QUARTERLY MONITORING REPORT
THIRD QUARTER 1998

L.E.CARPENTER

October 1998

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Dean Reviewed & Returned 10/3/98

Transmittal Letter

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Date: 10/27/98
Project No.: 3868.04
Subject: LE Carpenter, Wharton, NJ

We are sending you:
☒ Report

COPIES	DATE	NO.	DESCRIPTION
2	10/27/98	3868.04	3rd Quarter 1998 Monitoring Report

These items are transmitted as checked below:
☒ For your use

Remarks: Steven:

Per your request, find enclosed 2 copies of the 3rd Quarter Monitoring Report for the L.E. Carpenter facility in Wharton, New Jersey. What's your schedule looking like for the November site visit. Let me know and I will make appropriate travel arrangements

Nick

Signed: NJCl

Nicholas J. Clevett; Technical Manager
(Name and Title)

xc:

Section 1
Introduction

L.E. Carpenter and Company (LEC) is pleased to submit this Quarterly Monitoring Report for the L.E. Carpenter site located at 170 North Main Street, Wharton, New Jersey (Figure 1). Quarterly monitoring events are performed at the site to comply with paragraph 35 of the 1986 Administrative Consent Order issued to L.E. Carpenter by the New Jersey Department of Environmental Protection (NJDEP). This report provides a summary of activities completed during the third quarter, 1998, to include routine quarterly groundwater monitoring activities.

During the third quarter 1998, RMT conducted the following:

- Continued active free product recovery using enhanced fluid recovery (EFR) in accordance with the NJDEP approval letter dated August 20, 1997.
- Conducted quarterly groundwater monitoring activities as required under the Administrative Consent Order.
- Evaluated the replacement of 6 staff gauges to monitor surface water elevation fluctuations of surrounding surface water bodies.

A discussion of these activities is provided in the following sections.

Section 2
EFR Activities

In August 1997, the NJDEP approved the Remedial Action Plan (RAP) which described free product removal using enhanced fluid recovery (EFR) for the eastern portion of the site. EFR is conducted by applying a vacuum to product recovery wells to primarily remove free standing product, in addition to contaminated groundwater, contaminant vapors within vadose zone soils, and to enhance any natural biodegredation that may be occurring in the soil and groundwater as a result of increased aeration. The locations of the twenty-eight (28) EFR wells purged during each monthly EFR event and all groundwater monitoring wells are shown in Figure 2.

Monthly EFR events conducted by RMT during the third quarter 1998 were performed on July 31, 1998, August 24, 1998 and September 17, 1998 (Table 1). Prior to conducting EFR, product level and thickness were measured in each EFR well. Product measurements were recorded to determine the correct placement of the drop pipe or "stinger" to maximize product recovery and to track the amount of free product and the total volume of fluids removed during EFR through the third quarter 1998. Charts for each plume region (western, central, eastern) that graphically display free product thickness fluctuations over time, and free standing product fluctuations trends are presented as Appendix A. Figure 3 displays the extent of free product on-site for each EFR event.

The amount of free product extracted during each EFR event was estimated by measuring product thickness collected in the vacuum truck with an interface probe, while also accounting for an estimated volume of product vapor lost through the vent stack. Product vapor volume estimates were based on vacuum truck air flow measurements (in cfm) and vented VOCs concentrations (in ppm) obtained throughout each EFR event. During the third quarter 1998, a total of 760 gallons of fluid was removed during EFR activities, of which, approximately 191 gallons was free phase product. Since start-up in December 1997, site EFR activities have removed approximately 1,706 gallons of free product through September 17, 1998.

The following paragraphs describe free standing product trends in the western, central, and eastern portions of the free product plume. Free standing product refers to a volume (gal) of product occupying the casings of each EFR well. Total free standing product represents the sum of product volumes from each of the segregated region EFR wells.

In the western portion of the plume (EFR wells 1, 2, 3, 17, 18, 20, 21, and 28), there was a slight increase in the total volume of free standing product during the third quarter 1998. Total free standing product increased from 4.91 gallons on July 31, 1998 to 6 gallons on September 17, 1998. All western EFR wells showed slight increases in free product thickness during the third quarter 1998. However, the general product trend within the western portion appears to indicate a volumetric decease in total free standing product.

In the central portion of the plume (EFR wells 4, 5, 6, 7, 19, 22, 23, 24, 25, 26, and 27), there was also a slight increase in the volume of free standing product during the third quarter 1998. The total free standing product increased from 7.44 gallons on July 31, 1998 to 9.16 gallons on September 17, 1998. EFR wells 4, 5, 7, 19, 22, 23 & 27 showed slight increases in free product thickness, while EFR wells 6, 25, and 26 showed slight decreases in free product thickness. EFR well 24 did not reveal any measurable free product thickness. As with the western portion, the central free product thickness plume also appears to indicate a volumetric decrease.

In the eastern portion of the plume (EFR wells 8, 9, 10, 11, 12, 13, 14, 15, and 16), the total free standing product decreased from 11.12 gallons on July 31, 1998 to 10.58 gallons on September 17, 1998. EFR wells 8, 9, 13 & 15, showed slight increases in free product thickness, while EFR wells 10 , 11 & 12 showed slight decreases free product thickness during the third quarter 1998. EFR wells 14 and 16 did not reveal any measurable free product thickness.

The total free standing product throughout the site (accounting for all 28 EFR wells) increased slightly over the course of the third quarter from 19.47 gallons on July 31, 1998 to 22.04 gallons on September 17, 1998. However, a comparison between historic total free standing product volumes through out the site and present values appears to indicate a decreasing trend in the volume of product that exists at the soil/groundwater interface. In addition, a comparison between historical and third quarter 1998 free product extent and thickness summary figures (figure 3) indicates that the previous volume of free product existing in the center of the plume has been reduced (the 5 feet free product thickness contour has disappeared). This is a result of the noticeable reduction in the volume of free standing product measured in the former source area (EFR wells 10 and 11) during each of the three EFR events throughout the third quarter 1998.

Section 3
Quarterly Monitoring

During the third quarter 1998, RMT conducted routine quarterly groundwater monitoring activities at the L.E Carpenter site in accordance with the revised quarterly sampling program initiated during the third quarter 1995.

Groundwater sampling was conducted on August 28, 1998, in accordance with the procedures contained in the NJDEP's "Field Sampling Procedures Manual" dated May 1992. Monitoring wells MW-4, MW-14I, MW-15S, MW-15I, MW-22R, and MW-25R were purged utilizing a peristaltic pump to remove at least three well volumes prior to sampling. (Please note: Monitoring wells MW-22 and MW-25 were abandoned and replaced by Weston during the week of July 21, 1997 and are referred to as MW-22R and MW-25R in this report). During the well purge process, indicator parameters were monitored and recorded so that a representative sample of the formation water was collected for analysis (Appendix B). Once the wells were purged, samples were collected using Teflon coated plastic bailers.

A sample duplicate, a field blank and a trip blank were collected to satisfy quality control requirements. The trip blank was prepared by the laboratory and remained with the sample containers until the samples were returned to the laboratory. The duplicate was collected from monitoring well MW-22R. The field blank was collected by pouring distilled water through a Teflon coated bailer to verify that the field equipment was not adversely impacting the samples and decontamination procedures were adequate. Any sampling equipment used at each well was decontaminated prior to each use using a soap and water wash and distilled water rinse.

The results of the chemical analyses were compared to the NJDEP Class IIA Groundwater Quality Standards (NJGQS) and the Discharge Criteria presented in the Record of Decision (ROD) dated April 20, 1994. The presence of benzene and toluene was not detected at concentrations above the method detection limit in any of the groundwater samples. However, monitoring well MW-22R contained concentrations of both ethylbenzene and total xylenes above both the New Jersey standards and the ROD discharge criteria. Monitoring well MW-4 was also found to contain the same two contaminants of concern, however concentrations of both contaminants were below NJGQS and the discharge criteria outlined in the ROD.

Concentrations of ethylbenzene (1,880 µg/l) and total xylenes (10,300 µg/l) were detected in the sample collected from monitoring well MW-22R. Although these concentrations exceed both NJGQS and ROD discharge criteria, a notable downward trend in the concentrations of

ethylbenzene, total xylenes and bis-2-ethylhexylphthalate (DEHP) has been noted at this monitoring location during the past three quarters. Additionally, no concentrations of contaminants of concern have been detected above method detection levels at monitoring well MW-25R. Historical concentration trends of contaminants of concern detected at MW-22R are presented as Appendix C.

Concentrations of ethylbenzene and total xylenes below the NJGQS and the ROD discharge criteria were detected in monitoring well MW-4 (1.9 µg/l and 1.2 µg/l respectively). Concentrations of other contaminants of concern at the other four (4) monitoring wells (MW-14I, MW-15S, MW-15I & MW-25R) were not detected above the analytical method detection levels.

Historical groundwater monitoring data, to include the results from third quarter 1998 sampling, are presented in Table 2 with corresponding analytical laboratory reports presented as Appendix D. Sampling activities and all laboratory analyses were performed by Envirotech Research, Inc. (ERI) of Edison, New Jersey.

Section 4
Water Table Elevations

On August 28, 1998, Envirotech Research, Inc. (ERI) measured static groundwater levels from 71 different locations throughout the site (see Table 3) to evaluate the groundwater flow pattern in the shallow aquifer. It should be noted that 9 of the 71 locations monitored were observed to contain a measurable amount of free product. These locations include well points WP-A1, WP-A2 (*all product*), WP-A4, WP-A6, WP-A7, WP-A8, WP-A9, WP-B4 (*all product*), and WP-B7 (*all product*). Corrected water levels were used in the compilation of the groundwater contour map using a specific gravity of the primary constituent (toluene: 0.87). Figure 4 displays the water table potentiometric surface and indicates that groundwater flow direction is similar to that observed historically (generally toward the northeast).

Groundwater levels from the MW-19/Hot Spot-1 area were also used to determine flow patterns on the western portion of the site. It appears that a groundwater mound is present in the vicinity of monitoring well MW-20. This mound is probably related to the fact that groundwater within the relatively lower permeable clay, observed at monitoring well MW-20, will respond more slowly to fluctuations in the water table, than groundwater within the more permeable materials located beneath most of the western portion of the site.

RMT was unable to determine the specific interaction of the Rockaway River, the ditch located on the Air Products property to the north, and the Washington Forge Pond with shallow groundwater because the staff gauges were missing. The staff gauges will be replaced and surveyed during the fourth quarter, 1998.

Table 1
L.E. CARPENTER - Wharton, New Jersey
Free Product Recovery - EFR Wells

EFR Event Date Well No.	Development November 21, 1997 Feet of Product	EFR #1 December 9, 1997 Feet of Product	EFR #2 January 7, 1998 Feet of Product	EFR #3 January 22, 1998 Feet of Product	EFR #4 February 17, 1998 Feet of Product	EFR #5 March 13, 1998 Feet of Product	EFR #6 March 27, 1998 Feet of Product	EFR #7 April 24, 1998 Feet of Product	EFR #8 May 29, 1998 Feet of Product	EFR #9 June 30, 1998 Feet of Product	EFR #10 July 31, 1998 Feet of Product	EFR #11**** August 24, 1998 Feet of Product	EFR #12 September 17, 1998 Feet of Product
EFR-1	1.64	1.53	1.94	0.36	2.48	0.93	0.94	1.42	1.55	2.11	1.28	1.22	1.71
EFR-2	1.55	1.50	1.86	0.06	2.20	2.96	2.92	2.65	2.44	1.78	1.12	1.09	1.21
EFR-3	0.85	1.02	1.27	–	1.58	1.19	0.03	0.24	0.19	0.77	0.72	0.93	1.03
EFR-4	1.03	2.27	0.54	0.07	0.30	–	–	–	–	0.03	0.38	1.23	2.40
EFR-5	4.03	3.74	4.25	0.32	3.29	3.39	1.71	2.71	2.02	1.86	2.38	2.52	2.33
EFR-6	0.72	1.00	1.24	–	2.27	1.71	1.17	2.23	1.55	1.56	1.96	1.56	1.42
EFR-7	0.17	0.09	0.16	–	–	–	–	–	–	0.02	0.02	0.03	0.07
EFR-8	0.00	0.00	0.00	–	0.08	–	–	–	–	0.03	0.04	0.08	0.13
EFR-9	0.00	1.10	1.79	1.15	0.16	3.08	0.08	0.07	0.11	0.29	0.61	0.98	1.23
EFR-10	5.20	5.80	6.42	2.34	7.47	7.06	6.05	6.71	5.47	5.68	4.94	4.52	4.34
EFR-11	3.07	4.04	4.28	5.64	4.47	4.32	4.67	5.91	5.73	6.08	4.73	4.47	3.95
EFR-12	0.04	0.03	0.00	–	0.07	–	–	–	0.02	0.28	0.22	0.28	0.24
EFR-13	0.48	0.56	1.33	0.05	1.28	1.07	1.07	0.67	–	0.90	0.56	0.48	0.66
EFR-14	0.10	0.16	0.00	–	–	–	–	–	–	–	-	–	–
EFR-15	0.09	0.12	0.27	–	0.06	–	–	–	–	0.03	0.02	0.03	0.03
EFR-16	0.00	0.00	0.00	–	–	–	–	–	–	–	-	–	–
EFR-17	0.04	0.17	1.56	0.39	0.17	0.08	–	0.09	–	0.02	0.37	0.29	0.46
EFR-18	0.10	0.10	0.09	–	–	–	–	–	–	0.01	0.08	0.14	0.48
EFR-19	0.54	2.80	1.89	0.49	1.95	1.63	1.44	0.88	0.65	0.42	0.90	1.26	1.68
EFR-20	0.40	0.34	0.95	0.47	0.27	–	–	0.04	0.24	0.37	0.65	0.63	0.79
EFR-21	2.36	2.40	2.71	2.74	2.74	4.14	3.97	4.23	3.98	3.29	1.97	1.87	1.86
EFR-22	3.78	4.10	0.05	4.81	3.40	4.69	3.42	1.82	1.22	0.96	2.86	2.87	2.97
EFR-23	0.00	0.06	0.06	–	0.02	–	–	–	–	0.05	0.11	0.08	0.27
EFR-24	0.00	0.00	0.00	–	–	–	–	–	–	–	-	–	–
EFR-25	2.95	3.00	3.55	0.26	4.15	3.11	0.72	0.82	0.79	0.78	0.60	0.41	0.29
EFR-26	2.20	2.05	2.66	0.29	2.30	2.12	1.43	1.32	1.93	1.21	2.06	1.58	1.17
EFR-27	0.15	0.02	2.71	0.02	0.74	–	–	0.03	–	0.02	0.33	0.45	1.49
EFR-28	2.20	2.30	1.78	0.48	2.60	3.20	3.48	4.40	3.16	2.61	1.47	1.73	1.69
MIN (ft)	0.00	0.00	0.00	0.02	0.02	0.08	0.03	0.03	0.02	0.01	0.02	0.03	0.03
MAX (ft)	5.20	5.80	6.42	5.64	7.47	7.06	6.05	6.71	5.73	6.08	4.94	4.52	4.34
Average (ft)	1.20	1.44	1.55	1.17	1.92	2.79	2.21	2.01	1.94	1.25	1.22	1.23	1.36
Total Free Product (ft)	33.69	40.30	43.36	19.94	44.05	44.68	33.10	36.24	31.07	31.16	30.38	30.73	33.90
Total Standing Free Product Volume (gal)	21.60	25.83	27.79	12.78	28.24	28.64	21.22	23.23	19.92	19.97	19.47	19.70	22.04
Estimated Total Free Product Removed (gal)*	315	250	210	80	120	130	100	110	93	105	76	55	60
Total Volume Fluid Removed (gal)	2,350	1,410	376	256	314	300	339	403	390	561	211	220	329
Volume Resulting from Drum Purging (GW purge water) *if applicable*	-	-	-	-	-	338	150	600	70	110	71	-	110
Total Volume Removed from Site (gal) *(Invoiced volume)*	2,350	1,410	376	256	314	638	489	1,003	460	671	282	220	439
Cumulative Total Free Product Removed (gal)	315	565	775	855	975	1,105	1,205	1,315	1,410	1,515	1,591	1,646	1,706
Disposal Cost**	$3,976.37	$2,742.62	$1,130.50	$1,130.50	$1,219.12	$1,431.87	$1,541.31	$2,038.43	$1,240.75	$1,347.68	$1,324.62	$1,838.93	$1,383.18
Total Cost per gal***	$1.69	$1.95	$3.01	$4.42	$3.88	$2.24	$3.15	$2.03	$2.70	$2.01	$4.70	$8.36	$3.15

Notes:

Product thickness was determined prior to the EFR event.
gal = gallon
All EFR Wells are 4 inch in diameter

* Estimated free product (gal) based on Vacuum Truck gauging (interface probe) directly after each EFR Event
** Total invoiced disposal cost for EFR event (product and groundwater) and monitoring well purge water from 1/4ly well development and monitoring activities *(if applicable)*
*** Total Cost per gallon includes product transportation & disposal, manifest prep, & regulatory admin. fee for combined EFR and GW purge water drum volumes *(if applicable)*
**** EFR # 11 free product volume was 55 gal and contained PCBs (approx. weight 450lbs total @ specific gravity of 8.18 lbs/gal). Disposal costs were significantly higher due to PCB content

L.E. CARPENTER - Wharton, New Jersey

Quarterly Groundwater Monitoring Data

1st QUARTER 1995 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	26	ND	32	**25000**
MW-14I	ND	0.4	ND	1.2	**140**
MW-15S	ND	ND	ND	ND	2.4
MW-15I	ND	ND	ND	ND	**250**
MW-17S	ND	0.6	0.3	1.9	11
MW-22	ND	57	ND	**260**	**6500**
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	ND	ND	ND	ND
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

2nd QUARTER 1995 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	16	ND	13	**46000**
MW-14I	ND	ND	ND	ND	1.6
MW-15S	ND	ND	ND	ND	ND
MW-15I	ND	ND	ND	ND	7.2
MW-25	ND	ND	ND	ND	1.6
MW-30	ND	17	ND	13	**45000**
MW-17S	0.2	ND	0.18	ND	ND
MW-22	ND	311	ND	**955**	**380**
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	0.73	ND	ND	1.3
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

L.E. CARPENTER - Wharton, New Jersey

Quarterly Groundwater Monitoring Data

3rd QUARTER 1995 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	9.7	ND	8.7	NS
MW-14I	ND	ND	ND	ND	NS
MW-15S	ND	ND	ND	ND	NS
MW-15I	ND	ND	ND	ND	NS
MW-25	ND	ND	ND	ND	NS
MW-30	ND	ND	ND	ND	NS
MW-22	ND	171	ND	**693**	NS
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	ND	ND	ND	NS
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

4th QUARTER 1995 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	8.8	ND	11	**17000**
MW-14I	ND	ND	ND	ND	2.6
MW-15S	ND	ND	ND	ND	ND
MW-15I	ND	ND	ND	ND	2.8
MW-25	ND	ND	ND	ND	**68**
MW-30	ND	ND	ND	ND	ND
MW-22	ND	123	ND	**494**	**320**
MW-17S	ND	ND	ND	0.63	ND
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	ND	ND	ND	ND
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

L.E. CARPENTER - Wharton, New Jersey

Quarterly Groundwater Monitoring Data

1st QUARTER 1996 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	24	ND	**47**	NS
MW-14I	ND	ND	ND	ND	NS
MW-15S	ND	33	ND	**83**	NS
MW-15I	ND	ND	ND	ND	NS
MW-30	ND	ND	ND	ND	NS
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	ND	ND	ND	NS
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

3rd QUARTER 1996 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	6.8	ND	4.3	NS
MW-14I	ND	ND	ND	ND	NS
MW-15S	ND	ND	ND	ND	NS
MW-15I	ND	ND	ND	ND	NS
MW-25	ND	0.34	ND	2.2	NS
MW-22	ND	359	ND	**1320**	NS
MW-30	ND	ND	ND	ND	NS
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	ND	ND	ND	NS
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

L.E. CARPENTER - Wharton, New Jersey

Quarterly Groundwater Monitoring Data

4th QUARTER 1996 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	2.3	ND	ND	**11000**
MW-14I	ND	ND	ND	ND	2.7
MW-15S	ND	0.21	ND	1.7	ND
MW-15I	ND	ND	ND	ND	1.7
MW-25	ND	ND	ND	ND	ND
MW-17S	ND	ND	ND	ND	1.5
MW-22	ND	320	ND	**1330**	ND
MW-15I Dup	ND	ND	ND	ND	1.9
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	ND	ND	ND	ND
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

1st QUARTER 1997 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	3.5	ND	1.8	NS
MW-14I	ND	ND	ND	ND	NS
MW-15S	ND	ND	ND	ND	NS
MW-15I	ND	ND	ND	ND	NS
MW-25	ND	ND	ND	ND	NS
MW-30S	ND	0.2	ND	1.0	NS
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	ND	0.2	ND	NS
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

L.E. CARPENTER - Wharton, New Jersey

Quarterly Groundwater Monitoring Data

2nd QUARTER 1997 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	1.2	ND	4.2	**120**
MW-14I	ND	ND	ND	ND	1.6
MW-15S	ND	ND	ND	ND	1.2
MW-15I	ND	ND	ND	ND	2.2
MW-22	ND	**5,730**	ND	**32,900**	**7,500**
MW-25	ND	13.5	ND	**89**	**63**
MW-17S	ND	ND	ND	ND	NS
MW-30	ND	ND	ND	ND	2.2
TRIP BLANK	ND	ND	ND	ND	ND
FIELD BLANK	ND	ND	ND	ND	NS
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

3rd QUARTER 1997 (*Weston*)					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	2.2	ND	12.6	NS
MW-14I	1.2	22.1	ND	**176**	NS
MW-15S	ND	ND	ND	ND	NS
MW-15I	ND	ND	ND	ND	NS
MW-22	ND	**11,400**	348	**66,000**	NS
MW-25	ND	4.1	ND	30.7	NS
MW-30-S	ND	ND	ND	ND	NS
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	ND	ND	ND	NS
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

L.E. CARPENTER - Wharton, New Jersey

Quarterly Groundwater Monitoring Data

1st QUARTER 1998					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**bis-2-Ethylhexylphthalate**
MW-4	ND	ND	ND	ND	NS
MW-14I	ND	ND	ND	ND	NS
MW-15S	ND	ND	1.4	ND	NS
MW-15I	ND	ND	ND	ND	NS
MW-22	ND	**4,070**	348	**20,600**	NS
MW-25	ND	0.33	ND	1.5	NS
MW DUP (MW-25)	ND	0.39	ND	0.94	NS
TRIP BLANK	ND	ND	ND	ND	NS
FIELD BLANK	ND	ND	ND	ND	NS
NJDEP GWQS (ug/L)	NA	700	1000	40	40
ROD Discharge Criteria (ug/L)	NA	350	500	20	20

2nd QUARTER 1998					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**DEHP (ug/L)**
MW-4	ND	1.0	ND	1.4	**710**
MW-14I	ND	0.34	ND	2	24
MW-15S	ND	ND	ND	1.3	ND
MW-15I	ND	ND	ND	ND	1.9
MW-17S	ND	ND	ND	1.2	6.1
MW-22R	ND	**2,260**	ND	**11,300**	**5,800**
MW-25R	ND	ND	ND	ND	5.3
MW-15I DUP	ND	ND	ND	ND	3.8
TRIP BLANK	ND	ND	ND	ND	ND
FIELD BLANK	ND	ND	ND	ND	NS
NJDEP GWQS (ug/L)	NA	700	1000	40	30
ROD Discharge Criteria (ug/L)	NA	350	500	20	30

L.E. CARPENTER - Wharton, New Jersey

Quarterly Groundwater Monitoring Data

3rd QUARTER 1998					
Monitoring Well	**Benzene (ug/L)**	**Ethylbenzene (ug/L)**	**Toluene (ug/L)**	**Total Xylenes (ug/L)**	**DEHP (ug/L)**
MW-4	ND	1.9	ND	1.2	NS
MW-14I	ND	ND	ND	ND	NS
MW-15S	ND	ND	ND	ND	NS
MW-15I	ND	ND	ND	ND	NS
MW-22R	ND	**1,880**	ND	**10,300**	NS
MW-25R	ND	ND	ND	ND	NS
MW-22RD (DUP)	ND	**2,510**	ND	**11,000**	NS
FIELD BLANK	ND	ND	ND	ND	NS
TRIP BLANK	ND	ND	ND	ND	NS
NJDEP GWQS (ug/L)	NA	700	1000	40	30
ROD Discharge Criteria (ug/L)	NA	350	500	20	30

Notes:

1) ug/L = micrograms per liter
2) NJDEP GWQS = New Jersey Groundwater Quality Standards
3) Values in bold are above both the NJDEP GWQS and the ROD Discharge Criteria
4) NA = Not Applicable
5) NS = Not Sampled
6) ND: No Detection
7) No historical Weston reports were available for 2nd quarter 1996 & 4th quarter 1997

Table 3

Water Level Elevations (3rd. QUARTER 1998)

