APPENDIX C

BTEX-in-Soil Test Kit Calculation Forms

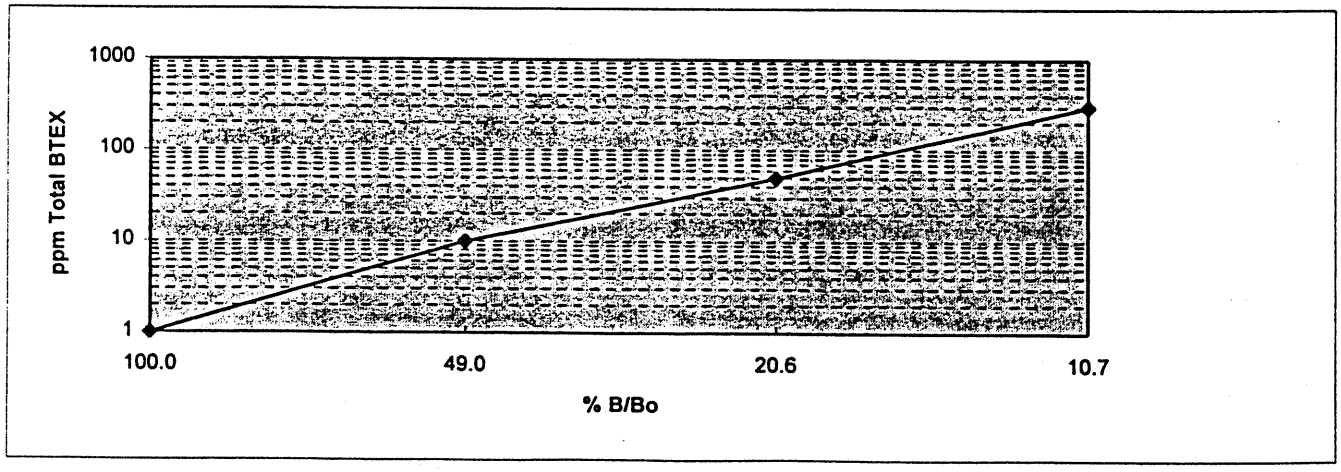
Date:	11/18/97	Project #:	06626M15
Time:	17:00	Project Name:	Industri-Plex Site
Operator:	A. Farrell	Project Location:	Woburn, MA
Assay Calibrator:	Total BTEX in Soil		
Photometer:	Millipore Differential Photometer		

Results

Sample ID	OD (450nm)			AVG. OD (450nm) % Bo	PPM (BTEX)
Neg Calibrator	0.85	0.84	0.84	100.0	1
10 ppm Calibrator	0.41	0.42	0.41	49.0	10
50 ppm Calibrator	0.18	0.17	0.17	20.6	50
300 ppm Calibrator	0.09	0.09	0.09	10.7	300
SB A2 / 2-4'	0.87	0.86	0.86	102.4	0
SB A2 / 4-6'	0.59	0.60	0.60	70.8	3.7
SB A2 / 6-8'	0.28	0.26	0.26	31.6	26
SB C2 / 2-4'	0.85	0.85	0.85	100.8	0
SB C2 / 4-6'	0.78	0.80	0.79	93.7	1.3
SB C2 / 6-8'	0.87	0.86	0.87	102.8	0
SB C2 / 6-8' DUP	0.80	0.80	0.80	94.9	1.25
SB E2 / 2-4'	0.82	0.82	0.82	97.3	1.15
SB E2 / 4-6'	0.69	0.70	0.68	81.9	2.3
SB E4 / 2-4'	0.68	0.68	0.68	80.7	2.4
SB E4 / 4-6'	0.37	0.38	0.38	44.7	12.5
SB G2 / 2-4'	0.82	0.83	0.83	79.9	2.5
SB G2 / 4-6'	0.66	0.67	0.69	98.1	1.1
SB G4 / 2-4'	0.79	0.80	0.80	94.5	1.45

AVG. OD (450nm) % Bo = OD (450nm) Sample X/OD (450nm) 0 ppm Standard

*-Negative calibrator = 0ppm, however it must be plotted as a value of 1 on the semilog graph.



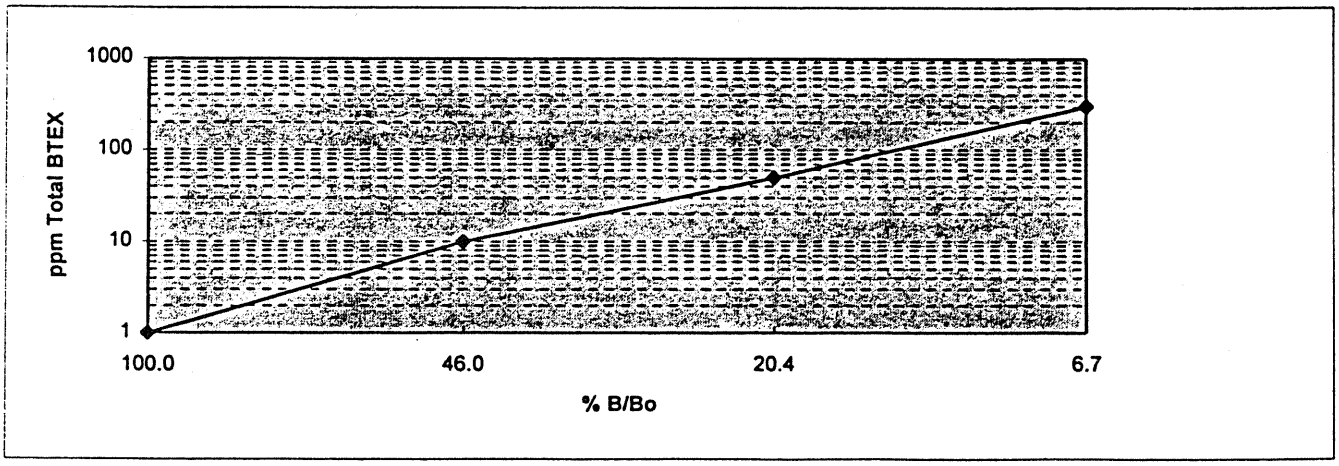
Date:	11/19/97	Project #:	06626M15
Time:	17:00	Project Name:	Industri-Plex Site
Operator:	A. Farrell	Project Location:	Woburn, MA
Assay Calibrator:	Total BTEX in Soil		
Photometer:	Millipore Differential Photometer		

Results

Sample ID	OD (450nm)			AVG. OD (450nm) % Bo	PPM (BTEX)
Neg Calibrator	0.95	0.95	0.95	100.0	1
10 ppm Calibrator	0.45	0.42	0.44	46.0	10
50 ppm Calibrator	0.20	0.19	0.19	20.4	50
300 ppm Calibrator	0.06	0.07	0.06	6.7	300
SB A4 / 2-4'	0.85	0.84	0.85	89.1	1.6
SB A4 / 4-6'	0.69	0.69	0.69	72.6	3.2
SB E3 / 2-4'	0.90	0.93	0.91	96.1	1.2
SB E3 / 4-6'	0.20	0.20	0.20	21.1	47
SB E3 / 6-8'	0.61	0.62	0.63	65.3	4.4
SB F2 / 2-4'	0.87	0.88	0.87	91.9	1.4
SB F2 / 4-6'	0.28	0.27	0.27	28.8	30
SB FG2 / 2-4'	0.89	0.89	0.90	94.0	1.3
SB FG2 / 2-4' DUP	0.86	0.87	0.87	91.2	1.5
SB FG2 / 4-6'	0.55	0.57	0.56	58.9	5.8
SB I4 / 2-4'	0.89	0.89	0.89	93.7	1.3
SB M3 / 2--4'	0.19	0.17	0.19	19.3	60
SB M5 / 2-4'	0.83	0.83	0.82	87.0	1.8

AVG. OD (450nm) % Bo = OD (450nm) Sample X/OD (450nm) 0 ppm Standard

*-Negative calibrator = 0ppm, however it must be plotted as a value of 1 on the semilog graph.



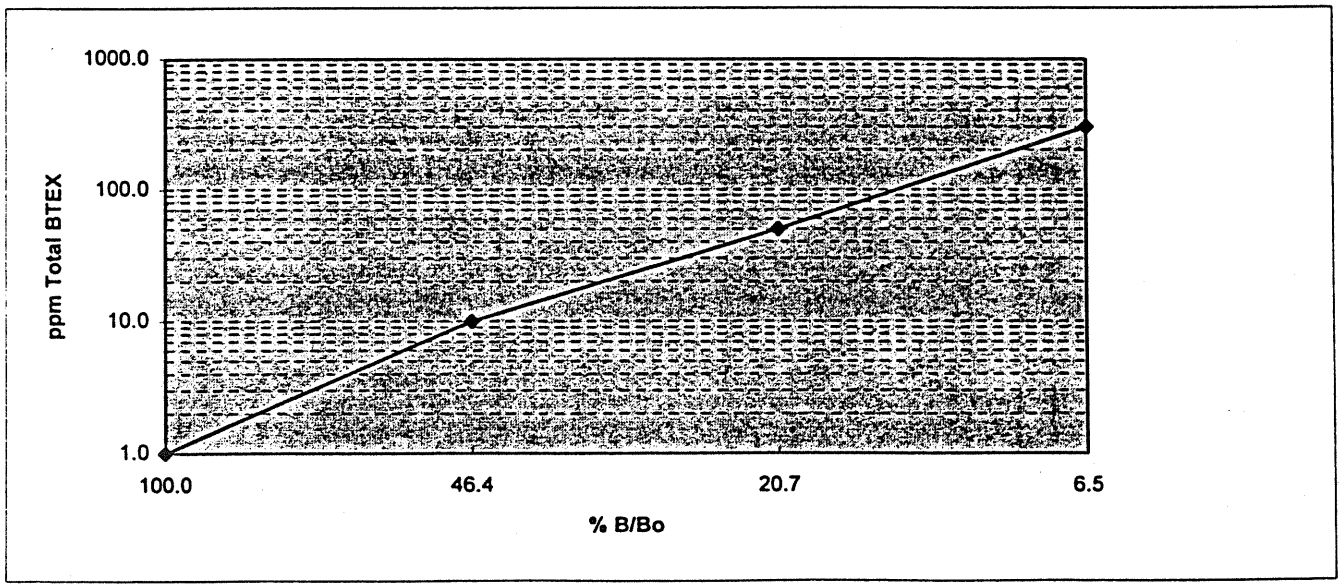
Date:	11/20/97	Project #:	06626M15
Time:	17:00	Project Name:	Industri-Plex Site
Operator:	A. Farrell	Project Location:	Woburn, MA
Assay Calibrator:	Total BTEX in Soil		
Photometer:	Millipore Differential Photometer		

Results

Sample ID	OD (450nm)			AVG. OD (450nm) % Bo	PPM (BTEX)
Neg Calibrator	0.87	0.87	0.87	100.0	1.0
10 ppm Calibrator	0.41	0.4	0.4	46.4	10
50 ppm Calibrator	0.18	0.18	0.18	20.7	50
300 ppm Calibrator	0.05	0.06	0.06	6.5	300
SB C6/ 2-4'	0.61	0.61	0.61	70.1	3.6
SB C6/ 4-6'	0.82	0.82	0.81	93.9	1.3
SB E6/ 2-4'	0.83	0.81	0.82	94.3	1.3
SB E6 / 4-6'	0.81	0.83	0.84	95.0	1.25
SB I6 / 0-2'	0.86	0.88	0.86	99.6	1
SB K4 / 2-4'	0.75	0.74	0.73	85.1	1.9
SB L6 / 2-4'	0.50	0.51	0.52	58.6	5.8
SB L6 / 4-6'	0.75	0.76	0.74	86.2	1.85
SB L6 / 4-6' DUP	0.75	0.77	0.75	87.0	1.8
SB M2/ 2-4'	0.52	0.51	0.51	59.0	5.8
SB M2/ 4-6'	0.36	0.39	0.37	42.9	12.5

AVG. OD (450nm) % Bo = OD (450nm) Sample X/OD (450nm) 0 ppm Standard

*-Negative calibrator = 0ppm, however it must be plotted as a value of 1 on the semilog graph.



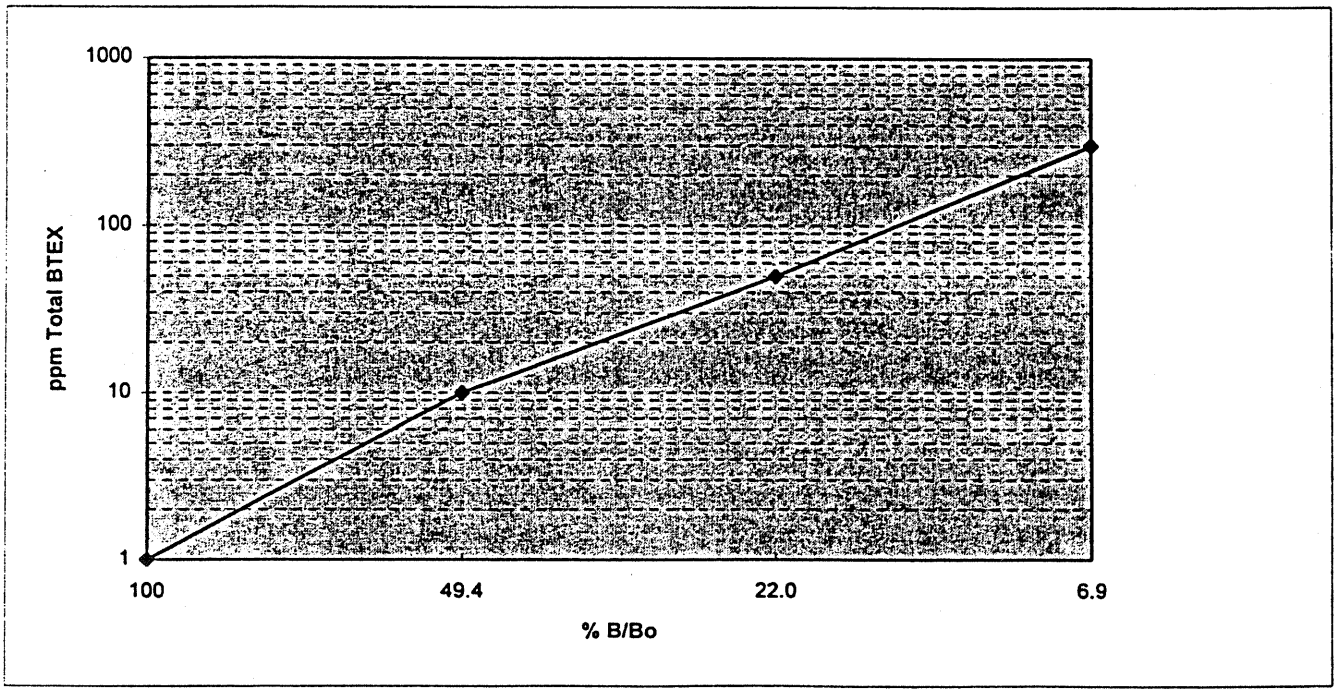
Date:	11/21/97	Project #:	06626M15
Time:	17:00	Project Name:	Industri-Plex Site
Operator:	A. Farrell	Project Location:	Woburn, MA
Assay Calibrator:	Total BTEX in Soil		
Photometer:	Millipore Differential Photometer		

Results

Sample ID	OD (450nm)			AVG. OD (450nm) % Bo	PPM (BTEX)
Neg Calibrator	0.82	0.82	0.81	100	1
10 ppm Calibrator	0.41	0.4	0.4	49.4	10
50 ppm Calibrator	0.18	0.18	0.18	22.0	50
300 ppm Calibrator	0.05	0.06	0.06	6.9	300
SB D4/ 2-4'	0.51	0.49	0.51	61.6	5.6
SB D4/ 4-6'	0.77	0.78	0.77	94.7	0.6
SB D6/ 2-4'	0.56	0.56	0.55	68.2	4
SB D7 / 2-4'	0.32	0.33	0.32	39.6	19
SB E5 / 2-4'	0.51	0.52	0.52	63.3	5.5
SB E6 / 2-4'	0.47	0.47	0.47	57.6	7
SB E7 / 2-4'	0.80	0.80	0.80	98.0	1.2
SB E7 / 2-4' DUP	0.71	0.70	0.69	85.7	2

AVG. OD (450nm) % Bo = OD (450nm) Sample X/OD (450nm) 0 ppm Standard

*-Negative calibrator = 0ppm, however it must be plotted as a value of 1 on the semilog graph.



