	57219	50.69	UG/L	98
36)	Chlorobenzene	23.47	112.0	54471	57.18	UG/L	93
40)	Bromofluorobenzene	27.66	95.0	57310	48.50	UG/L	85

* Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW7MS

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA# ~~2025~~ 1918

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF439

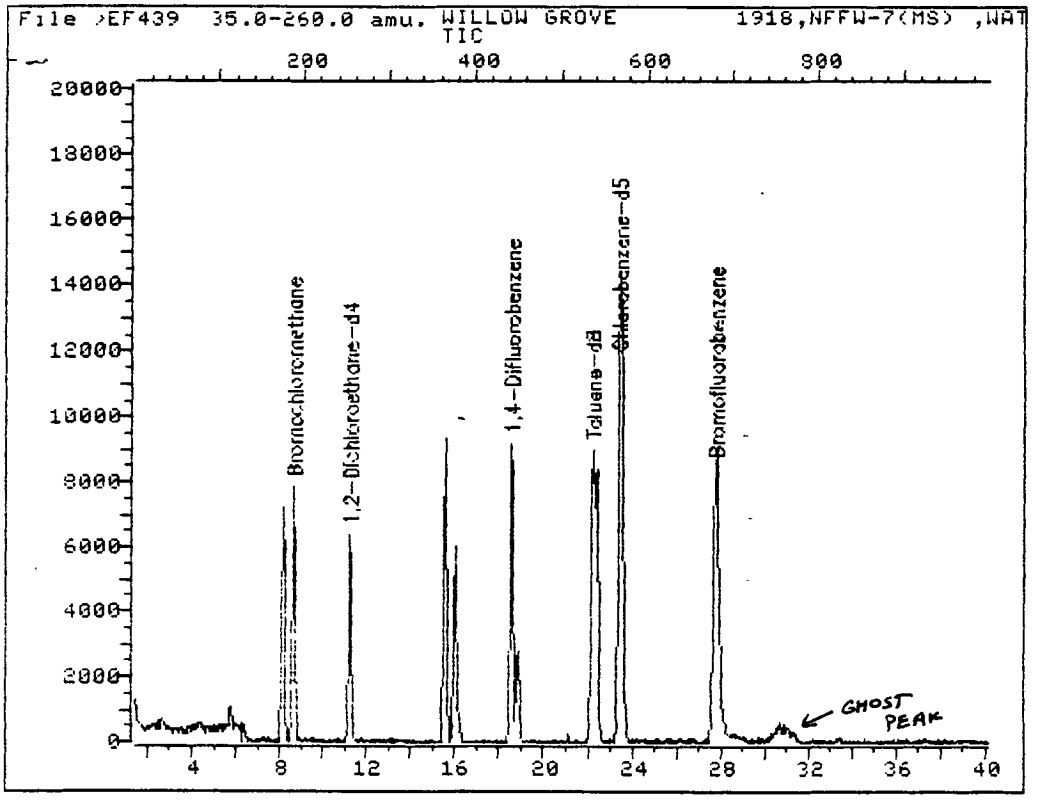
Level: (low/med) LOW Date Received: 4/21/89

% Moisture: not dec. 100. Date Analyzed: 4/28/89

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

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		
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		
124-48-1	Dibromochloromethane	4.	J
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene		
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	12.	
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		
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

TOTAL ION CHROMATOGRAM



Data File: >EF439::D2 Quant Output File: ^EF439::QT
Name: WILLOW GROVE
Misc: 1918,NFFW-7(MS) ,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

Operator ID: CARL
Quant Time: 890428 17:29
Injected at: 890428 16:49

QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890428 17:29
Output File: ^EF439::QT Injected at: 890428 16:49
Data Fil : >EF439::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1918,NFFW-7(MS) ,WATER,5,7002E5

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.65	128.0	11018	50.00	UG/L	96
9)	1,1-Dichloroethene	8.15	96.0	11713	58.77	UG/L	90
13)	1,2-Dichloroethane-d4	11.25	65.0	27355	48.88	UG/L	79
15)	*1,4-Difluorobenzene	18.57	114.0	36063	50.00	UG/L	90
23)	Trichloroethene	15.59	130.0	15992	47.59	UG/L	90
24)	Dibromochloromethane	16.21	129.0	2844	4.08	UG/L	97
26)	Benzene	16.02	78.0	24283	47.34	UG/L	89
28)	Bromoform	18.88	173.0	7950	11.56	UG/L	99
29)	*Chlorobenzene-d5	23.42	117.0	31722	50.00	UG/L	93
34)	Toluene	22.41	92.0	18788	50.47	UG/L	94
35)	Toluene-d8	22.22	98.0	34544	50.31	UG/L	98
36)	Chlorobenzene	23.54	112.0	28895	48.90	UG/L	94
40)	Bromofluorobenzene	27.76	95.0	31701	47.82	UG/L	92

* Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW6MS

Lab Nam : EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: EA#1780

Sample wt/vol: 5.0 (g/mL) G Lab File ID: EF425

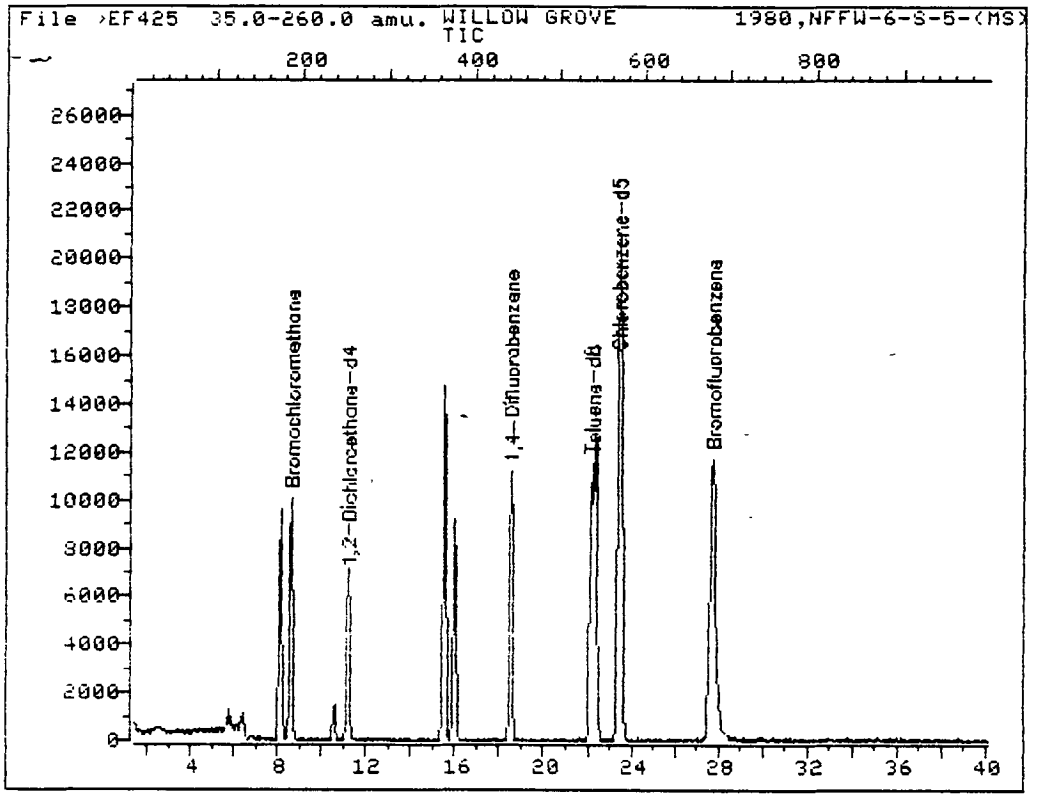
Level: (low/med) LOW Date Received: 4/17/89

% Moisture: not dec. 11. Date Analyzed: 4/27/89

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

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

TOTAL ION CHROMATOGRAM



Data File: >EF425::D2 Quant Output File: ^EF425::QT
Name: WILLOW GROVE
Misc: 1980,NFFW-6-S-5-(MS),SOIL,5,7002E5

Id File: EVOAS::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 12:28

Operator ID: CARL
Quant Time: 890427 16:38
Injected at: 890427 15:43

QUANT REPORT

Operator ID: CARL Quant R v: 6 Quant Time: 890427 16:38
Output File: ^EF425::QT Injected at: 890427 15:43
Data Fil : >EF425::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1980,NFFW-6-S-5-(MS),SOIL,5,7002E5

ID File: EVOAS::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 12:28

	Compound	R.T.	Q ion	Area	Conc	Unit	q
1)	*Bromochloromethane	8.63	128.0	12441	50.00	UG/KG	89
9)	1,1-Dichloroethene	8.12	96.0	15949	64.45	UG/KG	89
13)	1,2-Dichloroethane-d4	11.18	65.0	32911	56.20	UG/KG	80
15)	*1,4-Difluorobenzene	18.51	114.0	43899	50.00	UG/KG	90
23)	Trichloroethene	15.52	130.0	24156	57.14	UG/KG	85
26)	Benzene	15.99	78.0	37747	54.79	UG/KG	90
29)	*Chlorobenzene-d5	23.39	117.0	41023	50.00	UG/KG	93
34)	Toluene	22.35	92.0	28349	53.92	UG/KG	97
35)	Toluene-d8	22.19	98.0	44087	48.92	UG/KG	96
36)	Chlorobenzene	23.51	112.0	45855	54.61	UG/KG	93
40)	Bromofluorobenzene	27.73	95.0	42015	49.41	UG/KG	78

* Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW3MSD

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NFFW32

Matrix: (soil/water) WATER Lab Sample ID: EA # 1703

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF353

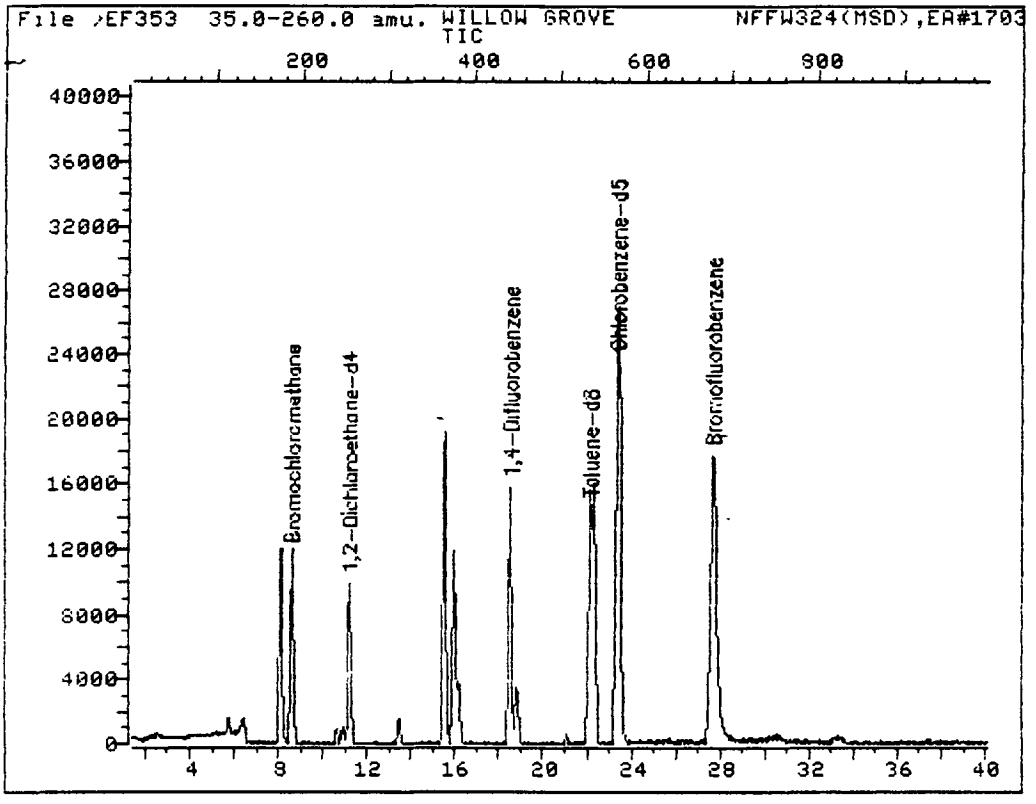
Level: (low/med) LOW Date Received: 4/15/89

% Moisture: not dec. 30. Date Analyzed: 4/17/89

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

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	69.	
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	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.	
78-87-5	1,2-Dichloropropane	5.	U
10061-01-5	cis-1,3-Dichloropropene	5.	U
79-01-6	Trichloroethene	58.	
124-48-1	Dibromochloromethane	10.	
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene	59.	
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	9.	
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	59.	
108-90-7	Chlorobenzene	59.	
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

TOTAL ION CHROMATOGRAM



Data File: >EF353::D2 Quant Output File: ^EF353::QT
Name: WILLOW GROVE
Misc: NFFW324(MSD),EA#1703,7002E5,WATER,5.0ML

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

Operator ID: CARL
Quant Time: 890417 18:56
Injected at: 890417 18:15

QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890417 18:56
Output File: EF353::QT Injected at: 890417 18:15
Data File: EF353::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: MFFW324(MSD),EA#1703,7002E5,WATER,5.0ML

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890417 09:07

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	9.61	128.0	15702	50.00	UG/L	90
9)	1,1-Dichloroethene	8.10	96.0	20195	68.85	UG/L	91
12)	Chloroform	10.62	83.0	3332	3.43	UG/L	98
13)	1,2-Dichloroethane-d4	11.20	65.0	43647	53.12	UG/L	79
15)	*1,4-Difluorobenzene	13.53	114.0	59168	50.00	UG/L	90
20)	Bromodichloromethane	13.45	83.0	6005	5.03	UG/L	84
22)	Trichloroethene	15.55	130.0	31125	58.03	UG/L	89
24)	Dibromochloromethane	16.20	129.0	11380	9.55	UG/L	99
26)	Benzene	15.97	78.0	46901	58.23	UG/L	89
28)	Bromoform	18.84	173.0	10119	3.97	UG/L	95
29)	*Chlorobenzene-d5	23.38	117.0	54519	50.00	UG/L	97
34)	Toluene	22.33	92.0	35151	58.66	UG/L	95
35)	Toluene-d8	22.14	98.0	57948	51.14	UG/L	98
36)	Chlorobenzene	23.49	112.0	56205	58.77	UG/L	91
40)	Bromofluorobenzene	27.68	95.0	59170	48.89	UG/L	87

* Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW7MSD

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) WATER Lab Sample ID: EA# 1918

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: EF440

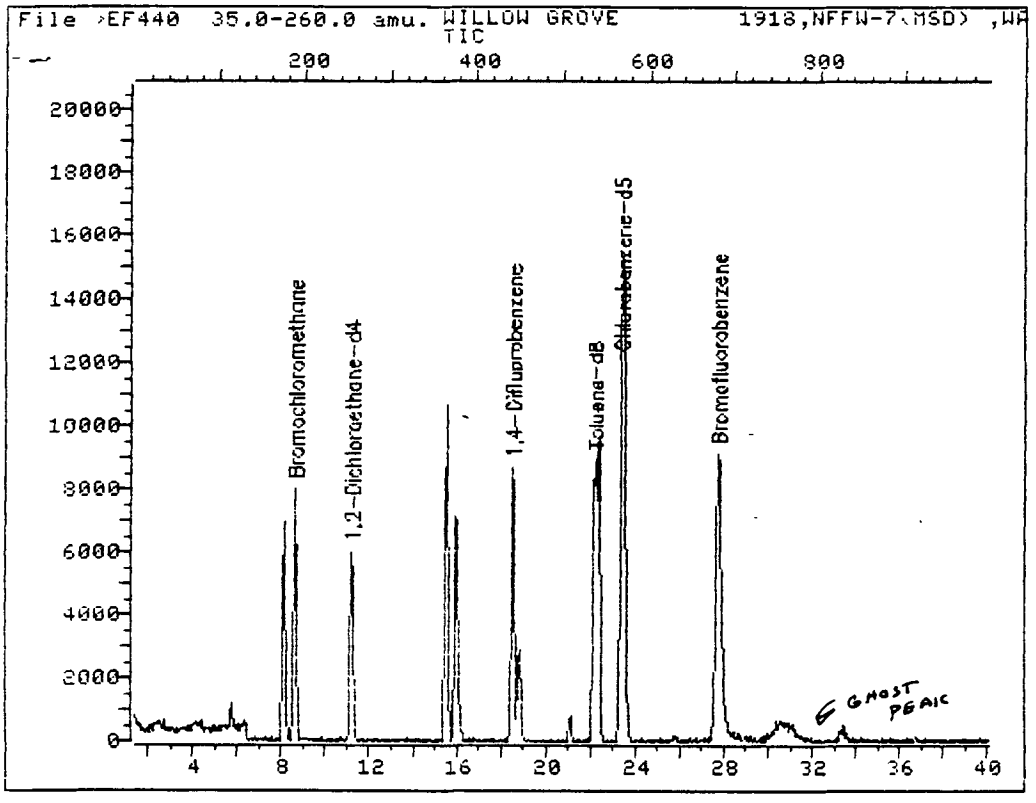
L v l: (low/med) LOW Date Received: 4/21/89

% Moistur : not dec. 100. Date Analyzed: 4/28/89

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

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		
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		
124-48-1	Dibromochloromethane	3.	J
79-00-5	1,1,2-Trichloroethane	5.	U
71-43-2	Benzene		
10061-02-6	trans-1,3-Dichloropropene	5.	U
75-25-2	Bromoform	13.	
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		
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene	5.	U
100-42-5	Styrene	5.	U
1330-20-7	Xylene (total)	5.	U

TOTAL ION CHROMATOGRAM



Data File: >EF440::D2 Quant Output File: ^EF440::QT
Name: WILLOW GROVE
Misc: 1918,NFFW-7(MSD) ,WATER,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

Operator ID: CARL
Quant Time: 890428 18:17
Injected at: 890428 17:34

QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890428 18:17
Output File: ^EF440::QT Injected at: 890428 17:34
Data Fil : >EF440::D2 Dilution Factor: 1.00000
Nam : WILLOW GROVE
Misc: 1918,NFFW-7(MSD) ,WATER,5,7002E5

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890428 11:20

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.63	128.0	10615	50.00	UG/L	98
9)	1,1-Dichloroethene	8.16	96.0	11755	61.22	UG/L	88
13)	1,2-Dichloroethane-d4	11.22	65.0	27461	50.93	UG/L	80
15)	*1,4-Difluorobenzene	18.55	114.0	33755	50.00	UG/L	90
23)	Trichloroethene	15.56	130.0	18549	58.97	UG/L	94
24)	Dibromochloromethane	16.18	129.0	2221	3.40	UG/L	99
26)	Benzene	15.99	78.0	29327	61.08	UG/L	90
28)	Bromoform	18.86	173.0	8511	13.22	UG/L	99
29)	*Chlorobenzene-d5	23.39	117.0	32100	50.00	UG/L	97
34)	Toluene	22.39	92.0	22238	59.04	UG/L	96
35)	Toluene-d8	22.19	98.0	34365	49.46	UG/L	97
36)	Chlorobenzene	23.51	112.0	34678	58.00	UG/L	94
40)	Bromofluorobenzene	27.74	95.0	31804	47.41	UG/L	91

* Compound is ISTD

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NFFW6MSD

Lab Name: EAENG Contract: 68-01-7436

Lab Code: EAENG Case No.: WILLOW SAS No.: SDG No.: NF6S5

Matrix: (soil/water) SOIL Lab Sample ID: EA# ~~1918~~ 1780

Sample wt/vol: 5.0 (g/mL) G Lab File ID: EF429

Level: (low/med) LOW Date Received: 4/17/89

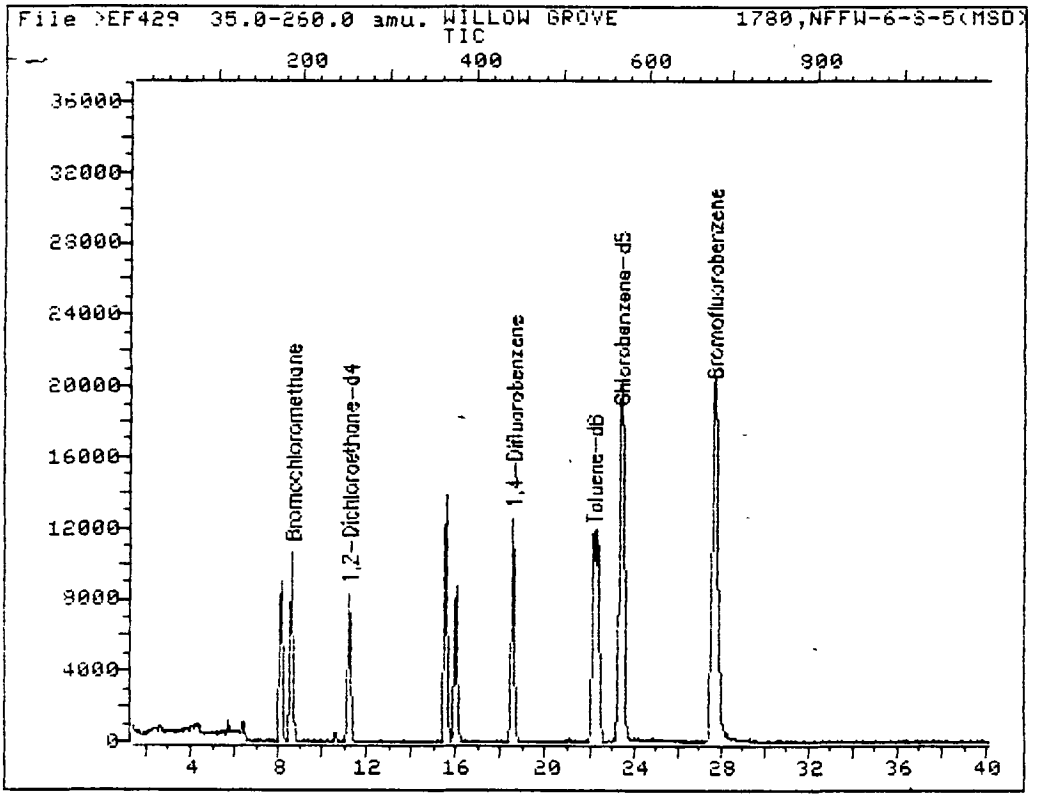
% Moisture: not dec. 11. Date Analyzed: 4/27/89

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

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

FORM I VOA 1/87 Rev.

TOTAL ION CHROMATOGRAM



Data File: >EF429::D2 Quant Output File: ^EF429::QT
Name: WILLOW GROVE
Misc: 1780,NFFW-6-S-5(MSD),SOIL,5,7002E5

Id File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 11:36

Operator ID: CARL
Quant Time: 890427 21:56
Injected at: 890427 21:15

QUANT REPORT

Operator ID: CARL Quant Rev: 6 Quant Time: 890427 21:56
Output File: ^EF429::QT Injected at: 890427 21:15
Data File: >EF429::D2 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: 1780,NFFW-6-S-5(MSD),SOIL,5,7002E5

ID File: EVOA::BD
Title: CLP protocol-5pt calibration, 7002E5
Last Calibration: 890427 11:36

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*Bromochloromethane	8.65	128.0	14057	50.00	UG/L	99
9)	1,1-Dichloroethene	8.15	96.0	14039	50.21	UG/L	88
13)	1,2-Dichloroethane-d4	11.21	65.0	35287	53.33	UG/L	81
15)	*1,4-Difluorobenzene	18.57	114.0	47676	50.00	UG/L	91
23)	Trichloroethene	15.55	130.0	22393	48.77	UG/L	89
26)	Benzene	16.01	78.0	34477	46.08	UG/L	91
29)	*Chlorobenzene-d5	23.42	117.0	41402	50.00	UG/L	96
34)	Toluene	22.37	92.0	26473	49.89	UG/L	96
35)	Toluene-d8	22.18	98.0	45960	50.53	UG/L	98
36)	Chlorobenzene	23.50	112.0	42321	49.94	UG/L	94
40)	Bromofluorobenzene	27.68	95.0	42621	49.67	UG/L	91

* Compound is ISTD

E. Quality Assurance Summary

EA LABORATORIES

QUALITY ASSURANCE SUMMARY

FOR NAVAL ENERGY AND ENVIRONMENTAL SUPPORT ACTIVITY CONTRACTS

Project: Willow Grove Analysis: TCL volatiles

EA Laboratories Report No. 890230 Method: U.S. EPA-CLP

Reviewed by: [illegible] Date: 5-24-89

1. The 10-day holding time requirement from sample collection to analysis was met for all samples.

   ✓ Yes ____ N

2. The 12-hour tuning period for BFB was met for all samples.

   ✓ Yes ____ No

3. Initial calibration criteria were met for all samples: the RSD is ≤30% for all CCC compounds, and the RRF for SPCC compounds is >0.300 (0.250 for bromoform).

   ✓ Yes ____ No

4. Continuing calibration criteria were met for all samples: the response factor percent deviation from the mean initial calibration response factor for all CCC compounds was ≤25%, and the RRF for SPCC compounds is >0.300 (0.250 for bromoform).

   ✓ mmt. 5 Jun 89 Yes ____ No

5. Surrogate recovery limits were met for all samples.

   ✓ Yes ____ No

6. MS and MSD criteria were met for all samples.

   ✓ Yes ✓ No

7. Method blank criteria were met for all samples: common laboratory contaminants are ≤5X CRQL, all other compounds are <CRQL.

   ✓ Yes ____ No

   MMR 27 Jun 89

(Revised 8 May 1989)

EA LABORATORIES

QUALITY ASSURANCE SUMMARY

FOR NAVAL ENERGY AND ENVIRONMENTAL SUPPORT ACTIVITY CONTRACTS

Project: Willow Grove Analysis: TCL volatiles

EA Laboratories Report No. _____ Method: U.S. EPA-CLP

Reviewed by: [illegible] Date: 5-24-87

8. Laboratory control sample criteria were met for all samples.

X Yes _____ No

9. Field and equipment blanks: no target compounds were detected the samples at concentrations <5X the concentration found in the highest associated blank.

X Yes _____ No

Comments: for ~~EPA~~ 1778; 1779, 1780, 1781, 1782, 1914

1915, 1916, 1917, 1918 2025, 2026, 2027

(Revised 8 May 1989)

4. SEMIVOLATILE DATA

A. QC Summary

WATER SURROGATE PERCENT RECOVERY SUMMARY

Case No. Willow Grove Contract Laboratory EA LABORATORIES Contract No. 10268.02

SMO TRAFFIC NO.	VOLATILE: TOLUENE-D8 (88-110)	VOLATILE: BFB (59-113)	VOLATILE: 1,2 DICHLORO-ETHANE-D4 (76-114)	SEMI-VOLATILE: NITRO-BENZENE-D5 (35-114)	SEMI-VOLATILE: 2-FLUORO-BIPHENYL (43-116)	SEMI-VOLATILE: TERPHENYL-D14 (33-141)	SEMI-VOLATILE:	SEMI-VOLATILE:	SEMI-VOLATILE: PHENOL-D5 (10-94)	SEMI-VOLATILE: 2-FLUORO-PHENOL (21-100)	SEMI-VOLATILE: 2,4,6 TRIBROMO-PHENOL (10-123)	PESTICIDE: DIBUTYL-CHLORENDATE ** (24-154)
BLANK #638	for EA	#1781		64	78	116						
RINSATE BLANK NFFLW2	FH	#1781		42	84	173*						

* VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS

** ADVISORY LIMITS ONLY

Volatiles: _____ out of _____ ; outside of QC limits

Semi-Volatiles: 1 out of 6 ; outside of QC limits

Pesticides: _____ out of _____ ; outside of QC limits

Comments: B/N only

002

FORM II

WATER SURROGATE PERCENT RECOVERY SUMMARY

Case No. Willow Grove Contract Laboratory EA LABORATORIES Contract No. 103803

	VOLATILE			SEMI-VOLATILE								PESTICIDE
SMO TRAFFIC NO.	~~TOLUENE-D8 (88-110)~~	~~BFB (86-115)~~	~~1,2 DICHLORO-ETHANE-D4 (76-114)~~	NITRO-BENZENE-D5 (35-114)	2-FLUORO-BIPHENYL (43-116)	TERPHENYL-D14 (33-141)			PHENOL-D5 (10-94)	2-FLUORO-PHENOL (21-100)	2,4,6 TRIBROMO-PHENOL (10-123)	** DIBUTYL-CHLORENDATE (24-154)
BLANK #664				100	91	99						
MFF Rinsate Blank #3	EA #1916			92	80	104						

* VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS

** ADVISORY LIMITS ONLY

Volatiles: _____ out of _____ ; outside of QC limits

Semi-Volatiles: 0 out of 6 ; outside of QC limits

Pesticides: _____ out of _____ ; outside of QC limits

Comments: B/N only.

003

FORM II

7/85

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Cas No. Willow Grove Contract Laboratory EA Laboratories Contract No. [illegible]

Low Low Medium

SMO TRAFFIC NO.	VOLATILE: TOLUENE-D8 (81-117)	VOLATILE: BFB (74-121)	VOLATILE: 1,2 DICHLORO-ETHANE-D4 (70-121)	SEMI-VOLATILE: NITRO-BENZENE-D5 (23-120)	SEMI-VOLATILE: 2-FLUORO-BIPHENYL (30-115)	SEMI-VOLATILE: TERPHENYL-D14 (18-137)	SEMI-VOLATILE:	SEMI-VOLATILE:	SEMI-VOLATILE: PHENOL-D5 (24-113)	SEMI-VOLATILE: 2-FLUORO-PHENOL (25-121)	SEMI-VOLATILE: 2,4,6 TRIBROMO PHENOL (19-122)	PESTICIDE: DIBUTYL-CHLORENDATE (20-150)
MSTD	→ 336			77	75	89						
Blank (#675) for EA #1779-80				62	66	81						
NFFW-5.5-2		EA #1779		67	68	72						
NFFW-5.5-2		EA #1779 (MS)		74	74	76						
NFFW-5.5-2		EA #1779 (MSD)		69	72	82						
NFFW-6.6-5		EA #	1780	67	64	76						

* VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS

* ADVISORY LIMITS ONLY

Volatiles: _____ out of _____ ; outside of QC limits

Semi-Volatiles: 0 out of 18 ; outside of QC limits

Pesticides: _____ out of _____ ; outside of QC limits

7/85

Comments: B/N only

FORM II

SOIL SURROGATE PERCENT RECOVERY SUMMARY

Cas No. Willow Grove Contract Laboratory EA LABORATORIES Contract No. 10558.03

Low _____ Medium _____

	VOLATILE			SEMI-VOLATILE								PESTICIDE
SMO TRAFFIC NO.	~~TOLUENE-D8~~ (81-117)	~~BFB~~ (74-121)	~~1,2 DICHLORO-ETHANE-D4~~ (70-121)	NITRO-BENZENE-D5 (23-120)	2-FLUORO-BIPHENYL (30-115)	TERPHENYL-D14 (18-137)			PHENOL-D5 (24-113)	2-FLUORO-PHENOL (25-121)	2,4,6 TRIBROMO PHENOL (19-122)	~~DIBUTYL-CHLORENDATE~~ (20-150) **
BLANK #674				75	69	75						
NFFW-7S-4	EA #	1915		77	72	75						

VALUES ARE OUTSIDE OF CONTRACT REQUIRED QC LIMITS

ADVISORY LIMITS ONLY

Volatiles: _____ out of _____ ; outside of QC limits

Semi-Volatiles: 0 out of 6 ; outside of QC limits

Pesticides: _____ out of _____ ; outside of QC limits

7/85

Comments: B/N only

FORM II

SOIL MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Case No. Willow Grove Contract EA Laboratories Contract No. 10355.03

Low Level low Medium Level _____

FRACTION	COMPOUND	CONC. SPIKE ADDED (ug/Kg)	SAMPLE RESULT	CONC. MS	% REC	CONC. MSD	% REC	RPD	QC LIMITS* RPD	QC LIMITS* RECOVERY
VOA SMO SAMPLE NO.	1,1-Dicholorethene								22	59-172
	Trichloroethene								24	62-137
	Chlorobenzene								21	60-133
	Toluene								21	59-139
	Benzene								21	66-142
B/N SMO SAMPLE NO. EA# 1779	1,2,4-Trichlorobenzene	100	0	88	88	83	83	6	23	38-107
	Acenaphthene	100	0	91	91	90	90	1	19	31-137
	2,4 Dinitrotoluene	100	0	95	95*	97	97*	2	47	28-89
	Pyrene	100	0	90	90	97	97	7	36	35-142
	N-Nitrosodi-n-Propylamine	100	0	106	106	102	102	4	38	41-126
	1,4-Dichlorobenzene	100	0	80	80	73	73	9	27	28-104
ACID SMO SAMPLE NO.	Pentachlorophenol								47	17-109
	Phenol								35	26-90
	2-Chlorophenol								50	25-102
	4-Chloro-3-Methylphenol								33	26-103
	4-Nitrophenol								50	11-114
PEST SMO SAMPLE NO.	Lindane								50	46-127
	Heptachlor								31	35-130
	Aldrin								43	34-132
	Dieldrin								38	31-134
	Endrin								45	42-139
	4,4'-DDT								50	23-134

ASTERISKED VALUES ARE OUTSIDE QC LIMITS.

RPD: VOAs ____ out of ____; outside QC limits
B/N 0 out of 6; outside QC limits
ACID ____ out of ____; outside QC limits
PEST ____ out of ____; outside QC limits

RECOVERY: VOAs ____ out of ____; outside QC limits
B/N 2 out of 12; outside QC limits
ACID ____ out of ____; outside QC limits
PEST ____ out of ____; outside QC limits

Comments: B/N only

7/85

FORM III

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: _____ Case No.: Willow Grove SAS No.: _____ SDG No.: _____

Lab File ID: DD 526 Lab Sample ID: BLANK #638

Date Extracted: 4/22/89 Extraction: (SepF/Cont/Sonc) S

Date Analyzed: 5/18/89 Time Analyzed: 21:35

Matrix: (soil/water) WATER Level: (low/med) —

Instrument ID: GC/MS #4

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	RINSATE BLANK NAF2	EA #1781	DD 524	5/18/89
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
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16				
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27				
28				
29				
30				

COMMENTS: _____

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: EA Laboratories Contract: 10338.03

Lab Code: _____ Case No.: Willow Grove SAS No.: _____ SDG No.: _____

Lab File ID: DD446 Lab Sample ID: BLK #664

Date Extracted: 4/25/89 Extraction: (SepF/Cont/Sonc) Cont

Date Analyzed: 5/9/89 Time Analyzed: 18:15

Matrix: (soil/water) WATER Level: (low/~~med~~) _____

Instrument ID: GC/MS #4

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	NFF. Rinsate Blank	EA # 1916	DD448	5/9/89
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
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27				
28				
29				
30				

COMMENTS: _____

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: _____ Case No.: Willow Grove SAS No.: _____ SDG No.: _____

Lab File ID: DD 459 Lab Sample ID: BLANK # 674

Date Extracted: 4/26/89 Extraction: (SepF/Cont/Sonc) Cont

Date Analyzed: 5/10/89 Time Analyzed: 14:30

Matrix: (soil/water) Soil Level: (low/~~med~~) low

Instrument ID: GC/MS #4

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	NFFW-7S-4	EA # 1915	DD 447	5/9/89
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
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29				
30				

COMMENTS: _____

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: EA Laboratories. Contract: 10358.03

Lab Code: _____ Case No.: Willow Grove SAS No.: _____ SDG No.: _____

Lab File ID: >DD476 Lab Sample ID: Blank (# 675)

Date Extracted: 4/26/89 Extraction: (~~Sep~~F/Cont/~~Sonc~~) Cont

Date Analyzed: 5/11/89 Time Analyzed: 19:30

Matrix: (soil/~~water~~) Soil Level: (low/~~med~~) low

Instrument ID: GC/MS #4

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

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	NFFW-5.5-2 (MS)	EA#1779 (MS)	>DD478	5/11/89
02	NFFW-5.5-2 (MSD)	EA#1779 (MSD)	>DD479	5/11/89
03	NFFW-6.5-5	EA #1780	>DD480	5/11/89
04		MSD. EA#336	>DD475	5/11/89
05	NFFW-5.5-2	EA#1779	>DD484	5/12/89
06				
07				
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COMMENTS: _____

GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

Case No.: Willow Grove Contractor: EA Laboratories Contract No.: 1035803

Instrument ID: #4 (D) Date: 05/09/89 Time: 10:58

Lab ID: >DD438-236 Data Release Authorized By :

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
51	30-60% of mass 198	56.02	56.02	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	75.17	75.17	Ok
70	Less than 2% of mass 69	.28	.37	Ok
127	40-60% of mass 198	55.04	55.04	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.46	6.46	Ok
275	10-30% of mass 198	20.18	20.18	Ok
365	Greater than 1% of mass 198	2.16	2.16	Ok
441	0-100% of mass 443	7.51	69.39	Ok
442	Greater than 40% of mass 198	51.75	51.75	Ok
443	17-23% of mass 442	10.83	20.92	Ok

This performance tune applies to the following samples, blanks and standards:

Sample ID	Lab ID	Date of Analysis	Time of Analysis
BNA 50 PPm Std.	Std # 1363 >DD439	5/9/89	11:29
BNA 160 PPm Std.	Std # 1360 >DD440	↓	12:51
BNA 120 PPm Std.	Std # 1361 >DD441	↓	13:40
BNA 80 PPm Std.	Std # 1362 >DD442	↓	14:28
BNA 20 PPm Std.	Std # 1364 >DD443	↓	15:17
Blank (# 664)	Blank (# 664) >DD446.	5/9/89	18:15
NFFW-7.S-4	EA # 1915 >DD447	↓	19:04
NFF. Rinsate Blk	EA # 1916 >DD448	↓	19:54

FORM V

GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

Case No.: Willow Grove Contractor: EA Laboratories Contract No.: 10388.03

Instrument ID: #4 (D) Date: 05/10/89 Time: 09:11

Lab ID: >DD453-237 Data Release Authorized By :

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriat Peak	Status
51	30-60% of mass 198	54.97	54.97	Ok
68	Less than 2% of mass 69	.31	.43	Ok
69	(reference only)	72.86	72.86	Ok
70	Less than 2% of mass 69	.33	.45	Ok
127	40-60% of mass 198	55.61	55.61	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	7.00	7.00	Ok
275	10-30% of mass 198	22.20	22.20	Ok
365	Greater than 1% of mass 198	2.91	2.91	Ok
441	0-100% of mass 443	8.96	75.76	Ok
442	Greater than 40% of mass 198	60.73	60.73	Ok
443	17-23% of mass 442	11.82	19.47	Ok

This performance tune applies to the following samples, blanks and standards:

Sample ID	Lab ID	Date of Analysis	Time of Analysis
BNA 50 PPm Std.	Std #1363 >DD454	5/10/89	9:47
Blank (#674)	Blk for EA#1915 >DD459	"	14:30

FORM V

GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

Case No.: Willow Grove Contractor: EA Laboratories Contract No.: 10388.03

Instrument ID: #4 (D) Date: 05/11/89 Time: 12:31

Lab ID: >DD470-233 Data Release Authorized By :

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriate Peak	Status
51	30-60% of mass 198	33.87	33.87	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	48.30	48.30	Ok
70	Less than 2% of mass 69	.18	.38	Ok
127	40-60% of mass 198	41.18	41.18	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.60	6.60	Ok
275	10-30% of mass 198	22.74	22.74	Ok
365	Greater than 1% of mass 198	3.05	3.05	Ok
441	0-100% of mass 443	8.59	77.72	Ok
442	Greater than 40% of mass 198	57.59	57.59	Ok
443	17-23% of mass 442	11.06	19.20	Ok

This performance tune applies to the following samples, blanks and standards:

Sample ID	Lab ID	Date of Analysis	Time of Analysis
BNA 50 PPm std.	Std #1363 >DD471	5/11/89	13:04
MSTD	MSTD EA=336 >DD475		18:41
Blank (#675)	Blank (#675) >DD476		19:30
NFFW-5.5-2 ms.	EA#1779 ms >DD478		21:10
NFFW-5 5-2 msD	EA#1779 msD >DD479		22:01
NFFW-6.5-5	EA#1780 >DD480		22:49

FORM V

GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

Case No.: Willow Grove Contractor: EA Laboratories Contract No.: 10388.03

Instrument ID: #4 (D) Date: 05/12/89 Time: 08:55

Lab ID: >DD481-230 Data Release Authorized By :

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriate Peak	Status
51	30-60% of mass 198	37.31	37.31	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	51.88	51.88	Ok
70	Less than 2% of mass 69	.22	.42	Ok
127	40-60% of mass 198	44.90	44.90	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.83	6.83	Ok
275	10-30% of mass 198	22.65	22.65	Ok
365	Greater than 1% of mass 198	2.57	2.57	Ok
441	0-100% of mass 443	6.99	73.09	Ok
442	Greater than 40% of mass 198	51.68	51.68	Ok
443	17-23% of mass 442	9.56	18.50	Ok

This performance tune applies to the following samples, blanks and standards:

Sample ID	Lab ID	Date of Analysis	Time of Analysis
BNA 50 PPm std.	std #1363	5/12/89	10:44
NFFW-5.5-2	EA #1779 >DD484	↓	11:59

FORM V

GC/MS PERFORMANCE STANDARD

Decafluorotriphenylphospine (DFTPP)

Case No.: Willow Grove Contractor: EA Laboratories Contract No.: 10333.03

Instrument ID: #4 (D) Date: 05/18/89 Time: 15:09

Lab ID: >DD518-221 Data Release Authorized By :

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	Appropriat Peak	Status
51	30-60% of mass 198	48.03	48.03	Ok
68	Less than 2% of mass 69	0.00	0.00	Ok
69	(reference only)	64.90	64.90	Ok
70	Less than 2% of mass 69	.62	.95	Ok
127	40-60% of mass 198	48.78	48.78	Ok
197	Less than 1% of mass 198	0.00	0.00	Ok
198	Base peak, 100% relative abundance	100.00	100.00	Ok
199	5-9% of mass 198	6.52	6.52	Ok
275	10-30% of mass 198	19.84	19.84	Ok
365	Greater than 1% of mass 198	2.43	2.43	Ok
441	0-100% of mass 443	7.74	76.89	Ok
442	Greater than 40% of mass 198	55.82	55.82	Ok
443	17-23% of mass 442	10.06	18.02	Ok

This performance tune applies to the following samples, blanks and standards:

Sample ID	Lab ID	Date of Analysis	Time of Analysis
BNA 50 PPm std.	std # 1371 >DD519	5/18/89	15:41
BNA 160 PPm std.	Std# 1368 >DD520	↓	16:46
BNA 120 PPm std.	Std # 1369 >DD521	↓	17:37
BNA 80 PPm std	Std # 1370 >DD522	↓	18:25
BNA 20 PPm std.	Std # 1372 >DD523	↓	19:13
Rinsate Blk. NFF2	EA # 1781 >DD524	5/18/89	20:00
Blank (#638)	Blank (# 638) >DD526	↓	21:35

FORM V

B. Sample Data

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1779
SAMPLE: NFFW-5.S-2
GC/MS FILE: >DD484::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/12/89 11:59
SAMPLE--->EXTRACT:	10.23G--> 1ml

CAS #		CONC UG/L	OR UG/KG
62-75-9	N-Nitrosodimethylamine	1200.	ND
111-44-4	bis(2-Chloroethyl)ether	1200.	ND
541-73-1	1,3-Dichlorobenzene	1200.	ND
106-46-7	1,4-Dichlorobenzene	1200.	ND
95-50-1	1,2-Dichlorobenzene	1200.	ND
39638-32-9	bis(2-chloroisopropyl)ether	1200.	ND
621-64-7	N-Nitroso-Di-n-propylamine	1200.	ND
67-72-1	Hexachloroethane	1200.	ND
98-95-3	Nitrobenzene	1200.	ND
78-59-1	Isophorone	1200.	ND
111-91-1	bis(2-Chloroethoxy)methane	1200.	ND
120-82-1	1,2,4-Trichlorobenzene	1200.	ND
91-20-3	Naphthalene	1200.	ND
87-68-3	Hexachlorobutadiene	1200.	ND
77-47-4	Hexachlorocyclopentadiene	1200.	ND
91-58-7	2-Chloronaphthalene	1200.	ND
131-11-3	Dimethylphthalate	1200.	ND
208-96-8	Acenaphthylene	1200.	ND
83-32-9	Acenaphthene	1200.	ND
121-14-2	2,4-Dinitrotoluene	1200.	ND
606-20-2	2,6-Dinitrotoluene	1200.	ND
84-66-2	Diethylphthalate	1200.	ND
7005-72-3	4-Chlorophenyl-phenylether	1200.	ND
86-73-7	Fluorene	1200.	ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1779
SAMPLE: NFFW-5.S-2
GC/MS FILE: >DD484::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/12/89 11:59
SAMPLE--->EXTRACT:	10.23G--> 1ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	1200.	ND
101-55-3	4-Bromophenyl-phenylether	1200.	ND
118-74-1	Hexachlorobenzene	1200.	ND
85-01-8	Phenanthrene	1200.	ND
120-12-7	Anthracene	1200.	ND
84-74-2	Di-n-Butyl phthalate	1200.	ND
206-44-0	Fluoranthene	1200.	ND
92-87-5	Benzidine	5900.	ND
129-00-0	Pyrene	1200.	ND
85-68-7	Butylbenzylphthalate	1200.	ND
91-94-1	3,3'-Dichlorobenzidine	2300.	ND
56-55-3	Benzo(a)Anthracene	1200.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	1200.	ND
218-01-9	Chrysene	1200.	ND
117-84-0	Di-n-Octyl phthalate	1200.	ND
205-99-2	Benzo(b)Fluoranthene	1200.	ND
205-99-2	Benzo(k)Fluoranthene	1200.	ND
50-32-8	Benzo(a)Pyrene	1200.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	1200.	ND
53-70-3	Dibenzo(a,h)Anthracene	1200.	ND
191-24-2	Benzo(g,h,i)Perylene	1200.	ND

Qualifier descriptions: ND - Compound analyzed for but not detected
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA Laboratories

Case No: Willow grove

Sample Number
NFFW-5.5-2
EA # 1779

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)	
1. —	Unknown C_8H_{18}	B/N	2.84	1300.00	
2. 565753	Pentane, 2,3,4-trimethyl	B/N	3.02	3100.00	
3. —	Unknown C_8H_{18}	B/N	3.05	4200.00	
4. —	Unknown C_9H_{20}	B/N	3.34	3100.00	
5. —	Unknown	B/N	3.54	790.00	
6. —	Unknown	B/N	7.77	4200.00	
7. —	Unknown	B/N	7.95	3100.00	
8. —	Unknown	B/N	8.66	4900.00	
9. —	Unknown	B/N	8.89	5000.00	
10. —	Unknown	B/N	9.17	990.00	
11. 74367343	Propanoic acid, 2-methyl	B/N	13.39	850.00	B
12. —	Unknown	B/N	28.44	4600.00	
13.					
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27.					
28.					
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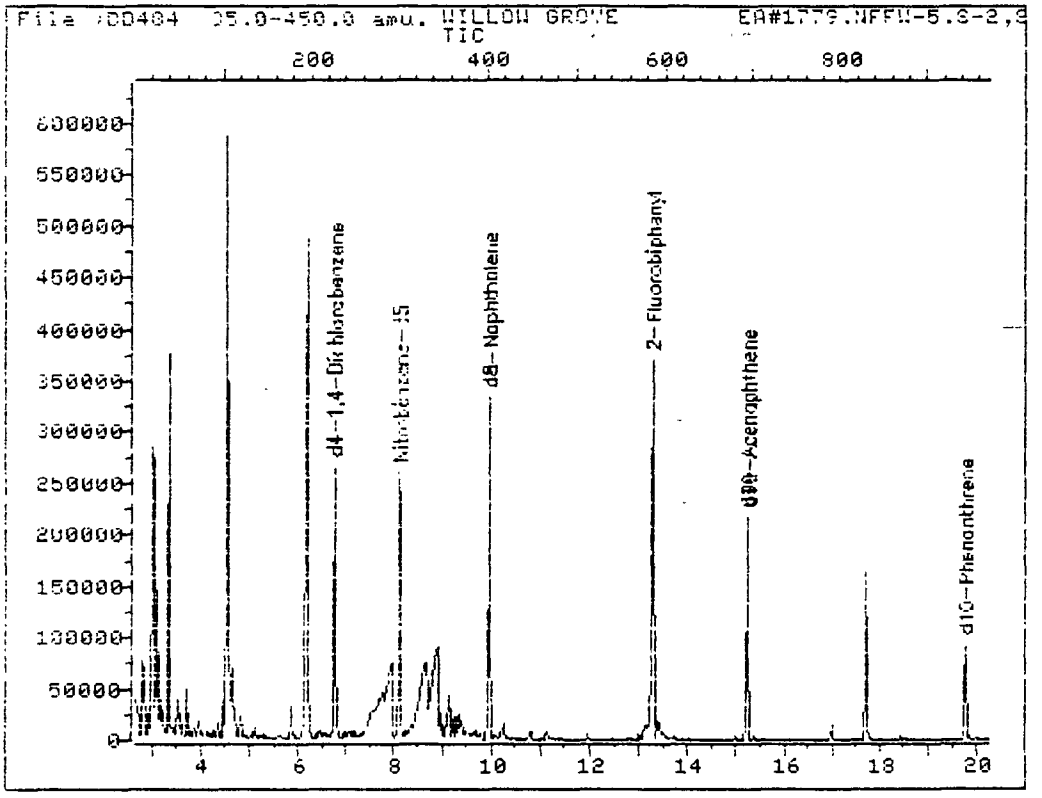
TOTAL ION CHROMATOGRAM



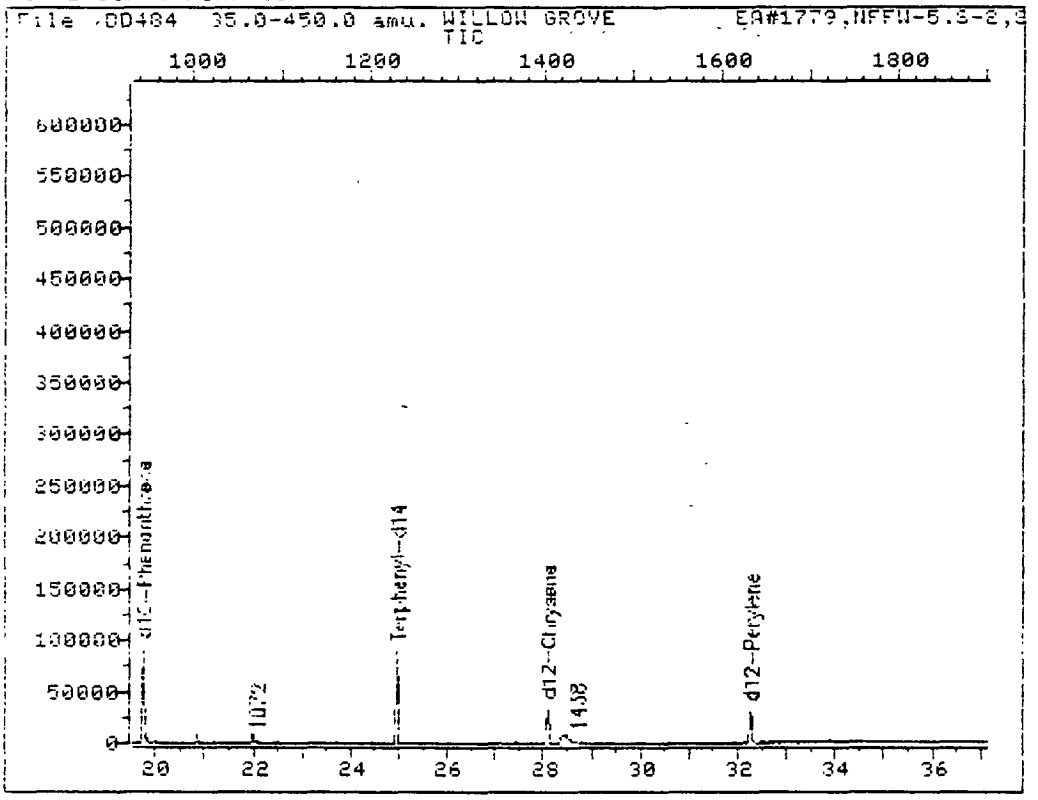
Data File: >DD484::D1 Quant Output File: ^DD484::QT
Name: WILLOW GROVE
Misc: EA#1779,NFFW-5.S-2,SOIL,10.23G,1, WILLOW (97.75) BTL#99

Id File: IDDBND::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890512 12:30

Operator ID: BHADRA
Quant Time: 890512 12:42
Injected at: 890512 11:59

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD484::D1 Quant Output File: ^DD484::QT
Name: WILLOW GROVE
Misc: EA#1779,NFFW-5.S-2,SOIL,10.23G,1, WILLOW <97.75> BTL#99

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890512 12:30

Operator ID: BHADRA
Quant Time: 890512 12:42
Injected at: 890512 11:59

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890512 12:42
Output File: :DD484::QT Injected at: 890512 11:59
Data File: :DD484::01 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: EH#1779,NFFW-5.S-2.SOIL,10.23G,1, WILLOW (97.75) BTL#99