L.E. Carpenter, Wharton, New Jersey

WELL LOCATION	LATITUDE	LONGITUDE	ELEVATION	OUTER CASING	INNER WELL	MEAS. DATE	PRODUCT DEPTH	WATER DEPTH	PRODUCT ELEVATION	WATER ELEVATION	PRODUCT THICKNESS	CORRECTED WATER LEVEL ELEVATIONS
CW-1	40° 54' 14.2"	74° 34' 34.7"	630.83	634.35	--	Aug-98		8.55	--	622.28	--	--
CW-3	40° 54' 13.8"	74° 34' 32.5"	628.63	633.30	--	Aug-98	--	8.63	--	620.00	--	--
DC-P0	--	--	625.75	--	--	Aug-98	--	0.76	--	624.99	--	--
DC-P1	--	--	625.24	--	--	--	--	NA	--	--	--	--
DC-P2	--	--	626.91	--	--	--	--	NA	--	--	--	--
DC-P3	--	--	625.22	--	--	--	--	NA	--	--	--	--
DC-P4	--	--	625.12	--	--	Aug-98	--	0.61	--	624.51	--	--
DC-P5	--	--	625.17	--	--	Aug-98	--	0.80	--	624.37	--	--
GEI-1I	40° 54' 19.3"	74° 34' 35.3"	628.44	630.93	630.78	Aug-98	--	5.90	--	624.88	--	--
GEI-2 I	40° 54' 17.4"	74° 34' 43.1"	635.92	638.35	638.20	Aug-98	--	12.26	--	625.94	--	--
GEI-2 S	40° 54' 17.3"	74° 34' 43.0"	635.46	637.87	637.67	Aug-98	--	12.19	--	625.48	--	--
GEI-3 I	40° 54' 14.8"	74° 34' 43.7"	637.56	639.99	639.85	Aug-98	--	14.44	--	625.41	--	--
M.W.-1R	40° 54' 13.8"	74° 34' 38.8"	635.79	635.78	635.47	Aug-98	--	10.64	--	624.83	--	--
MW-2R	40° 54' 14.4"	74° 34' 33.1"	629.06	632.28	632.14	Aug-98	--	7.71	--	624.43	--	--
M.W.-3	40° 54' 14.0"	74° 34' 32.6"	628.64	632.27	632.56	Aug-98	--	7.85	--	624.71	--	--
M.W.-4	40° 54' 12.4"	74° 34' 34.4"	628.86	632.31	632.50	Aug-98	--	7.97	--	624.53	--	--
MW-6R	40° 54' 13.8"	74° 34' 34.1"	629.82	632.64	632.42	Aug-98	--	7.47	--	624.95	--	--
M.W.-8	40° 54' 12.7"	74° 34' 33.3"	627.99	630.56	628.79	Aug-98	--	3.52	--	625.27	--	--
M.W.-9	40° 54' 12.5"	74° 34' 35.1"	629.21	631.69	630.18	Aug-98	--	5.28	--	624.90	--	--
M.W.-11D (R)	40° 54' 14.2"	74° 34' 34.9"	630.66	633.35	633.09	Aug-98	--	6.53	--	626.56	--	--
M.W.-11I (R)	40° 54' 14.1"	74° 34' 34.9"	630.89	633.67	633.33	Aug-98	--	8.78	--	624.55	--	--
M.W.-11 S	40° 54' 14.0"	74° 34' 34.9"	631.23	633.26	632.96	Aug-98	--	8.47	--	624.49	--	--
MW-12R	40° 54' 12.3"	74° 34' 35.9"	632.17	634.86	634.33	Aug-98	--	9.61	--	624.72	--	--
M.W.12 S	40° 54' 12.3"	74° 34' 36.0"	630.23	633.71	633.18	--	--	--	--	--	--	--
M.W.-13 I	40° 54' 15.1"	74° 34' 31.9"	628.36	630.88	630.66	Aug-98	--	6.24	--	624.42	--	--
MW-13R	40° 54' 15.0"	74° 34' 31.8"	628.26	630.96	630.59	Aug-98	--	6.24	--	624.35	--	--
M.W.-13 S	40° 54' 15.3"	74° 34' 31.7"	628.34	631.40	631.23	Aug-98	--	5.80	--	625.43	--	--
M.W.-14 I	40° 54' 14.2"	74° 34' 31.2"	625.93	628.32	628.23	Aug-98	--	4.00	--	624.23	--	--
M.W.-14 S	40° 54' 14.3"	74° 34' 31.0"	625.78	628.63	628.41	Aug-98	--	4.32	--	624.09	--	--
M.W.-15 I	40° 54' 15.0"	74° 34' 37.9"	634.74	636.88	636.66	Aug-98	--	11.85	--	624.81	--	--
M.W.-15 S	40° 54' 15.0"	74° 34' 38.0"	634.83	637.03	636.77	Aug-98	--	12.00	--	624.77	--	--
M.W.-16 I	40° 54' 16.0"	74° 34' 40.3"	632.43	635.08	634.96	Aug-98	--	9.71	--	625.25	--	--
M.W.-16 S	40° 54' 15.9"	74° 34' 40.4"	632.57	634.69	634.47	Aug-98	--	9.25	--	625.22	--	--
M.W.-17 S	40° 54' 12.8"	74° 34' 39.7"	632.95	634.92	634.79	Aug-98	--	9.93	--	624.86	--	--

Table 3

Water Level Elevations (3rd. QUARTER 1998)

L.E. Carpenter, Wharton, New Jersey

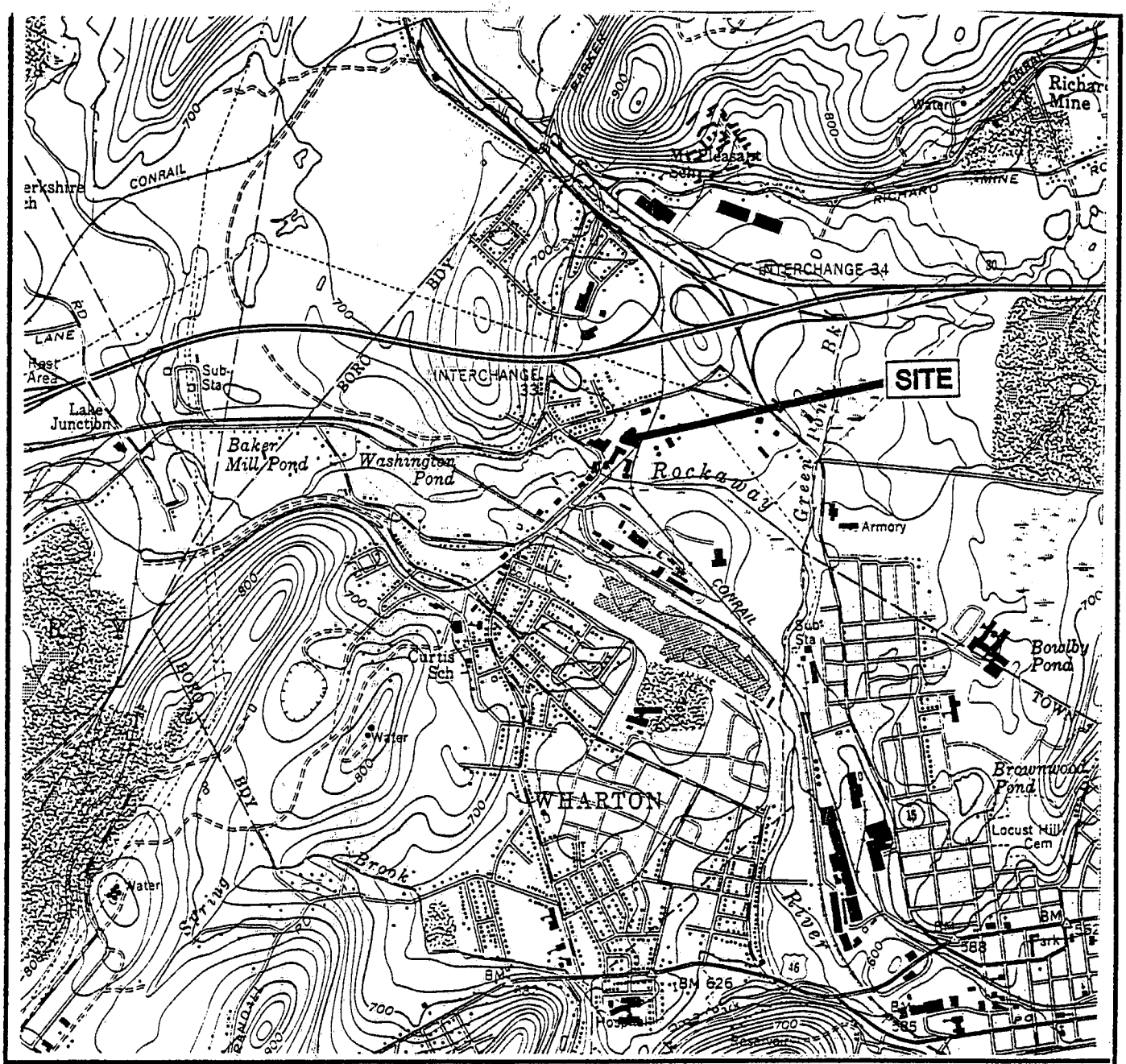
WELL LOCATION	LATITUDE	LONGITUDE	ELEVATION	OUTER CASING	INNER WELL	MEAS. DATE	PRODUCT DEPTH	WATER DEPTH	PRODUCT ELEVATION	WATER ELEVATION	PRODUCT THICKNESS	CORRECTED WATER LEVEL ELEVATIONS
M.W.-18 I	40° 54' 18.4"	74° 34' 35.2"	628.35	631.19	631.04	Aug-98	--	6.23	--	624.81	--	--
M.W.-18 S	40° 54' 18.4"	74° 34' 35.0"	628.22	631.48	631.26	Aug-98	--	6.44	--	624.82	--	--
M.W.-19	40° 54' 17.1"	74° 34' 43.7"	636.72	639.24	638.88	Aug-98	--	13.31	--	625.57	--	--
M.W.-19-1	40° 54' 17.0"	74° 34' 44.0"	636.50	639.26	638.86	Aug-98	--	13.26	--	625.60	--	--
M.W.-19-2	40° 54' 17.2"	74° 34' 44.0"	637.05	639.36	638.76	Aug-98	--	13.17	--	625.59	--	--
M.W.-19-3	40° 54' 17.1"	74° 34' 44.5"	637.54	640.04	639.65	Aug-98	--	13.97	--	625.68	--	--
M.W.-19-4	40° 54' 16.7"	74° 34' 44.0"	636.27	638.44	637.74	Aug-98	--	12.08	--	625.66	--	--
M.W.-19-5	40° 54' 17.3"	74° 34' 43.5"	636.39	639.07	638.74	Aug-98	--	13.24	--	625.50	--	--
M.W.-20	40° 54' 17.2"	74° 34' 41.2"	634.82	637.03	636.77	Aug-98	--	11.20	--	625.57	--	--
M.W.-21	40° 54' 14.1"	74° 34' 28.2"	625.17	629.09	628.80	Aug-98	--	4.77	--	624.03	--	--
M.W.-22	40° 54' 13.7"	74° 34' 31.2"	625.94	628.31	628.13	Aug-98	--	4.27	--	623.86	--	--
M.W.-23	40° 54' 15.8"	74° 34' 30.5"	628.70	630.95	630.64	Aug-98	--	3.96	--	626.68	--	--
M.W.-25	40° 54' 13.7"	74° 34' 29.8"	625.25	627.37	627.22	Aug-98	--	3.12	--	624.10	--	--
MW-26	40° 54' 15.7"	74° 34' 34.3"	630.84	634.39	633.26	Aug-98	--	8.68	--	624.58	--	--
RP-1	--	--	629.65	--	--	--	--	NA	--	--	--	--
RP-2	--	--	627.75	--	--	Aug-98	--	2.14	--	625.61	--	--
RP-3	--	--	627.11	--	--	Aug-98	--	2.72	--	624.39	--	--
RP-4	--	--	642.28	--	--	Aug-98	--	2.60	--	639.68	--	--
RW-1	40° 54' 13.6"	74° 34' 39.1"	635.19	637.81	637.38	Aug-98	--	12.60	--	624.78	--	--
RW-2	40° 54' 14.2"	74° 34' 32.8"	629.80	631.78	631.68	Aug-98	--	7.27	--	624.41	--	--
RW-3	40° 54' 14.9"	74° 34' 33.9"	629.89	632.15	631.99	Aug-98	--	7.32	--	624.67	--	--
WP-A1	40° 54' 13.9"	74° 34' 38.8"	636.29	636.32	635.81	Aug-98	10.84	11.57	624.97	624.24	0.73	624.88
WP-A2	40° 54' 14.2"	74° 34' 39.0"	637.31	639.62	639.19	Aug-98	4.66	--	634.53	--	--	--
WP-A3	40° 54' 13.7"	74° 34' 40.3"	635.97	635.97	635.56	Aug-98	--	10.73	--	624.83	--	--
WP-A4	40° 54' 14.0"	74° 34' 38.5"	635.63	635.66	635.10	Aug-98	12.06	13.14	623.04	621.96	1.08	622.90
WP-A5	40° 54' 14.4"	74° 34' 38.1"	635.70	--	637.85	Aug-98	--	13.13	--	624.72	--	--
WP-A6	40° 54' 13.6"	74° 34' 38.0"	634.95	--	637.28	Aug-98	12.54	14.56	624.74	622.72	2.02	624.48
WP-A7	40° 54' 13.7"	74° 34' 36.6"	632.94	--	634.88	Aug-98	10.29	12.60	624.59	622.28	2.31	624.29
WP-A8	40° 54' 14.3"	74° 34' 36.6"	634.70	--	637.56	Aug-98	12.95	14.17	624.61	623.39	1.22	624.45
WP-A9	40° 54' 13.6"	74° 34' 37.4"	637.22	--	639.32	Aug-98	14.98	15.89	624.34	623.43	0.91	624.22
WP-B1	40° 54' 13.9"	74° 34' 35.7"	631.85	--	633.65	Aug-98	--	7.75	--	625.90	--	--
WP-B2	40° 54' 14.5"	74° 34' 35.1"	630.48	632.58	632.25	Aug-98	--	7.67	--	624.58	--	--
WP-B3	40° 54' 14.2"	74° 34' 35.4"	631.71	--	633.33	Aug-98	--	8.57	--	624.76	--	--
WP-B4	40° 54' 14.5"	74° 34' 34.5"	629.93	--	632.56	Aug-98	7.84	--	--	--	--	--

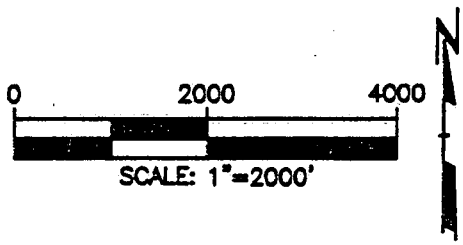
Table 3

Water Level Elevations (3rd. QUARTER 1998)

L.E. Carpenter, Wharton, New Jersey

WELL LOCATION	LATITUDE	LONGITUDE	ELEVATION	OUTER CASING	INNER WELL	MEAS. DATE	PRODUCT DEPTH	WATER DEPTH	PRODUCT ELEVATION	WATER ELEVATION	PRODUCT THICKNESS	CORRECTED WATER LEVEL ELEVATIONS
WP-B5	40° 54' 14.7"	74° 34' 34.2"	630.03	--	632.11	Aug-98	--	6.49	--	625.62	--	--
WP-B6	40° 54' 13.4"	74° 34' 33.7"	629.72	--	631.86	Aug-98	--	7.54	--	624.32	--	--
WP-B7	40° 54' 13.5"	74° 34' 32.3"	627.62	--	629.49	Aug-98	5.24	--	--	--	--	--
WP-B9	40° 54' 14.2"	74° 34' 33.5"	640.32	--	632.37	--	--	--	--	--	--	--
WP-B10	40° 54' 14.9"	74° 34' 34.7"	630.42	633.12	632.74	Aug-98	--	8.08	--	624.66	--	--
WP-C1	40° 54' 12.6"	74° 34' 36.1"	632.81	--	633.51	Aug-98	--	9.00	--	624.51	--	--
WP-C2	40° 54' 12.5"	74° 34' 35.6"	633.02	--	634.46	Aug-98	--	8.98	--	625.48	--	--
WP-C3	40° 54' 12.4"	74° 34' 36.4"	631.00	--	632.64	Aug-98	--	7.75	--	624.89	--	--
WP-C4	40° 54' 12.8"	74° 34' 35.9"	632.44	--	633.27	Aug-98	--	8.75	--	624.52	--	--
production well	40° 54' 13.0"	74° 34' 38.6"	634.43	635.41	--	--	--	--	--	--	--	--





QUADRANGLE LOCATION

SOURCE: BASE MAP FROM DOVER, NEW JERSEY, 7.5 MINUTE USGS QUADRANGLE, DATED 1981.

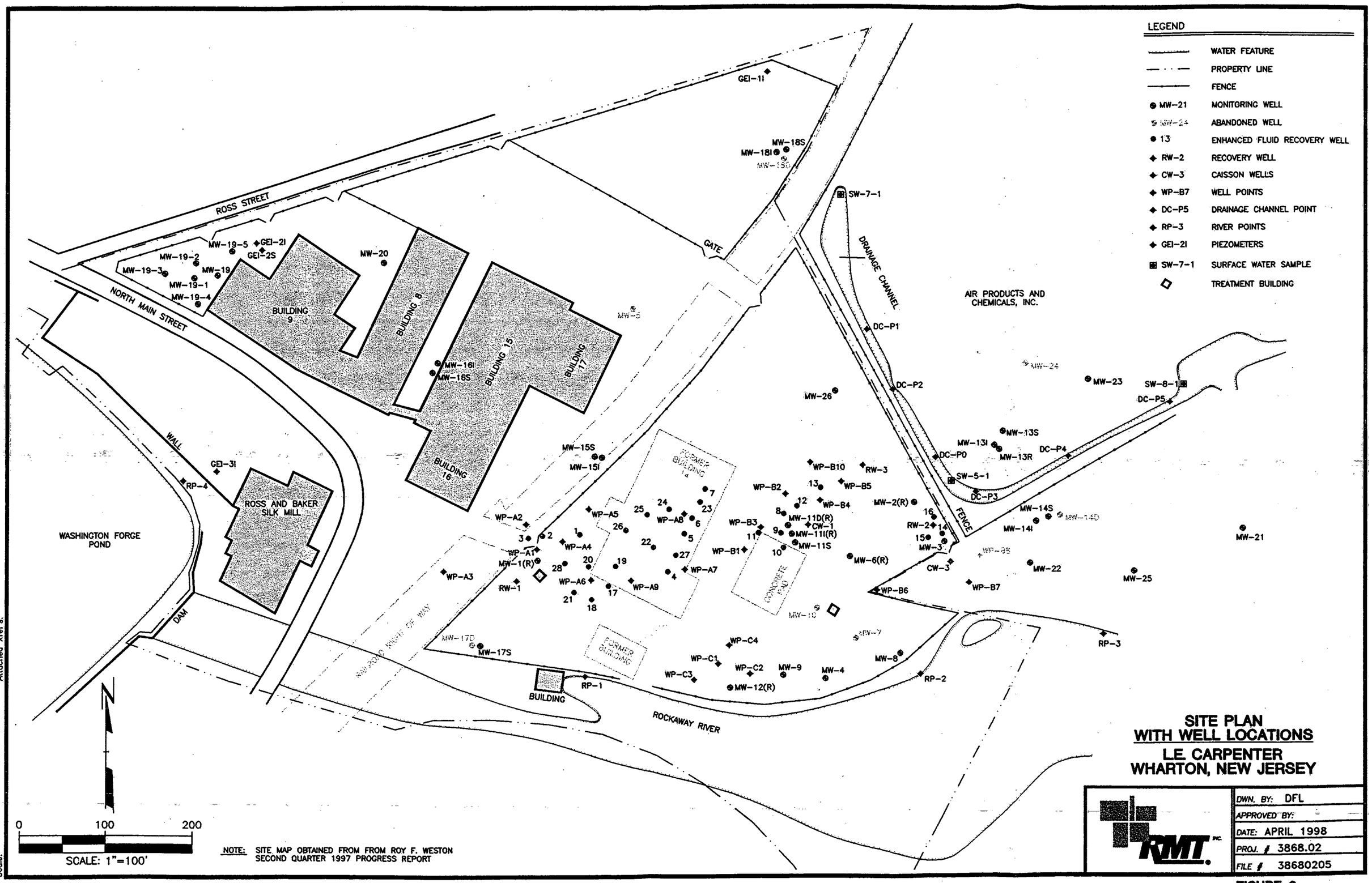
SITE LOCATOR MAP

LE CARPENTER
WHARTON, NEW JERSEY

RMT INC.

DWN. BY:	DFL
APPROVED BY:	
DATE:	APRIL 1998
PROJ.#	3868.02
FILE #	38680208

FIGURE 1



NOTE: SITE MAP OBTAINED FROM FROM ROY F. WESTON SECOND QUARTER 1997 PROGRESS REPORT

SITE PLAN WITH WELL LOCATIONS

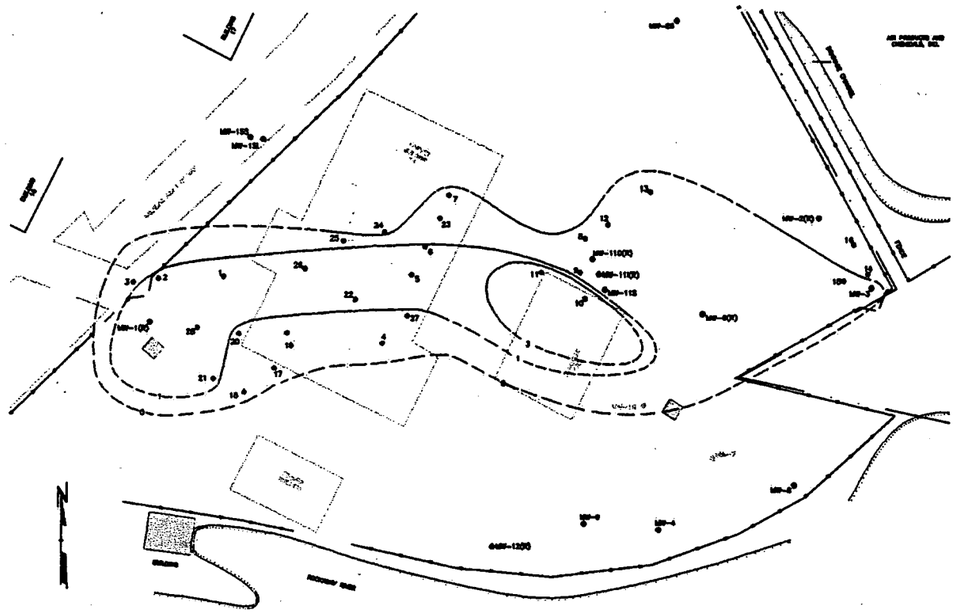
LE CARPENTER WHARTON, NEW JERSEY

RMT INC.

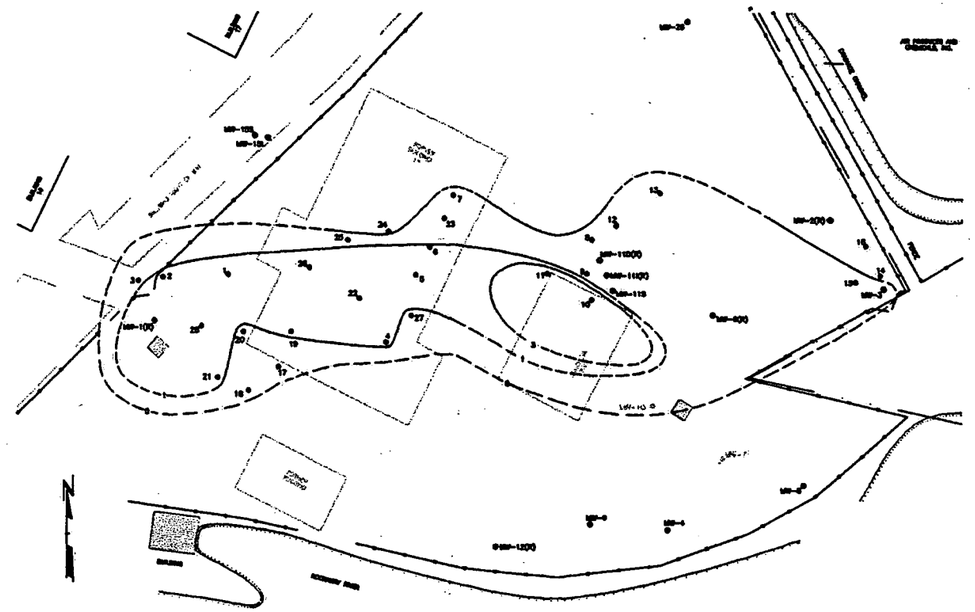
DWN. BY:	DFL
APPROVED BY:	
DATE:	APRIL 1998
PROJ. #	3868.02
FILE #	38680205

FIGURE 2

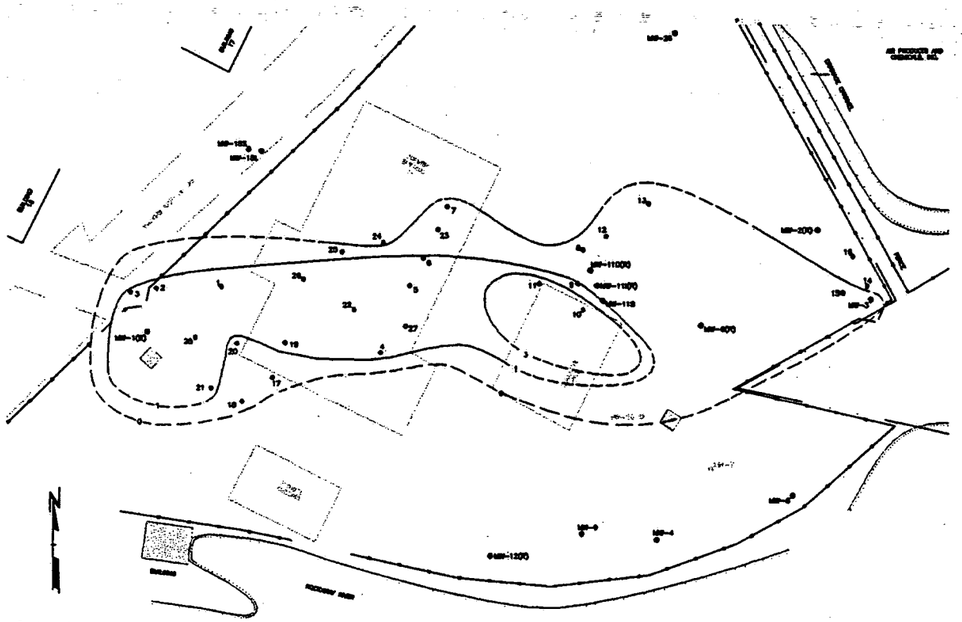
PLOT DATA
Drawing Name:
Operator Name:
Scale:
Dwg Size:
Plot Date:
Plot Time:
Attached Xref's:



EFR EVENT #10 (JULY 31, 1998)



EFR EVENT #11 (AUGUST 24, 1998)



EFR EVENT #12 (SEPTEMBER 17, 1998)

PLOT DATA

Drawing Name: x
Operator Name: x x
Scale: x

Dwg Size: x
Plot Date: x x
Plot Time: x x
Attached Xref's: x

ENHANCED FLUID RECOVERY
SUMMARY FIGURES

L.E. CARPENTER
WHARTON, NEW JERSEY

RMT INC.