APPENDIX D

Analytical Laboratory Report Prepared by
American Environmental Network

American Environmental Network
149 Rangeway Road • N. Billerica, MA 01862 • (978) 667-1400 • Fax (978) 667-7871

Mr. Larry McTiernan
Roux Associates
13 Branch Street, Suite 13
Methuen, MA 01844

December 1, 1997

Dear Mr. McTiernan:

Please find enclosed the analytical results of the sample(s) received at our laboratory on November 18, 1997. This report contains sections addressing the following information at a minimum:

- sample ID correspondence table
- analytical results
- chain-of-custody (if applicable)
- definitions of data qualifiers and terminology

Client Project #	06626M15	**Client Project Name**	N/A
IEA Report #	R119-075	**Purchase Order #**	N/A

Copies of this analytical report and supporting data are maintained in our files for a minimum of 3 years unless special arrangements are made. Unless specifically indicated, all analytical testing was performed at the IEA-Massachusetts laboratory.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (978) 667-1400 for any additional information. Thank you for utilizing our services and we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

IEA/American Environmental Network (MA)
MA-DEP #MA038

MW/dib

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12/1/97, 11:33 am

AEN - Massachusetts
Analysis Report: EPA Method 8240B

Client:	Roux Associates	AEN ID:	R119-075-01
Project:	06626M15	Sample:	SS-E4/4-6
Report Date:	11/21/97	Type:	Soil
Collected:	11/18/97	Container:	Glass
Received:	11/18/97		
Analyzed:	11/20/97	Dilution Factor:	1.4
By:	WJG		

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
1	Benzene	7	BQL
2	Bromodichloromethane	7	BQL
3	Bromoform	7	BQL
4	Bromomethane	14	BQL
5	Carbon tetrachloride	7	BQL
6	Chlorobenzene	7	BQL
7	Chloroethane	14	BQL
8	2-Chloroethylvinyl ether	7	BQL
9	Chloroform	7	BQL
10	Chloromethane	14	BQL
11	Dibromochloromethane	7	BQL
12	1,2-Dichlorobenzene	7	BQL
13	1,3-Dichlorobenzene	7	BQL
14	1,4-Dichlorobenzene	7	BQL
15	1,1-Dichloroethane	7	BQL
16	1,2-Dichloroethane	7	BQL
17	1,1-Dichloroethene	7	BQL
18	cis-1,2-Dichloroethene	7	BQL
19	trans-1,2-Dichloroethene	7	BQL
20	1,2-Dichloropropane	7	BQL
21	cis-1,3-Dichloropropene	7	BQL
22	trans-1,3-Dichloropropene	7	BQL
23	Ethylbenzene	7	BQL
24	Methylene chloride	7	BQL
25	1,1,2,2-Tetrachloroethane	7	BQL
26	Tetrachloroethene	7	BQL
27	Toluene	7	BQL
28	1,1,1-Trichloroethane	7	BQL
29	1,1,2-Trichloroethane	7	BQL
30	Trichloroethene	7	BQL
31	Trichlorofluoromethane	7	BQL
32	Vinyl chloride	14	BQL

AEN - Massachusetts
Analysis Report: EPA Method 8240B

Client:	Roux Associates	AEN ID:	R119-075-01
Project:	06626M15	Sample:	SS-E4/4-6

Number	Compound	PQL ug/kg (dry)	Result ug/kg (dry)
Other TCL Compounds:			
33	Acetone	140	BQL
34	2-Butanone	140	BQL
35	Carbon disulfide	7	BQL
36	1,2-Dibromoethane	7	BQL
37	2-Hexanone	70	BQL
38	Methyl-t-butylether	7	BQL
39	4-Methyl-2-pentanone	70	BQL
40	Styrene	7	BQL
41	Vinyl Acetate	70	BQL
42	Xylenes (Total)	7	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	87	%
Toluene-d8	84	%
Bromofluorobenzene	79	%

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.
Dilution factor adjusted for moisture content of sample.

AEN - Massachusetts
Analysis Report: EPA Method 8240B

Client:	Roux Associates	AEN ID:	R119-075-02
Project:	06626M15	Sample:	GW-C2
Report Date:	11/26/97	Type:	Water
Collected:	11/18/97	Container:	VOA
Received:	11/18/97		
Analyzed:	11/21/97	Dilution Factor:	5
By:	WJG		

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	25	BQL
2	Bromodichloromethane	25	BQL
3	Bromoform	25	BQL
4	Bromomethane	50	BQL
5	Carbon tetrachloride	25	BQL
6	Chlorobenzene	25	BQL
7	Chloroethane	50	BQL
8	2-Chloroethylvinyl ether	25	BQL
9	Chloroform	25	BQL
10	Chloromethane	50	BQL
11	Dibromochloromethane	25	BQL
12	1,2-Dichlorobenzene	25	BQL
13	1,3-Dichlorobenzene	25	BQL
14	1,4-Dichlorobenzene	25	BQL
15	1,1-Dichloroethane	25	BQL
16	1,2-Dichloroethane	25	BQL
17	1,1-Dichloroethene	25	BQL
18	cis-1,2-Dichloroethene	25	BQL
19	trans-1,2-Dichloroethene	25	BQL
20	1,2-Dichloropropane	25	BQL
21	cis-1,3-Dichloropropene	25	BQL
22	trans-1,3-Dichloropropene	25	BQL
23	Ethylbenzene	25	BQL
24	Methylene chloride	25	69B
25	1,1,2,2-Tetrachloroethane	25	BQL
26	Tetrachloroethene	25	BQL
27	Toluene	25	BQL
28	1,1,1-Trichloroethane	25	BQL
29	1,1,2-Trichloroethane	25	BQL
30	Trichloroethene	25	BQL
31	Trichlorofluoromethane	25	BQL
32	Vinyl chloride	50	BQL

AEN - Massachusetts
Analysis Report: EPA Method 8240B

Client:	Roux Associates	AEN ID:	R119-075-02
Project:	06626M15	Sample:	GW-C2

Other TCL Compounds:		PQL (ug/L)	Result (ug/L)
33	Acetone	500	BQL
34	2-Butanone	500	BQL
35	Carbon disulfide	100	BQL
36	1,2-Dibromoethane	25	BQL
37	2-Hexanone	250	BQL
38	Methyl-t-butylether	25	BQL
39	4-Methyl-2-pentanone	250	BQL
40	Styrene	25	BQL
41	Vinyl Acetate	250	BQL
42	Xylenes (Total)	25	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	95	%
Toluene-d8	105	%
Bromofluorobenzene	110	%

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.
Quantitation limit elevated due to sample dilution prior to analysis.
Dilution due to sample foaming.
B = Compound in blank

AEN - Massachusetts
Analysis Report: EPA Method 8240B

Client:	Roux Associates	AEN ID:	R119-075-03
Project:	06626M15	Sample:	Trip Blank 11/18
Report Date:	11/26/97	Type:	Water
Collected:	11/18/97	Container:	VOA
Received:	11/18/97		
Analyzed:	11/26/97	Dilution Factor:	1
By:	WJG		

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	cis-1,2-Dichloroethene	5	BQL
19	trans-1,2-Dichloroethene	5	BQL
20	1,2-Dichloropropane	5	BQL
21	cis-1,3-Dichloropropene	5	BQL
22	trans-1,3-Dichloropropene	5	BQL
23	Ethylbenzene	5	BQL
24	Methylene chloride	5	BQL
25	1,1,2,2-Tetrachloroethane	5	BQL
26	Tetrachloroethene	5	BQL
27	Toluene	5	BQL
28	1,1,1-Trichloroethane	5	BQL
29	1,1,2-Trichloroethane	5	BQL
30	Trichloroethene	5	BQL
31	Trichlorofluoromethane	5	BQL
32	Vinyl chloride	10	BQL

AEN - Massachusetts
Analysis Report: EPA Method 8240B

Client:	Roux Associates	AEN ID:	R119-075-03
Project:	06626M15	Sample:	Trip Blank 11/18

Other TCL Compounds:		PQL (ug/L)	Result (ug/L)
33	Acetone	100	BQL
34	2-Butanone	100	BQL
35	Carbon disulfide	20	BQL
36	1,2-Dibromoethane	5	BQL
37	2-Hexanone	50	BQL
38	Methyl-t-butylether	5	BQL
39	4-Methyl-2-pentanone	50	BQL
40	Styrene	5	BQL
41	Vinyl Acetate	50	BQL
42	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	106	%
Toluene-d8	100	%
Bromofluorobenzene	116	%

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

AEN - Massachusetts
Analysis Report: EPA Method 8240B

Client:		AEN ID:	Method Blank
Project:		Sample:	
Report Date:	11/26/97	Type:	Water
Collected:		Container:	
Received:			
Analyzed:	11/21/97	Dilution Factor:	1
By:	WJG		

Number	Compound	PQL (ug/L)	Result (ug/L)
1	Benzene	5	BQL
2	Bromodichloromethane	5	BQL
3	Bromoform	5	BQL
4	Bromomethane	10	BQL
5	Carbon tetrachloride	5	BQL
6	Chlorobenzene	5	BQL
7	Chloroethane	10	BQL
8	2-Chloroethylvinyl ether	5	BQL
9	Chloroform	5	BQL
10	Chloromethane	10	BQL
11	Dibromochloromethane	5	BQL
12	1,2-Dichlorobenzene	5	BQL
13	1,3-Dichlorobenzene	5	BQL
14	1,4-Dichlorobenzene	5	BQL
15	1,1-Dichloroethane	5	BQL
16	1,2-Dichloroethane	5	BQL
17	1,1-Dichloroethene	5	BQL
18	cis-1,2-Dichloroethene	5	BQL
19	trans-1,2-Dichloroethene	5	BQL
20	1,2-Dichloropropane	5	BQL
21	cis-1,3-Dichloropropene	5	BQL
22	trans-1,3-Dichloropropene	5	BQL
23	Ethylbenzene	5	BQL
24	Methylene chloride	5	11
25	1,1,2,2-Tetrachloroethane	5	BQL
26	Tetrachloroethene	5	BQL
27	Toluene	5	BQL
28	1,1,1-Trichloroethane	5	BQL
29	1,1,2-Trichloroethane	5	BQL
30	Trichloroethene	5	BQL
31	Trichlorofluoromethane	5	BQL
32	Vinyl chloride	10	BQL

AEN - Massachusetts
Analysis Report: EPA Method 8240B

Client:
Project:

AEN ID: Method Blank
Sample:

Other TCL Compounds:		PQL (ug/L)	Result (ug/L)
33	Acetone	100	BQL
34	2-Butanone	100	BQL
35	Carbon disulfide	20	BQL
36	1,2-Dibromoethane	5	BQL
37	2-Hexanone	50	BQL
38	Methyl-t-butylether	5	BQL
39	4-Methyl-2-pentanone	50	BQL
40	Styrene	5	BQL
41	Vinyl Acetate	50	BQL
42	Xylenes (Total)	5	BQL

Surrogate Standard Recovery:

1,2-Dichloroethane-d4	96	%
Toluene-d8	105	%
Bromofluorobenzene	110	%

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.
Corresponding Samples: R119-075-02.

American Environmental Network, Inc.
149 Rangeway Road
N. Billerica, Massachusetts 01862
978/667-1400
Fax 978/667-7871

CHAIN OF CUSTODY RECORD

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ MCP GW1 ☐ MCP OTHER ____
☐ RCRA ☐ NIOSH ☑ OTHER ____

REQUIRED

CUST. P.O. #	
AEN QUOTE #	

TURN AROUND

☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH ____
☒ OTHER See Comments

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
Kane Associates	Larry McTiernan	06620A115	(978)667-2900	(978)667-2910

ADDRESS	CITY	STATE	ZIP
5 Church St	Malden	MA	02148

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	VOCs USEPA 8240								(COMMENTS)
1/18	1035	SS [illegible]	Soil	2oz VOA	2	Ice	X								48-hr TAT
1/18	0940	[illegible]	W	VOA	2	HCl	X								7-day TAT
1/18		Trip Blank 11/18	W	VOA	2	HCl	X								

SAMPLED BY: Alan Farrell (PRINT NAME) [signature] (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
[signature]	1/18 1855		

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME
		[signature]	11-18-97 18:35

AEN USE ONLY

FIELD REMARKS

American Environmental Network
149 Rangeway Road • N. Billerica, MA 01862 • (978) 667-1400 • Fax (978) 667-7871

Mr. Larry McTurnan
Roux Associates
13 Branch Street, Suite 13
Methuen, MA 01844

December 10, 1997

Dear Mr. McTurnan:

Please find enclosed the analytical results of the sample(s) received at our laboratory on November 24, 1997. This report contains sections addressing the following information at a minimum:

- sample ID correspondence table
- analytical results
- chain-of-custody (if applicable)
- definitions of data qualifiers and terminology

Client Project #	06626M15	**Client Project Name**	N/A
IEA Report #	R119-076	**Purchase Order #**	N/A

Copies of this analytical report and supporting data are maintained in our files for a minimum of 3 years unless special arrangements are made. Unless specifically indicated, all analytical testing was performed at the IEA-Massachusetts laboratory.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (978) 667-1400 for any additional information. Thank you for utilizing our services and we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

IEA/American Environmental Network (MA)
MA-DEP #MA038

MW/dib

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12/10/97, 3:37 pm

Sample ID Correspondence Table

Client Sample ID	IEA Sample ID
GW-EF4	R119-076-01
GW-F3	R119-076-02
Trip Blank	R119-076-03
SS-E6/2-4	R119-076-04
SS-F2/2-4	R119-076-05
SS-F2/4-6	R119-076-06
SS-M2/4-6	R119-076-07
GW-E6/FB	R119-076-08
GW-FG 2/FB	R119-076-09

SUBCONTRACT/INTERLABORATORY NOTIFICATION

Report Date:12/09/97
Client:Roux Associates
Project:06626M15

Received Date:11/24/97
AEN Job Number:R119-076

A portion of the analytical work for this project was performed at another laboratory. Analytical methods conducted within the AEN Network are subject to uniform corporate quality control procedures. Non-network laboratories are selected on the basis of appropriate certification. The following parameters were analyzed at the indicated labs.