ID File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890512 12:30

	Compound	R.T.	Q ion	Area	Conc	Units	
1)	*d4-1,4-Dichlorobenzene	6.75	152.0	121571	40.00	NG	4
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG	
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG	
4)	1,3-Dichlorobenzene	0.00	146.0	0	0.00	NG	
5)	1,4-Dichlorobenzene	0.00	146.0	0	0.00	NG	
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG	
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG	
8)	N-Nitroso-Di-n-propylamine	0.00	70.0	0	0.00	NG	
9)	Hexachloroethane	0.00	117.0	0	0.00	NG	
10)	*d8-Naphthalene	9.97	136.0	365375	40.00	NG	8
11)	Nitrobenzene-d5	8.13	82.0	237123	67.24	NG ✓67 %	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG	
13)	Isophorone	0.00	82.0	0	0.00	NG	
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG	
15)	1,2,4-Trichlorobenzene	0.00	180.0	0	0.00	NG	
16)	Naphthalene	0.00	128.0	0	0.00	NG	
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG	
18)	*d10-Acenaphthene	15.24	164.0	116281	40.00	NG	9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG	
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG	
21)	2-Fluorobiphenyl	13.28	172.0	311276	67.76	NG ✓68 %	9
22)	Dimethylphthalate	15.24	163.0	37090	~~3.67 NG~~		9
23)	Acenaphthylene	0.00	152.0	0	0.00	NG	
24)	Acenaphthene	0.00	153.0	0	0.00	NG	
25)	2,4-Dinitrotoluene	0.00	165.0	0	0.00	NG	
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG	
27)	Diethylphthalate	0.00	149.0	0	0.00	NG	
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG	
29)	Fluorene	0.00	166.0	0	0.00	NG	
30)	*d10-Phenanthrene	19.77	188.0	90779	40.00	NG	9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG	
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG	
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG	
34)	Phenanthrene	0.00	178.0	0	0.00	NG	
35)	Anthracene	0.00	178.0	0	0.00	NG	
36)	Di-n-Butyl phthalate	22.09	149.0	2339	~~.52 NG~~		9
37)	Fluoranthene	0.00	202.0	0	0.00	NG	
38)	Benzidine	0.00	184.0	0	0.00	NG	
39)	*d12-Chrysene	28.10	240.0	31234	40.00	NG	9
40)	Pyrene	0.00	202.0	0	0.00	NG	
41)	Terphenyl-d14	24.97	244.0	79563	71.90	NG ✓72 %	9
42)	Butylbenzylphthalate	0.00	149.0	0	0.00	NG	

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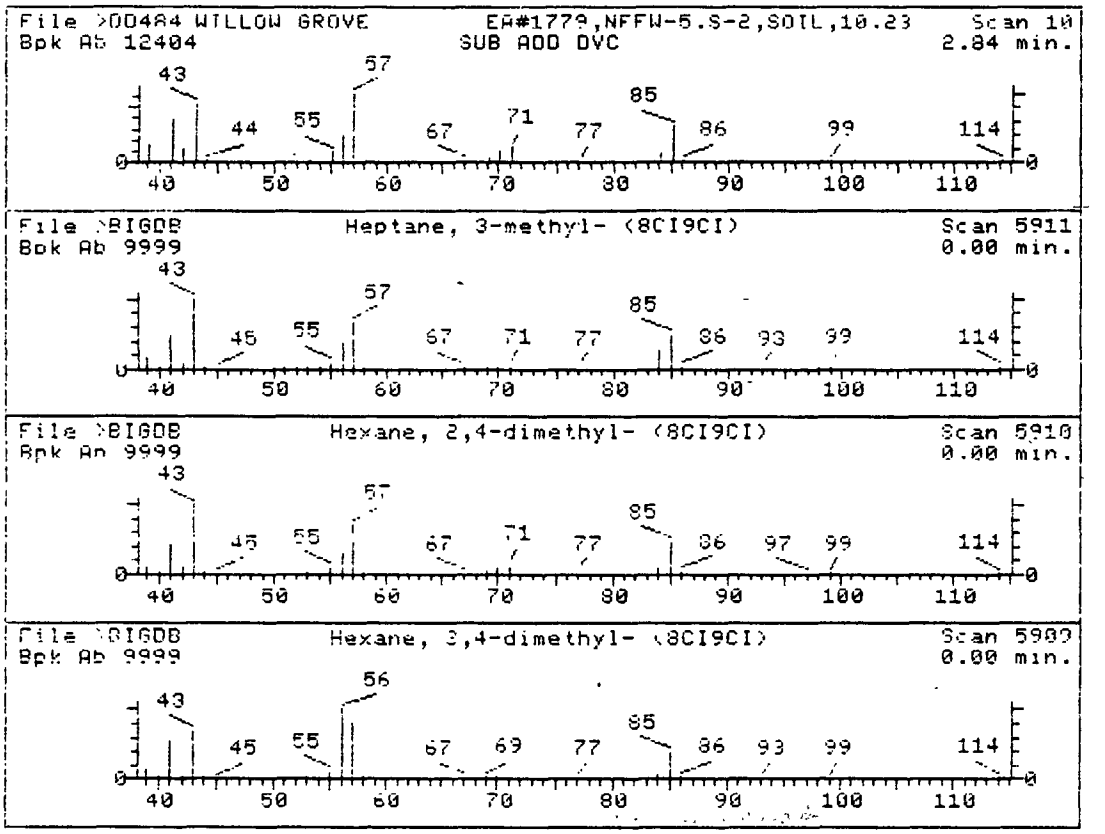
Output File:^DD484:: Data File:>DD484::D1

	Compound	R.T.	Q ion	Area	Conc	Units	c
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	28.72	149.0	1219	~~.78~~ ~~NG~~		9
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	32.27	264.0	33096	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD



Retention time = 2.84 C_8H_{18}

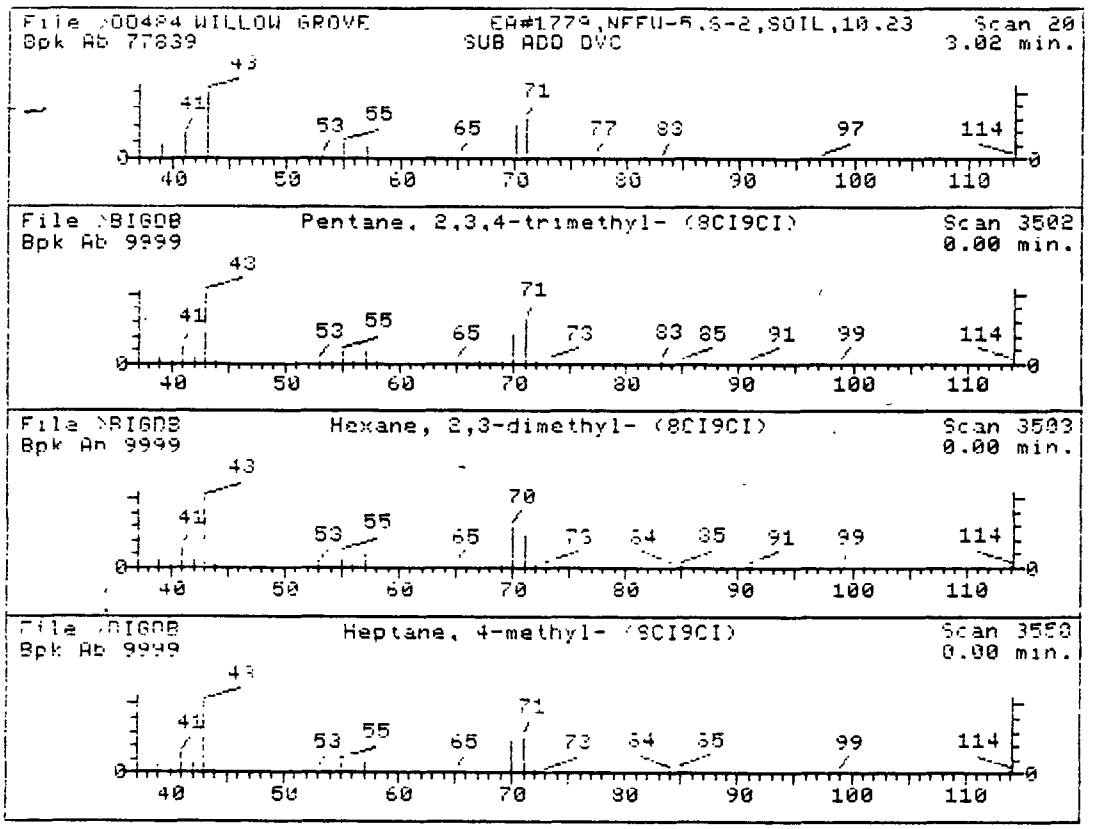
Area = 225559.0 Tentative Concentration is 1300.00

1.	Heptane, 3-methyl- (8CI9CI)	114	C8H18
2.	Hexane, 2,4-dimethyl- (8CI9CI)	114	C8H18
3.	Hexane, 3,4-dimethyl- (8CI9CI)	114	C8H18
4.	Pentane, 2,2-dimethyl- (8CI9CI)	100	C7H16
5.	Pentane, 2,2,3,4-tetramethyl- (8CI9CI)	128	C9H20
6.	Methane, isocyanato- (9CI)	57	C2H3NO
7.	Cyclobutanone, oxime (8CI9CI)	85	C4H7NO

Sample file: >DD484 Spectrum #: 10
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	58*	589811	5911	"BIGDB	43	48	2	0	104	19	25	2
2.	53*	589435	5910	"BIGDB	42	56	0	0	85	36	19	4

3.	51*	583482	5909	"BIGDB	48	42	1	0	108	33	20	3
4.	42	590352	5912	"BIGDB	44	40	0	0	98	33	16	2
5.	30	1186534	1016	"BIGDB	48	38	1	0	100	41	8	1
6.	27*	624839	948	"BIGDB	27	37	1	0	88	44	8	1
7.	27*	2972056	5957	"BIGDB	31	65	3	0	76	39	10	1



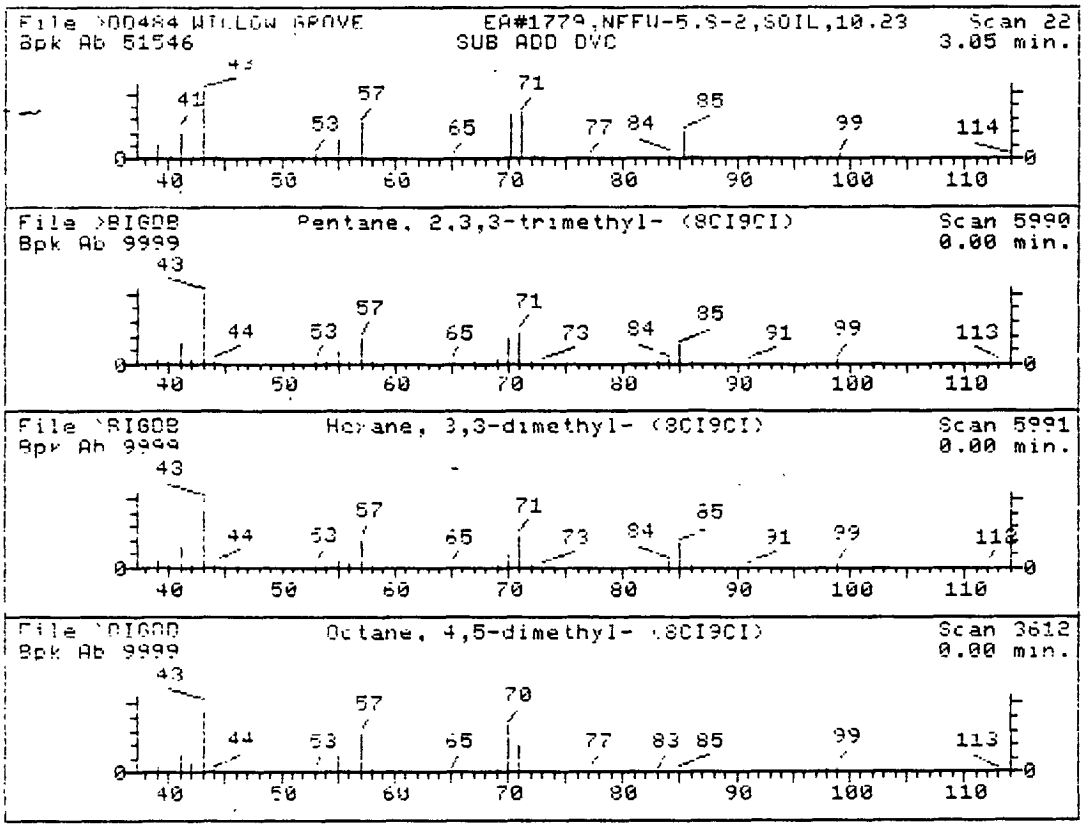
Retention time = 3.02

Area = 530395.0 Tentative Concentration is 3100.00

✓1.	Pentane, 2,3,4-trimethyl- (8CI9CI)	114	C8H18
2.	Hexane, 2,3-dimethyl- (8CI9CI)	114	C8H18
3.	Heptane, 4-methyl- (8CI9CI)	114	C8H18
4.	Pentane, 3-ethyl- (8CI9CI)	100	C7H16
5.	Pyrrolidine (DOT)(8CI9CI)	71	C4H9N

Sample file: >DD484 Spectrum #: 20
Search speed: 2 Tilting option: S No. of ion ranges searched: 46

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	96*	565753	3502	"BIGDB	64	16	0	0	90	2	72	9
2.	83	584941	3503	"BIGDB	61	26	2	0	87	4	57	2
3.	78	589537	3550	"BIGDB	51	36	2	0	100	4	55	1
4.	70	617787	3504	"BIGDB	41	42	2	0	100	8	42	1
5.	42*	123751	3498	"BIGDB	21	67	2	0	100	22	17	1



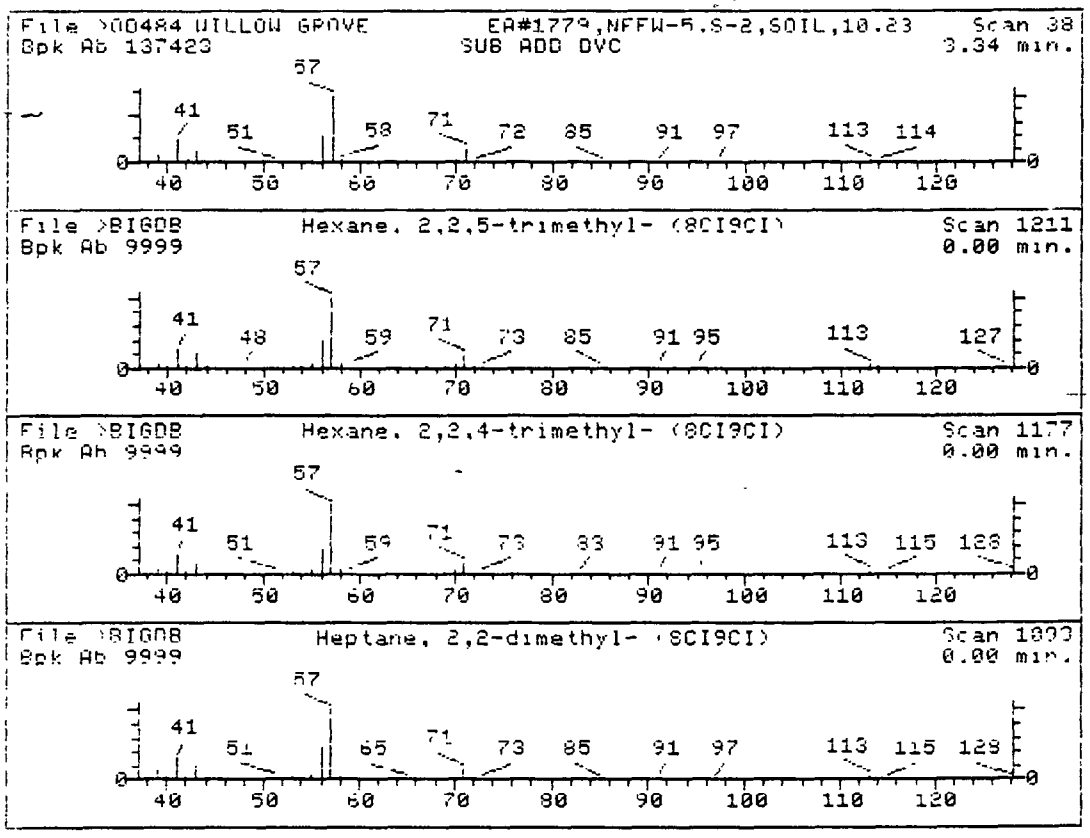
Retention time = 3.05 unknown C_8H_{18}

Area = 712904.0 Tentative Concentration is 4200.00

1.	Pentane, 2,3,3-trimethyl- (8CI9CI)	114 C8H18
2.	Hexane, 3,3-dimethyl- (8CI9CI)	114 C8H18
3.	Octane, 4,5-dimethyl- (8CI9CI)	142 C10H22
4.	Heptane, 3,3,4-trimethyl- (8CI9CI)	142 C10H22
5.	Hexane, 2,4-dimethyl- (8CI9CI)	114 C8H18
6.	Hexane, 2,3-dimethyl- (8CI9CI)	114 C8H18
7.	Decane, 3,3,4-trimethyl- (9CI)	184 C13H28

Sample file: >DD484 Spectrum #: 22
Search speed: 2 Tilting option: S No. of ion ranges searched: 46

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	66	560214	5990	"BIGDB	64	24	0	0	100	16	31	4
2.	60	563166	5991	"BIGDB	54	36	2	0	100	14	30	1
3.	37	15869962	3612	"BIGDB	40	45	2	0	96	26	14	1
4.	35	20278879	3892	"BIGDB	38	48	2	0	69	27	14	1
5.	35	589435	5910	"BIGDB	50	48	2	0	71	28	14	1
6.	30	584941	3503	"BIGDB	41	46	2	0	100	31	12	1
7.	28	7622186	3555	"BIGDB	46	50	1	0	67	40	10	1



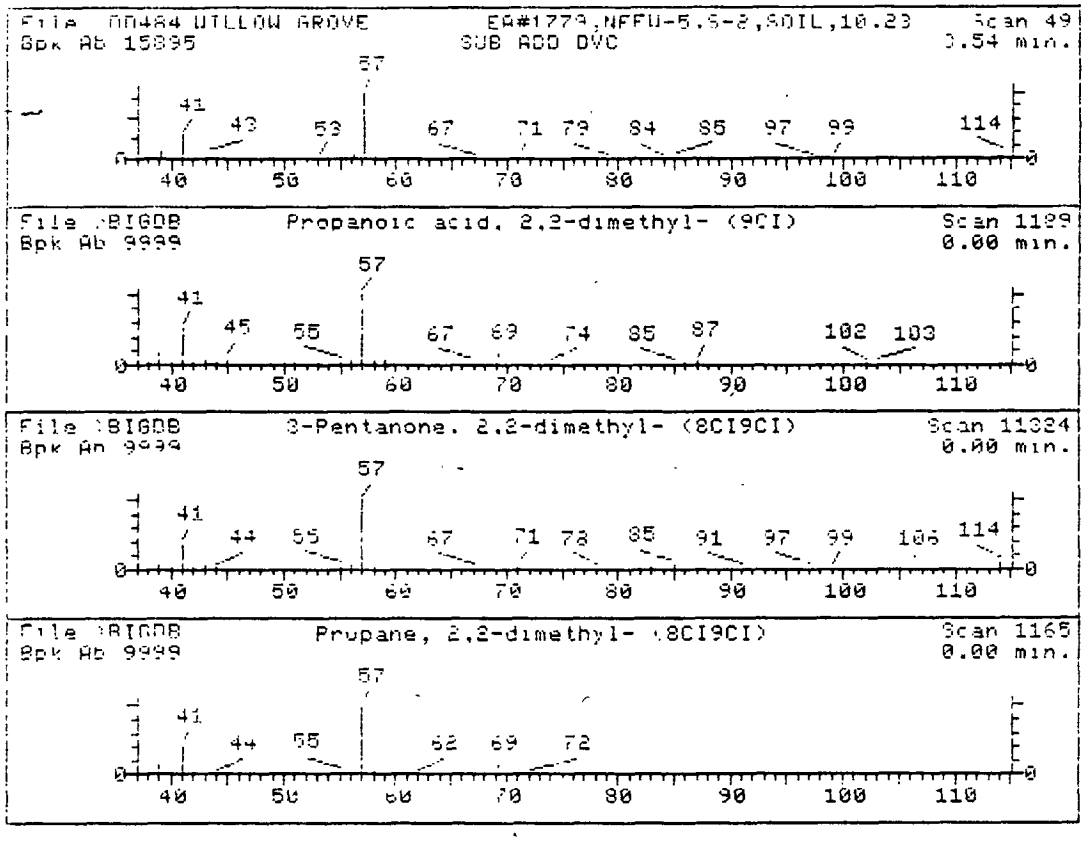
Retention time = 3.34 Unknown C_9H_{20}

Area = 529992.0 Tentative Concentration is 3100.00

1. Hexane, 2,2,5-trimethyl- (8CI9CI)	128	C9H20
2. Hexane, 2,2,4-trimethyl- (8CI9CI)	128	C9H20
3. Heptane, 2,2-dimethyl- (8CI9CI)	128	C9H20
4. Pentane, 3-ethyl-2,2-dimethyl- (8CI9CI)	128	C9H20
5. Heptane, 2,2,4-trimethyl- (8CI9CI)	142	C10H22
6. Pentane, 2,2,4,4-tetramethyl- (8CI9CI)	128	C9H20
7. Pentane, 2,2,3-trimethyl- (8CI9CI)	114	C8H18

Sample file: >DD484 Spectrum #: 38
Search speed: 2 Tilting option: S No. of ion ranges searched: 46

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	87	3522949	1211	"BIGDB	67	12	0	0	86	3	63	4
2.	81	16747265	1177	"BIGDB	63	14	0	0	90	9	53	4
3.	79	1071267	1093	"BIGDB	51	28	0	0	76	10	48	3
4.	67	16747323	971	"BIGDB	47	32	0	0	67	15	34	2
5.	60	14720742	1022	"BIGDB	43	38	3	0	89	12	30	1
6.	58	1070877	1168	"BIGDB	43	26	0	0	90	18	25	2
7.	46	564023	955	"BIGDB	50	25	2	0	73	22	17	1



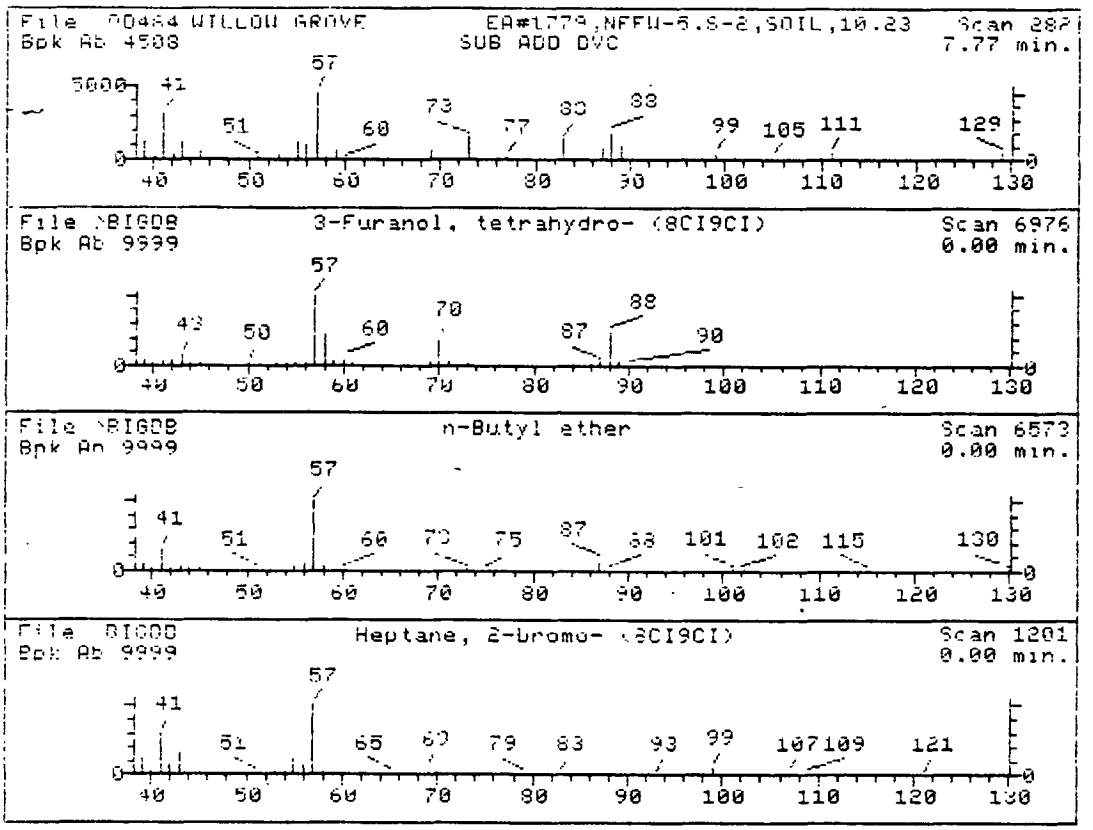
Retention time = 3.54 Internal

Area = 134456.0 Tentative Concentration is 790.00

1. Propanoic acid, 2,2-dimethyl- (9CI) 102 C5H10O2
2. 3-Pentanone, 2,2-dimethyl- (8CI9CI) 114 C7H14O
3. Propane, 2,2-dimethyl- (8CI9CI) 72 C5H12
4. Diazene, bis(1,1-dimethylethyl)- (9CI) 142 C8H18N2

Sample file: >DD484 Spectrum #: 49
Search speed: 2 Tilting option: S No. of ion ranges searched: 46

	Prob.	CAS #	CON #	ROOT	K	Dk	#FLG	TILT	%	CON	C_I	R_I
1.	52	75989	1189	"BIGDB	37	38	2	0	71	18	20	1
2.	52	564045	11324	"BIGDB	41	36	2	0	99	16	20	1
3.	52	463821	1165	"BIGDB	37	33	0	0	90	18	20	1
4.	20	927833	1176	"BIGDB	38	33	1	0	54	55	5	1



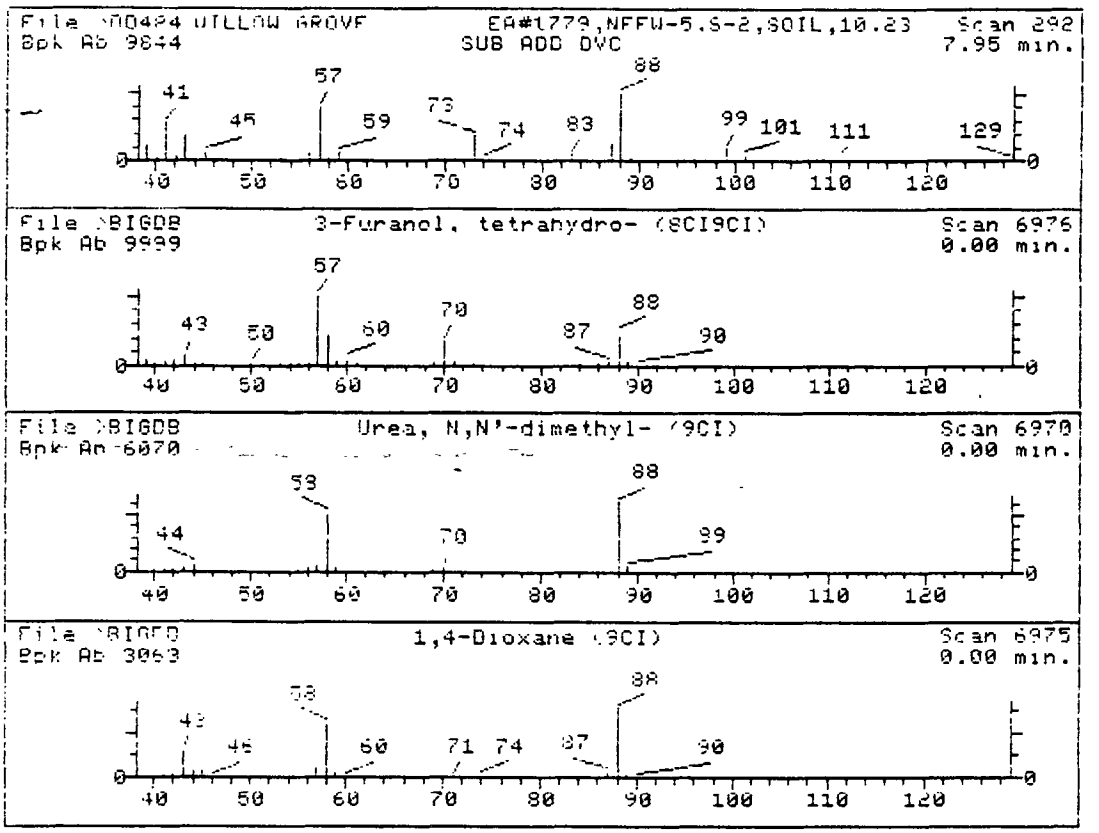
Retention time = 7.77

Area = 718311.0 Tentative Concentration is 4200.00

1. 3-Furanol, tetrahydro- (8CI9CI)	88	C4H8O2
2. n-Butyl ether	130	C8H18O
3. Heptane, 2-bromo- (8CI9CI)	178	C7H15Br
4. 1-Pentene, 4,4-dimethyl- (8CI9CI)	98	C7H14
5. Octane, 3-methyl- (8CI9CI)	128	C9H20
6. Butane, 2,2,3,3-tetramethyl- (8CI9CI)	114	C8H18
7. Diazene, bis(1,1-dimethylethyl)- (9CI)	142	C8H18N2

Sample file: 00484 Spectrum #: 282
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	28*	453203	6976	"BIGDB	25	66	2	0	88	39	10	1
2.	20*	142961	6573	"BIGDB	23	55	1	0	90	53	5	1
3.	15	1974045	1201	"BIGDB	40	44	2	0	100	59	3	1
4.	15	762629	1183	"BIGDB	35	41	1	0	85	57	3	1
5.	15	2216333	8731	"BIGDB	35	49	2	0	89	59	3	1
6.	15	594821	1200	"BIGDB	28	44	0	0	77	59	3	1
7.	11	927833	1176	"BIGDB	33	38	1	0	87	61	2	1



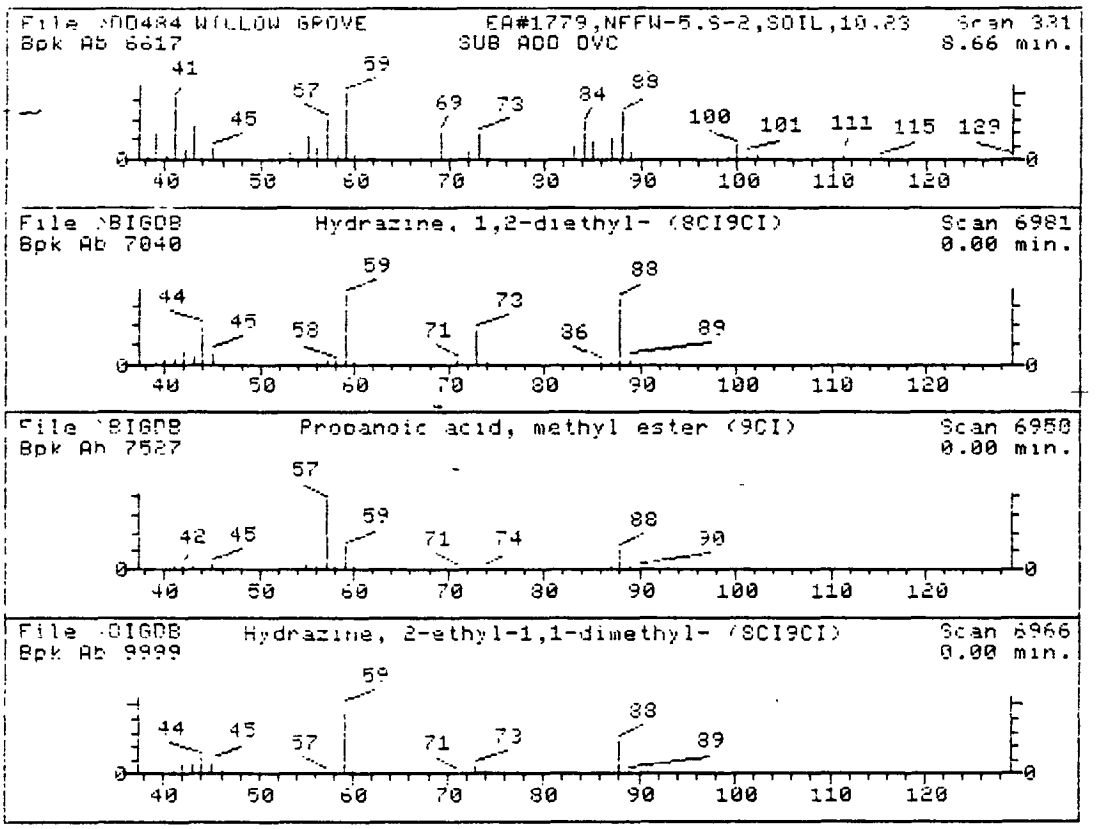
Retention time = 7.95

Area = 520497.0 Tentative Concentration is 3100.00

1.	3-Furanol, tetrahydro- (8CI9CI)	88	C4H8O2
2.	Urea, N,N'-dimethyl- (9CI)	88	C3H8N2O
3.	1,4-Dioxane (9CI)	88	C4H8O2
4.	Heptane, 3-(chloromethyl)- (8CI9CI)	148	C8H17Cl
5.	1-Propene, 3-(1,1-dimethylethoxy)- (9CI)	114	C7H14O
6.	Pentanol, 2,2,4-trimethyl- (8CI9CI)	130	C8H18O
7.	2-Pentene, 5-butoxy-, (E)- (9CI)	142	C9H18O

Sample file: >DD484 Spectrum #: 292
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	26*	453203	6976	"BIGDB	26	65	2	0	79	45	8	1
2.	20*	96311	6970	"BIGDB	26	64	2	0	164	55	5	1
3.	20*	123911	6975	"BIGDB	20	92	2	0	121	51	5	1
4.	15	123046	8714	"BIGDB	38	46	2	0	79	58	3	1
5.	15	1471041	8728	"BIGDB	38	22	1	0	114	56	3	1
6.	15	1331404	8727	"BIGDB	45	44	1	0	69	57	3	1
7.	15	54004238	8760	"BIGDB	38	38	1	0	78	57	3	1



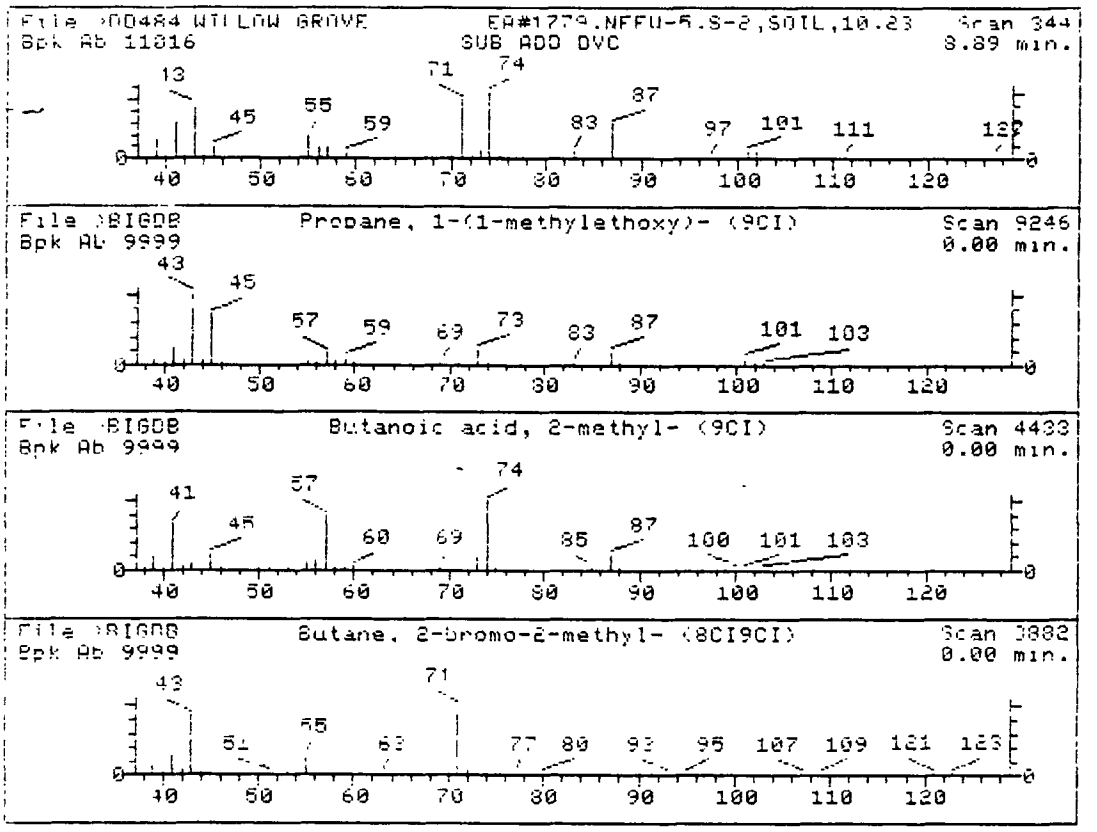
Retention time = 8.66

Area = 826374.0 Tentative Concentration is 4900.00

1.	Hydrazine, 1,2-diethyl- (8CI9CI)	88	C4H12N2
2.	Propanoic acid, methyl ester (9CI)	88	C4H8O2
3.	Hydrazine, 2-ethyl-1,1-dimethyl- (8CI9CI)	88	C4H12N2
4.	Butane, 2-ethoxy- (9CI)	102	C6H14O
5.	Thiirane, 2,3-dimethyl-, trans- (9CI)	88	C4H8S
6.	Oxirane, 3-ethyl-2,2-dimethyl- (9CI)	100	C6H12O
7.	3-Hexanol (8CI9CI)	102	C6H14O

Sample file: >DD484 Spectrum #: 331
Search speed: 2 Tilting option: S No. of ion ranges searched: 46

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	35*	1615801	6981	"BIGDB	51	54	1	0	106	48	11	3
2.	25*	554121	6950	"BIGDB	26	68	2	0	332	50	7	1
3.	20*	29559828	6966	"BIGDB	28	66	1	0	96	51	5	1
4.	20*	2679870	1654	"BIGDB	23	69	2	0	515	52	5	1
5.	20*	5955986	6959	"BIGDB	33	89	3	0	94	52	5	1
6.	15*	1192229	1635	"BIGDB	29	73	2	0	100	58	3	1
7.	15*	623370	1630	"BIGDB	25	71	3	0	100	60	3	1



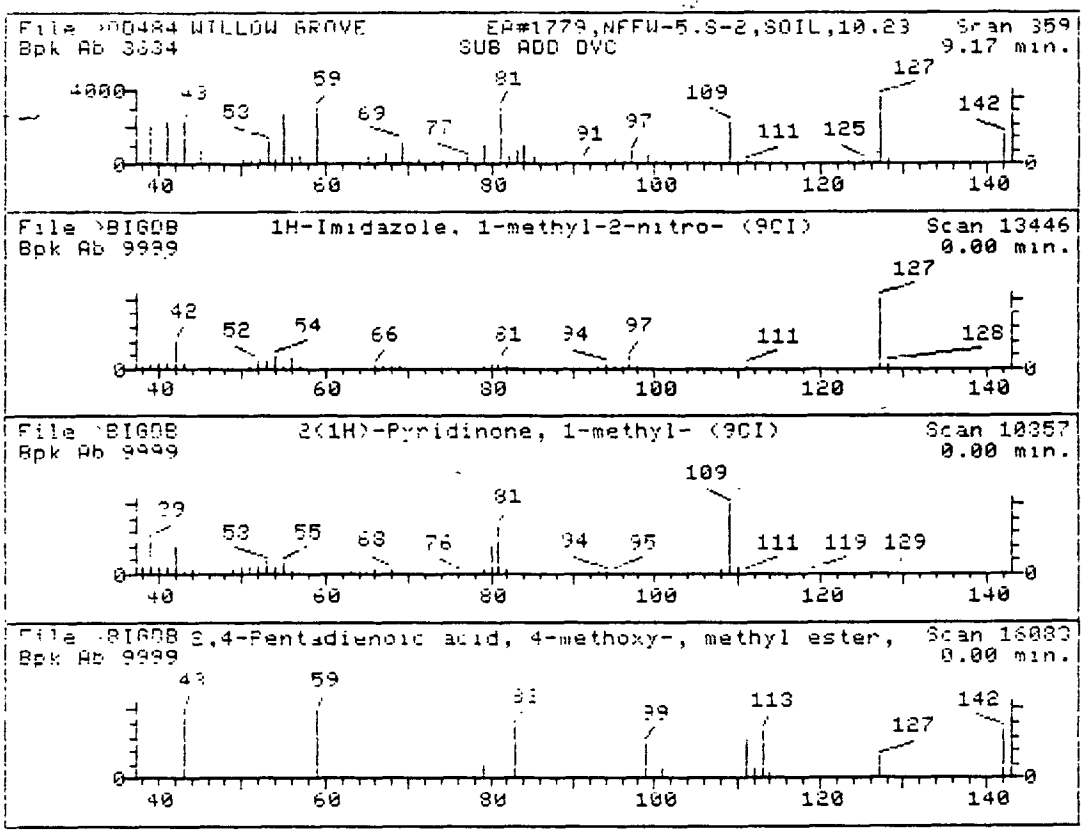
Retention time = 8.89 Unknown

Area = 833941.0 Tentative Concentration is 5000.00

1. Propane, 1-(1-methylethoxy)- (9CI) 102 C6H14O
2. Butanoic acid, 2-methyl- (9CI) 102 C5H10O2
3. Butane, 2-bromo-2-methyl- (8CI9CI) 150 C5H11Br
4. Methyl propyl ether 74 C4H10O
5. Ethane, isocyanato- (9CI) 71 C3H5NO
6. Methylamine, N-(1-methylhexylidene)- (8CI) 127 C8H17N

Sample file: :DD484 Spectrum #: 344
Search speed: 2 Tilting option: S No. of ion ranges searched: 46

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	15*	627087	9246	"BIGDB	39	57	2	1	72	56	3	1
2.	15*	116530	4433	"BIGDB	30	75	2	0	78	57	3	1
3.	11	507368	3882	"BIGDB	36	42	2	0	89	65	2	1
4.	11*	557175	4418	"BIGDB	21	48	2	0	564	63	2	1
5.	11*	109900	3880	"BIGDB	22	51	2	0	115	65	2	1
6.	11*	22058715	3945	"BIGDB	27	61	3	0	89	64	2	1



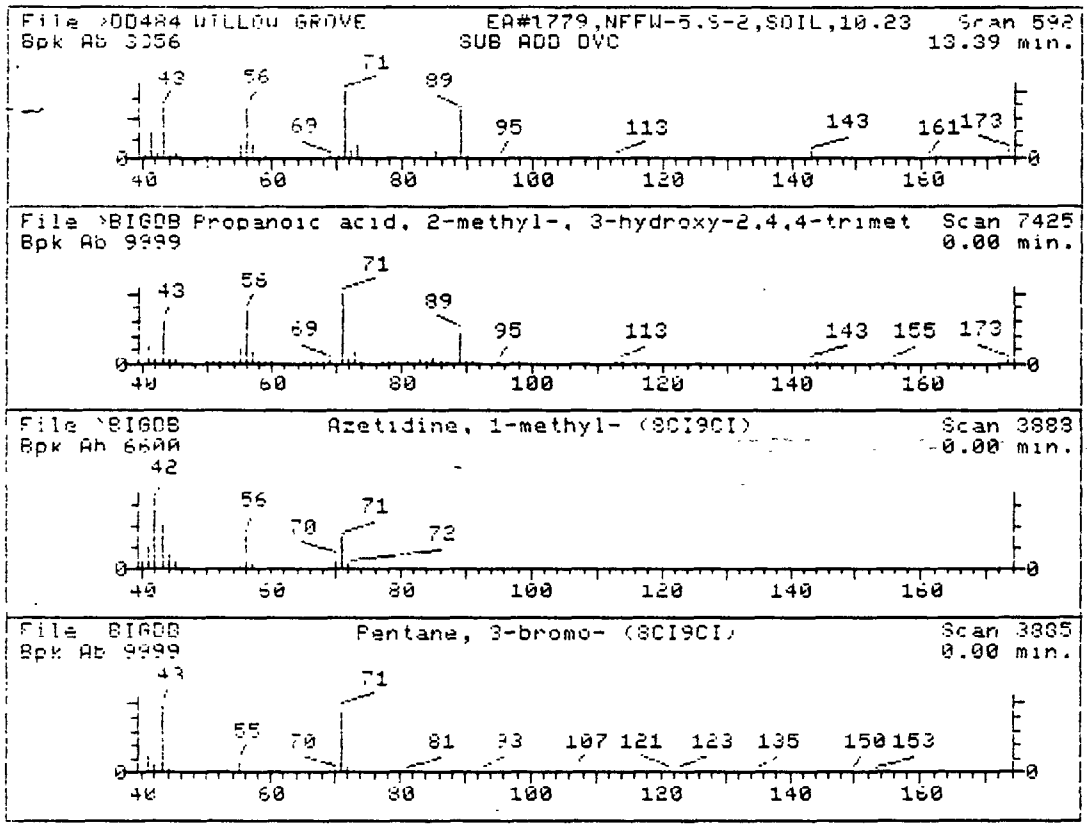
Retention time = 9.17

Area = 166262.0 Tentative Concentration is 990.00

1. 1H-Imidazole, 1-methyl-2-nitro- (9CI) 127 C4H5N3O2
2. 2(1H)-Pyridinone, 1-methyl- (9CI) 109 C6H7NO
3. 2,4-Pentadienoic acid, 4-methoxy-, methyl ester, (Z) - (9CI) 142 C7H10O3
4. 3-Heptyne, 7-fluoro-2,2-dimethyl- (9CI) 142 C9H15F
5. 2,4-Heptadiene, (E,E)- (9CI) 96 C7H12
6. Silane, diazidodimethyl- (8CI9CI) 142 C2H6N6Si

Sample file: >DD484 Spectrum #: 359
Search speed: 2 Tilting option: S No. of ion ranges searched: 46

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	30*	1671825	13446	"BIGDB	57	41	2	-2	74	49	10	2
2.	15*	694859	10357	"BIGDB	41	68	2	1	59	56	3	1
3.	15*	61203789	16083	"BIGDB	25	79	3	0	62	58	3	1
4.	15*	55402114	13498	"BIGDB	25	94	3	0	100	60	3	1
5.	15	2384943	5204	"BIGDB	57	40	2	2	57	60	3	1
6.	11*	4774736	13493	"BIGDB	29	72	2	0	109	63	2	1



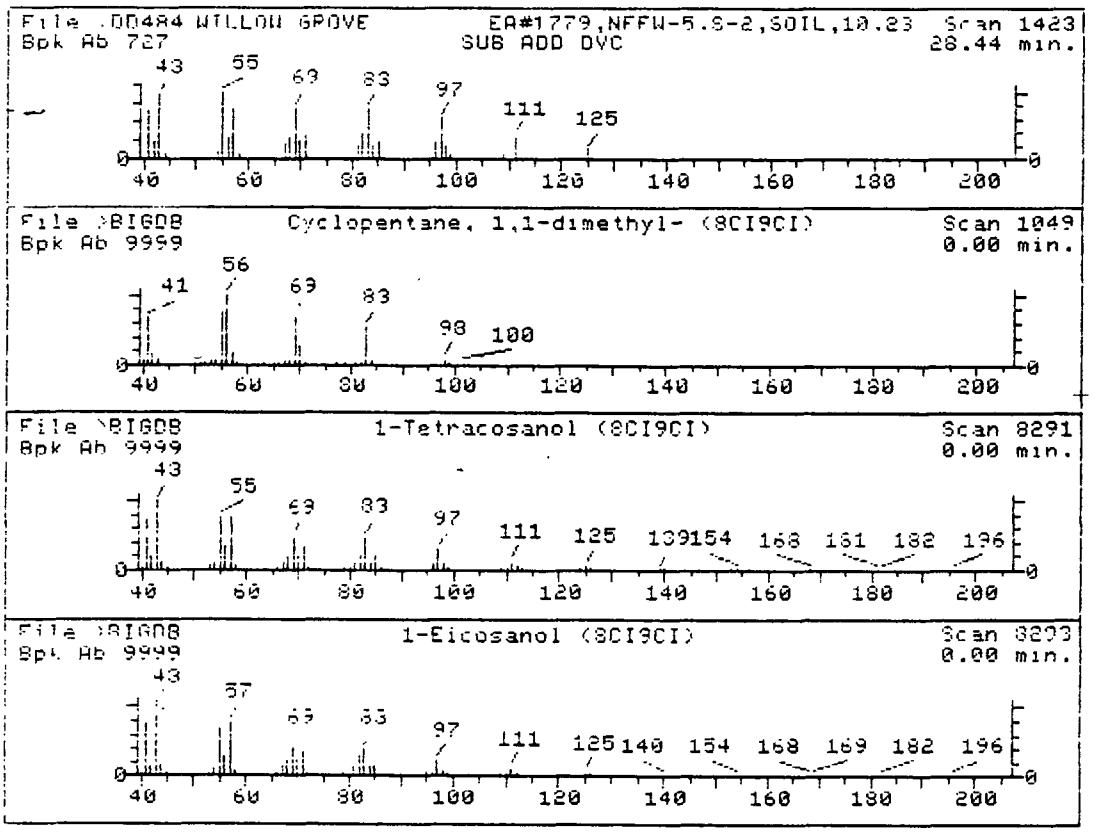
Retention time = 13.39

Area = 105641.0 Tentative Concentration is 850.00

✓1. Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethyl pentyl ester (9CI) 216 C12H24O3
2. Azetidine, 1-methyl- (8CI9CI) 71 C4H9N
3. Pentane, 3-bromo- (8CI9CI) 150 C5H11Br
4. Propane, 1-isocyanato- (9CI) 85 C4H7NO
5. Cyclopentanamine (9CI) 85 C5H11N
6. Cyanic acid, propyl ester (8CI9CI) 85 C4H7NO
7. Oxirane, 2,3-bis(1-methylethyl)-, trans- (9CI) 128 C8H16O

Sample file: >DD484 Spectrum #: 592
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	86	74367343	7425	"BIGDB	101	15	2	-2	100	1	60	3
2.	25*	4923799	3888	"BIGDB	23	78	2	0	140	48	7	1
3.	11	1809105	3885	"BIGDB	36	40	2	0	106	63	2	1
4.	11*	110781	1010	"BIGDB	24	61	2	0	76	64	2	1
5.	11*	1003038	1015	"BIGDB	22	59	2	0	76	62	2	1
6.	11*	1768361	1017	"BIGDB	27	78	3	0	76	64	2	1
7.	11	54644325	979	"BIGDB	49	37	3	0	76	62	2	1



Retention time = 28.44 unknown

Area = 101462.0 Tentative Concentration is 4600.00

1.	Cyclopentane, 1,1-dimethyl- (8CI9CI)	98 C7H14
2.	1-Tetracosanol (8CI9CI)	354 C24H50O
3.	1-Eicosanol (8CI9CI)	298 C20H42O
4.	Nonadecanol (9CI)	284 C19H40O
5.	1-Butene, 2-ethyl-3-methyl- (8CI9CI)	98 C7H14
6.	1-Pentene, 3-ethyl- (8CI9CI)	98 C7H14
7.	7-Oxabicyclo[4.1.0]heptane (8CI9CI)	98 C6H10O

Sample file: >DD484 Spectrum #: 1423
Search speed: 2 Tilting option: S No. of ion ranges searched: 56

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	25*	1638262	1049	"BIGDB	35	64	2	0	99	47	7	1
2.	25	506514	8291	"BIGDB	61	103	2	0	94	47	7	1.
3.	11	629969	8293	"BIGDB	67	85	2	0	94	61	2	1.
4.	11	52783434	8301	"BIGDB	66	87	2	0	94	61	2	1.
5.	11*	7357939	8513	"BIGDB	32	77	2	0	63	64	2	1.
6.	11*	4038044	3592	"BIGDB	23	73	3	0	98	64	2	1:
7.	11*	286204	5586	"BIGDB	30	85	3	0	75	62	2	1.

LIBRARY SEARCH SUMMARY

MS Data File:>00484::01 Analyst:BHADRA MS

Name:WILLOW GROVE Date/Time: 5/12/89 11:59
Misc:EH#1779,NFFW-5.5-2,SOIL,10.23G,1, WILLOW 797.757 BTL#99

The following hits are >10% of the nearest ISTD.