DWN. BY:	DFL
APPROVED BY:	
DATE:	OCT. 1998
PROJ. #	3868.07
FILE #	38680234

FIGURE 3

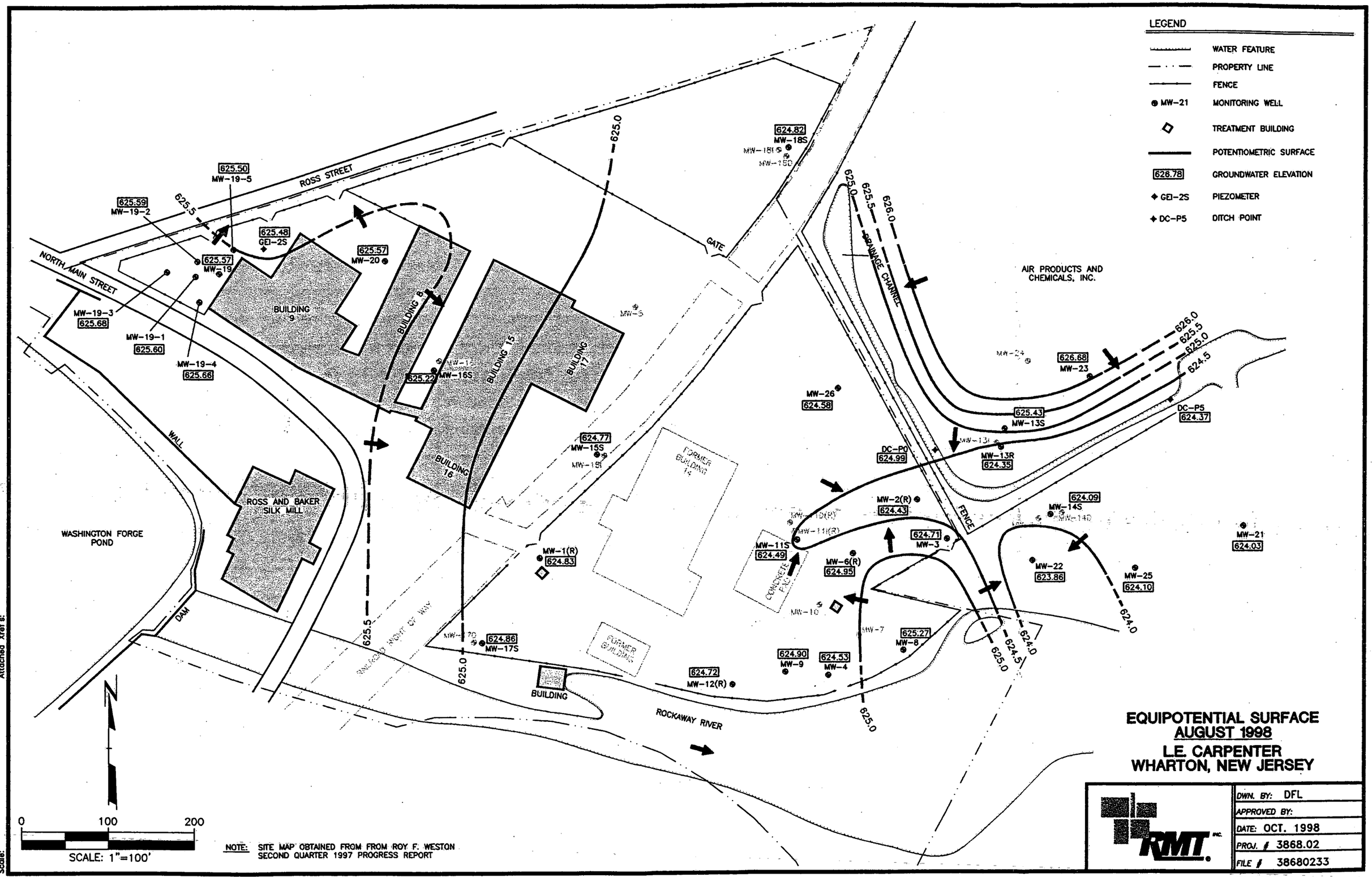
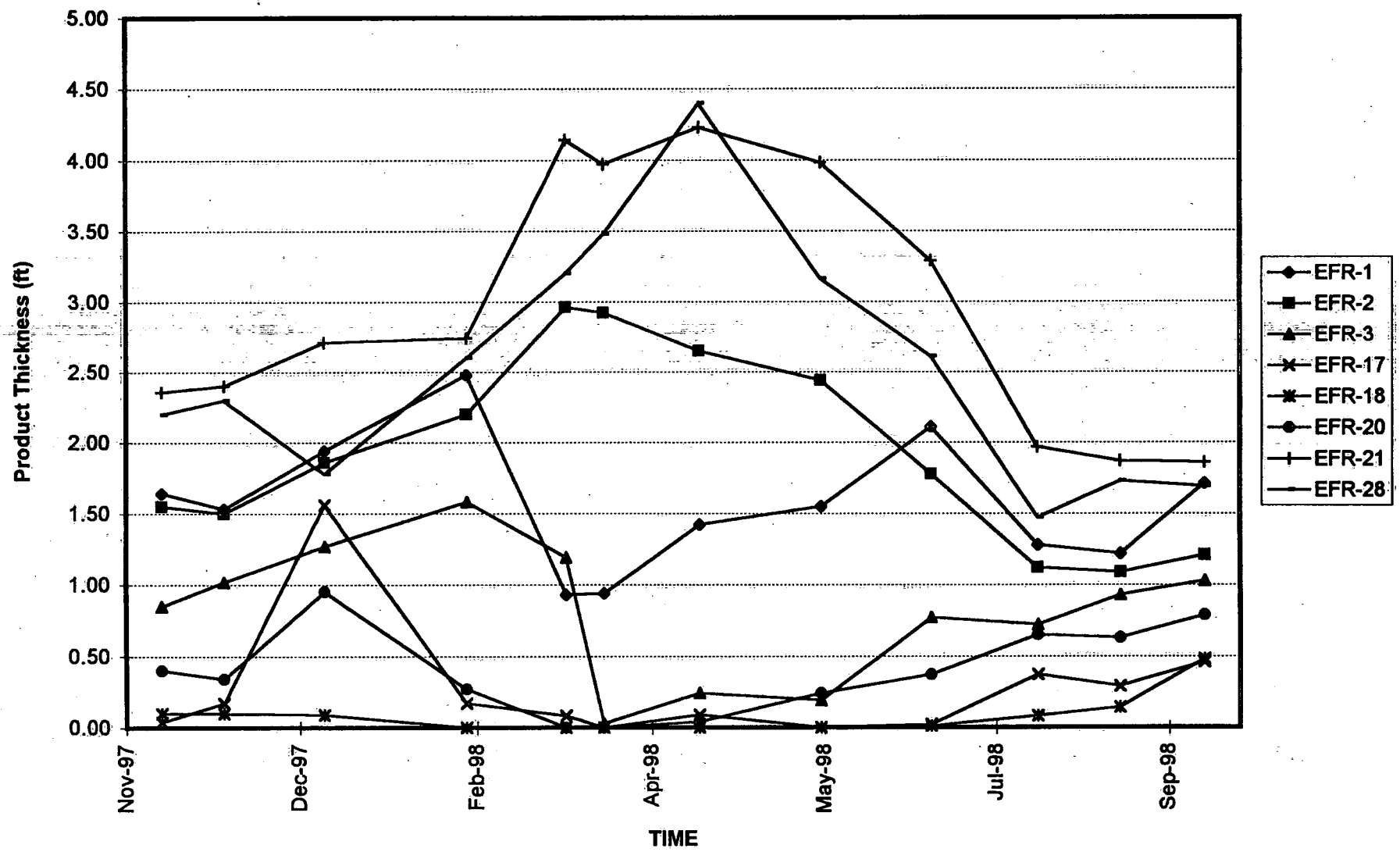

LEGEND
WATER FEATURE
PROPERTY LINE
FENCE
MW-21 MONITORING WELL
TREATMENT BUILDING
POTENTIOMETRIC SURFACE
626.78 GROUNDWATER ELEVATION
GEI-2S PIEZOMETER
DC-P5 DITCH POINT
ROSS STREET
NORTH MAIN STREET
625.50 MW-19-5
625.59 MW-19-2
625.48 GEI-2S
625.57 MW-19
625.57 MW-20
MW-19-3 625.68
MW-19-1 625.60
MW-19-4 625.66
BUILDING 9
BUILDING 8
BUILDING 15
BUILDING 17
BUILDING 16
625.22 MW-16S
624.77 MW-15S
624.82 MW-18S
GATE
625.0
625.5
626.0
624.5
624.0
AIR PRODUCTS AND CHEMICALS, INC.
DRAINAGE CHANNEL
626.68 MW-23
625.43 MW-13S
MW-13R 624.35
DC-P0 624.99
DC-P5 624.37
MW-26 624.58
MW-2(R) 624.43
624.09 MW-14S
624.71 MW-3
MW-11S 624.49
MW-6(R) 624.95
MW-1(R) 624.83
MW-22 623.86
MW-25 624.10
MW-21 624.03
625.27 MW-8
624.90 MW-9
624.53 MW-4
624.72 MW-12(R)
624.86 MW-17S
FENCE
CONCRETE PAD
FORMER BUILDING 14
FORMER BUILDING
BUILDING
RAILROAD RIGHT OF WAY
ROCKAWAY RIVER
WALL
DAM
WASHINGTON FORGE POND
ROSS AND BAKER SILK MILL
0 100 200
SCALE: 1"=100'
NOTE: SITE MAP OBTAINED FROM FROM ROY F. WESTON SECOND QUARTER 1997 PROGRESS REPORT
EQUIPOTENTIAL SURFACE
AUGUST 1998
L.E. CARPENTER
WHARTON, NEW JERSEY
RMT INC.
DWN. BY: DFL
APPROVED BY:
DATE: OCT. 1998
PROJ. # 3868.02
FILE # 38680233
Dwg Size:
Plot Date:
Plot Time:
Attached Xref's:
PLOT DATA
Drawing Name:
Operator Name:
Scale:

FIGURE 4

Appendix A
Free Product Fluctuation Charts

Free Product Changes vs. Time
Western Portion of Plume
L.E. Carpenter, Wharton, New Jersey
Through 3rd Quarter 1998



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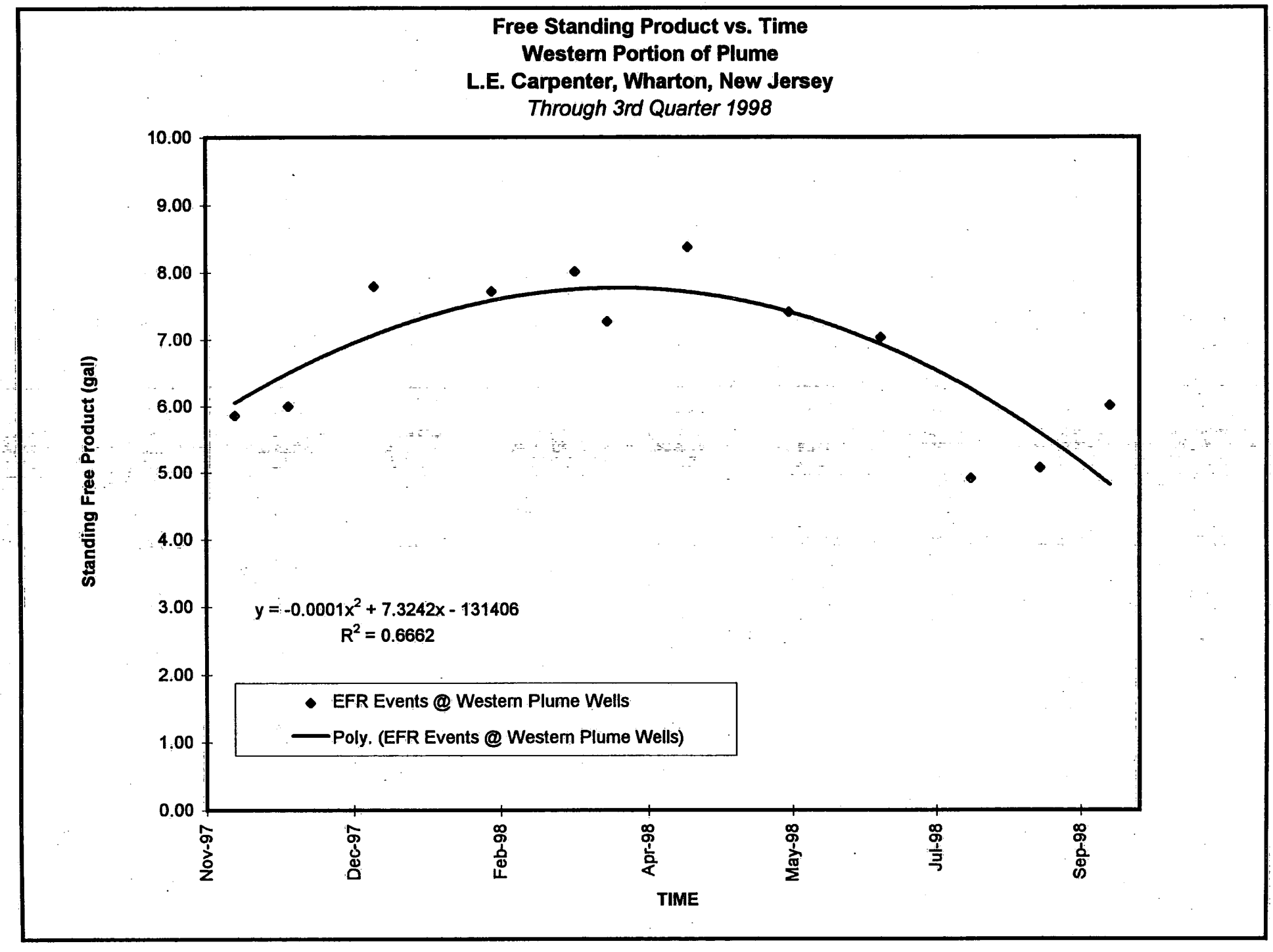

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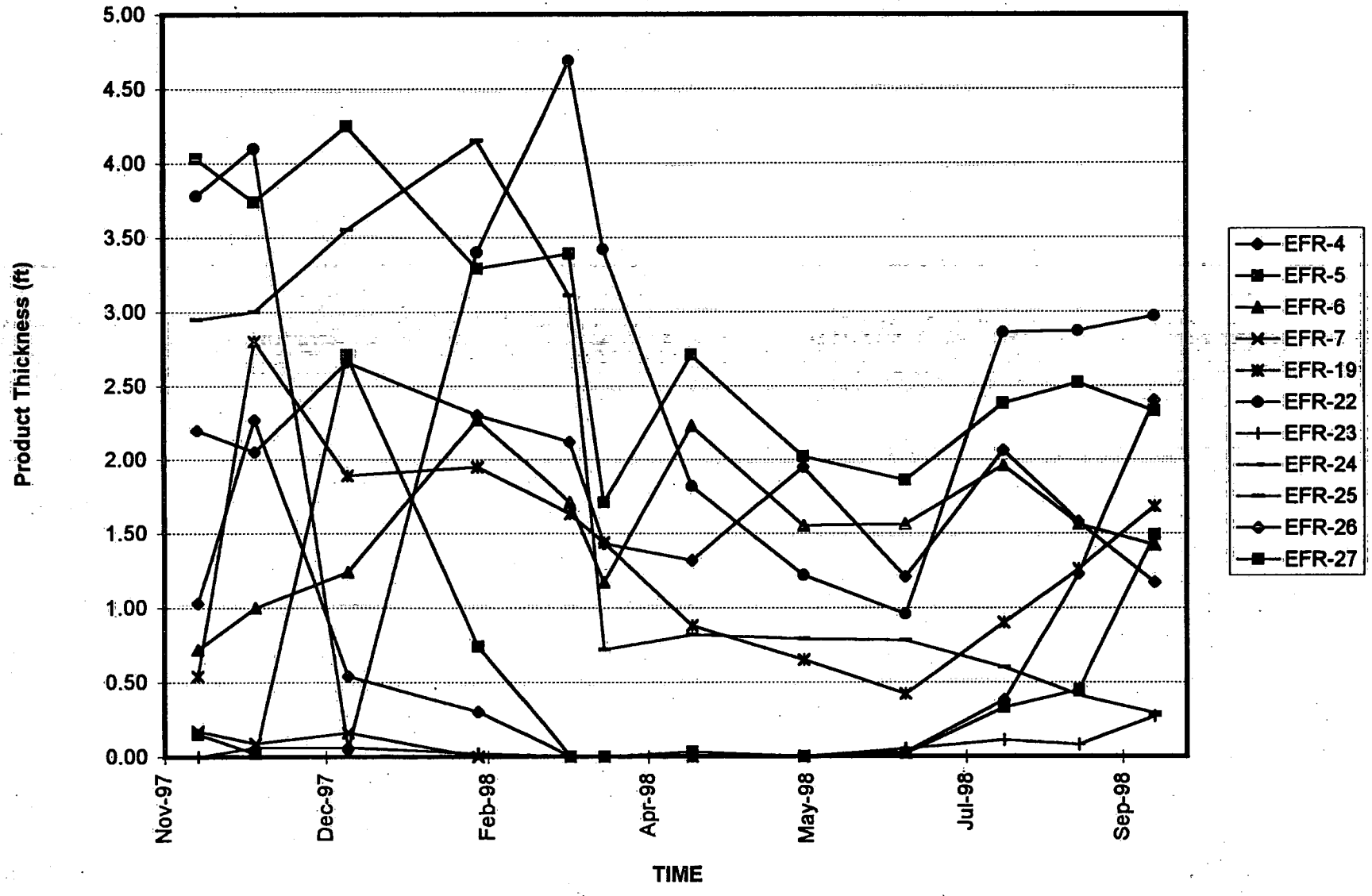
Free Product Changes vs. Time
Central Portion of Plume
L.E. Carpenter, Wharton, New Jersey
Through 3rd Quarter 1998



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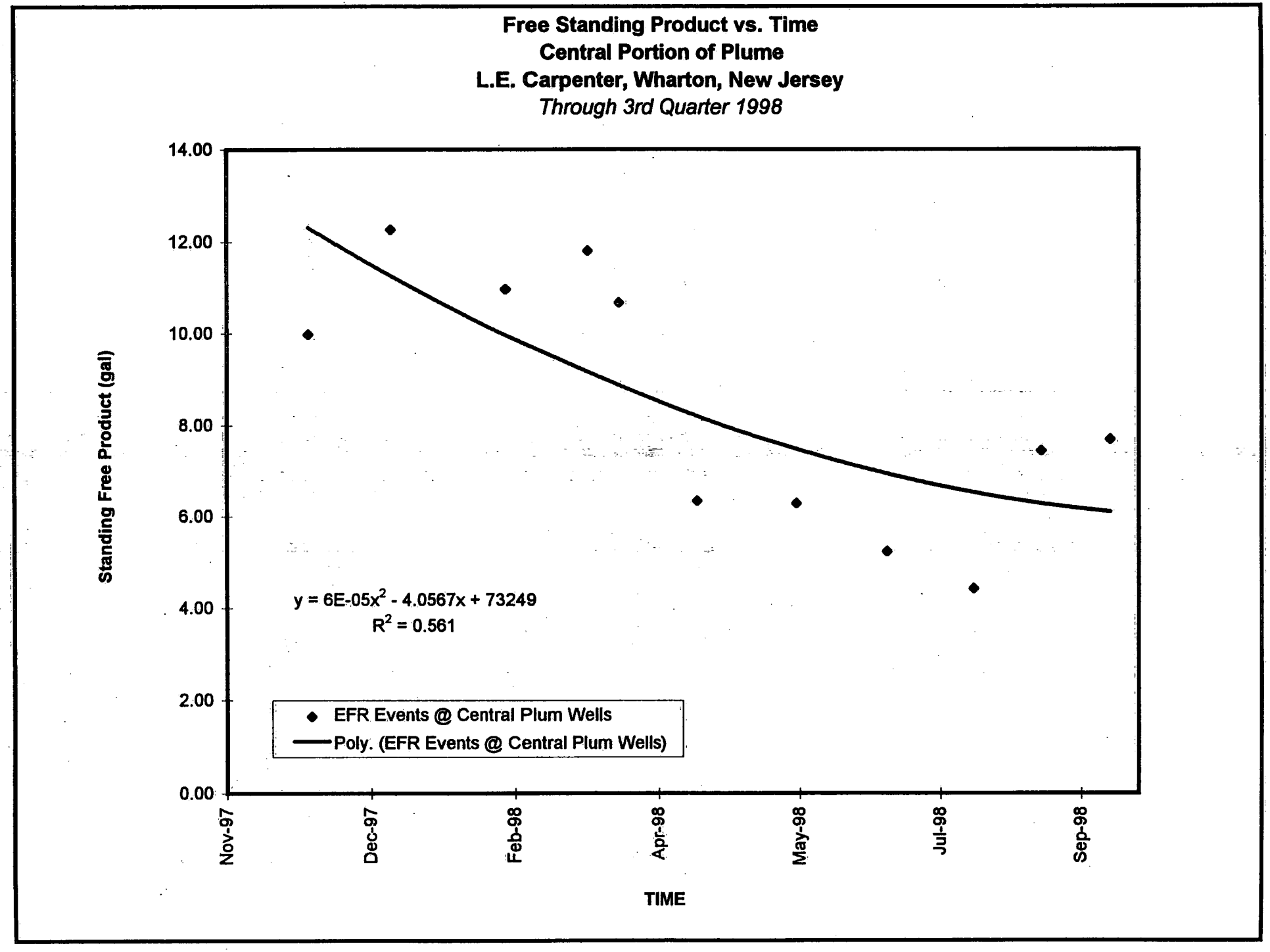

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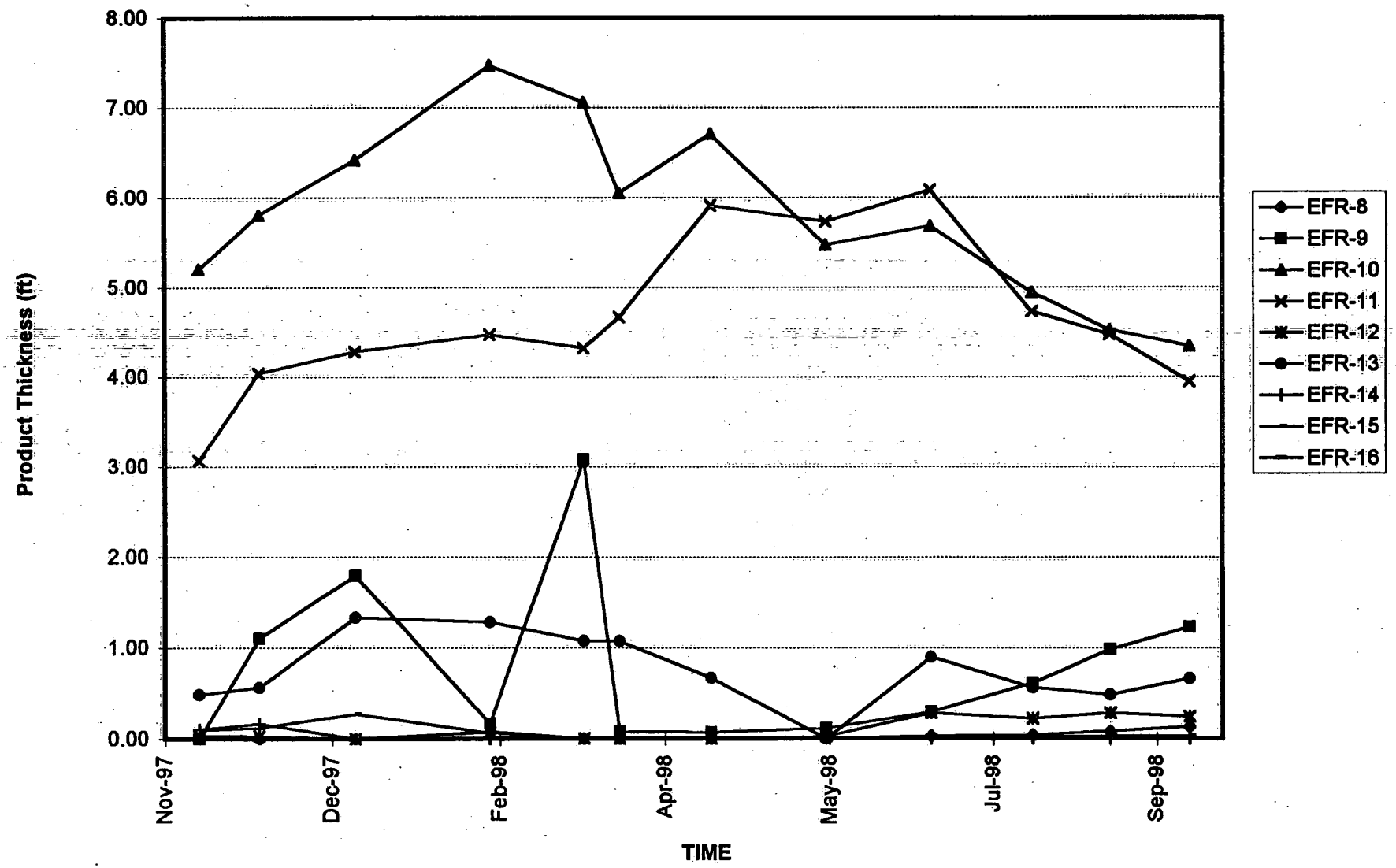
Free Product Changes vs. Time
Eastern Portion of Plume
L.E. Carpenter, Wharton, New Jersey
Through 3rd Quarter 1998