Subcontract Laboratory	Parameter
AEN - IL	EPA Method 8020

If you have any questions please call your client service representative.

Definitions of Data Qualifiers and Terminology

A number of data qualifiers are widely used within the environmental testing industry and may be utilized in our data reports. The following definitions of these qualifiers are included as a service to our clientele. The majority of the qualifiers have evolved from the EPA contract laboratory program (CLP).

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to use caution when applying the results of this analyte.

BQL - Below Quantitation Limit indicates the compound was not detected in the sample above the practical quantitation limit.

D - Indicates the compound was diluted below the calibration range.

E - Indicates that the concentration of the specific compound exceeded the calibration range of the instrument for that particular analysis.

J - Indicates an estimated value. The compound is determined to be present in the sample based on GC/MS criteria, but the amount is less than the sample quantitation limit. IEA - MA GC/MS reports do not typically report J - marked results. If requested, J - marked results are provided and the report flagged to verify that the data was appropriately reviewed.

MDL - The method detection limit is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.

NA - Not applicable or not available.

ND - Indicates the compound or analyte was not detected in the sample above the method detection limit or the practical quantitation limit for the particular analysis.

PQL - The practical quantitation limit is the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine operating conditions.

AEN - Massachusetts
Analysis Report: EPA Method 8020A -Volatile Aromatics

Client:	Roux Associates	AEN ID:	R119-076-01
Project:	06626M15	Sample:	GW-EF4
Report Date:	12/02/97	Type:	Water
Collected:	11/22/97	Container:	VOA
Received:	11/24/97		
Analyzed:	11/30/97	Dilution Factor:	1
By:	LSB		

Number	Priority Pollutant Compounds	PQL (ug/L)	Result (ug/L)
1	Benzene	1	BQL
2	Chlorobenzene	1	BQL
3	1,2-Dichlorobenzene	1	BQL
4	1,3-Dichlorobenzene	1	BQL
5	1,4-Dichlorobenzene	1	BQL
6	Ethylbenzene	1	BQL
7	Toluene	1	BQL
8	Xylenes (Total)	1	BQL
9	Methyl-t-butylether	1	BQL

Surrogate Standard Recovery:

1,4-Difluorobenzene 81 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

AEN - Massachusetts
Analysis Report: EPA Method 8020A -Volatile Aromatics

Client:	Roux Associates	AEN ID:	R119-076-02
Project:	06626M15	Sample:	GW-F3
Report Date:	12/02/97	Type:	Water
Collected:	11/21/97	Container:	VOA
Received:	11/24/97		
Analyzed:	12/01/97	Dilution Factor:	200
By:	LSB		

Number	Priority Pollutant Compounds	PQL (ug/L)	Result (ug/L)
1	Benzene	200	BQL
2	Chlorobenzene	200	BQL
3	1,2-Dichlorobenzene	200	BQL
4	1,3-Dichlorobenzene	200	BQL
5	1,4-Dichlorobenzene	200	BQL
6	Ethylbenzene	200	BQL
7	Toluene	200	19,000
8	Xylenes (Total)	200	BQL
9	Methyl-t-butylether	200	BQL

Surrogate Standard Recovery:

1,4-Difluorobenzene 106 %

Comments:

PQL = Practical quantitation limit.
BQL = Below quantitation limit.
Quantitation limit elevated due to sample dilution prior to analysis.
Sample diluted due to high concentration of target compounds present.

AEN - Massachusetts
Analysis Report: EPA Method 8020A -Volatile Aromatics

Client:	Roux Associates	AEN ID:	R119-076-03
Project:	06626M15	Sample:	Trip Blank
Report Date:	12/02/97	Type:	Water
Collected:	11/18/97	Container:	VOA
Received:	11/24/97		
Analyzed:	11/29/97	Dilution Factor:	1
By:	LSB		

Number	Priority Pollutant Compounds	PQL (ug/L)	Result (ug/L)
1	Benzene	1	BQL
2	Chlorobenzene	1	BQL
3	1,2-Dichlorobenzene	1	BQL
4	1,3-Dichlorobenzene	1	BQL
5	1,4-Dichlorobenzene	1	BQL
6	Ethylbenzene	1	BQL
7	Toluene	1	BQL
8	Xylenes (Total)	1	BQL
9	Methyl-t-butylether	1	BQL

Surrogate Standard Recovery:

1,4-Difluorobenzene 82 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

AEN - Massachusetts
Analysis Report: EPA Method 8020A -Volatile Aromatics

Client:	Roux Associates	AEN ID:	R119-076-04
Project:	06626M15	Sample:	SS-E6/2-4
Report Date:	12/09/97	Type:	Soil
Collected:	11/20/97	Container:	Glass
Received:	11/24/97		
Analyzed:	12/03/97	Dilution Factor:	1
By:	IL		

Number	Priority Pollutant Compounds	PQL (ug/kg dry)	Result (ug/kg dry)
1	Benzene	1	BQL
2	Ethylbenzene	2	BQL
3	Toluene	2	3
4	Xylenes (Total)	2	2
5	Methyl-t-butylether	2	BQL

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.
Dilution factor adjusted for moisture content of sample.

AEN - Massachusetts
Analysis Report: EPA Method 8020A -Volatile Aromatics

Client:	Roux Associates	AEN ID:	R119-076-05
Project:	06626M15	Sample:	SS-F2/2-4
Report Date:	12/09/97	Type:	Soil
Collected:	11/20/97	Container:	Glass
Received:	11/24/97		
Analyzed:	12/03/97	Dilution Factor:	1
By:	IL		

Number	Priority Pollutant Compounds	PQL (ug/kg dry)	Result (ug/kg dry)
1	Benzene	1	BQL
2	Ethylbenzene	2	BQL
3	Toluene	2	BQL
4	Xylenes (Total)	2	2
5	Methyl-t-butylether	2	BQL

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.
Dilution factor adjusted for moisture content of sample.

AEN - Massachusetts
Analysis Report: EPA Method 8020A -Volatile Aromatics

Client:	Roux Associates	AEN ID:	R119-076-06
Project:	06626M15	Sample:	SS-F2/4-6
Report Date:	12/09/97	Type:	Soil
Collected:	11/20/97	Container:	Glass
Received:	11/24/97		
Analyzed:	12/03/97	Dilution Factor:	1
By:	IL		

Number	Priority Pollutant Compounds	PQL (ug/kg dry)	Result (ug/kg dry)
1	Benzene	1	BQL
2	Ethylbenzene	2	BQL
3	Toluene	2	BQL
4	Xylenes (Total)	2	BQL
5	Methyl-t-butylether	2	BQL

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.
Dilution factor adjusted for moisture content of sample.

AEN - Massachusetts
Analysis Report: EPA Method 8020A -Volatile Aromatics

Client:	Roux Associates	AEN ID:	R119-076-07
Project:	06626M15	Sample:	SS-M2/4-6
Report Date:	12/09/97	Type:	Soil
Collected:	11/20/97	Container:	Glass
Received:	11/24/97		
Analyzed:	12/03/97	Dilution Factor:	1
By:	IL		

Number	Priority Pollutant Compounds	PQL (ug/kg dry)	Result (ug/kg dry)
1	Benzene	1	BQL
2	Ethylbenzene	2	BQL
3	Toluene	2	BQL
4	Xylenes (Total)	2	BQL
5	Methyl-t-butylether	2	BQL

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.
Dilution factor adjusted for moisture content of sample.

AEN - Massachusetts
Analysis Report: EPA Method 8020A -Volatile Aromatics

Client:	Roux Associates	AEN ID:	R119-076-08
Project:	06626M15	Sample:	GW-E6/FB
Report Date:	12/02/97	Type:	Water
Collected:	11/20/97	Container:	VOA
Received:	11/24/97		
Analyzed:	11/30/97	Dilution Factor:	1
By:	LSB		

Number	Priority Pollutant Compounds	PQL (ug/L)	Result (ug/L)
1	Benzene	1	BQL
2	Chlorobenzene	1	BQL
3	1,2-Dichlorobenzene	1	BQL
4	1,3-Dichlorobenzene	1	BQL
5	1,4-Dichlorobenzene	1	BQL
6	Ethylbenzene	1	BQL
7	Toluene	1	BQL
8	Xylenes (Total)	1	BQL
9	Methyl-t-butylether	1	BQL

Surrogate Standard Recovery:

1,4-Difluorobenzene 86 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

AEN - Massachusetts
Analysis Report: EPA Method 8020A -Volatile Aromatics

Client:	Roux Associates	AEN ID:	R119-076-09
Project:	06626M15	Sample:	GW-FG 2/FB
Report Date:	12/02/97	Type:	Water
Collected:	11/20/97	Container:	VOA
Received:	11/24/97		
Analyzed:	11/30/97	Dilution Factor:	1
By:	LSB		

Number	Priority Pollutant Compounds	PQL (ug/L)	Result (ug/L)
1	Benzene	1	BQL
2	Chlorobenzene	1	BQL
3	1,2-Dichlorobenzene	1	BQL
4	1,3-Dichlorobenzene	1	BQL
5	1,4-Dichlorobenzene	1	BQL
6	Ethylbenzene	1	BQL
7	Toluene	1	BQL
8	Xylenes (Total)	1	BQL
9	Methyl-t-butylether	1	BQL

Surrogate Standard Recovery:

1,4-Difluorobenzene 84 %

Comments:
PQL = Practical quantitation limit.
BQL = Below quantitation limit.

American Environmental Network, Inc.
149 Rangeway Road
N. Billerica, Massachusetts 01862
978/667-1400
Fax 978/667-7871

CHAIN OF CUSTODY RECORD

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ MCP GW1 ☐ MCP OTHER ____
☐ RCRA ☐ NIOSH ☒ OTHER ____

REQUIRED

CUST. P.O. #	
AEN QUOTE #	

TURN AROUND

☐ 15 BUSINESS DAY
☐ 10 BUSINESS DAY
☐ RUSH ____
☒ OTHER 24 Business Day

COMPANY	CONTACT PERSON	PROJECT I.D.	PHONE #	FAX #
Roux Associates	Larry McTurnan	06626M15	(978)687-2400	(978)687-2600

ADDRESS

13 Branch St.

CITY	STATE	ZIP
Methuen	MA	01844

DATE	TIME	SAMPLE I.D.	MATRIX	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVES	VOCs USEPA 8020								(COMMENTS)
11/22	1330	~~EF~~ GW-EF4	Water	VOA		HCl	X								
11/21	1445	GW-F3	Water	VOA		HCl	X								
11/18	—	Trip Blank	Water	VOA		HCl	X								
11/20	0920	SS-E6/2-4	Soil	VOA		Ice	✓								
11/19	1045	SS-F2/2-4	Soil	VOA		Ice	✓								
11/19	1130	SS-F2/4-6	Soil	VOA		Ice	✓								
11/20	1510	SS-M2/4-6	Soil	VOA		Ice	✓								
11/20	0925	GW-E6/FB	Water	VOA		HCl	X								
11/20	0815	GW-FG2/FB	Water	VOA		HCl	X								

SAMPLED BY: Ann Farrell (PRINT NAME) [signature] (SIGNATURE)

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME
[signature]	11/24/97 1010	[signature]	11/24/97 1040

RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME

AEN USE ONLY

FIELD REMARKS

APPENDIX E

Ground-Water Analysis Report Prepared by
O'Reilly, Talbot & Okun Associates, Inc.

O'Reilly, Talbot & Okun
Associates, Inc.

Environmental • Safety • Health • Geotechnical Engineering

December 3, 1997

Ann Farrell
Roux Associates
13 Branch Street
Methuen, MA 01844

Dear Ann:

Enclosed is a summary report for the on-site analytical work conducted by O'Reilly, Talbot & Okun Associates, Inc. at the Industriplex Site. Should you have any questions or comments, please contact me.

Sincerely,

James Gagnon, PE, LSP
Sr. Environmental Specialist

293 Bridge Street • Suite 500 • Springfield, Massachusetts 01103
Phone (413) 788-6222 • Fax (413) 788-8830 • E-Mail oto413@aol.com

O'Reilly, Talbot & Okun
Associates, Inc.

Environmental • Safety • Health • Geotechnical Engineering

SUMMARY REPORT

GROUNDWATER HEADSPACE SCREENING
INDUSTRIPLEX SITE
WOBURN, MASSACHUSETTS

DECEMBER 1997

293 Bridge Street • Suite 500 • Springfield, Massachusetts 01103
Phone (413) 788-6222 • Fax (413) 788-8830 • E-Mail oto413@aol.com

CONFIDENTIAL

SUMMARY REPORT

GROUNDWATER HEADSPACE SCREENING
INDUSTRIPLEX
WOBURN, MASSACHUSETTS

INTRODUCTION

O'Reilly, Talbot & Okun Associates, Inc. was hired by the Industriplex Site Trust to conduct headspace screening for the presence of benzene and toluene in groundwater samples collected at the Industriplex site located in Woburn, Massachusetts. Groundwater samples were collected utilizing a Geoprobe technique by Roux Associates. The samples were analyzed for benzene and toluene utilizing a Hewlett Packard gas chromatograph; a detailed description of the analytical protocol is presented in the following sections. The testing was conducted on November 19 through November 22, 1997.

SUMMARY OF RESULTS

Analytical results are presented in Table 1. The groundwater sample locations and designations were provided by Roux Associates.