Peak # in PBM file	Retention Time	Peak Area	10% of Nearest ISTD Area	
1	2.84	225559	79852	
2	3.02	530395	79852	
3	3.05	712904	79852	
4	3.34	529992	79852	
5	3.54	134456	79852	
~~6~~	~~4.54~~	~~1859501~~	~~79852~~	2 Fluorophenol
~~7~~	~~5.19~~	~~1828163~~	~~79852~~	Phenol-d5
8	7.77	718311	79852	
9	7.95	520497	79852	
10	8.66	826374	78521	
11	8.89	833941	78521	
12	9.17	166262	78521	
13	13.39	105641	57961	
~~14~~	~~17.72~~	~~469747~~	~~25955~~	2,4,6 Tribromoph
15	28.44	101462	10260	

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1780
SAMPLE: NFFW-6.S-5
GC/MS FILE: >DD480::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/11/89 22:49
SAMPLE--->EXTRACT:	10.59G--> 1ml

CAS #		CONC UG/L OR UG/KG
62-75-9	N-Nitrosodimethylamine	1100. ND
111-44-4	bis(2-Chloroethyl)ether	1100. ND
541-73-1	1,3-Dichlorobenzene	1100. ND
106-46-7	1,4-Dichlorobenzene	1100. ND
95-50-1	1,2-Dichlorobenzene	1100. ND
39638-32-9	bis(2-chloroisopropyl)ether	1100. ND
621-64-7	N-Nitroso-Di-n-propylamine	1100. ND
67-72-1	Hexachloroethane	1100. ND
98-95-3	Nitrobenzene	1100. ND
78-59-1	Isophorone	1100. ND
111-91-1	bis(2-Chloroethoxy)methane	1100. ND
120-82-1	1,2,4-Trichlorobenzene	1100. ND
91-20-3	Naphthalene	1100. ND
87-68-3	Hexachlorobutadiene	1100. ND
77-47-4	Hexachlorocyclopentadiene	1100. ND
91-58-7	2-Chloronaphthalene	1100. ND
131-11-3	Dimethylphthalate	1100. ND
208-96-8	Acenaphthylene	1100. ND
83-32-9	Acenaphthene	1100. ND
121-14-2	2,4-Dinitrotoluene	1100. ND
606-20-2	2,6-Dinitrotoluene	1100. ND
84-66-2	Diethylphthalate	1100. ND
7005-72-3	4-Chlorophenyl-phenylether	1100. ND
86-73-7	Fluorene	1100. ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1780
SAMPLE: NFFW-6.S-5
GC/MS FILE: >DD480::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/11/89 22:49
SAMPLE--->EXTRACT:	10.59G--> 1ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	1100.	ND
101-55-3	4-Bromophenyl-phenylether	1100.	ND
118-74-1	Hexachlorobenzene	1100.	ND
85-01-8	Phenanthrene	1100.	ND
120-12-7	Anthracene	1100.	ND
84-74-2	Di-n-Butyl phthalate	1100.	ND
206-44-0	Fluoranthene	1100.	ND
92-87-5	Benzidine	5300.	ND
129-00-0	Pyrene	1100.	ND
85-68-7	Butylbenzylphthalate	1100.	ND
91-94-1	3,3'-Dichlorobenzidine	2100.	ND
56-55-3	Benzo(a)Anthracene	1100.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	490.	TR
218-01-9	Chrysene	1100.	ND
117-84-0	Di-n-Octyl phthalate	1100.	ND
205-99-2	Benzo(b)Fluoranthene	1100.	ND
205-99-2	Benzo(k)Fluoranthene	1100.	ND
50-32-8	Benzo(a)Pyrene	1100.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	1100.	ND
53-70-3	Dibenzo(a,h)Anthracene	1100.	ND
191-24-2	Benzo(g,h,i)Perylene	1100.	ND

Qualifier descriptions: ND - Compound analyzed for but not det cted
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA. Laboratories

Case No:

Sample Number
NFFW-6.5-5
EA#1760

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)	
1. —	Unknown	B/N	13.07	740.00	B
2. 74367343	Propanoic acid, 2-methyl	B/N	13.38	810.00	B
3. —	Unknown	B/N	19.99	620.00	
4. 57103	Hexadecanoic acid	B/N	22.00	640.00	B
5. 10544500	Sulfur, mol	B/N	23.39	4700.00	
6. —	Unknown	B/N	28.32	4800.00	
7. —	Unknown	B/N	30.41	610.00	
8. —	Unknown	B/N	34.09	1800.00	
9.					
10.					
11.					
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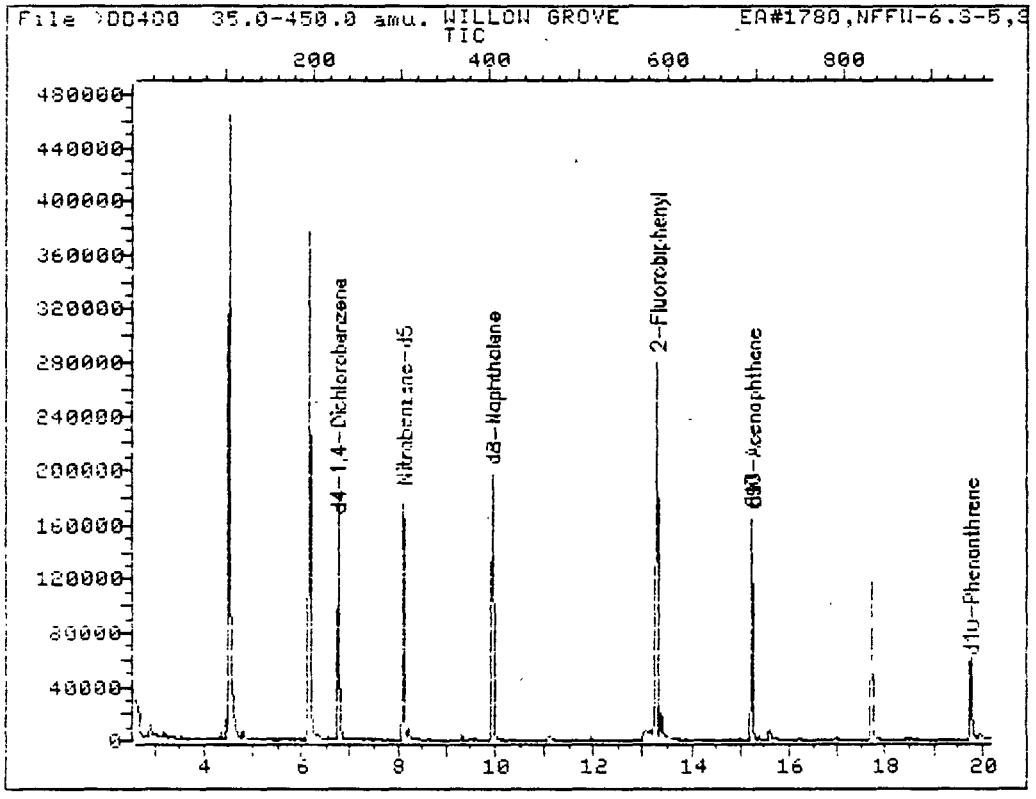
30.					

TOTAL ION CHROMATOGRAM



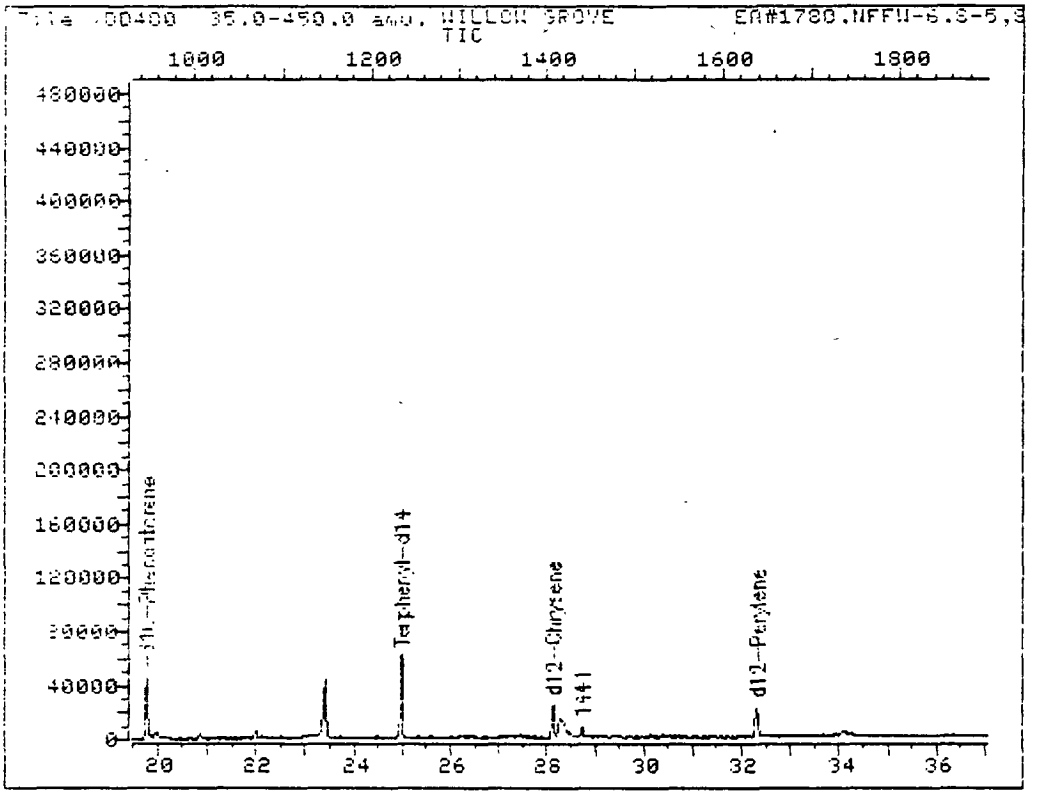
Data File: >DD480::D1 Quant Output File: >DD480::QT
Name: WILLOW GROVE
Misc: EA#1780,NFFW-6.S-5,SOIL,10.59G,1, WILLOW (94.43) BTL# 8

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

Operator ID: BHADRA
Quant Time: 890511 23:29
Injected at: 890511 22:49

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD480::D1 Quant Output File: ^DD480::QT
Name: WILLOW GROVE
Misc: EA#1780,NFFW-6.S-5,SOIL,10.59G,1, WILLOW (94.43) BTL# 8

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

Operator ID: BHADRA
Quant Time: 890511 23:29
Injected at: 890511 22:49

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890511 23:29
Output File: ^DD480::QT Injected at: 890511 22:49
Data File: ^DD480::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: EH#1780,NFFW-6.S-5,SOIL,10.59G,1, WILLOW <94.43> BTL# 8

ID File: IDDBNO::8D
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*d4-1,4-Dichlorobenzene	6.75	152.0	77642	40.00	NG	9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG	
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG	
4)	1,3-Dichlorobenzene	0.00	146.0	0	0.00	NG	
5)	1,4-Dichlorobenzene	0.00	146.0	0	0.00	NG	
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG	
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG	
8)	N-Nitroso-Di-n-propylamine	0.00	70.0	0	0.00	NG	
9)	Hexachloroethane	0.00	117.0	0	0.00	NG	
10)	*d8-Naphthalene	9.95	136.0	241448	40.00	NG	8
11)	Nitrobenzene-d5	8.13	82.0	153812	67.14	NG ✓67%	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG	
13)	Isophorone	0.00	82.0	0	0.00	NG	
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG	
15)	1,2,4-Trichlorobenzene	0.00	180.0	0	0.00	NG	
16)	Naphthalene	0.00	128.0	0	0.00	NG	
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG	
18)	*d10-Acenaphthene	15.24	164.0	86611	40.00	NG	9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG	
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG	
21)	2-Fluorobiphenyl	13.29	172.0	227372	64.18	NG ✓64%	9
22)	Dimethylphthalate	15.24	163.0	27825	~~8.85~~	~~NG~~	5
23)	Acenaphthylene	0.00	152.0	0	0.00	NG	
24)	Acenaphthene	0.00	153.0	0	0.00	NG	
25)	2,4-Dinitrotoluene	0.00	165.0	0	0.00	NG	
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG	
27)	Diethylphthalate	0.00	149.0	0	0.00	NG	
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG	
29)	Fluorene	0.00	166.0	0	0.00	NG	
30)	*d10-Phenanthrene	19.77	188.0	65844	40.00	NG	9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG	
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG	
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG	
34)	Phenanthrene	0.00	178.0	0	0.00	NG	
35)	Anthracene	0.00	178.0	0	0.00	NG	
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG	
37)	Fluoranthene	0.00	202.0	0	0.00	NG	
38)	Benzidine	0.00	184.0	0	0.00	NG	
39)	*d12-Chrysene	28.12	240.0	23915	40.00	NG	9
40)	Pyrene	0.00	202.0	0	0.00	NG	
41)	Terphenyl-d14	24.97	244.0	65957	76.03	NG ✓76%	8
42)	Butylbenzylphthalate	0.00	149.0	0	0.00	NG	

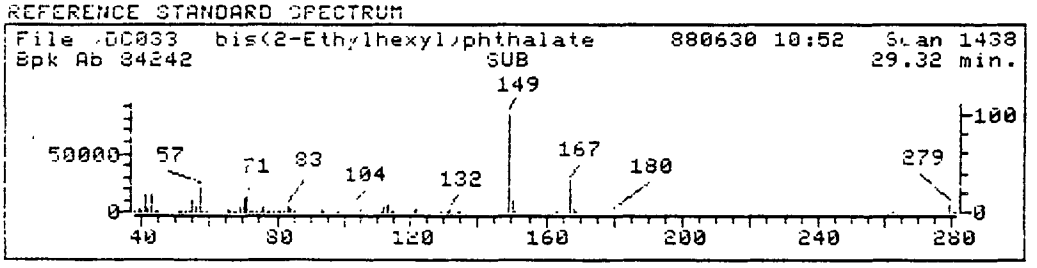
QUANT REPORT
page 2

Output File:^DD480:: Data File:>DD480::D1

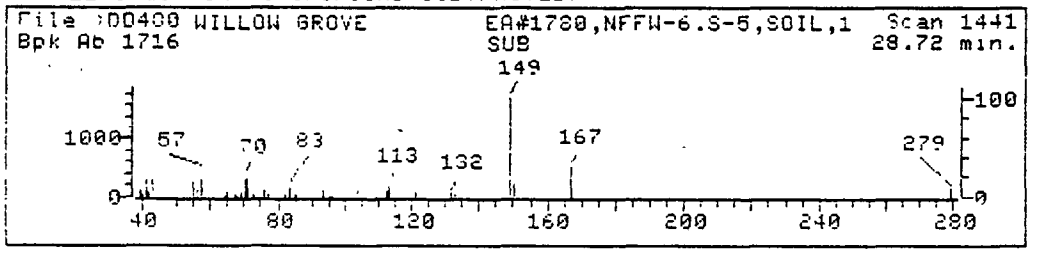
	Compound	R.T.	Q ion	Area	Conc	Units	c
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	28.72	149.0	4545	4.63	NG	9
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	32.31	264.0	24435	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD

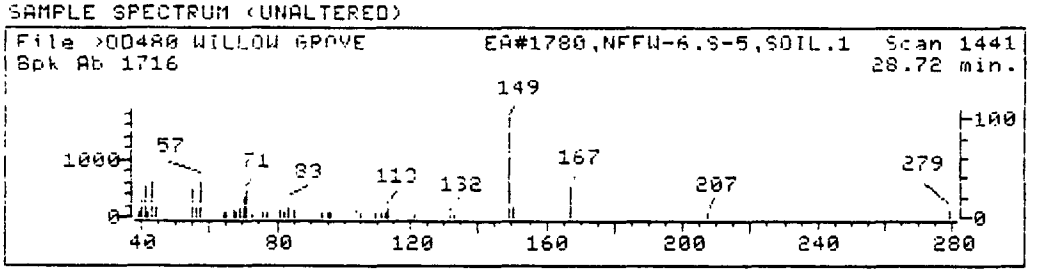
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

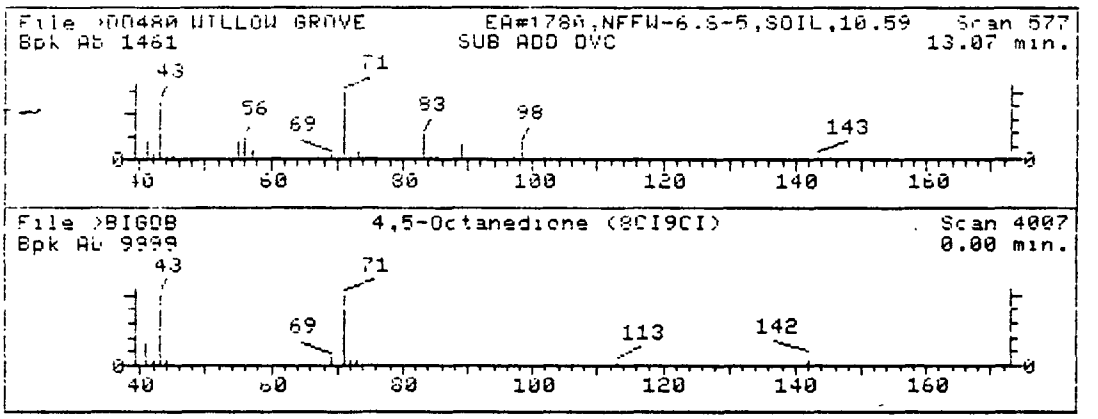


SAMPLE SPECTRUM (UNALTERED)



Data File: >DD480::D1 Quant Output File: ^DD480::QT
Name: WILLOW GROVE
Misc: EA#1780,NFFW-6.S-5,SOIL,10.59G,1, WILLOW (94.43) BTL# 8
Quant Time: 890511 23:29 Quant ID File: IDDBND::BD
Injected at: 890511 22:49 Last Calibration: 890511 16:46

Compound No: 45
Compound Name: bis(2-Ethylhexyl)phthalate
Scan Number: 1441
Retention Time: 28.72 min.
Quant Ion: 149.0
Area: 4545
Concentration: 4.63 NG
q-value: 91



unknown

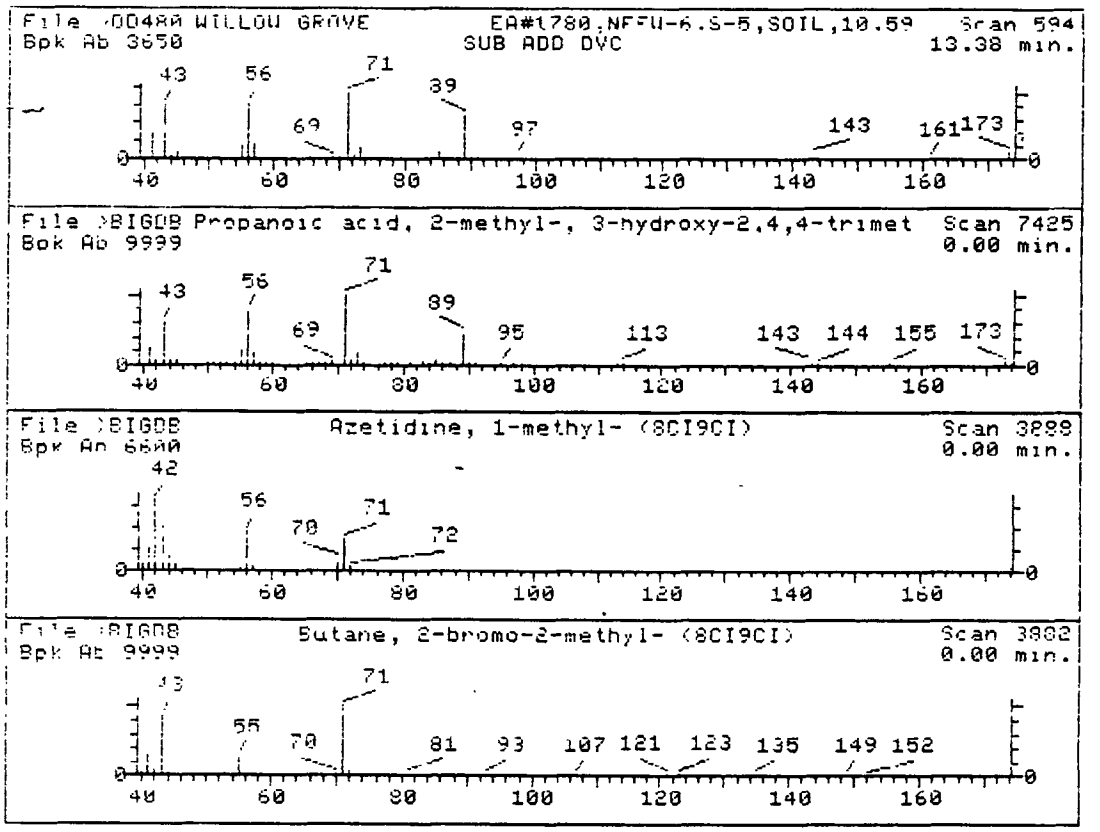
Retention time = 13.07

Area = 75628.00 Tentative Concentration is 740.00

1. 4,5-Octanedione (8CI9CI) 142 C8H14O2

Sample file: >DD480 Spectrum #: 577
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	20	5455243	4007	"BIGDB	45	31	2	0	87	54	5	1



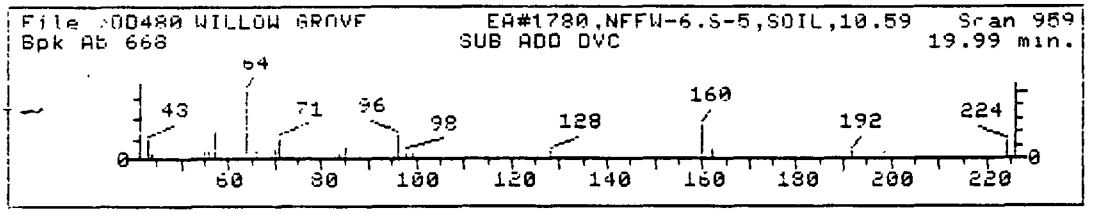
Retention time = 13.38

Area = 82372.00 Tentative Concentration is 810.00

1. Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethyl pentyl ester (9CI) 216 C12H2403
2. Azetidine, 1-methyl- (8CI9CI) 71 C4H9N
3. Butane, 2-bromo-2-methyl- (8CI9CI) 150 C5H11Br

Sample file: >DD480 Spectrum #: 594
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	83	74367343	7425	"BIGDB	90	26	2	-1	100	1	57	2
2.	25*	4923799	3888	"BIGDB	29	72	2	0	138	46	7	1
3.	11	507368	3882	"BIGDB	35	43	2	0	82	62	2	1



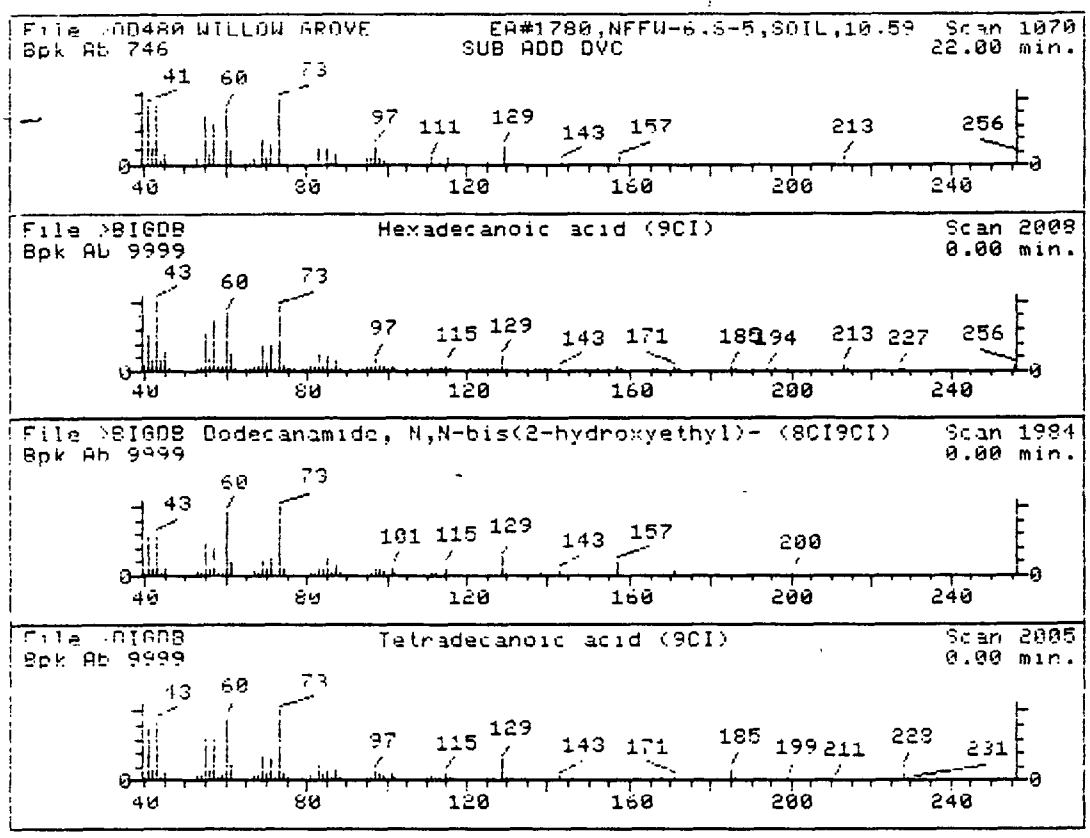
Unknown

Retention time = 19.99

Area = 27764.00 Tentative Concentration is 620.00

Sample file: >DD480 Spectrum #: 959

No data base entries were retrieved.



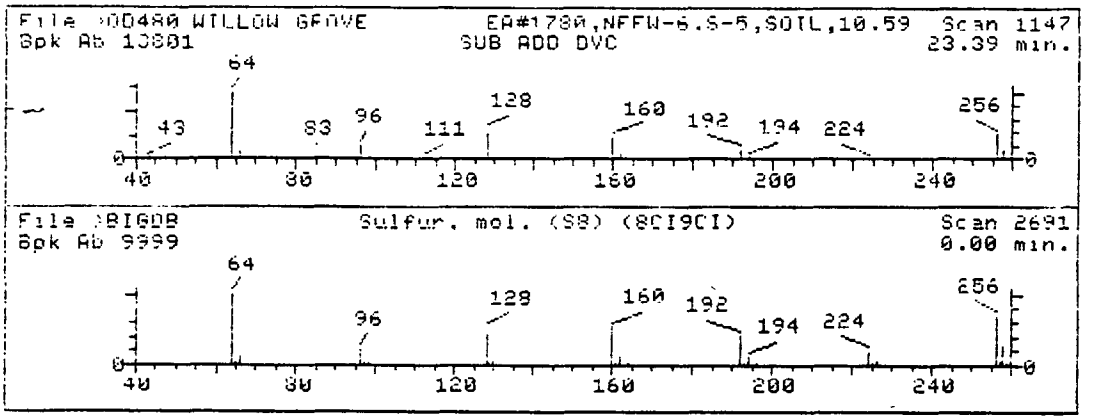
Retention time = 22.00

Area = 28634.00 Tentative Concentration is 640.00

1. Hexadecanoic acid (9CI)	256	C16H32O2
2. Dodecanamide, N,N-bis(2-hydroxyethyl)- (8CI9CI)	287	C16H33NO3
3. Tetradecanoic acid (9CI)	228	C14H28O2
4. Glycine, N-methyl-N-(1-oxododecyl)- (9CI)	271	C15H29NO3
5. Acetic acid (ACN)(8CI9CI)	60	C2H4O2
6. Isoxazolidine, 5-ethyl-2,4-dimethyl-, trans- (9CI)	129	C7H15NO

Sample file: >DD480 Spectrum #: 1070
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	79*	57103	2008	"BIGDB	81	70	3	-1	97	8	48	3
2.	60	120401	1984	"BIGDB	71	82	3	0	93	14	30	1
3.	52	544638	2005	"BIGDB	82	64	3	0	93	19	20	1
4.	48	97789	1972	"BIGDB	76	74	2	0	97	21	17	1
5.	15*	64197	1835	"BIGDB	28	51	3	0	90	59	3	1
6.	15*	56728144	1932	"BIGDB	25	79	3	0	116	56	3	1



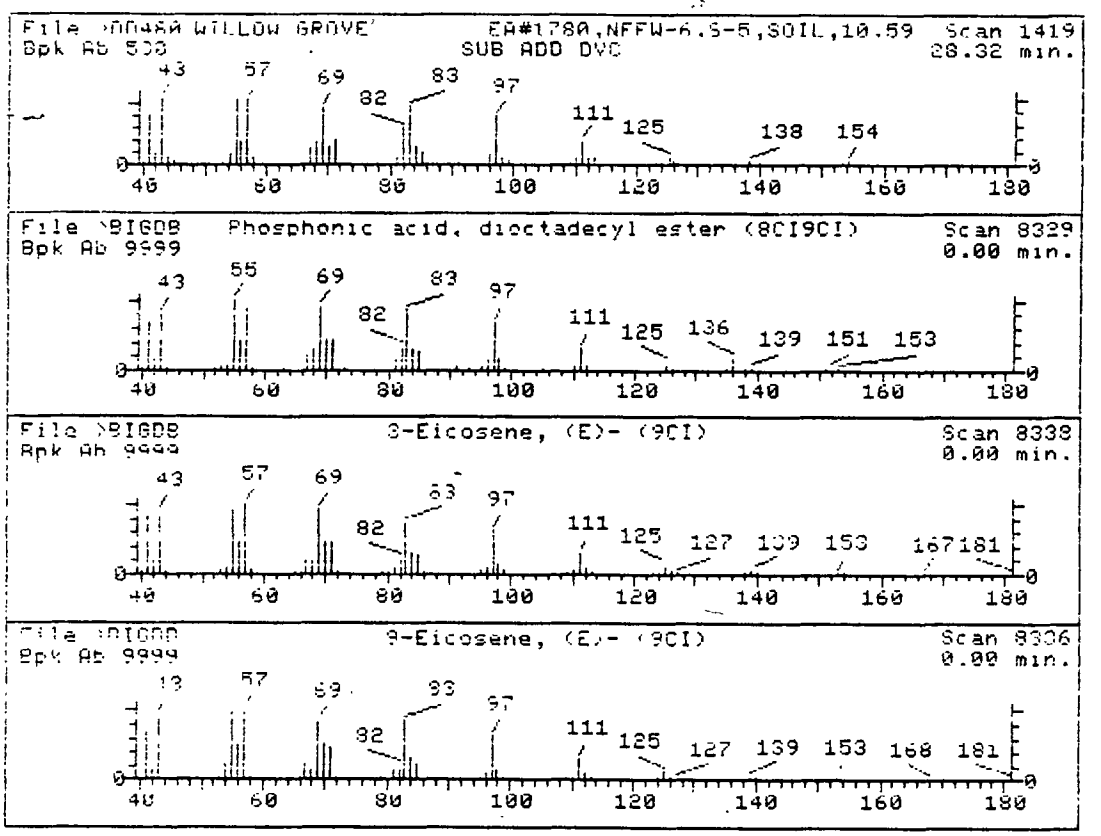
Retention time = 23.39

Area = 207833.0 Tentative Concentration is 4700.00

1. Sulfur, mol. (S8) (8CI9CI) 0

Sample file: >DD480 Spectrum #: 1147
Search speed: 2 Tilting option: S No. of ion ranges searched: 49

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	59*	10544500	2691	"BIGDB	80	78	2	2	57	36	21	5



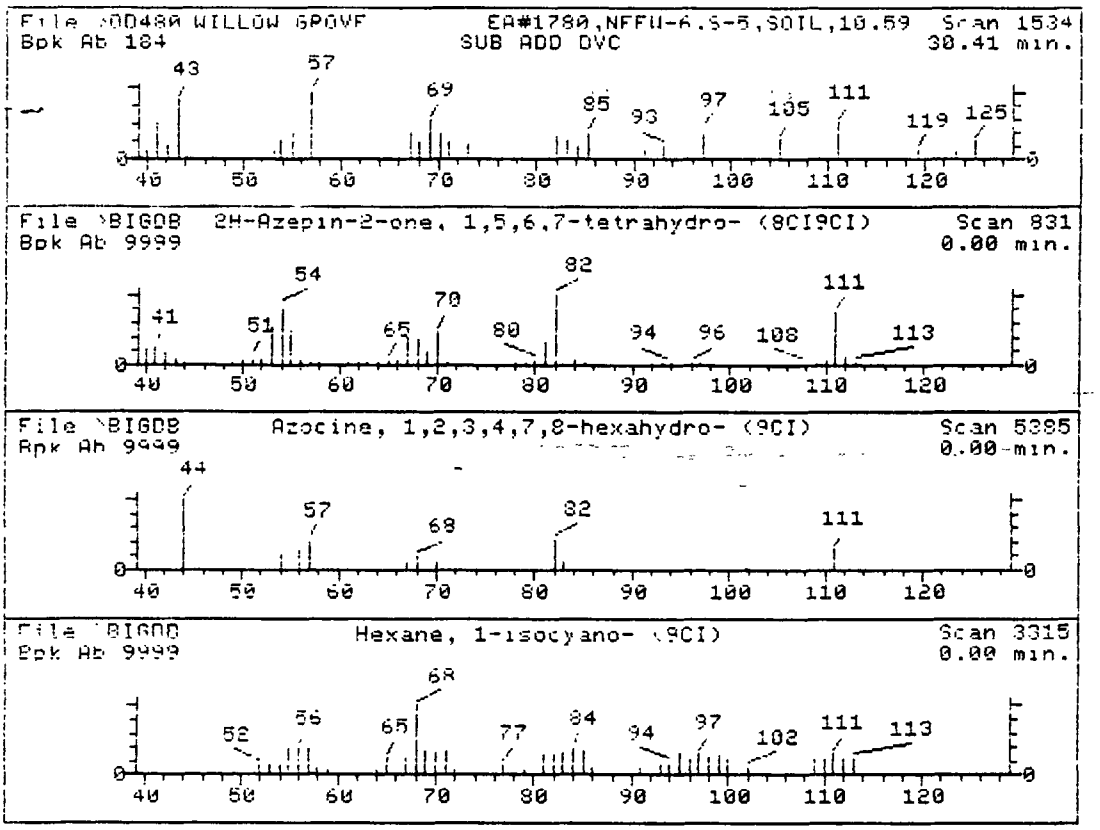
Retention time = 28.32

Area = 96519.00 Tentative Concentration is 4800.00

1. Phosphonic acid, dioctadecyl ester (8CI9CI)	586	C36H75O3P
2. 3-Eicosene, (E)- (9CI)	280	C20H40
3. 9-Eicosene, (E)- (9CI)	280	C20H40
4. 9-Octadecene, (E)- (8CI9CI)	252	C18H36
5. Cyclohexane, 2-propenyl- (9CI)	124	C9H16
6. 2-Decene, 7-methyl-, (Z)- (9CI)	154	C11H22
7. 1-Dotriacontanol (8CI9CI)	466	C32H66O

Sample file: >DD480 Spectrum #: 1419
Search speed: 2 Tilting option: S No. of ion ranges searched: 49

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	67	19047859	8329	"BIGDB	114	86	3	1	99	12	34	2
2.	58	74685339	8338	"BIGDB	97	69	3	0	91	18	25	2
3.	52	74685293	8336	"BIGDB	84	86	3	0	97	18	20	1
4.	52	7206259	8308	"BIGDB	94	58	3	0	97	18	20	1
5.	47*	2114423	5622	"BIGDB	62	37	1	2	84	44	17	5
6.	42*	74630232	10658	"BIGDB	68	39	2	-2	81	40	17	3
7.	35	6624799	8333	"BIGDB	72	109	3	0	97	28	14	1



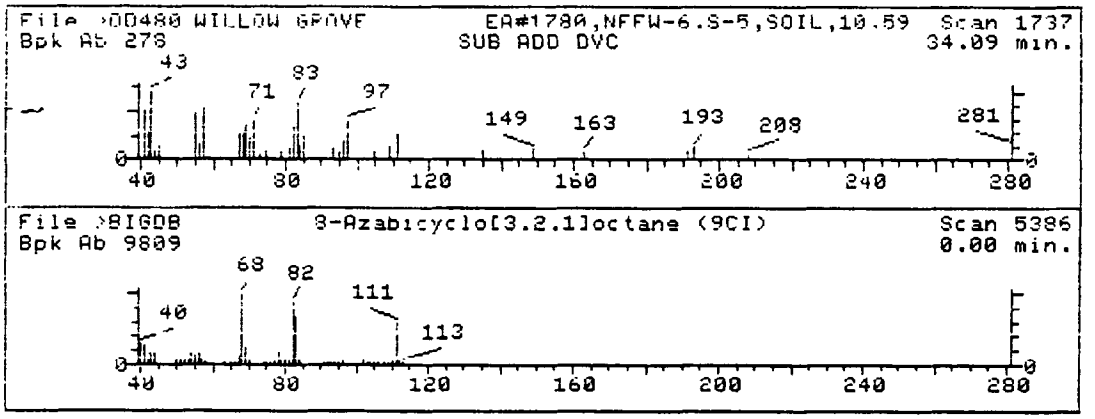
Retention time = 30.41

Area = 11473.00 Tentative Concentration is 610.00

1. 2H-Azepin-2-one, 1,5,6,7-tetrahydro- (8CI9CI) 111 C6H9NO
2. Azocine, 1,2,3,4,7,8-hexahydro- (9CI) 111 C7H13N
3. Hexane, 1-isocyano- (9CI) 111 C7H13N
4. Cyclohexane, isocyanato- (9CI) 125 C7H11NO
5. 3-Dodecen-1-ol, 12-[(tetrahydro-2H-pyran-2-yl)oxy]-, (Z)- (9CI) 284 C17H32O3

Sample file: >DD480 Spectrum #: 1534
Search speed: 2 Tilting option: S No. of ion ranges searched: 58

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	27*	2228797	831	"BIGDB	34	97	3	0	73	40	10	1
2.	20*	57502484	5385	"BIGDB	27	49	3	0	183	53	5	1
3.	20*	15586239	3315	"BIGDB	22	106	3	0	111	53	5	1
4.	15*	3173533	8294	"BIGDB	24	75	3	0	47	56	3	1
5.	15	69494162	5947	"BIGDB	39	21	2	0	61	60	3	1



Retention time = 34.09 unknown

Area = 33847.00 Tentative Concentration is 1800.00

1. 8-Azabicyclo[3.2.1]octane (9CI) 111 $C_7H_{13}N$

Sample file: >DD480 Spectrum #: 1737
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	OK	#FLG	TILT	%	CON	C_I	R_I
1.	20*	280057	5386	"BIGDB	24	73	3	0	44	52	5	1

LIBRARY SEARCH SUMMARY

MS Data File:>DD480::D1 Analyst:BHADRA MS

Name:WILLOW GROVE Date/Time: 5/11/89 22:49
Misc:EA#1780,NFFW-6.S-5,SOIL,10.59G,1, WILLOW ?94.43? BTL# 8

The following hits are >10% of the nearest ISTD.

Peak # in PBM file	Retention Time	Peak Area	10% of Nearest ISTD Area	
~~1~~	~~4.52~~	~~1055272~~	~~50375~~	2-Fluoro phenol
~~2~~	~~8.19~~	~~1084870~~	~~50375~~	Phenol-d5
3	13.07	75628	43074	
4	13.38	82372	43074	
~~5~~	~~17.72~~	~~351243~~	~~18831~~	2,4,6 Tribromophe
6	19.99	27764	18831	
7	22.00	28634	18831	
8	23.39	207833	18831	
9	28.32	96519	8507	
10	30.41	11473	7964	
11	34.09	33847	7964	

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1915
SAMPLE: NFFW-7.S-4
GC/MS FILE: >OD447::01
DATE REC'D: ~~04/17/89~~ 04/21/89
INSTRUMENT ID: #4 SEM 6-15-89

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	SOIL
DATE EXTRACTED:	~~04/25/89~~ 04/26/89
DATE ANALYZED:	05/09/89 19:04
SAMPLE--->EXTRACT:	10.49G--> 1ml

CAS #		CONC UG/L	OR UG/KG
62-75-9	N-Nitrosodimethylamine	1200.	ND
111-44-4	bis(2-Chloroethyl)ether	1200.	ND
541-73-1	1,3-Dichlorobenzene	1200.	ND
106-46-7	1,4-Dichlorobenzene	1200.	ND
95-50-1	1,2-Dichlorobenzene	1200.	ND
39638-32-9	bis(2-chloroisopropyl)ether	1200.	ND
621-64-7	N-Nitroso-Di-n-propylamine	1200.	ND
67-72-1	Hexachloroethane	1200.	ND
98-95-3	Nitrobenzene	1200.	ND
78-59-1	Isophorone	1200.	ND
111-91-1	bis(2-Chloroethoxy)methane	1200.	ND
120-82-1	1,2,4-Trichlorobenzene	1200.	ND
91-20-3	Naphthalene	950.	TR
87-68-3	Hexachlorobutadiene	1200.	ND
77-47-4	Hexachlorocyclopentadiene	1200.	ND
91-58-7	2-Chloronaphthalene	1200.	ND
131-11-3	Dimethylphthalate	1200.	ND
208-96-8	Acenaphthylene	1200.	ND
83-32-9	Acenaphthene	1200.	ND
121-14-2	2,4-Dinitrotoluene	1200.	ND
606-20-2	2,6-Dinitrotoluene	1200.	ND
84-66-2	Diethylphthalate	1200.	ND
7005-72-3	4-Chlorophenyl-phenylether	1200.	ND
86-73-7	Fluorene	1200.	ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1915
SAMPLE: NFFW-7.S-4
GC/MS FILE: >DD447::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	SOIL
DATE EXTRACTED:	04/25/89
DATE ANALYZED:	05/09/89 19:04
SAMPLE--->EXTRACT:	10.49G--> 1ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	1200.	ND
101-55-3	4-Bromophenyl-phenylether	1200.	ND
118-74-1	Hexachlorobenzene	1200.	ND
85-01-8	Phenanthrene	1200.	ND
120-12-7	Anthracene	1200.	ND
84-74-2	Di-n-Butyl phthalate	1200.	ND
206-44-0	Fluoranthene	1200.	ND
92-87-5	Benzidine	5800.	ND
129-00-0	Pyrene	1200.	ND
85-68-7	Butylbenzylphthalate	1200.	ND
91-94-1	3,3'-Dichlorobenzidine	2300.	ND
56-55-3	Benzo(a)Anthracene	1200.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	1200.	ND
218-01-9	Chrysene	1200.	ND
117-84-0	Di-n-Octyl phthalate	1200.	ND
205-99-2	Benzo(b)Fluoranthene	1200.	ND
205-99-2	Benzo(k)Fluoranthene	1200.	ND
50-32-8	Benzo(a)Pyrene	1200.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	1200.	ND
53-70-3	Dibenzo(a,h)Anthracene	1200.	ND
191-24-2	Benzo(g,h,i)Perylene	1200.	ND

Qualifier descriptions: ND - Compound analyzed for but not det cted
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA. Laboratories

Case No: Willow Grove

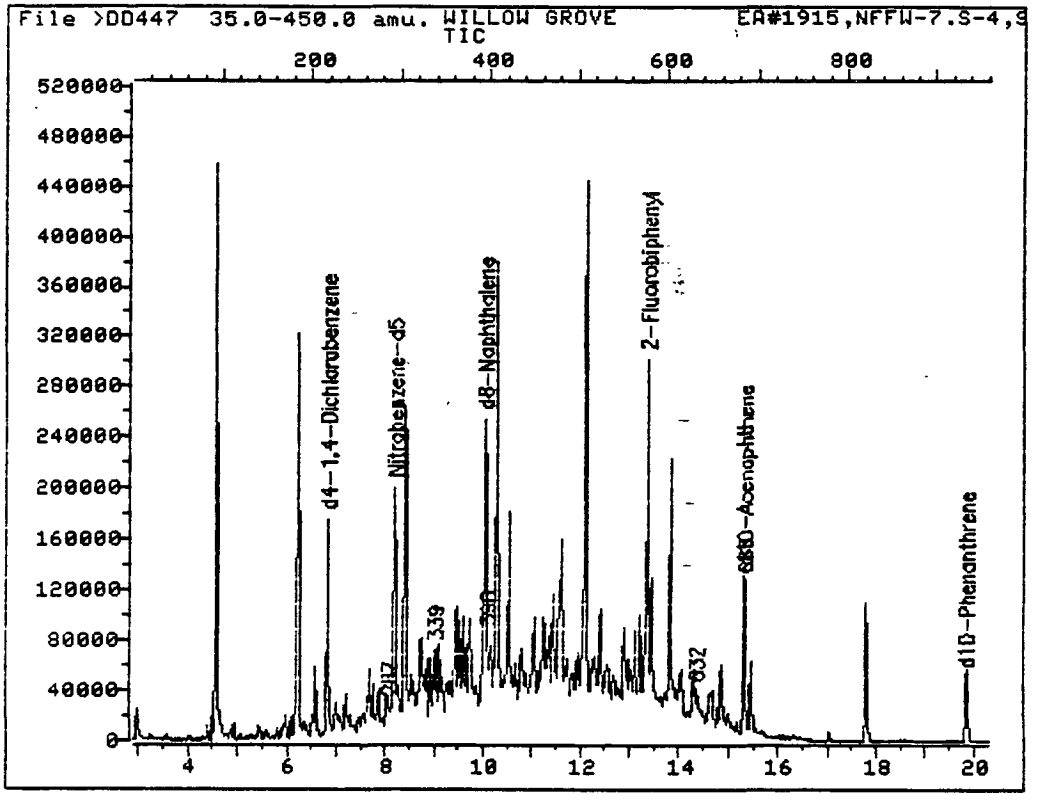
Sample Number
NFFW-7.9-4
EA # 1915

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 1120214	UNDECANE	B/N	8.43	7900.00
2. —	UNKNOWN	B/N	8.74	1400.00
3. 4292926	Cyclohexane, pentyl	B/N	9.12	990.00
4. —	UNKNOWN	B/N	9.47	1400.00
5. 7045718	UNDECANE, 2-methyl	B/N	9.63	990.00
6. —	UNKNOWN	B/N	9.74	980.00
7. 112403	DODECANE	B/N	10.30	5400.00
8. 17301289	UNDECANE, 3,6-dimethyl	B/N	10.56	2300.00
9. —	UNKNOWN	B/N	10.79	1300.00
10. —	UNKNOWN cyclohexane	B/N	11.05	1000.00
11. —	UNKNOWN ALKANE	B/N	11.25	1400.00
12. —	UNKNOWN ALKANE	B/N	11.45	970.00
13. —	UNKNOWN ALKANE	B/N	11.63	2200.00
14. —	UNKNOWN ALKANE	B/N	12.12	5800.00
15. —	UNKNOWN ALKANE	B/N	13.45	2200.00
16. —	UNKNOWN ALKANE	B/N	13.85	6900.00
17. —	UNKNOWN ALKANE	B/N	14.87	2200.00
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

TOTAL ION CHROMATOGRAM



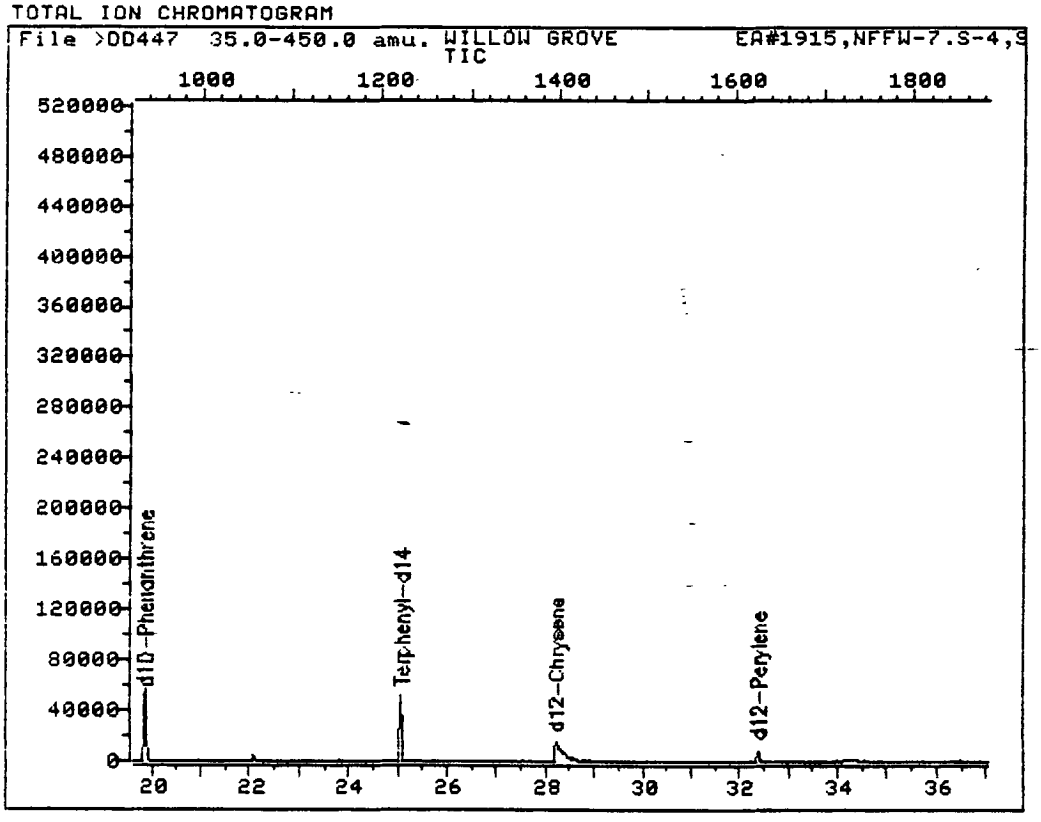
Data File: >DD447::D1 Quant Output File: ^DD447::QT
Name: WILLOW GROVE
Misc: EA#1915,NFFW-7.S-4,SOIL,10.49G,1,WILLOW GROVE (95.33) BTL# 8

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890509 13:54

Operator ID: BHADRA
Quant Time: 890509 19:45
Injected at: 890509 19:04

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD447::D1 Quant Output File: ^DD447::QT
Name: WILLOW GROVE
Misc: EA#1915,NFFW-7.S-4,SOIL,10.49G,1,WILLOW GROVE (95.33) BTL# 8

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890509 13:54

Operator ID: BHADRA
Quant Time: 890509 19:45
Injected at: 890509 19:04

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890509 19:45
Output File: ^DD447::QT Injected at: 890509 19:04
Data File: >DD447::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: EA#1915,NFFW-7.S-4,SOIL,10.49G,1,WILLOW GROVE (95.33) BTL# 8

ID File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
La t Calibration: 890509 13:54

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*d4-1,4-Dichlorobenzene	6.83	152.0	59265	40.00	NG	9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG	
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG	
4)	1,3-Dichlorobenzene	0.00	146.0	0	0.00	NG	
5)	1,4-Dichlorobenzene	0.00	146.0	0	0.00	NG	
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG	
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG	
8)	N-Nitroso-Di-n-propylamine	0.00	70.0	0	0.00	NG	
9)	Hexachloroethane	0.00	117.0	0	0.00	NG	
10)	*d8-Naphthalene	10.05	136.0	201628	40.00	NG	9
11)	Nitrobenzene-d5	8.21	82.0	149555	77.33	NG 77 %	9
12)	Nitrobenzene	8.09	77.0	2794	~~1.51~~	~~NG~~	9
13)	Isophorone	9.03	82.0	8113	~~2.15~~	~~NG~~	8
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG	
15)	1,2,4-Trichlorobenzene	0.00	180.0	0	0.00	NG	
16)	Naphthalene	10.10	128.0	38226	8.20	NG	9
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG	
18)	*d10-Acenaphthene	15.33	164.0	71726	40.00	NG	9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG	
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG	
21)	2-Fluorobiphenyl	13.38	172.0	208993	72.19	NG 72 %	9
22)	Dimethylphthalate	15.34	163.0	23089	~~8.77~~	~~NG~~	5
23)	Acenaphthylene	14.36	152.0	1130	~~.34~~	~~NG~~	7
24)	Acenaphthene	0.00	153.0	0	0.00	NG	
25)	2,4-Dinitrotoluene	0.00	165.0	0	0.00	NG	
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG	
27)	Diethylphthalate	0.00	149.0	0	0.00	NG	
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG	
29)	Fluorene	0.00	166.0	0	0.00	NG	
30)	*d10-Phenanthrene	19.85	188.0	57197	40.00	NG	9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG	
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG	
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG	
34)	Phenanthrene	0.00	178.0	0	0.00	NG	
35)	Anthracene	0.00	178.0	0	0.00	NG	
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG	
37)	Fluoranthene	0.00	202.0	0	0.00	NG	
38)	B nzidine	0.00	184.0	0	0.00	NG	
39)	*d12-Chrysene	28.22	240.0	13679	40.00	NG	9
40)	Pyrene	0.00	202.0	0	0.00	NG	
41)	T rph nyl-d14	25.07	244.0	44049	74.91	NG 75 %	9
42)	Butylb nzylphthalate	0.00	149.0	0	0.00	NG	

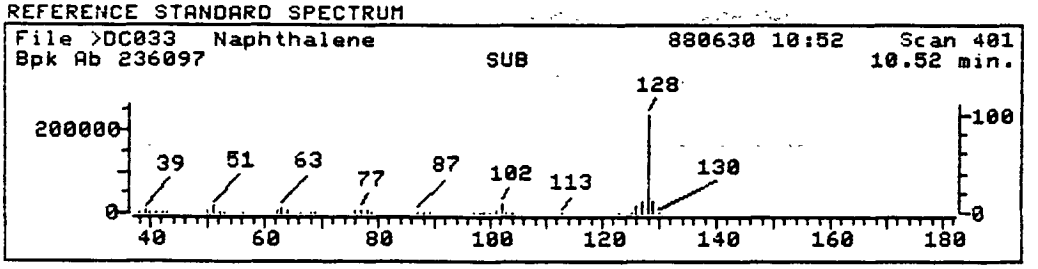
QUANT REPORT
page 2

Output File:^DD447:: Data File:>DD447::D1

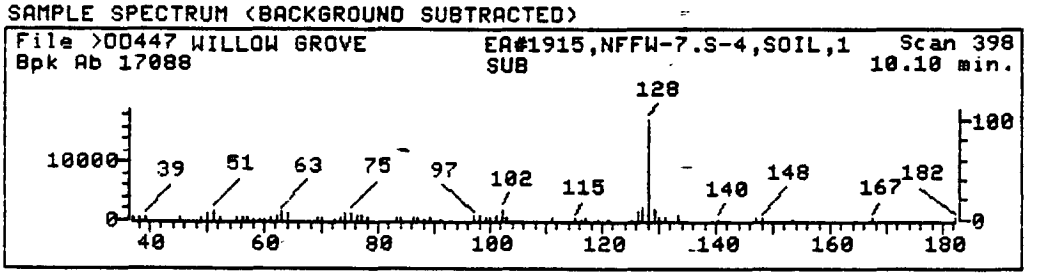
	Compound	R.T.	Q ion	Area	Conc	Unit	q
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	0.00	149.0	0	0.00	NG	
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	32.38	264.0	10889	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD

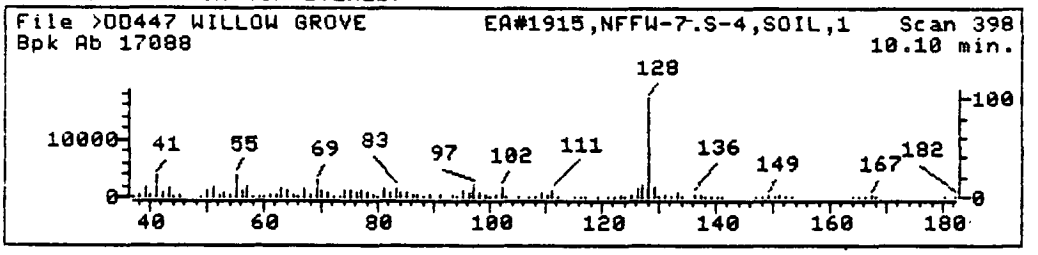
REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