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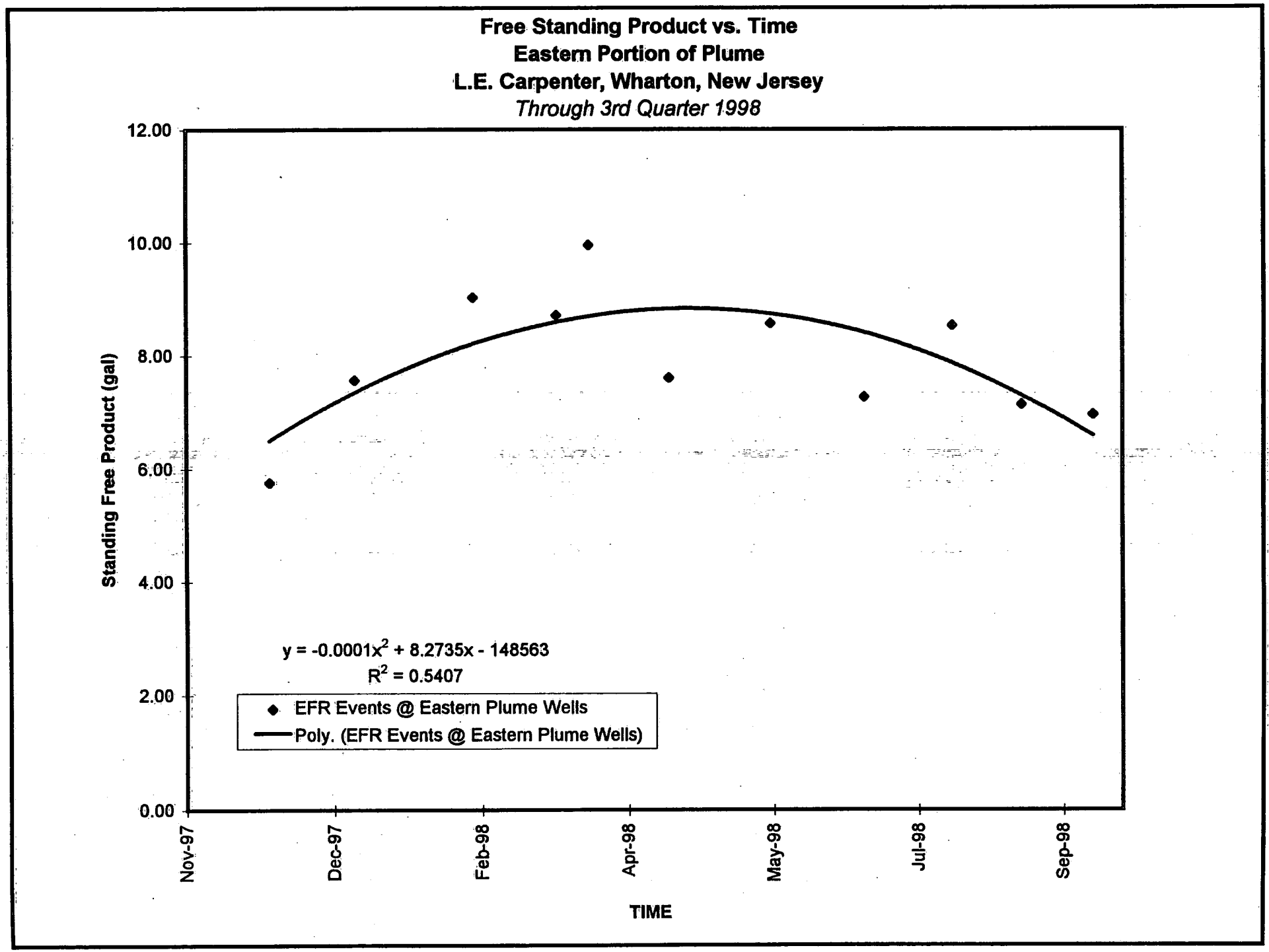

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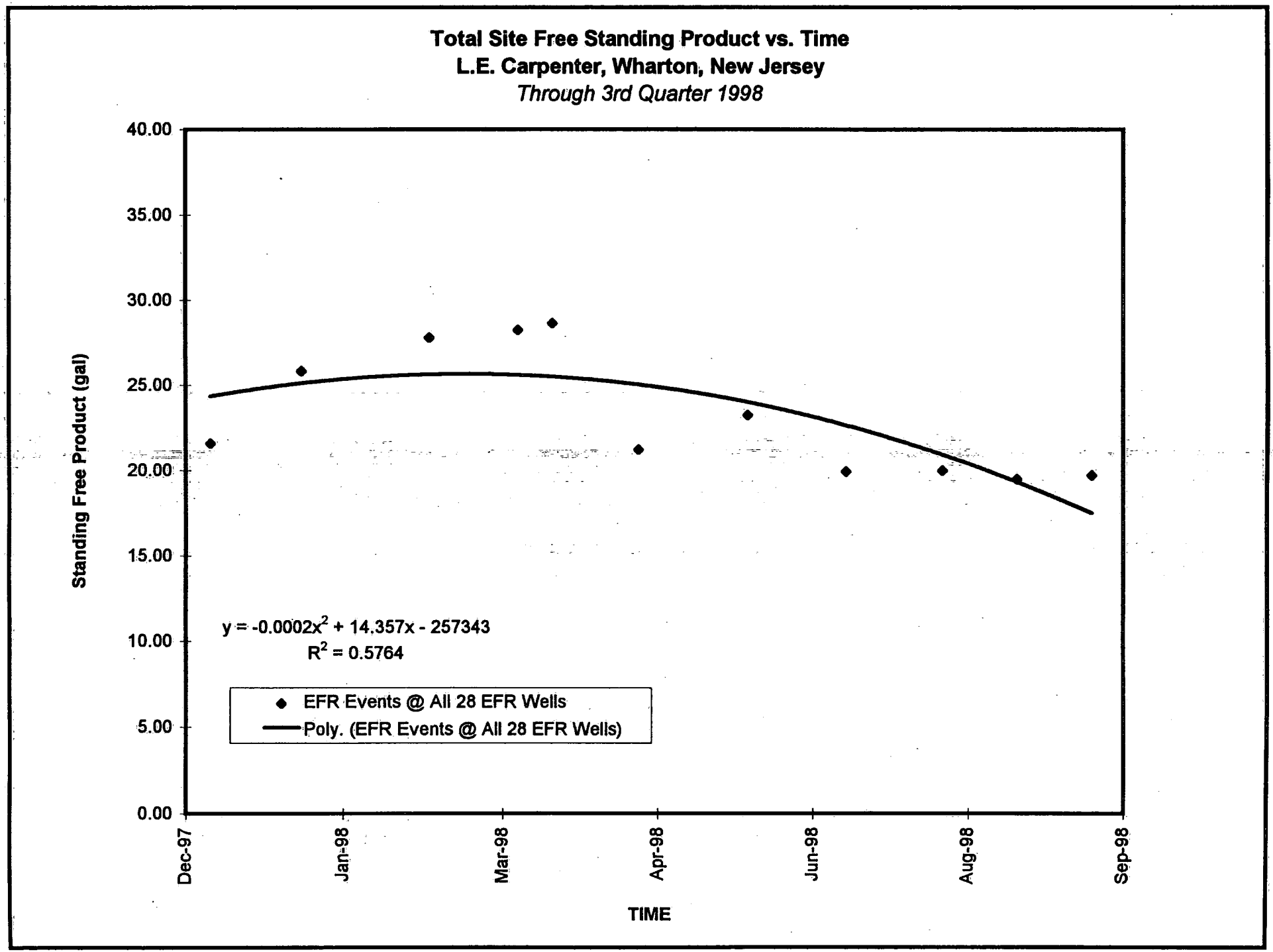


I:\wpord\pjt\00-03868\04\T386804e\Total Site Product Trend

Appendix B
Well Sampling Data

Monitoring Well Data

Client: RMT Project: LE Carpenter

Job No: G 848 Date Sampled: 8/28/98 Analyst: B. Daly

Well ID	MW-4	MW-14I	MW-15S	MW-15I	MW-22R	MW-25R
Depth to Water From TOC feet (before purging)	7.97	3.97	12.0	11.85	4.27	3.12
Depth to Water From TOC feet (after purging)	8.49	4.19	12.01	11.92	6.41	8.71
Depth to Water From TOC feet (before sampling)	8.05	4.02	12.0	11.90	3.99	3.41
Depth to Bottom From TOC feet	18.31	43.32	19.48	40.14	8.81	9.11
PID Reading from Well Casing (ppm)	0	0	0	0	0	0
pH before Purge	6.23	7.57	6.28	6.90	6.40	6.69
Temp. before Purge (°C)	20.2	19.1	17.8	17.4	19.3	19.2
Diss. Oxygen before Purge (ppm)	0.3	2.8	3.3	1.6	0.4	0.4
Cond. before Purge (umhos/cm)	445	235	190	290	600	330
Water Volume in Well (gal.)	1.86	7.08	6.16	5.09	0.82	1.08
Purge Method	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump	peristaltic pump
Purge Start Time	16:37	15:04	9:35	9:36	14:54	14:45
Purge End Time	16:44	15:33	9:55	9:56	14:59	14:51
Purge Rate (gpm)	0.71	0.76	0.92	0.76	0.54	0.66
Volume Purged (gal.)	5.58	21.24	18.49	15.27	2.55	3.24
pH after Purge	6.43	7.44	6.21	6.84	6.09	6.53
Temp. after Purge (°C)	17.6	16	17.2	15.8	20.8	21.1
Diss. Oxygen after Purge (ppm)	0.8	1.5	1.4	0.7	0.3	0.2
Cond. after Purge (umhos/cm)	425	240	270	180	680	390
pH after Sample	6.41	7.29	6.59	6.91	6.59	6.77
Temp. after Sample (°C)	19.5	19.2	17.9	17.3	20.4	20.6
Diss. Oxygen after Sampling (ppm)	0.8	1.9	3.5	1.4	0.9	1.6
Cond. after Sample (umhos/cm)	455	250	130	340	590	395
Sampling Method	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer	teflon bailer
Time of Sampling	16:51	15:49	10:02	10:08	15:22	15:16

Appendix C
MW-22R Contaminant of Concern Concentration Trends

MW-22R
Contaminants of Concern Concentrations

Time Frame	QUARTER	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	Total Xylenes (ug/L)	DEHP (ug/L)
1	21-Feb-95	ND	57	ND	**260**	**6500**
2	13-Jun-95	ND	311	ND	**955**	**380**
3	13-Sep-95	ND	171	ND	**693**	NS
4	07-Dec-95	ND	123	ND	**494**	**320**
5	17-Sep-96	ND	359	ND	**1320**	NS
6	12-Dec-96	ND	320	ND	**1330**	ND
7	14-Aug-97	ND	**5,730**	ND	**32,900**	**7,500**
8	03-Oct-97	ND	**11,400**	348	**66,000**	NS
9	12-Mar-98	ND	**4,070**	348	**20,600**	NS
10	04-Jun-98	ND	**2,260**	ND	**11,300**	**5,800**
11	28-Aug-98	ND	**1,880**	ND	**10,300**	NS
NJDEP GWQS (ug/L)		NA	700	1000	40	30
ROD Discharge Criteria (ug/L)		NA	350	500	20	30

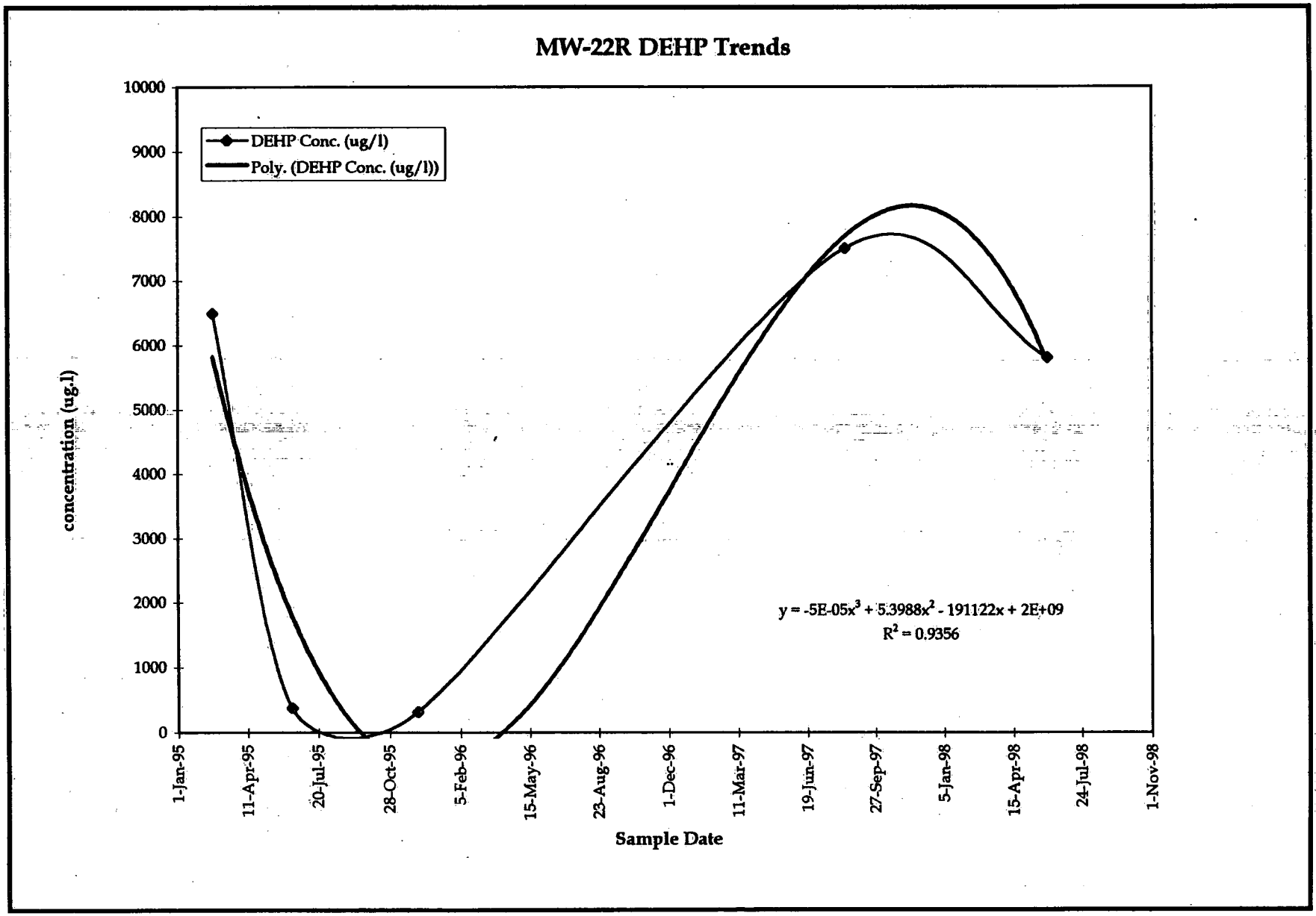
**NOTES

Concentrations in bold exceed both the ROD discharge criteria and NJDEP GWQS

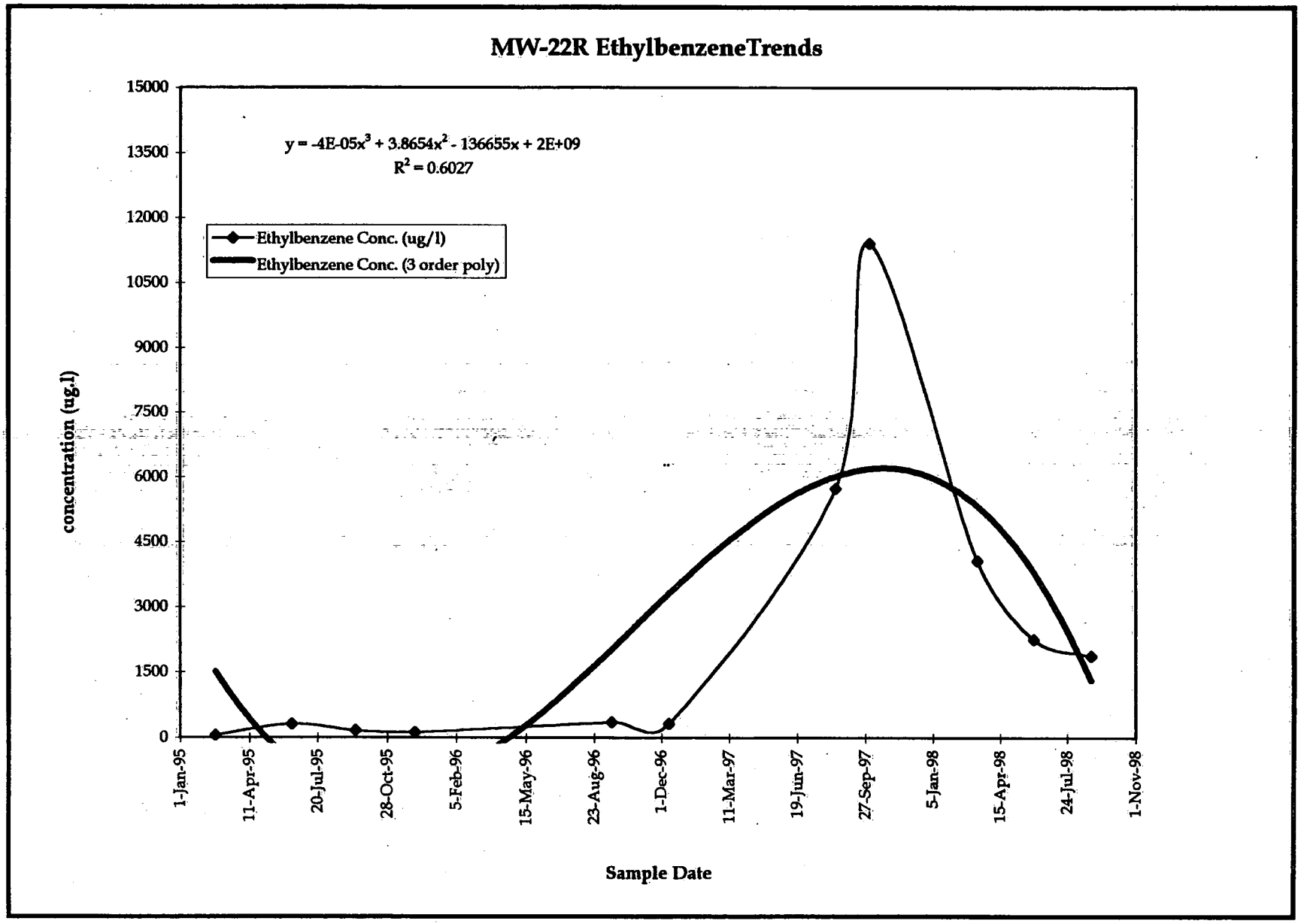
ND = Not detected above method detection limits

NS = Not Sampled

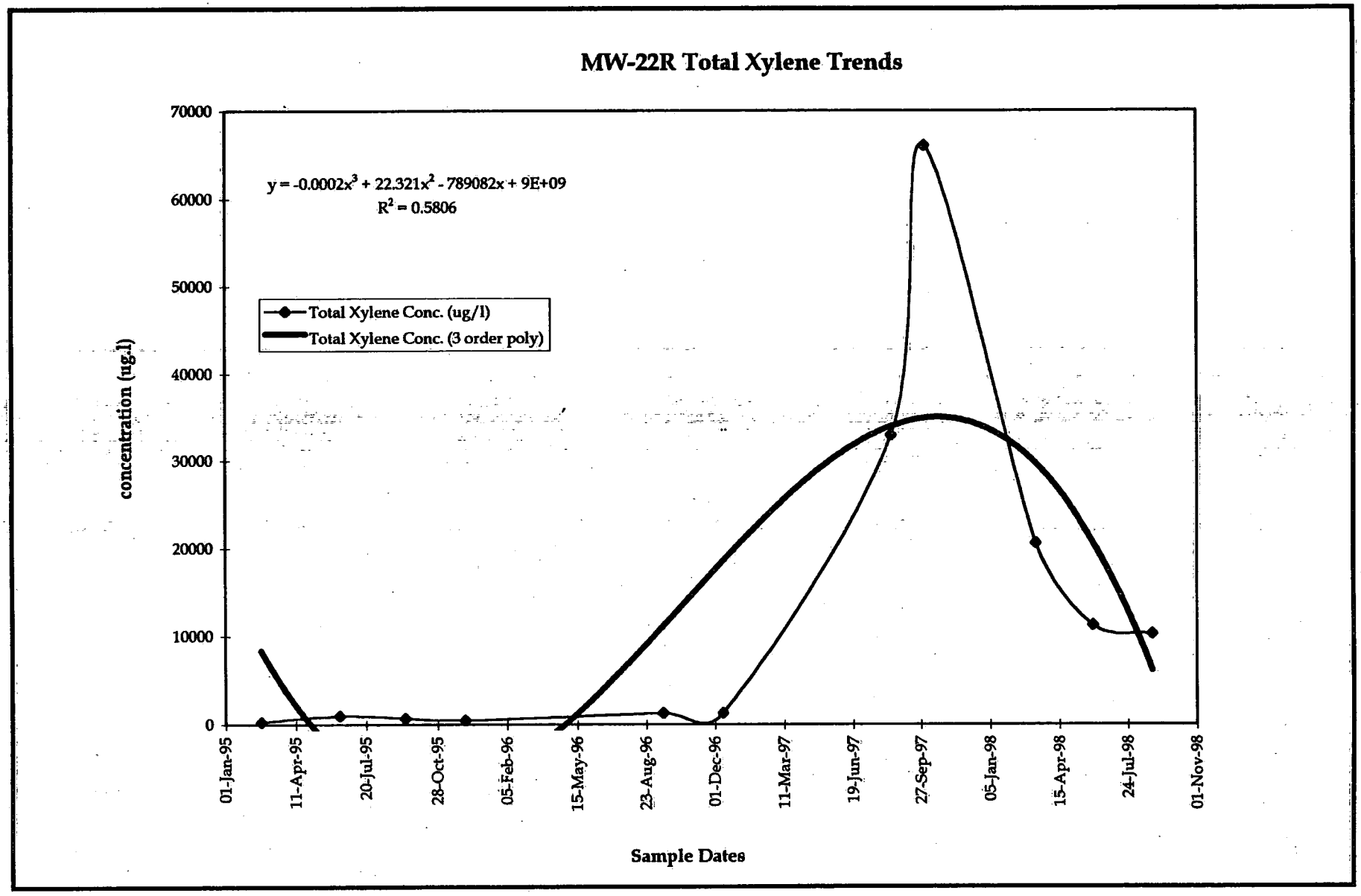
MW-22R
Contaminants of Concern
Concentration vs. Time



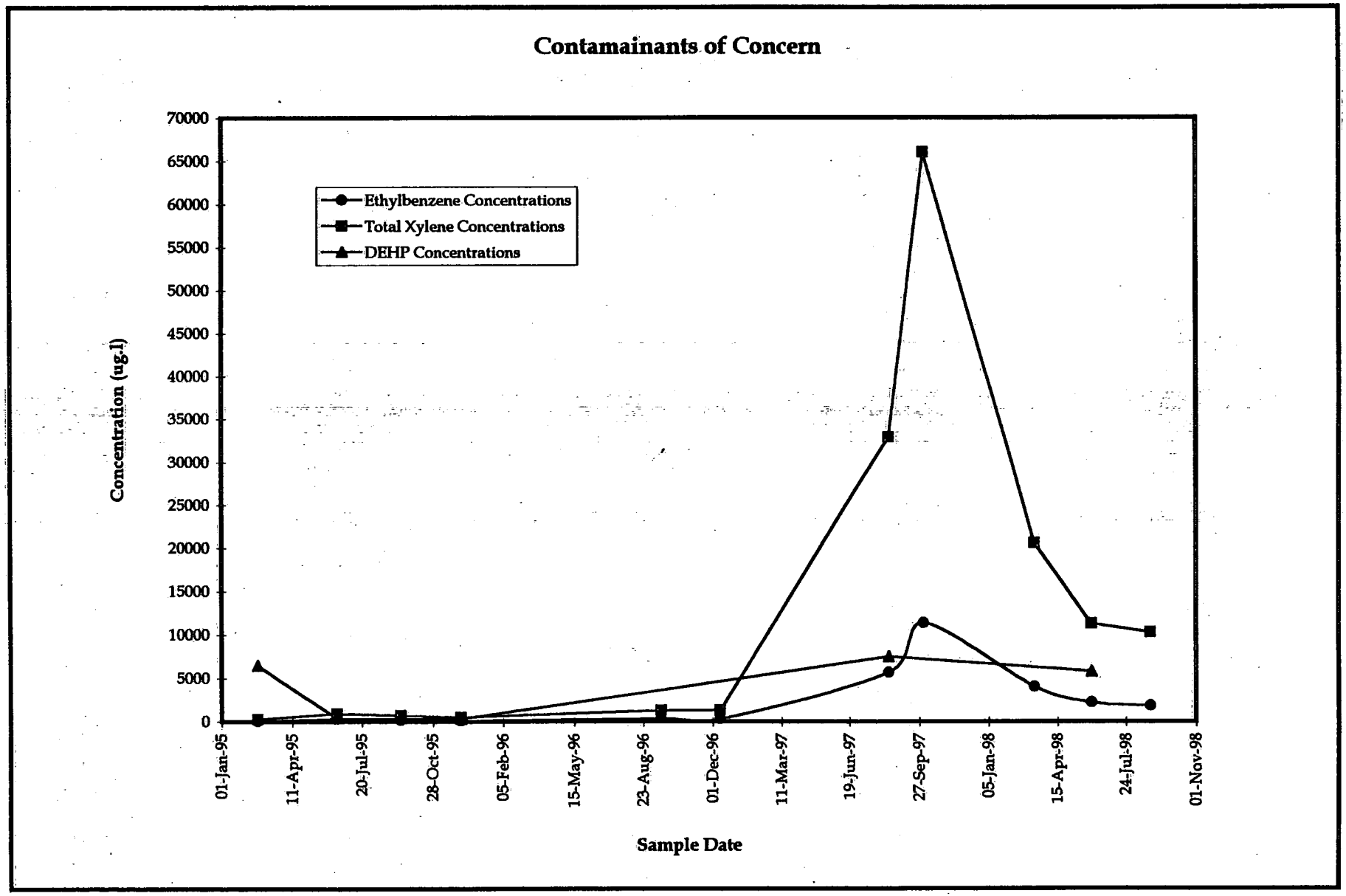
MW-22R
Contaminants of Concern
Concentration vs. Time



MW-22R
Contaminants of Concern
Concentration vs. Time



MW-22R
Contaminants of Concern
Concentration vs. Time



Appendix D
Groundwater Analytical Results

ENVIROTECH RESEARCH, INC.

777 New Durham Road
Edison, New Jersey 08817
Tel: (732) 549-3900
Fax: (732) 549-3679
www.enviro-lab.com

September 17, 1998

Residuals Management Technologies, Inc.
999 Plaza Drive , Suite 370
Schaumburg, IL 60173-5407

Attention: Mr. James Van Nortwick

Re: Job No. G848 - L.E. Carpenter

Dear Mr. Van Nortwick:

Enclosed are the results you requested for the following sample(s) received at our laboratory on August 28, 1998:

Lab No.	Client ID	Analysis Required
80988	MW-4	BTEX (GC)
80989	MW-14I	BTEX (GC)
80990	MW-15S	BTEX (GC)
80991	MW-15I	BTEX (GC)
80992	MW-22R	BTEX (GC)
80993	MW-25R	BTEX (GC)
80994	MW-22RD	BTEX (GC)
80995	Field_Blank	BTEX (GC)
80996	Trip_Blank	BTEX (GC)

An invoice for our services is also enclosed. If you have any questions please contact your Project Manager, Paul Simms, at (732) 549-3900.