TABLE 1
ANALYTICAL RESULTS
CONCENTRATIONS IN GROUNDWATER

DATE: SAMPLE DESIGNATION	BENZENE	TOLUENE
11/19/97		
GW-C4	ND	ND
GW-A4	ND	ND
GW-E3	ND	ND
GW-F2	ND	ND
GW-I4	ND	ND
GW-M3	ND	ND
GW-M5	ND	ND
GW-FG2	ND	ND
11/20/97		
GW-C6	ND	ND
GW-I6	ND	ND
GW-K4	ND	ND
GW-L6	ND	ND
GW-M2 (18')	ND	ND
11/21/97		
GW-D4	ND	ND
GW-G3 (13'-15')	ND	20,000 µg/l
GW-F3 (24'-25' preserved)	ND	13,000 µg/l
GW-F3 (24'-25' unpreserved)	ND	19,000 µg/l
ESA-1	ND	<5 µg/l
ESA-2	ND	ND
11/22/97		
GW-M2 (25')	ND	2,400 µg/l
GW-E2 (25')	ND	5,400 µg/l
GW-F2 (25')	ND	ND
GW-E3 (25')	ND	ND
GW-I2 (14')	ND	50 µg/l
GW-EF4 (14')	ND	ND

ND = not detected
Detection limit = 25 µg/l

SAMPLE ANALYSIS

Groundwater samples collected by Roux Associates field personnel were analyzed on-site within several hours of collection utilizing a Hewlett Packard Model 5890II gas chromatograph equipped with a flame ionization detector. Peak integration was performed by a Hewlett Packard Model 3396B Integrator. The specific GC parameters and conditions were as follows:

Chromatographic Column:	J & W Scientific DB-1 0.53mm, 30 meter, 5.0 μ film thickness
Detector:	Flame Ionization
Oven Conditions:	100 °C isothermal
Detector Temperature:	250 °C
Injection Temperature:	200 °C
Carrier Gas:	Nitrogen @ approx. 15 cc/min.
Sample size:	0.5 ml

Groundwater samples in 40 ml VOA vials were placed in a room temperature (65 °F) waterbath to provide a consistent sample temperature. To created a headspace, ten milliliters of water were removed and the vial was agitated by hand for two minutes. A 0.5 ml headspace sample was drawn from through the septum utilizing a gas-tight syringe and was immediately injected into the chromatograph. Compounds were identified based on a comparison to retention times of standards.

To calibrate the chromatograph, a 10,000 μg/l standard of benzene and toluene was prepared from neat standards. Lower concentration standards were prepared by diluting the 10,000 μg/l standard. Aqueous calibration standards were placed into 40 ml VOA vials and were handled in the same manner as the groundwater samples. A zero standard was prepared utilizing de-ionized water.

Chromatograms for the standards and for the groundwater samples are attached.

Several of the groundwater samples exhibited foaming and effervescence during agitation, apparently as a result of a reaction between the hydrochloric acid preservative and compounds present in the groundwater samples. This "off-gassing" may have impacted the concentration of toluene present in the headspace of some groundwater samples.

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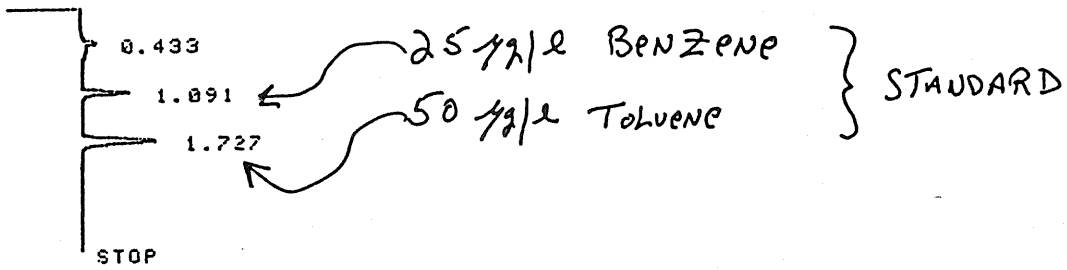
CHROMATOGRAMS

RT	AREA	TYPE	WIDTH	AREA%
.436	1196	PB	.058	100.00000

TOTAL AREA= 1196
MUL FACTOR=1.0000E+00

* RUN # 23 NOV 19, 1997 13:44:21
START



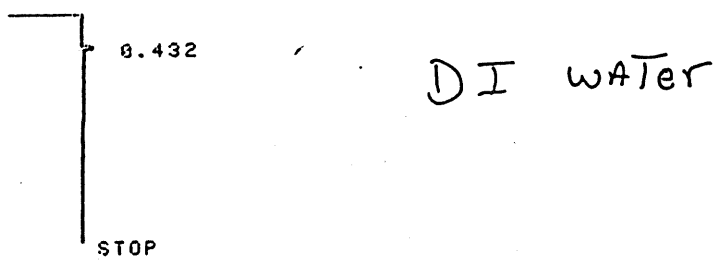
RUN# 23 NOV 19, 1997 13:44:21

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.433	1037	PV	.047	6.12956
1.091	5344	PB	.065	31.58766
1.727	10537	BB	.082	62.28277

TOTAL AREA= 16918
MUL FACTOR=1.0000E+00

* RUN # 24 NOV 19, 1997 13:50:35
START



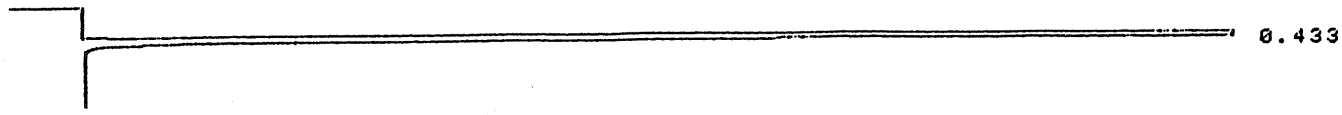
RUN# 24 NOV 19, 1997 13:50:35

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.432	1075	PV	.049	100.00000

TOTAL AREA= 1075
MUL FACTOR=1.0000E+00

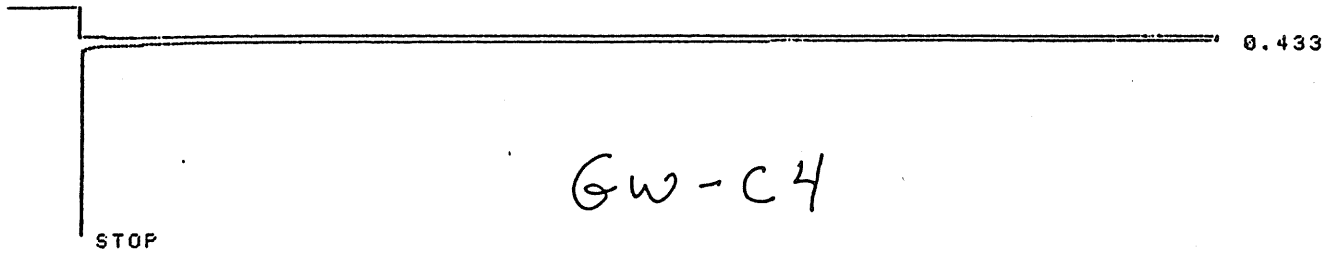
* RUN # 25 NOV 19, 1997 13:54:30
START



MUL FACTOR=1.0000E+00

* RUN # 25 NOV 19, 1997 13:54:30

START



RUN# 25 NOV 19, 1997 13:54:30

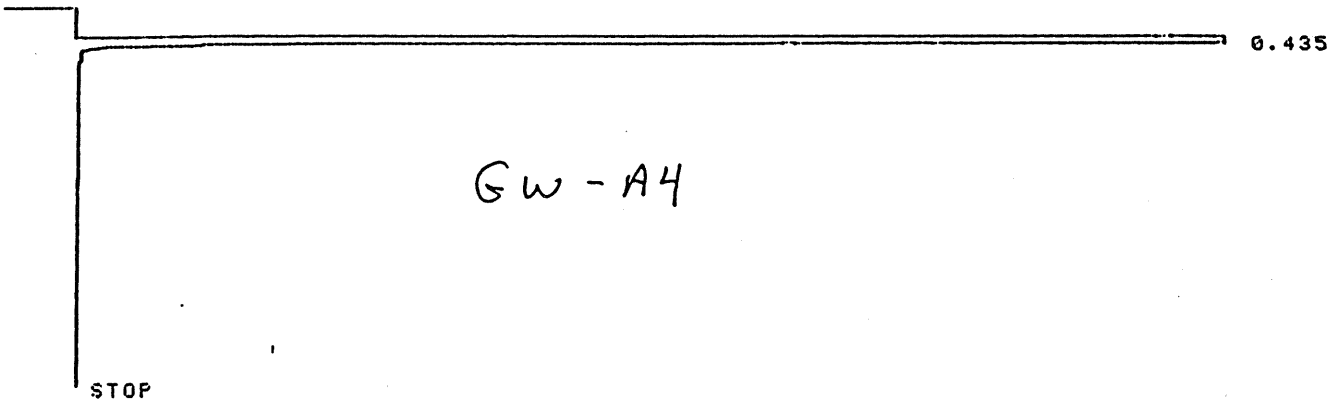
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.433	1372178	PB	.051	100.00000

TOTAL AREA=1372178
MUL FACTOR=1.0000E+00

* RUN # 26 NOV 19, 1997 14:02:02

START



RUN# 26 NOV 19, 1997 14:02:02

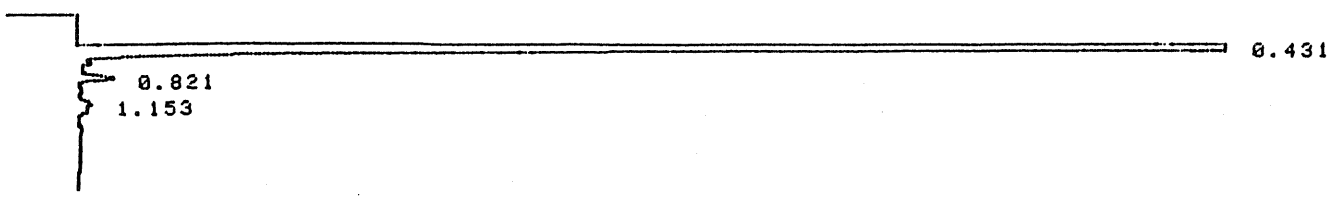
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.435	5061363	PB	.052	100.00000

TOTAL AREA=5061363
MUL FACTOR=1.0000E+00

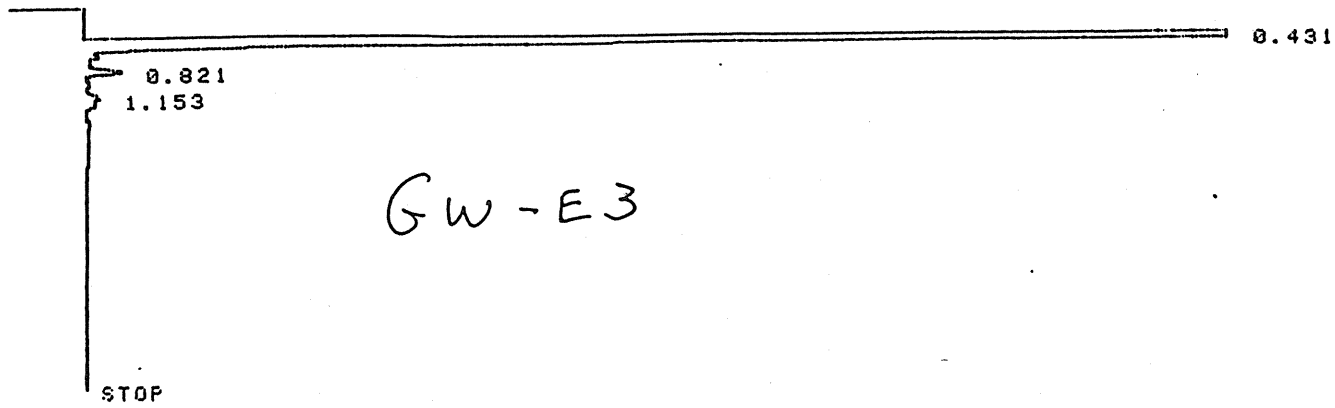
* RUN # 27 NOV 19, 1997 14:11:01

START



* RUN # 27 NOV 19, 1997 14:11:01

START



RUN# 27 NOV 19, 1997 14:11:01

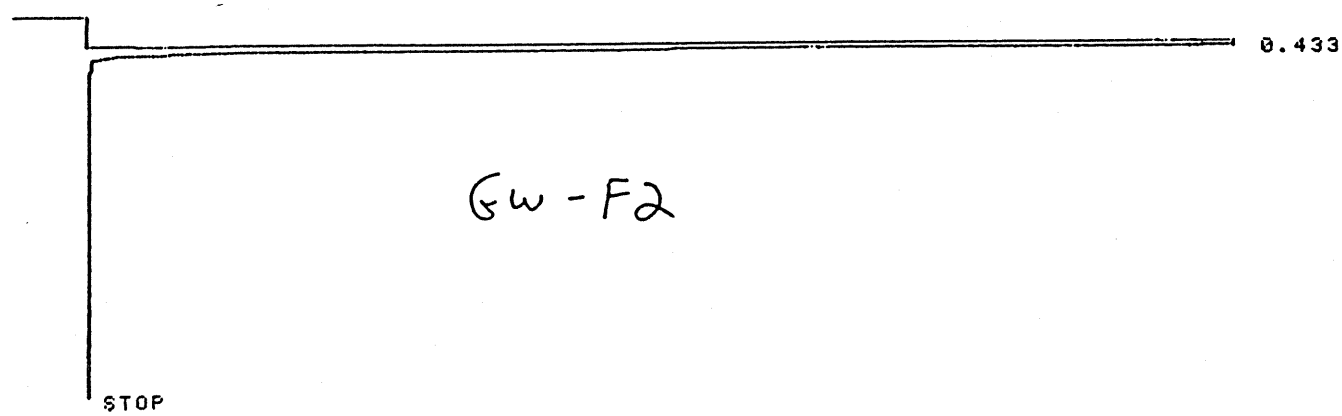
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.431	7717229	PB	.050	99.91597
.821	4472	BP	.074	.05790
1.153	2020	VV	.085	.02615

TOTAL AREA=7723722
MUL FACTOR=1.0000E+00

* RUN # 28 NOV 19, 1997 14:17:51

START



RUN# 28 NOV 19, 1997 14:17:51

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.433	1175498	PB	.050	100.00000

TOTAL AREA=1175498
MUL FACTOR=1.0000E+00

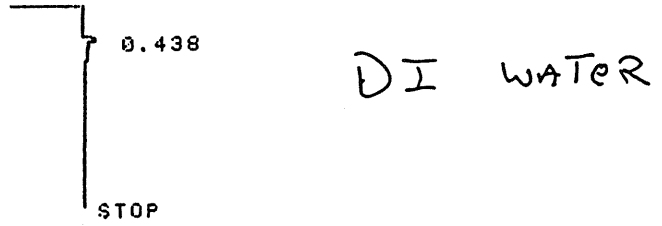
* RUN # 29 NOV 19, 1997 14:24:00

START

1.768	5142	PB	.084	48.21379

TOTAL AREA= 10665
MUL FACTOR=1.0000E+00

* RUN # 38 NOV 19, 1997 15:38:37
START



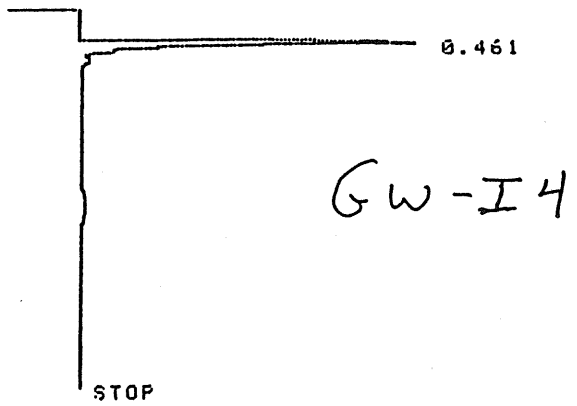
RUN# 38 NOV 19, 1997 15:38:37

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.438	1555	PV	.073	100.00000

TOTAL AREA= 1555
MUL FACTOR=1.0000E+00

* RUN # 39 NOV 19, 1997 15:42:06
START



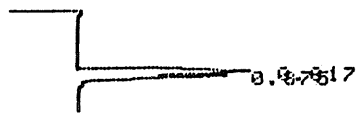
RUN# 39 NOV 19, 1997 15:42:06

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.461	41131	PV	.073	100.00000

TOTAL AREA= 41131
MUL FACTOR=1.0000E+00

* RUN # 40 NOV 19, 1997 15:51:06
START



STOP

RUN# 41 NOV 19, 1997 15:57:48

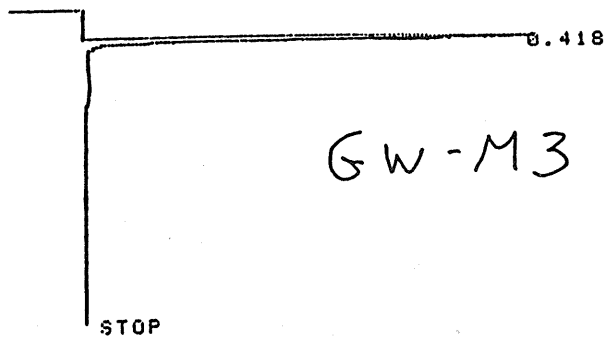
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.382	2082	PV	.047	21.61545
1.051	2712	PB	.064	28.15614
1.667	4838	BB	.078	50.22840

TOTAL AREA= 9632
MUL FACTOR=1.0000E+00

* RUN # 42 NOV 19, 1997 16:02:40

START



RUN# 42 NOV 19, 1997 16:02:40

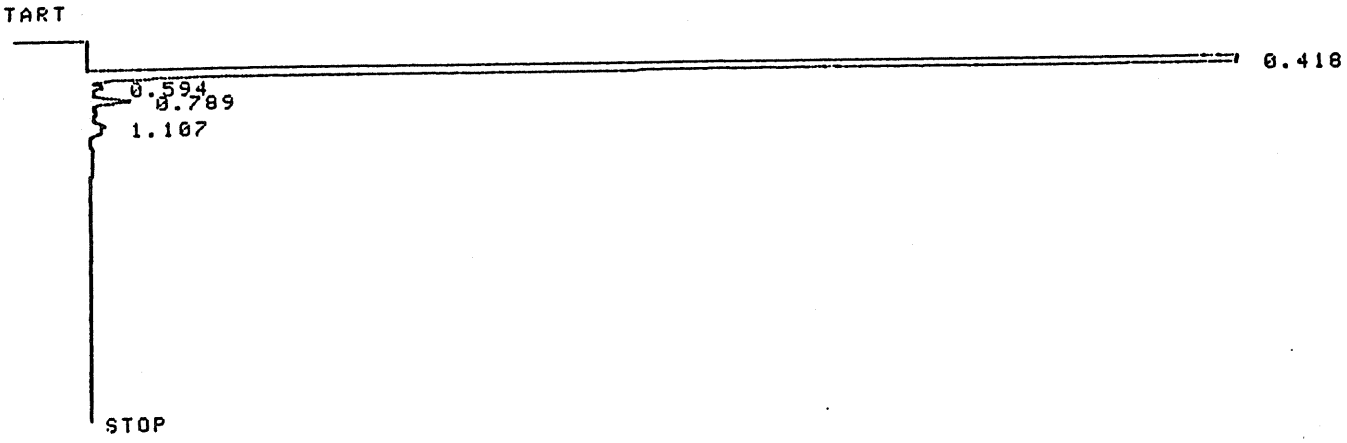
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.418	35643	PB	.047	100.00000

TOTAL AREA= 35643
MUL FACTOR=1.0000E+00

* RUN # 43 NOV 19, 1997 16:07:38

START



RUN# 43 NOV 19, 1997 16:07:38

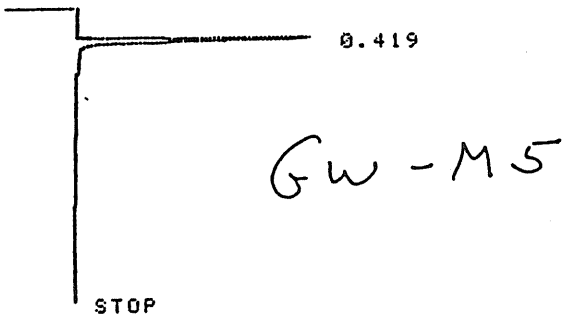
AREA%

RT	AREA	TYPE	WIDTH	AREA%

TOTAL AREA= 18669
MUL FACTOR=1.0000E+00

* RUN # 47 NOV 19, 1997 16:26:28

START



RUN# 47 NOV 19, 1997 16:26:28

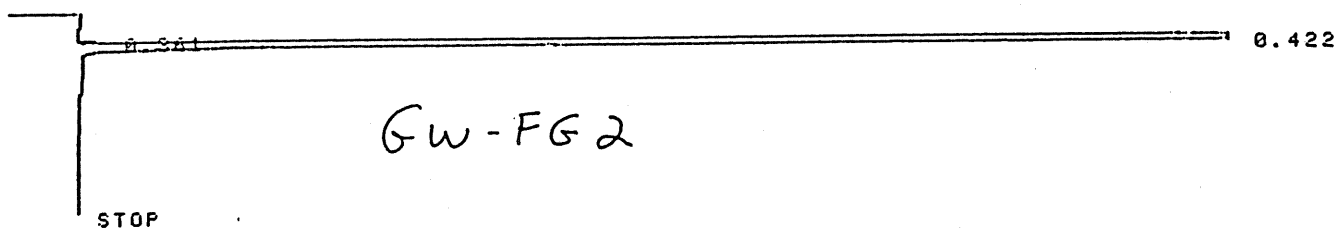
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.419	19470	PB	.049	100.00000

TOTAL AREA= 19470
MUL FACTOR=1.0000E+00

* RUN # 48 NOV 19, 1997 16:31:32

START



RUN# 48 NOV 19, 1997 16:31:32

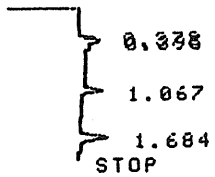
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.361	212	PP	.007	.01833
.422	1156535	PB	.047	99.98170

TOTAL AREA=1156747
MUL FACTOR=1.0000E+00

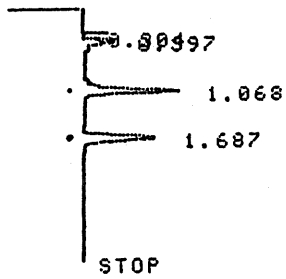
* RUN # 49 NOV 19, 1997 16:34:44

START



* RUN # 5 NOV 20, 1997 11:39:26

START



25 µg/l Benzene
25 µg/l Toluene
} STANDARD

RUN# 5 NOV 20, 1997 11:39:26

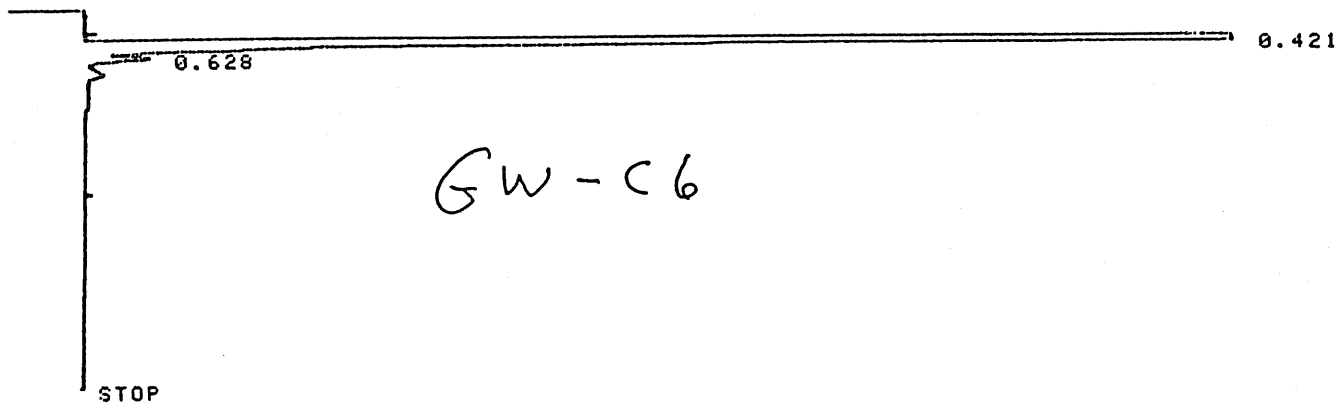
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.304	121	PB	.005	.91639
.397	1321	BV	.049	10.00454
1.068	6452	PB	.080	48.86398
1.687	5310	BB	.085	40.21509

TOTAL AREA= 13204
MUL FACTOR=1.0000E+00

* RUN # 6 NOV 20, 1997 11:47:04

START



GW-C6

RUN# 6 NOV 20, 1997 11:47:04

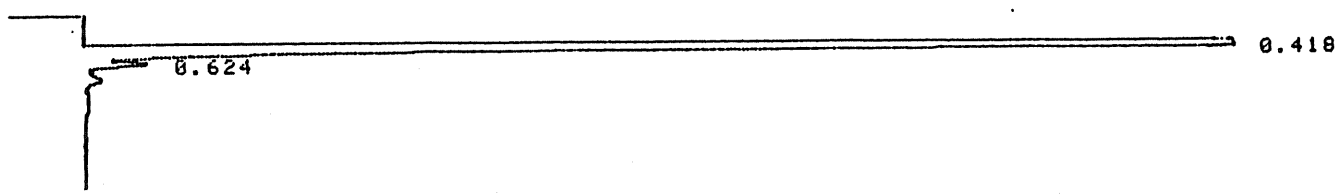
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.421	665157	PB	.052	99.63958
.628	2406	BP	.059	.36042

TOTAL AREA= 667563
MUL FACTOR=1.0000E+00

* RUN # 7 NOV 20, 1997 11:57:12

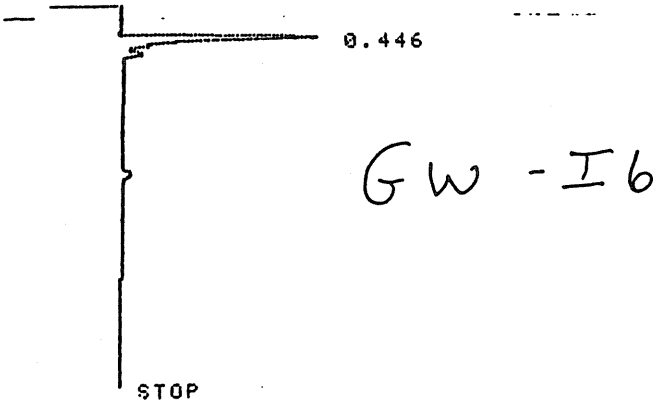
START



MUL FACTOR=1.0000E+00

* RUN # 8 NOV 20, 1997 12:27:59

START



GW -I6

RUN# 8 NOV 20, 1997 12:27:59

AREA%

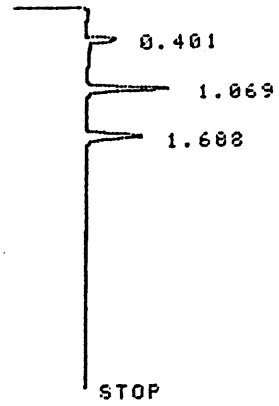
RT	AREA	TYPE	WIDTH	AREA%
.446	10479	PV	.063	100.00000

TOTAL AREA= 10479

MUL FACTOR=1.0000E+00

* RUN # 9 NOV 20, 1997 12:34:34

START



RUN# 9 NOV 20, 1997 12:34:34

AREA%

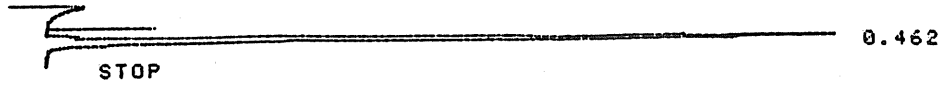
RT	AREA	TYPE	WIDTH	AREA%
.401	1522	BV	.060	14.67979
1.069	4780	BB	.068	46.10339
1.688	4066	BB	.083	39.21683

TOTAL AREA= 10368

MUL FACTOR=1.0000E+00

* RUN # 10 NOV 20, 1997 12:40:32

START



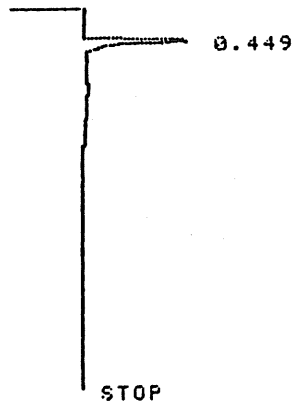
RUN# 10 NOV 20, 1997 12:40:32

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.462	39136	PB	.059	100.00000