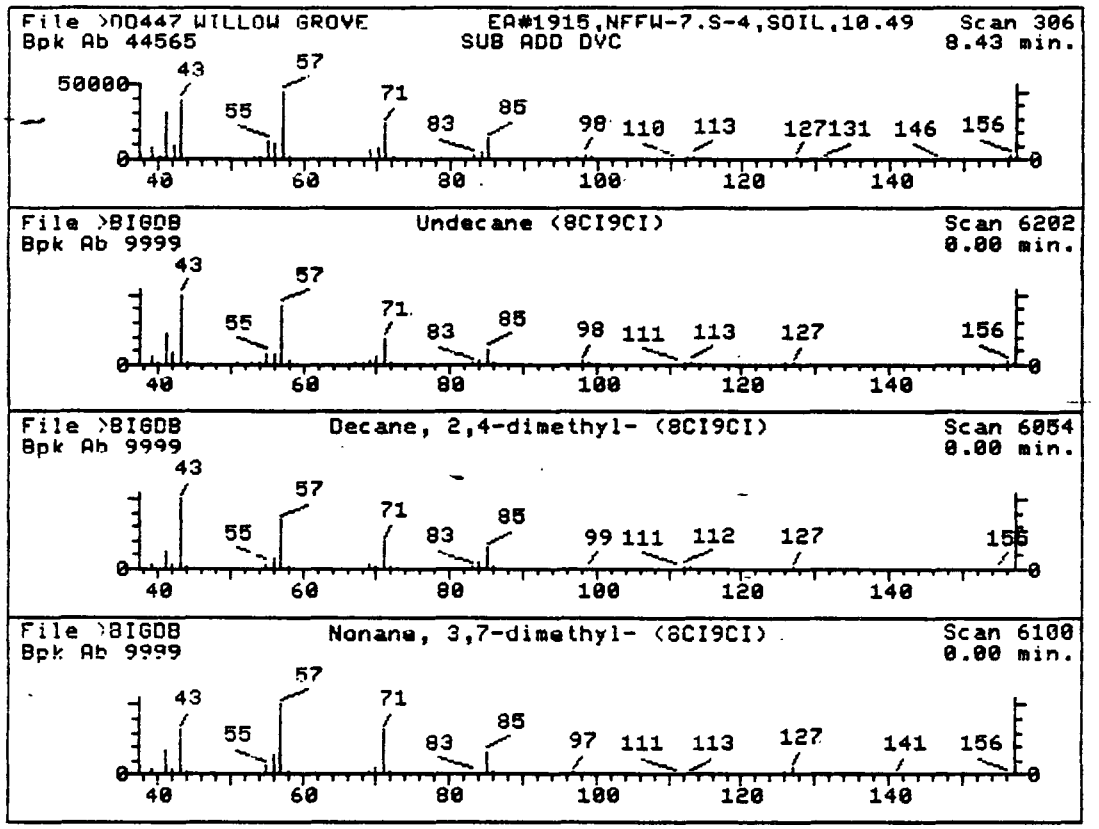


SAMPLE SPECTRUM (UNALTERED)



Data File: >DD447::D1 Quant Output File: ^DD447::QT
Name: WILLOW GROVE
Misc: EA#1915,NFFW-7.S-4,SOIL,10.49G,1,WILLOW GROVE (95.33) BTL# 8
Quant Time: 890509 19:45 Quant ID File: IDDBNO::BD
Injected at: 890509 19:04 Last Calibration: 890509 13:54

Compound No: 16
Compound Name: Naphthalene
Scan Number: 398
Retention Time: 10.10 min.
Quant Ion: 128.0
Area: 38226
Concentration: 8.20 NG
q-value: 99



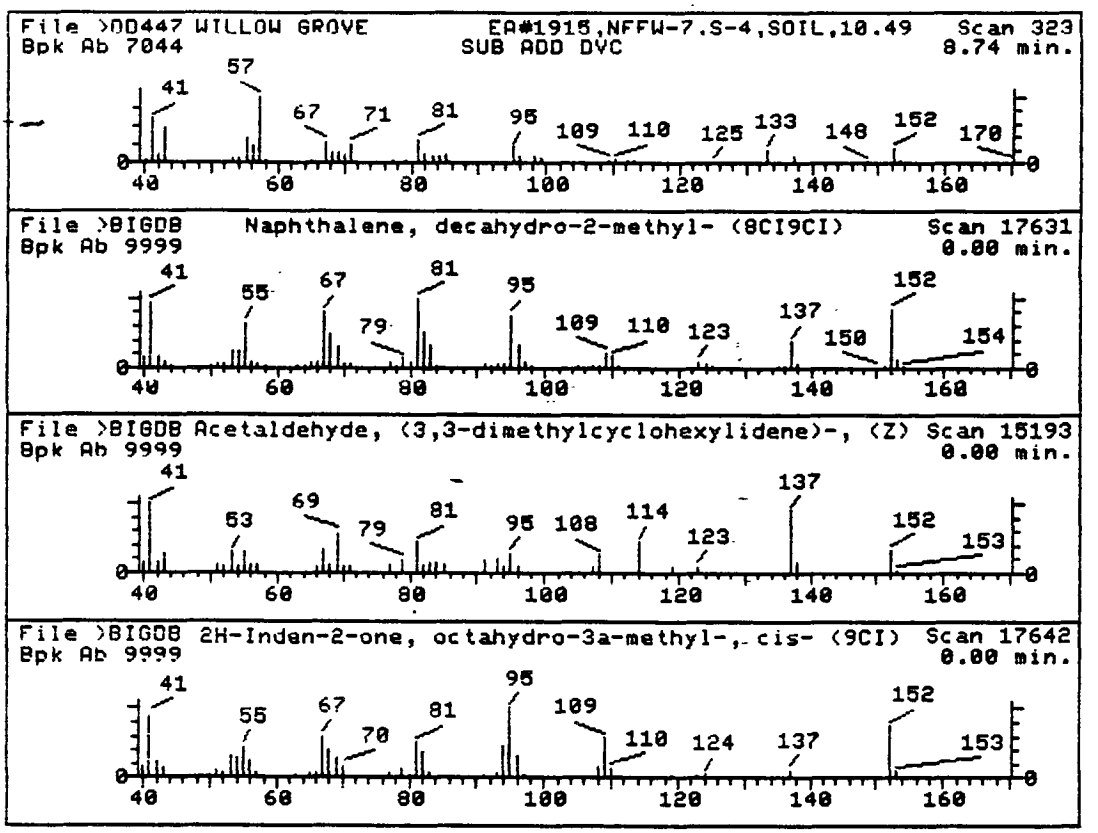
Retention time = 8.43

Area = 765494.0 Tentative Concentration is 7900.00

✓1. Undecane (8CI9CI)	156	C11H24
2. Decane, 2,4-dimethyl- (8CI9CI)	170	C12H26
3. Nonane, 3,7-dimethyl- (8CI9CI)	156	C11H24
4. Undecane, 4,6-dimethyl- (8CI)	184	C13H28
5. Heptadecane, 2,6-dimethyl- (9CI)	268	C19H40
6. Decane, 2,9-dimethyl- (8CI9CI)	170	C12H26
7. Octane, 5-ethyl-2-methyl- (9CI)	156	C11H24

Sample file: >DD447 Spectrum #: 306
Search speed: 2 Tilting option: S No. of ion ranges searched: 57

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	93*	1120214	6202	"BIGDB	82	15	1	0	116	0	68	8
2.	76	2801845	6054	"BIGDB	66	21	1	1	115	10	45	2
3.	74*	17302328	6100	"BIGDB	51	35	1	0	69	15	39	4
4.	60	17312822	3957	"BIGDB	59	39	2	0	100	12	30	1
5.	60	54105678	3959	"BIGDB	62	54	2	0	84	15	30	1
6.	58	1002171	6094	"BIGDB	60	32	2	0	87	16	25	2
7.	58*	62016186	13436	"BIGDB	54	44	2	1	82	16	25	2



Retention time = 8.74 unknown

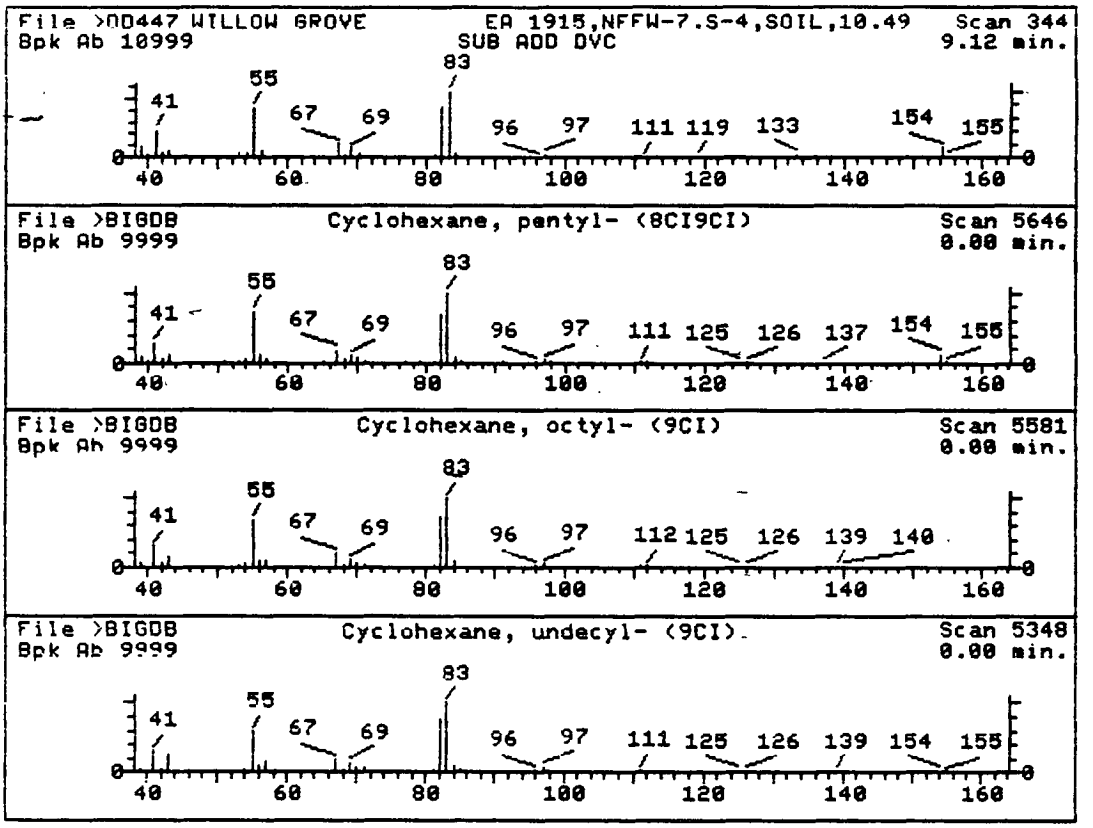
Area = 279335.0 Tentative Concentration is 1400.00

1. Naphthalene, decahydro-2-methyl- (8CI9CI) 152 C11H20
2. Acetaldehyde, (3,3-dimethylcyclohexylidene)-, (Z)- (9CI) 152 C10H16O
3. 2H-Inden-2-one, octahydro-3a-methyl-, cis- (9CI) 152 C10H16O
4. 1,8-Nonadiene, 2,8-dimethyl- (8CI9CI) 152 C11H20
5. Bicyclo[2.2.1]heptan-2-one, 4,7,7-trimethyl-, (1S)- (9CI) 152 C10H16O
6. Bicyclo[4.1.0]heptan-3-one, 4,7,7-trimethyl-, [1R-(1 .alpha.,4.alpha.,6.alpha.)]- (9CI) 152 C10H16O
7. Bicyclo[3.1.1]heptan-2-one, 3,6,6-trimethyl- (9CI) 152 C10H16O

Sample file: >DD447 Spectrum #: 323
Search speed: 2 Tilting option: S No. of ion ranges searched: 57

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	85*	2958761	17631	"BIGDB	96	22	1	0	26	44	43	9
2.	25*	26532241	15193	"BIGDB	36	86	3	0	67	44	8	1
3.	24*	13351296	17642	"BIGDB	57	58	2	1	29	55	7	2
4.	24*	20054255	3287	"BIGDB	50	49	1	-1	34	55	7	2
5.	15*	10292985	17579	"BIGDB	45	61	3	0	104	60	3	1

6.	15*	4176049	17634	"BIGDB	36	61	2	0	24	58	3	1
7.	15*	16022085	17581	"BIGDB	25	76	2	0	48	60	3	1



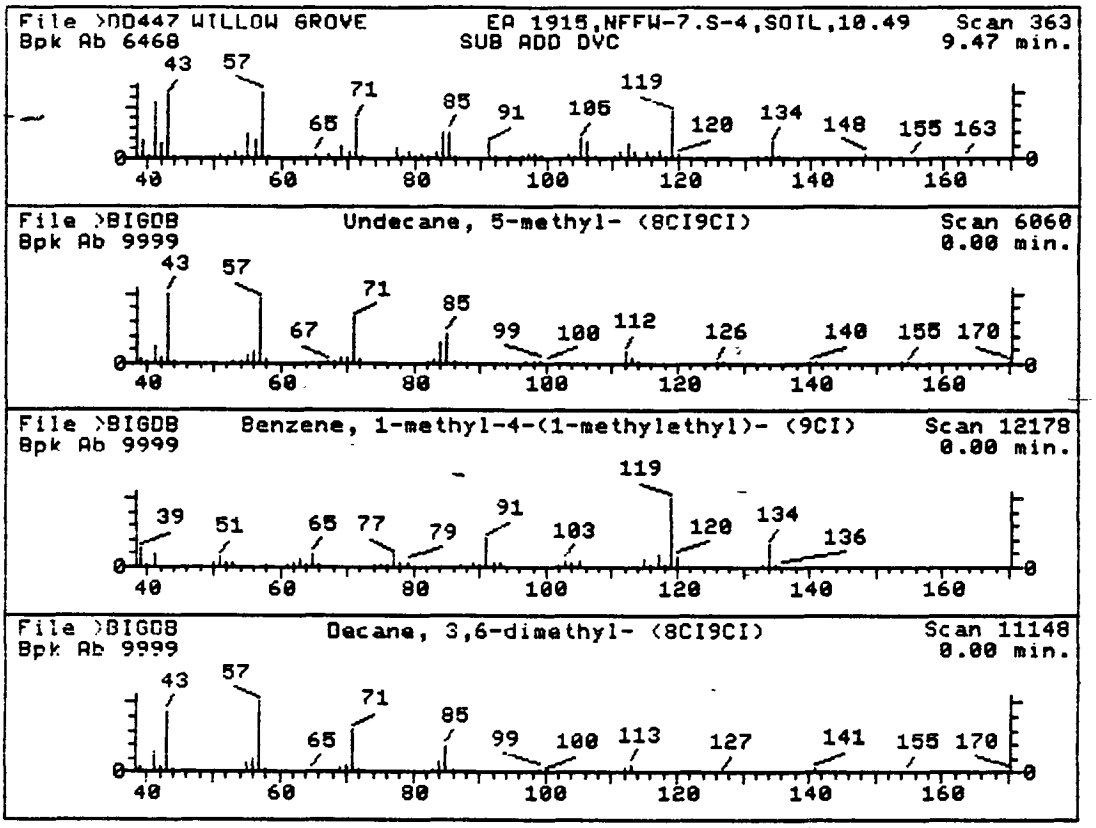
Retention time = 9.12

Area = 193383.0 Tentative Concentration is 990.00

√1. Cyclohexane, pentyl- (8CI9CI)	154	C11H22
2. Cyclohexane, octyl- (9CI)	196	C14H28
3. Cyclohexane, undecyl- (9CI)	238	C17H34
4. Cyclohexane, (1-methylethyl)- (9CI)	126	C9H18
5. 1-Azabicyclo[3.1.0]hexane (8CI9CI)	83	C5H9N
6. Heptanenitrile (8CI9CI)	111	C7H13N
7. Cyclohexanecarboxylic acid, ethenyl ester (9CI)	154	C9H14O2

Sample file: >DD447 Spectrum #: 344
S arch speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	87*	4292926	5646	"BIGDB	71	24	0	0	71	31	40	8
2.	67	1795159	5581	"BIGDB	80	28	2	3	72	12	34	2
3.	60	54105667	5348	"BIGDB	70	46	2	0	97	12	30	1
4.	60	696297	5414	"BIGDB	58	45	2	0	76	13	30	1
5.	43*	285767	5336	"BIGDB	35	44	3	0	149	22	17	1
6.	24*	629083	5370	"BIGDB	24	78	3	0	52	42	8	1
7.	20*	4840760	5605	"BIGDB	36	47	2	0	100	53	5	1



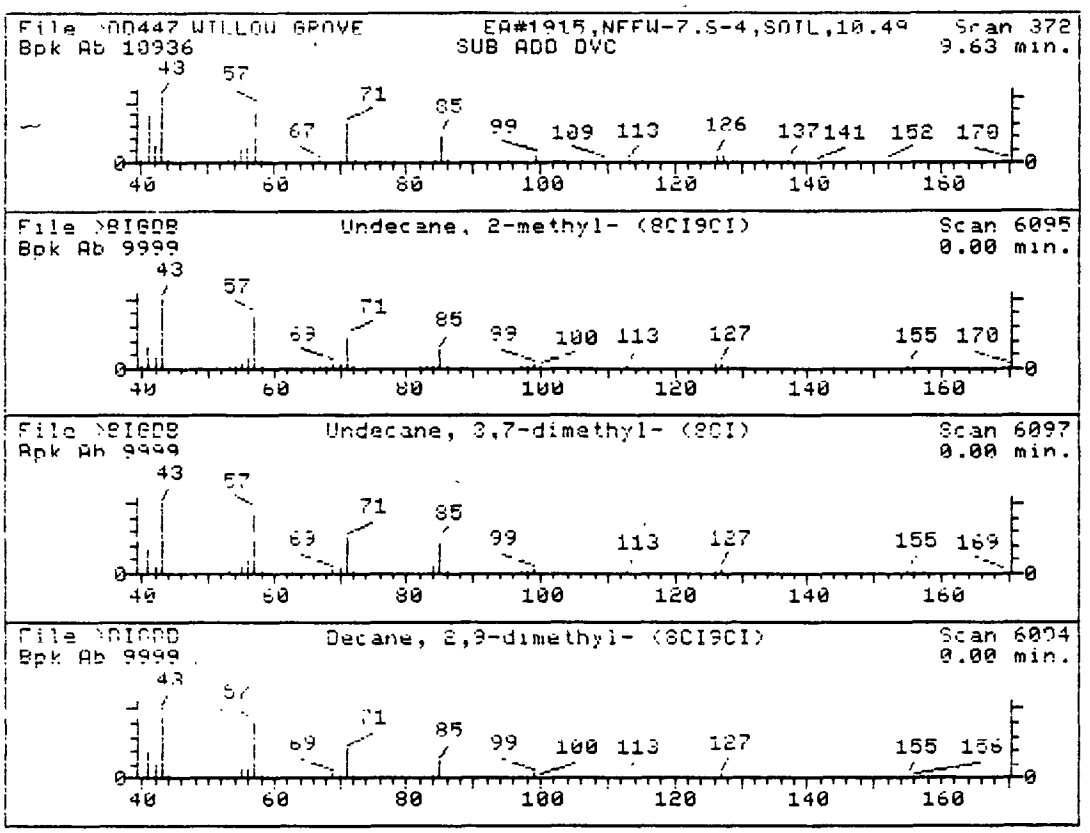
Retention time = 9.47 unknown

Area = 267801.0 Tentative Concentration is 1400.00

1. Undecane, 5-methyl- (8CI9CI)	170	C12H26
2. Benzene, 1-methyl-4-(1-methylethyl)- (9CI)	134	C10H14
3. Decane, 3,6-dimethyl- (8CI9CI)	170	C12H26
4. Benzene, (1,1-dimethylethyl)- (9CI)	134	C10H14
5. Ethanone, 1-(3-ethyloxiranyl)- (9CI)	114	C6H10O2
6. Nonadecane (8CI9CI)	268	C19H40
7. Decane, 5,6-dimethyl- (8CI9CI)	170	C12H26

Sample file: >DD447 Spectrum #: 363
Search speed: 2 Tilting option: S No. of ion ranges searched: 57

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	55*	1632708	6060	"BIGDB	53	45	0	0	72	48	14	6
2.	39*	99876	12178	"BIGDB	62	28	0	-2	27	55	11	6
3.	32*	17312537	11148	"BIGDB	54	44	1	0	81	55	9	4
4.	18*	98066	12167	"BIGDB	49	46	1	-1	52	59	4	2
5.	15*	17257817	5933	"BIGDB	33	41	0	-2	80	58	3	1
6.	15	629925	6091	"BIGDB	62	72	2	0	95	60	3	1
7.	15*	1636437	5801	"BIGDB	36	61	1	0	85	58	3	1



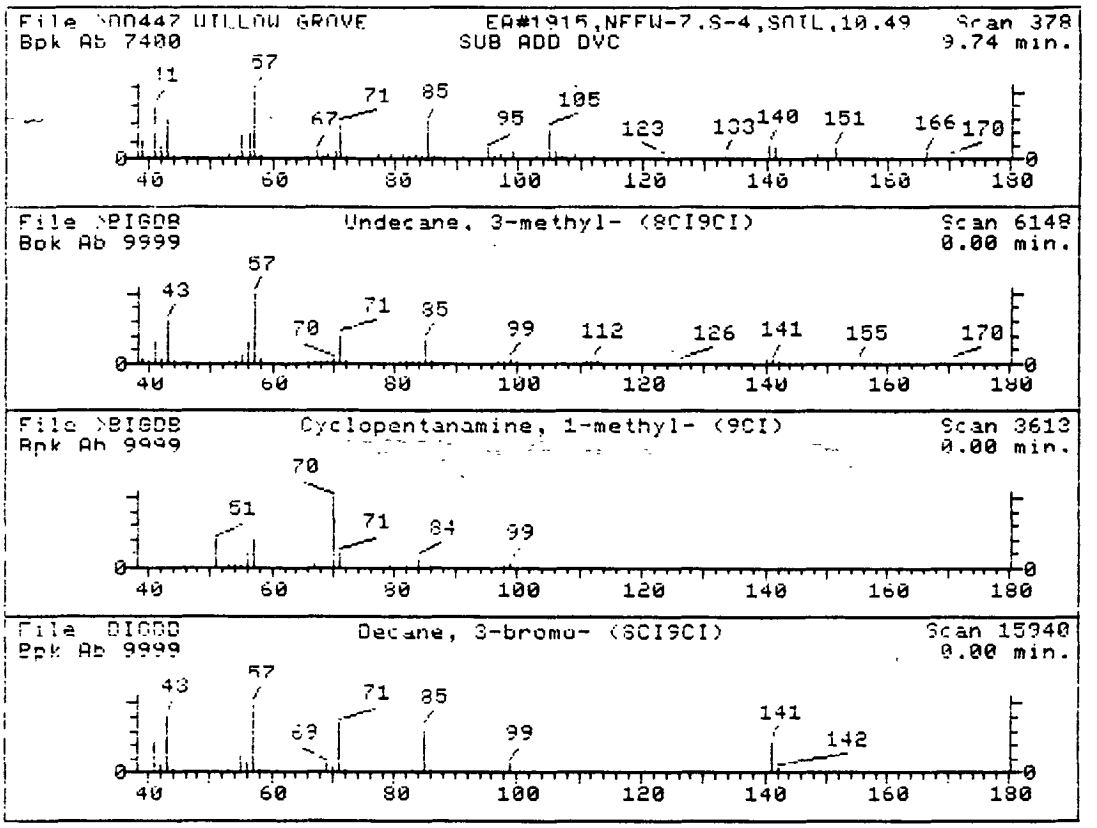
Retention time = 9.63

Area = 192797.0 Tentative Concentration is 990.00

✓ 1. Undecane, 2-methyl- (8CI9CI)	170	C12H26
2. Undecane, 3,7-dimethyl- (8CI)	184	C13H28
3. Decane, 2,9-dimethyl- (8CI9CI)	170	C12H26
4. Undecane, 5-methyl- (8CI9CI)	170	C12H26
5. Decane, 3,6-dimethyl- (8CI9CI)	170	C12H26
6. Nonane, 5-(2-methylpropyl)- (9CI)	184	C13H28
7. Octane, 5-ethyl-2-methyl- (9CI)	156	C11H24

Sample file: >DD447 Spectrum #: 372
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	88*	7045718	6095	"BIGDB	70	24	2	0	117	1	65	5
2.	70	17301290	6097	"BIGDB	60	43	2	0	99	9	42	1
3.	67	1002171	6094	"BIGDB	62	30	1	0	100	14	34	2
4.	67*	1632708	6060	"BIGDB	49	49	2	1	100	12	34	2
5.	60*	17312537	11148	"BIGDB	43	55	2	1	93	12	30	1
6.	60	62185539	13288	"BIGDB	62	47	2	0	60	13	30	1
7.	60	62016186	13436	"BIGDB	53	45	2	0	94	11	30	1



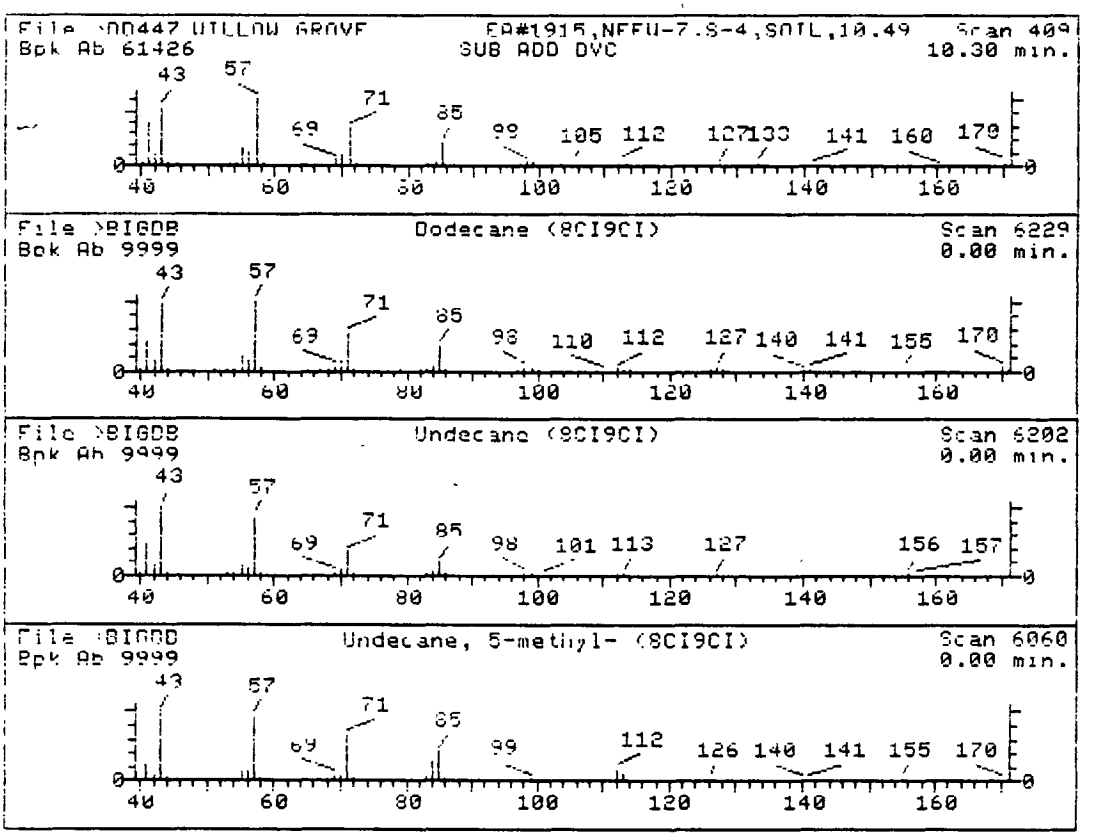
Retention time = 9.74

Area = 190182.0 Tentative Concentration is 980.00

1.	Undecane, 3-methyl- (8CI9CI)	170	C12H26
2.	Cyclopentanamine, 1-methyl- (9CI)	99	C6H13N
3.	Decane, 3-bromo- (8CI9CI)	220	C10H21Br
4.	Undecane, 2,9-dimethyl- (8CI)	184	C13H28
5.	Decane, 2,3,5-trimethyl- (9CI)	184	C13H28
6.	Nonane, 3,7-dimethyl- (8CI9CI)	156	C11H24
7.	Undecane, 5-methyl- (8CI9CI)	170	C12H26

Sample file: >DD447 Spectrum #: 378
Search speed: 2 Tilting option: S No. of ion ranges searched: 53

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	30	1002433	6148	"BIGDB	45	43	0	0	100	46	10	2
2.	25*	40571457	3613	"BIGDB	43	56	2	0	208	50	7	1
3.	25	30571712	15940	"BIGDB	71	54	2	0	68	49	7	1
4.	25	17301267	8938	"BIGDB	55	46	2	0	100	41	8	1
5.	24	62238113	6164	"BIGDB	64	39	1	0	68	53	7	2
6.	15	17302328	6100	"BIGDB	40	46	1	0	78	56	3	1
7.	15*	1632708	6060	"BIGDB	24	74	2	0	55	57	3	1



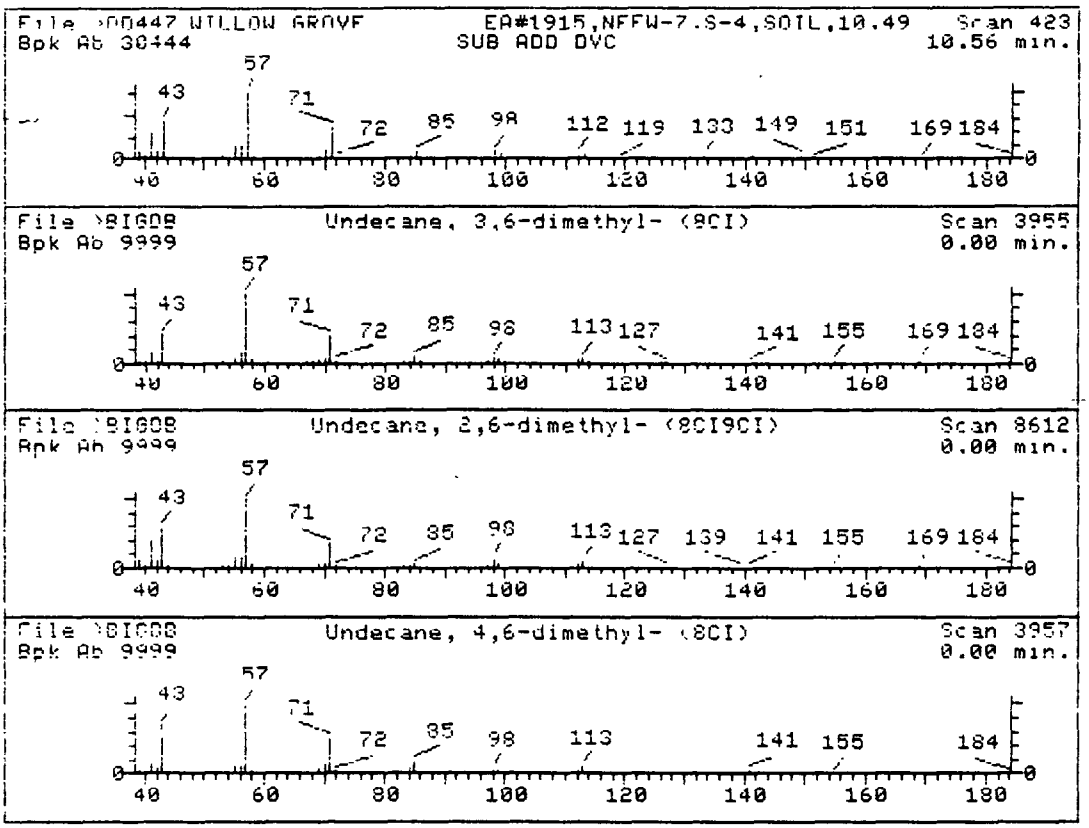
Retention time = 10.30

Area = 1050811. Tentative Concentration is 5400.00

✓ 1.	Dodecane (8CI9CI)	170	C12H26
2.	Undecane (8CI9CI)	156	C11H24
3.	Undecane, 5-methyl- (8CI9CI)	170	C12H26
4.	Heptadecane, 2,6,10,15-tetramethyl- (9CI)	296	C21H44
5.	Undecane, 2-methyl- (8CI9CI)	170	C12H26
6.	Decane, 3,6-dimethyl- (8CI9CI)	170	C12H26
7.	Undecane, 3,6-dimethyl- (8CI)	184	C13H28

Sample file: >DD447 Spectrum #: 409
Search speed: 2 Tilting option: S No. of ion ranges searched: 59

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	95*	112403	6229	"BIGDB	93	8	1	1	87	3	72	9
2.	83	1120214	6202	"BIGDB	61	36	2	0	110	5	57	2
3.	79*	1632708	6060	"BIGDB	54	44	2	0	81	10	48	3
4.	78	54833486	6161	"BIGDB	75	58	2	1	74	2	55	1
5.	76*	7045718	6095	"BIGDB	60	34	2	-2	98	7	45	2
6.	76*	17312537	11148	"BIGDB	49	49	2	0	91	7	45	2
7.	70	17301289	3955	"BIGDB	54	43	2	0	100	9	42	1



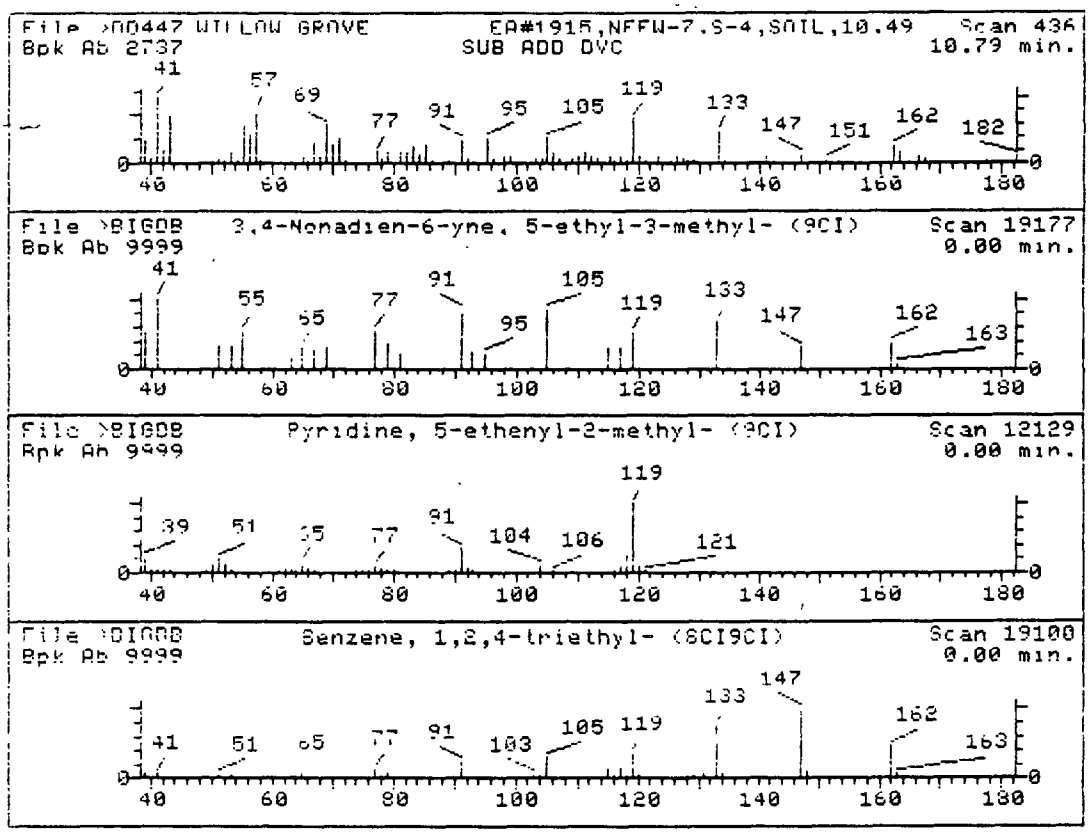
Retention time = 10.56

Area = 448968.0 Tentative Concentration is 2300.00

1. Undecane, 3,6-dimethyl- (8CI) 184 C13H28
2. Undecane, 2,6-dimethyl- (8CI9CI) 184 C13H28
3. Undecane, 4,6-dimethyl- (8CI) 184 C13H28
4. Undecane, 2,5-dimethyl- (8CI9CI) 184 C13H28
5. Dodecane, 6-methyl- (8CI9CI) 184 C13H28
6. Decane, 2,6,7-trimethyl- (9CI) 184 C13H28
7. Undecane, 6-ethyl- (8CI9CI) 184 C13H28

Sample file: >DD447 Spectrum #: 423
Search speed: 2 Tilting option: S No. of ion ranges searched: 56

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	93*	17301289	3955	"BIGDB	82	15	1	0	99	1	68	8
2.	89*	17301234	8612	"BIGDB	70	32	0	0	81	22	47	8
3.	76*	17312822	3957	"BIGDB	62	36	1	2	89	13	40	5
4.	75*	17301223	10849	"BIGDB	55	44	0	0	74	19	35	6
5.	70*	6044719	8611	"BIGDB	64	33	0	-1	92	16	32	5
6.	60	62108252	3963	"BIGDB	56	42	2	0	86	14	30	1
7.	60	17312606	10962	"BIGDB	50	49	1	0	73	11	30	1



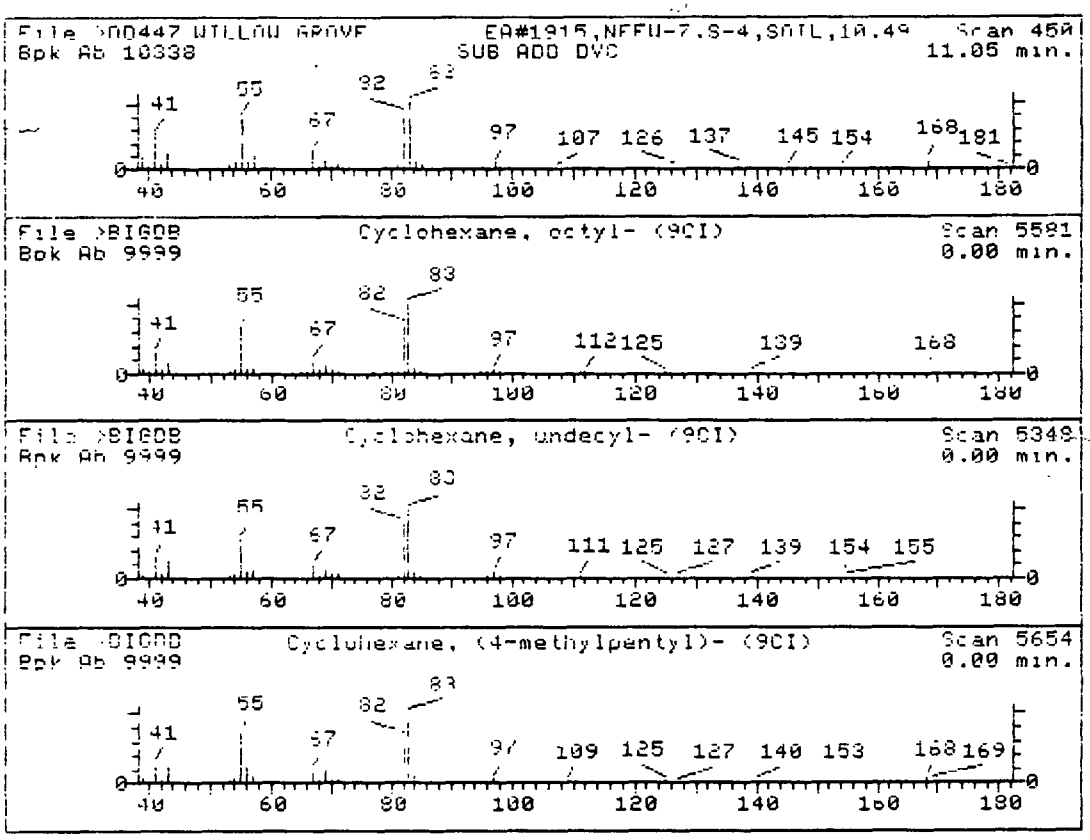
Retention time = 10.79

Area = 248399.0 Tentative Concentration is 1300.00

1. 3,4-Nonadien-6-yne, 5-ethyl-3-methyl- (9CI)	162	C12H18
2. Pyridine, 5-ethenyl-2-methyl- (9CI)	119	C8H9N
3. Benzene, 1,2,4-triethyl- (8CI9CI)	162	C12H18
4. 3-Nonyne (8CI9CI)	124	C9H16
5. Benzene, 1,3,5-triethyl- (8CI9CI)	162	C12H18
6. Benzene, 1-methyl-2-(1-ethylpropyl)- (9CI)	162	C12H18

Sample file: >00447 Spectrum #: 436
Search speed: 2 Tilting option: S No. of ion ranges searched: 75

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	35*	61227881	19177	"BIGDB	41	54	0	-2	16	46	11	3
2.	25*	140761	12129	"BIGDB	52	53	2	-1	51	48	7	1
3.	18*	877441	19100	"BIGDB	50	62	2	0	57	57	4	2
4.	18*	20184898	7986	"BIGDB	52	48	1	-1	27	58	4	2
5.	13*	102250	19095	"BIGDB	56	54	2	0	50	64	3	3
6.	12*	54410741	19087	"BIGDB	40	58	1	0	72	65	2	2



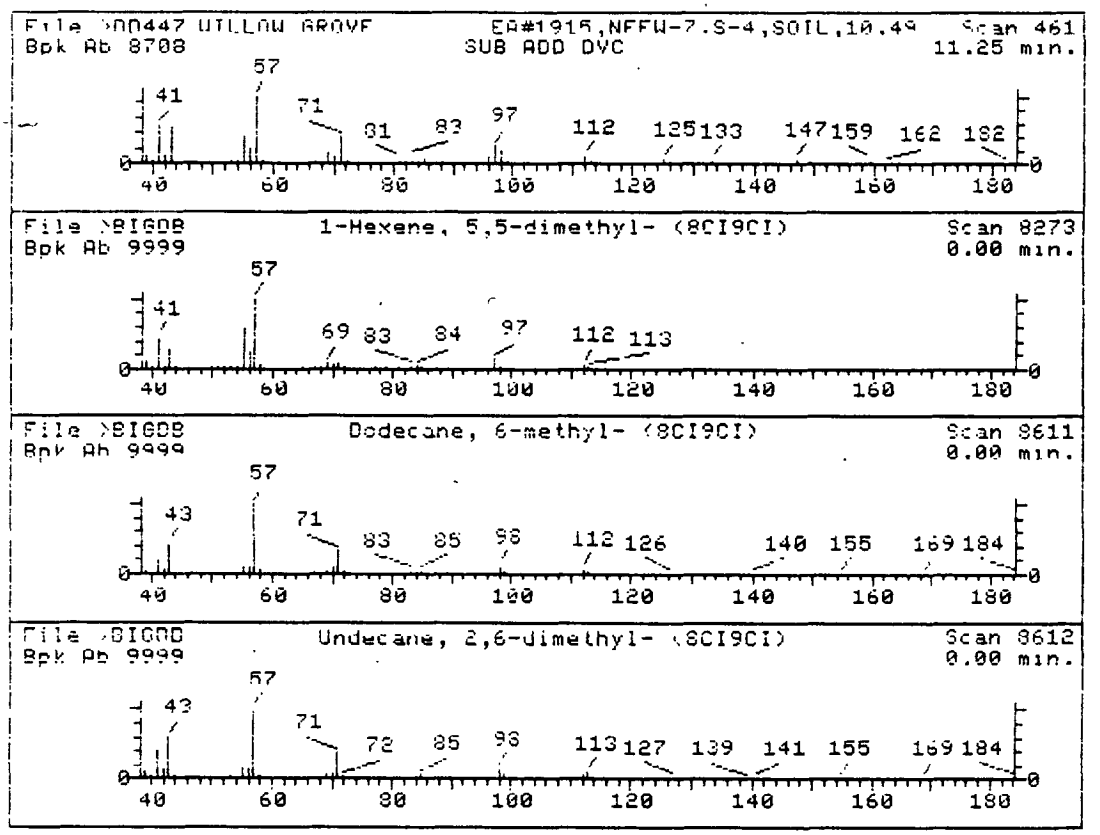
Retention time = 11.05

Area = 200454.0 Tentative Concentration is 1000.00

1. Cyclohexane, octyl- (9CI)	196	C14H28
2. Cyclohexane, undecyl- (9CI)	238	C17H34
3. Cyclohexane, (4-methylpentyl)- (9CI)	168	C12H24
4. Cyclohexane, pentyl- (8CI9CI)	154	C11H22
5. Cyclohexane, hexyl- (9CI)	168	C12H24
6. Cyclohexane, (1,3-dimethylbutyl)- (9CI)	168	C12H24
7. Cyclohexane, (1-methylethyl)- (9CI)	126	C9H18

Sample file: >DD447 Spectrum #: 450
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	76	1795159	5581	"BIGDB	77	31	2	0	100	8	45	2
2.	71	54105667	5348	"BIGDB	89	27	2	0	100	13	38	3
3.	70*	61142209	5654	"BIGDB	49	48	3	0	100	10	42	1
4.	67	4292926	5646	"BIGDB	60	35	2	0	100	13	34	2
5.	66*	4292755	5564	"BIGDB	56	39	1	0	88	19	31	4
6.	60*	61142196	5502	"BIGDB	38	74	3	0	76	15	30	1
7.	60	696297	5414	"BIGDB	64	39	2	0	80	13	30	1



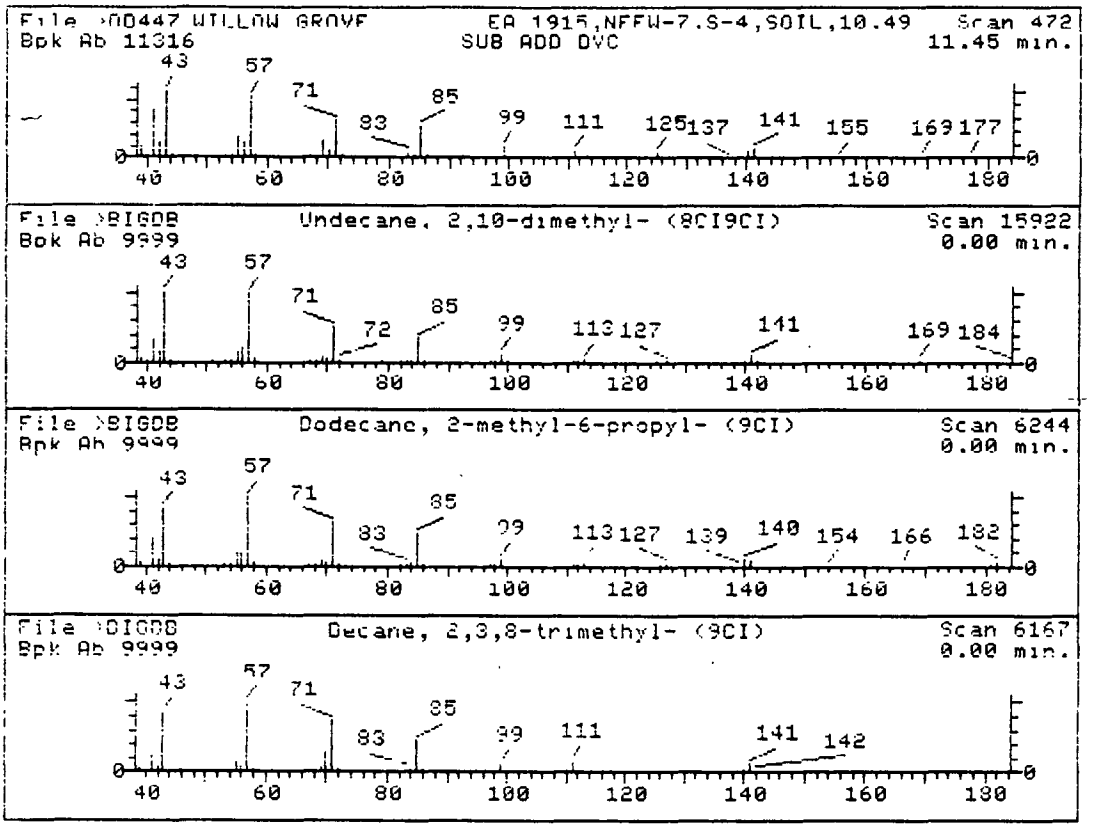
Retention time = 11.25

Area = 270654.0 Tentative Concentration is 1400.00

1.	1-Hexene, 5,5-dimethyl- (8CI9CI)	112 C8H16
2.	Dodecane, 6-methyl- (8CI9CI)	184 C13H28
3.	Undecane, 2,6-dimethyl- (8CI9CI)	184 C13H28
4.	Undecane, 2,5-dimethyl- (8CI9CI)	184 C13H28
5.	Methylamine, N-(1-propylpentylidene)- (8CI)	141 C9H19N
6.	Undecane, 4,5-dimethyl- (8CI)	184 C13H28
7.	Methylamine, N-(1-butylpentylidene)- (8CI)	155 C10H21N

Sample file: >DD447 Spectrum #: 461
Search speed: 2 Tilting option: S No. of ion ranges searched: 71

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	55*	7116861	8273	"BIGDB	58	25	1	-2	100	34	22	4
2.	51*	6044719	8611	"BIGDB	46	51	0	0	89	41	17	5
3.	48*	17301234	8612	"BIGDB	55	47	2	-1	100	23	17	1
4.	31*	17301223	10849	"BIGDB	45	54	2	0	100	45	8	1
5.	30*	18641753	8855	"BIGDB	30	58	3	0	48	32	12	1
6.	30	17312797	3677	"BIGDB	63	43	1	0	68	45	12	2
7.	28*	10599812	8632	"BIGDB	33	54	2	0	30	41	8	1



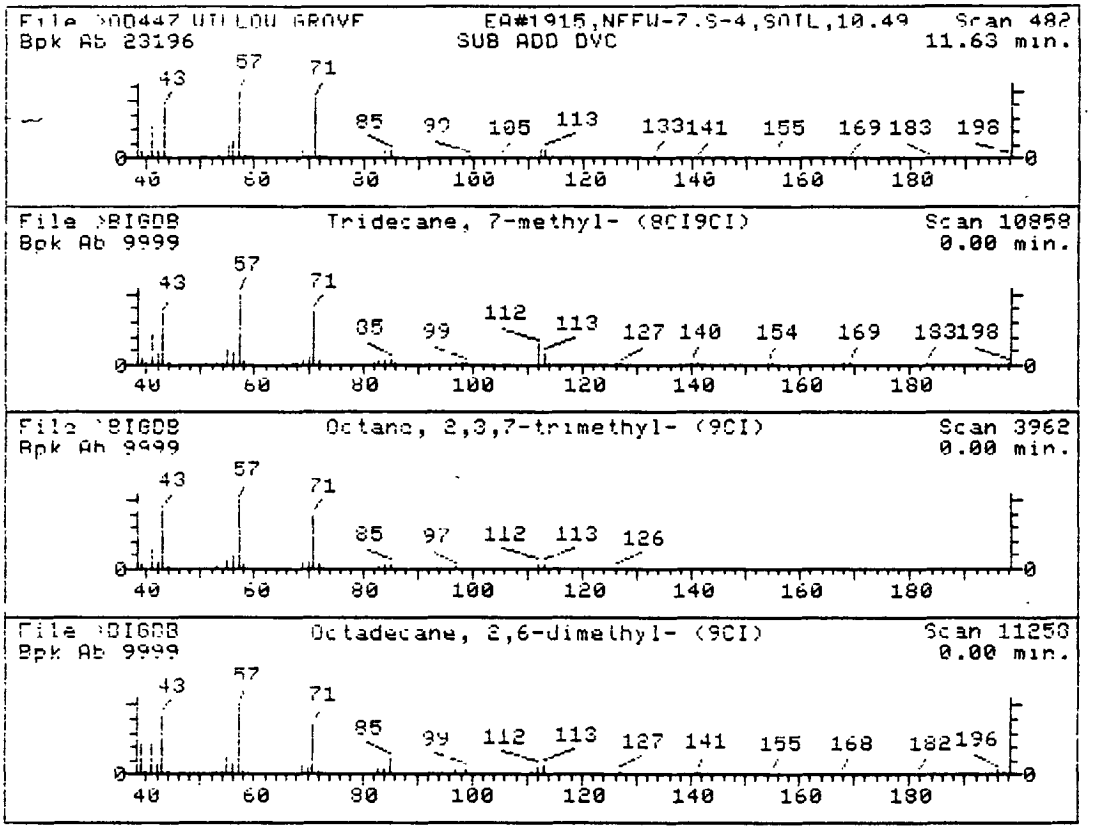
Retention time = 11.45

Area = 189120.0 Tentative Concentration is 970.00

1.	Undecane, 2,10-dimethyl- (8CI9CI)	184 C13H28
2.	Dodecane, 2-methyl-6-propyl- (9CI)	226 C16H34
3.	Decane, 2,3,8-trimethyl- (9CI)	184 C13H28
4.	Undecane, 4,8-dimethyl- (8CI9CI)	184 C13H28
5.	Decane, 2,3,7-trimethyl- (9CI)	184 C13H28
6.	Decane, 2,3,6-trimethyl- (9CI)	184 C13H28
7.	Undecane, 3-methyl- (8CI9CI)	170 C12H26

Sample file: >DD447 Spectrum #: 472
Search speed: 2 Tilting option: S No. of ion ranges searched: 51

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	73*	17301278	15922	"BIGDB	62	47	0	0	82	34	32	7
2.	60	55045084	6244	"BIGDB	69	50	2	0	89	14	30	1
3.	52	62238146	6167	'BIGDB	58	50	1	0	76	18	20	1
4.	48*	17301336	15923	"BIGDB	53	58	1	0	90	38	17	3
5.	48	62238135	6166	"BIGDB	71	38	2	0	75	23	17	1
6.	44	62238124	6165	"BIGDB	65	43	2	0	79	23	17	1
7.	43	1002433	6148	"BIGDB	51	37	3	0	140	23	17	1