Very truly yours,

Michael J. Urban
Laboratory Manager

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ENVIROTECH RESEARCH, INC.

Client ID: MW-4
Site: L.E. Carpenter

Lab Sample No: 80988
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2624.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	1.9	0.14
Xylene (Total)	1.2	0.50

ENVIROTECH RESEARCH, INC.

Client ID: **MW-14I**
Site: L.E. Carpenter

Lab Sample No: **80989**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2625.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-15S
Site: L.E. Carpenter

Lab Sample No: 80990
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2626.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: MW-15I
Site: L.E. Carpenter

Lab Sample No: 80991
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2627.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: **MW-22R**
Site: L.E. Carpenter

Lab Sample No: **80992**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/10/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2694.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 250.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	50.0
Toluene	ND	35.0
Ethylbenzene	1880	35.0
Xylene (Total)	10300	125

ENVIROTECH RESEARCH, INC.

Client ID: MW-25R
Site: L.E. Carpenter

Lab Sample No: 80993
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2629.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: **MW-22RD**
Site: L.E. Carpenter

Lab Sample No: **80994**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2620.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 250.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	50.0
Toluene	ND	35.0
Ethylbenzene	2510	35.0
Xylene (Total)	11000	125

ENVIROTECH RESEARCH, INC.

Client ID: **Field_Blank**
Site: L.E. Carpenter

Lab Sample No: **80995**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2630.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH, INC.

Client ID: **Trip_Blank**
Site: L.E. Carpenter

Lab Sample No: **80996**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2631.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

ENVIROTECH RESEARCH INC.
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

PAGE 1 OF 1

Name (for report and invoice) MR JAMES VAN NORTWICK	Samplers Name (Printed) BRENJAN DALY, MATT MORSE	Site/Project Identification L.E. CARPENTER
Company RESIDUALS MANAGEMENT TECHNOLOGIES INC	P.O. #	State (Location of site): NJ: ☒ NY: ☐ Other:
		Regulatory Program:
Address 999 PLAZA DRIVE, SUITE 320	Analysis Turnaround Time: Standard ☒	
City SCHAUMBURG, State IL Zip 60173-5407	Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐	
Phone Fax		

ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUE

LAB USE ONLY Project No: 8016801 Job No:

Sample Identification	Date	Time	Matrix	No. of. Cont.	BTEX							G848		Sample Numbers
MW-4	8/28/98	16:51	AQ	3	X							80988		
MW-14I	↓	15:49	↓	↓	X							80989		
MW-15S	↓	10:02	↓	↓	X							80990		
MW-15I	↓	10:09	↓	↓	X							80991		
MW-22R	↓	15:22	↓	↓	X							80992		
MW-25R	↓	15:16	↓	↓	X							80993		
MW-22RD	↓	—	↓	↓	X							80994		
FIELD BLANK	↓	15:33	↓	2	X							80995		
TRIP BLANK	↓	06:00	↓	2	X							80996		

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH
6 = Other _____, 7 = Other _____

Soil:
Water: 1,2

Special Instructions _____ Water Metals Filtered (Yes/No)? _____

Relinquished by	Company	Date / Time	Received by	Company
1) B. Daly	Envirotech	8/28 1830	1) [signature]	Envirotech
2)			2)	
3)			3)	
4)			4)	

Laboratory Certifications: New Jersey (12543), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

Water Levels/Free Product Measurements-L.E. Carpenter Site 8/28/98

Well ID	Product	Depth to Water
MW-1 (R)	Y	10.64
MW-2 (R)	N	7.71
MW-3	Y	7.85
MW-4	N	7.97
MW-6 (R)	Y	7.47
MW-8	N	3.52
MW-9	N	5.28
MW-11S	Y	8.47
MW-11IR	N	8.78
MW-11DR	N	6.53
MW-12R	N	9.61
MW-13S	N	5.80
MW-13(R)	N	6.24
MW-131	N	6.24
MW-14S	N	4.32
MW-14I	N	4.0
MW-15S	N	12.0
MW-15I	N	11.85
MW-16S	N	9.25
MW-16I	N	9.71
MW-17S	N	9.93
MW-18S	N	6.44
MW-18I	N	6.23
MW-19	N	13.31
MW-20	N	11.2
MW-21	N	4.77
MW-22 (R)	N	4.27
MW-23	N	3.96
MW-25 (R)	N	3.12
MW-26	N	8.68
RW-1	Y	12.60
RW-2	N	7.27
RW-3	N	7.32
CW-1	N	8.55
CW-3	N	8.63
GEI-1I	N	5.90
GEI-2S	N	12.19
GEI-2I	N	12.26
GEI-3I	N	14.44
WP-A1	10.84	11.57
WP-A2	4.66	(all product)
WP-A3	N	10.73
WP-A4	12.06	13.14
WP-A5	N	13.13
WP-A6	12.54	14.56
WP-A7	10.29	12.6

Well ID	Product	Depth to Water
WP-A8	12.95	14.17
WP-A9	14.98	15.89
WP-B1	N	7.75
WP-B2	N	7.67
WP-B3	N	8.57
WP-B4	7.84	(all product)
WP-B5	Y	6.49
WP-B6	N	7.54
WP-B7	5.24	(all product)
WP-B10	N	8.08
WP-C1	N	9.0
WP-C2	N	8.98
WP-C3	N	7.75
WP-C4	N	8.75
DC-P0	N	0.76
DC-P1	N	can't find
DC-P2	N	pushed over
DC-P3	N	can't find
DC-P4	N	0.61
DC-P5	N	0.8
RP-O1	N	gone
RP-O2	N	2.14
RP-O3	N	2.72
RP-O4	N	2.60
EFR-1	11.65	12.07
EFR-2	12.76	13.43
EFR-3	11.83	12.26
EFR-4	N	13.97
EFR-5	Y	7.85
EFR-6	7.87	8.12
EFR-7	N	9.57
EFR-8	N	7.85
EFR-9	7.87	8.12
EFR-10	Y	9.40
EFR-11	8.40	9.07
EFR-12	N	7.11
EFR-13	Y	6.77
EFR-14	N	6.08
EFR-15	N	6.21
EFR-16	N	5.90
EFR-17	N	12.04
EFR-18	N	11.36
EFR-19	15.91	16.04
EFR-20	N	12.43
EFR-21	10.84	12.28
EFR-22	14.05	15.27

Well ID	Product	Depth to Water
EFR-23	N	10.81
EFR-24	N	13.03
EFR-25	Y	13.79
EFR-26	14.85	15.03
EFR-27	N	13.52
EFR-28	11.73	12.84
MW-19-1	N	13.26
MW-19-2	N	13.17
MW-19-3	N	13.97
MW-19-4	N	12.08
MW-19-5	N	13.24

Monitoring Well Data

Client: RMT

Project: LE Carpenter

Date Sampled: 8/28/98

Job No.: G 848

Name of Analyst: Brendan Daly

Names & Signatures of Samplers: Brendan Daly

Brendan M Daly

Matt Morse

Matt Morse

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817
(732) 549-3900

Client: Residuals Management Technologies, Inc.

Date Sampled: 8/28/1998

Site: L.E. Carpenter

Date Received: 8/28/1998

Matrix: WATER

Job No.: G848

Sample No.: 80988

Analytic Parameter	Extraction Date	Extractor's Name	Analysis Date	Analyst's Name	QA Batch
602			9/5/98	KB	6506

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817
(732) 549-3900

Client: Residuals Management Technologies, Inc.

Date Sampled: 8/28/1998

Site: L.E. Carpenter

Date Received: 8/28/1998

Matrix: WATER

Job No.: G848

Sample No.: 80989

Analytic Parameter	Extraction Date	Extractor's Name	Analysis Date	Analyst's Name	QA Batch
602			9/5/98	KB	6506

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817
(732) 549-3900

Client: Residuals Management Technologies, Inc.

Date Sampled: 8/28/1998

Site: L.E. Carpenter

Date Received: 8/28/1998

Matrix: WATER

Job No.: G848

Sample No.: 80990

Analytic Parameter	Extraction Date	Extractor's Name	Analysis Date	Analyst's Name	QA Batch
602			9/5/98	KB	6506

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817
(732) 549-3900

Client: Residuals Management Technologies, Inc.

Date Sampled: 8/28/1998

Site: L.E. Carpenter

Date Received: 8/28/1998

Matrix: WATER

Job No.: G848

Sample No.: 80991

Analytic Parameter	Extraction Date	Extractor's Name	Analysis Date	Analyst's Name	QA Batch
602			9/5/98	KB	6506

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817
(732) 549-3900

Client: Residuals Management Technologies, Inc.

Date Sampled: 8/28/1998

Site: L.E. Carpenter

Date Received: 8/28/1998

Matrix: WATER

Job No.: G848

Sample No.: 80992

Analytic Parameter	Extraction Date	Extractor's Name	Analysis Date	Analyst's Name	QA Batch
602			9/10/98	KB	6506

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817
(732) 549-3900

Client: Residuals Management Technologies, Inc.

Date Sampled: 8/28/1998

Site: L.E. Carpenter

Date Received: 8/28/1998

Matrix: WATER

Job No.: G848

Sample No.: 80993

Analytic Parameter	Extraction Date	Extractor's Name	Analysis Date	Analyst's Name	QA Batch
602			9/5/98	KB	6506

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817
(732) 549-3900

Client: Residuals Management Technologies, Inc.

Date Sampled: 8/28/1998

Site: L.E. Carpenter

Date Received: 8/28/1998

Matrix: WATER

Job No.: G848

Sample No.: 80994

Analytic Parameter	Extraction Date	Extractor's Name	Analysis Date	Analyst's Name	QA Batch
602			9/5/98	KB	6506

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817
(732) 549-3900

Client: Residuals Management Technologies, Inc.

Date Sampled: 8/28/1998

Site: L.E. Carpenter

Date Received: 8/28/1998

Matrix: WATER

Job No.: G848

Sample No.: 80995

Analytic Parameter	Extraction Date	Extractor's Name	Analysis Date	Analyst's Name	QA Batch
602			9/5/98	KB	6506

INTERNAL CUSTODY RECORD
AND
LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.

777 NEW DURHAM ROAD, EDISON, NJ 08817
(732) 549-3900

Client: Residuals Management Technologies, Inc.

Date Sampled: 8/28/1998

Site: L.E. Carpenter

Date Received: 8/28/1998

Matrix: WATER

Job No.: G848

Sample No.: 80996

Analytic Parameter	Extraction Date	Extractor's Name	Analysis Date	Analyst's Name	QA Batch
602			9/5/98	KB	9506

Analytical Methodology Summary

Volatile Organics:

Unless otherwise specified, water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Drinking water samples are analyzed by EPA Method 524.2. Solid samples are analyzed for volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8260B. Water samples are analyzed for volatile organics by purge and trap GC/PID and GC/ELCD as specified in EPA Methods 601 and 602. Solid samples are analyzed by GC/PID and GC/ELCD in accordance with SW-846, 3rd Edition Method 8021B.

Acid and Base/Neutral Extractable Organics:

Unless otherwise specified, water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270C.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8260B and 8270C. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatile, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Unless otherwise specified, water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8081A for organochlorine pesticides and Method 8082 for PCBs.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Appendix A, page 52, and analyzed by U.S. EPA Method 418.1

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050B "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010B. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471A. Other specific Atomic Absorption method references are as follows:

	Water Test Method		Solid Test Method	
Element	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.3. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.2. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611B Alumina Column Cleanup and/or Method 3650B Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability	- Method 1020A
Corrosivity	- Water pH Method 9040B Soil pH Method 9045C
Reactivity	- Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release
Toxicity	- TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

P - For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%.

* - For dual column analysis, the lowest quantitated concentration is being reported due to coeluting interference.

NON-CONFORMANCE SUMMARY

Envirotech Research, Inc. Job Number: GE48

Volatile Organics Analysis:

All data conforms with method requirements ✓; or
Analysis was not requested _____; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Base/Neutral and/or Acid Extractable Organics:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

PCBs and/or Organochlorine Pesticides:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

See continuation page if checked ( )

Page 1 of 2

Client ID: **MW-4**
Site: L.E. Carpenter

Lab Sample No: **80988**
Lab Job No: G848

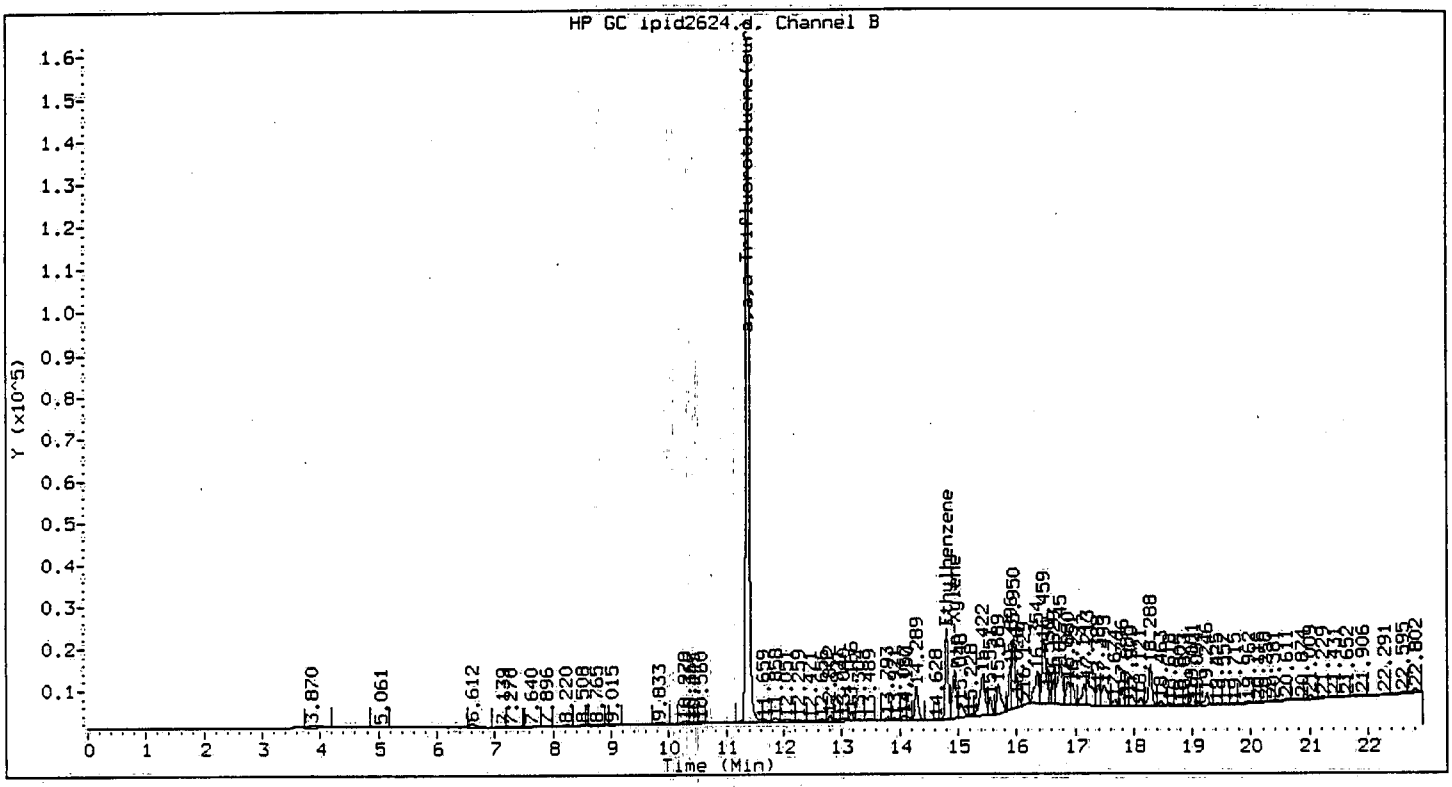
Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2624.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	1.9	0.14
Xylene (Total)	1.2	0.50

Data File: /chem/VOAGC3.i/602/08-28-98/05sep98.b/ipid2624.d Page 1
Report Date 09/07/98 11:45



Method : /chem/VOAGC3.i/602/08-28-98/05sep98.b/GC3-602.m
Sample Info : 80988
Lab ID : 80988
Inj Date : 05-SEP-98 14:57:00
Operator : KB
Cpnd Sublist: BTEX

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
m+p-Xylene	14.940	14.974	0.034	259953	1.137	1.137
Ethylbenzene	14.803	14.832	0.030	394757	1.945	1.945
Xylene (Total)	25.019	25.019	0.000	259953	1.169	1.169
a,a,a-Trifluorotoluene(sur)	11.370	11.406	0.036	3229913	29.609	29.609

Client ID: **MW-14I**
Site: L.E. Carpenter

Lab Sample No: **80989**
Lab Job No: G848

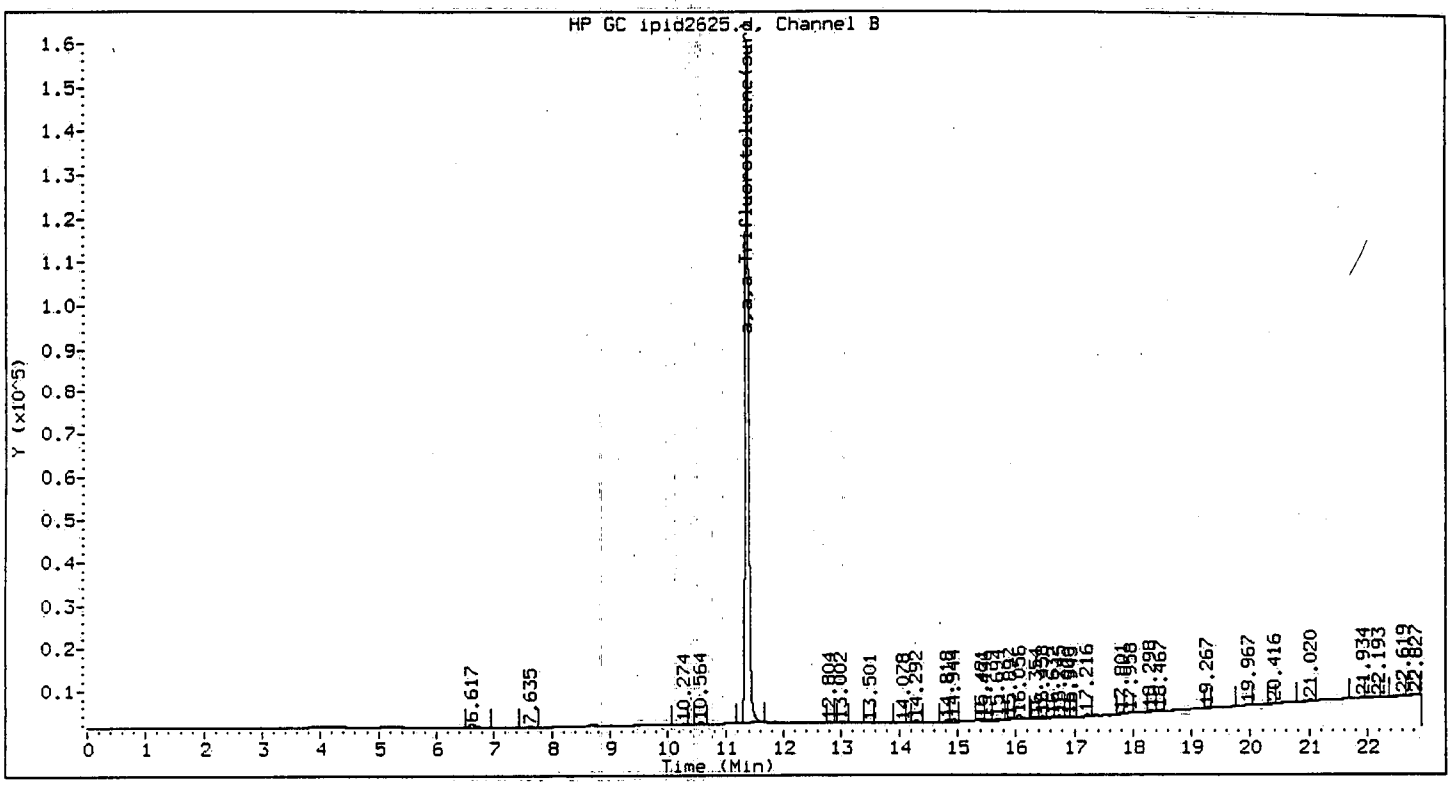
Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2625.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

Data File: /chem/VOAGC3.i/602/08-28-98/05sep98.b/ipid2625.d Page 1
Report Date 09/07/98 10:59



Method : /chem/VOAGC3.i/602/08-28-98/05sep98.b/GC3-602.m
Sample Info : 80989
Lab ID : 80989
Inj Date : 05-SEP-98 15:30:00
Operator : KB
Cpnd Sublist: BTEX

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
a,a,a-Trifluorotoluene(sur)	11.372	11.406	0.034	3171346	29.072	29.072

Client ID: **MW-15S**
Site: L.E. Carpenter

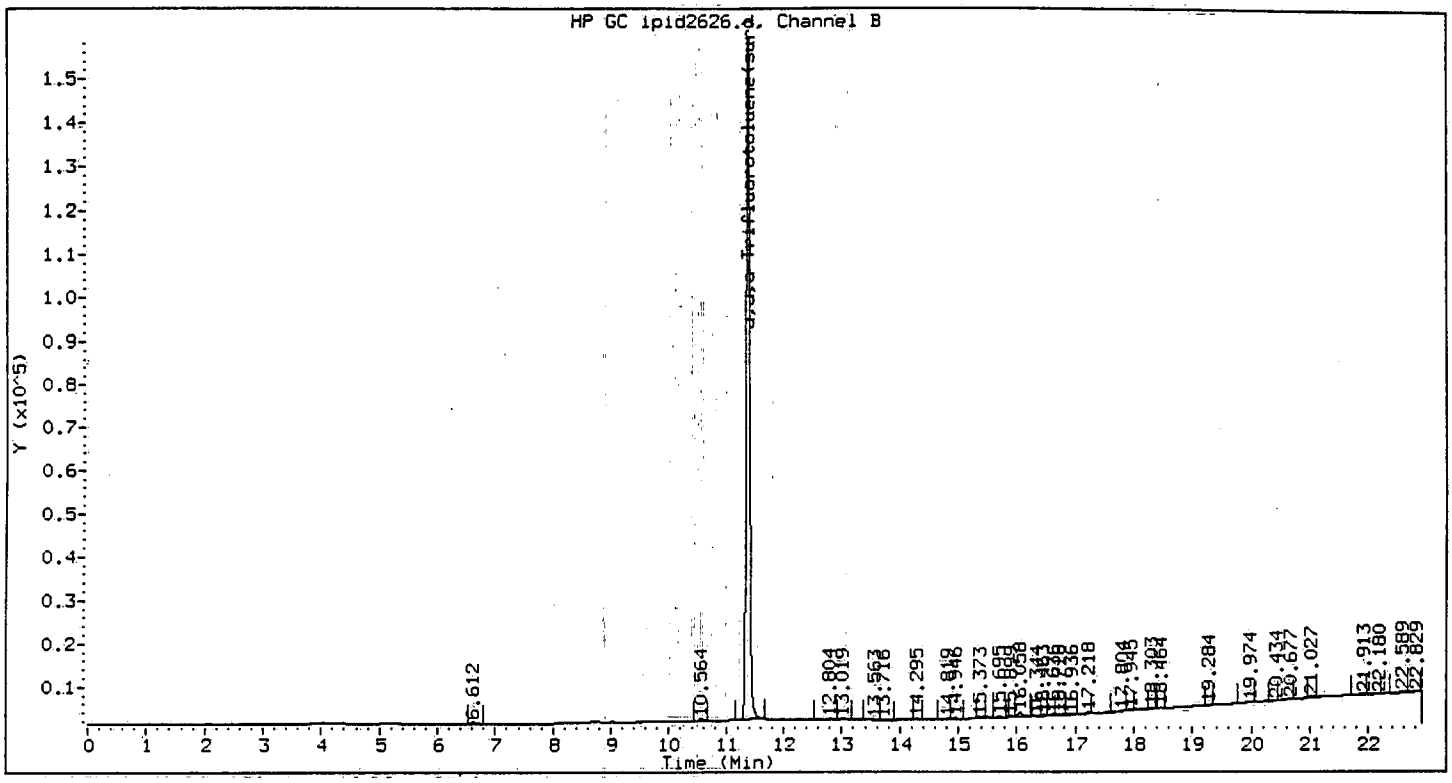
Lab Sample No: **80990**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2626.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50



Method : /chem/VOAGC3.i/602/08-28-98/05sep98.b/GC3-602.m
Sample Info : 80990
Lab ID : 80990
Inj Date : 05-SEP-98 16:03:00
Operator : KB
Cpnd Sublist: BTEX

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
a,a,a-Trifluorotoluene(sur)	11.372	11.406	0.034	3130962	28.702	28.702