TOTAL AREA= 39136
MUL FACTOR=1.0000E+00

* RUN # 11 NOV 20, 1997 12:49:49
START



GW-K4

RUN# 11 NOV 20, 1997 12:49:49

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.449	6634	PV	.076	100.00000

TOTAL AREA= 6634
MUL FACTOR=1.0000E+00

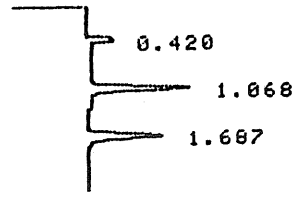
*

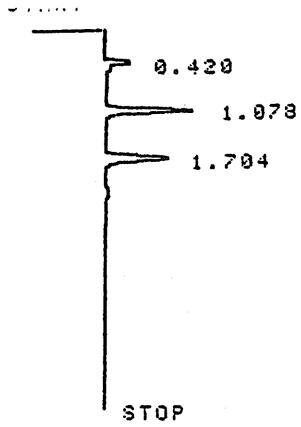
** LOOP DOWN: TIMEOUT **

Configuring, Wait for "LOOP UP" message

**********(LOOP UP)**********

* RUN # 12 NOV 20, 1997 13:05:10
START





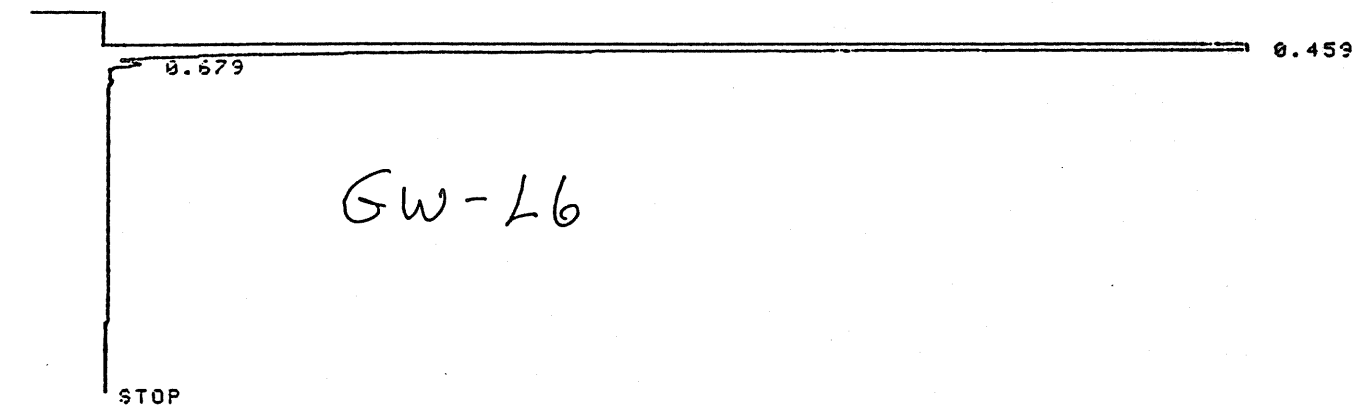
RUN# 15 NOV 20, 1997 14:36:24

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.420	1652	PB	.071	13.93858
1.078	5309	BB	.072	44.79413
1.704	4891	PB	.088	41.26730

TOTAL AREA= 11852
MUL FACTOR=1.0000E+00

* RUN # 16 NOV 20, 1997 15:25:45
START



GW-L6

RUN# 16 NOV 20, 1997 15:25:45

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.459	1875799	PB	.051	99.93248
.679	1267	BP	.062	.06750

TOTAL AREA=1877066
MUL FACTOR=1.0000E+00

* RUN # 17 NOV 20, 1997 16:14:52
START

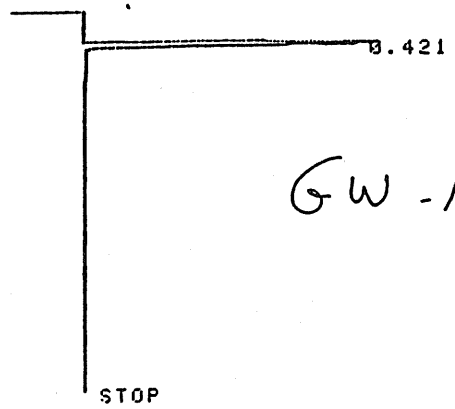
RUN# 16 NOV 20, 1997 15:25:45

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.459	1875799	PB	.051	99.93248
.679	1267	BP	.062	.06750

TOTAL AREA=1877066
MUL FACTOR=1.0000E+00

* RUN # 17 NOV 20, 1997 16:14:52
START



GW-M2 (18')

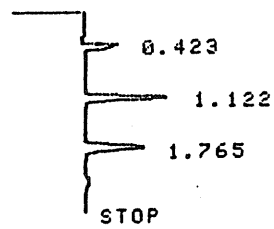
RUN# 17 NOV 20, 1997 16:14:52

AREA%

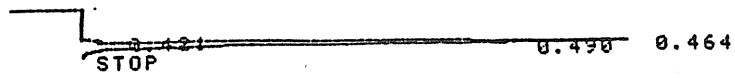
RT	AREA	TYPE	WIDTH	AREA%
.421	12870	PB	.051	100.00000

TOTAL AREA= 12870
MUL FACTOR=1.0000E+00

* RUN # 18 NOV 20, 1997 16:20:39
START



RUN# 18 NOV 20, 1997 16:20:39



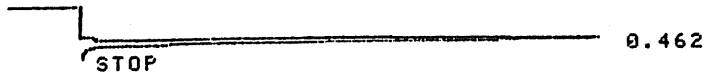
RUN# 2 NOV 21, 1997 12:32:27

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.421	1043	PV	.027	2.24123
.464	27400	VV	.029	58.87790
.490	18094	I VH	.025	38.88090

TOTAL AREA= 46537
MUL FACTOR=1.0000E+00

* RUN # 3 NOV 21, 1997 12:33:32
START



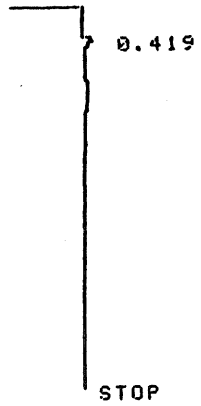
RUN# 3 NOV 21, 1997 12:33:32

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.462	45155	PB	.052	100.00000

TOTAL AREA= 45155
MUL FACTOR=1.0000E+00

* RUN # 4 NOV 21, 1997 12:37:37
START



DI WATER

RUN# 4 NOV 21, 1997 12:37:37

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.419	972	BV	.056	100.00000

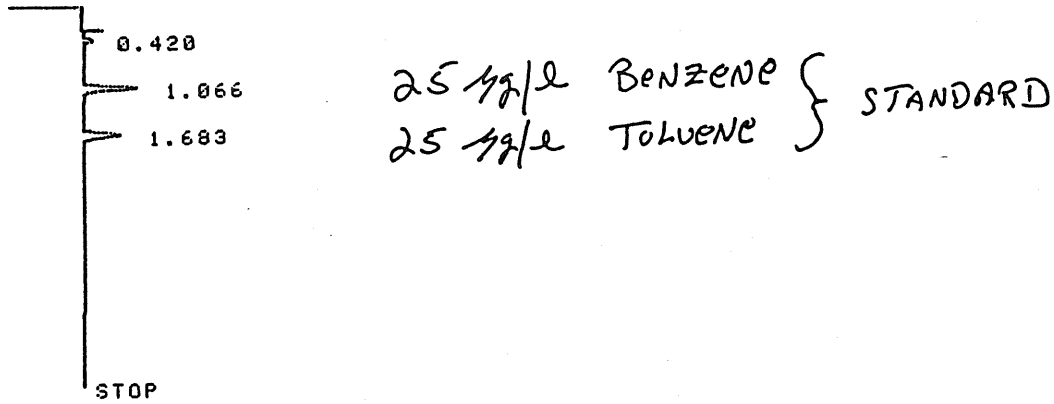
TOTAL AREA= 972
MUL FACTOR=1.0000E+00

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.419	972	BV	.056	100.00000

TOTAL AREA= 972
MUL FACTOR=1.0000E+00

* RUN # 5 NOV 21, 1997 12:44:41
START



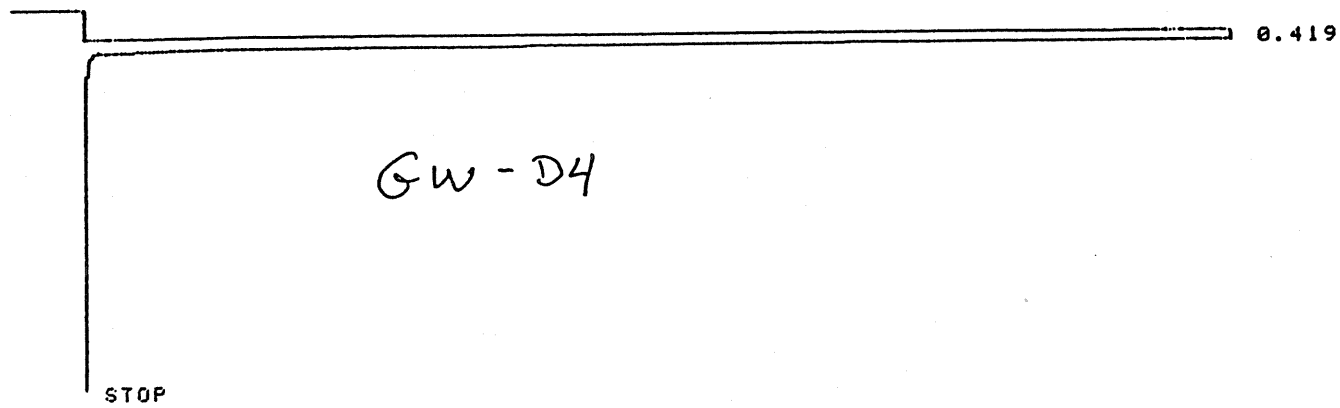
RUN# 5 NOV 21, 1997 12:44:41

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.420	923	PV	.051	7.32947
1.066	6115	BB	.066	48.55874
1.683	5555	BB	.083	44.11181

TOTAL AREA= 12593
MUL FACTOR=1.0000E+00

* RUN # 6 NOV 21, 1997 12:54:28
START



RUN# 6 NOV 21, 1997 12:54:28

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.419	10582160	PB	.054	100.00000

TOTAL AREA=1.0582E+07
MUL FACTOR=1.0000E+00

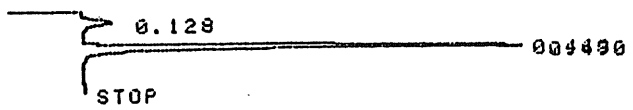
RUN# 13 NOV 21, 1997 14:58:49

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.464	22036	PV	.029	50.84098
.490	21307	VB	.031	49.15902

TOTAL AREA= 43343
MUL FACTOR=1.0000E+00

* RUN # 14 NOV 21, 1997 15:00:22
START



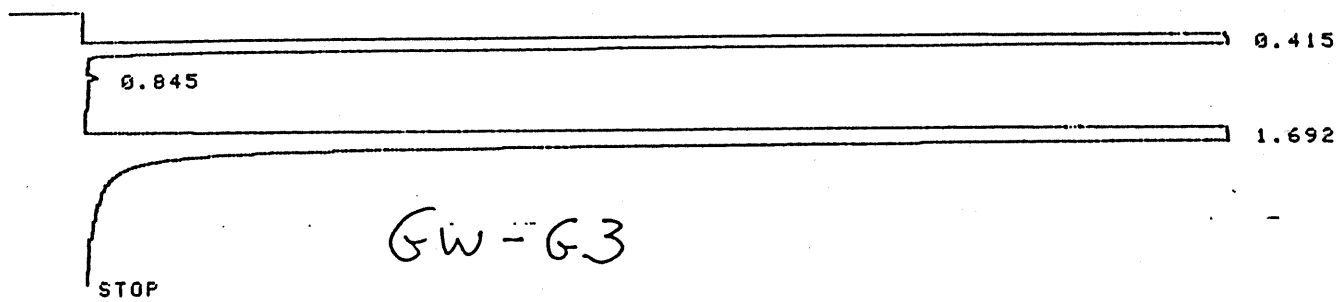
RUN# 14 NOV 21, 1997 15:00:22

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.128	3950	BB	.081	8.42810
.463	16868	PV	.023	35.99122
.490	26049	VB	.035	55.58069

TOTAL AREA= 46867
MUL FACTOR=1.0000E+00

* RUN # 15 NOV 21, 1997 15:02:22
START



GW-G3

RUN# 15 NOV 21, 1997 15:02:22

AREA%

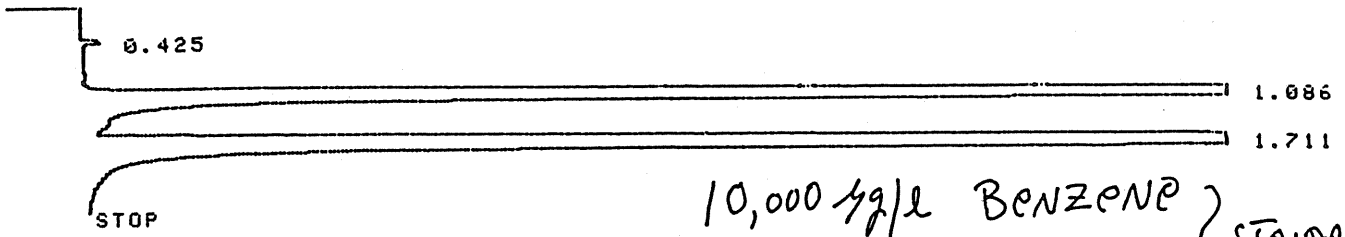
RT	AREA	TYPE	WIDTH	AREA%
.415	9928954	PB	.050	72.50150
.845	1221	PB	.058	.00892
1.692	3764653	PB	.085	27.48959

TOTAL AREA=1.3695E+07
MUL FACTOR=1.0000E+00

* RUN # 16 NOV 21, 1997 15:06:53
START

* RUN # 23 NOV 21, 1997 15:44:35

START



10,000 µg/l BENZENE
10,000 µg/l TOLUENE
} STANDARD

RUN# 23 NOV 21, 1997 15:44:35

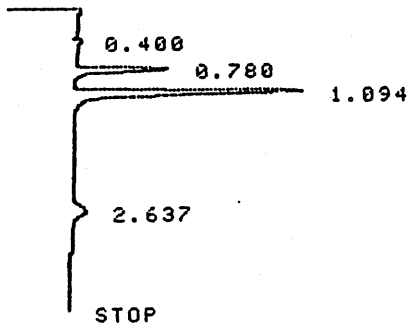
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.425	1803	PV	.057	.04445
1.086	2066501	PB	.069	50.95062
1.711	1987586	PB	.087	49.00493

TOTAL AREA=4055890
MUL FACTOR=1.0000E+00

* RUN # 24 NOV 21, 1997 15:50:34

START: not ready



RUN# 24 NOV 21, 1997 15:50:34

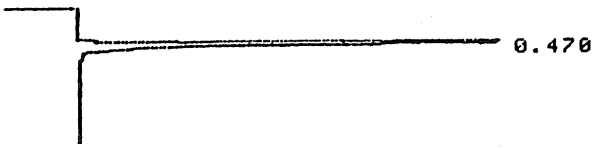
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.400	994	PV	.052	2.18418
.780	11248	VB	.071	24.71599
1.094	28224	BB	.074	62.01850
2.637	5043	PB	.176	11.08132

TOTAL AREA= 45509
MUL FACTOR=1.0000E+00

* RUN # 25 NOV 21, 1997 15:57:03

START: not ready



STOP

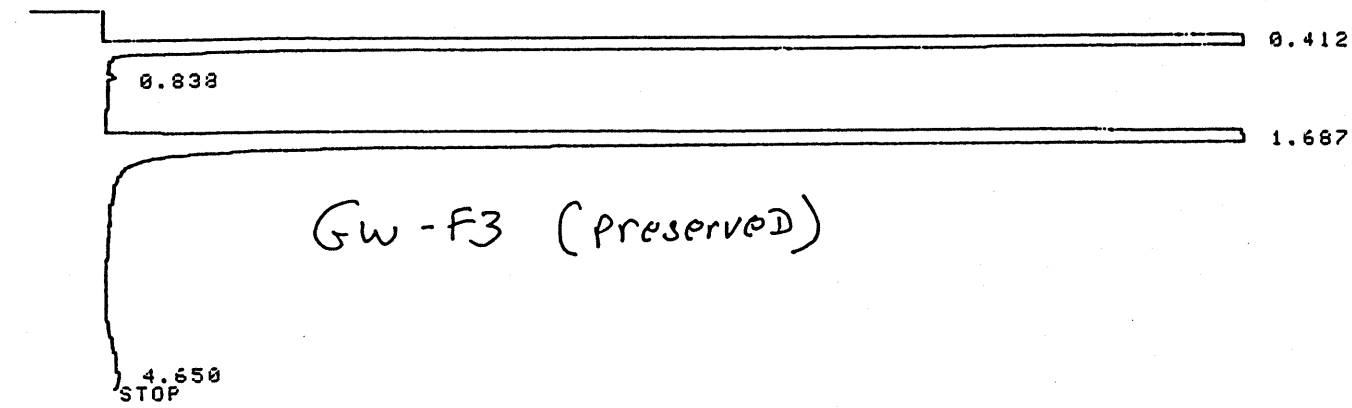
RUN# 21 NOV 21, 1997 15:30:19

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.466	16071	PV	.023	37.10776
.491	27238	VB	.037	62.89224

TOTAL AREA= 43309
MUL FACTOR=1.0000E+00

* RUN # 22 NOV 21, 1997 15:34:30
START



GW-F3 (preserved)

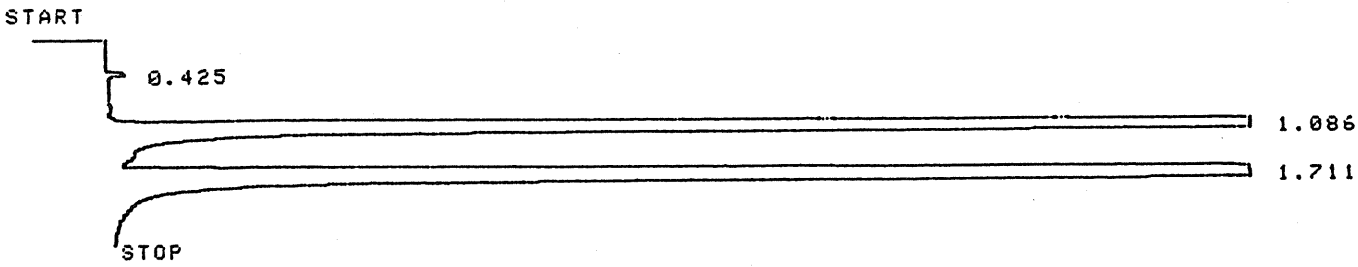
RUN# 22 NOV 21, 1997 15:34:30

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.412	22520672	PB	.042	89.70310
.838	981	PP	.062	.00391
1.687	2573224	PB	.084	10.24952
4.650	10918	I BH	.619	.04349

TOTAL AREA=2.5106E+07
MUL FACTOR=1.0000E+00

* RUN # 23 NOV 21, 1997 15:44:35
START



RUN# 23 NOV 21, 1997 15:44:35

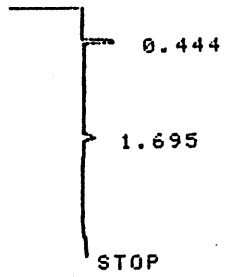
AREA%

RT	AREA	TYPE	WIDTH	AREA%

RT	AREA	TYPE	WIDTH	AREA%
.445	301938	PB	.049	100.00000

TOTAL AREA= 301938
MUL FACTOR=1.0000E+00

* RUN # 32 NOV 21, 1997 16:32:35
START



ESA -1

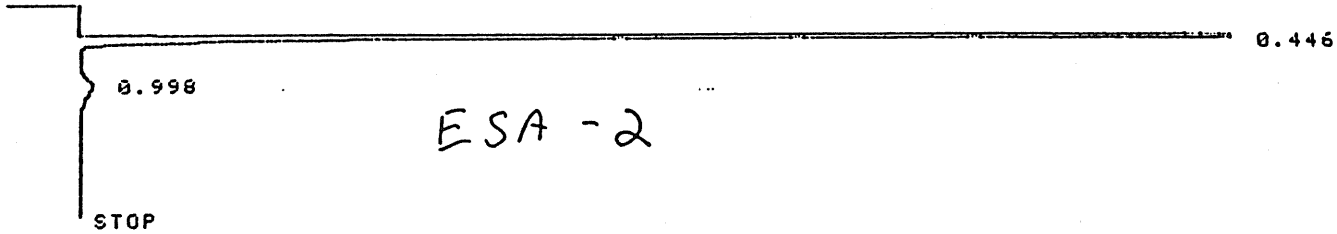
RUN# 32 NOV 21, 1997 16:32:35

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.444	2615	PP	.048	57.75178
1.695	1913	BB	.083	42.24822

TOTAL AREA= 4528
MUL FACTOR=1.0000E+00

* RUN # 33 NOV 21, 1997 16:37:23
START



ESA -2

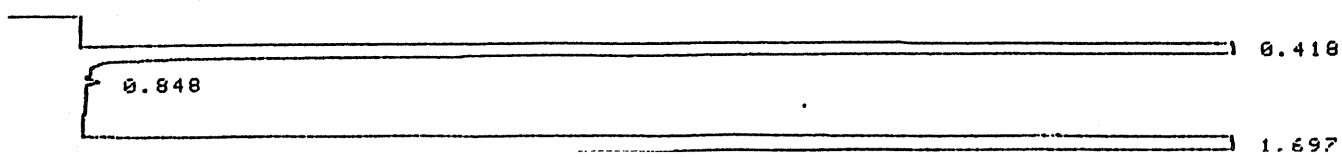
RUN# 33 NOV 21, 1997 16:37:23

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.446	291432	PB	.050	98.15830
.998	5468	BP	.264	1.84170

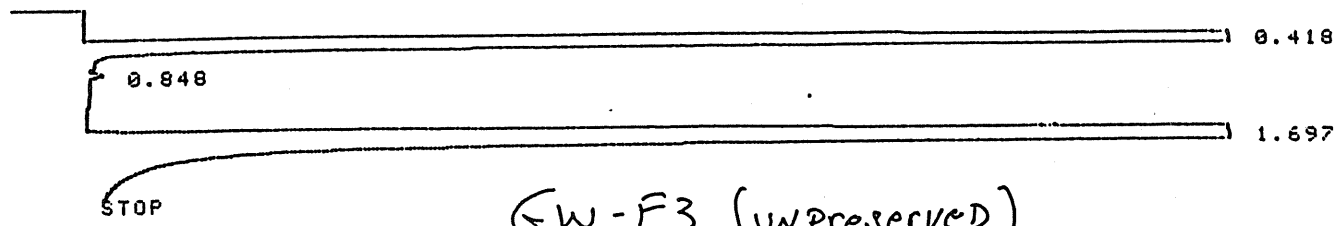
TOTAL AREA= 296900
MUL FACTOR=1.0000E+00

* RUN # 34 NOV 21, 1997 16:41:11
START



* RUN # 34 NOV 21, 1997 16:41:11

START



GW-F3 (unpreserved)

RUN# 34 NOV 21, 1997 16:41:11

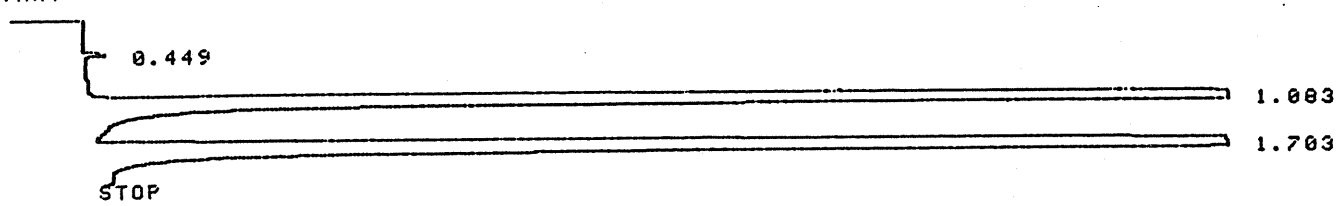
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.418	45341536	PB	.046	92.36515
.848	1475	PP	.058	.00300
1.697	3746434	PB	.085	7.63186

TOTAL AREA=4.9089E+07
MUL FACTOR=1.0000E+00

* RUN # 35 NOV 21, 1997 16:46:04

START



RUN# 35 NOV 21, 1997 16:46:04

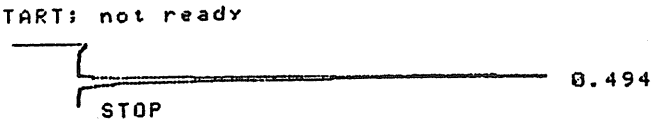
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.449	1622	PP	.045	.06216
1.083	1523932	PB	.064	58.40357
1.703	1083759	PB	.084	41.53427

TOTAL AREA=2609314
MUL FACTOR=1.0000E+00

* RUN # 36 NOV 21, 1997 16:50:49

START; not ready



RUN# 36 NOV 21, 1997 16:50:49

AREA%

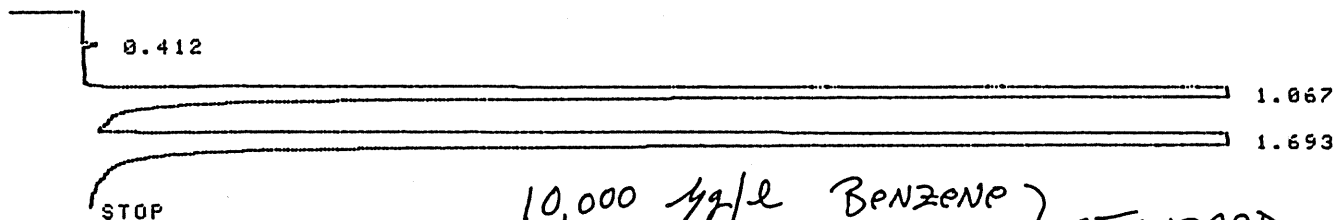
RT	AREA	TYPE	WIDTH	AREA%
.494	40477	PB	.052	100.00000

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.420	1429	PV	.058	100.00000

TOTAL AREA= 1429
MUL FACTOR=1.0000E+00

* RUN # 5 NOV 22, 1997 11:20:26
START



10,000 µg/l Benzene
10,000 µg/l Toluene } STANDARD

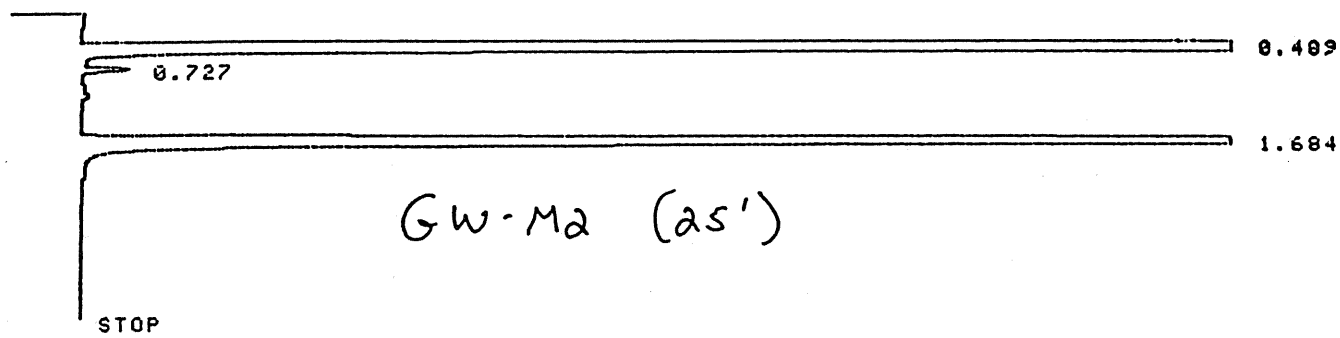
RUN# 5 NOV 22, 1997 11:20:26

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.412	1364	BP	.053	.03570
1.067	1984617	PB	.071	51.93896
1.693	1835076	PB	.090	48.02534

TOTAL AREA=3821058
MUL FACTOR=1.0000E+00

* RUN # 6 NOV 22, 1997 11:27:45
START



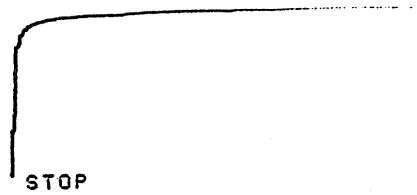
GW-M2 (25')

RUN# 6 NOV 22, 1997 11:27:45

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.409	15496616	PV	.022	48.62422
.437	15944336	VB	.028	50.02906
.727	4305	PB	.056	.01351
1.684	424905	PB	.083	1.33324