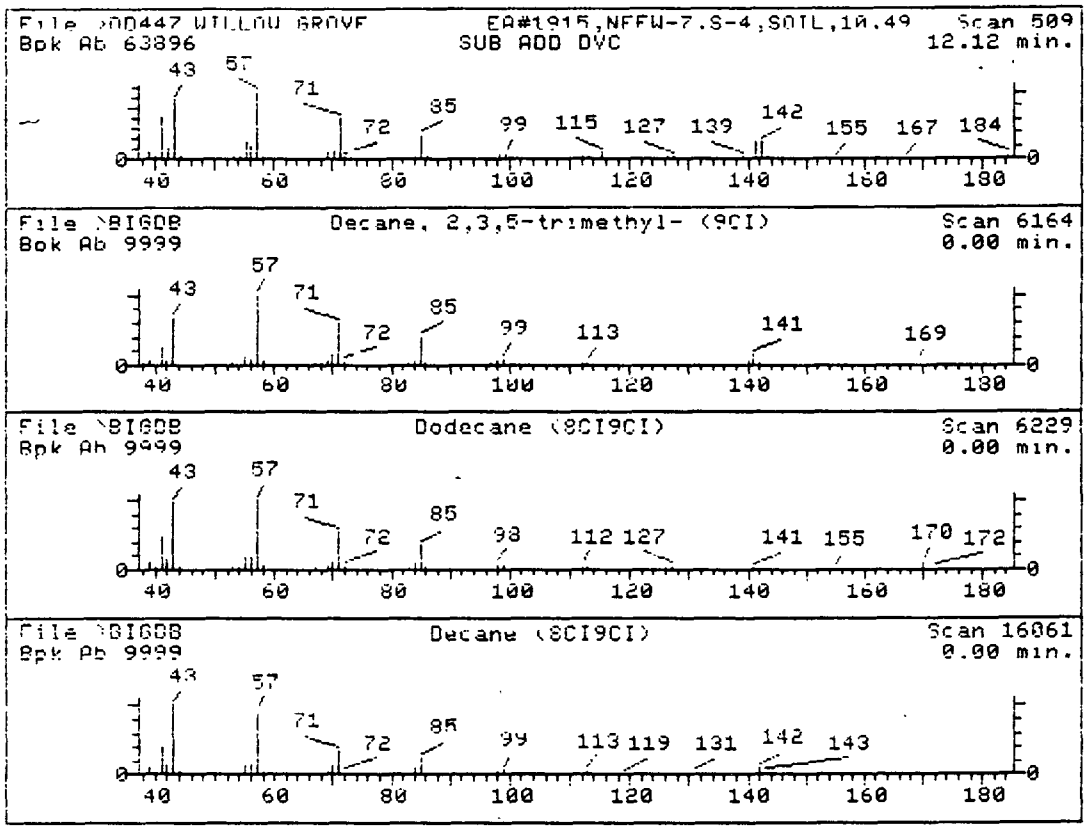
Retention time = 11.63

Area = 421459.0 Tentative Concentration is 2200.00

1.	Tridecane, 7-methyl- (8CI9CI)	198 C14H30
2.	Octane, 2,3,7-trimethyl- (9CI)	156 C11H24
3.	Octadecane, 2,6-dimethyl- (9CI)	282 C20H42
4.	Octane, 2,3,6-trimethyl- (9CI)	156 C11H24
5.	Heptane, 5-ethyl-2-methyl- (8CI9CI)	142 C10H22
6.	Heptane, 2,5,5-trimethyl- (8CI9CI)	142 C10H22
7.	Heptane, 3-ethyl-5-methyl- (9CI)	142 C10H22

Sample file: >DD447 Spectrum #: 482
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	79*	26730143	10858	"BIGDB	64	47	2	1	100	8	48	3
2.	78	62016346	3962	"BIGDB	62	31	3	0	100	1	55	1
3.	78	75163972	11258	"BIGDB	75	64	3	0	91	1	55	1
4.	70	62016335	3961	"BIGDB	51	41	2	0	98	7	42	1
5.	60	13475780	3954	"BIGDB	56	45	2	0	76	14	30	1
6.	60	1189997	3946	"BIGDB	47	43	2	0	93	15	30	1
7.	52	52896909	3958	"BIGDB	47	47	2	0	85	16	20	1



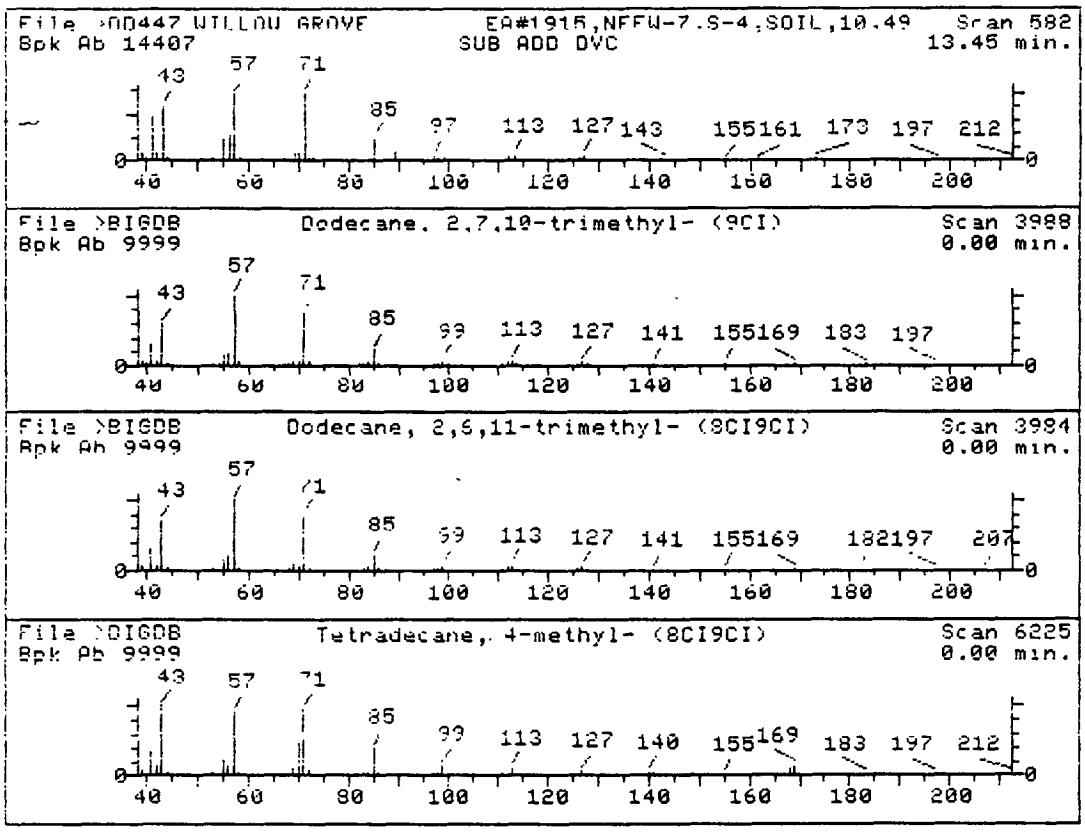
Retention time = 12.12

Area = 1130267. Tentative Concentration is 5800.00

1. Decane, 2,3,5-trimethyl- (9CI)	184	C13H28
2. Dodecane (8CI9CI)	170	C12H26
3. Decane (8CI9CI)	142	C10H22
4. Tetradecane, 1-iodo- (8CI9CI)	324	C14H29I
5. Decane, 5-propyl- (8CI)	184	C13H28
6. Undecane, 4,6-dimethyl- (8CI)	184	C13H28
7. Decane, 2,3,6-trimethyl- (9CI)	184	C13H28

Sample file: >DD447 Spectrum #: 509
Search speed: 2 Tilting option: S No. of ion ranges searched: 49

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	51	62238113	6164	"BIGDB	74	29	1	0	87	35	20	3
2.	49	112403	6229	"BIGDB	86	15	1	0	86	42	17	5
3.	47*	124185	16061	"BIGDB	57	43	0	0	88	51	11	6
4.	46	19218941	6199	"BIGDB	96	32	1	0	90	46	13	5
5.	45*	17312628	4003	"BIGDB	53	58	2	0	77	33	16	2
6.	43*	17312822	3957	"BIGDB	59	39	1	0	97	46	13	5
7.	42	62238124	6165	"BIGDB	77	31	1	0	74	37	17	3



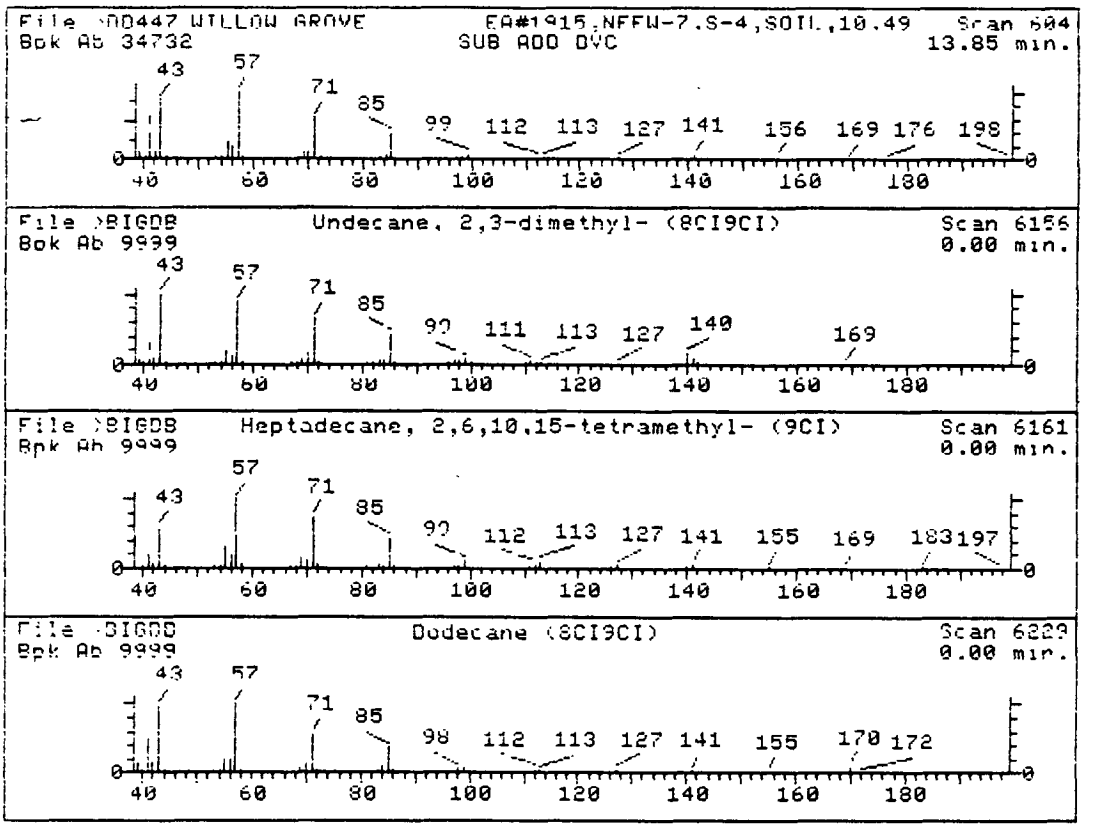
Retention time = 13.45 unknown alkane

Area = 191131.0 Tentative Concentration is 2200.00

1.	Dodecane, 2,7,10-trimethyl- (9CI)	212	C15H32
2.	Dodecane, 2,6,11-trimethyl- (8CI9CI)	212	C15H32
3.	Tetradecane, 4-methyl- (8CI9CI)	212	C15H32
4.	Nonane, 3-methyl-5-propyl- (8CI)	184	C13H28
5.	Dodecane, 4,6-dimethyl- (9CI)	198	C14H30
6.	Nonane, 3,7-dimethyl- (8CI9CI)	156	C11H24
7.	Ether, heptyl hexyl (8CI)	200	C13H28O

Sample file: >DD447 Spectrum #: 582
Search speed: 2 Tilting option: S No. of ion ranges searched: 50

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	59	74645980	3988	"BIGDB	81	28	1	0	98	25	27	3
2.	58	31295564	3984	"BIGDB	69	37	2	0	98	19	25	2
3.	57*	25117242	6225	"BIGDB	69	60	3	1	73	25	22	2
4.	52	31081182	6159	"BIGDB	68	37	2	2	89	16	20	1
5.	43	61141728	3960	"BIGDB	69	41	1	0	81	33	16	2
6.	41	17302328	6100	"BIGDB	64	22	1	0	95	37	17	3
7.	35	7289409	5987	"BIGDB	67	44	2	2	75	27	14	1



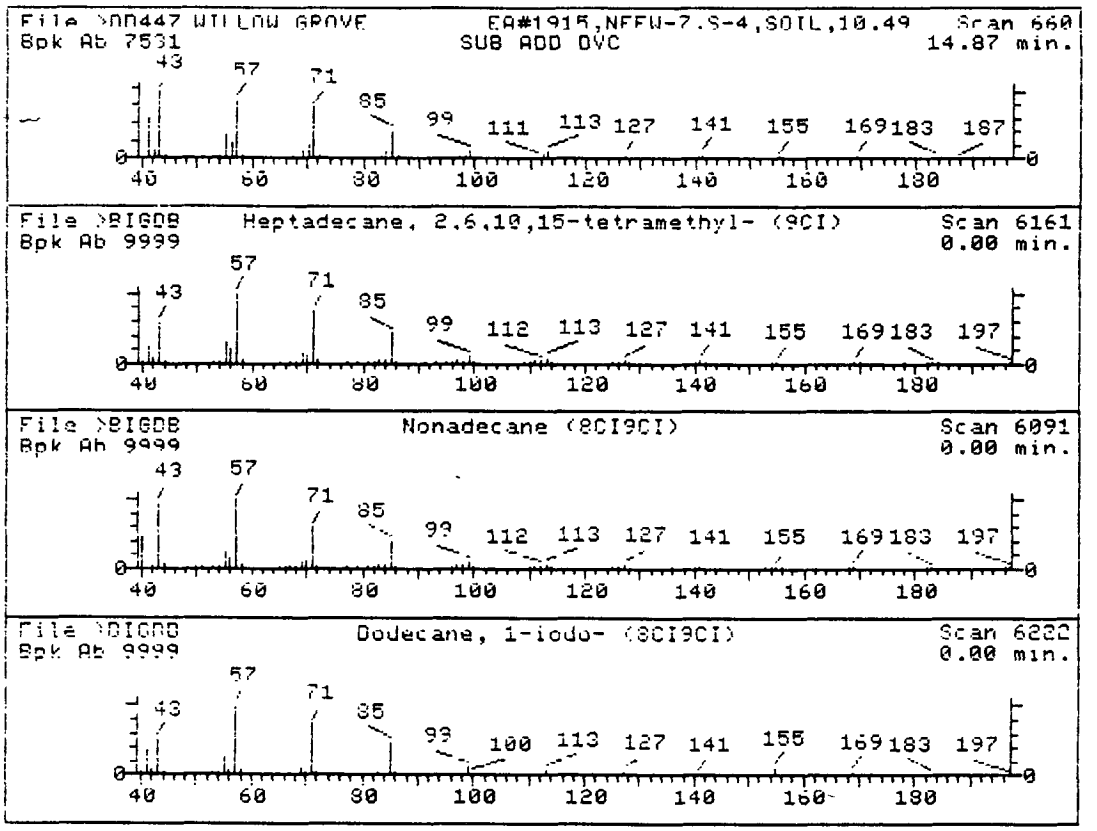
Retention time = 13.85 alkane

Area = 598366.0 Tentative Concentration is 6900.00

1.	Undecane, 2,3-dimethyl- (8CI9CI)	184	C13H28
2.	Heptadecane, 2,6,10,15-tetramethyl- (9CI)	296	C21H44
3.	Dodecane (8CI9CI)	170	C12H26
4.	Nonane, 3,7-dimethyl- (8CI9CI)	156	C11H24
5.	Hexatriacontane (8CI9CI)	506	C36H74
6.	Tridecane (8CI9CI)	184	C13H28
7.	Hexadecane (8CI9CI)	226	C16H34

Sample file: >DD447 Spectrum #: 604
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	83	17312775	6156	"BIGDB	77	35	2	1	84	5	57	2
2.	83	54833486	6161	"BIGDB	81	52	2	0	68	3	57	2
3.	79	112403	6229	"BIGDB	77	24	1	0	73	7	48	3
4.	79*	17302328	6100	"BIGDB	54	32	2	0	95	10	48	3
5.	78	630068	6193	"BIGDB	69	93	2	0	91	2	55	1
6.	78	629505	6250	"BIGDB	88	25	3	2	84	5	55	1
7.	78	544763	6146	"BIGDB	68	52	2	0	98	5	55	1



Retention time = 14.87

Area = 195949.0 Tentative Concentration is 2200.00

1. Heptadecane, 2,6,10,15-tetramethyl- (9CI)	296	C21H44
2. Nonadecane (8CI9CI)	268	C19H40
3. Dodecane, 1-iodo- (8CI9CI)	296	C12H25I
4. Hexadecane (8CI9CI)	226	C16H34
5. Nonane, 2,6-dimethyl- (8CI9CI)	156	C11H24
6. Tridecane, 6-propyl- (9CI)	226	C16H34
7. Heptane, 3-ethyl-5-methyl- (9CI)	142	C10H22

Sample file: >DD447 Spectrum #: 660
Search speed: 2 Tilting option: S No. of ion ranges searched: 51

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	83	54833486	6161	"BIGDB	89	44	2	0	86	5	57	2
2.	78	629925	6091	"BIGDB	70	64	3	0	87	5	55	1
3.	71	4292197	6222	"BIGDB	83	46	1	0	78	15	38	3
4.	70	544763	6146	"BIGDB	73	47	2	0	87	7	42	1
5.	70*	17302282	3956	"BIGDB	58	33	0	0	75	35	32	7
6.	70	55045108	6247	"BIGDB	70	59	3	0	86	9	42	1
7.	69*	52896909	3958	"BIGDB	60	34	0	0	87	36	28	7

LIBRARY SEARCH SUMMARY

MS Data File:>DD447::D1 Analyst:BHADRA MS

Name:WILLOW GROVE Date/Time: 5/09/89 19:04
Misc:EA#1915,NFFW-7.S-4,SOIL,10.49G,1,WILLOW GROVE ?95.33? BTL# 8

The following hits are >10% of the nearest ISTD.

Peak # in PBM file	Retention Time	Peak Area	10% of Nearest ISTD Area	
~~1~~	~~4.59~~	~~1116956~~	~~44939~~	2-Fluorophenol
~~2~~	~~6.25~~	~~1029882~~	~~44939~~	Phenol-d5
3	8.43	765494	44939	
4	8.74	279335	89924	
5	9.12	193383	89924	
6	9.47	267801	89924	
7	9.63	192797	89924	
8	9.74	190182	89924	
9	10.30	1050811	89924	
10	10.56	448968	89924	
11	10.79	248399	89924	
12	11.05	200454	89924	
13	11.25	270654	89924	
14	11.45	189120	89924	
15	11.63	421459	89924	
16	12.12	1130267	89924	
17	13.45	191131	40287	
18	13.85	598366	40287	
19	14.87	195949	40287	
~~20~~	~~17.81~~	~~324758~~	~~16617~~	2,4,6 Tribromo Phenol

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1781
SAMPLE: RINSATE BLANK
GC/MS FILE: >DD524::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	WATER
DATE EXTRACTED:	04/22/89
DATE ANALYZED:	05/18/89 20:00
SAMPLE--->EXTRACT:	1000ml--> 2ml

CAS #		CONC UG/L	OR UG/KG
62-75-9	N-Nitrosodimethylamine	10.	ND
111-44-4	bis(2-Chloroethyl)ether	10.	ND
541-73-1	1,3-Dichlorobenzene	10.	ND
106-46-7	1,4-Dichlorobenzene	10.	ND
95-50-1	1,2-Dichlorobenzene	10.	ND
39638-32-9	bis(2-chloroisopropyl)ether	10.	ND
621-64-7	N-Nitroso-Di-n-propylamine	10.	ND
67-72-1	Hexachloroethane	10.	ND
98-95-3	Nitrobenzene	10.	ND
78-59-1	Isophorone	10.	ND
111-91-1	bis(2-Chloroethoxy)methane	10.	ND
120-82-1	1,2,4-Trichlorobenzene	10.	ND
91-20-3	Naphthalene	10.	ND
87-68-3	Hexachlorobutadiene	10.	ND
77-47-4	Hexachlorocyclopentadiene	10.	ND
91-58-7	2-Chloronaphthalene	10.	ND
131-11-3	Dimethylphthalate	10.	ND
208-96-8	Acenaphthylene	10.	ND
83-32-9	Acenaphthene	10.	ND
121-14-2	2,4-Dinitrotoluene	10.	ND
606-20-2	2,6-Dinitrotoluene	10.	ND
84-66-2	Diethylphthalate	10.	ND
7005-72-3	4-Chlorophenyl-phenylether	10.	ND
86-73-7	Fluorene	10.	ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1781
SAMPLE: RINSATE BLANK
GC/MS FILE: >DD524::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	WATER
DATE EXTRACTED:	04/22/89
DATE ANALYZED:	05/18/89 20:00
SAMPLE--->EXTRACT:	1000ml--> 2ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	10.	ND
101-55-3	4-Bromophenyl-phenylether	10.	ND
118-74-1	Hexachlorobenzene	10.	ND
85-01-8	Phenanthrene	10.	ND
120-12-7	Anthracene	10.	ND
84-74-2	Di-n-Butyl phthalate	10.	ND
206-44-0	Fluoranthene	10.	ND
92-87-5	Benzidine	50.	ND
129-00-0	Pyrene	10.	ND
85-68-7	Butylbenzylphthalate	10.	ND
91-94-1	3,3'-Dichlorobenzidine	20.	ND
56-55-3	Benzo(a)Anthracene	10.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	10.	ND
218-01-9	Chrysene	10.	ND
117-84-0	Di-n-Octyl phthalate	10.	ND
205-99-2	Benzo(b)Fluoranthene	10.	ND
205-99-2	Benzo(k)Fluoranthene	10.	ND
50-32-8	Benzo(a)Pyrene	10.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	10.	ND
53-70-3	Dibenzo(a,h)Anthracene	10.	ND
191-24-2	Benzo(g,h,i)Perylene	10.	ND

Qualifier descriptions: ND - Compound analyzed for but not detected
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA. Laboratories

Case No: Willow Grove

Sample Number
Rinsate Blk
EA# 1781

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. —	No semivol. comp. found.	B/N	—	—
2.				
3.				
4				
5.				
6.				
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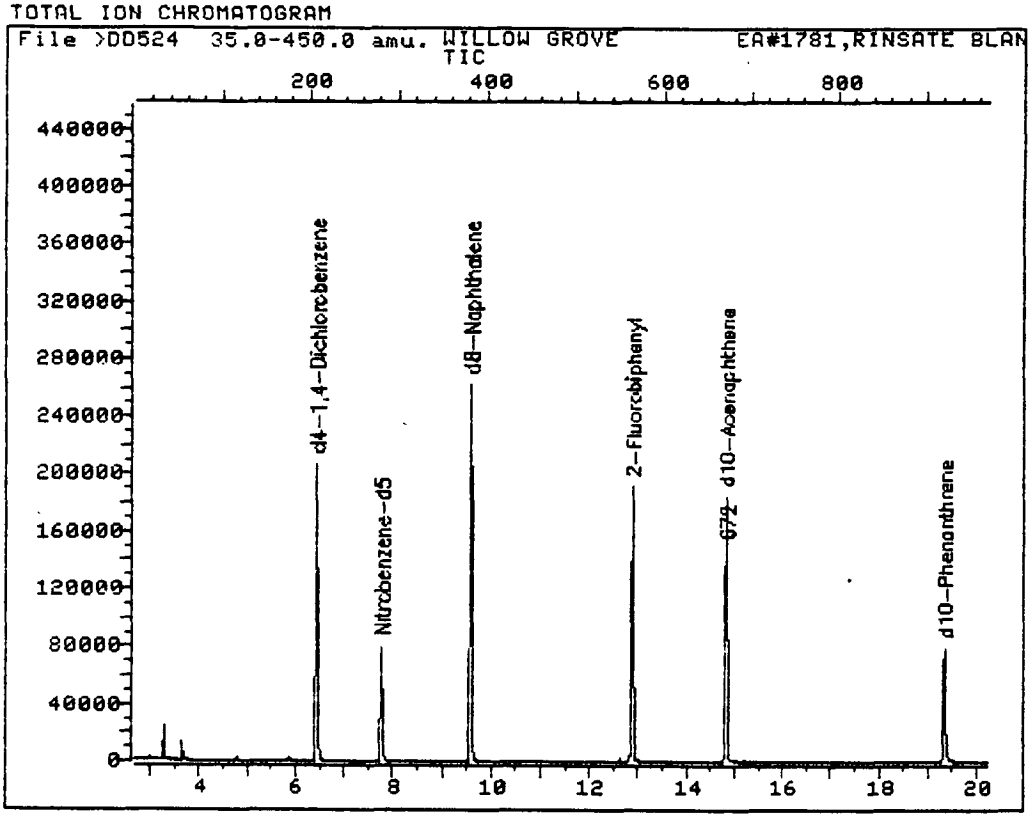
30.				

TOTAL ION CHROMATOGRAM



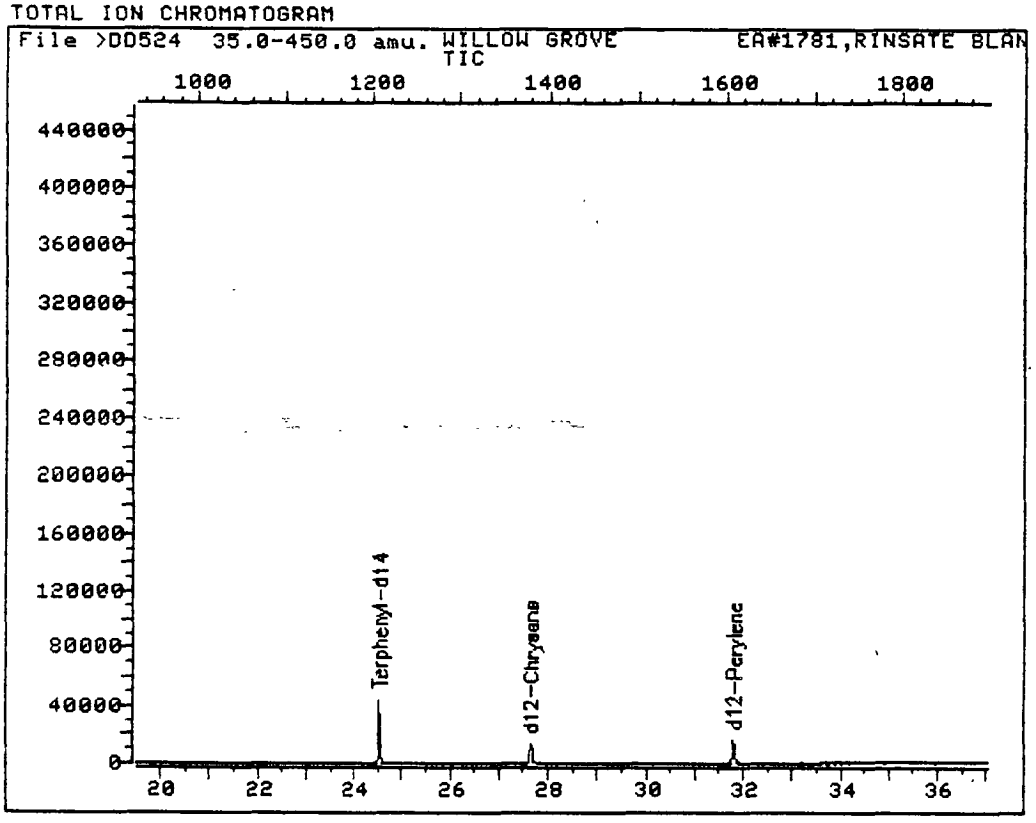
Data File: >DD524::D1 Quant Output File: ^DD524::QT
Name: WILLOW GROVE
Misc: EA#1781,RINSATE BLANK.NFF2,WATER,1000ml,2 WILLOW <2> BTL# 5

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890518 17:38

Operator ID: BHADRA
Quant Time: 890518 20:40
Injected at: 890518 20:00

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD524::D1 Quant Output File: ^DD524::QT
Name: WILLOW GROVE
Misc: EA#1781,RINSATE BLANK.NFF2,WATER,1000ml,2 WILLOW <2> BTL# 5

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890518 17:38

Operator ID: BHADRA
Quant Time: 890518 20:40
Injected at: 890518 20:00

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890518 20:40
Output File: ^DD524::QT Injected at: 890518 20:00
Data File: >DD524::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: EA#1781,RINSATE BLANK.NFF2,WATER,1000ml,2 WILLOW (2) BTL# 5

ID File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890518 17:38

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*d4-1,4-Dichlorobenzene	6.44	152.0	71237	40.00	NG	9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG	
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG	
4)	1,3-Dichlorobenzene	0.00	146.0	0	0.00	NG	
5)	1,4-Dichlorobenzene	0.00	146.0	0	0.00	NG	
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG	
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG	
8)	N-Nitroso-Di-n-propylamine	0.00	70.0	0	0.00	NG	
9)	Hexachloroethane	0.00	117.0	0	0.00	NG	
10)	*d8-Naphthalene	9.59	136.0	298617	40.00	NG	8
11)	Nitrobenzene-d5	7.78	82.0	56500	21.11	NG ✓42 ℓ	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG	
13)	Isophorone	0.00	82.0	0	0.00	NG	
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG	
15)	1,2,4-Trichlorobenzene	0.00	180.0	0	0.00	NG	
16)	Naphthalene	0.00	128.0	0	0.00	NG	
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG	
18)	*d10-Acenaphthene	14.82	164.0	103009	40.00	NG	9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG	
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG	
21)	2-Fluorobiphenyl	12.89	172.0	144740	41.82	NG ✓84 ℓ	9
22)	Dimethylphthalate	14.84	163.0	33668	~~9.50~~ NG		5
23)	Acenaphthylene	0.00	152.0	0	0.00	NG	
24)	Acenaphthene	0.00	153.0	0	0.00	NG	
25)	2,4-Dinitrotoluene	0.00	165.0	0	0.00	NG	
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG	
27)	Diethylphthalate	0.00	149.0	0	0.00	NG	
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG	
29)	Fluorene	0.00	166.0	0	0.00	NG	
30)	*d10-Phenanthrene	19.35	188.0	87701	40.00	NG	9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG	
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG	
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG	
34)	Phenanthrene	0.00	178.0	0	0.00	NG	
35)	Anthracene	0.00	178.0	0	0.00	NG	
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG	
37)	Fluoranthene	0.00	202.0	0	0.00	NG	
38)	Benzidine	0.00	184.0	0	0.00	NG	
39)	*d12-Chrysene	27.64	240.0	17847	40.00	NG	9
40)	Pyrene	0.00	202.0	0	0.00	NG	
41)	Terphenyl-d14	24.52	244.0	46085	86.46	NG x 173 ℓ	8
42)	Butylbenzylphthalate	0.00	149.0	0	0.00	NG	

QUANT REPORT
page 2

Output File:^DD524:: Data File:>DD524::D1

	Compound	R.T.	Q ion	Area	Conc	Units	q
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	0.00	149.0	0	0.00	NG	
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	31.80	264.0	23045	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1916
SAMPLE: NFF.RINSATE BLK
GC/MS FILE: >DD448::D1
DATE REC'D: ~~04/25/89~~ 04/21/89
INSTRUMENT ID: #4 JCH 6-15-89

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	WATER
DATE EXTRACTED:	04/25/89
DATE ANALYZED:	05/09/89 19:54
SAMPLE--->EXTRACT:	1000mL--> 1ml

CAS #		CONC UG/L	OR UG/KG
62-75-9	N-Nitrosodimethylamine	10.	ND
111-44-4	bis(2-Chloroethyl)ether	10.	ND
541-73-1	1,3-Dichlorobenzene	10.	ND
106-46-7	1,4-Dichlorobenzene	10.	ND
95-50-1	1,2-Dichlorobenzene	10.	ND
39638-32-9	bis(2-chloroisopropyl)ether	10.	ND
621-64-7	N-Nitroso-Di-n-propylamine	10.	ND
67-72-1	Hexachloroethane	10.	ND
98-95-3	Nitrobenzene	10.	ND
78-59-1	Isophorone	10.	ND
111-91-1	bis(2-Chloroethoxy)methane	10.	ND
120-82-1	1,2,4-Trichlorobenzene	10.	ND
91-20-3	Naphthalene	10.	ND
87-68-3	Hexachlorobutadiene	10.	ND
77-47-4	Hexachlorocyclopentadiene	10.	ND
91-58-7	2-Chloronaphthalene	10.	ND
131-11-3	Dimethylphthalate	10.	ND
208-96-8	Acenaphthylene	10.	ND
83-32-9	Acenaphthene	10.	ND
121-14-2	2,4-Dinitrotoluene	10.	ND
606-20-2	2,6-Dinitrotoluene	10.	ND
84-66-2	Diethylphthalate	10.	ND
7005-72-3	4-Chlorophenyl-phenylether	10.	ND
86-73-7	Fluorene	10.	ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1916
SAMPLE: NFF.RINSATE BLK
GC/MS FILE: >DD448::D1
DATE REC'D: 04/25/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	WATER
DATE EXTRACTED:	04/25/89
DATE ANALYZED:	05/09/89 19:54
SAMPLE--->EXTRACT:	1000mL--> 1ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	10.	ND
101-55-3	4-Bromophenyl-phenylether	10.	ND
118-74-1	Hexachlorobenzene	10.	ND
85-01-8	Phenanthrene	10.	ND
120-12-7	Anthracene	10.	ND
84-74-2	Di-n-Butyl phthalate	10.	ND
206-44-0	Fluoranthene	10.	ND
92-87-5	Benzidine	50.	ND
129-00-0	Pyrene	10.	ND
85-68-7	Butylbenzylphthalate	10.	ND
91-94-1	3,3'-Dichlorobenzidine	20.	ND
56-55-3	Benzo(a)Anthracene	10.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	10.	ND
218-01-9	Chrysene	10.	ND
117-84-0	Di-n-Octyl phthalate	10.	ND
205-99-2	Benzo(b)Fluoranthene	10.	ND
205-99-2	Benzo(k)Fluoranthene	10.	ND
50-32-8	Benzo(a)Pyrene	10.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	10.	ND
53-70-3	Dibenzo(a,h)Anthracene	10.	ND
191-24-2	Benzo(g,h,i)Perylene	10.	ND

Qualifier descriptions: ND - Compound analyzed for but not detected
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA. Laboratories

Case No: Willow Grove

Sample Number
NFF RINSATE BLK
EA # 1916

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. —	No Semi-Volatile Compounds Found	—	—	—
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
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26.				
27.				
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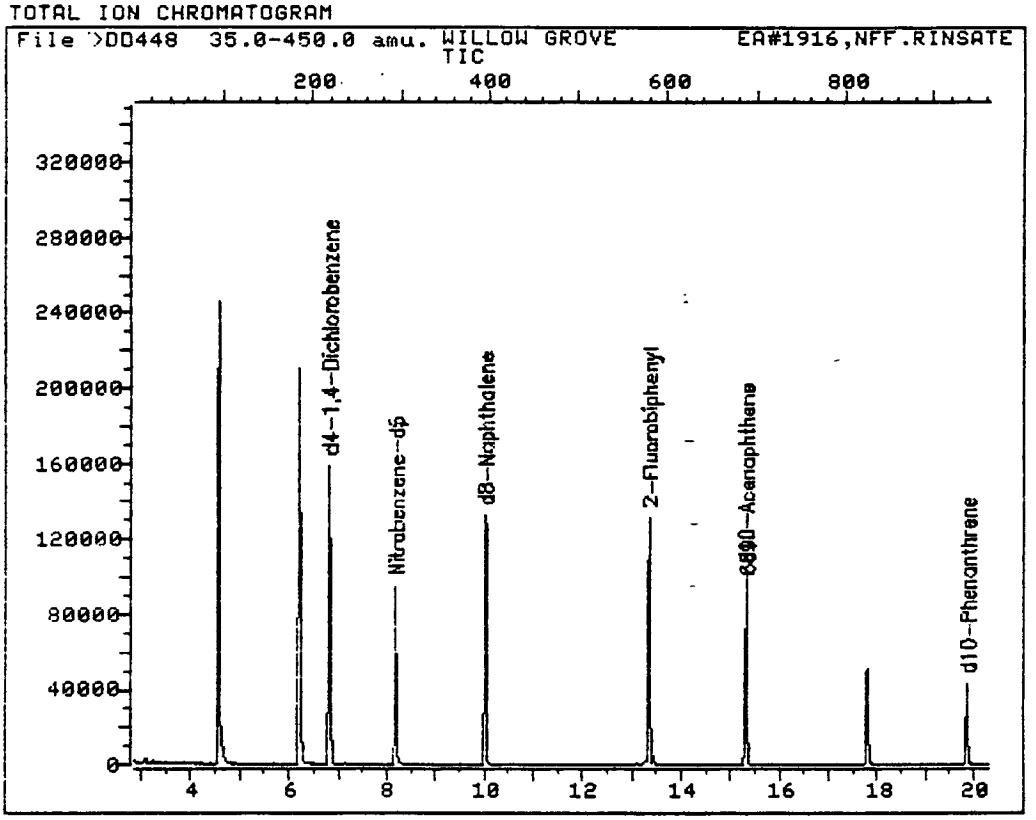
29.				
30.				

TOTAL ION CHROMATOGRAM



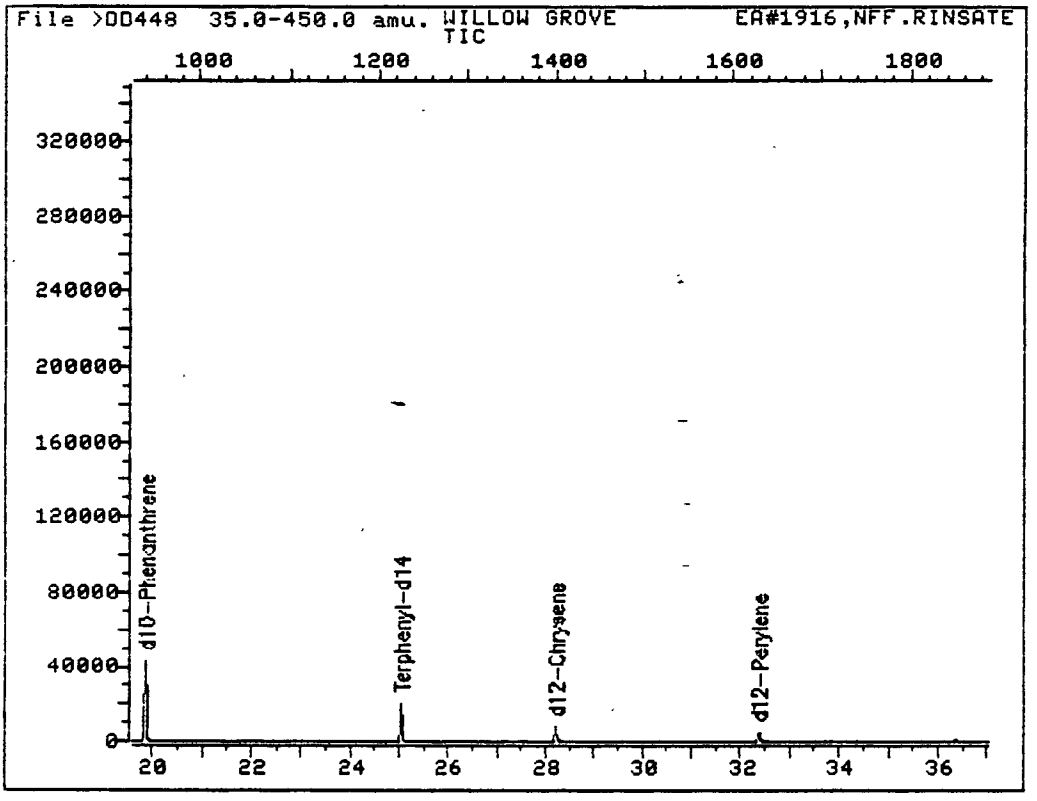
Data File: >DD448::D1 Quant Output File: ^DD448::QT
Name: WILLOW GROVE
Misc: EA#1916,NFF.RINSATE BLK,WATER,1000ml,2 (2) BTL# 9

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890509 13:54

Operator ID: BHADRA
Quant Time: 890509 20:34
Injected at: 890509 19:54

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD448::D1 Quant Output File: ^DD448::QT
Name: WILLOW GROVE
Misc: EA#1916,NFF.RINSATE BLK,WATER,1000ml,2 <2> BTL# 9

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890509 13:54

Operator ID: BHADRA
Quant Time: 890509 20:34
Injected at: 890509 19:54

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890509 20:34
Output File: ^DD448::QT Injected at: 890509 19:54
Data File: >DD448::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: EA#1916,NFF.RINSATE BLK,WATER,1000ml,2 (2) BTL# 9

ID File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890509 13:54

	Compound	R.T.	Q ion	Area	Conc	Units		q
1)	*d4-1,4-Dichlorobenzene	6.82	152.0	54916	40.00	NG		9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG		
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG		
4)	1,3-Dichlorobenzene	0.00	146.0	0	0.00	NG		
5)	1,4-Dichlorobenzene	0.00	146.0	0	0.00	NG		
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG		
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG		
8)	N-Nitroso-Di-n-propylamine	0.00	70.0	0	0.00	NG		
9)	Hexachloroethane	0.00	117.0	0	0.00	NG		
10)	*d8-Naphthalene	10.02	136.0	165084	40.00	NG		9
11)	Nitrobenzene-d5	8.19	82.0	72534	45.81	NG	92%	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG		
13)	Isophorone	0.00	82.0	0	0.00	NG		
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG		
15)	1,2,4-Trichlorobenzene	0.00	180.0	0	0.00	NG		
16)	Naphthalene	0.00	128.0	0	0.00	NG		
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG		
18)	*d10-Acenaphthene	15.31	164.0	59234	40.00	NG		9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG		
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG		
21)	2-Fluorobiphenyl	13.35	172.0	95955	40.13	NG	80%	9
22)	Dimethylphthalate	15.33	163.0	19017	~~8.75~~	~~NG~~		5
23)	Acenaphthylene	0.00	152.0	0	0.00	NG		
24)	Acenaphthene	0.00	153.0	0	0.00	NG		
25)	2,4-Dinitrotoluene	0.00	165.0	0	0.00	NG		
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG		
27)	Diethylphthalate	0.00	149.0	0	0.00	NG		
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG		
29)	Fluorene	0.00	166.0	0	0.00	NG		
30)	*d10-Phenanthrene	19.87	188.0	44373	40.00	NG		9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG		
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG		
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG		
34)	Phenanthrene	0.00	178.0	0	0.00	NG		
35)	Anthracene	0.00	178.0	0	0.00	NG		
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG		
37)	Fluoranthene	0.00	202.0	0	0.00	NG		
38)	Benzidine	0.00	184.0	0	0.00	NG		
39)	*d12-Chrysene	28.21	240.0	10082	40.00	NG		9
40)	Pyr ne	0.00	202.0	0	0.00	NG		
41)	Terphenyl-d14	25.04	244.0	22515	51.95	NG	104%	8
42)	Butylbenzylphthalate	0.00	149.0	0	0.00	NG		

QUANT REPORT
page 2

Output File:^DD448:: Data File:>DD448::D1

	Compound	R.T.	Q ion	Area	Conc	Unit	q
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	0.00	149.0	0	0.00	NG	
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	32.37	264.0	7465	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD

C. Standards Data

Initial Calibration Data
HSL Compounds

Case No: Willow Grove Instrument ID: GC/MS#4(D)

Contractor: EA LABORATORIES Calibration Date: 05/09/89

Contract No: 10348.03

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>DD443	>DD439	>DD442	>DD441	>DD440					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
N-Nitrosodimethylamine	.97363	.72287	.77073	.80672	.73894	.443	.80258	12.567		
2-Fluorophenol	1.36724	1.40904	1.37603	1.29015	1.22137	.670	1.33277	5.702		
Phenol-d5	1.76134	1.64003	1.67427	1.62284	1.61490	.916	1.66268	3.590		
Phenol	1.74252	1.51856	1.66814	1.59604	1.60645	.920	1.62634	5.160	*	
bis(2-Chloroethyl)ether	1.52814	1.33891	1.52549	1.48645	1.53891	.938	1.48358	5.613		
2-Chlorophenol	1.36229	1.28388	1.33657	1.30739	1.27738	.946	1.31350	2.727		
1,3-Dichlorobenzene	1.52681	1.45014	1.41449	1.38955	1.36639	.988	1.42948	4.383		
1,4-Dichlorobenzene	1.49155	1.43491	1.41583	1.31978	1.27914	1.006	1.38824	6.259	*	
1,2-Dichlorobenzene	1.41744	1.34100	1.35001	1.20146	1.21561	1.066	1.30511	7.134		
bis(2-Chloroisopropyl)ether	1.28805	1.06466	1.34940	1.28301	1.15123	1.117	1.22727	9.462		
N-Nitroso-Di-n-propylamine	1.02399	.90995	.68605	.86757	.94885	1.177	.88728	14.242		**
Hexachloroethane	.67927	.65743	.61941	.57155	.60053	1.171	.62564	6.912		
Nitrobenzene-d5	.40011	.38366	.39759	.40395	.38501	.818	.39406	2.329		
Nitrobenzene	.38224	.36645	.38373	.38734	.35423	.824	.37480	3.738		
Isophorone	.79917	.74828	.78039	.79285	.74910	.888	.77396	3.106		
2-Nitrophenol	.18253	.19224	.20039	.20172	.20304	.905	.19598	4.397	*	
2,4-Dimethylphenol	.29835	.32545	.31393	.32637	.33115	.931	.31905	4.134		
bis(2-Chloroethoxy)methane	.44351	.41932	.44744	.43997	.41950	.955	.43395	3.119		
2,4-Dichlorophenol	.24199	.24965	.26079	.23047	.25227	.972	.24703	4.630	*	
1,2,4-Trichlorobenzene	.29145	.29603	.28818	.27144	.28210	.991	.28584	3.328		
Naphthalene	.95507	.92499	.92633	.92868	.82679	1.006	.91237	5.416		
Hexachlorobutadiene	.17121	.17416	.16210	.14941	.15336	1.063	.16205	6.660	*	
4-Chloro-3-methylphenol	.22001	.22784	.24082	.23995	.23166	1.186	.23206	3.745	*	
Hexachlorocyclopentadiene	.35940	.42024	.39464	.33282	.37925	.838	.37727	8.838		**
2,4,6-Trichlorophenol	.36767	.41497	.41603	.36325	.42482	.856	.39735	7.399	*	
2-Chloronaphthalene	1.22108	1.27216	1.28233	1.15645	1.22981	.885	1.23237	4.053		
2-Fluorobiphenyl	1.58254	1.61453	1.60050	1.44815	1.55221	.872	1.55959	4.264		
Dimethylphthalate	1.48694	1.46749	1.49801	1.35868	1.39460	.968	1.44114	4.248		
Acenaphthylene	1.85292	1.85474	1.88865	1.69476	1.74570	.968	1.80735	4.580		
Acenaphthene	1.23259	1.22275	1.22991	1.21034	1.20961	1.007	1.22104	.878	*	

RF - Response Factor (Subscript is amount in NG)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Willow Grove Instrument ID: GC/MS#4(D)

Contractor: EA LABORATORIES Calibration Date: 05/09/89

Contract No: 10388.03

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>DD443	>DD439	>DD442	>DD441	>DD440					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
2,4-Dinitrophenol	-	.04607	.06285	.07070	.10009	1.022	.06993	32.292		**
4-Nitrophenol	-	.07894	.08119	.07291	.08339	1.049	.07911	5.706		**
2,4-Dinitrotoluene	.26722	.29234	.31605	.30660	.30149	1.055	.29674	6.267		
2,6-Dinitrotoluene	.29163	.31559	.32597	.33352	.32348	.979	.31804	5.060		
Diethylphthalate	1.46686	1.43704	1.44626	1.39084	1.36950	1.114	1.42210	2.847		
4-Chlorophenyl-phenylether	.46580	.45839	.48705	.46195	.47279	1.116	.46920	2.412		
Fluorene	1.00122	.97584	1.02113	.98303	1.04803	1.109	1.00585	2.922		
4,6-Dinitro-2-methylphenol	.10909	.14725	.15605	.15882	.16441	.877	.14712	15.053		
N-Nitrosodiphenylamine	.73617	.69266	.69855	.70072	.66044	.882	.69771	3.861	*	
2,4,6-Tribromophenol	.12152	.13672	.12976	.12602	.12045	.896	.12689	5.226		
4-Bromophenyl-phenylether	.24629	.25120	.24698	.25032	.24914	.936	.24878	.847		
Hexachlorobenzene	.31884	.29883	.28514	.28605	.28549	.955	.29487	4.945		
Pentachlorophenol	-	.11001	.10671	.11310	.11590	.985	.11143	3.554	*	
Phenanthrene	1.08462	1.06183	1.07879	1.03808	1.06396	1.004	1.06546	1.698		
Anthracene	1.01114	.99657	1.03649	.98583	1.00654	1.011	1.00731	1.886		
Di-n-Butyl phthalate	1.98458	1.85577	1.89934	1.76263	1.73033	1.117	1.84653	5.581		
Fluoranthene	.64314	.64716	.71208	.59003	.65355	1.192	.64919	6.677	*	
Benzidine	-	.02126	.09847	.07596	.09401	1.221	.07242	48.977		(Conc=40.0,100.0,1
Pyrene	2.68501	2.65419	2.36456	2.43499	2.42327	.863	2.51240	5.826		
Terphenyl-d14	1.73102	1.71942	1.60856	1.52545	1.62250	.888	1.64139	5.187		
Butylbenzylphthalate	1.64289	1.51909	1.46106	1.50611	1.47661	.951	1.52115	4.723		
3,3'-Dichlorobenzidine	.19625	.25995	.35669	.33408	.35531	1.002	.30046	23.418		
Benzo(a)Anthracene	1.20934	1.21909	1.25819	1.15255	1.25021	.998	1.21788	3.438		
bis(2-Ethylhexyl)phthalate	2.73651	2.30450	2.10656	2.35835	2.18650	1.021	2.33848	10.406		
Chrysene	1.20634	1.10965	1.13750	1.09727	1.13857	1.003	1.13786	3.711		
Di-n-Octyl phthalate	3.24331	3.22440	3.18156	3.04659	3.30722	.946	3.20061	3.039	*	
Benzo(b+k)Fluoranthene	1.23881	1.17560	1.21633	1.10607	1.16160	.971	1.17968	4.364		(Conc=40.0,100.0,1(
Benzo(a)Pyrene	1.02311	1.01050	1.11249	1.02484	1.05488	.995	1.04516	3.924	*	
Indeno(1,2,3-cd)Pyrene	.90219	.98907	1.12339	.96681	1.04728	1.090	1.00575	8.331		
Dibenzo(a,h)Anthracene	.61849	.73309	.84505	.73621	.79336	1.092	.74524	11.341		

RF - Response Factor (Subscript is amount in NG)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Willow Grove Instrument ID: GC/MS#4(D)

Contractor: EA LABORATORIES Calibration Date: 05/09/89

Contract No: 10388.03

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>DD443	>DD439	>DD442	>DD441	>DD440					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	80.00	120.00	160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Benzo(g,h,i)Perylene	.78297	.85411	.85861	.73326	.88506	1.113	.82280	7.625		

RF - Response Factor (Subscript is amount in NG)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Willow Grove Instrument ID: GC/MS#4(D)

Contractor: EA LABORATORIES Calibration Date: 05/18/89

Contract No: 10388.03

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>00523	>00519	>00522	>00521	>00520					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
N-Nitrosodimethylamine	.97184	.73288	.53263	.83547	.85716	.435	.78599	21.009		
2-Fluorophenol	1.07823	1.16115	.71073	.87275	.91254	.662	.94708	18.710		
Phenol-d5	1.23455	1.29734	.94837	1.14252	1.15307	.917	1.15517	11.406		
Phenol	1.53016	1.49530	1.09420	1.34081	1.34357	.921	1.36081	12.651	*	
bis(2-Chloroethyl)ether	1.41065	1.43157	1.07161	1.30875	1.32672	.938	1.30986	10.932		
2-Chlorophenol	1.12499	1.22905	.91504	1.12447	1.07150	.946	1.09301	10.497		
1,3-Dichlorobenzene	1.34573	1.35581	1.29858	1.24048	1.20407	.987	1.28893	5.108		
1,4-Dichlorobenzene	1.41247	1.37112	1.24041	1.16809	1.02529	1.007	1.24348	12.597	*	
1,2-Dichlorobenzene	1.29492	1.25260	1.13378	1.06286	.97784	1.068	1.14440	11.466		
bis(2-Chloroisopropyl)ether	1.90199	1.57014	1.58234	1.73799	1.51555	1.124	1.66160	9.497		
N-Nitroso-Di-n-propylamine	.99576	.98651	.52152	.48441	.96756	1.185	.79115	33.319		**
Hexachloroethane	.57356	.60768	.41755	.51897	.50166	1.178	.52388	13.934		
Nitrobenzene-d5	.34936	.35852	.32678	.34728	.34050	.814	.34449	3.428		
Nitrobenzene	.39436	.37374	.33290	.37270	.37164	.819	.36907	6.043		
Isophorone	.80563	.78252	.55742	.76843	.74793	.885	.73239	13.659		
2-Nitrophenol	.17431	.18279	.13127	.18108	.17268	.903	.16843	12.595	*	
2,4-Dimethylphenol	.20733	.28971	.16459	.24836	.26351	.931	.23470	20.990		
bis(2-Chloroethoxy)methane	.45308	.43907	.34011	.42040	.40655	.955	.41184	10.645		
2,4-Dichlorophenol	.24774	.25269	.24443	.24411	.21689	.974	.24117	5.808	*	
1,2,4-Trichlorobenzene	.31951	.29134	.29288	.28464	.27005	.992	.29169	6.165		
Naphthalene	.89512	.86123	.82577	.78466	.73766	1.007	.82089	7.559		
Hexachlorobutadiene	.22090	.17919	.18230	.17062	.15393	1.066	.18139	13.608	*	
4-Chloro-3-methylphenol	.20688	.21908	.16385	.21262	.21043	1.196	.20257	10.908	*	
Hexachlorocyclopentadiene	.30608	.37288	.35988	.36168	.32740	.834	.34558	8.055		**
2,4,6-Trichlorophenol	.36133	.35538	.36336	.36050	.36632	.853	.36138	1.117	*	
2-Chloronaphthalene	1.19621	1.12922	1.11386	1.07172	1.04989	.883	1.11218	5.100		
2-Fluorobiphenyl	1.44005	1.34382	1.30138	1.26445	1.23664	.870	1.31727	6.040		
Dimethylphthalate	1.41697	1.37632	1.31688	1.25855	1.22133	.969	1.31801	6.126		
Acenaphthylene	1.62544	1.59741	1.51216	1.47505	1.42866	.967	1.52774	5.401		
Acenaphthene	1.14162	1.07569	1.02318	1.00418	.94882	1.008	1.03870	7.054	*	