Client ID: **MW-15I**
Site: L.E. Carpenter

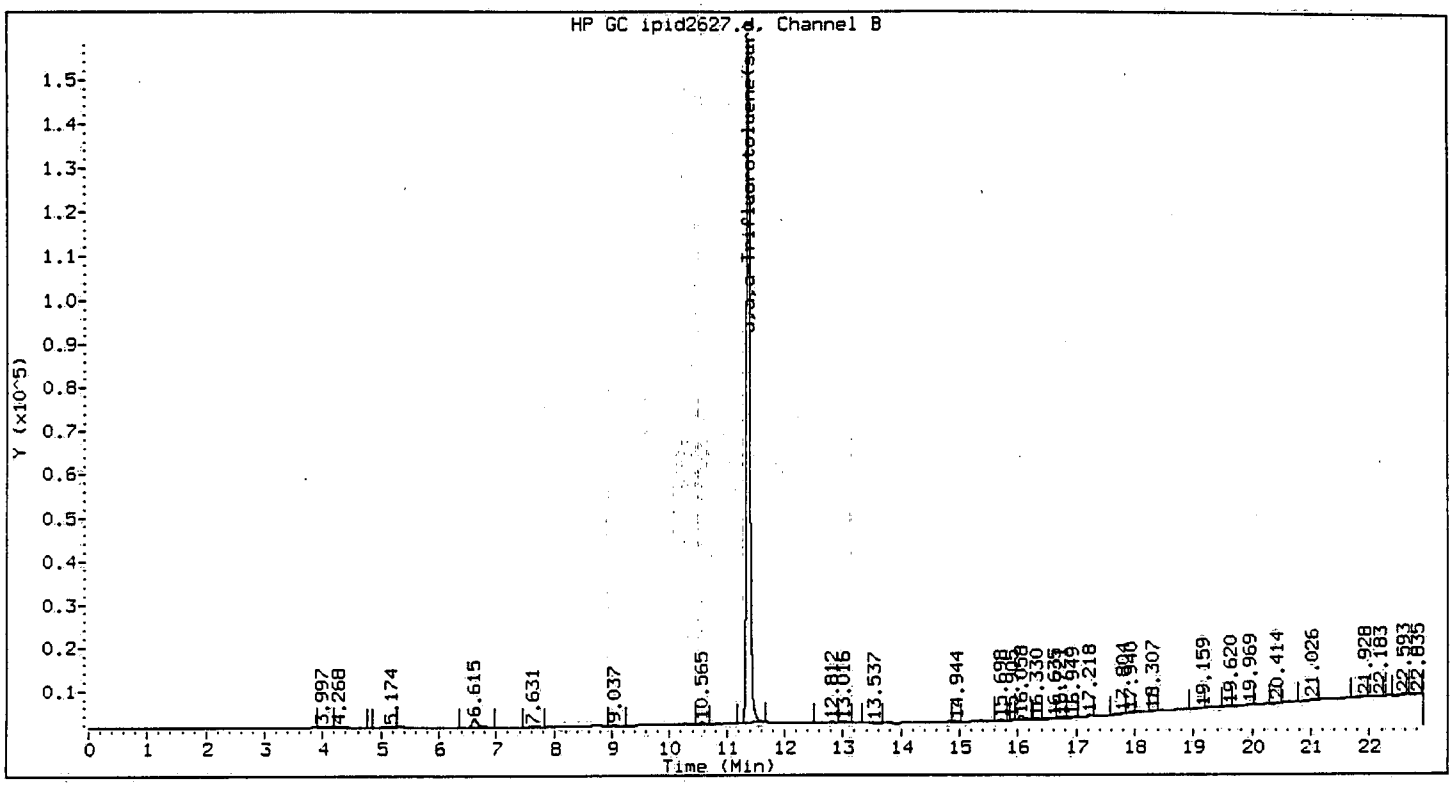
Lab Sample No: **80991**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2627.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50



Method : /chem/VOAGC3.i/602/08-28-98/05sep98.b/GC3-602.m
Sample Info : 80991
Lab ID : 80991
Inj Date : 05-SEP-98 16:36:00
Operator : KB
Cpnd Sublist: BTEX

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
a,a,a-Trifluorotoluene(sur)	11.373	11.406	0.033	3138049	28.767	28.767

Client ID: **MW-22R**
Site: L.E. Carpenter

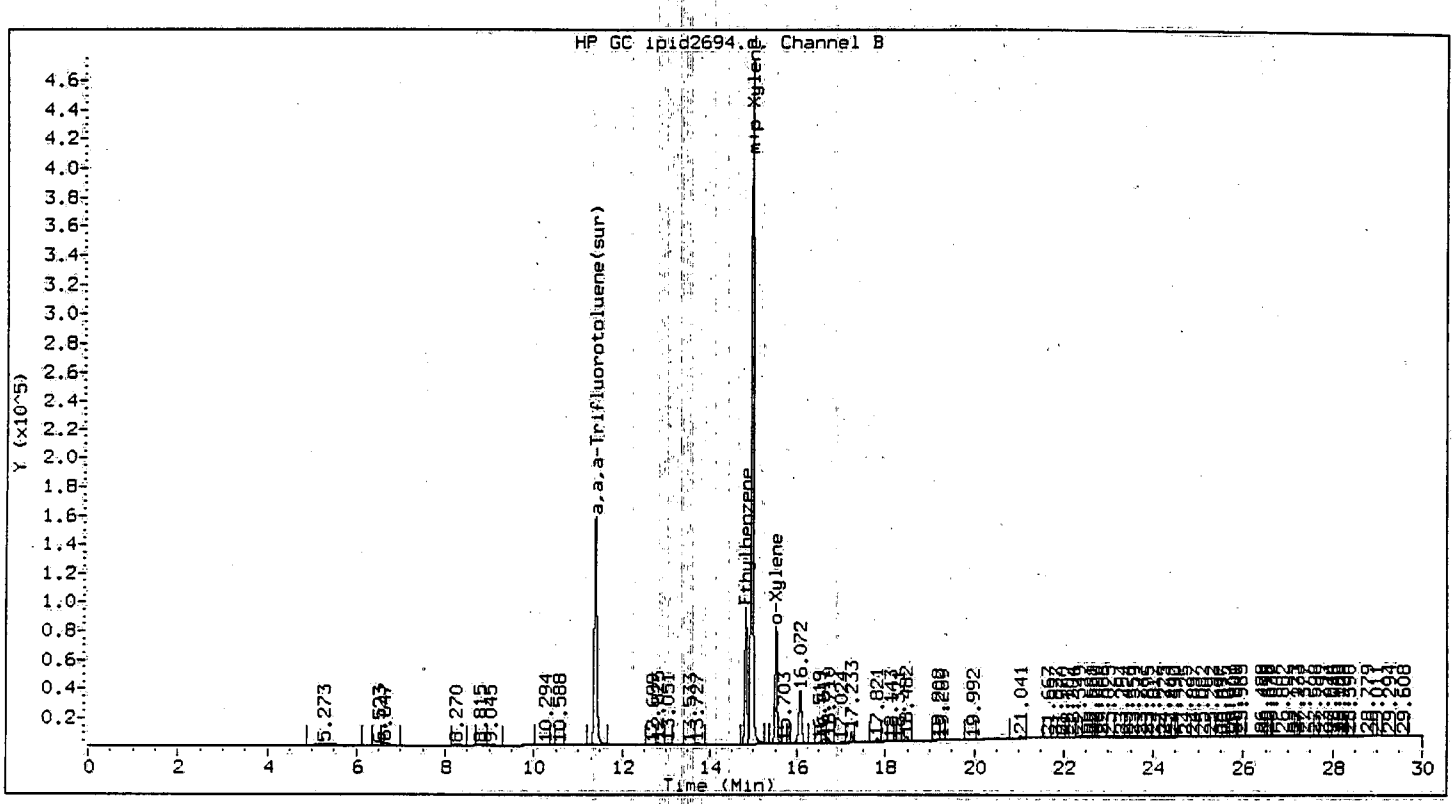
Lab Sample No: **80992**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/10/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2694.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 250.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	50.0
Toluene	ND	35.0
Ethylbenzene	1880	35.0
Xylene (Total)	10300	125



Method : /chem/VOAGC3.i/602/08-28-98/09sep98.b/GC3-602.m
Sample Info : 80992;;250
Lab ID : 80992
Inj Date : 10-SEP-98 03:04:00
Operator : KB
Cpnd Sublist: BTEX

Inst ID : VOAGC3.i
Dil Factor : 250
Sample Matrix : WATER
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
m+p-Xylene	14.958	14.974	0.015	7851832	34.347	8586.702
o-Xylene	15.516	15.529	0.013	1296611	6.174	1543.441
Ethylbenzene	14.820	14.832	0.012	1530158	7.540	1885.063
Xylene (Total)	25.019	25.019	0.000	9148444	41.133	10283.333
a,a,a-Trifluorotoluene(sur)	11.394	11.406	0.012	3124716	28.645	28.645

Client ID: **MW-25R**
Site: L.E. Carpenter

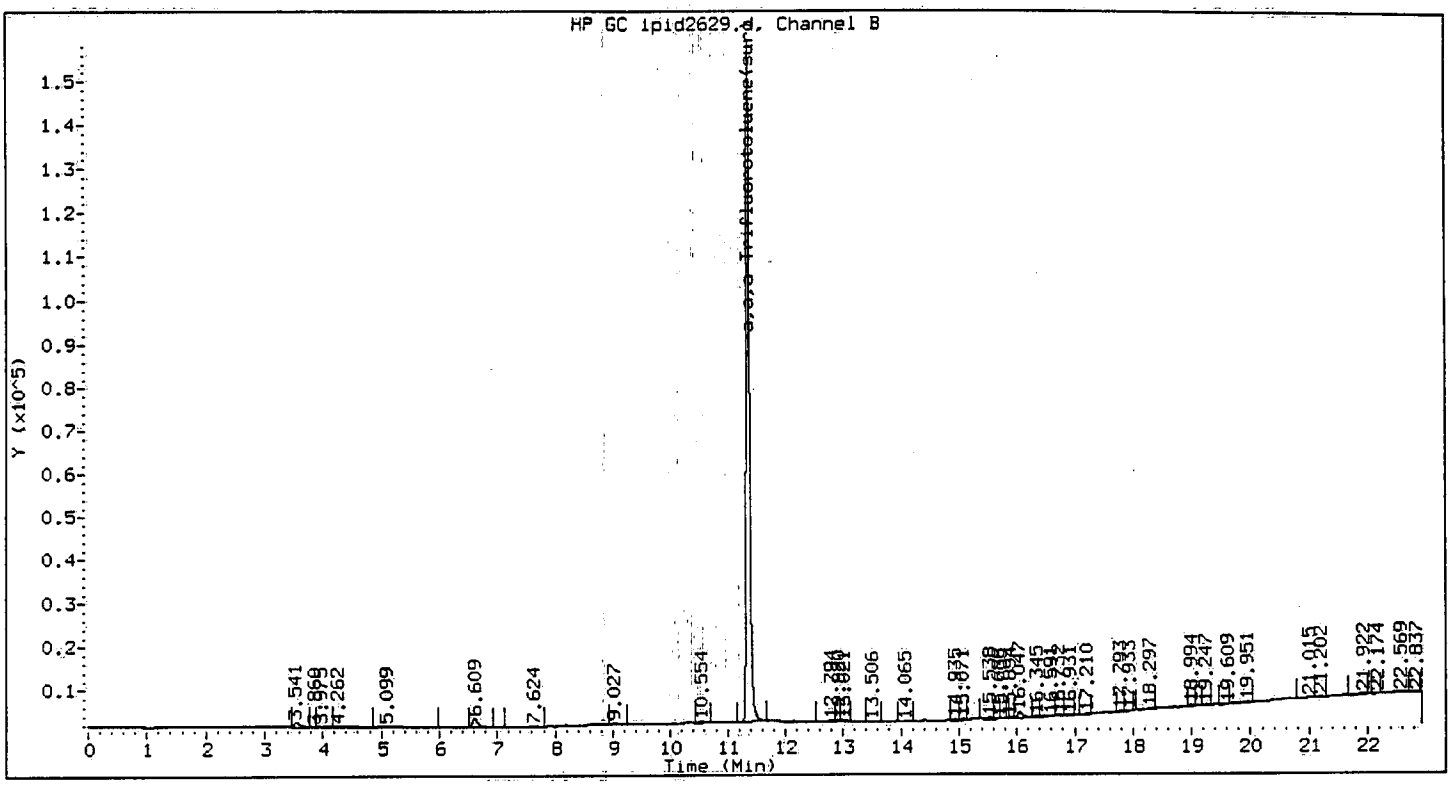
Lab Sample No: **80993**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2629.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50



Method : /chem/VOAGC3.i/602/08-28-98/05sep98.b/GC3-602.m
Sample Info : 80993
Lab ID : 80993
Inj Date : 05-SEP-98 17:46:00
Operator : KB
Cpnd Sublist: BTEX

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
a,a,a-Trifluorotoluene(sur)	11.363	11.406	0.043	3119055	28.593	28.593

Client ID: **MW-22RD**
Site: L.E. Carpenter

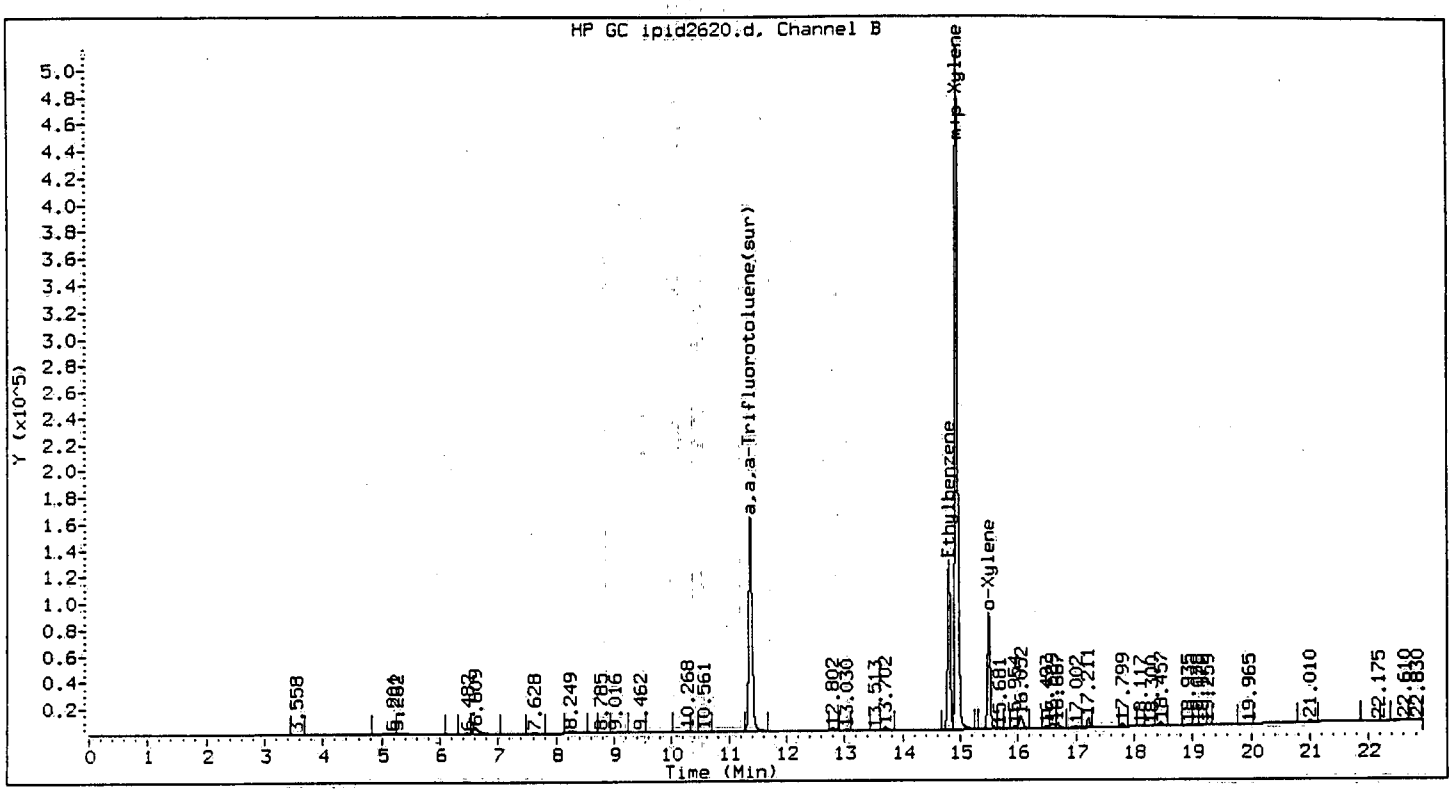
Lab Sample No: **80994**
Lab Job No: G848

Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2620.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 250.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	50.0
Toluene	ND	35.0
Ethylbenzene	2510	35.0
Xylene (Total)	11000	125



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Sample Info : 80994;;250
Lab ID : 80994
Inj Date : 05-SEP-98 12:46:00
Operator : KB
Cpnd Sublist: BTEX

Inst ID : VOAGC3.i
Dil Factor : 250
Sample Matrix : WATER
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
m+p-Xylene	14.937	14.974	0.037	8436506	36.904	9226.095
o-Xylene	15.494	15.529	0.035	1390615	6.621	1655.339
Ethylbenzene	14.798	14.832	0.034	2037406	10.040	2509.961
Xylene (Total)	25.019	25.019	0.000	9827121	44.185	11046.200
a,a,a-Trifluorotoluene(sur)	11.371	11.406	0.035	3195167	29.291	29.291

Client ID: **Field_Blank**
Site: L.E. Carpenter

Lab Sample No: **80995**
Lab Job No: G848

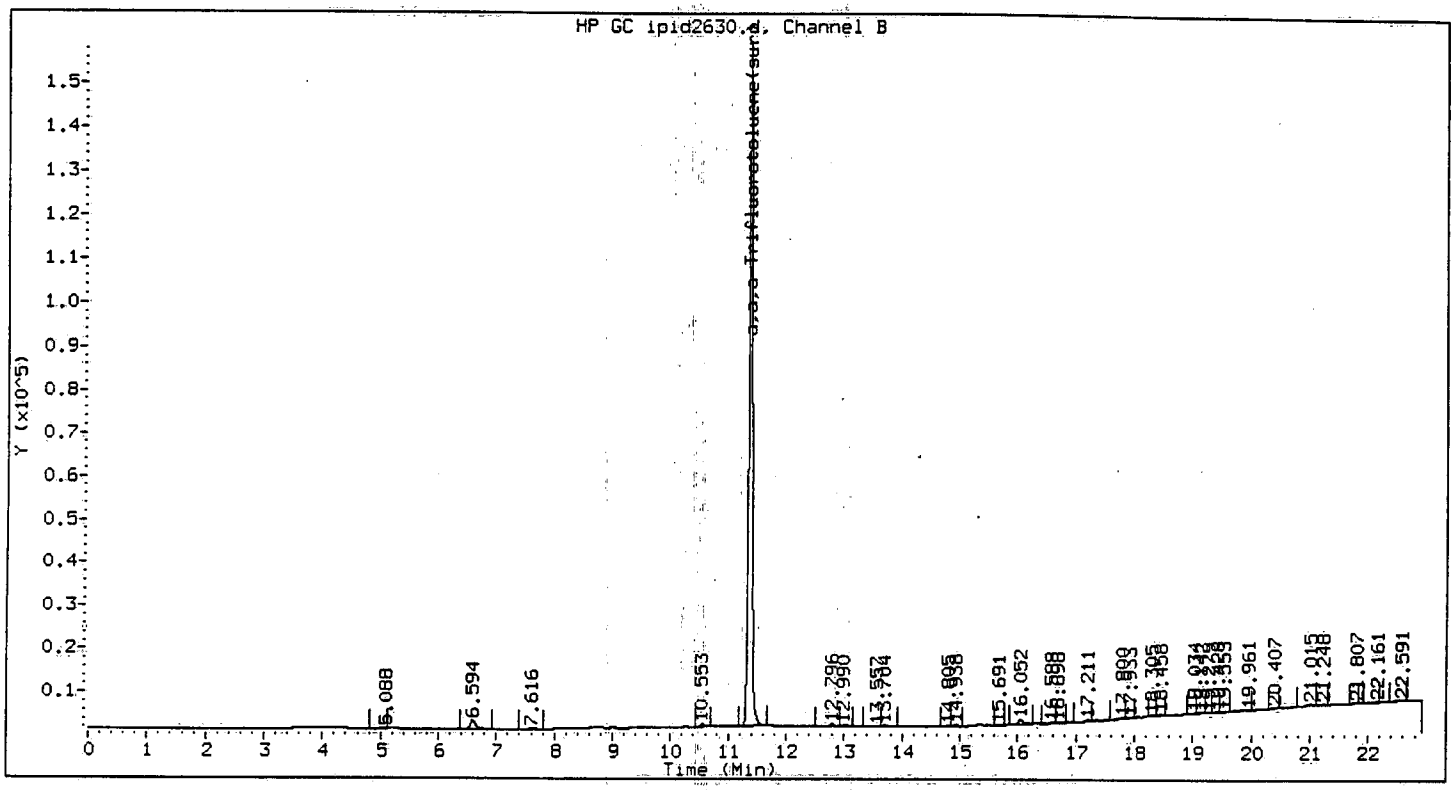
Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2630.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

Data File: /chem/VOAGC3.i/602/08-28-98/05sep98.b/ipid2630.d
Report Date 09/07/98 11:00



Method : /chem/VOAGC3.i/602/08-28-98/05sep98.b/GC3-602.m
Sample Info : 80995
Lab ID : 80995
Inj Date : 05-SEP-98 18:18:00
Operator : KB
Cpnd Sublist: BTEX

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
a,a,a-Trifluorotoluene(sur)	11.363	11.406	0.043	3132696	28.718	28.718

Client ID: **Trip_Blank**
Site: L.E. Carpenter

Lab Sample No: **80996**
Lab Job No: G848

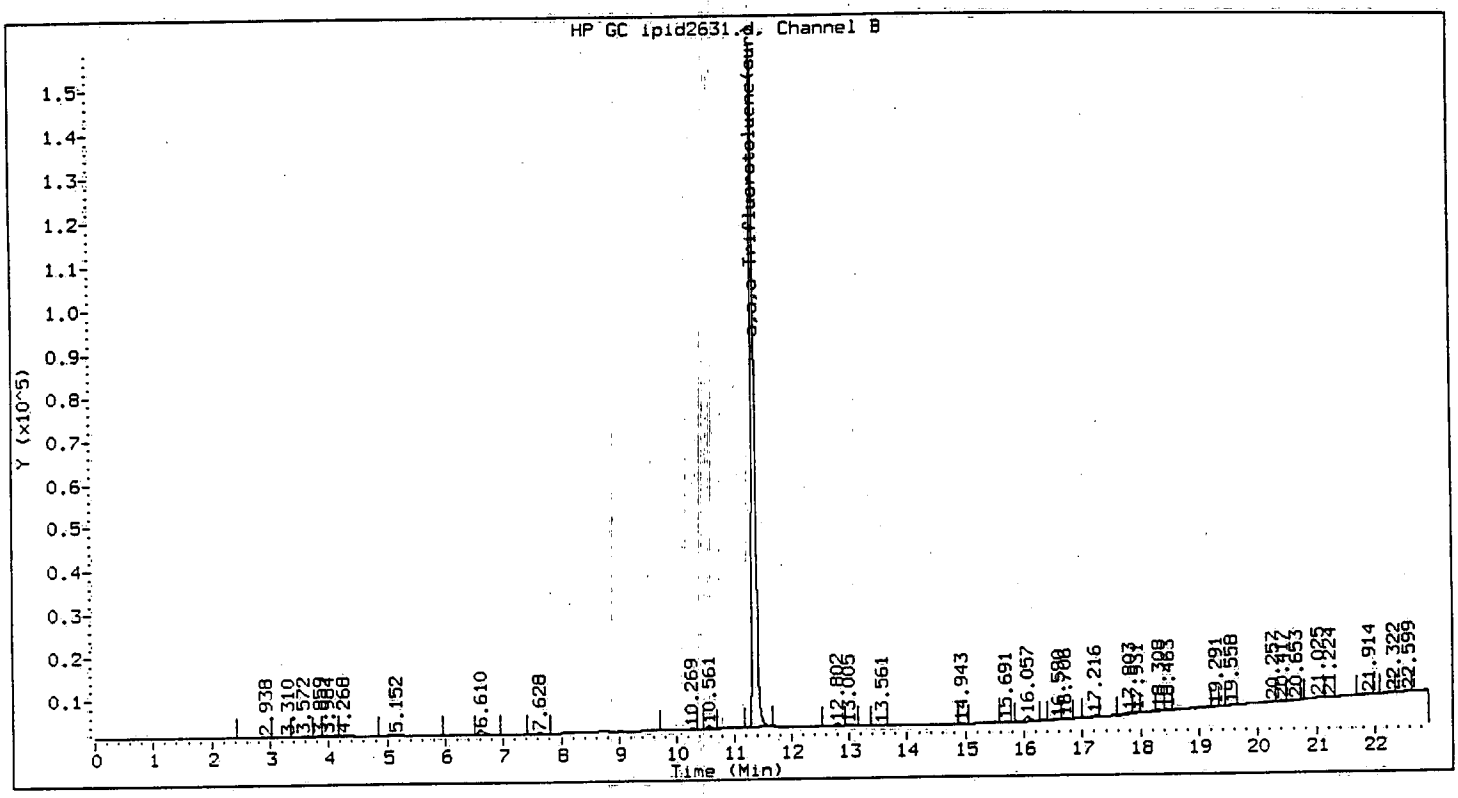
Date Sampled: 08/28/98
Date Received: 08/28/98
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2631.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
Benzene	ND	0.20
Toluene	ND	0.14
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50

Data File: /chem/VOAGC3.i/602/08-28-98/05sep98.b/ipid2631.d Page 1
Report Date 09/07/98 11:00



Method : /chem/VOAGC3.i/602/08-28-98/05sep98.b/GC3-602.m
Sample Info : 80996
Lab ID : 80996
Inj Date : 05-SEP-98 18:51:00
Operator : KB
Cpnd Sublist: BTEX

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: SAMPLE

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
a,a,a-Trifluorotoluene(sur)	11.369	11.406	0.037	3143825	28.820	28.820

LAB SAMPLE NO.