TOTAL AREA=3.1870E+07
MUL FACTOR=1.0000E+00



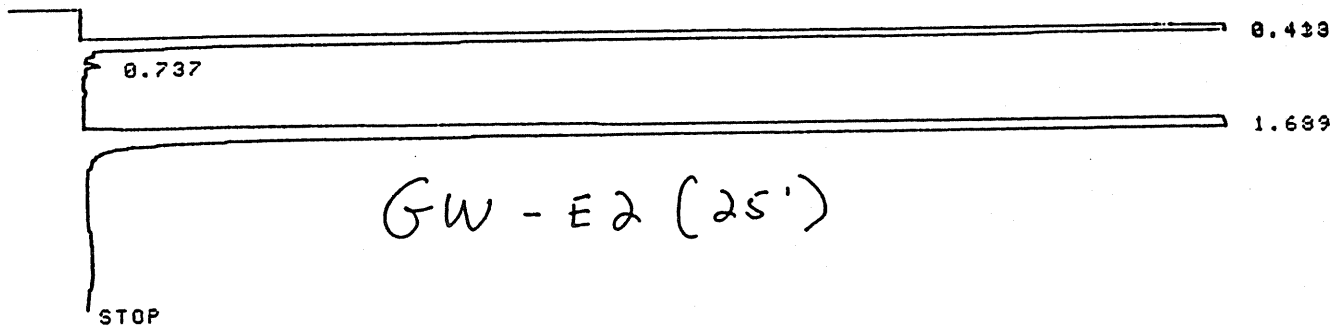
RUN# 8 NOV 22, 1997 11:41:04

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.412	2664181	PB	.052	72.95440
.741	1420	PV	.054	.03888
1.688	986243	PB	.085	27.00673

TOTAL AREA=3651843
MUL FACTOR=1.0000E+00

* RUN # 9 NOV 22, 1997 11:45:40
START



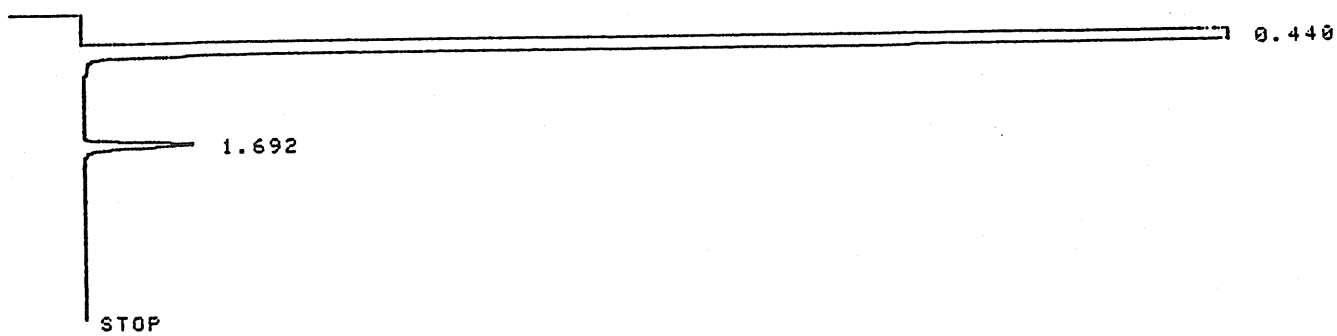
RUN# 9 NOV 22, 1997 11:45:40

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.413	1229411	PV	.025	33.83118
.438	1406873	VB	.027	38.71459
.737	1452	PV	.057	.03996
1.689	996223	PB	.083	27.41426

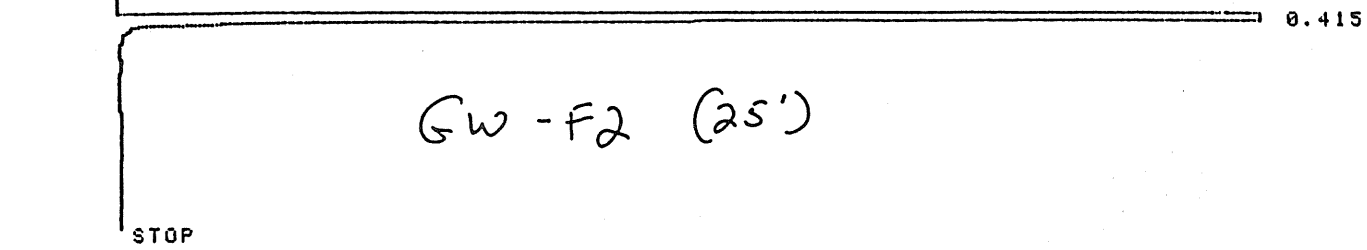
TOTAL AREA=3633958
MUL FACTOR=1.0000E+00

* RUN # 10 NOV 22, 1997 11:51:11
START



* RUN # 17 NOV 22, 1997 12:20:42

START



RUN# 17 NOV 22, 1997 12:20:42

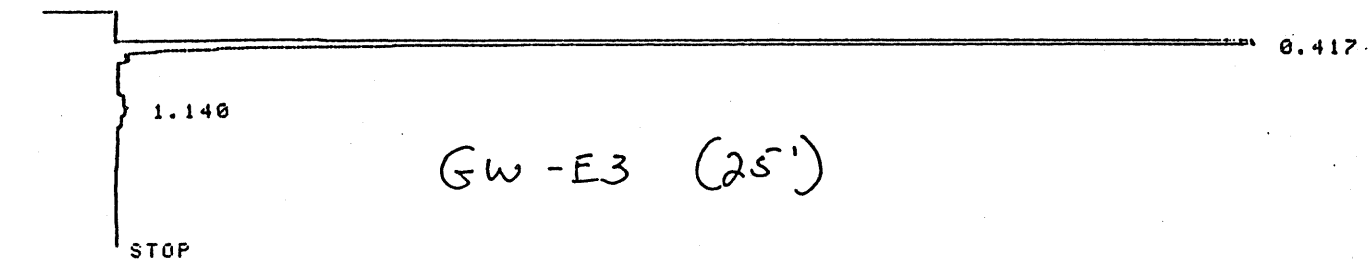
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.415	28040016	PB	.038	100.00000

TOTAL AREA=2.8040E+07
MUL FACTOR=1.0000E+00

* RUN # 18 NOV 22, 1997 12:25:15

START



RUN# 18 NOV 22, 1997 12:25:15

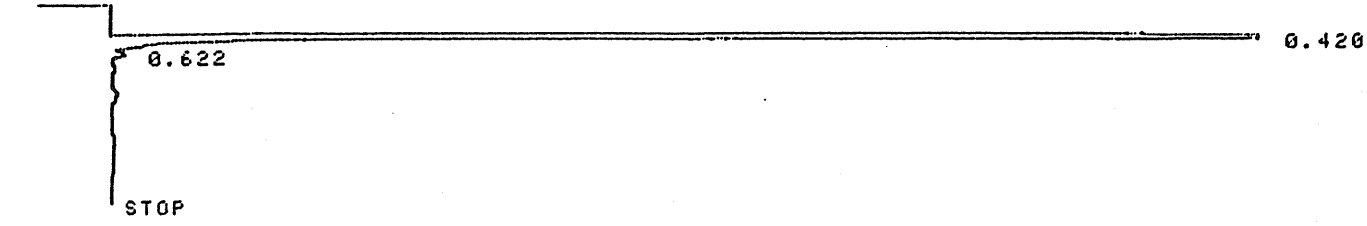
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.417	246300	PB	.047	97.16896
1.140	7176	PV	.364	2.83104

TOTAL AREA= 253476
MUL FACTOR=1.0000E+00

* RUN # 19 NOV 22, 1997 12:29:02

START



STOP

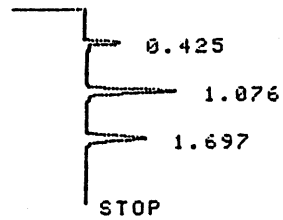
RUN# 19 NOV 22, 1997 12:29:02

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.420	242599	PB	.047	99.52250
.622	1164	BP	.060	.47751

TOTAL AREA= 243763
MUL FACTOR=1.0000E+00

* RUN # 20 NOV 22, 1997 12:32:16
START



50 µg/l BENZENE
50 µg/l TOLUENE
} STANDARD

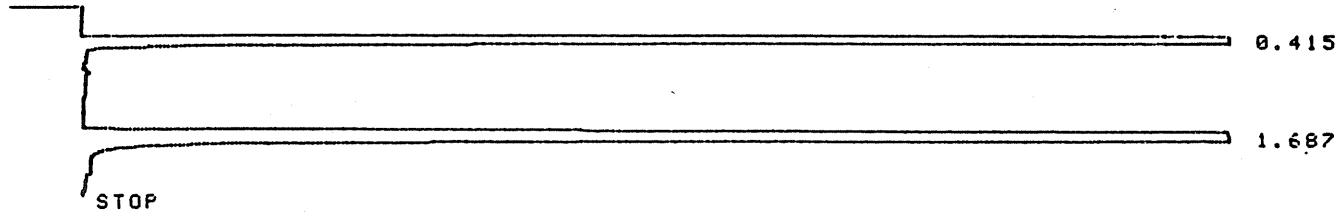
RUN# 20 NOV 22, 1997 12:32:16

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.425	2778	PB	.048	12.81010
1.076	10318	BB	.069	47.57909
1.697	8590	BB	.083	39.61082

TOTAL AREA= 21686
MUL FACTOR=1.0000E+00

* RUN # 21 NOV 22, 1997 12:38:35
START; not ready

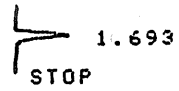


RUN# 21 NOV 22, 1997 12:38:35

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.415	9919411	PB	.048	91.11053
1.687	967816	PB	.083	8.88947

TOTAL AREA=1.0887E+07
MUL FACTOR=1.0000E+00



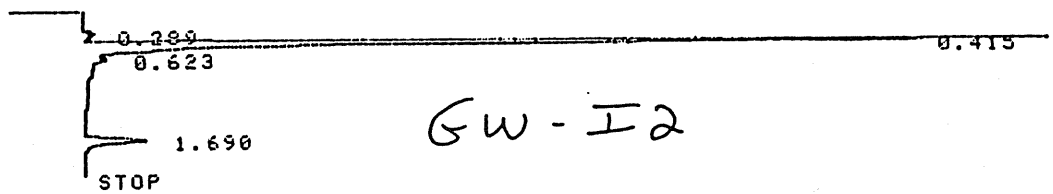
RUN# 26 NOV 22, 1997 13:07:24

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.411	88599	PB	.055	89.69507
.998	2027	BB	.060	2.05208
1.693	8152	PB	.088	8.25285

TOTAL AREA= 98778
MUL FACTOR=1.0000E+00

* RUN # 27 NOV 22, 1997 13:10:46
START



GW-I2

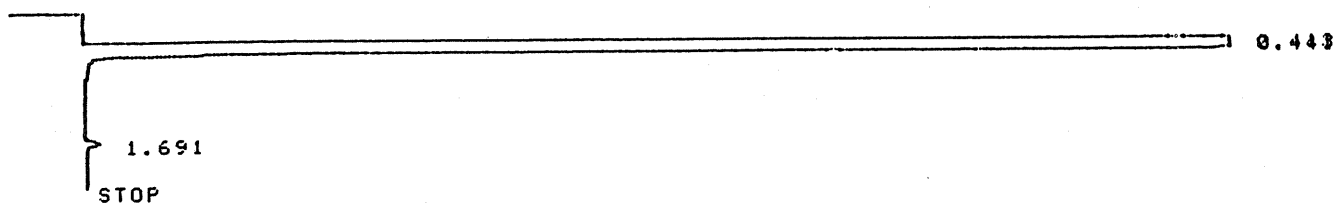
RUN# 27 NOV 22, 1997 13:10:46

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.289	894	PB	.037	.85872
.415	91945	BV	.056	88.31610
.623	2521	VV	.074	2.42150
1.690	8749	BB	.083	8.40369

TOTAL AREA= 104109
MUL FACTOR=1.0000E+00

* RUN # 28 NOV 22, 1997 13:18:06
START



RUN# 28 NOV 22, 1997 13:18:06

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.413	13388616	PV	.023	45.37592
.441	16114992	VB	.029	54.61600
1.691	2387	PB	.089	.00809

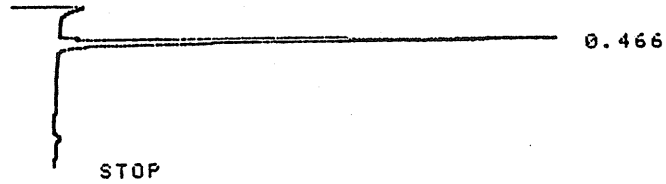
TOTAL AREA=2.9506E+07

CLICK TO RETURN TO APPENDIX 2

MUL FACTOR=1.0000E+00

* RUN # 32 NOV 22, 1997 13:34:23

START



RUN# 32 NOV 22, 1997 13:34:23

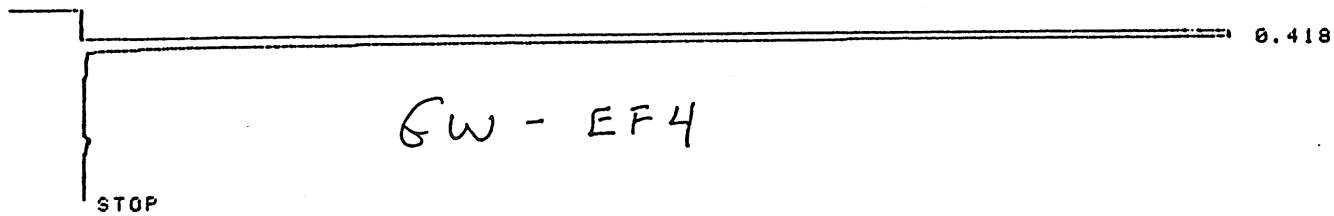
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.466	43895	BB	.051	100.00000

TOTAL AREA= 43895
MUL FACTOR=1.0000E+00

* RUN # 33 NOV 22, 1997 13:37:11

START



GW - EF4

RUN# 33 NOV 22, 1997 13:37:11

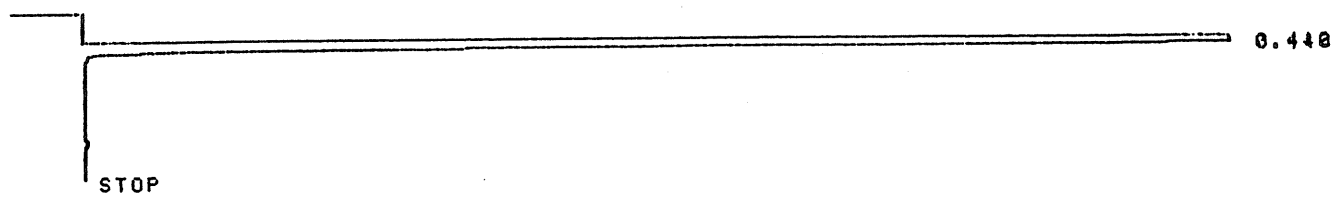
AREA%

RT	AREA	TYPE	WIDTH	AREA%
.418	1416569	PB	.048	100.00000

TOTAL AREA=1416569
MUL FACTOR=1.0000E+00

* RUN # 34 NOV 22, 1997 13:40:49

START



RUN# 34 NOV 22, 1997 13:40:49

AREA%

RT	AREA	TYPE	WIDTH	AREA%
.412	669395	PV	.026	46.51939
.440	769564	VB	.029	53.48062