RF - Response Factor (Subscript is amount in NG)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Willow Grove Instrument ID: GC/MS#4(D)

Contractor: EA LABORATORIES Calibration Date: ~~05/19/89~~ 05/18/89

Contract No: 10388.03

JEH 6-15-89

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>00523	>00519	>00522	>00521	>00520					
Compound	RF 20.00	RF 50.00	RF 80.00	RF 120.00	RF 160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
2,4-Dinitrophenol	-	.05775	.05597	.05149	.06344	1.024	.05716	8.651		**
4-Nitrophenol	-	.06938	.07016	.07089	.07976	1.054	.07255	6.684		**
2,4-Dinitrotoluene	.35164	.28851	.30080	.28016	.28726	1.057	.30167	9.580		
2,6-Dinitrotoluene	.28509	.30741	.30017	.28436	.27692	.980	.29079	4.317		
Diethylphthalate	1.93026	1.28654	1.18546	1.08467	.93875	1.119	1.28514	29.790		
4-Chlorophenyl-phenylether	.69513	.46087	.47608	.43731	.38048	1.120	.48998	24.553		
Fluorene	1.26549	.91416	.89705	.85271	.80011	1.112	.94590	19.455		
4,6-Dinitro-2-methylphenol	.08153	.13600	.09555	.12909	.13466	.876	.11537	21.773		
N-Nitrosodiphenylamine	.60139	.65080	.39927	.53331	.55379	.881	.54771	17.270	*	
2,4,6-Tribromophenol	.10579	.10841	.08094	.10158	.10212	.894	.09977	10.913		
4-Bromophenyl-phenylether	.26073	.25795	.17883	.22961	.22806	.935	.23104	14.261		
Hexachlorobenzene	.32547	.26877	.21798	.25697	.24925	.954	.26369	14.913		
Pentachlorophenol	-	.10500	.09446	.10008	.10390	.985	.10086	4.718	*	
Phenanthrene	.93647	.92552	.90141	.97939	.89220	1.004	.92700	3.699		
Anthracene	.88144	1.00888	.88059	.97878	.86703	1.011	.92334	7.090		
Di-n-Butyl phthalate	1.62411	1.53812	1.42340	1.76232	1.36232	1.122	1.54205	10.338		
Fluoranthene	.59721	.65961	.72486	.85999	.71586	1.196	.71151	13.699	*	
Benzidine	-	.04488	.12886	.17817	.16438	1.227	.12907	46.368		(Conc=40.0,100.0,16
Pyrene	2.00873	1.74736	1.97949	1.88817	1.42449	.861	1.80965	13.160		
Terphenyl-d14	1.31672	1.19469	1.34299	1.32582	.95184	.887	1.22641	13.400		
Butylbenzylphthalate	1.06040	1.02645	.81625	.86175	.82709	.952	.91839	12.630		
3,3'-Dichlorobenzidine	.23014	.29317	.36817	.36979	.36331	1.002	.32491	19.065		
Benzo(a)Anthracene	1.04042	1.09143	1.06542	1.07351	1.07531	.998	1.06922	1.745		
bis(2-Ethylhexyl)phthalate	1.68014	1.55227	1.19900	1.33424	1.19531	1.024	1.39219	15.572		
Chrysene	.99001	1.00139	.96447	.95498	.94779	1.003	.97173	2.369		
Di-n-Octyl phthalate	1.97237	2.13301	2.40389	1.82773	1.71463	.947	2.01033	13.444	*	
Benzo(b+k)Fluoranthene	1.00891	.97123	1.29819	1.02235	.96344	.971	1.05283	13.239		(Conc=40.0,100.0,16
Benzo(a)Pyrene	.86561	.88771	.89928	.94339	.88119	.995	.89544	3.288	*	
Indeno(1,2,3-cd)Pyrene	1.00574	.98195	1.03720	.96237	1.02892	1.086	1.00324	3.129		
Dibenzo(a,h)Anthracene	.76001	.75911	.80975	.82744	.79418	1.089	.79010	3.830		

RF - Response Factor (Subscript is amount in NG)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: Willow Grove Instrument ID: GC/MS#4(D)

Contractor: EA LABORATORIES Calibration Date: ~~05/19/89~~ 05/18/89

Contract No: 10388.03

JEH
06-15-89

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % RSD for CCC is 30%

Laboratory ID:	>00523	>00519	>00522	>00521	>00520					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	80.00	120.00	160.00	$\overline{RRT}$	$\overline{RF}$	% RSD	CCC	SPCC
Benzo(g,h,i)Perylene	.84256	.84726	.82054	.82798	.85658	1.109	.83899	1.740		

RF - Response Factor (Subscript is amount in NG)

$\overline{RRT}$ - Average Relative Retention Time (RT Std/RT Istd)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Willow Grove

Calibration Date: 05/10/89

Contractor: EA LABORATORIES

Time: 09:47

Contract No: 10388.03

Laboratory ID: >DD454

Instrument ID: GC/MS#4(D)

Initial Calibration Date: 05/09/89

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
N-Nitrosodimethylamine	.80258	.70361	12.33		
2-Fluorophenol	1.33277	1.32712	.42		
Phenol-d5	1.66268	1.62409	2.32		
Phenol	1.62634	1.56034	4.06	*	
bis(2-Chloroethyl)ether	1.48358	1.35847	8.43		
2-Chlorophenol	1.31350	1.23642	5.87		
1,3-Dichlorobenzene	1.42948	1.39370	2.50		
1,4-Dichlorobenzene	1.38824	1.38591	.17	*	
1,2-Dichlorobenzene	1.30511	1.28099	1.85		
bis(2-Chloroisopropyl)ether	1.22727	1.16394	5.16		
N-Nitroso-Di-n-propylamine	.88728	.89634	1.02		**
Hexachloroethane	.62564	.64185	2.59		
Nitrobenzene-d5	.39406	.38541	2.20		
Nitrobenzene	.37480	.37241	.64		
Isophorone	.77396	.74432	3.83		
2-Nitrophenol	.19598	.18265	6.80	*	
2,4-Dimethylphenol	.31905	.28276	11.37		
bis(2-Chloroethoxy)methane	.43395	.41329	4.76		
2,4-Dichlorophenol	.24703	.23660	4.22	*	
1,2,4-Trichlorobenzene	.28584	.28287	1.04		
Naphthalene	.91237	.91214	.03		
Hexachlorobutadiene	.16205	.17752	9.55	*	
4-Chloro-3-methylphenol	.23206	.21939	5.46	*	
Hexachlorocyclopentadiene	.37727	.38222	1.31		**
2,4,6-Trichlorophenol	.39735	.38299	3.61	*	
2-Chloronaphthalene	1.23237	1.17687	4.50		
2-Fluorobiphenyl	1.55959	1.50612	3.43		
Dimethylphthalate	1.44114	1.39599	3.13		
Acenaphthylene	1.80735	1.75191	3.07		
Acenaphthene	1.22104	1.18141	3.25	*	
2,4-Dinitrophenol	.06993	.05855	16.27		**
4-Nitrophenol	.07911	.07407	6.37		**

RF - Response Factor from daily standard file at 50.00 NG

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Willow Grove

Calibration Date: 05/10/89

Contractor: EA LABORATORIES

Time: 09:47

Contract No: 10388.03

Laboratory ID: >DD454

Instrument ID: GC/MS#4(D)

Initial Calibration Date: 05/09/89

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
2,4-Dinitrotoluene	.29674	.28626	3.53			
2,6-Dinitrotoluene	.31804	.30317	4.67			
Diethylphthalate	1.42210	1.34057	5.73			
4-Chlorophenyl-phenylether	.46920	.46220	1.49			
Fluorene	1.00585	.95846	4.71			
4,6-Dinitro-2-methylphenol	.14712	.13962	5.10			
N-Nitrosodiphenylamine	.69771	.60733	12.95	*		
2,4,6-Tribromophenol	.12689	.14423	13.66			
4-Bromophenyl-phenylether	.24878	.23612	5.09			
Hexachlorobenzene	.29487	.29912	1.44			
Pentachlorophenol	.11143	.11698	4.98	*		
Phenanthrene	1.06546	.99540	6.57			
Anthracene	1.00731	.93912	6.77			
Di-n-Butyl phthalate	1.84653	1.70153	7.85			
Fluoranthene	.64919	.68295	5.20	*		
Benzidine	.07242	.02080	71.28			(Conc=100.00)
Pyrene	2.51240	2.18840	12.90			
Terphenyl-d14	1.64139	1.53256	6.63			
Butylbenzylphthalate	1.52115	1.23853	18.58			
3,3'-Dichlorobenzidine	.30046	.24857	17.27			
Benzo(a)Anthracene	1.21788	1.14633	5.87			
bis(2-Ethylhexyl)phthalate	2.33848	1.90917	18.36			
Chrysene	1.13786	1.07897	5.18			
Di-n-Octyl phthalate	3.20061	2.50513	21.73	*		
Benzo(b+k)Fluoranthene	1.17968	1.09941	6.80			(Conc=100.00)
Benzo(a)Pyrene	1.04516	.99769	4.54	*		
Indeno(1,2,3-cd)Pyrene	1.00575	.96251	4.30			
Dibenzo(a,h)Anthracene	.74524	.68716	7.79			
Benzo(g,h,i)Perylene	.82280	.82779	.61			

RF - Response Factor from daily standard file at 50.00 NG

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Willow Grove

Calibration Date: 05/11/89

Contractor: EA LABORATORIES

Time: 13:04

Contract No: 10388.03

Laboratory ID: >DD471

Instrument ID: GC/MS#4(D)

Initial Calibration Date: 05/09/89

Minimum $\overline{RF}$ for SPCC is 0.05 Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
N-Nitrosodimethylamine	.80258	.75825	5.52		
2-Fluorophenol	1.33277	1.44500	8.42		-
Phenol-d5	1.66268	1.66911	.39		
Phenol	1.62634	1.54605	4.94	*	-
bis(2-Chloroethyl)ether	1.48358	1.30730	11.88		
2-Chlorophenol	1.31350	1.24070	5.54		
1,3-Dichlorobenzene	1.42948	1.38242	3.29		
1,4-Dichlorobenzene	1.38824	1.38991	.12	*	
1,2-Dichlorobenzene	1.30511	1.31806	.99		
bis(2-Chloroisopropyl)ether	1.22727	1.52237	24.05		
N-Nitroso-Di-n-propylamine	.88728	.94119	6.08		**
Hexachloroethane	.62564	.57959	7.36		
Nitrobenzene-d5	.39406	.37950	3.70		
Nitrobenzene	.37480	.36186	3.45		
Isophorone	.77396	.79043	2.13		
2-Nitrophenol	.19598	.18595	5.12	*	
2,4-Dimethylphenol	.31905	.26611	16.59		
bis(2-Chloroethoxy)methane	.43395	.43101	.68		
2,4-Dichlorophenol	.24703	.24136	2.30	*	
1,2,4-Trichlorobenzene	.28584	.29878	4.53		
Naphthalene	.91237	.89866	1.50		
Hexachlorobutadiene	.16205	.17621	8.74	*	
4-Chloro-3-methylphenol	.23206	.21769	6.19	*	
Hexachlorocyclopentadiene	.37727	.25079	33.53		**
2,4,6-Trichlorophenol	.39735	.41132	3.51	*	
2-Chloronaphthalene	1.23237	1.13970	7.52		
2-Fluorobiphenyl	1.55959	1.63628	4.92		
Dimethylphthalate	1.44114	1.45169	.73		
Acenaphthylene	1.80735	1.70361	5.74		
Acenaphthene	1.22104	1.16155	4.87	*	
2,4-Dinitrophenol	.06993	.06358	9.08		**
4-Nitrophenol	.07911	.06528	17.48		**

RF - Response Factor from daily standard file at 50.00 NG

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Willow Grove

Calibration Date: 05/11/89

Contractor: EA LABORATORIES

Time: 13:04

Contract No: 10388.03

Laboratory ID: >D0471

Instrument ID: GC/MS#4(D)

Initial Calibration Date: 05/09/89

Minimum $\overline{RF}$ for SPCC is 0.05

Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
2,4-Dinitrotoluene	.29674	.29722	.16			
2,6-Dinitrotoluene	.31804	.30641	3.65			
Diethylphthalate	1.42210	1.47824	3.95			
4-Chlorophenyl-phenylether	.46920	.48125	2.57			
Fluorene	1.00585	.98804	1.77			
4,6-Dinitro-2-methylphenol	.14712	.12223	16.92			
N-Nitrosodiphenylamine	.69771	.67186	3.70	*		
2,4,6-Tribromophenol	.12689	.13675	7.77			
4-Bromophenyl-phenylether	.24878	.25815	3.77			
Hexachlorobenzene	.29487	.30848	4.61			
Pentachlorophenol	.11143	.09711	12.86	*		
Phenanthrene	1.06546	.98988	7.09			
Anthracene	1.00731	.91578	9.09			
Di-n-Butyl phthalate	1.84653	1.74871	5.30			
Fluoranthene	.64919	.64869	.08	*		
Benzidine	.07242	.03751	48.21			(Conc=100.00)
Pyrene	2.51240	1.96212	21.90			
Terphenyl-d14	1.64139	1.45098	11.60			
Butylbenzylphthalate	1.52115	1.20737	20.63			
3,3'-Dichlorobenzidine	.30046	.31809	5.87			
Benzo(a)Anthracene	1.21788	1.13965	6.42			
bis(2-Ethylhexyl)phthalate	2.33848	1.64118	29.82			
Chrysene	1.13786	1.03172	9.33			
Di-n-Octyl phthalate	3.20061	2.40622	24.82	*		
Benzo(b+k)Fluoranthene	1.17968	1.06664	9.58			(Conc=100.00)
Benzo(a)Pyrene	1.04516	1.01838	2.56	*		
Indeno(1,2,3-cd)Pyrene	1.00575	1.08142	7.52			
Dibenzo(a,h)Anthracene	.74524	.83179	11.61			
Benzo(g,h,i)Perylene	.82280	.89637	8.94			

RF - Response Factor from daily standard file at 50.00 NG

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Willow Grove

Calibration Date: 05/12/89

Contractor: EA LABORATORIES

Time: 10:44

Contract No: 10388.03

Laboratory ID: >DD483

Instrument ID: GC/MS#4(D)

Initial Calibration Date: 05/09/89

Minimum $\overline{RF}$ for SPCC is 0.05

Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
N-Nitrosodimethylamine	.80258	.80117	.17		
2-Fluorophenol	1.33277	1.27102	4.63		-
Phenol-d5	1.66268	1.64779	.90		
Phenol	1.62634	1.58249	2.70	*	-
bis(2-Chloroethyl)ether	1.48358	1.39550	5.94		
2-Chlorophenol	1.31350	1.25063	4.79		
1,3-Dichlorobenzene	1.42948	1.39706	2.27		
1,4-Dichlorobenzene	1.38824	1.38497	.24	*	
1,2-Dichlorobenzene	1.30511	1.33603	2.37		
bis(2-Chloroisopropyl)ether	1.22727	1.42525	16.13		
N-Nitroso-Di-n-propylamine	.88728	.94253	6.23		**
Hexachloroethane	.62564	.55761	10.87		
Nitrobenzene-d5	.39406	.38605	2.03		
Nitrobenzene	.37480	.37382	.26		
Isophorone	.77396	.79637	2.90		
2-Nitrophenol	.19598	.18691	4.63	*	
2,4-Dimethylphenol	.31905	.26057	18.33		
bis(2-Chloroethoxy)methane	.43395	.43448	.12		
2,4-Dichlorophenol	.24703	.24648	.23	*	
1,2,4-Trichlorobenzene	.28584	.30207	5.68		
Naphthalene	.91237	.89860	1.51		
Hexachlorobutadiene	.16205	.17271	6.58	*	
4-Chloro-3-methylphenol	.23206	.21687	6.55	*	
Hexachlorocyclopentadiene	.37727	.19556	48.16		**
2,4,6-Trichlorophenol	.39735	.38215	3.83	*	
2-Chloronaphthalene	1.23237	1.16907	5.14		
2-Fluorobiphenyl	1.55959	1.58016	1.32		
Dimethylphthalate	1.44114	1.47122	2.09		
Acenaphthylene	1.80735	1.69312	6.32		
Acenaphthene	1.22104	1.15813	5.15	*	
2,4-Dinitrophenol	.06993	.06295	9.98		**
4-Nitrophenol	.07911	.06642	16.03		**

RF - Response Factor from daily standard file at 50.00 NG

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Willow Grove

Calibration Date: 05/12/89

Contractor: EA LABORATORIES

Time: 10:44

Contract No: 10388.03

Laboratory ID: >DD483

Instrument ID: GC/MS#4(D)

Initial Calibration Date: 05/09/89

Minimum $\overline{RF}$ for SPCC is 0.05

Maximum % Diff for CCC is 25%

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
2,4-Dinitrotoluene	.29674	.29545	.43			
2,6-Dinitrotoluene	.31804	.31483	1.01			
Diethylphthalate	1.42210	1.51952	6.85			
4-Chlorophenyl-phenylether	.46920	.48008	2.32			
Fluorene	1.00585	.97830	2.74			
4,6-Dinitro-2-methylphenol	.14712	.10905	25.87			
N-Nitrosodiphenylamine	.69771	.67584	3.13	*		
2,4,6-Tribromophenol	.12689	.13118	3.38			
4-Bromophenyl-phenylether	.24878	.26212	5.36			
Hexachlorobenzene	.29487	.29755	.91			
Pentachlorophenol	.11143	.08867	20.43	*		
Phenanthrene	1.06546	.95016	10.82			
Anthracene	1.00731	.90228	10.43			
Di-n-Butyl phthalate	1.84653	1.66011	10.10			
Fluoranthene	.64919	.60511	6.79	*		
Benzidine	.07242	.04214	41.82			(Conc=100.00)
Pyrene	2.51240	1.87062	25.54			
Terphenyl-d14	1.64139	1.41718	13.66			
Butylbenzylphthalate	1.52115	1.13962	25.08			
3,3'-Dichlorobenzidine	.30046	.36271	20.72			
Benzo(a)Anthracene	1.21788	1.16511	4.33			
bis(2-Ethylhexyl)phthalate	2.33848	1.58858	32.07			
Chrysene	1.13786	1.08433	4.70			
Di-n-Octyl phthalate	3.20061	2.42502	24.23	*		
Benzo(b+k)Fluoranthene	1.17968	1.13144	4.09			(Conc=100.00)
Benzo(a)Pyrene	1.04516	1.05807	1.23	*		
Indeno(1,2,3-cd)Pyrene	1.00575	1.32188	31.43			
Dibenzo(a,h)Anthracene	.74524	1.02307	37.28			
Benzo(g,h,i)Perylene	.82280	1.09171	32.68			

RF - Response Factor from daily standard file at 50.00 NG

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: EAENG Case No.: Willow Grove SAS No.: . SDG No.: .

Lab File ID (Standard): DD439 Date Analyzed: 5/9/89

Instrument ID: GC/MS #4 (D) Time Analyzed: 11:29

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	67509	6.81	224378	10.04	74476	15.33
	UPPER LIMIT	135018	7.31	448756	10.54	148952	15.83
	LOWER LIMIT	33754	6.31	112184	9.54	37238	14.83
	EPA SAMPLE NO.						
01	BLANK #674	67242	6.82	216546	10.04	73394	15.31
02	BLANK #664	55788	6.82	171071	10.03	56724	15.31
1915 03	NFFW-7.5-4	59265	6.83	201628	10.05	71726	15.33
1916 04	NFF. RINSATE BLANK	54916	6.82	165084	10.02	59294	15.31
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06							
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22							

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

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

Column used to flag internal standard area value with an asterisk

FORM VIII SV-1

1/87 Rev.

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: EAENG Case No.: Willow Grove SAS No.: . SDG No.

Lab File ID (Standard): DD439 Date Analyzed: 5/9/89

Instrument ID: GC/ms #4 (D) Time Analyzed: 11:29

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
	12 HOUR STD	56730	19.86	12507	28.21	9182	32.37
	UPPER LIMIT	113460	20.36	25014	28.71	18364	32.87
	LOWER LIMIT	28365	19.36	6253	27.71	4591	31.87
	EPA SAMPLE NO.						
01	BLANK #674	66478	19.86	21033	28.21	17862	32.39
02	BLANK #684	42799	19.87	10920	28.22	8682	32.36
1915 03	NFFW-7.8-4	57197	19.85	13679	28.22	10889	32.38
1916 04	NFF RINSATE BLANK	44373	19.87	10082	28.21	7465	32.37
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IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

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

Column used to flag internal standard area values with an asterisk

FORM VIII SV-2 1/87 Rev.

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: EAENG Case No.: Willow fire SAS No.: . SDG No.: .

Lab File ID (Standard): >DD454 50 ppm Std Date Analyzed: 5/10/89

Instrument ID: GC/MS #4 (D) Time Analyzed: 9:47

	IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
12 HOUR STD	80011	6.82	266578	10.03	92290	15.31
UPPER LIMIT	160022	7.32	533156	10.53	184580	15.81
LOWER LIMIT	40005	6.32	133289	9.53	46145	14.81
EPA SAMPLE NO.						
01 Blank (# 674)	67242	6.82	216546	10.04	73394	15.31
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

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

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

Column used to flag int rnal standard area values with an asteri k

pag 1 of 1

FORM VIII SV-1

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: EAENG Case No.: Willowgrove SAS No.: . SDG No.

Lab Fil ID (Standard): >DD454 50ppm std. Date Analyzed: 5/10/89

Instrument ID: GC/MS #4 (D) Time Analyzed: 9:47

	IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
12 HOUR STD	77906.	19.86	21399	28.21	20897	32.37
UPPER LIMIT	155812	20.36	42798	28.71	41794	32.87
LOWER LIMIT	38953	19.36	10699	27.71	10448	31.87
EPA SAMPLE NO.						
01 Blank (# 674)	66478	19.86	21033	28.21	17862	32.39
02						
03						
04						
05						
06						
07						
08						
09						
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20						
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22						

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

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

Column used to flag internal standard area values with an asterisk.

FORM VIII SV-2 1/87 Rev.

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: EAENG Case No.: Willow Grove SAS No.: . SDG No.: .

Lab File ID (Standard): >DD471 50ppm std. Date Analyzed: 5/11/89

Instrument ID: GC/MS # 4(D) Time Analyzed: 13:04

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	100156	6.76	347806	9.99	109687	15.25
	UPPER LIMIT	200312	7.26	695612	10.49	219374	15.75
	LOWER LIMIT	50078	6.26	173903	9.49	54843	14.75
	EPA SAMPLE NO.						
01	MSTD.	78245	6.77	263074	9.98	88764	15.25
02	Blank (# 675)	80094	6.76	261951	9.96	88026	15.25
1779MS 03	NFFW-5.5-2(MS)	81776	6.77	286858	9.98	97049	15.25
1779MSD 04	NFFW-5.5-2(MSD)	79009	6.76	281400	9.97	96652	15.25
1780 05	NFFW-6.5-5	77642	6.75	241448	9.95	86611	15.24
06							
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22							

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

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

Column used to flag internal standard ar a valu s with an a terisk.

FORM VIII SV-1 1/87 Rev.

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Cod : EAENG Case No.: Willow Grove SAS No.: . SDG No.

Lab Fil ID (Standard): 7DD471 50 ppm std. Date Analyzed: 5/11/89

In trument ID: GC/MS #4 (D) Time Analyzed: 13:04

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
	12 HOUR STD	88530.	19.78	26166.	28.14	23401	32.31
	UPPER LIMIT	177060	20.28	52332	28.64	46802	32.81
	LOWER LIMIT	44265	19.28	13083	27.64	11700	31.81
	EPA SAMPLE NO.						
01	MSTD.	68341	19.80	21131	28.14	20702	32.31
02	Blank (# 675)	70063	19.78	24395	28.12	23955	32.31
1779 MS 03	NFFW-5 S.2 (MS)	81378	19.78	27322	28.13	24693	32.30
1779 MSD 04	NFFW-5 S.2 (MSD)	78735	19.79	24057	28.12	21345	32.31
1780 05	NFFW-6 S-5	65844	19.77	23915	28.12	24435	32.31
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22							

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

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

Column used to flag internal standard area values with an asterisk

FORM VIII SV-2 1/87 Rev.

8B
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: EAENG Case No.: Willow Grove SAS No.: . SDG No.: .

Lab File ID (Standard): >DD483 50 PPm std Date Analyzed: 5/12/89

Instrum nt ID: GC/MS #4 (D) Time Analyzed: 10:44

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	103545	6.71	355474	9.92	118871	15.18
	UPPER LIMIT	207090	7.21	710948	10.42	237742	15.68
	LOWER LIMIT	51772	6.21	177737	9.42	59435	14.68
	EPA SAMPLE NO.						
1779 01	NFFW-5.5-2.	121571	6.75	365375	9.97	116281	15.24
02							
03							
04							
05							
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22							

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

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

Column used to flag internal standard area values with an a terisk

FORM VIII SV-1 1/87 Rev.

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Nam :EA LABORATORIES Contract: 10388.03

Lab Code: EAENG Case No.: Willow Grove SAS No.: . SDG No.

Lab File ID (Standard): >DD483 50ppm std Date Analyzed: 5/12/89

Instrument ID: GC/MS #4 (D) Time Analyzed: 10:44

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
	12 HOUR STD	98916.	19.71	28373.	28.06	25205	32.23
	UPPER LIMIT	197832	20.21	56746	28.56	50410	32.73
	LOWER LIMIT	49458	19.21	14186	27.56	12602.	31.73
	EPA SAMPLE NO.						
1779 01	NFFW-5.5-2	90779	19.77	31234	28.10	33096	32.27
02							
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22							

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

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

Column used to flag internal standard area values with an asterisk

FORM VIII SV-2 1/87 Rev.

8B

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: EAENG Case No.: Willow Grove SAS No.: . SDG No.: .

Lab File ID (Standard): DD 519 Date Analyzed: 5/18/89

Instrument ID: GC/MS # 4 (D) Time Analyzed: 15:41

		IS1(DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
	12 HOUR STD	93764	6.46	374735	9.61	100166	14.83
	UPPER LIMIT	187528	6.96	749470	10.11	200332	15.33
	LOWER LIMIT	46882	5.96	187367	9.11	50083	14.33
	EPA SAMPLE NO.						
01	BLANK #638	104538	6.44	318994	9.59	106772	14.82
178\ 02	RINSATE BLANK.NFF2	71237	6.44	298617	9.59	103009	14.82
03							
04							
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22							

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

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

Column us d to flag internal standard area values with an asterisk

FORM VIII SV-1

1/87 Rev.

8C
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: EA LABORATORIES Contract: 10388.03

Lab Code: EAENG Case No.: Willow Grove SAS No.: . SDG No.

Lab File ID (Standard): DD 519 Date Analyzed: 5/18/89

Instrument ID: GC/MS #4 (D) Time Analyzed: 15:41

		IS4(PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6(PRY) AREA #	RT
	12 HOUR STD	81329	19.35	27171	27.66	26997	31.81
	UPPER LIMIT	162658	19.85	54342	28.16	53994	32.31
	LOWER LIMIT	40664	18.85	13585	27.16	13498	31.31
	EPA SAMPLE NO.						
01	BLANK #638	98750	19.34	31203	27.63	29332	31.80
1781 02	Rinsate BLANK NFFZ	87701	19.35	17847	27.64	23045	31.80
03							
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22							

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

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

Column used to flag internal standard area values with an asterisk

FORM VIII SV-2 1/87 Rev.

D. Raw QC Data

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: BLANK(#664)
SAMPLE: -----
GC/MS FILE: >DD446::D1
DATE REC'D: N/A
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	WATER
DATE EXTRACTED:	04/25/89
DATE ANALYZED:	05/09/89 18:15
SAMPLE--->EXTRACT:	1000mL--> 1ml

CAS #		CONC UG/L OR UG/KG	
62-75-9	N-Nitrosodimethylamine	10.	ND
111-44-4	bis(2-Chloroethyl)ether	10.	ND
541-73-1	1,3-Dichlorobenzene	10.	ND
106-46-7	1,4-Dichlorobenzene	10.	ND
95-50-1	1,2-Dichlorobenzene	10.	ND
39638-32-9	bis(2-chloroisopropyl)ether	10.	ND
621-64-7	N-Nitroso-Di-n-propylamine	10.	ND
67-72-1	Hexachloroethane	10.	ND
98-95-3	Nitrobenzene	10.	ND
78-59-1	Isophorone	10.	ND
111-91-1	bis(2-Chloroethoxy)methane	10.	ND
120-82-1	1,2,4-Trichlorobenzene	10.	ND
91-20-3	Naphthalene	10.	ND
87-68-3	Hexachlorobutadiene	10.	ND
77-47-4	Hexachlorocyclopentadiene	10.	ND
91-58-7	2-Chloronaphthalene	10.	ND
131-11-3	Dimethylphthalate	10.	ND
208-96-8	Acenaphthylene	10.	ND
83-32-9	Acenaphthene	10.	ND
121-14-2	2,4-Dinitrotoluene	10.	ND
606-20-2	2,6-Dinitrotoluene	10.	ND
84-66-2	Diethylphthalate	10.	ND
7005-72-3	4-Chlorophenyl-phenylether	10.	ND
86-73-7	Fluorene	10.	ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: BLANK(#664)
SAMPLE: -----
GC/MS FILE: >DD446::D1
DATE REC'D: N/A
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	WATER
DATE EXTRACTED:	04/25/89
DATE ANALYZED:	05/09/89 18:15
SAMPLE--->EXTRACT:	1000mL--> 1ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	10.	ND
101-55-3	4-Bromophenyl-phenylether	10.	ND
118-74-1	Hexachlorobenzene	10.	ND
85-01-8	Phenanthrene	10.	ND
120-12-7	Anthracene	10.	ND
84-74-2	Di-n-Butyl phthalate	10.	ND
206-44-0	Fluoranthene	10.	ND
92-87-5	Benzidine	50.	ND
129-00-0	Pyrene	10.	ND
85-68-7	Butylbenzylphthalate	10.	ND
91-94-1	3,3'-Dichlorobenzidine	20.	ND
56-55-3	Benzo(a)Anthracene	10.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	10.	ND
218-01-9	Chrysene	10.	ND
117-84-0	Di-n-Octyl phthalate	10.	ND
205-99-2	Benzo(b)Fluoranthene	10.	ND
205-99-2	Benzo(k)Fluoranthene	10.	ND
50-32-8	Benzo(a)Pyrene	10.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	10.	ND
53-70-3	Dibenzo(a,h)Anthracene	10.	ND
191-24-2	Benzo(g,h,i)Perylene	10.	ND

Qualifier descriptions: ND - Compound analyzed for but not detected
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA. Laboratories

Case No: Willow Grove

Sample Number
BLANK #664
EA# 1916

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. —	Unknown	B/N	25.88	~~170~~ 4600
2. —	UNKNOWN	B/N	27.42	~~170~~
3. —	UNKNOWN	B/N	28.87	~~160.00~~
4.				
5.				
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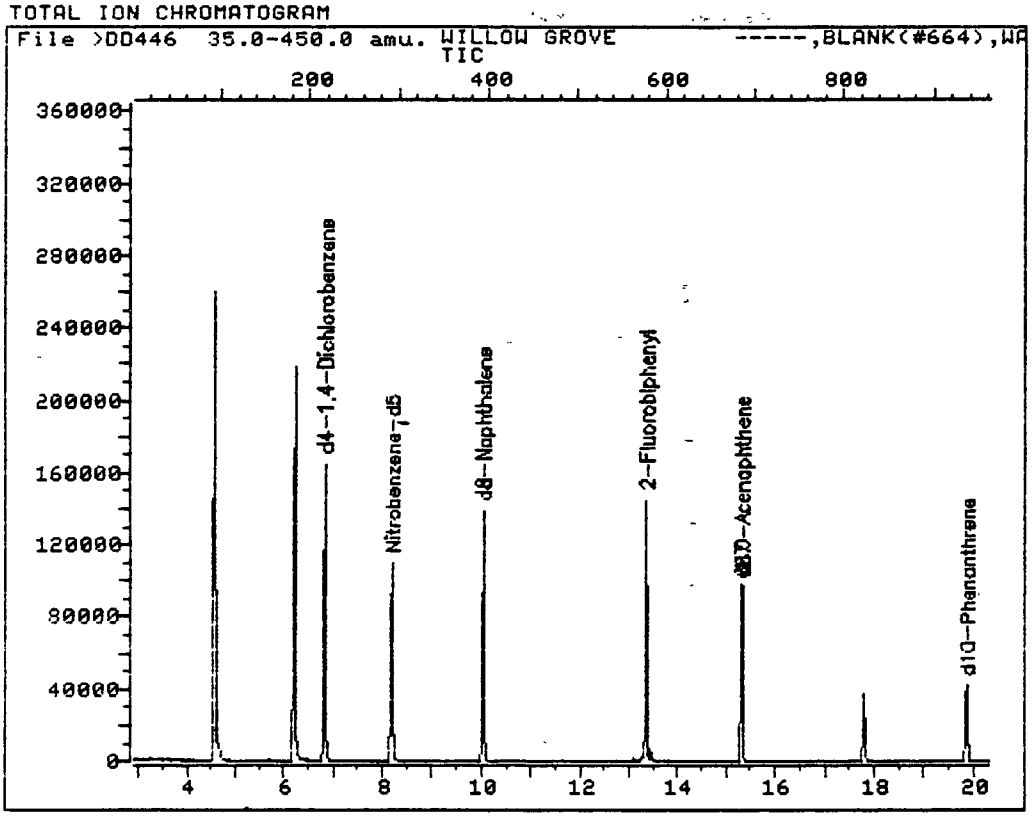
30.				

TOTAL ION CHROMATOGRAM



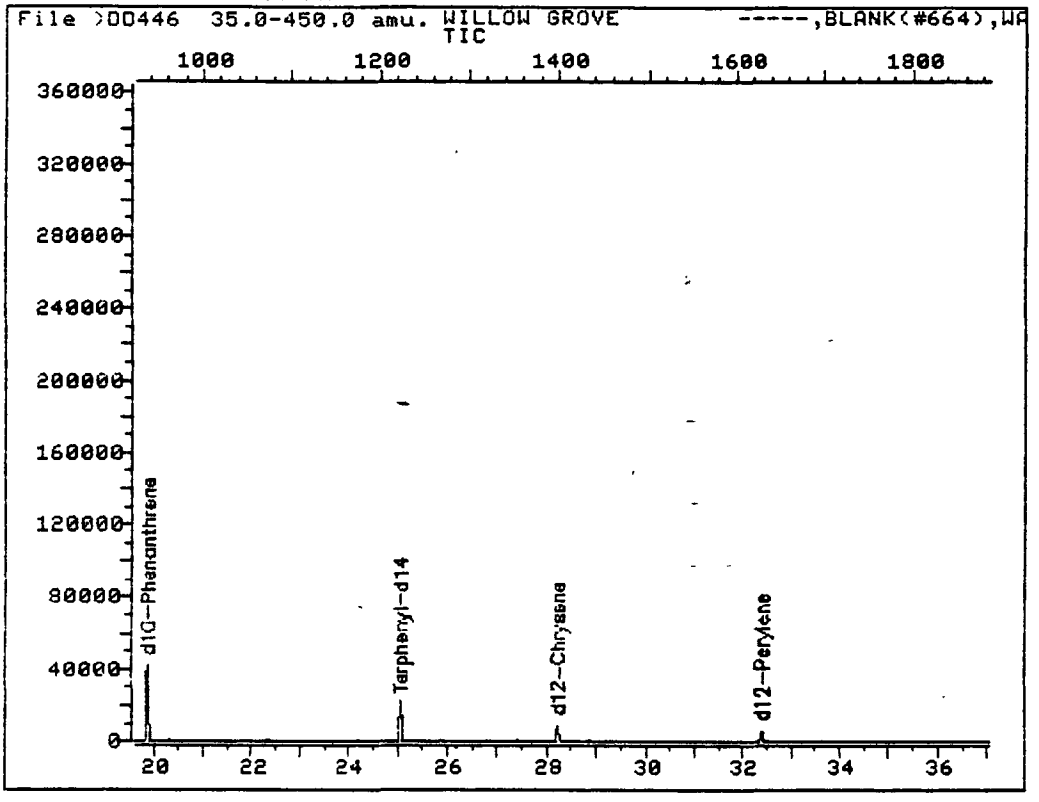
Data File: >DD446::D1 Quant Output File: ^DD446::QT
Name: WILLOW GROVE
Misc: -----,BLANK(#664),WATER,1000ml,2,EA#1916 WILLOW (2) BTL# 7

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890509 13:54

Operator ID: BHADRA
Quant Time: 890509 18:55
Injected at: 890509 18:15

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD446::D1 Quant Output File: ^DD446::QT
Name: WILLOW GROVE
Misc: -----,BLANK(#664),WATER,1000ml,2,EA#1916 WILLOW <2> BTL# 7

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890509 13:54

Operator ID: BHADRA
Quant Time: 890509 18:55
Injected at: 890509 18:15

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890509 18:55
Output File: ^DD446::QT Injected at: 890509 18:15
Data File: >DD446::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: -----,BLANK(#664),WATER,1000ml,2,EA#1916 WILLOW (2) BTL# 7

ID File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
La t Calibration: 890509 13:54

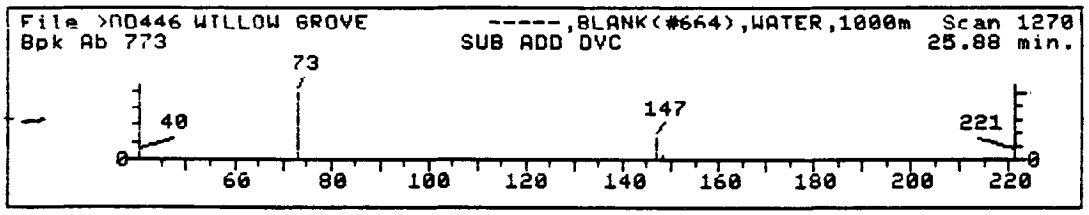
	Compound	R.T.	Q ion	Area	Conc	Units	c
1)	*d4-1,4-Dichlorobenzene	6.82	152.0	55788	40.00	NG	9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG	
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG	
4)	1,3-Dichlorobenzene	0.00	146.0	0	0.00	NG	
5)	1,4-Dichlorobenzene	0.00	146.0	0	0.00	NG	
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG	
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG	
8)	N-Nitroso-Di-n-propylamine	0.00	70.0	0	0.00	NG	
9)	Hexachloroethane	0.00	117.0	0	0.00	NG	
10)	*d8-Naphthalene	10.03	136.0	171071	40.00	NG	9
11)	Nitrobenzene-d5	8.20	82.0	82348	50.19	NG 100%	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG	
13)	Isophorone	0.00	82.0	0	0.00	NG	
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG	
15)	1,2,4-Trichlorobenzene	0.00	180.0	0	0.00	NG	
16)	Naphthalene	0.00	128.0	0	0.00	NG	
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG	
18)	*d10-Acenaphthene	15.31	164.0	56724	40.00	NG	9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG	
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG	
21)	2-Fluorobiphenyl	13.36	172.0	104093	45.46	NG 91%	9
22)	Dimethylphthalate	15.37	163.0	18227	~~8.76~~	~~NG~~	5
23)	Acenaphthylene	0.00	152.0	0	0.00	NG	
24)	Acenaphthene	0.00	153.0	0	0.00	NG	
25)	2,4-Dinitrotoluene	0.00	165.0	0	0.00	NG	
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG	
27)	Diethylphthalate	0.00	149.0	0	0.00	NG	
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG	
29)	Fluorene	0.00	166.0	0	0.00	NG	
30)	*d10-Phenanthrene	19.87	188.0	42799	40.00	NG	9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG	
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG	
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG	
34)	Phenanthrene	0.00	178.0	0	0.00	NG	
35)	Anthracene	0.00	178.0	0	0.00	NG	
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG	
37)	Fluoranthene	0.00	202.0	0	0.00	NG	
38)	Benzidine	0.00	184.0	0	0.00	NG	
39)	*d12-Chrysene	28.22	240.0	10920	40.00	NG	9
40)	Pyr n	0.00	202.0	0	0.00	NG	
41)	T rphenyl-d14	25.05	244.0	23249	49.53	NG 99%	8
42)	Butylbenzylphthalate	0.00	149.0	0	0.00	NG	

QUANT REPORT
page 2

Output File:^DD446:: Data File:>DD446::D1

	Compound	R.T.	Q ion	Area	Conc	Units	o
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	0.00	149.0	0	0.00	NG	
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	32.38	264.0	8682	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD



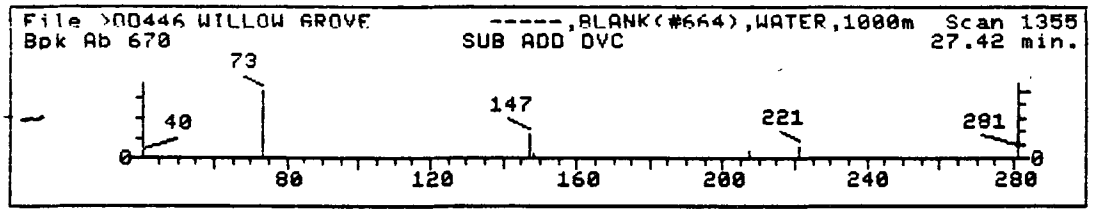
unknown

R tention time = 25.88

Area = 3076.00 Tentative Concentration is ~~170.00~~ 4.[illegible] ug/l

Sample file: >DD446 Spectrum #: 1270

No data base entries were retrieved.



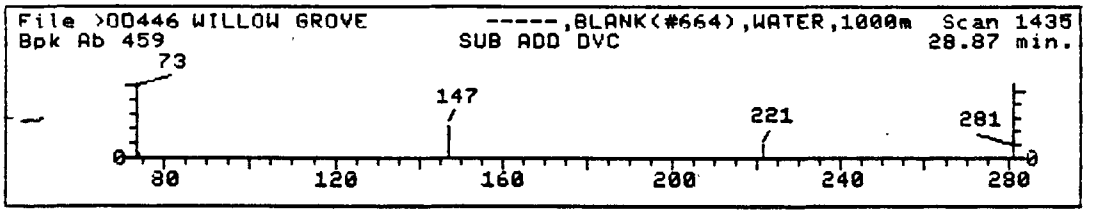
Unknown

R tention time = 27.42

Area = 3060.00 Tentative Concentration is ~~170.00~~ 4 ug

Sample file: >DD446 Spectrum #: 1355

No data base entries were retrieved.



Retention time = 28.87 unknown

Area = 3020.00 Tentative Concentration is ~~160.00~~ 4 ug/l

Sample file: >DD446 Spectrum #: 1435

No data base entries were retrieved.

LIBRARY SEARCH SUMMARY

MS Data File:>DD446::D1 Analyst:BHADRA MS

Name:WILLOW GROVE Date/Time: 5/09/89 18:15
Misc:-----,BLANK(#664),WATER,1000ml,2,EA#1916 WILLOW ?2? BTL# 7

The following hits are >10% of the nearest ISTD.

Peak # in PBM file	Retention Time	Peak Area	10% of Nearest ISTD Area	
~~1~~	~~4.56~~	~~580298~~	~~36496~~	2-Fluorophenol
~~2~~	~~6.23~~	~~592996~~	~~36496~~	Phenol-d5
~~3~~	~~17.79~~	~~113045~~	~~12195~~	2,4,6-Tribromof
4	25.88	3076	2988	
5	27.42	3060	2988	
6	28.87	3020	2988	

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: BLANK(#674)
SAMPLE: -----
GC/MS FILE: >DD459::D1
DATE REC'D: N/A
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	SOIL
DATE EXTRACTED:	04/25/89
DATE ANALYZED:	05/10/89 14:30
SAMPLE--->EXTRACT:	10.34G--> 1ml

CAS #		CONC UG/L	OR UG/KG
62-75-9	N-Nitrosodimethylamine	970.	ND
111-44-4	bis(2-Chloroethyl)ether	970.	ND
541-73-1	1,3-Dichlorobenzene	970.	ND
106-46-7	1,4-Dichlorobenzene	970.	ND
95-50-1	1,2-Dichlorobenzene	970.	ND
39638-32-9	bis(2-chloroisopropyl)ether	970.	ND
621-64-7	N-Nitroso-Di-n-propylamine	970.	ND
67-72-1	Hexachloroethane	970.	ND
98-95-3	Nitrobenzene	970.	ND
78-59-1	Isophorone	970.	ND
111-91-1	bis(2-Chloroethoxy)methane	970.	ND
120-82-1	1,2,4-Trichlorobenzene	970.	ND
91-20-3	Naphthalene	970.	ND
87-68-3	Hexachlorobutadiene	970.	ND
77-47-4	Hexachlorocyclopentadiene	970.	ND
91-58-7	2-Chloronaphthalene	970.	ND
131-11-3	Dimethylphthalate	970.	ND
208-96-8	Acenaphthylene	970.	ND
83-32-9	Acenaphthene	970.	ND
121-14-2	2,4-Dinitrotoluene	970.	ND
606-20-2	2,6-Dinitrotoluene	970.	ND
84-66-2	Diethylphthalate	970.	ND
7005-72-3	4-Chlorophenyl-phenylether	970.	ND
86-73-7	Fluorene	970.	ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: BLANK(#674)
SAMPLE: -----
GC/MS FILE: >DD459::D1
DATE REC'D: N/A
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	SOIL
DATE EXTRACTED:	04/25/89
DATE ANALYZED:	05/10/89 14:30
SAMPLE--->EXTRACT:	10.34G--> 1ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	970.	ND
101-55-3	4-Bromophenyl-phenylether	970.	ND
118-74-1	Hexachlorobenzene	970.	ND
85-01-8	Phenanthrene	970.	ND
120-12-7	Anthracene	970.	ND
84-74-2	Di-n-Butyl phthalate	970.	ND
206-44-0	Fluoranthene	970.	ND
92-87-5	Benzidine	4800.	ND
129-00-0	Pyrene	970.	ND
85-68-7	Butylbenzylphthalate	970.	ND
91-94-1	3,3'-Dichlorobenzidine	1900.	ND
56-55-3	Benzo(a)Anthracene	970.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	970.	ND
218-01-9	Chrysene	970.	ND
117-84-0	Di-n-Octyl phthalate	970.	ND
205-99-2	Benzo(b)Fluoranthene	970.	ND
205-99-2	Benzo(k)Fluoranthene	970.	ND
50-32-8	Benzo(a)Pyrene	970.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	970.	ND
53-70-3	Dibenzo(a,h)Anthracene	970.	ND
191-24-2	Benzo(g,h,i)Perylene	970.	ND

Qualifier descriptions: ND - Compound analyzed for but not detected
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA. Laboratories

Case No: Willow Grove

Sample Number
BLANK (#674)
EA # 1915

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. —	UNKNOWN	B/N	13.10	410.00
2. 74367943	Propanoic acid, 2-methyl	B/N	13.45	700.00
3. —	UNKNOWN	B/N	28.42	980.00
4. —	UNKNOWN	B/N	30.51	640.00
5. —	UNKNOWN	B/N	34.04	2700.00
6. —	UNKNOWN	B N	34.86	550.00
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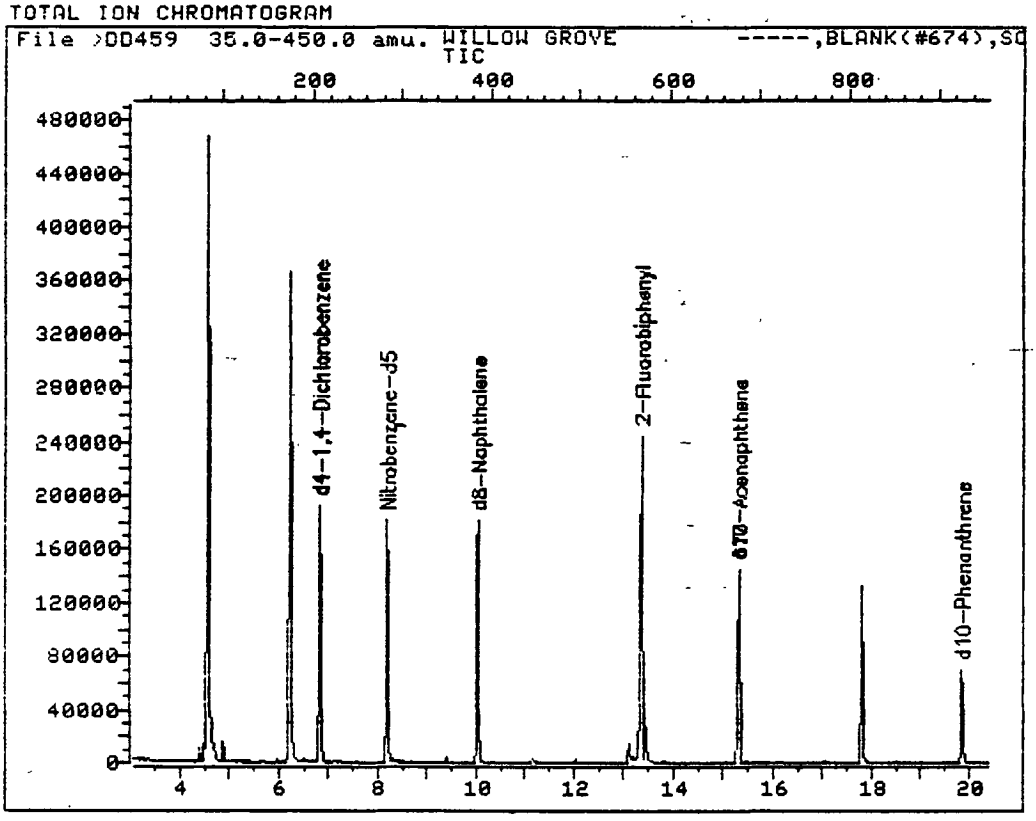
TOTAL ION CHROMATOGRAM



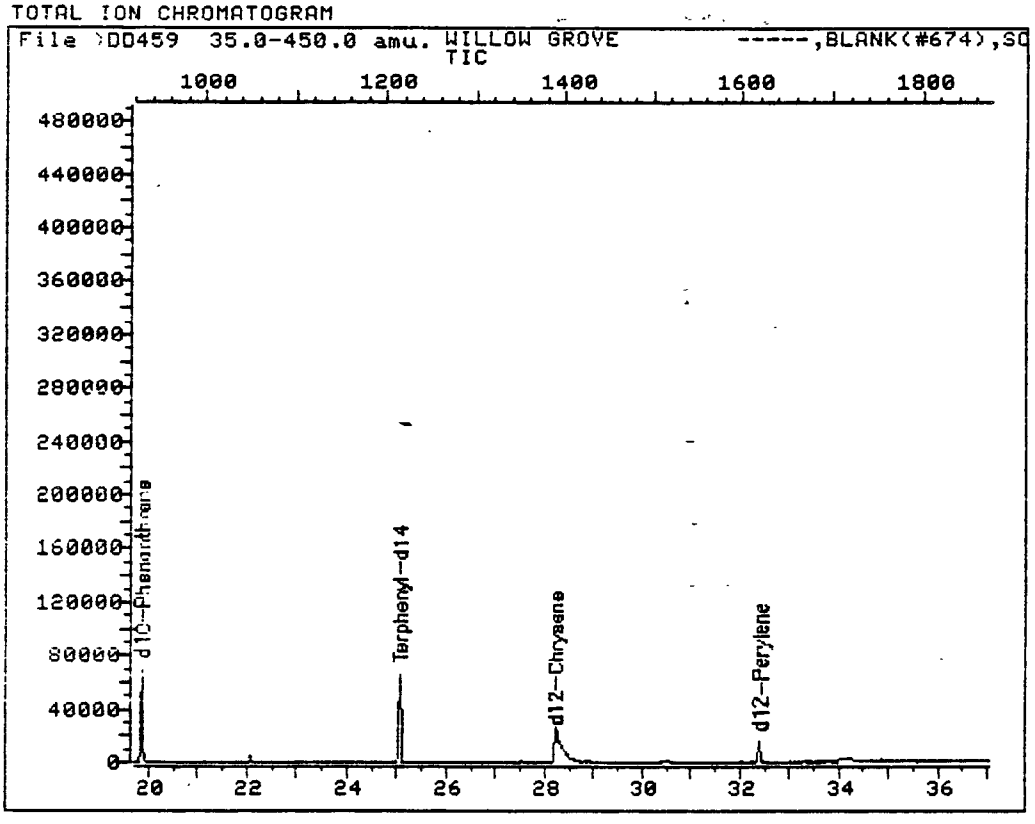
Data File: >DD459::D1 Quant Output File: ^DD459::QT
Name: WILLOW GROVE
Misc: -----,BLANK(#674),SOIL,10.34G,1 EA#1915 (96.71) BTL# 5

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890510 11:37

Operator ID: BHADRA
Quant Time: 890510 15:11
Injected at: 890510 14:30

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD459::D1 Quant Output File: ^DD459::QT
Name: WILLOW GROVE
Misc: -----,BLANK(#674),SOIL,10.34G,1 EA#1915 (96.71) BTL# 5

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890510 11:37

Operator ID: BHADRA
Quant Time: 890510 15:11
Injected at: 890510 14:30

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890510 15:11
Output File: ^DD459::QT Injected at: 890510 14:30
Data File: >DD459::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: -----,BLANK(#674),SOIL,10.34G,1 EA#1915 (96.71) BTL# 5

ID File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890510 11:37

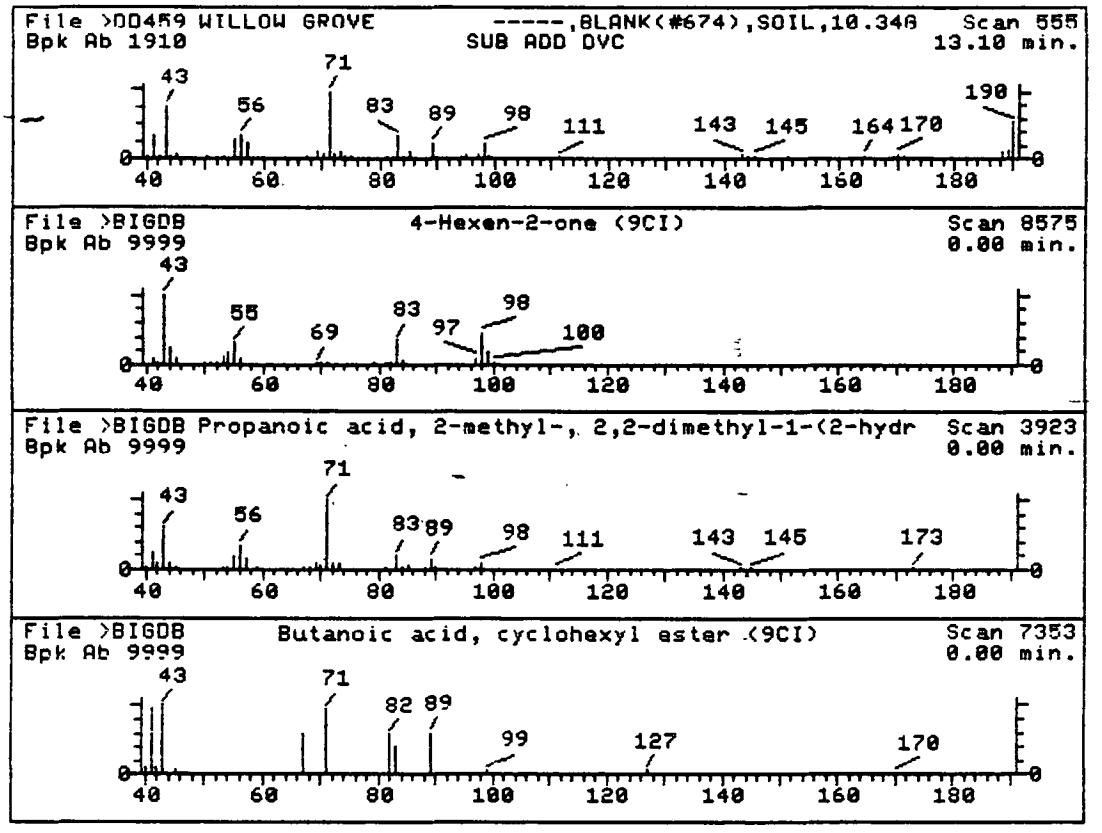
	Compound	R.T.	Q ion	Area	Conc	Unit	c
1)	*d4-1,4-Dichlorobenzene	6.82	152.0	67242	40.00	NG	9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG	
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG	
4)	1,3-Dichlorobenzene	0.00	146.0	0	0.00	NG	
5)	1,4-Dichlorobenzene	0.00	146.0	0	0.00	NG	
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG	
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG	
8)	N-Nitroso-Di-n-propylamine	0.00	70.0	0	0.00	NG	
9)	Hexachloroethane	0.00	117.0	0	0.00	NG	
10)	*d8-Naphthalene	10.04	136.0	216546	40.00	NG	9
11)	Nitrobenzene-d5	8.20	82.0	156517	75.01	NG 75%	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG	
13)	Isophorone	0.00	82.0	0	0.00	NG	
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG	
15)	1,2,4-Trichlorobenzene	0.00	180.0	0	0.00	NG	
16)	Naphthalene	0.00	128.0	0	0.00	NG	
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG	
18)	*d10-Acenaphthene	15.31	164.0	73394	40.00	NG	9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG	
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG	
21)	2-Fluorobiphenyl	13.36	172.0	191948	69.46	NG 69%	9
22)	Dimethylphthalate	15.31	163.0	24142	~~9.43~~	~~NG~~	5
23)	Acenaphthylene	0.00	152.0	0	0.00	NG	
24)	Acenaphthene	0.00	153.0	0	0.00	NG	
25)	2,4-Dinitrotoluene	0.00	165.0	0	0.00	NG	
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG	
27)	Diethylphthalate	0.00	149.0	0	0.00	NG	
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG	
29)	Fluorene	0.00	166.0	0	0.00	NG	
30)	*d10-Phenanthrene	19.86	188.0	66478	40.00	NG	9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG	
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG	
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG	
34)	Phenanthrene	0.00	178.0	0	0.00	NG	
35)	Anthracene	0.00	178.0	0	0.00	NG	
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG	
37)	Fluoranthene	0.00	202.0	0	0.00	NG	
38)	Benzidine	0.00	184.0	0	0.00	NG	
39)	*d12-Chrysene	28.21	240.0	21033	40.00	NG	9
40)	Pyrene	0.00	202.0	0	0.00	NG	
41)	Terphenyl-d14	25.06	244.0	60438	75.00	NG 75%	9
42)	Butylb nzylphthalat	0.00	149.0	0	0.00	NG	

QUANT REPORT
page 2

Output File:^DD459:: Data File:>DD459::D1

	Compound	R.T.	Q ion	Area	Conc	Unit	q
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	0.00	149.0	0	0.00	NG	
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	32.39	264.0	17862	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD



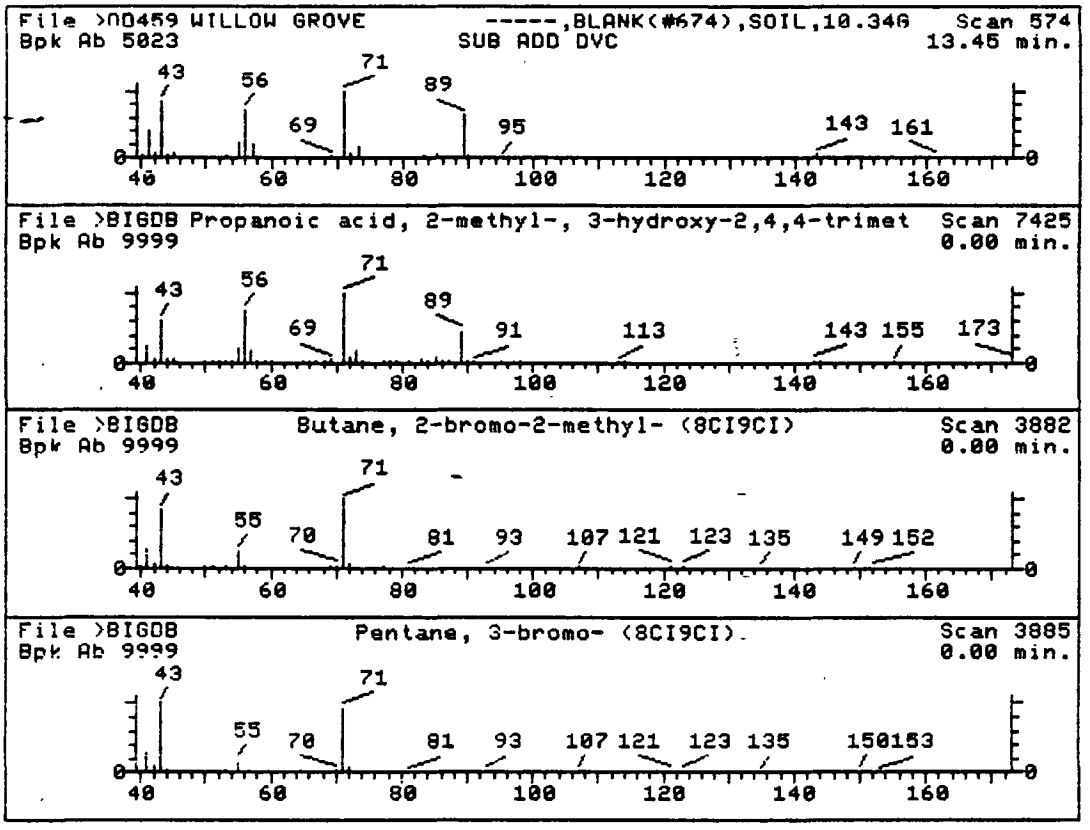
Retention time = 13.10 unknown

Area = 41862.00 Tentative Concentration is 410.00

1.	4-Hexen-2-one (9CI)	98	C6H10O
2.	Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(2-hydroxy -1-methylethyl)propyl ester (9CI)	216	C12H24O3
3.	Butanoic acid, cyclohexyl ester (9CI)	170	C10H18O2
4.	Butyric acid, thio-, S-hexyl ester (8CI)	188	C10H20OS
5.	4,5-Octanedione (8CI9CI)	142	C8H14O2
6.	Butane, 2-bromo-2-methyl- (8CI9CI)	150	C5H11Br
7.	Oxirane, butyl- (9CI)	100	C6H12O

Sample file: >DD459 Spectrum #: 555
Search speed: 2 Tilting option: S No. of ion ranges search d: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	25*	25659227	8575	"BIGDB	38	56	2	1	55	48	7	1
2.	25	74367332	3923	"BIGDB	37	77	0	0	94	49	7	1
3.	25*	1551446	7353	"BIGDB	34	76	3	0	78	48	7	1
4.	20*	2432544	4039	"BIGDB	26	67	1	0	100	54	5	1
5.	18	5455243	4007	"BIGDB	42	34	0	0	73	59	4	2
6.	15	507368	3882	"BIGDB	36	42	0	0	92	59	3	1
7.	15	1436346	3910	"BIGDB	39	48	2	0	100	59	3	1



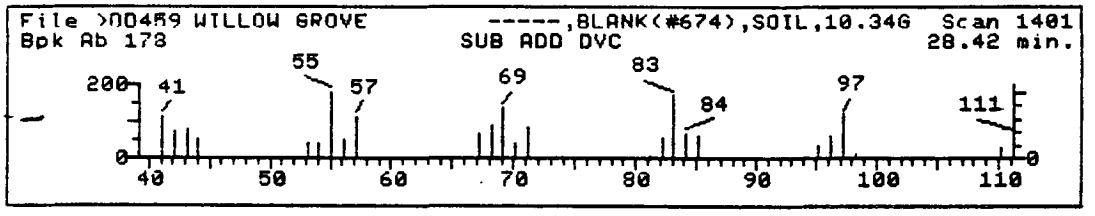
Retention time = 13.45

Area = 70569.00 Tentative Concentration is 700.00

✓1.	Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethyl pentyl ester (9CI)	216	C12H24O3
2.	Butane, 2-bromo-2-methyl- (8CI9CI)	150	C5H11Br
3.	Pentane, 3-bromo- (8CI9CI)	150	C5H11Br
4.	1-Penten-3-ol, 3-methyl- (8CI9CI)	100	C6H12O
5.	Azetidine, 1-methyl- (8CI9CI)	71	C4H9N

Sample file: >DD459 Spectrum #: 574
Search speed: 2 Tilting option: S No. of ion ranges search d: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	83	74367343	7425	"BIGDB	85	31	2	0	96	2	57	2
2.	20	507368	3882	"BIGDB	36	42	2	0	91	53	5	1
3.	20	1809105	3885	"BIGDB	34	42	1	0	75	53	5	1
4.	20	918854	3909	"BIGDB	36	47	2	0	100	52	5	1
5.	20*	4923799	3888	"BIGDB	23	78	2	0	151	55	5	1



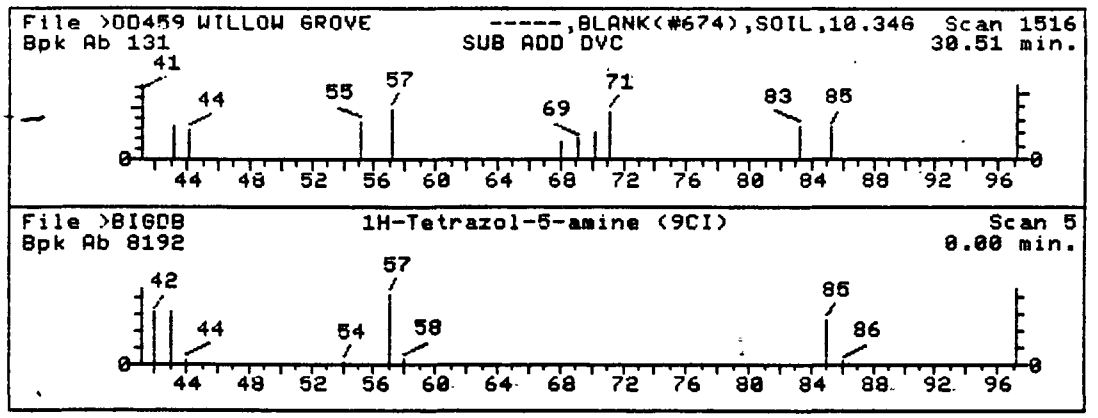
Unknown

Retention time = 28.42

Area = 68121.00 Tentative Concentration is 980.00

Sample file: >DD459 Spectrum #: 1401

No data base entries were retrieved.



Unknown

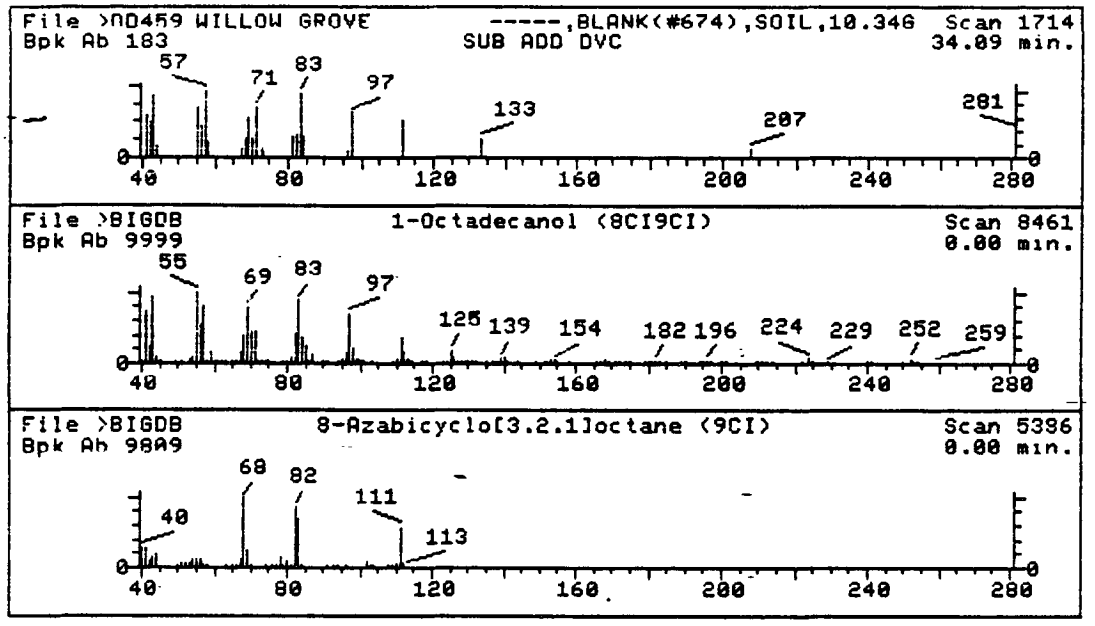
Retention time = 30.51

Area = 9039.00 Tentative Concentration is 640.00

1. 1H-Tetrazol-5-amine (9CI) 85 CH3N5

Sample file: >DD459 Spectrum #: 1516
Search speed: 2 Tilting option: S No. of ion ranges searched: 50

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	11*	4418615	5	"BIGDB	22	103	3	0	68	61	2	1



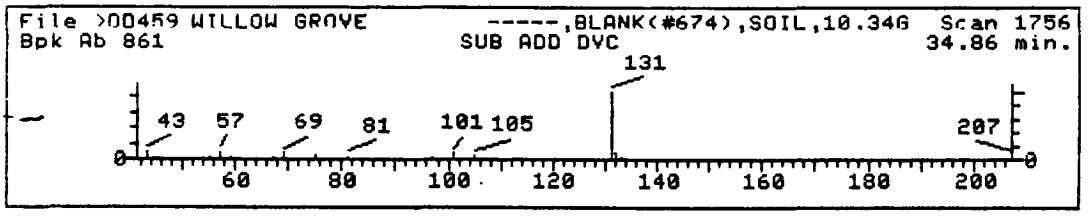
Retention time = 34.09 unknown

Area = 37229.00 Tentative Concentration is 2700.00

1. 1-Octadecanol (8CI9CI) 270 C18H38O
2. 8-Azabicyclo[3.2.1]octane (9CI) 111 C7H13N

Sample file: >DD459 Spectrum #: 1714
Search speed: 2 Tilting option: S No. of ion ranges search d: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	26	112925	8461	"BIGDB	71	99	3	0	74	40	10	1
2.	15*	280057	5386	"BIGDB	23	89	3	0	96	60	3	1



Retention time = 34.86 unknown

Area = 7739.00 Tentative Concentration is 550.00

Sample file: >DD459 Spectrum #: 1756

No data base entries were retrieved.

LIBRARY SEARCH SUMMARY

MS Data File:>DD459::D1 Analyst:BHADRA MS

Name:WILLOW GROVE Date/Time: 5/10/89 14:30
Misc:-----,BLANK(#674),SOIL,10.34G,1 EA#1915 ?96.71? BTL# 5

The following hits are >10% of the nearest ISTD.

Peak # in PBM file	Retention Time	Peak Area	10% of Nearest ISTD Area	
~~1~~	~~4.57~~	~~1092001~~	~~46226~~	2 Fluoro phenol
~~2~~	~~6.24~~	~~1095918~~	~~46226~~	Phenol-ds
~~3~~	~~13.10~~	~~41862~~	~~39279~~	ds
4	13.45	70569	39279	
~~5~~	~~17.81~~	~~391111~~	~~19441~~	2,4,6 Tribromophen
6	28.42	68121	27006	
7	30.51	9039	5425	
8	34.09	37229	5425	
9	34.86	7739	5425	

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: BLANK(#675)
SAMPLE: ------
GC/MS FILE: >DD476::D1
DATE REC'D: N/A
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/11/89 19:30
SAMPLE--->EXTRACT:	10.62G--> 1ml

CAS #		CONC UG/L OR UG/KG
62-75-9	N-Nitrosodimethylamine	940. ND
111-44-4	bis(2-Chloroethyl)ether	940. ND
541-73-1	1,3-Dichlorobenzene	940. ND
106-46-7	1,4-Dichlorobenzene	940. ND
95-50-1	1,2-Dichlorobenzene	940. ND
39638-32-9	bis(2-chloroisopropyl)ether	940. ND
621-64-7	N-Nitroso-Di-n-propylamine	940. ND
67-72-1	Hexachloroethane	940. ND
98-95-3	Nitrobenzene	940. ND
78-59-1	Isophorone	940. ND
111-91-1	bis(2-Chloroethoxy)methane	940. ND
120-82-1	1,2,4-Trichlorobenzene	940. ND
91-20-3	Naphthalene	940. ND
87-68-3	Hexachlorobutadiene	940. ND
77-47-4	Hexachlorocyclopentadiene	940. ND
91-58-7	2-Chloronaphthalene	940. ND
131-11-3	Dimethylphthalate	940. ND
208-96-8	Acenaphthylene	940. ND
83-32-9	Acenaphthene	940. ND
121-14-2	2,4-Dinitrotoluene	940. ND
606-20-2	2,6-Dinitrotoluene	940. ND
84-66-2	Diethylphthalate	940. ND
7005-72-3	4-Chlorophenyl-phenylether	940. ND
86-73-7	Fluorene	940. ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: BLANK(#675)
SAMPLE: ------
GC/MS FILE: >DD476::D1
DATE REC'D: N/A
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/11/89 19:30
SAMPLE--->EXTRACT:	10.62G--> 1ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	940.	ND
101-55-3	4-Bromophenyl-phenylether	940.	ND
118-74-1	Hexachlorobenzene	940.	ND
85-01-8	Phenanthrene	940.	ND
120-12-7	Anthracene	940.	ND
84-74-2	Di-n-Butyl phthalate	940.	ND
206-44-0	Fluoranthene	940.	ND
92-87-5	Benzidine	4700.	ND
129-00-0	Pyrene	940.	ND
85-68-7	Butylbenzylphthalate	940.	ND
91-94-1	3,3'-Dichlorobenzidine	1900.	ND
56-55-3	Benzo(a)Anthracene	940.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	940.	ND
218-01-9	Chrysene	940.	ND
117-84-0	Di-n-Octyl phthalate	940.	ND
205-99-2	Benzo(b)Fluoranthene	940.	ND
205-99-2	Benzo(k)Fluoranthene	940.	ND
50-32-8	Benzo(a)Pyrene	940.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	940.	ND
53-70-3	Dibenzo(a,h)Anthracene	940.	ND
191-24-2	Benzo(g,h,i)Perylene	940.	ND

Qualifier descriptions: ND - Compound analyzed for but not detected
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA Laboratories

Case No: Willow Grove

Sample Number: Blank # 675

EA # 1779-80

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. 57556	1, 2 Propanediol	B/N	2.93	420.00
2. —	Unknown	B/N	13.04	570.00
3. —	Propanoic Acid, 2methyl-	B/N	13.34	880.00
4. —	Unknown	B/N	22.00	730.00
5. —	Unknown	B/N	26.17	660.00
6. —	Unknown alcohol	B/N	28.27	6900.00
7. —	Unknown	B/N	30.35	670.00
8. —	Unknown	B/N	32.15	580.00
9. —	Unknown	B/N	34.02	4800.00
10. —	Unknown	B/N	36.27	1500.00
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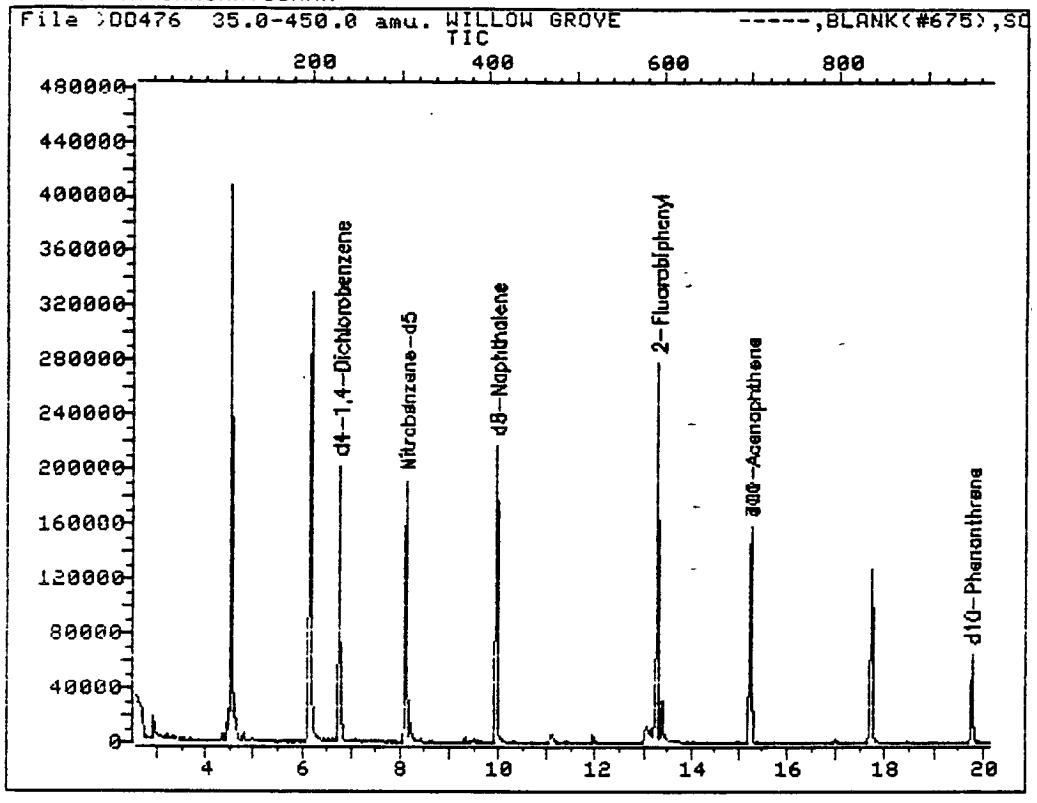
TOTAL ION CHROMATOGRAM



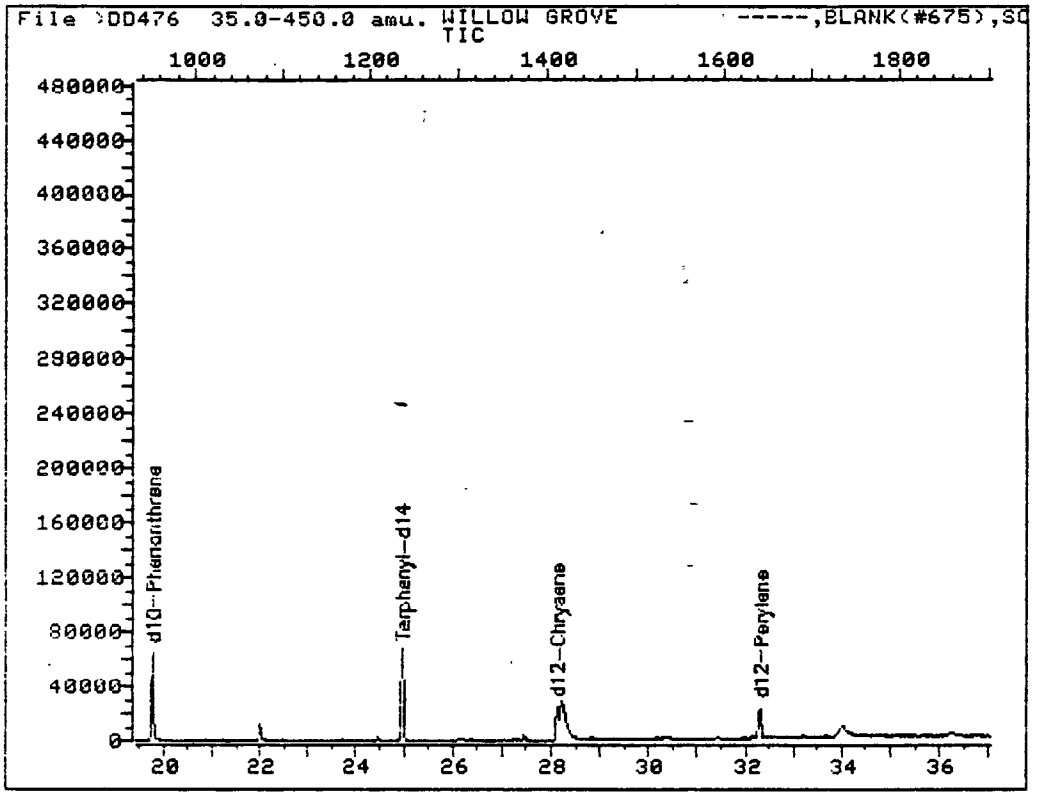
Data File: >DD476::D1 Quant Output File: ^DD476::QT
Name: WILLOW GROVE
Misc: -----,BLANK(#675),SOIL,10.62G,1,EA#1779-80 (94.16) BTL# 4

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

Operator ID: BHADRA
Quant Time: 890511 20:10
Injected at: 890511 19:30

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD476::D1 Quant Output File: ^DD476::QT
Name: WILLOW GROVE
Misc: -----,BLANK(#675),SOIL,10.62G,1,EA#1779-80 (94.16) BTL# 4

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

Operator ID: BHADRA
Quant Time: 890511 20:10
Injected at: 890511 19:30

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890511 20:10
Output File: ^DD476::QT Injected at: 890511 19:30
Data File: >DD476::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: -----,BLANK(#675),SOIL,10.62G,1,EA#1779-80 (94.16) BTL# 4

ID File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

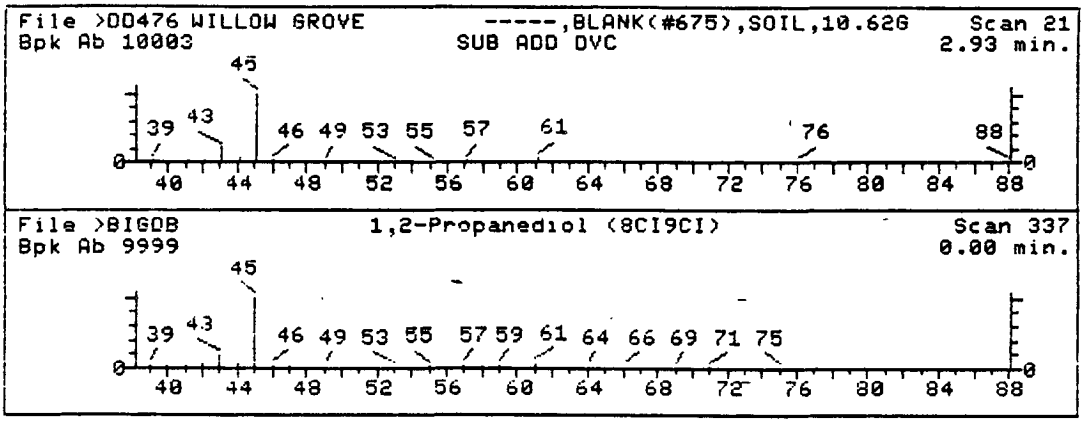
	Compound	R.T.	Q ion	Area	Conc	Units	c
1)	*d4-1,4-Dichlorobenzene	6.76	152.0	80094	40.00	NG	9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG	
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG	
4)	1,3-Dichlorobenzene	0.00	146.0	0	0.00	NG	
5)	1,4-Dichlorobenzene	0.00	146.0	0	0.00	NG	
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG	
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG	
8)	N-Nitroso-Di-n-propylamine	0.00	70.0	0	0.00	NG	
9)	Hexachloroethane	0.00	117.0	0	0.00	NG	
10)	*d8-Naphthalene	9.96	136.0	261951	40.00	NG	8
11)	Nitrobenzene-d5	8.13	82.0	153369	61.71	NG 62%	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG	
13)	Isophorone	0.00	82.0	0	0.00	NG	
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG	
15)	1,2,4-Trichlorobenzene	0.00	180.0	0	0.00	NG	
16)	Naphthalene	0.00	128.0	0	0.00	NG	
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG	
18)	*d10-Acenaphthene	15.25	164.0	88026	40.00	NG	9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG	
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG	
21)	2-Fluorobiphenyl	13.29	172.0	238735	66.30	NG 66%	9
22)	Dimethylphthalate	15.25	163.0	29051	~~9.89~~	~~NG~~	5
23)	Acenaphthylene	0.00	152.0	0	0.00	NG	
24)	Acenaphthene	0.00	153.0	0	0.00	NG	
25)	2,4-Dinitrotoluene	0.00	165.0	0	0.00	NG	
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG	
27)	Diethylphthalate	0.00	149.0	0	0.00	NG	
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG	
29)	Fluorene	0.00	166.0	0	0.00	NG	
30)	*d10-Phenanthrene	19.78	188.0	70063	40.00	NG	9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG	
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG	
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG	
34)	Phenanthrene	0.00	178.0	0	0.00	NG	
35)	Anthracene	0.00	178.0	0	0.00	NG	
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG	
37)	Fluoranthene	0.00	202.0	0	0.00	NG	
38)	Benzidine	0.00	184.0	0	0.00	NG	
39)	*d12-Chrysene	28.12	240.0	24395	40.00	NG	9
40)	Pyrene	0.00	202.0	0	0.00	NG	
41)	Terphenyl-d14	24.97	244.0	71242	80.51	NG 81%	8
42)	Butylbenzylphthalate	0.00	149.0	0	0.00	NG	

QUANT REPORT
page 2

Output File:^DD476:: Data File:>DD476::D1

	Compound	R.T.	Q ion	Area	Conc	Units	q
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	0.00	149.0	0	0.00	NG	
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	32.31	264.0	23955	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD



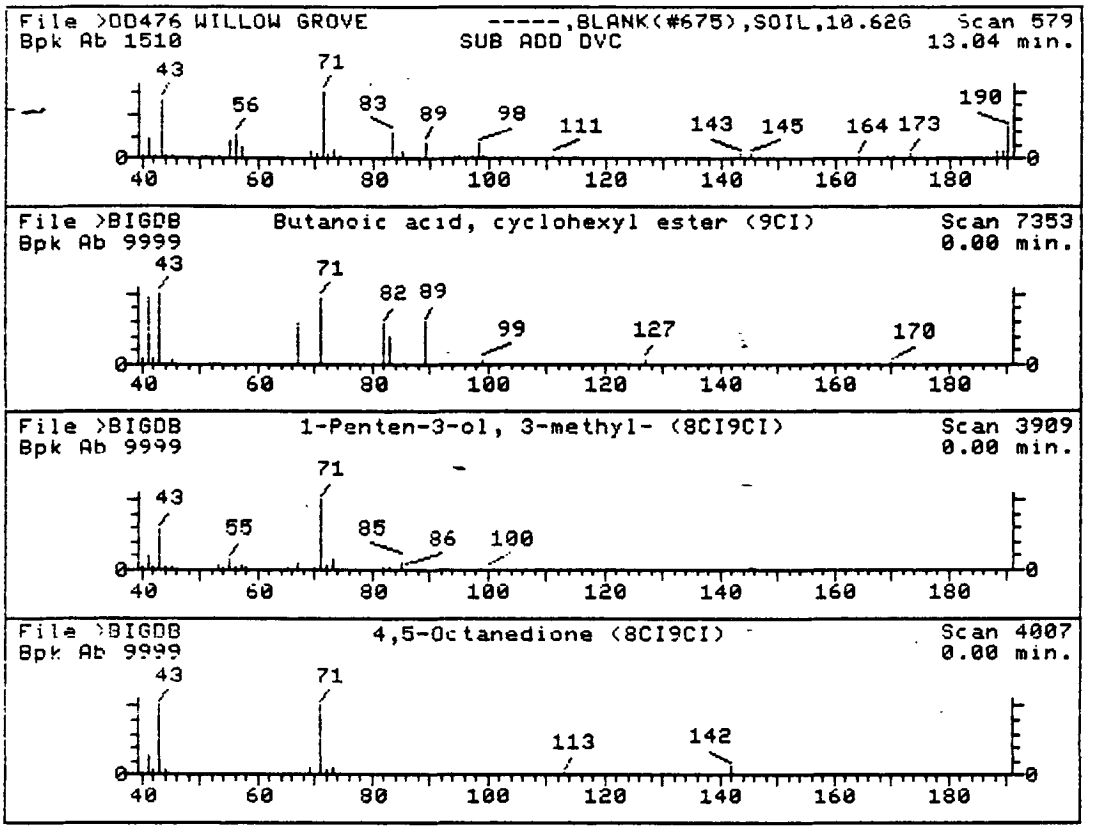
Retention time = 2.93

Area = 59486.00 Tentative Concentration is 420.00

✓ 1. 1,2-Propanediol (8CI9CI) 76 C3H8O2

Sample file: >DD476 Spectrum #: 21
Search speed: 2 Tilting option: S No. of ion ranges searched: 47

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	60	57556	337	"BIGDB	38	45	2	0	100	11	30	1.



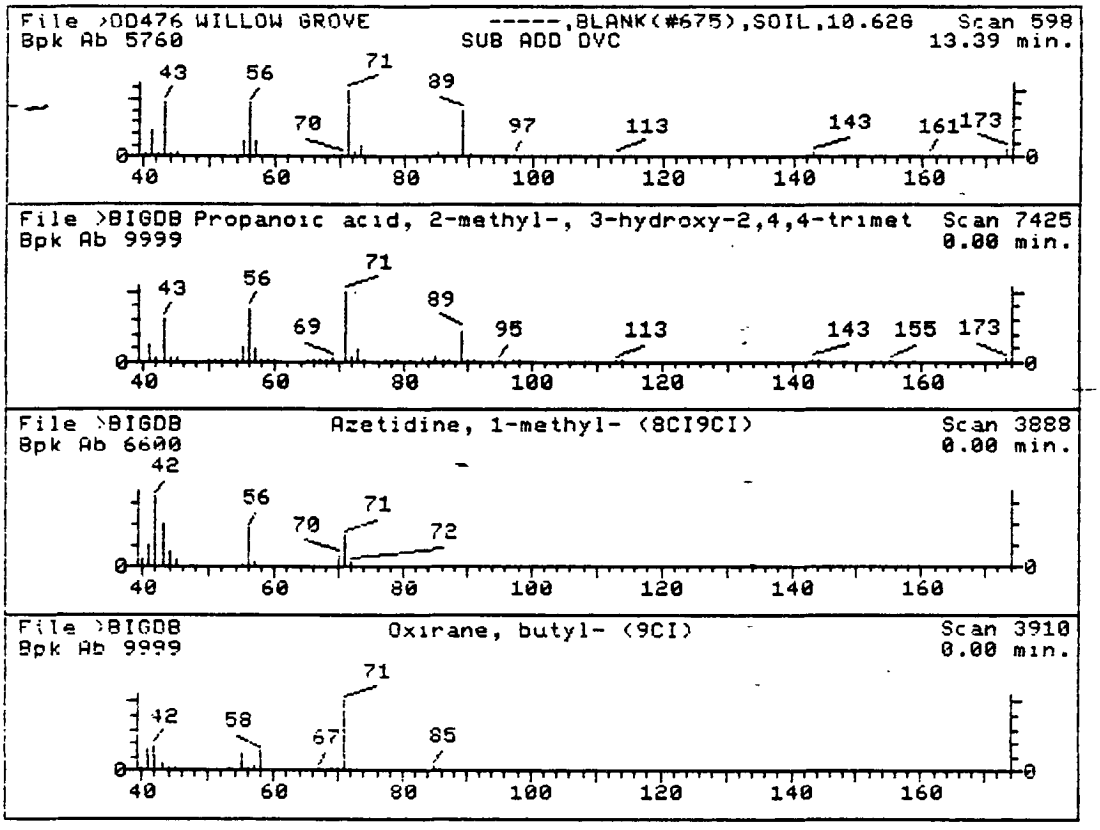
Retention time = 13.04 Unknown

Area = 68044.00 Tentative Concentration is 570.00

1.	Butanoic acid, cyclohexyl ester (9CI)	170	C10H18O2
2.	1-Penten-3-ol, 3-methyl- (8CI9CI)	100	C6H12O
3.	4,5-Octanedione (8CI9CI)	142	C8H14O2
4.	Butane, 2-bromo-2-methyl- (8CI9CI)	150	C5H11Br
5.	Oxirane, butyl- (9CI)	100	C6H12O
6.	Cyclopropane, 1,1,2,3-tetramethyl- (9CI)	98	C7H14
7.	Butyric acid, ester with p-hydroxybenzonitrile (8CI)	189	C11H11NO2

Sample file: >DD476 Spectrum #: 579
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	26*	1551446	7353	"BIGDB	23	87	3	0	88	38	10	1
2.	11	918854	3909	"BIGDB	39	44	2	0	69	64	2	1
3.	11	5455243	4007	"BIGDB	35	41	2	0	88	65	2	1
4.	11	507368	3882	"BIGDB	35	43	2	0	97	65	2	1
5.	11	1436346	3910	"BIGDB	39	48	2	0	99	65	2	1
6.	11*	74752935	8532	"BIGDB	34	67	2	0	69	65	2	1
7.	11*	29052106	3974	"BIGDB	23	70	2	0	100	64	2	1



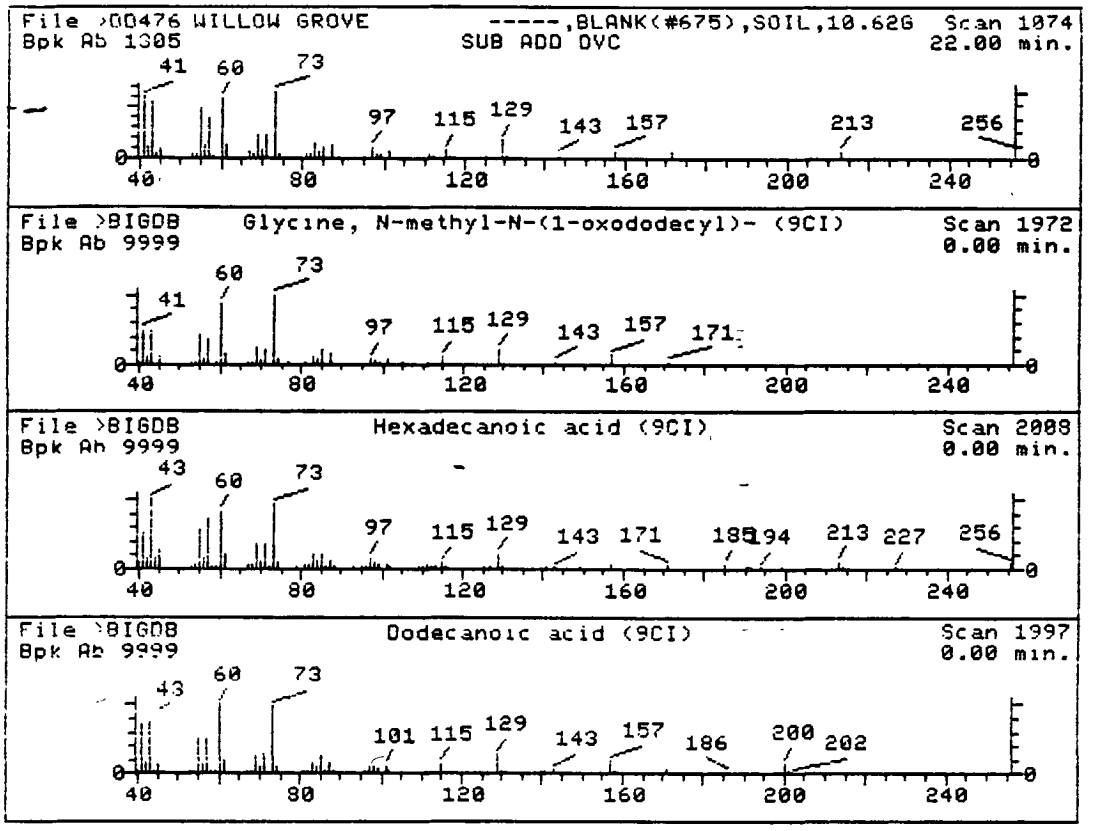
Retention time = 13.39 Unknown

Area = 104056.0 Tentative Concentration is 880.00

1. Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethyl pentyl ester (9CI) 216 C12H2403
2. Azetidine, 1-methyl- (8CI9CI) 71 C4H9N
3. Oxirane, butyl- (9CI) 100 C6H12O
4. Oxetane, 2,3,4-trimethyl-, (2.alpha.,3.alpha.,4.beta.)- (9CI) 100 C6H12O
5. Butane, 2-bromo-2-methyl- (8CI9CI) 150 C5H11Br

Sample file: >DD476 Spectrum #: 598
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	36	74367343	7425	"BIGDB	62	54	1	0	69	31	12	1
2.	25*	4923799	3888	"BIGDB	23	78	2	0	137	45	8	1
3.	15	1436346	3910	"BIGDB	38	49	2	0	85	60	3	1
4.	11	32347129	957	"BIGDB	35	42	2	0	54	64	2	1
5.	11	507368	3882	"BIGDB	35	43	2	0	83	61	2	1



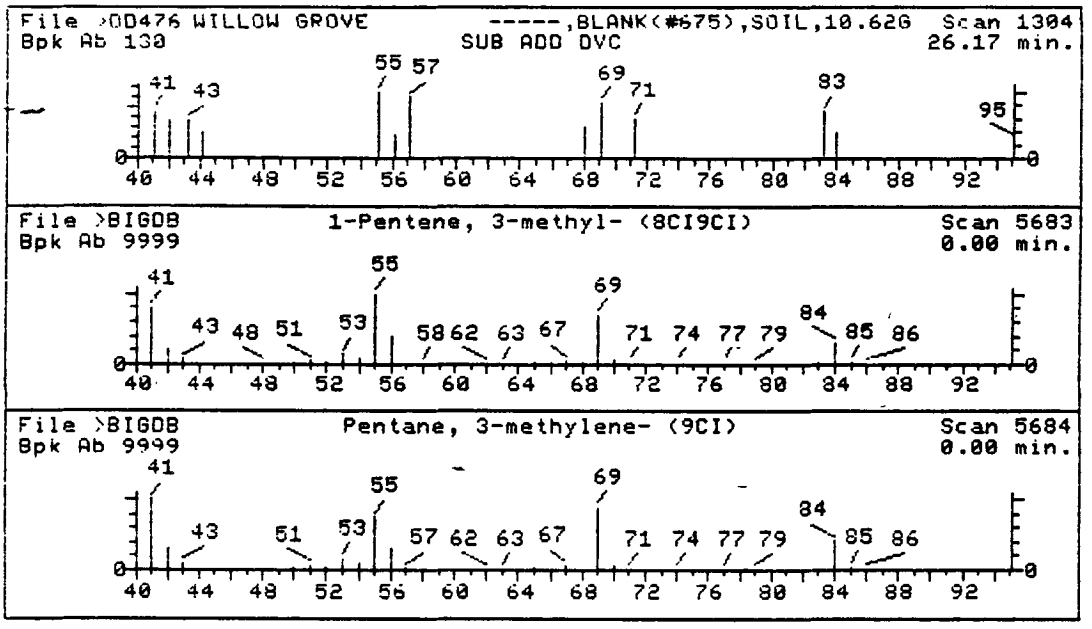
Retention time = 22.00 unknown

Area = 38573.00 Tentative Concentration is 730.00

1. Glycine, N-methyl-N-(1-oxododecyl)- (9CI)	271	C15H29NO3
2. Hexadecanoic acid (9CI)	256	C16H32O2
3. Dodecanoic acid (9CI)	200	C12H24O2
4. Dodecanamide, N,N-bis(2-hydroxyethyl)- (8CI9CI)	287	C16H33NO3
5. Pentadecanoic acid (8CI9CI)	242	C15H30O2
6. Tetradecanoic acid (9CI)	228	C14H28O2
7. Heptanoic acid (8CI9CI)	130	C7H14O2

Sample file: >DD476 Spectrum #: 1074
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	68	97789	1972	"BIGDB	79	71	0	0	91	23	30	5
2.	66*	57103	2008	"BIGDB	78	73	3	0	83	16	31	4
3.	60	143077	1997	"BIGDB	79	59	3	0	90	11.	30	1
4.	55	120401	1984	"BIGDB	95	58	1	2	81	36	19	4
5.	52	1002842	2007	"BIGDB	89	61	3	0	83	19	20	1
6.	41	544638	2005	"BIGDB	70	76	3	0	98	22	17	1
7.	27*	111148	1881	"BIGDB	36	61	2	0	66	41	8	1



unknown

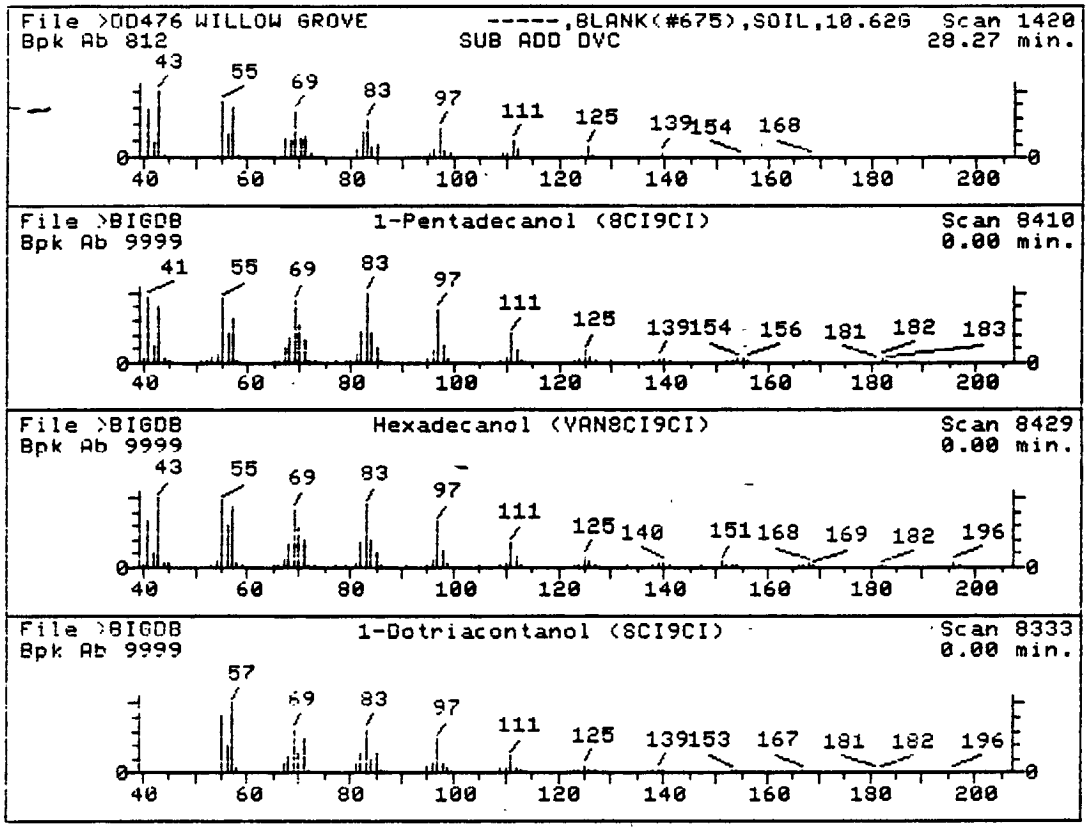
Retention time = 26.17

Area = 14325.00 Tentative Concentration is 660.00

1. 1-Pentene, 3-methyl- (8CI9CI) 84 C6H12
2. Pentane, 3-methylene- (9CI) 84 C6H12

Sample file: >DD476 Spectrum #: 1304
Search speed: 2 Tilting option: S No. of ion ranges search d: 50

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	11*	760203	5683	"BIGDB	37	60	3	0	88	65	2	1
2.	11*	760214	5684	"BIGDB	24	78	3	0	69	65	2	1



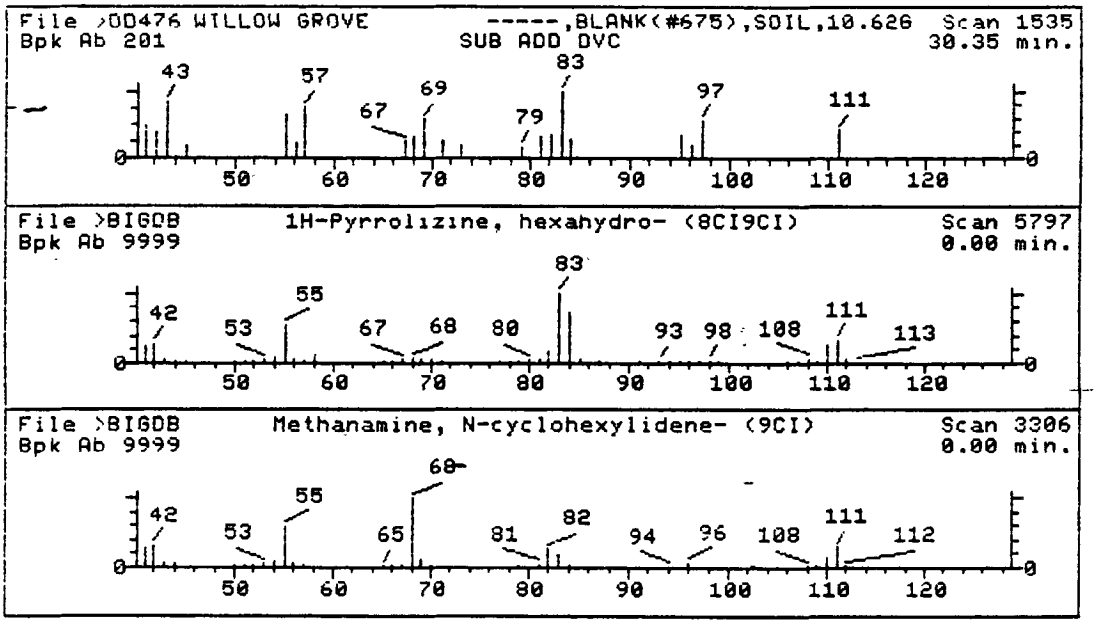
Retention time = 28.27 Unknown Alcohol

Area = 151151.0 Tentative Concentration is 6900.00

1.	1-Pentadecanol (8CI9CI)	228	C15H32O
2.	Hexadecanol (VAN8CI9CI)	242	C16H34O
3.	1-Dotriacontanol (8CI9CI)	466	C32H66O
4.	5-Eicosene, (E)- (9CI)	280	C20H40
5.	11-Tricosene (9CI)	322	C23H46
6.	3-Eicosene, (E)- (9CI)	280	C20H40
7.	Cyclododecane (8CI9CI)	168	C12H24

Sample file: >DD476 Spectrum #: 1420
Search speed: 2 Tilting option: S No. of ion ranges search d: 60

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	78	629765	8410	"BIGDB	80	83	3	0	57	5	55	1
2.	78	29354981	8429	"BIGDB	85	82	3	0	63	5	55	1
3.	76	6624799	8333	"BIGDB	107	74	3	0	76	10	45	2
4.	67	74685306	8337	"BIGDB	129	26	2	-1	66	26	27	5
5.	64	52078565	8318	"BIGDB	117	35	2	-2	70	23	28	4
6.	64	74685339	8338	"BIGDB	122	44	2	-1	50	21	28	4
7.	51*	294622	3799	"BIGDB	63	57	3	0	84	28	24	3



Unknown

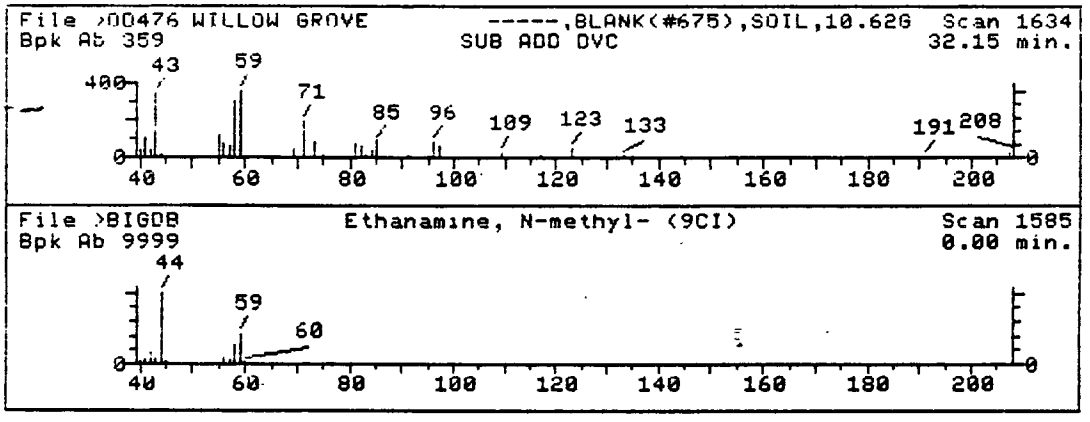
Retention time = 30.35

Area = 13445.00 Tentative Concentration is 670.00

1. 1H-Pyrrolizine, hexahydro- (8CI9CI) 111 C7H13N
2. Methanamine, N-cyclohexylidene- (9CI) 111 C7H13N

Sample file: >DD476 Spectrum #: 1535
Search speed: 2 Tilting option: S No. of ion ranges searched: 49

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	25*	643209	5797	"BIGDB	31	74	3	0	100	50	7	1
2.	11*	6407358	3306	"BIGDB	29	70	3	0	111	64	2	1



Unknown

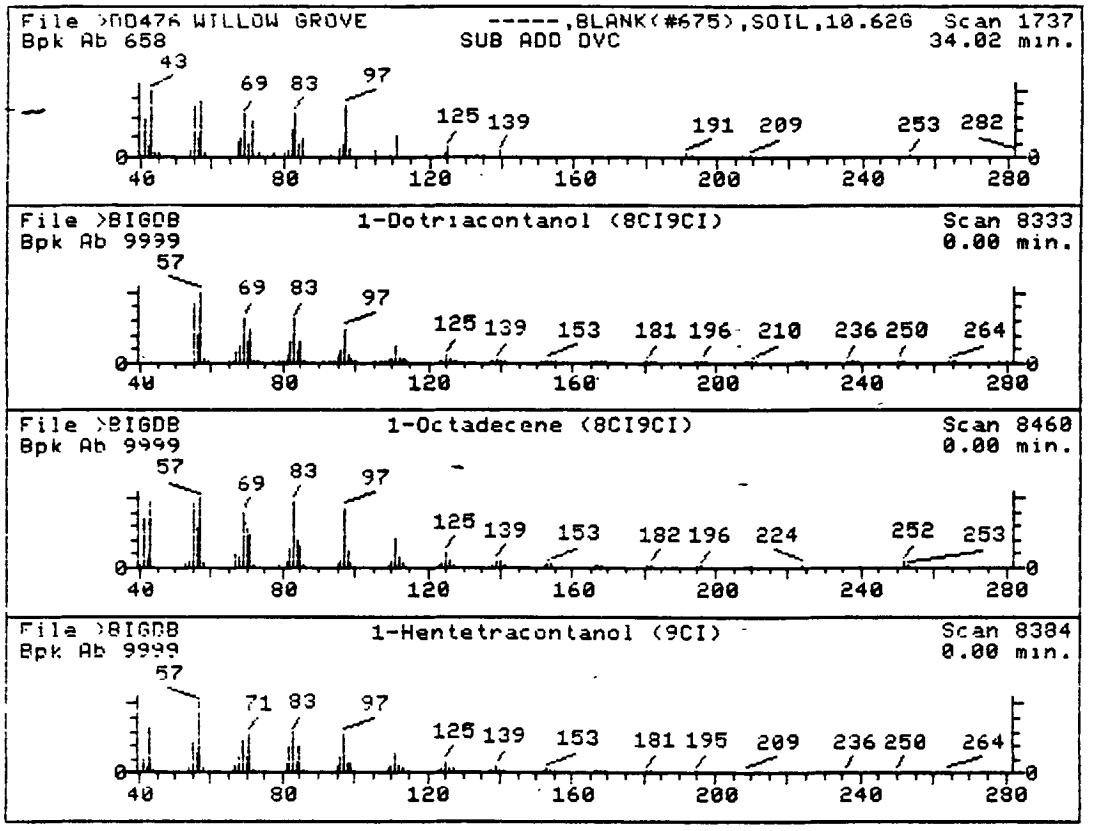
Retention time = 32.15

Area = 11607.00 Tentative Concentration is 580.00

1. Ethanamine, N-methyl- (9CI) 59 C3H9N

Sample file: >DD476 Spectrum #: 1634
Search speed: 2 Tilting option: S No. of ion ranges searched: 48

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	25*	624782	1585	"BIGDB	26	54	3	0	238	43	8	1



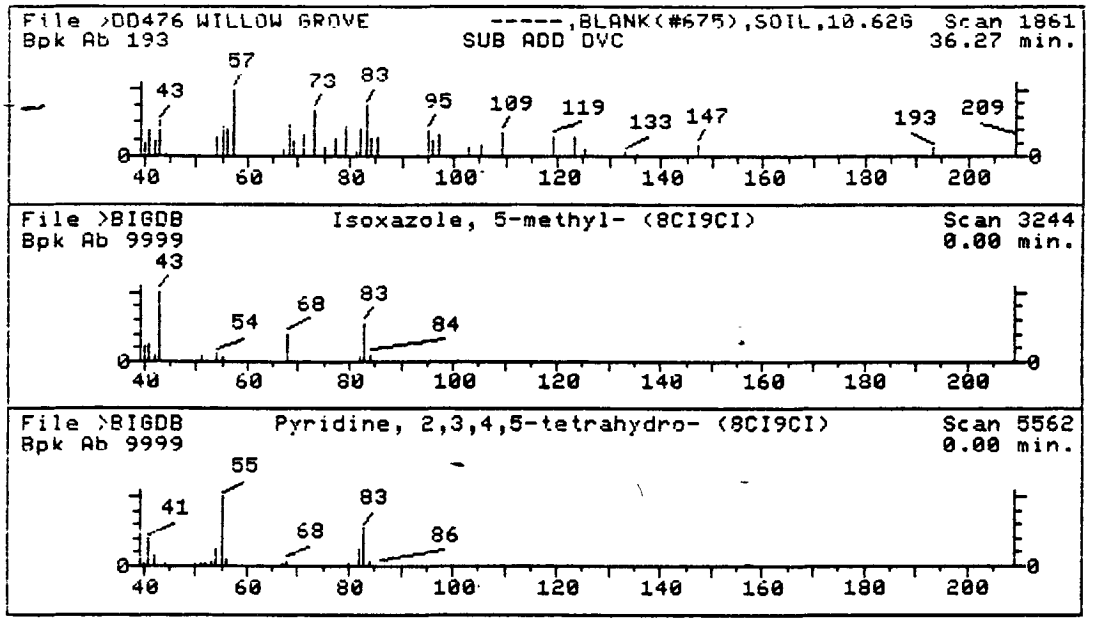
Retention time = 34.02 unknown.

Area = 96688.00 Tentative Concentration is 4800.00

1. 1-Dotriacontanol (8CI9CI)	466	C32H66O
2. 1-Octadecene (8CI9CI)	252	C18H36
3. 1-Hentetracontanol (9CI)	592	C41H84O
4. 1H-1,2,4-Triazole, 1-ethyl- (8CI9CI)	97	C4H7N3
5. Phosphonic acid, dioctadecyl ester (8CI9CI)	586	C36H75O3P
6. Cyclopentane, 1,1'-ethylidenebis- (9CI)	166	C12H22
7. Hexadecane, 1,1-bis(dodecyloxy)- (9CI)	594	C40H82O2

Sample file: >DD476 Spectrum #: 1737
Search speed: 2 Tilting option: S No. of ion ranges searched: 54

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	57	6624799	8333	"BIGDB	109	72	2	-2	60	28	24	3
2.	37	112889	8460	"BIGDB	79	93	3	0	69	28	14	1
3.	31	40710427	8384	"BIGDB	80	115	3	0	82	33	12	1
4.	25*	16778704	8219	"BIGDB	36	60	3	0	77	43	8	1
5.	25	19047859	8329	"BIGDB	84	116	3	0	70	48	7	1
6.	25	4413212	8238	"BIGDB	53	46	2	0	68	48	7	1
7.	20	56554644	5501	"BIGDB	70	123	3	0	86	51	5	1



unknown

Retention time = 36.27

Area = 30150.00 Tentative Concentration is 1500.00

1. Isoxazole, 5-methyl- (8CI9CI) 83 C4H5NO
2. Pyridine, 2,3,4,5-tetrahydro- (8CI9CI) 83 C5H9N

Sample file: >DD476 Spectrum #: 1861
Search speed: 2 Tilting option: S No. of ion ranges searched: 56

	Prob.	CAS #	CON #	ROOT	K	DK	#FLG	TILT	%	CON	C_I	R_I
1.	25*	5765446	3244	"BIGDB	23	62	2	0	96	48	7	1
2.	11*	505180	5562	"BIGDB	27	66	3	0	97	62	2	1

LIBRARY SEARCH SUMMARY

MS Data File:>DD476::D1 Analyst:BHADRA MS

Name:WILLOW GROVE Date/Time: 5/11/89 19:30
Misc:-----,BLANK(#675),SOIL,10.62G,1,EA#1779-80 ?94.16? BTL# 4

The following hits are >10% of the nearest ISTD.

Peak # in PBM file	Retention Time	Peak Area	10% of Nearest ISTD Area	
1	2.93	59486	53060	
~~2~~	~~4.55~~	~~1064724~~	~~53060~~	2Fluorophenol
~~3~~	~~6.18~~	~~1145511~~	~~53060~~	Phenol-d5
4	13.04	68044	44743	
5	13.39	104056	44743	
~~6~~	~~17.73~~	~~379413~~	~~19901~~	2,4,6 Tribromophe
7	22.00	38573	19901	
8	26.17	14325	8217	
9	28.27	151151	8217	
10	30.35	13445	7593	
11	32.15	11607	7593	
12	34.02	96688	7593	
13	36.27	30150	7593	

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: BLANK(#638)
SAMPLE: ------
GC/MS FILE: >DD526::D1
DATE REC'D: N/A
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	WATER
DATE EXTRACTED:	04/22/89
DATE ANALYZED:	05/18/89 21:35
SAMPLE--->EXTRACT:	1000ml--> 2ml

CAS #		CONC UG/L OR UG/KG	
62-75-9	N-Nitrosodimethylamine	10.	ND
111-44-4	bis(2-Chloroethyl)ether	10.	ND
541-73-1	1,3-Dichlorobenzene	10.	ND
106-46-7	1,4-Dichlorobenzene	10.	ND
95-50-1	1,2-Dichlorobenzene	10.	ND
39638-32-9	bis(2-chloroisopropyl)ether	10.	ND
621-64-7	N-Nitroso-Di-n-propylamine	10.	ND
67-72-1	Hexachloroethane	10.	ND
98-95-3	Nitrobenzene	10.	ND
78-59-1	Isophorone	10.	ND
111-91-1	bis(2-Chloroethoxy)methane	10.	ND
120-82-1	1,2,4-Trichlorobenzene	10.	ND
91-20-3	Naphthalene	10.	ND
87-68-3	Hexachlorobutadiene	10.	ND
77-47-4	Hexachlorocyclopentadiene	10.	ND
91-58-7	2-Chloronaphthalene	10.	ND
131-11-3	Dimethylphthalate	10.	ND
208-96-8	Acenaphthylene	10.	ND
83-32-9	Acenaphthene	10.	ND
121-14-2	2,4-Dinitrotoluene	10.	ND
606-20-2	2,6-Dinitrotoluene	10.	ND
84-66-2	Diethylphthalate	10.	ND
7005-72-3	4-Chlorophenyl-phenylether	10.	ND
86-73-7	Fluorene	10.	ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: BLANK(#638)
SAMPLE: ------
GC/MS FILE: >DD526::D1
DATE REC'D: N/A
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	WATER
DATE EXTRACTED:	04/22/89
DATE ANALYZED:	05/18/89 21:35
SAMPLE--->EXTRACT:	1000ml--> 2ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	10.	ND
101-55-3	4-Bromophenyl-phenylether	10.	ND
118-74-1	Hexachlorobenzene	10.	ND
85-01-8	Phenanthrene	10.	ND
120-12-7	Anthracene	10.	ND
84-74-2	Di-n-Butyl phthalate	10.	ND
206-44-0	Fluoranthene	10.	ND
92-87-5	Benzidine	50.	ND
129-00-0	Pyrene	10.	ND
85-68-7	Butylbenzylphthalate	10.	ND
91-94-1	3,3'-Dichlorobenzidine	20.	ND
56-55-3	Benzo(a)Anthracene	10.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	10.	ND
218-01-9	Chrysene	10.	ND
117-84-0	Di-n-Octyl phthalate	10.	ND
205-99-2	Benzo(b)Fluoranthene	10.	ND
205-99-2	Benzo(k)Fluoranthene	10.	ND
50-32-8	Benzo(a)Pyrene	10.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	10.	ND
53-70-3	Dibenzo(a,h)Anthracene	10.	ND
191-24-2	Benzo(g,h,i)Perylene	10.	ND

Qualifier descriptions: ND - Compound analyzed for but not detected
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA. Laboratories
Case No: Willow Grove

Sample Number
Blank # 638
EA# 1781

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. —	No Semivol. Comp. found	B/N.	—	—
2.				
3.				
4.				
5.				
6.				
7.				
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9.				
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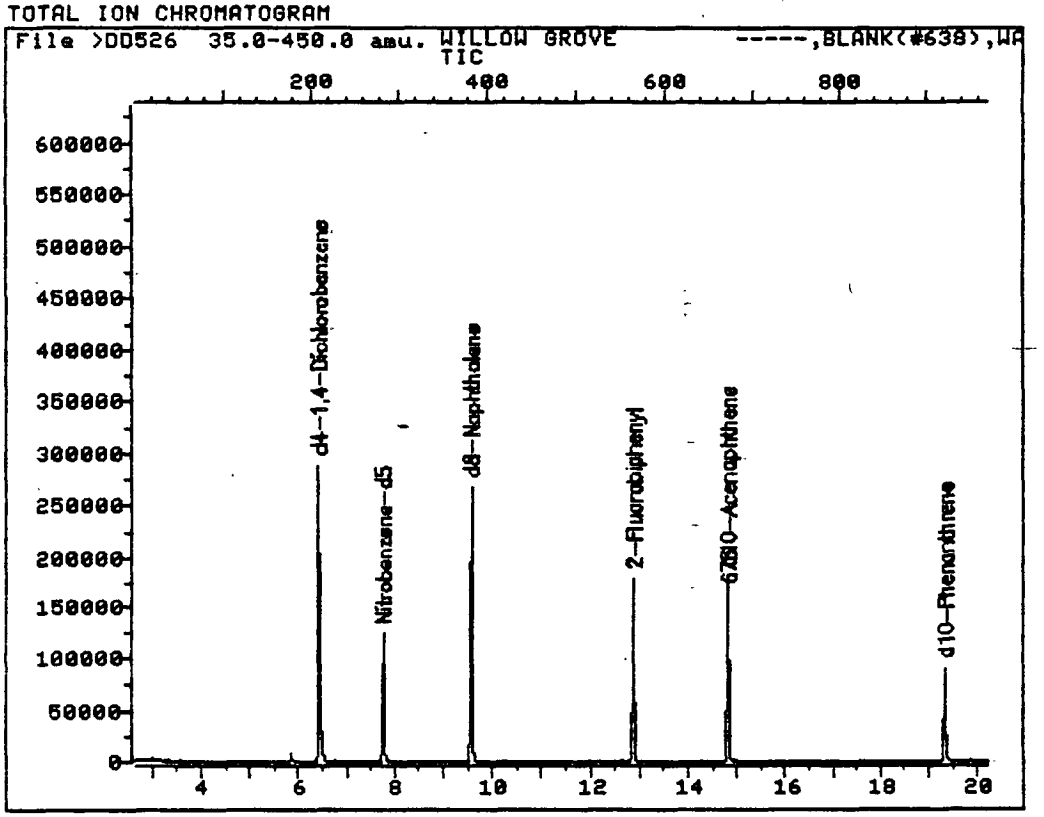
24.				
25.				
26.				
27.				
28.				
29.				
30.				

TOTAL ION CHROMATOGRAM



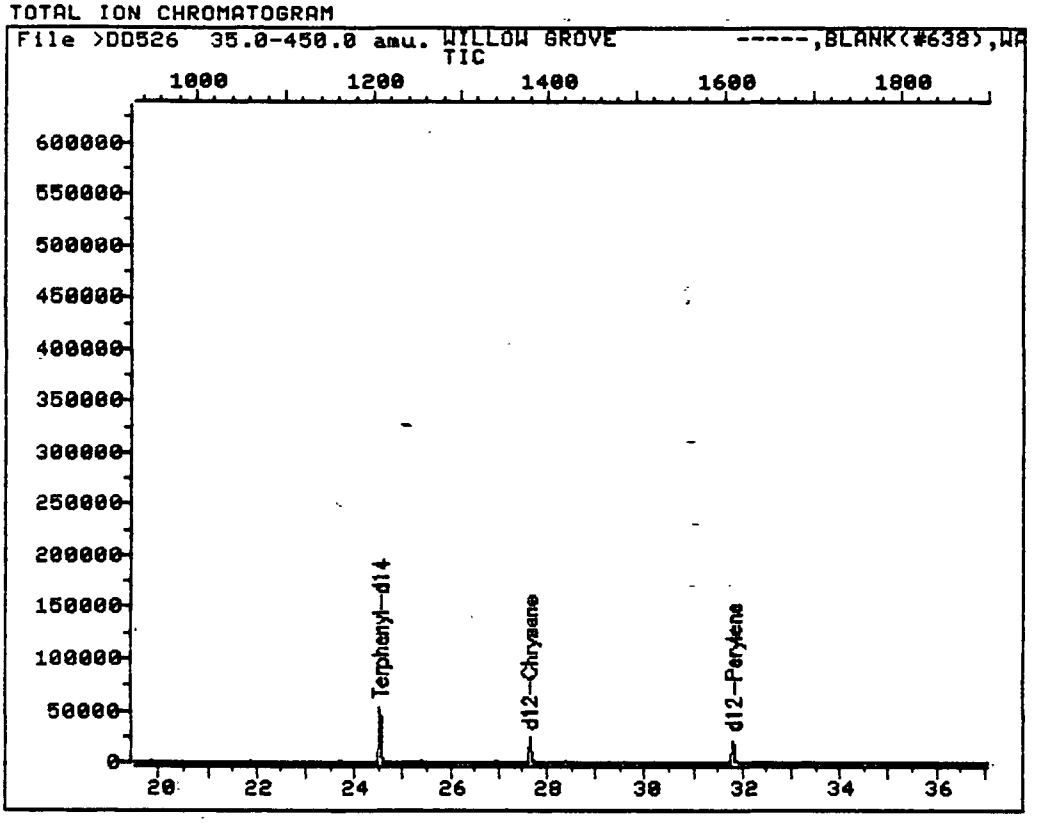
Data File: >DD526::D1 Quant Output File: ^DD526::QT
Name: WILLOW GROVE
Misc: -----,BLANK(#638),WATER,1000ml,2 EA#1781 (2) BTL# 7

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890518 17:38

Operator ID: BHADRA
Quant Time: 890518 22:15
Injected at: 890518 21:35

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD526::D1 Quant Output File: ^DD526::QT
Name: WILLOW GROVE
Misc: -----,BLANK(#638),WATER,1000ml,2 EA#1781 (2) BTL# 7

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890518 17:38

Operator ID: BHADRA
Quant Time: 890518 22:15
Injected at: 890518 21:35

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890518 22:15
Output File: ^DD526::QT Injected at: 890518 21:35
Data File: >DD526::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: -----,BLANK(#638),WATER,1000ml,2 EA#1781 (2) BTL# 7

ID File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890518 17:38

	Compound	R.T.	Q ion	Area	Conc	Units		a
1)	*d4-1,4-Dichlorobenzene	6.44	152.0	104538	40.00	NG		9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG		
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG		
4)	1,3-Dichlorobenzene	0.00	146.0	0	0.00	NG		
5)	1,4-Dichlorobenzene	0.00	146.0	0	0.00	NG		
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG		
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG		
8)	N-Nitroso-Di-n-propylamine	0.00	70.0	0	0.00	NG		
9)	Hexachloroethane	0.00	117.0	0	0.00	NG		
10)	*d8-Naphthalene	9.59	136.0	318994	40.00	NG		8
11)	Nitrobenzene-d5	7.78	82.0	91936	32.15	NG	✓646	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG		
13)	Isophorone	0.00	82.0	0	0.00	NG		
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG		
15)	1,2,4-Trichlorobenzene	0.00	180.0	0	0.00	NG		
16)	Naphthalene	0.00	128.0	0	0.00	NG		
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG		
18)	*d10-Acenaphthene	14.82	164.0	106772	40.00	NG		9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG		
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG		
21)	2-Fluorobiphenyl	12.88	172.0	139872	38.99	NG	✓786	9
22)	Dimethylphthalate	14.84	163.0	34448	~~9.38~~	~~NG~~		5
23)	Acenaphthylene	0.00	152.0	0	0.00	NG		
24)	Acenaphthene	0.00	153.0	0	0.00	NG		
25)	2,4-Dinitrotoluene	0.00	165.0	0	0.00	NG		
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG		
27)	Diethylphthalate	0.00	149.0	0	0.00	NG		
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG		
29)	Fluorene	0.00	166.0	0	0.00	NG		
30)	*d10-Phenanthrene	19.34	188.0	98750	40.00	NG		9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG		
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG		
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG		
34)	Phenanthrene	0.00	178.0	0	0.00	NG		
35)	Anthracene	0.00	178.0	0	0.00	NG		
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG		
37)	Fluoranthene	0.00	202.0	0	0.00	NG		
38)	Benzidine	0.00	184.0	0	0.00	NG		
39)	*d12-Chrysene	27.63	240.0	31203	40.00	NG		9
40)	Pyr ne	0.00	202.0	0	0.00	NG		
41)	Terph nyl-d14	24.52	244.0	53866	57.80	NG	✓116	8
42)	Butylbenzylphthalate	0.00	149.0	0	0.00	NG		

QUANT REPORT
page 2

Output File:^DD526:: Data File:>DD526::D1

	Compound	R.T.	Q ion	Area	Conc	Units	q
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	0.00	149.0	0	0.00	NG	
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	31.80	264.0	29332	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1779(MS)
SAMPLE: NFFW-5.S-2
GC/MS FILE: >DD478::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/11/89 21:10
SAMPLE--->EXTRACT:	10.24G--> 1ml

CAS #		CONC UG/L OR UG/KG	
62-75-9	N-Nitrosodimethylamine	1200.	ND
111-44-4	bis(2-Chloroethyl)ether	1200.	ND
541-73-1	1,3-Dichlorobenzene	1200.	ND
106-46-7	1,4-Dichlorobenzene	9400.	
95-50-1	1,2-Dichlorobenzene	1200.	ND
39638-32-9	bis(2-chloroisopropyl)ether	1200.	ND
621-64-7	N-Nitroso-Di-n-propylamine	12000.	
67-72-1	Hexachloroethane	1200.	ND
98-95-3	Nitrobenzene	1200.	ND
78-59-1	Isophorone	1200.	ND
111-91-1	bis(2-Chloroethoxy)methane	1200.	ND
120-82-1	1,2,4-Trichlorobenzene	10000.	
91-20-3	Naphthalene	1200.	ND
87-68-3	Hexachlorobutadiene	1200.	ND
77-47-4	Hexachlorocyclopentadiene	1200.	ND
91-58-7	2-Chloronaphthalene	1200.	ND
131-11-3	Dimethylphthalate	1200.	ND
208-96-8	Acenaphthylene	1200.	ND
83-32-9	Acenaphthene	11000.	
121-14-2	2,4-Dinitrotoluene	11000.	
606-20-2	2,6-Dinitrotoluene	1200.	ND
84-66-2	Diethylphthalate	1200.	ND
7005-72-3	4-Chlorophenyl-phenylether	1200.	ND
86-73-7	Fluorene	1200.	ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1779(MS)
SAMPLE: NFFW-5.S-2
GC/MS FILE: >DD478::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/11/89 21:10
SAMPLE--->EXTRACT:	10.24G--> 1ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	1200.	ND
101-55-3	4-Bromophenyl-phenylether	1200.	ND
118-74-1	Hexachlorobenzene	1200.	ND
85-01-8	Phenanthrene	1200.	ND
120-12-7	Anthracene	1200.	ND
84-74-2	Di-n-Butyl phthalate	1200.	ND
206-44-0	Fluoranthene	1200.	ND
92-87-5	Benzidine	5900.	ND
129-00-0	Pyrene	10000.	
85-68-7	Butylbenzylphthalate	1200.	ND
91-94-1	3,3'-Dichlorobenzidine	2300.	ND
56-55-3	Benzo(a)Anthracene	1200.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	1200.	ND
218-01-9	Chrysene	1200.	ND
117-84-0	Di-n-Octyl phthalate	1200.	ND
205-99-2	Benzo(b)Fluoranthene	1200.	ND
205-99-2	Benzo(k)Fluoranthene	1200.	ND
50-32-8	Benzo(a)Pyrene	1200.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	1200.	ND
53-70-3	Dibenzo(a,h)Anthracene	1200.	ND
191-24-2	Benzo(g,h,i)Perylene	1200.	ND

Qualifier descriptions: ND - Compound analyzed for but not detected
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA Laboratories.
Case No: Willow Grove

Sample Number
NFFW-5.5-2
EA#1779 MS

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. —	not required.	B/N	—	—
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
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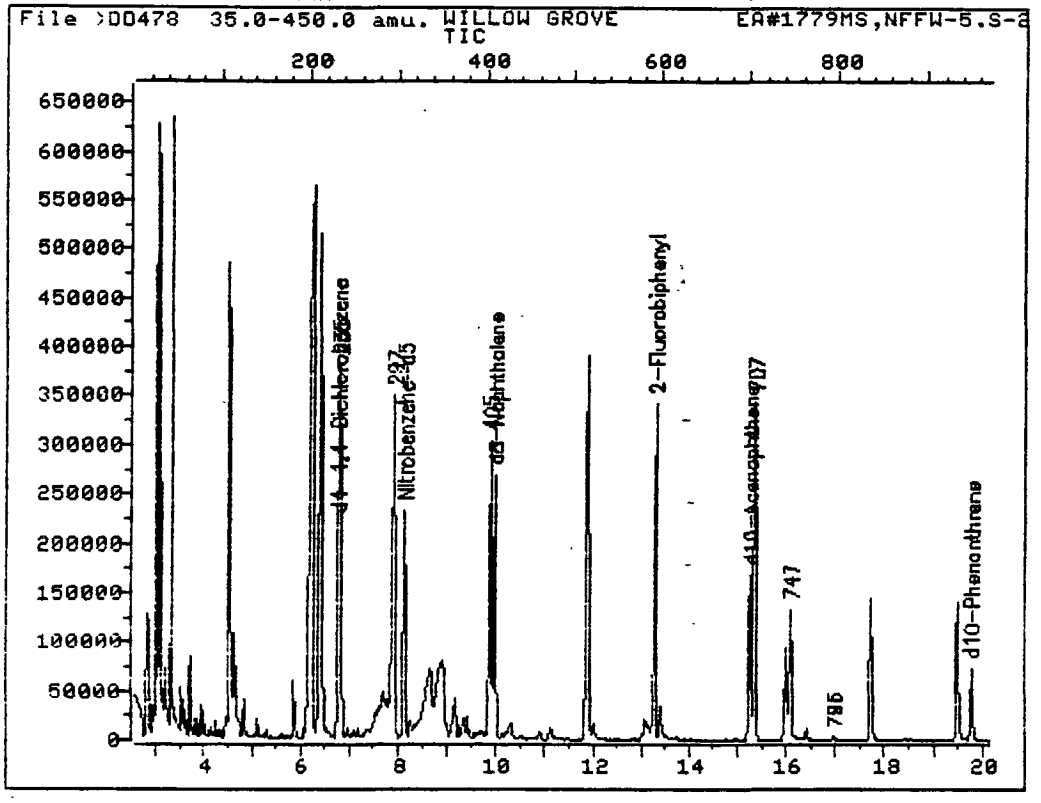
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

TOTAL ION CHROMATOGRAM



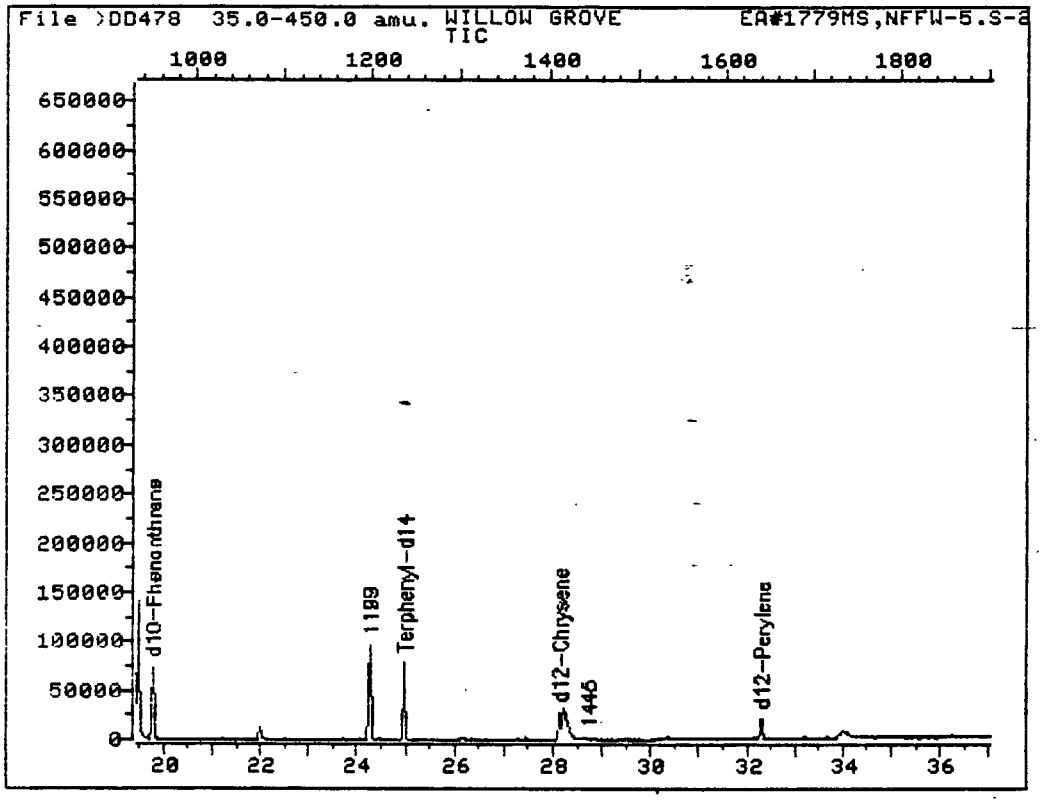
Data File: >DD478::D1 Quant Output File: ^DD478::QT
Name: WILLOW GROVE
Misc: EA#1779MS,NFFW-5.S-2,SOIL,10.24G,1, WILLOW (97.66) BTL# 6

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

Operator ID: BHADRA
Quant Time: 890511 21:50
Injected at: 890511 21:10

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD478::D1 Quant Output File: ^DD478::QT
Name: WILLOW GROVE
Misc: EA#1779MS,NFFW-5.S-2,SOIL,10.24G,1, WILLOW <97.66> BTL# 6

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

Operator ID: BHADRA
Quant Time: 890511 21:50
Injected at: 890511 21:10

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890511 21:50
Output File: ^DD478::QT Injected at: 890511 21:10
Data File: >DD478::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: EA#1779MS,NFFW-5.S-2,SOIL,10.24G,1, WILLOW (97.66) BTL# 6

ID Fil : IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

	Compound	R.T.	Q ion	Area	Conc	Units	
1)	*d4-1,4-Dichlorobenzene	6.77	152.0	81776	40.00	NG	9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG	
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG	
4)	1,3-Dichlorobenzene	6.80	146.0	227158	~~80.30~~	~~NG~~	9
5)	1,4-Dichlorobenzene	6.80	146.0	227158	79.94	NG	9
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG	
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG	
8)	N-Nitroso-Di-n-propylamine	7.93	70.0	203349	105.68	NG	8
9)	Hexachloroethane	0.00	117.0	0	0.00	NG	
10)	*d8-Naphthalene	9.98	136.0	286858	40.00	NG	8
11)	Nitrobenzene-d5	8.14	82.0	200759	73.77	NG 74%	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG	
13)	Isophorone	0.00	82.0	0	0.00	NG	
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG	
15)	1,2,4-Trichlorobenzene	9.89	180.0	188764	88.10	NG	9
16)	Naphthalene	0.00	128.0	0	0.00	NG	
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG	
18)	*d10-Acenaphthene	15.25	164.0	97049	40.00	NG	9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG	
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG	
21)	2-Fluorobiphenyl	13.29	172.0	292527	73.68	NG 74%	9
22)	Dimethylphthalate	0.00	163.0	0	0.00	NG	
23)	Acenaphthylene	15.36	152.0	119816	~~28.99~~	~~NG~~	c
24)	Acenaphthene	15.36	153.0	255396	90.62	NG	9
25)	2,4-Dinitrotoluene	16.09	165.0	68399	94.85	NG	8
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG	
27)	Diethylphthalate	16.97	149.0	730	~~.20~~	~~NG~~	8
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG	
29)	Fluorene	0.00	166.0	0	0.00	NG	
30)	*d10-Phenanthrene	19.78	188.0	81378	40.00	NG	9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG	
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG	
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG	
34)	Phenanthrene	0.00	178.0	0	0.00	NG	
35)	Anthracene	0.00	178.0	0	0.00	NG	
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG	
37)	Fluoranthene	24.27	202.0	120016	~~90.94~~	~~NG~~	9
38)	Benzidine	0.00	184.0	0	0.00	NG	
39)	*d12-Chrysene	28.13	240.0	27322	40.00	NG	9
40)	Pyrene	24.27	202.0	120016	89.55	NG	9
41)	Terphenyl-d14	24.98	244.0	75616	76.30	NG 76%	8
42)	Butylbenzylphthalate	0.00	149.0	0	0.00	NG	

QUANT REPORT
page 2

Output File:^DD478:: Data File:>DD478::D1

	Compound	R.T.	Q ion	Area	Conc	Units	q
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	28.73	149.0	1072	~~.96~~	~~NG~~	8
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	32.30	264.0	24693	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1779(MSD)
SAMPLE: NFFW-5.S-2
GC/MS FILE: >DD479::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 1

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/11/89 22:01
SAMPLE--->EXTRACT:	10.21G--> 1ml

CAS #		CONC UG/L	OR UG/KG
62-75-9	N-Nitrosodimethylamine	1200.	ND
111-44-4	bis(2-Chloroethyl)ether	1200.	ND
541-73-1	1,3-Dichlorobenzene	1200.	ND
106-46-7	1,4-Dichlorobenzene	8600.	
95-50-1	1,2-Dichlorobenzene	1200.	ND
39638-32-9	bis(2-chloroisopropyl)ether	1200.	ND
621-64-7	N-Nitroso-Di-n-propylamine	12000.	
67-72-1	Hexachloroethane	1200.	ND
98-95-3	Nitrobenzene	1200.	ND
78-59-1	Isophorone	1200.	ND
111-91-1	bis(2-Chloroethoxy)methane	1200.	ND
120-82-1	1,2,4-Trichlorobenzene	9800.	
91-20-3	Naphthalene	1200.	ND
87-68-3	Hexachlorobutadiene	1200.	ND
77-47-4	Hexachlorocyclopentadiene	1200.	ND
91-58-7	2-Chloronaphthalene	1200.	ND
131-11-3	Dimethylphthalate	1200.	ND
208-96-8	Acenaphthylene	1200	ND
83-32-9	Acenaphthene	10000.	
121-14-2	2,4-Dinitrotoluene	11000.	
606-20-2	2,6-Dinitrotoluene	1200.	ND
84-66-2	Diethylphthalate	1200.	ND
7005-72-3	4-Chlorophenyl-phenylether	1200.	ND
86-73-7	Fluorene	1200.	ND

EA LABORATORIES

CLIENT: WILLOW GROVE
LAB NO.: EA#1779(MSD)
SAMPLE: NFFW-5.S-2
GC/MS FILE: >DD479::D1
DATE REC'D: 04/17/89
INSTRUMENT ID: #4

ORGANICS ANALYSIS DATA SHEET
SEMI-VOLATILE COMPOUNDS
PAGE 2

MATRIX:	SOIL
DATE EXTRACTED:	04/26/89
DATE ANALYZED:	05/11/89 22:01
SAMPLE--->EXTRACT:	10.21G--> 1ml

CAS #		CONC UG/L OR UG/KG	
86-30-6	N-Nitrosodiphenylamine	1200.	ND
101-55-3	4-Bromophenyl-phenylether	1200.	ND
118-74-1	Hexachlorobenzene	1200.	ND
85-01-8	Phenanthrene	1200.	ND
120-12-7	Anthracene	1200.	ND
84-74-2	Di-n-Butyl phthalate	1200.	ND
206-44-0	Fluoranthene	1200.	ND
92-87-5	Benzidine	5900.	ND
129-00-0	Pyrene	11000.	
85-68-7	Butylbenzylphthalate	1200.	ND
91-94-1	3,3'-Dichlorobenzidine	2300.	ND
56-55-3	Benzo(a)Anthracene	1200.	ND
117-81-7	bis(2-Ethylhexyl)phthalate	1200.	ND
218-01-9	Chrysene	1200.	ND
117-84-0	Di-n-Octyl phthalate	1200.	ND
205-99-2	Benzo(b)Fluoranthene	1200.	ND
205-99-2	Benzo(k)Fluoranthene	1200.	ND
50-32-8	Benzo(a)Pyrene	1200.	ND
193-39-5	Indeno(1,2,3-cd)Pyrene	1200.	ND
53-70-3	Dibenzo(a,h)Anthracene	1200.	ND
191-24-2	Benzo(g,h,i)Perylene	1200.	ND

Qualifier descriptions: ND - Compound analyzed for but not detect d
Number reported is method detection limit
TR - Present but less than detection limit

Laboratory Name: EA Laboratories

Case No: Willow Grove

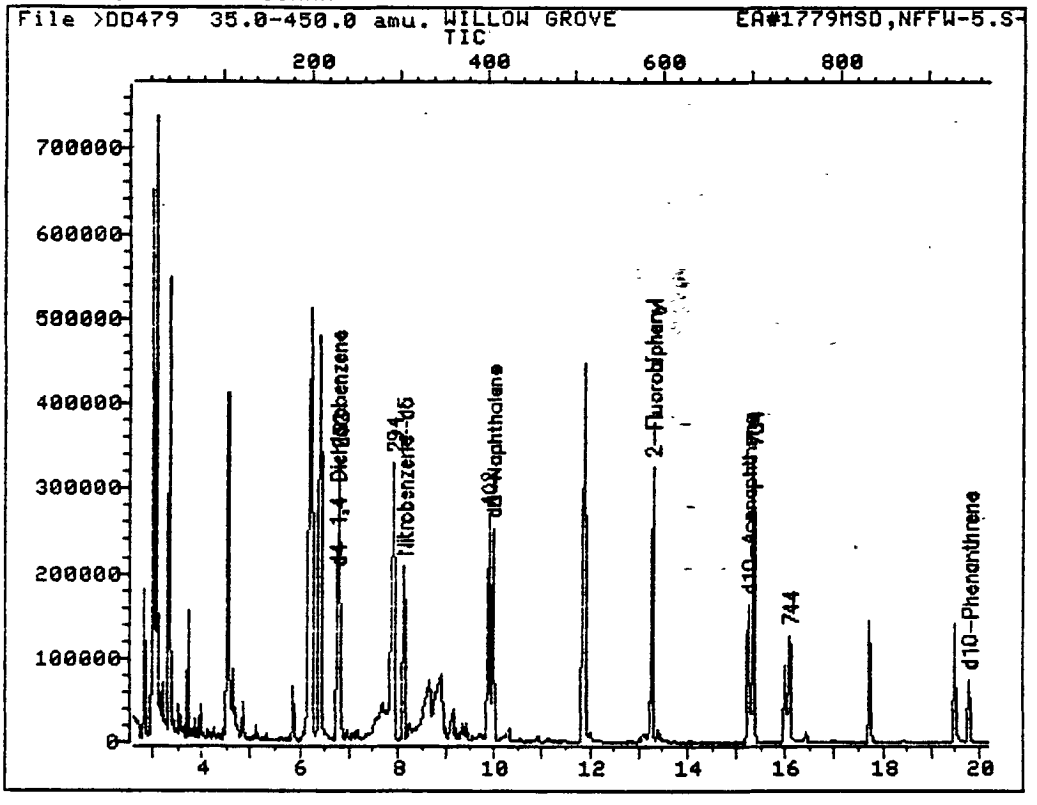
Sample Number
NFFW-5.S-2
EA # 1779 MSD

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

CAS Number	Compound Name	Fraction	RT or Scan Number	Estimated Concentration (ug/l or ug/kg)
1. —	Not required.	B/N	—	—
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				

TOTAL ION CHROMATOGRAM



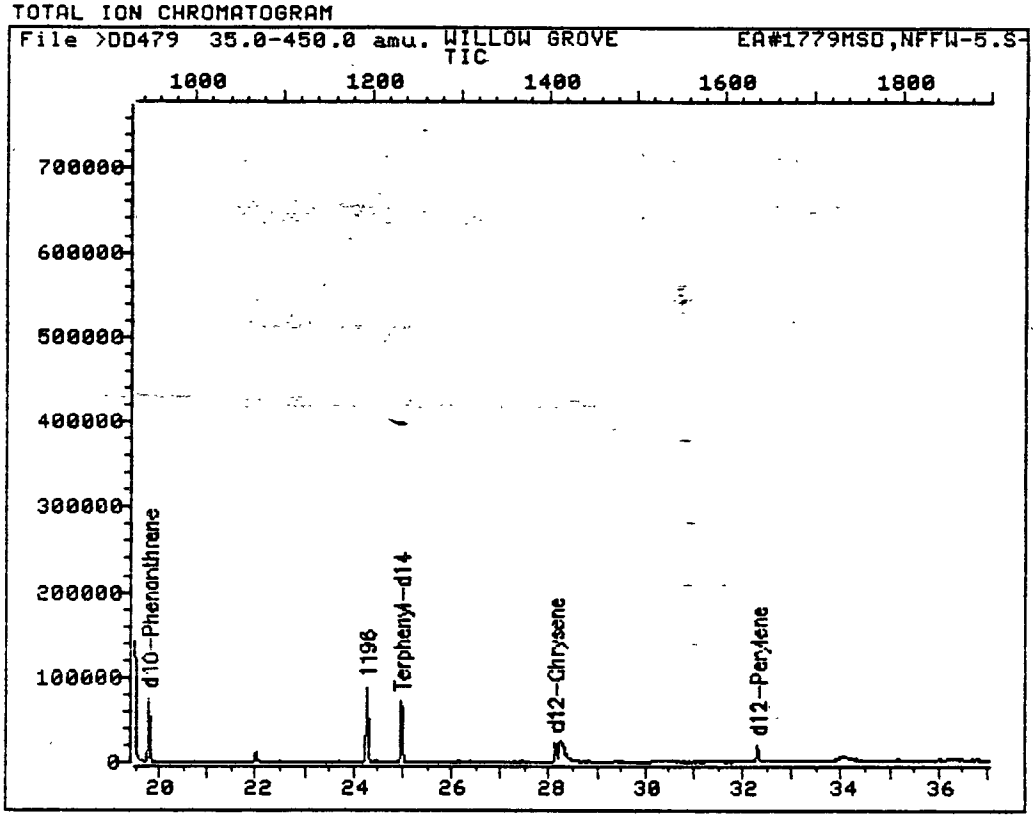
Data File: >DD479::D1 Quant Output File: ^DD479::QT
Name: WILLOW GROVE
Misc: EA#1779MSD,NFFW-5.S-2,SOIL,10.21G,1, WILLOW (97.94) BTL# 7

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

Operator ID: BHADRA
Quant Time: 890511 22:41
Injected at: 890511 22:01

TIC page 1 of 2

TOTAL ION CHROMATOGRAM



Data File: >DD479::D1 Quant Output File: ^DD479::QT
Name: WILLOW GROVE
Misc: EA#1779MSD,NFFW-5.S-2,SOIL,10.21G,1, WILLOW (97.94) BTL# 7

Id File: IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

Operator ID: BHADRA
Quant Time: 890511 22:41
Injected at: 890511 22:01

TIC page 2 of 2

QUANT REPORT

Operator ID: BHADRA Quant Rev: 6 Quant Time: 890511 22:41
Output File: ^DD479::QT Injected at: 890511 22:01
Data File: >DD479::D1 Dilution Factor: 1.00000
Name: WILLOW GROVE
Misc: EA#1779MSD,NFFW-5.S-2,SOIL,10.21G,1, WILLOW (97.94) BTL# 7

ID Fil : IDDBNO::BD
Title: PRIORITY POLLUTANT LIST (B/N ONLY)---INSTRUMENT #4(D)
Last Calibration: 890511 16:46

	Compound	R.T.	Q ion	Area	Conc	Units	c
1)	*d4-1,4-Dichlorobenzene	6.76	152.0	79009	40.00	NG	9
2)	N-Nitrosodimethylamine	0.00	74.0	0	0.00	NG	
3)	bis(2-Chloroethyl)ether	0.00	93.0	0	0.00	NG	
4)	1,3-Dichlorobenzene	6.80	146.0	201412	~~73.76~~	~~NG~~	9
5)	1,4-Dichlorobenzene	6.80	146.0	201412	73.36	NG	9
6)	1,2-Dichlorobenzene	0.00	146.0	0	0.00	NG	
7)	bis(2-Chloroisopropyl)ether	0.00	45.0	0	0.00	NG	
8)	N-Nitroso-Di-n-propylamine	7.92	70.0	190257	102.34	NG	8
9)	Hexachloroethane	0.00	117.0	0	0.00	NG	
10)	*d8-Naphthalene	9.97	136.0	281400	40.00	NG	8
11)	Nitrobenzene-d5	8.14	82.0	183943	68.90	NG 69%	9
12)	Nitrobenzene	0.00	77.0	0	0.00	NG	
13)	Isophorone	0.00	82.0	0	0.00	NG	
14)	bis(2-Chloroethoxy)methane	0.00	93.0	0	0.00	NG	
15)	1,2,4-Trichlorobenzene	9.88	180.0	175576	83.53	NG	9
16)	Naphthalene	0.00	128.0	0	0.00	NG	
17)	Hexachlorobutadiene	0.00	225.0	0	0.00	NG	
18)	*d10-Acenapnthene	15.25	164.0	96652	40.00	NG	9
19)	Hexachlorocyclopentadiene	0.00	237.0	0	0.00	NG	
20)	2-Chloronaphthalene	0.00	162.0	0	0.00	NG	
21)	2-Fluorobiphenyl	13.29	172.0	283754	71.77	NG 72%	9
22)	Dimethylphthalate	0.00	163.0	0	0.00	NG	
23)	Acenaphthylene	15.38	152.0	121206	~~29.44~~	~~NG~~	6
24)	Acenaphthene	15.36	153.0	251312	89.54	NG	9
25)	2,4-Dinitrotoluene	16.08	165.0	69579	96.88	NG	8
26)	2,6-Dinitrotoluene	0.00	165.0	0	0.00	NG	
27)	Diethylphthalate	0.00	149.0	0	0.00	NG	
28)	4-Chlorophenyl-phenylether	0.00	204.0	0	0.00	NG	
29)	Fluorene	0.00	166.0	0	0.00	NG	
30)	*d10-Phenanthrene	19.79	188.0	78735	40.00	NG	9
31)	N-Nitrosodiphenylamine	0.00	169.0	0	0.00	NG	
32)	4-Bromophenyl-phenylether	0.00	248.0	0	0.00	NG	
33)	Hexachlorobenzene	0.00	284.0	0	0.00	NG	
34)	Phenanthrene	0.00	178.0	0	0.00	NG	
35)	Anthracene	0.00	178.0	0	0.00	NG	
36)	Di-n-Butyl phthalate	0.00	149.0	0	0.00	NG	
37)	Fluoranthene	24.27	202.0	114622	~~89.77~~	~~NG~~	9
38)	Benzidine	0.00	184.0	0	0.00	NG	
39)	*d12-Chrysene	28.12	240.0	24057	40.00	NG	9
40)	Pyrene	24.27	202.0	114622	97.13	NG	9
41)	Terphenyl-d14	24.97	244.0	71778	82.25	NG 82%	8
42)	Butylbenzylphthalate	0.00	149.0	0	0.00	NG	

QUANT REPORT
page 2

Output File:^DD479:: Data File:>DD479::D1

	Compound	R.T.	Q ion	Area	Conc	Units	c
43)	3,3'-Dichlorobenzidine	0.00	252.0	0	0.00	NG	
44)	Benzo(a)Anthracene	0.00	228.0	0	0.00	NG	
45)	bis(2-Ethylhexyl)phthalate	0.00	149.0	0	0.00	NG	
46)	Chrysene	0.00	228.0	0	0.00	NG	
47)	*d12-Perylene	32.31	264.0	21345	40.00	NG	9
48)	Di-n-Octyl phthalate	0.00	149.0	0	0.00	NG	
49)	Benzo(b)Fluoranthene	0.00	252.0	0	0.00	NG	
50)	Benzo(k)Fluoranthene	0.00	252.0	0	0.00	NG	
51)	Benzo(a)Pyrene	0.00	252.0	0	0.00	NG	
52)	Indeno(1,2,3-cd)Pyrene	0.00	276.0	0	0.00	NG	
53)	Dibenzo(a,h)Anthracene	0.00	278.0	0	0.00	NG	
54)	Benzo(g,h,i)Perylene	0.00	276.0	0	0.00	NG	

* Compound is ISTD

E. Quality Assurance Summary

EA LABORATORIES

QUALITY ASSURANCE SUMMARY

FOR NAVAL ENERGY AND ENVIRONMENTAL SUPPORT ACTIVITY CONTRACTS

Project: Willow Grove (10389.03) Analysis: TCL semivolatiles

EA Laboratories Report No. _____ Method: U.S. EPA-CLP

Reviewed by: J.E. Heffleger Date: 06-15-89

1. Water samples were extracted within 5 days of sample receipt (soils samples within 10 days) and analyzed within 40 days of extraction.

   rec'd - 4-21-89
   H2O ext 4-25-89 — Soil ext 4-26-89 —

   ✓ Yes ____ No

2. The 12-hour tuning period for DFPP was met for all samples.

   ✓ Yes ____ No

3. Initial calibration criteria were met for all samples: a five-point calibration curve was run, the RSD is <30% for all CCC compounds, and the mean RRF for SPCC compounds is >0.050.

   ✓ Yes ____ No

4. Continuing calibration criteria were met for all samples: the response factor percent difference from the mean initial calibration response factor for all CCC compounds was ≤25%, and the RRF for SPCC compounds is >0.050.

   ✓ Yes ____ N

5. Surrogate recovery limits were met for all samples.

   ✓ Yes ____ No

6. MS and MSD criteria were met for all samples.

   See Note 6.

   ✓ Yes ____ No

7. Method blank criteria were met for all samples: phthalates are ≤5X CRQL, all other compounds are <CRQL.

   ✓ Yes ____ No

(Revised 2 June 1989)

EA LABORATORIES

QUALITY ASSURANCE SUMMARY

FOR NAVAL ENERGY AND ENVIRONMENTAL SUPPORT ACTIVITY CONTRACTS

Project: Willow Grove (10388.03) Analysis: TCL semivolatiles

EA Laboratories Report No. _____ Method: U.S. EPA-CLP

Reviewed by: J.E. Heffleger Date: 06-15-89

8. Laboratory control sample criteria were met for all samples.

   See Note 8: ✓ Yes ____ No

9. Field and equipment blanks: no target compounds were detected in the samples at concentrations <5X the concentration found in the highest associated blank.

   ✓ Yes ____ N

Comments: Note 6: Two (2) of the twelve (12) matrix spike compounds were above QC limits for the soil MS/MSD. No further action is required. Note 8: The recovery of 2,4-dinitrotoluene was above the QC limit in the soil laboratory control sample. No action is required.

(Revised 2 June 1989)

5. MISCELLANEOUS WET CHEMISTRY DATA

A. Analytical Results

RESULTS FOR THE DETERMINATION OF TOTAL PETROLEUM HYDROCARBONS AND TOTAL ORGANIC CARBON IN THREE SOIL SAMPLES COLLECTED AT WILLOW GROVE BETWEEN 12 AND 19 APRIL 1989

Sample	Total Petroleum -Hydrocarbons (mg/kg, dry weight)	Total Organic Carbon (mg/kg, dry weight)	EA Number
NFFW-5, S-2	96	2,600	1779
NFFW-6, S-5	90	16,600	1780
NFFW-7, S-4	352	730	1915

RESULTS FOR THE DETERMINATION OF TOTAL PETROLEUM HYDROCARBONS AND TOTAL ORGANIC CARBON IN TWO RINSATE BLANKS COLLECTED AT WILLOW GROVE ON 14 AND 20 APRIL 1989

Sample	Total Petroleum Hydrocarbons (mg/L)	Total Organic Carbon (mg/L)	EA Number
Rinsate Blank NFF #2	<1.0	<10	1781
Rinsate Blank #3	<1.0	<10	1916

B. Quality Assurance Summary

EA LABORATORIES QA/QC DATA FOR WET CHEMISTRY DATA

Project name: Willow Grove

Client sample designation NFFW-7, S-4

EA Number 8901915

Matrix: Liquid _____ (mg/L)

Soil X (mg/kg) (dry)

Parameter	Sample results	Method detection limit	Method blank	QC check std. recovery (%)	Duplicate	Matrix spike recovery (%)
General organics						
Total organic carbon	730	1.0	----	104/102	1020	----