IG248

VOLATILE METHOD BLANK SUMMARY

Date Analyzed: 09/05/98

Instrument ID: VOAGC3

Time Analyzed: 0935

Lab File ID: IPID2615

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

	CLIENT ID.	LAB SAMPLE NO	LAB FILE ID	TIME ANALYZED
01	MW-22RD	80994	IPID2620	1246
02	MW-4	80988	IPID2624	1457
03	MW-14I	80989	IPID2625	1530
04	MW-15S	80990	IPID2626	1603
05	MW-15I	80991	IPID2627	1636
06	MW-25R	80993	IPID2629	1746
07	FIELD_BLANK	80995	IPID2630	1818
08	TRIP_BLANK	80996	IPID2631	1851
09	MW-22RDMS	80994MS	IPID2652	0616
10	MW-22RDMSD	80994MSD	IPID2653	0649
11				
12				
13				
14				
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29				
30				

COMMENTS:

page 1 of 1

Client ID: **IG248**
Site:

Lab Sample No: **IG248**
Lab Job No: G848

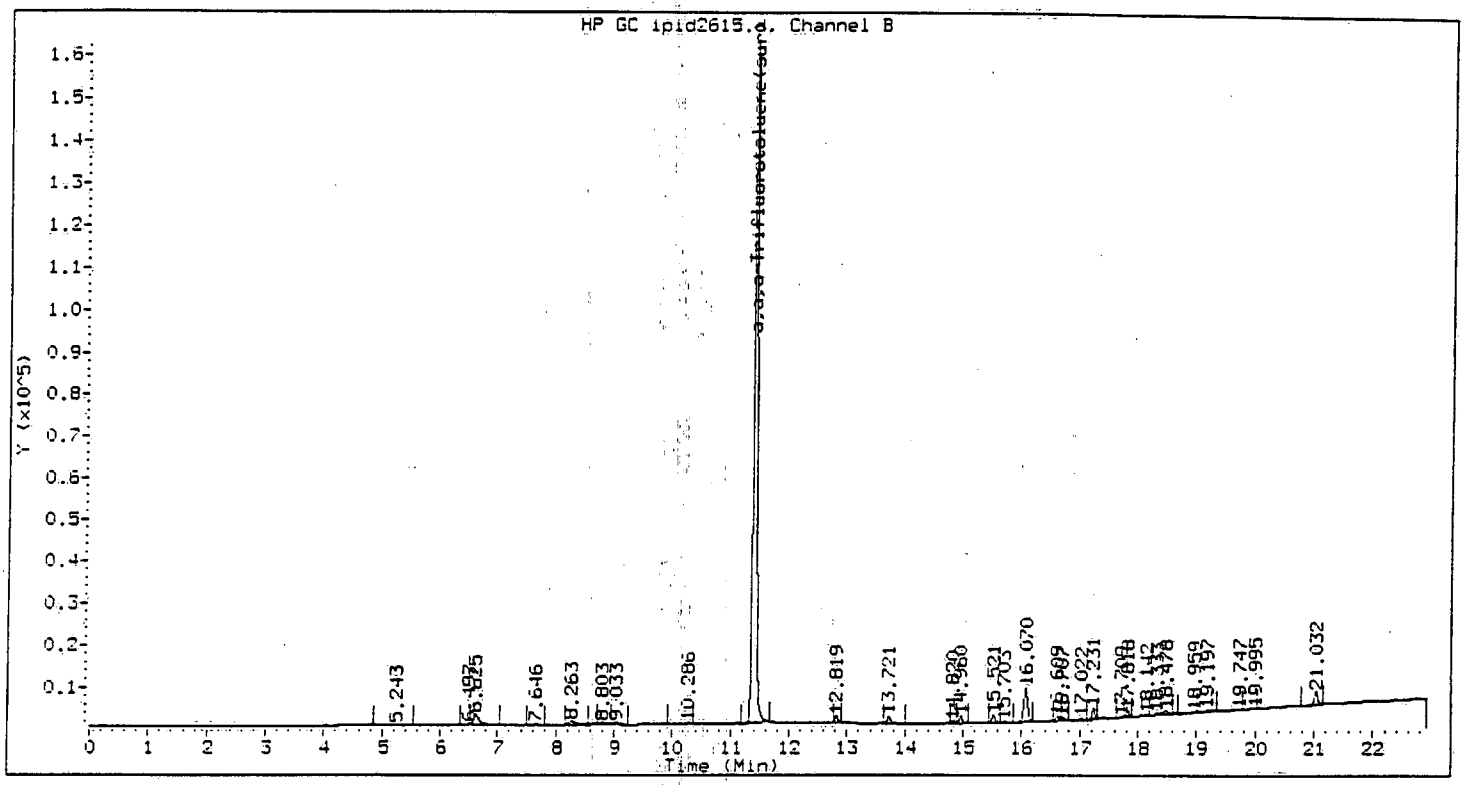
Date Sampled: _____
Date Received: _____
Date Analyzed: 09/05/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2615.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
TBA	ND	100
MTBE	ND	0.50
DIPE	ND	0.50
Benzene	ND	0.20
Toluene	ND	0.14
Chlorobenzene	ND	0.11
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50
1,3-Dichlorobenzene	ND	0.15
1,4-Dichlorobenzene	ND	0.13
1,2-Dichlorobenzene	ND	0.10
Naphthalene	ND	0.10

Data File: /chem/VOAGC3.i/602/08-28-98/05sep98.b/ipid2615.d
Report Date 09/07/98 10:59



Method : /chem/VOAGC3.i/602/08-28-98/05sep98.b/GC3-602.m
Sample Info : IG248
Lab ID : IG248
Inj Date : 05-SEP-98 09:35:00
Operator : KB
Cpnd Sublist: all
Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: BLANK

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
a,a,a-Trifluorotoluene(sur)	11.387	11.406	0.019	3194670	29.286	29.286

LAB SAMPLE NO.

IG252

VOLATILE METHOD BLANK SUMMARY

Date Analyzed: 09/09/98

Instrument ID: VOAGC3

Time Analyzed: 1012

Lab File ID: IPID2664

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

	CLIENT ID.	LAB SAMPLE NO	LAB FILE ID	TIME ANALYZED
01	MW-22R	80992	IPID2694	0304
02				
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
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29				
30				

COMMENTS:

page 1 of 1

Client ID: **IG252**
Site:

Lab Sample No: **IG252**
Lab Job No: G848

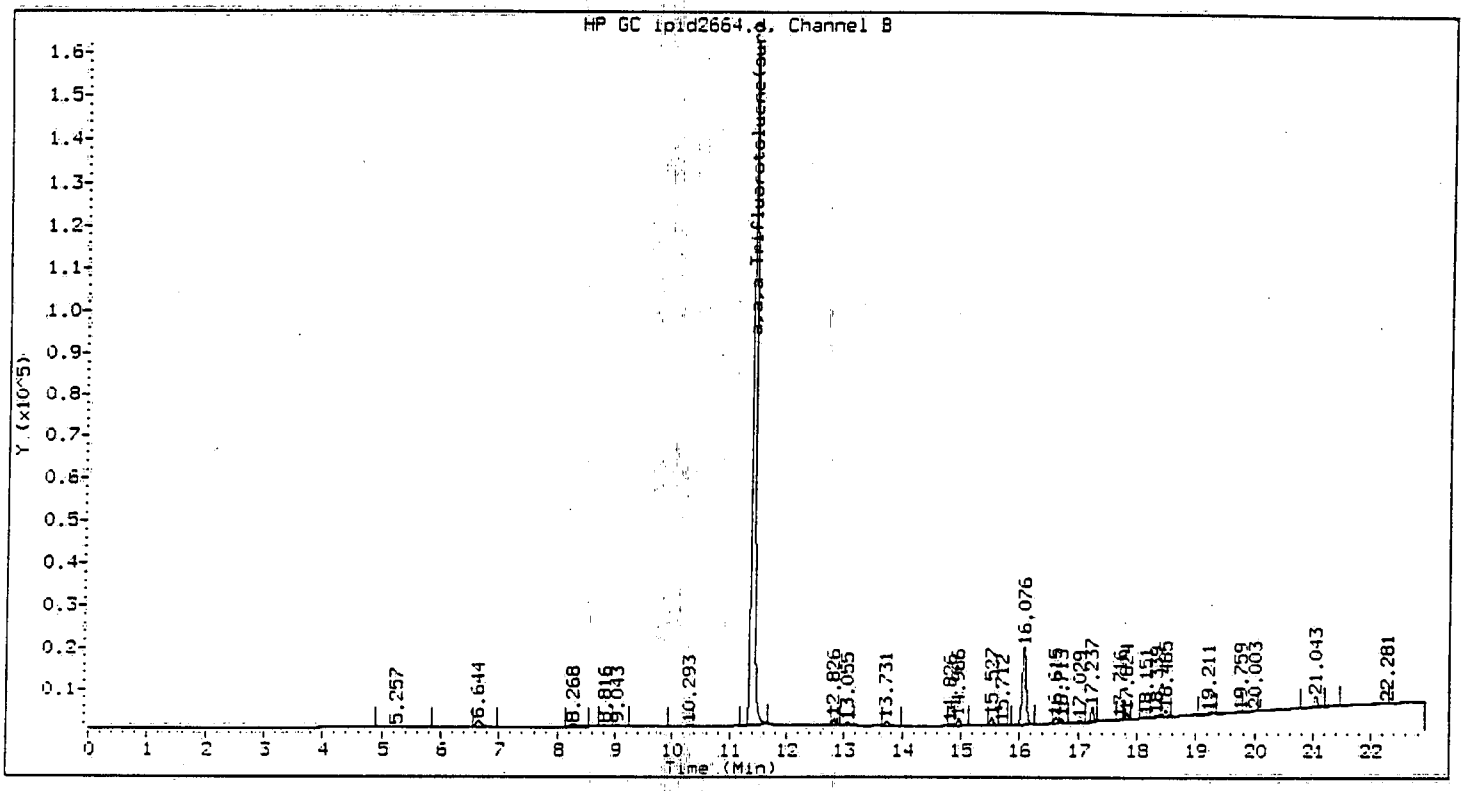
Date Sampled: _____
Date Received: _____
Date Analyzed: 09/09/98
GC Column: DB624
Instrument ID: VOAGC3.i
Lab File ID: ipid2664.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Final Volume: 0.0 mL
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/PID
METHOD 602

Parameter	Analytical Result Units: ug/l	Method Detection Limit Units: ug/l
TBA	ND	100
MTBE	ND	0.50
DIPE	ND	0.50
Benzene	ND	0.20
Toluene	ND	0.14
Chlorobenzene	ND	0.11
Ethylbenzene	ND	0.14
Xylene (Total)	ND	0.50
1,3-Dichlorobenzene	ND	0.15
1,4-Dichlorobenzene	ND	0.13
1,2-Dichlorobenzene	ND	0.10
Naphthalene	ND	0.10

Data File: /chem/VOAGC3.i/602/08-28-98/09sep98.b/ipid2664.d
Report Date 09/10/98 08:55



Method : /chem/VOAGC3.i/602/08-28-98/09sep98.b/GC3-602.m
Sample Info : IG252
Lab ID : IG252
Inj Date : 09-SEP-98 10:12:00
Operator : KB
Cpnd Sublist: all
Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: BLANK

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
a,a,a-Trifluorotoluene(sur)	11.395	11.406	0.012	3214310	29.466	29.466

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Instrument ID: VOAGC3

Calibration Date(s): 08/28/98 08/28/98

Calibration Time(s): 0814 1042

LAB FILE ID: RRF2: IPID2539 RRF5: IPID2535 RRF10: IPID2536
RRF20: IPID2537 RRF40: IPID2538

COMPOUND	RRF2	RRF5	RRF10	RRF20	RRF40
TBA **	976	1192	1109	1038	
MTBE	102232	106497	105016	102910	103459
DIPE	157585	147599	136373	135879	143622
Benzene	301096	272053	241831	249859	269308
Toluene	283902	249114	223972	229628	247284
Chlorobenzene	263234	240630	222161	222761	239169
Ethylbenzene	230428	204024	181287	192848	206074
Xylene (Total)	253651	225805	202120	208413	222058
1,3-Dichlorobenzene	195240	178035	164622	170179	180613
1,4-Dichlorobenzene	217150	195560	182115	185751	200114
1,2-Dichlorobenzene	170321	154521	144466	147137	156770
Naphthalene	160467	133479	134649	132454	138543
a,a,a-Trifluorotoluene(sur)	106913	110231	109722	108787	109770

** TBA Calibration Levels are RF200, RF400, RF1000, and RF2000

VOLATILE ORGANICS INITIAL CALIBRATION DATA

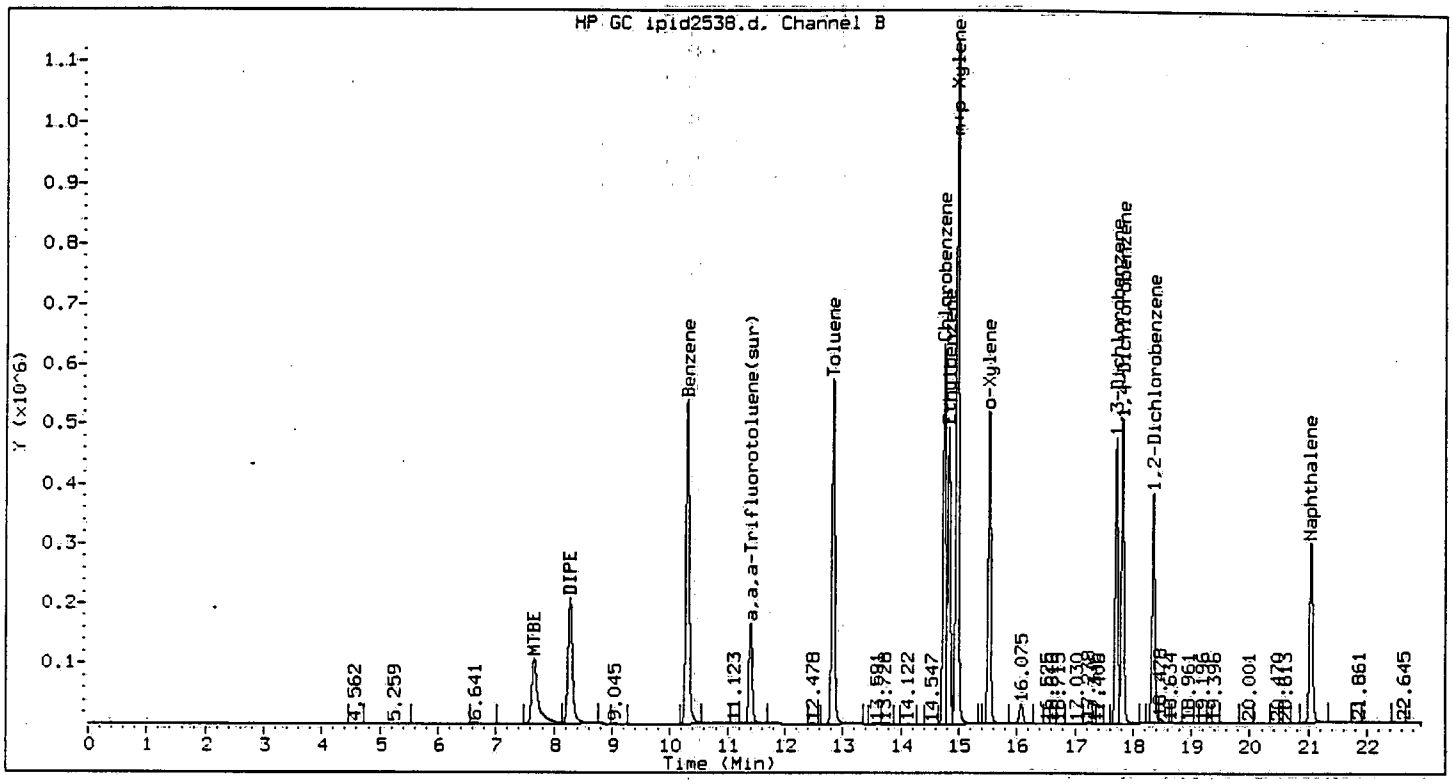
Instrument ID: VOAGC3

Calibration Date(s): 08/28/98 08/28/98

Calibration Time(s): 0814 1042

COMPOUND	CURVE	COEFFICENT A1	%RSD OR R^2
TBA **	AVRG	1079	8.6*
MTBE	AVRG	104023	1.6*
DIPE	AVRG	144211	6.2*
Benzene	AVRG	266829	8.6*
Toluene	AVRG	246780	9.5*
Chlorobenzene	AVRG	237591	7.1*
Ethylbenzene	AVRG	202932	9.0*
Xylene (Total)	AVRG	222410	9.0*
1,3-Dichlorobenzene	AVRG	177738	6.6*
1,4-Dichlorobenzene	AVRG	196138	7.0*
1,2-Dichlorobenzene	AVRG	154643	6.5*
Naphthalene	AVRG	139918	8.4*
a,a,a-Trifluorotoluene(sur)	AVRG	109085	1.2*

** TBA Calibration Levels are RF200, RF400, RF1000, and RF2000
* Compounds with required maximum %RSD values.



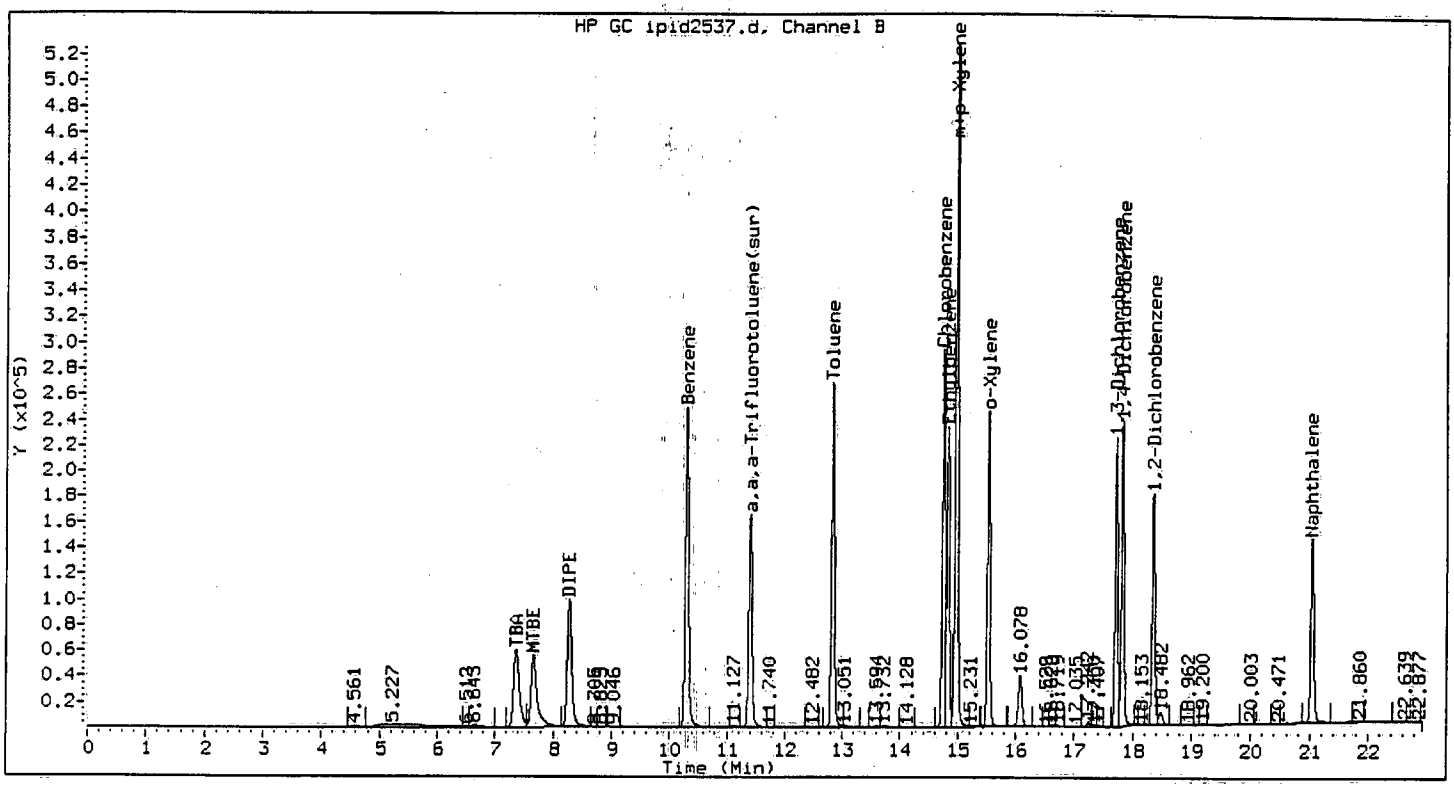
Method : /chem/VOAGC3.i/602/08-28-98/28aug98.b/GC3-602.m
Sample Info : ISTD040
Lab ID : ISTD040
Inj Date : 28-AUG-98 10:09:00
Operator : KB
Cpnd Sublist: all

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: CALIB_5

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
o-Xylene	15.521	15.529	0.008	8251664	39.290	39.290
m+p-Xylene	14.966	14.974	0.008	18395298	80.468	80.468
MTBE	7.658	7.668	0.010	4138367	39.783	39.783
DIPE	8.275	8.283	0.009	5744873	39.836	39.836
Benzene	10.294	10.302	0.008	10772317	40.372	40.372
Toluene	12.827	12.834	0.008	9891359	40.082	40.082
Chlorobenzene	14.745	14.753	0.008	9566773	40.266	40.266
Ethylbenzene	14.825	14.832	0.008	8242944	40.619	40.619
Xylene (Total)	25.019	25.019	0.000	26646962	119.810	119.810

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
1,3-Dichlorobenzene	17.711	17.719	0.008	7224517	40.647	40.647
1,4-Dichlorobenzene	17.818	17.826	0.009	8004572	40.811	40.811
1,2-Dichlorobenzene	18.348	18.356	0.009	6270805	40.550	40.550
Naphthalene	21.036	21.047	0.010	5541725	39.607	39.607
a,a,a-Trifluorotoluene(sur)	11.399	11.406	0.007	3293105	30.189	30.189

Data File: /chem/VOAGC3.i/602/08-28-98/28aug98.b/ipid2537.d Page 1
Report Date 08/29/98 08:14



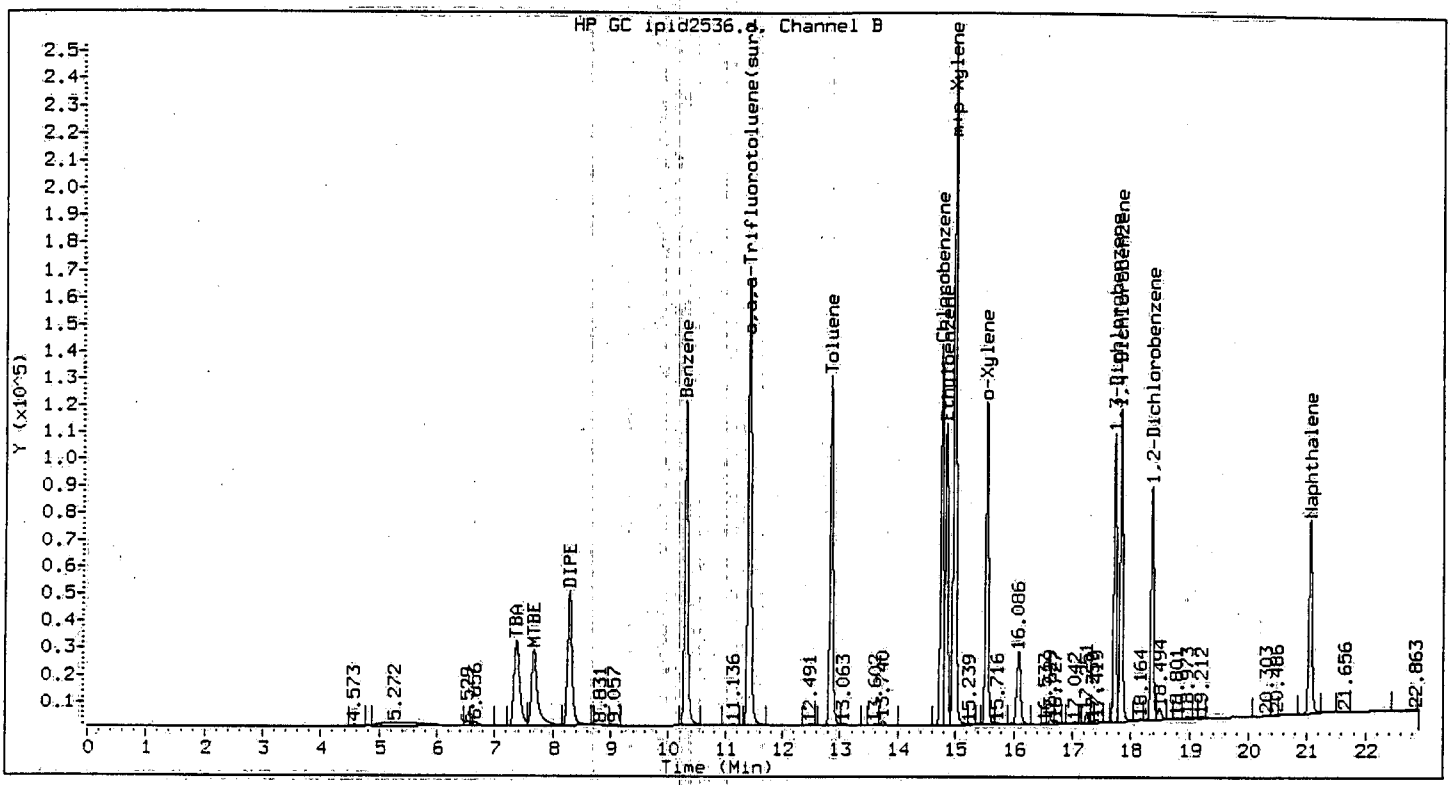
Method : /chem/VOAGC3.i/602/08-28-98/28aug98.b/GC3-602.m
Sample Info : ISTD020
Lab ID : ISTD020
Inj Date : 28-AUG-98 09:37:00
Operator : KB
Cpnd Sublist: all

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: CALIB_4

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
o-Xylene	15.525	15.529	0.004	3910572	18.620	18.620
m+p-Xylene	14.970	14.974	0.004	8594188	37.594	37.594
TBA	7.363	7.369	0.006	2075168	1923.641	1923.641
MTBE	7.664	7.668	0.004	2058202	19.786	19.786
DIPE	8.279	8.283	0.004	2717589	18.844	18.844
Benzene	10.297	10.302	0.005	4997176	18.728	18.728
Toluene	12.830	12.834	0.004	4592570	18.610	18.610
Chlorobenzene	14.749	14.753	0.004	4455221	18.752	18.752
Ethylbenzene	14.829	14.832	0.004	3856953	19.006	19.006

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
Xylene (Total)	25.019	25.019	0.000	12504760	56.224	56.224
1,3-Dichlorobenzene	17.715	17.719	0.004	3403584	19.149	19.149
1,4-Dichlorobenzene	17.822	17.826	0.004	3715023	18.941	18.941
1,2-Dichlorobenzene	18.352	18.356	0.004	2942735	19.029	19.029
Naphthalene	21.041	21.047	0.005	2649083	18.933	18.933
a,a,a-Trifluorotoluene(sur)	11.402	11.406	0.004	3263607	29.918	29.918

Data File: /chem/VOAGC3.i/602/08-28-98/28aug98.b/ipid2536.d Page 1
Report Date 08/29/98 08:14

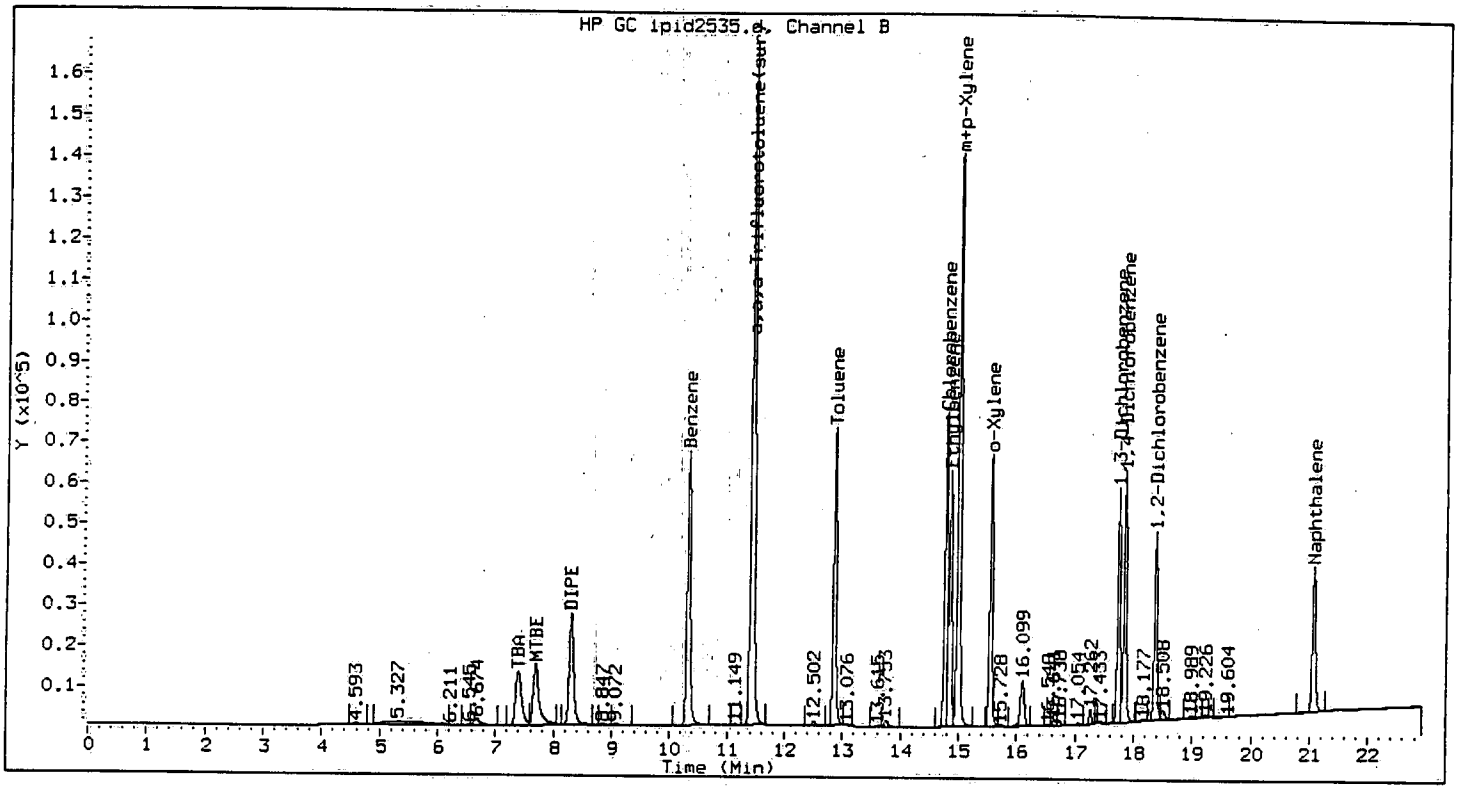


Method : /chem/VOAGC3.i/602/08-28-98/28aug98.b/GC3-602.m
Sample Info : ISTD010
Lab ID : ISTD010
Inj Date : 28-AUG-98 09:04:00
Operator : KB
Cpnd Sublist: all

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: CALIB_3

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
o-Xylene	15.534	15.529	0.005	1913970	9.113	9.113
m+p-Xylene	14.979	14.974	0.005	4149635	18.152	18.152
TBA	7.372	7.369	0.003	1108909	1027.938	1027.938
MTBE	7.673	7.668	0.006	1050159	10.095	10.095
DIPE	8.289	8.283	0.006	1363726	9.456	9.456
Benzene	10.307	10.302	0.005	2418312	9.063	9.063
Toluene	12.839	12.834	0.005	2239725	9.076	9.076
Chlorobenzene	14.758	14.753	0.005	2221606	9.351	9.351
Ethylbenzene	14.837	14.832	0.005	1812874	8.933	8.933

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
Xylene (Total)	25.019	25.019	0.000	6063605	27.263	27.263
1,3-Dichlorobenzene	17.724	17.719	0.005	1646218	9.262	9.262
1,4-Dichlorobenzene	17.831	17.826	0.005	1821152	9.285	9.285
1,2-Dichlorobenzene	18.361	18.356	0.005	1444659	9.342	9.342
Naphthalene	21.052	21.047	0.006	1346486	9.623	9.623
a,a,a-Trifluorotoluene(sur)	11.411	11.406	0.005	3291660	30.175	30.175

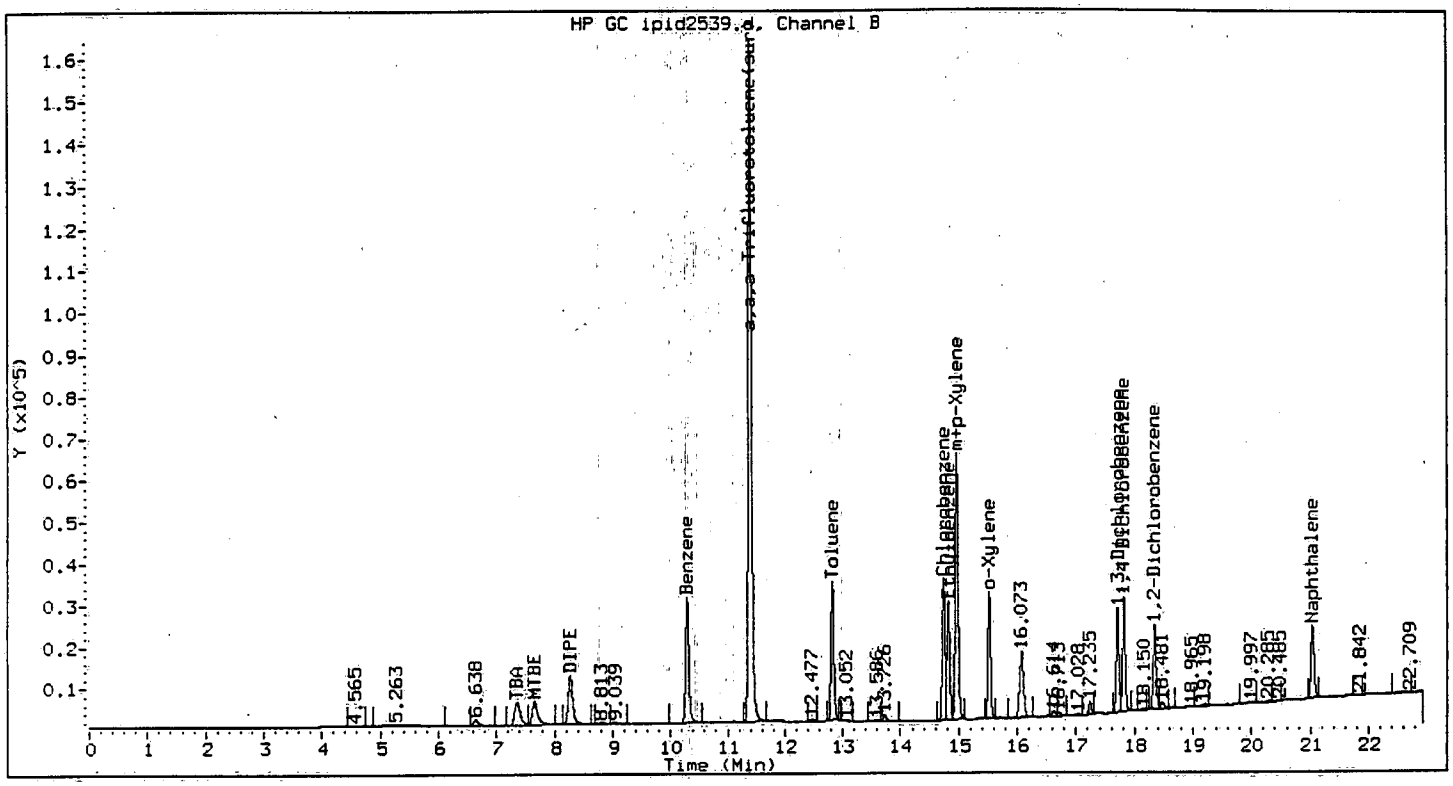


Method : /chem/VOAGC3.i/602/08-28-98/28aug98.b/GC3-602.m
Sample Info : ISTD005
Lab ID : ISTD005
Inj Date : 28-AUG-98 08:14:00
Operator : KB
Cpnd Sublist: all

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: CALIB_2

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
o-Xylene	15.546	15.529	0.017	1075351	5.322	5.322
m+p-Xylene	14.990	14.974	0.017	2311731	10.467	10.467
TBA	7.389	7.369	0.019	476934	428.534	428.534
MTBE	7.690	7.668	0.022	532485	5.097	5.097
DIPE	8.304	8.283	0.020	737993	5.239	5.239
Benzene	10.321	10.302	0.020	1360263	5.267	5.267
Toluene	12.852	12.834	0.018	1245569	5.245	5.245
Chlorobenzene	14.770	14.753	0.017	1203149	5.204	5.204
Ethylbenzene	14.849	14.832	0.017	1020120	5.203	5.203

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
Xylene (Total)	25.019	25.019	0.000	3387082	15.783	15.783
1,3-Dichlorobenzene	17.736	17.719	0.018	890175	5.135	5.135
1,4-Dichlorobenzene	17.844	17.826	0.017	977800	5.122	5.122
1,2-Dichlorobenzene	18.374	18.356	0.018	772607	5.126	5.126
Naphthalene	21.068	21.047	0.021	667395	4.952	4.952
a,a,a-Trifluorotoluene(sur)	11.424	11.406	0.018	3306924	30.165	30.165



Method : /chem/VOAGC3.i/602/08-28-98/28aug98.b/GC3-602.m
Sample Info : ISTD002
Lab ID : ISTD002
Inj Date : 28-AUG-98 10:42:00
Operator : KB
Cpnd Sublist: all

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: CALIB_1

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
o-Xylene	15.519	15.529	0.010	483622	2.303	2.303
m+p-Xylene	14.963	14.974	0.010	1038286	4.542	4.542
TBA	7.354	7.369	0.016	195251	180.994	180.994
MTBE	7.654	7.668	0.014	204464	1.966	1.966
DIPE	8.271	8.283	0.013	315170	2.185	2.185
Benzene	10.290	10.302	0.012	602191	2.257	2.257
Toluene	12.824	12.834	0.011	567804	2.301	2.301
Chlorobenzene	14.743	14.753	0.010	526469	2.216	2.216
Ethylbenzene	14.822	14.832	0.010	460855	2.271	2.271

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
Xylene (Total)	25.019	25.019	0.000	1521908	6.843	6.843
1,3-Dichlorobenzene	17.709	17.719	0.010	390480	2.197	2.197
1,4-Dichlorobenzene	17.817	17.826	0.010	434301	2.214	2.214
1,2-Dichlorobenzene	18.346	18.356	0.010	340642	2.203	2.203
Naphthalene	21.036	21.047	0.011	320934	2.294	2.294
a,a,a-Trifluorotoluene(sur)	11.394	11.406	0.012	3207398	29.403	29.403

VOLATILE ORGANICS CONTINUING CALIBRATION CHECK

Instrument ID: VOAGC3 Calibration Date: 09/05/98 Time: 0811

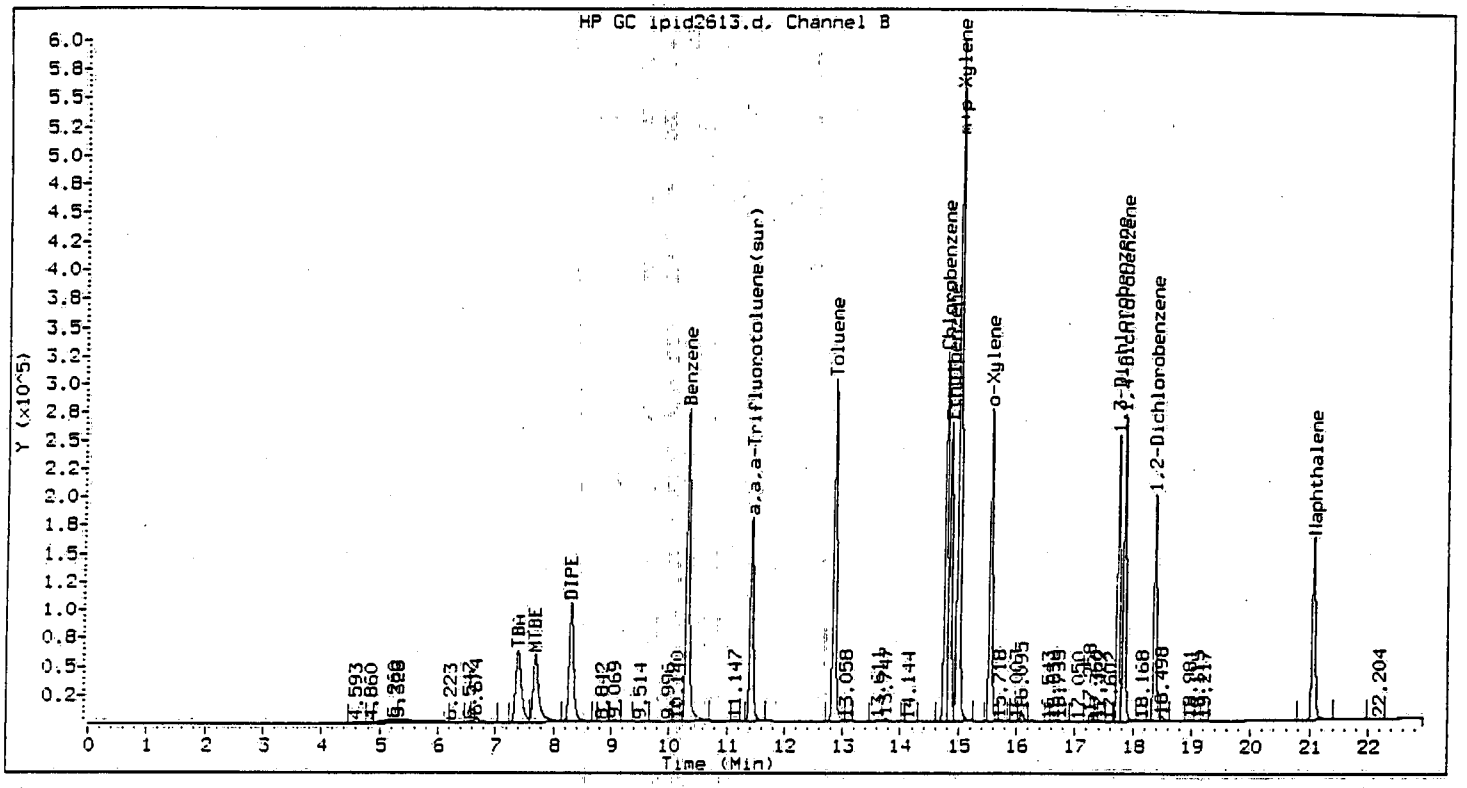
Lab File ID: IPID2613 Init. Calib. Date(s): 08/28/98 08/28/98

Heated Purge: (Y/N) N Init. Calib. Times: 0814 1042

COMPOUND	$\overline{RRF}$	RRF20	MIN RRF	%D	MAX %D
TBA **	1078.77	1084.36		-0.0	50.0
MTBE	104022.84	103175.57		0.8	50.0
DIPE	144211.49	141381.86		2.0	50.0
Benzene	266829.20	285793.85		-7.1	23.0
Toluene	246780.16	257446.74		-4.3	22.5
Chlorobenzene	237591.05	247619.62		-4.2	19.5
Ethylbenzene	202932.03	217485.24		-7.0	37.0
Xylene (Total)	222409.53	236250.35		-6.2	50.0
1,3-Dichlorobenzene	177737.78	192653.90		-8.2	27.5
1,4-Dichlorobenzene	196138.23	212655.26		-8.4	30.5
1,2-Dichlorobenzene	154643.03	165544.65		-7.0	32.0
Naphthalene	139918.37	149849.65		-6.9	50.0
a,a,a-Trifluorotoluene(sur)	109084.63	117249.96		-7.3	22.0

** TBA Continuing Calibration Level is RF2000.

Data File: /chem/VOAGC3.i/602/08-28-98/05sep98.b/ipid2613.d Page 1
Report Date 09/07/98 10:58



Method : /chem/VOAGC3.i/602/08-28-98/05sep98.b/GC3-602.m
Sample Info : ISTD020
Lab ID : ISTD020
Inj Date : 05-SEP-98 08:11:00
Operator : KB
Cpnd Sublist: all

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: CCALIB_4

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
o-Xylene	15.542	15.529	0.013	4414350	21.019	21.019
m+p-Xylene	14.987	14.974	0.013	9760670	42.697	42.697
TBA	7.390	7.369	0.021	2168715	2010.358	2010.358
MTBE	7.691	7.668	0.023	2063511	19.837	19.837
DIPE	8.306	8.283	0.022	2827637	19.608	19.608
Benzene	10.319	10.302	0.018	5715877	21.421	21.421
Toluene	12.850	12.834	0.015	5148934	20.864	20.864
Chlorobenzene	14.767	14.753	0.014	4952392	20.844	20.844
Ethylbenzene	14.846	14.832	0.014	4349704	21.434	21.434

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
Xylene (Total)	25.019	25.019	0.000	14175021	63.734	63.734
1,3-Dichlorobenzene	17.731	17.719	0.012	3853078	21.678	21.678
1,4-Dichlorobenzene	17.839	17.826	0.012	4253105	21.684	21.684
1,2-Dichlorobenzene	18.369	18.356	0.013	3310893	21.410	21.410
Naphthalene	21.062	21.047	0.015	2996992	21.420	21.420
a,a,a-Trifluorotoluene(sur)	11.423	11.406	0.017	3517498	32.246	32.246

VOLATILE ORGANICS CONTINUING CALIBRATION CHECK

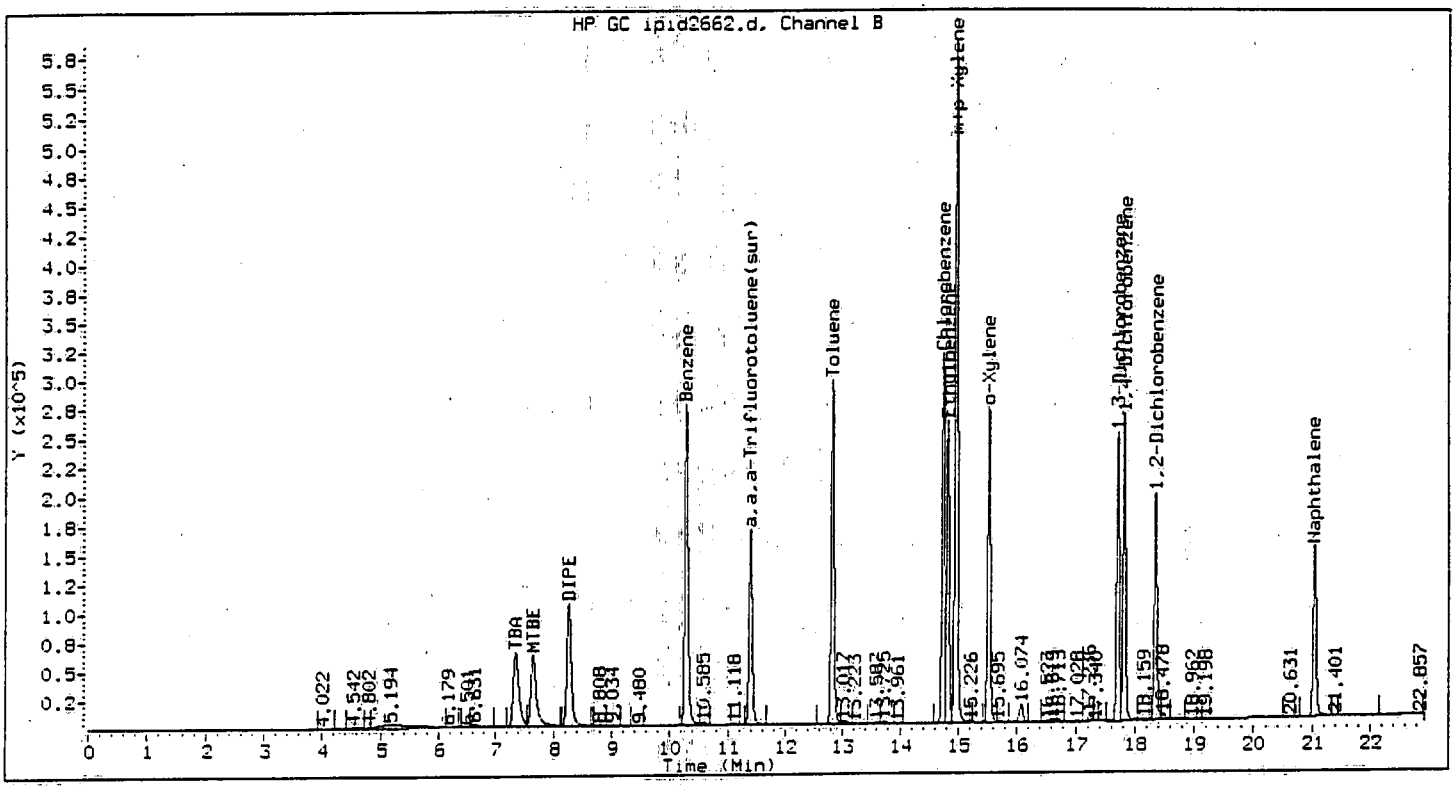
Instrument ID: VOAGC3 Calibration Date: 09/09/98 Time: 0858

Lab File ID: IPID2662 Init. Calib. Date(s): 08/28/98 08/28/98

Heated Purge: (Y/N) N Init. Calib. Times: 0814 1042

COMPOUND	$\overline{RRF}$	RRF20	MIN RRF	%D	MAX %D
TBA **	1078.77	1114.93		-3.2	50.0
MTBE	104022.84	107237.92		-2.9	50.0
DIPE	144211.49	143091.42		0.8	50.0
Benzene	266829.20	275464.19		-3.2	23.0
Toluene	246780.16	253633.00		-2.6	22.5
Chlorobenzene	237591.05	242911.31		-2.2	19.5
Ethylbenzene	202932.03	215473.80		-6.0	37.0
Xylene (Total)	222409.53	232299.13		-4.4	50.0
1,3-Dichlorobenzene	177737.78	188243.94		-5.9	27.5
1,4-Dichlorobenzene	196138.23	206406.41		-5.2	30.5
1,2-Dichlorobenzene	154643.03	160841.59		-4.0	32.0
Naphthalene	139918.37	138243.03		1.2	50.0
a,a,a-Trifluorotoluene(sur)	109084.63	110863.58		-1.6	22.0

** TBA Continuing Calibration Level is RF2000.



Method : /chem/VOAGC3.i/602/08-28-98/09sep98.b/GC3-602.m
Sample Info : ISTD020
Lab ID : ISTD020
Inj Date : 09-SEP-98 08:58:00
Operator : KB
Cpnd Sublist: all

Inst ID : VOAGC3.i
Dil Factor : 1
Sample Matrix : WATER
Sample Type: CCALIB_4

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)
o-Xylene	15.519	15.529	0.010	4317317	20.557	20.557
m+p-Xylene	14.964	14.974	0.010	9620630	42.084	42.084
TBA	7.350	7.369	0.019	2229862	2067.041	2067.041
MTBE	7.651	7.668	0.017	2144758	20.618	20.618
DIPE	8.269	8.283	0.015	2861828	19.845	19.845
Benzene	10.287	10.302	0.014	5509283	20.647	20.647
Toluene	12.823	12.834	0.011	5072659	20.555	20.555
Chlorobenzene	14.742	14.753	0.011	4858226	20.448	20.448
Ethylbenzene	14.822	14.832	0.010	4309476	21.236	21.236

Compounds	RT	EXP RT	DLT RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)
Xylene (Total)	25.019	25.019	0.000	13937947	62.668	62.668
1,3-Dichlorobenzene	17.709	17.719	0.010	3764878	21.182	21.182
1,4-Dichlorobenzene	17.817	17.826	0.010	4128128	21.047	21.047
1,2-Dichlorobenzene	18.346	18.356	0.010	3216831	20.802	20.802
Naphthalene	21.038	21.047	0.009	2764860	19.761	19.761
a,a,a-Trifluorotoluene(sur)	11.395	11.406	0.011	3325907	30.489	30.489

VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Matrix: WATER Level: LOW Lab Job No: G848

	LAB SAMPLE NO.	SMC1 #	SMC2 #	OTHER	TOT OUT
01	IG248	98			0
02	80994	98			0
03	80988	99			0
04	80989	97			0
05	80990	96			0
06	80991	96			0
07	80993	95			0
08	80995	96			0
09	80996	96			0
10	80994MS	98			0
11	80994MSD	99			0
12	IG252	98			0
13	80992	95			0
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

QC LIMITS

SMC1 = a,a,a-Trifluorotoluene (78-122)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

VOLATILE SPIKE RECOVERY SUMMARY
METHOD 602

Matrix: WATER

Level: LOW

Matrix Spike - Lab Sample No.: 80994

MS Sample from Lab Job No: G848

QA Batch: 6506

Compound	MS % REC.	BS % REC.	LIMITS
Benzene	96	97	39-150
Toluene	97	98	46-148
Chlorobenzene	93	98	55-135
Ethylbenzene	109	102	32-160
1,3-Dichlorobenzene	96	102	50-141
1,4-Dichlorobenzene	104	109	42-143
1,2-Dichlorobenzene	95	101	37-154

* Values outside of QC limits

Spike Recovery: 0 out of 14 outside limits

COMMENTS: