RO 473

ENVIRONMENTAL ENGINEERING, INC
2680 Bishop Drive • Suite 203 • San Ramon, CA 94583
TEL (925) 244-6600 • FAX (925) 244-6601

Third Quarter 2002
GROUNDWATER MONITORING REPORT
TEXACO GASOLINE SERVICE STATION
15101 FREEDOM AVENUE
SAN LEANDRO, CALIFORNIA

September 26, 2002

Project 2551

Prepared for

Mr. Mohammad Pazdel
35840 Alcazar Court
Fremont, California

Prepared by

SOMA Environmental Engineering, Inc.
2680 Bishop Drive, Suite 203
San Ramon, California

ENVIRONMENTAL ENGINEERING, INC
2680 Bishop Drive • Suite 203 • San Ramon, CA 94583
TEL (925) 244-6600 • FAX (925) 244-6601

September 26, 2002

Mr. Scott O. Seery
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Texaco Gasoline Service Station (Formerly Freedom ARCO Station)
Site Address: 15101 Freedom Avenue, San Leandro, California
STID 4473/RO0000473

Dear Scott:

A copy of SOMA's "Third Quarter 2002 Groundwater Monitoring Report" for the subject property is enclosed.

Thank you for your time in reviewing our report. If you have any questions or comments, please call me at (925) 244-6600.

Sincerely,

Mansour Sepehr, Ph.D.,P.E.
Principal Hydrogeologist

Enclosure

cc: Mr. Mohammad Pazdel w/enclosure
Mr. Farrokh Hosseinyoun w/enclosure

Certification

This report has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Mohammad Pazdel, for the property located at 15101 Freedom Avenue, San Leandro, California, to comply with the Alameda County Health Care Services' (ACHCS) requirements for the Third Quarter 2002 groundwater monitoring event.

Mansour Sepehr, Ph.D., P.E.
Principal Hydrogeologist

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1.0 INTRODUCTION

This report has been prepared by SOMA Environmental Engineering, Inc., (SOMA) on behalf of Mr. Mohammad Pazdel, the property owner. Formerly, the property was known as Freedom ARCO Station located at 15101 Freedom Avenue, between 151st Street and Fairmont Boulevard, just west of Interstate 580 in San Leandro, California (the "Site"). The Site is currently operating as a service station under the brand name of Texaco. Figure 1 shows the location of the Site.

Since the 1960's, the Site has been used as a gasoline service station. In 1985, Mr. Mohammad Pazdel purchased the business and in 1992 he purchased the property from Mr. Mohammad Mashhoon. From 1985 until 1997, when Mr. Pazdel sold the business, the Site operated as "Freedom ARCO Station".

This groundwater monitoring report summarizes the results of the Third Quarter 2002 groundwater monitoring event conducted at the Site on August 8, 2002. This report includes the results of on-site measurements of the physical and chemical properties of the groundwater, which included pH, temperature, and electrical conductivity (EC). During this monitoring event, five monitoring wells (MW-1 to MW-5) were sampled and analyzed for the following chemicals as requested by the City of San Leandro Environmental Services Division (CSLESD):

- Total petroleum hydrocarbons as gasoline (TPH-g)
- Benzene, toluene, ethylbenzene, and total xylenes (collectively referred to as BTEX)
- Methyl tertiary Butyl Ether (MtBE)
- Total Lead

- Gasoline Oxygenates, which included tertiary Butyl Alcohol (TBA), Isopropyl Ether (DIPE), Ethyl tertiary Butyl Ether (ETBE), and Methyl tertiary Amyl Ether (TAME).

These activities were performed in accordance with the general guidelines of the California Regional Water Quality Control Board (CRWQCB).

1.1 Previous Activities

On May 20, 1999, in order to comply with underground storage tank (UST) upgrade regulations, three 10,000-gallon single walled USTs were removed and replaced with new double-walled fuel tanks. Geo-Logic oversaw the removal of the USTs, approximately 250 feet of product piping and six dispensers at the Site. Paradiso Mechanical, Inc. removed the old USTs and installed the new USTs. The on-site participating agency was Alameda County Health Care Services (ACHCS). During the upgrade of the USTs, petroleum chemicals were detected in subsurface soils beneath the old USTs and over-excavation of the UST cavity was performed.

After excavation and removal, the product piping and the three USTs were transported to the Ecology Control Industries facility in Richmond, California for proper disposal. On May 20 and May 21, 1999, Geo-Logic collected soil samples from beneath the USTs, product piping, and dispensers. On May 20, 1999, seven soil samples were collected from the west and east sides of the tank excavation pit (T1W, T2W, T3W, T1E, T2E, T3E, and an additional soil sample at T1W). The depths at which the samples were taken ranged from 12 to 14 feet below ground surface (bgs). In addition, six soil samples were collected from beneath the dispensers (P1, P2, P4, P5, P6, and P7). The depths at which the samples were taken ranged from 2.5 to 3 feet bgs. One soil sample was collected beneath the product lines (P3) at a depth of 2.5 feet bgs. On May 21, 1999, eight additional soil samples (P8, P9, P10, P11, P12, P13, P14, and P15) were collected beneath

the product piping and in the area of the dispensers at depths ranging from 3 to 3.5 feet bgs. A stockpile soil sample was also collected at this time.

On June 2, 1999, additional soil samples were collected during over-excavation activities from beneath the product piping and the base of the tank excavation cavity. An additional soil sample (P12) was collected beneath the product piping at a depth of 5 feet bgs. In order to define the vertical extent of hydrocarbon contamination, three additional soil samples were collected in the western portion of the tank cavity at depths ranging from 16.5 to 24.5 feet bgs.

The soil samples collected during the removal and over-excavation activities were submitted to Calcoast Analytical in Emeryville, California. Soil samples were analyzed for TPH-g using EPA Method 8015, BTEX compounds and MtBE using EPA Method 8020B and total lead using EPA Method 6010A. EPA Method 8260 was used to confirm the presence of MtBE. The concentration of TPH-g in soil samples ranged between 0.76 mg/Kg (in P3, at a depth of 2.5 feet bgs) and 4,000 mg/Kg (in T1W, at a depth of 24.5 feet bgs). Benzene concentrations ranged between 28 mg/Kg (in T1W, at a depth of 13.5 feet bgs) and non-detectable levels (in P2 through P6, and P14, at depths ranging from 2.5 to 3 feet bgs). MtBE concentrations ranged from below the laboratory reporting limit to 0.93 mg/Kg.

On July 7, 1999, a 20,000-gallon gasoline UST, an 8,000-gallon gasoline UST, and a 6,000-gallon diesel UST were installed in the tank cavity by Paradiso Mechanical, Inc.

In July 2001, CCS Environmental Services of San Rafael, California (CCS) at the request of the ACHCS conducted additional soil and groundwater investigations to further examine potential petroleum hydrocarbon contamination discovered during the removal and upgrade of the USTs at the Site. During this investigation, CCS drilled five soil borings (SB-1 through SB-5) using the direct-push method.

The soil boring locations are shown in Figure 2. The soil borings were advanced to a maximum depth of 31 feet. Due to the semi-confined nature of the saturated sediments directly beneath the Site, the groundwater stabilized at depths of 17 to 20 feet bgs, shortly after drilling. The results of this investigation indicated that petroleum-impacted soils are generally encountered below a depth of 19 feet and are predominantly present within the capillary fringe, just above the saturated zone. The maximum concentrations of TPH-g and BTEX in soil samples collected between 19 and 25.5 feet bgs were 470, 2.6, 16, 12, and 73 mg/Kg, respectively. MtBE was below the laboratory reporting limit of 0.005 mg/Kg in all soil samples. The maximum concentrations of TPH-g and BTEX in the groundwater samples collected from the soil borings were 83, 19, 1.8, 1.5, and 73 mg/L, respectively. MtBE was detected in the groundwater at each of the borings except SB-4. The maximum reported concentration was 87 mg/L at soil boring SB-2.

On April 22 and 23, 2002, SOMA installed 5 (4-inch diameter) on-site groundwater monitoring wells (MW-1 to MW-5) to evaluate the groundwater flow gradient, and the extent of petroleum hydrocarbons and MtBE contamination beneath the Site. The wells were developed and sampled following installation. Figure 2 displays the locations of the monitoring wells.

2.0 FIELD ACTIVITIES

On August 8, 2002, SOMA's field crew conducted a groundwater monitoring event in accordance with the procedures and guidelines of the CRWQCB. During this groundwater monitoring event, a total of five monitoring wells (MW-1 to MW-5) were monitored. Figure 2 displays the locations of the monitoring wells.

The depth to groundwater at each well was measured from the top of the casings to the nearest 0.01 foot using an electric sounder. To calculate the groundwater elevation at each monitoring well, the top of the casing elevation and depth to

groundwater were used. There was no detection of free product in any of the wells.

Prior to collecting samples, each well was purged using a battery operated 2-inch diameter pump (Model ES-60 DC).

In order to ensure that the final samples were in equilibrium with and representative of the surrounding groundwater, several samples were taken during the purging for field measurements of pH, temperature and EC. These parameters were measured using a Hanna pH, conductivity, and temperature meter. The equipment was calibrated at the Site using standard solutions and procedures provided by the manufacturer. Appendix A details the field measurements taken during the monitoring event.

The purging continued until these parameters stabilized or three casing volumes were purged. For sampling purposes, after purging, a disposable polyethylene bailer was used to collect sufficient samples from each monitoring well for laboratory analyses. The groundwater samples collected from each monitoring well were transferred to four 40-mL VOA vials, which had been prepared with a hydrochloric acid preservative. The vials were sealed to prevent the development of air bubbles within the headspace area. These groundwater samples were analyzed for TPH-g, BTEX, MtBE and gasoline oxygenates. The groundwater samples collected from each monitoring well were also transferred to a 500 mL polyethylene container preserved with nitric acid (HNO_3) and analyzed for total lead. After the groundwater samples were collected, they were placed in an ice chest and maintained at 4 °C. A chain of custody (COC) form was completed for the samples and accompanied them in the ice chest. On that same day, August 8, 2002, SOMA's field crew delivered the groundwater samples to Curtis & Tompkins, Ltd. laboratory in Berkeley, California.

3.0 LABORATORY ANALYSIS

Curtis & Tompkins, Ltd., a state certified laboratory, analyzed the groundwater samples for TPH-g, BTEX, MtBE, gasoline oxygenates and total lead. Samples for TPH-g measurement were prepared using EPA Method 5030 and analyzed using Method 8015B(M). Samples for BTEX and MtBE measurements were prepared using EPA Method 5030 and analyzed using EPA Method 8021B. Detections of MtBE were confirmed using EPA Method 8260B. EPA Method 8260B was also used to analyze gasoline oxygenates. Samples for total lead measurement were prepared using EPA Method 3010 and analyzed using EPA Method 6010B.

4.0 RESULTS

The following sections provide the results of field measurements and laboratory analyses for the August 8, 2002 groundwater monitoring event.

4.1 Field Measurements

Table 1 presents the calculated groundwater elevations at each groundwater monitoring well. No free product was detected in any of the wells. As Table 1 shows, depths to groundwater ranged from 19.80 feet in monitoring well MW-5 to 23.31 feet in monitoring well MW-1. The corresponding groundwater elevations ranged from 27.99 feet in monitoring well MW-5 to 28.40 feet in monitoring well MW-1.

Table 2 presents the historical groundwater elevations at different groundwater monitoring wells. SOMA conducted the first monitoring event on the newly installed wells during the Second Quarter 2002.

In general, groundwater elevations have gone down. This is most likely attributable to the on-set of a drier season.

The groundwater elevation contour map in feet is displayed in Figure 3. As shown in Figure 3, groundwater flows southward. The groundwater elevations are relatively similar throughout the Site in all monitoring wells. The approximate average groundwater gradient on-site is 0.0023 feet/feet.

Table 3 summarizes the field measurements of the physical and chemical properties of groundwater collected from the monitoring wells at the time of sampling. The pH measurements ranged from 6.85 in monitoring well MW-1 to 7.25 in monitoring well MW-3. The temperature measurements ranged from 20.67 °C in monitoring well MW-2 to 22.22 °C in monitoring well MW-3. EC ranged from 1215 µS/cm in monitoring well MW-5 to 1581 µS/cm in monitoring well MW-4.

4.2 Laboratory Analysis

Table 4 presents the results of the laboratory analyses on the groundwater samples. In general, the analytical results indicate that groundwater samples collected from monitoring wells MW-3 and MW-5 were the most impacted, with the exception of MtBE, which seems to peak in monitoring well MW-4. This trend corresponds to that of the Second Quarter monitoring event. High concentrations of TPH-g and BTEX in monitoring wells MW-3 and MW-5 can be attributed to leaks from the old USTs prior to their upgrade in 1999.

TPH-g concentrations were detected in all of the monitoring wells. TPH-g concentrations ranged from 2,700 µg/L in monitoring well MW-2 to 40,000 µg/L in monitoring well MW-3. Figure 4 displays the contour map of TPH-g concentrations in the groundwater on August 8, 2002. The highest reported TPH-

g concentration was in monitoring well MW-3. TPH-g concentration at 1,800 µg/L was also detected in monitoring well MW-5.

The following trends were observed for BTEX analytes during the Third Quarter 2002 monitoring event. All BTEX analytes were detected in all of the monitoring wells with the exception of toluene, which was below laboratory reporting limit in monitoring wells MW-2 and MW-4. The monitoring wells least impacted by BTEX were MW-2 and MW-4. The benzene, ethylbenzene and total xylenes concentrations in monitoring well MW-2 were 4.6 µg/L, 310 µg/L, and 140 µg/L, respectively. The benzene, ethylbenzene and total xylenes concentrations in monitoring well MW-4 were 70 µg/L, 300 µg/L, and 115 µg/L, respectively. The highest BTEX concentrations were detected in monitoring well MW-3 at 5,800 µg/L, 1,100 µg/L, 1,600 µg/L, and 6,500 µg/L, respectively. Figure 5 displays the contour map of benzene concentrations in the groundwater on August 8, 2002. Similar to the results for TPH-g, the highest benzene concentration was detected in monitoring well MW-3, and a high benzene concentration was detected in monitoring well MW-5.

Table 4 presents the results of MtBE analysis by both the EPA Method 8021B and by the confirmation method 8260B. MtBE concentrations were detected in monitoring wells MW-3, MW-4 and MW-5. EPA Method 8260B showed that MtBE concentrations ranged from 1,300 µg/L in monitoring well MW-3 to 4,800 µg/L in monitoring well MW-4. Figure 6 displays the contour map of MtBE concentrations in the groundwater on August 8, 2002. As shown in Figure 6, the highest MtBE concentration was detected in the vicinity of the dispenser islands, in monitoring well MW-4.

Total lead was also analyzed during this monitoring event. Total lead was below the laboratory reporting limits for monitoring wells MW-1 and MW-2. Total lead concentrations in monitoring wells MW-3, MW-4 and MW-5 were 12 µg/L, 3.9

µg/L and 4.8 µg/L, respectively. No contour map for total lead concentrations is displayed in this report.

Table 5 presents the historical groundwater analytical data. The following concentration trends were observed for TPH-g, BTEX, MtBE and total lead since the previous monitoring event (Second Quarter 2002). TPH-g concentrations decreased in monitoring wells MW-2, MW-3, and MW-5 and increased in monitoring wells MW-1 and MW-4. MtBE concentrations decreased in all monitoring wells, and was below the laboratory reporting limit in monitoring wells MW-1 and MW-2. All BTEX analytes decreased in monitoring well MW-5 with the exception of benzene, which remained constant. Benzene decreased in monitoring wells MW-2 and MW-3, and increased in MW-1 and MW-4. Toluene decreased in all monitoring wells, with the exception of MW-3, and was below the laboratory reporting limit in both monitoring wells MW-2 and MW-4. Ethylbenzene increased in all wells except monitoring well MW-5. Total xylenes decreased in monitoring wells MW-1, MW-2, and MW-5, and increased in monitoring wells MW-3 and MW-4. Total lead concentrations remained below detection limits in monitoring wells MW-1 and MW-2 and decreased in monitoring well MW-3. Concentrations of total lead increased in monitoring wells MW-4 and MW-5. Further monitoring events may help to delineate more clear concentrations trends in analytical results.

In compliance with a request by the CSLESD, SOMA had the groundwater samples analyzed for gasoline oxygenates for the first time during the Third Quarter 2002 monitoring event. Table 6 displays the results of gasoline oxygenates analytical results. TBA was below laboratory reporting limit in monitoring wells MW-3 and MW-5 and peaked in monitoring well MW-4 at 1,500 µg/L. DIPE and ETBE were below the laboratory reporting limits in all wells. TAME was below laboratory reporting limit in monitoring wells MW-1 and MW-2 and peaked in monitoring well MW-5 at 510 µg/L.

Table 7 displays the historical analytical results of gasoline oxygenates in the groundwater sampled at the Site. Gasoline oxygenates were analyzed for the first time at the Site during the Third Quarter 2002. Further monitoring events will be needed to observe any concentration trends for these chemicals over time.

Appendix A includes the laboratory report and COC form for the Third Quarter 2002 monitoring event.

5.0 CONCLUSION AND RECOMMENDATIONS

The results of the August 8, 2002 groundwater monitoring event can be summarized as follows:

1. In general, the groundwater flows towards the south. The highest groundwater elevation was found in monitoring well MW-1 at 28.40 feet. The average groundwater gradient on-site is 0.0023 feet/feet.

2. The highest TPH-g and benzene concentrations were detected in monitoring well MW-3. The high TPH-g and benzene concentrations detected in monitoring well MW-3 can be attributed to a possible earlier release. During the upgrade of the USTs in May 1999, petroleum chemicals were detected in subsurface soils beneath the old USTs.

3. The highest concentration of MtBE was detected in monitoring well MW-4. This can be attributed to the proximity of wells to the dispenser islands and the high solubility of MtBE. Monitoring well MW-4 is located west of the dispenser islands that were remodeled in May 1999.

4. MtBE concentrations have been decreasing in all monitoring wells in comparison with the previous monitoring event (Second Quarter 2002). The highest on-site concentration of MtBE is in monitoring well MW-4 at

4,800 µg/L. Further monitoring is needed to establish clearer concentration trends for the determination of remediation options.

5. In compliance with a request by the CSLESD, gasoline oxygenates were analyzed for the first time during the Third Quarter 2002. TBA was found to be present in monitoring wells MW-1, MW-2, and MW-4. TAME was present in monitoring wells MW-3, MW-4, and MW-5. DIPE and ETBE have non-detectable levels in all the wells. Further monitoring events will be needed to establish concentration trends in these chemicals over time.

6.0 REPORT LIMITATIONS

This report is the summary of work done by SOMA, including observations and descriptions of the Site's conditions. It includes the analytical results produced by Curtis & Tompkins Laboratories for the current groundwater monitoring event. The number and location of the wells were selected to provide the required information, but may not be completely representative of the entire Site's conditions. All conclusions and recommendations are based on the results of the laboratory analysis. Conclusions beyond those specifically stated in this document should not be inferred from this report.

SOMA warrants that the services provided were done in accordance with the generally accepted practices in the environmental engineering and consulting field at the time of this sampling.

7.0 REFERENCES

Alameda County Health Care Services, August 23, 2001. A Letter in Connection with a Request for Conducting a Subsurface Investigation.

CSS Environmental Services, Inc., August 15, 2001. "Preliminary Site Assessment for the Property Located at 15101 Freedom Avenue, San Leandro, California".

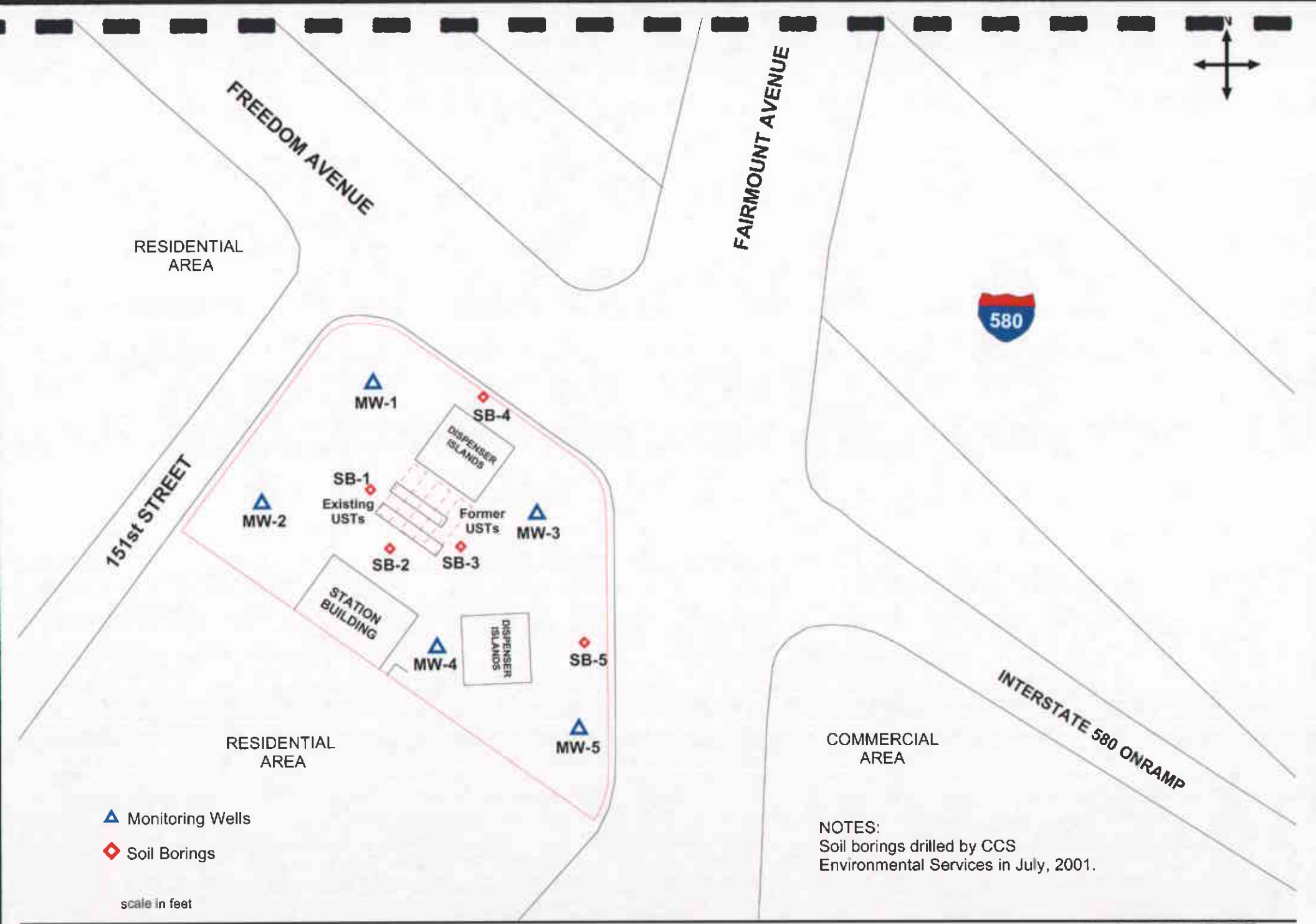
Geo-logic, Geotechnical and Environmental Consulting Services, June 11, 1999. "Report of Soil Sampling During Tank Removal and Station Upgrade".

SOMA Environmental Engineering Inc., June 19, 2002. "Second Quarter 2002 Groundwater Monitoring Report, Texaco Gasoline Service Station, 15101 Freedom Avenue, San Leandro, California".

Figures

Figure 1: Site vicinity map.

SOMA
ENVIRONMENTAL ENGINEERING, INC.



NOTES:
Soil borings drilled by CCS Environmental Services in July, 2001.

Figure 2: Site map showing locations of groundwater monitoring wells and soil borings.

SOMA ENVIRONMENTAL ENGINEERING, INC.

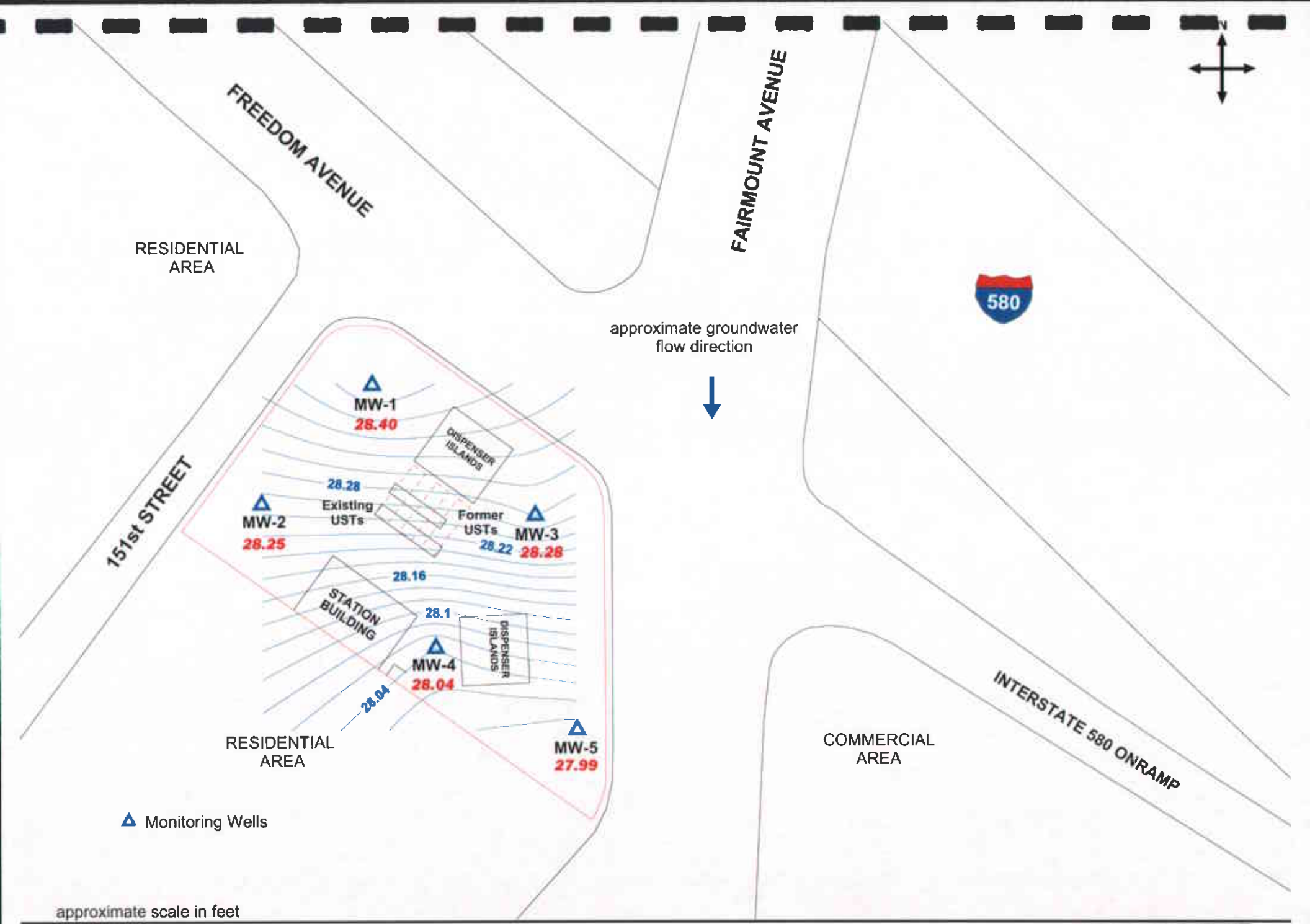


Figure 3: Groundwater elevation contour map in feet.
August 8, 2002.

SOMA ENVIRONMENTAL ENGINEERING, INC.

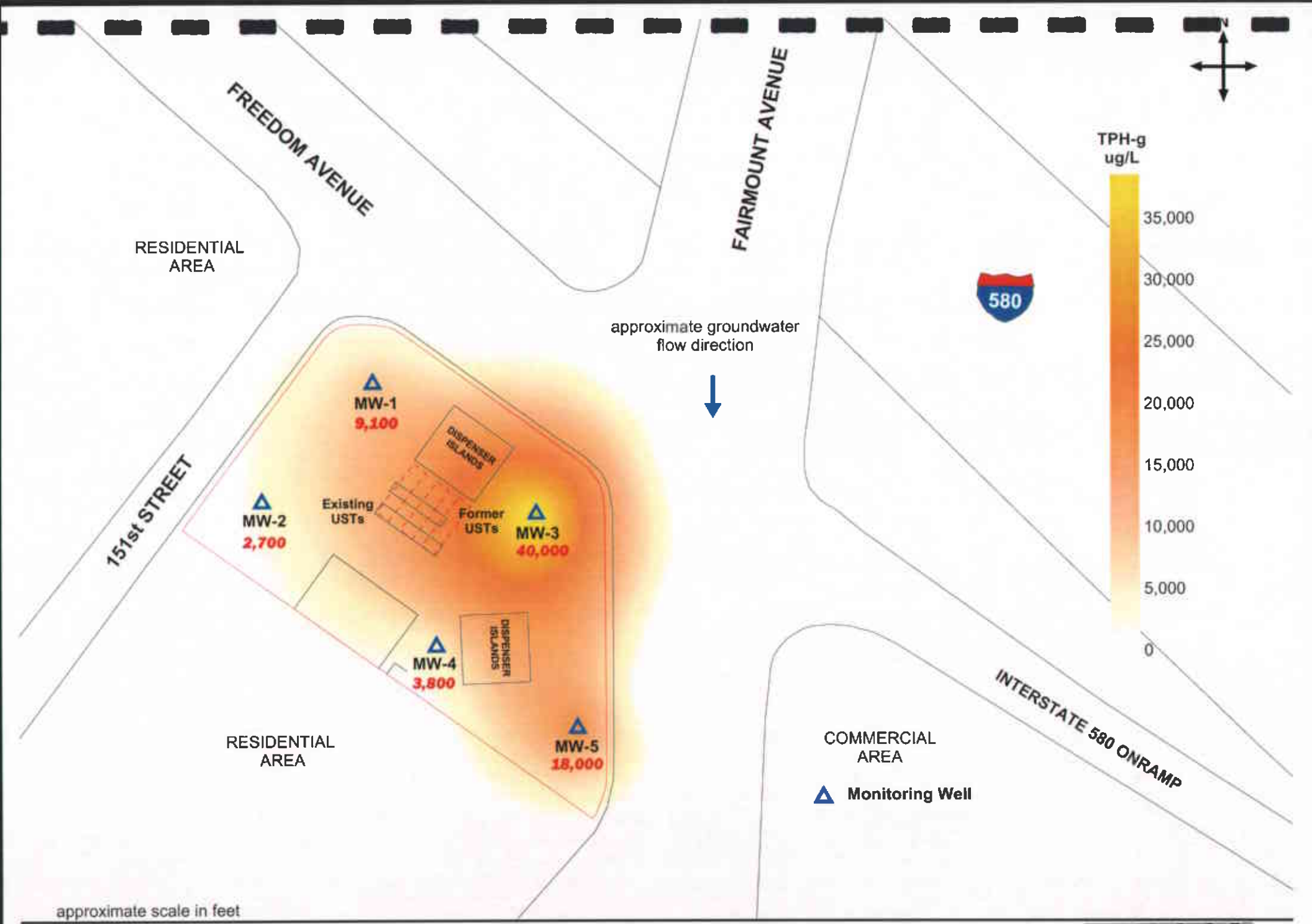


Figure 4: Contour map of TPH-g concentrations in groundwater.
August 8, 2002.

SOMA ENVIRONMENTAL ENGINEERING, INC.

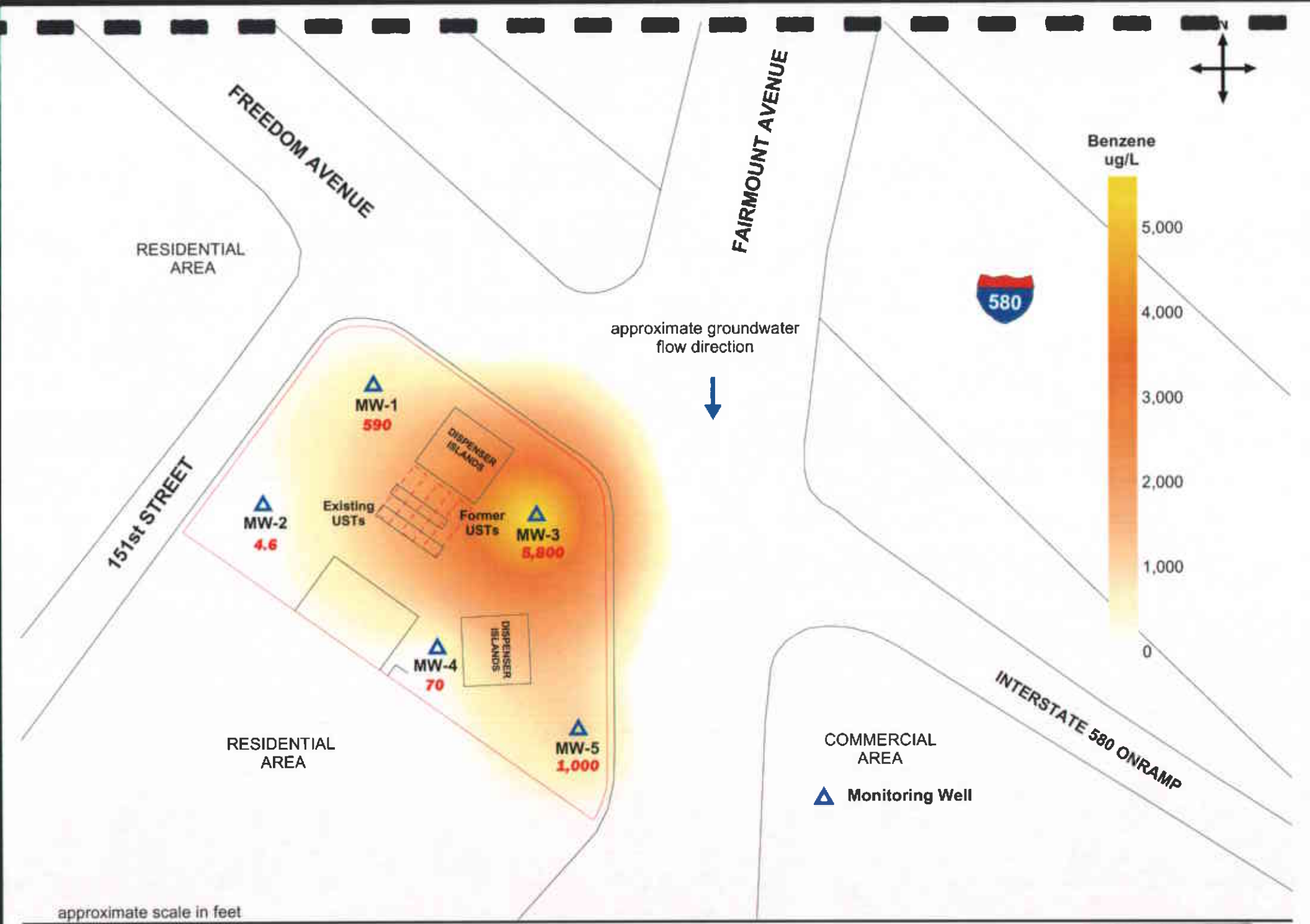


Figure 5: Contour map of Benzene concentrations in groundwater.
August 8, 2002.

SOMA ENVIRONMENTAL ENGINEERING, INC.

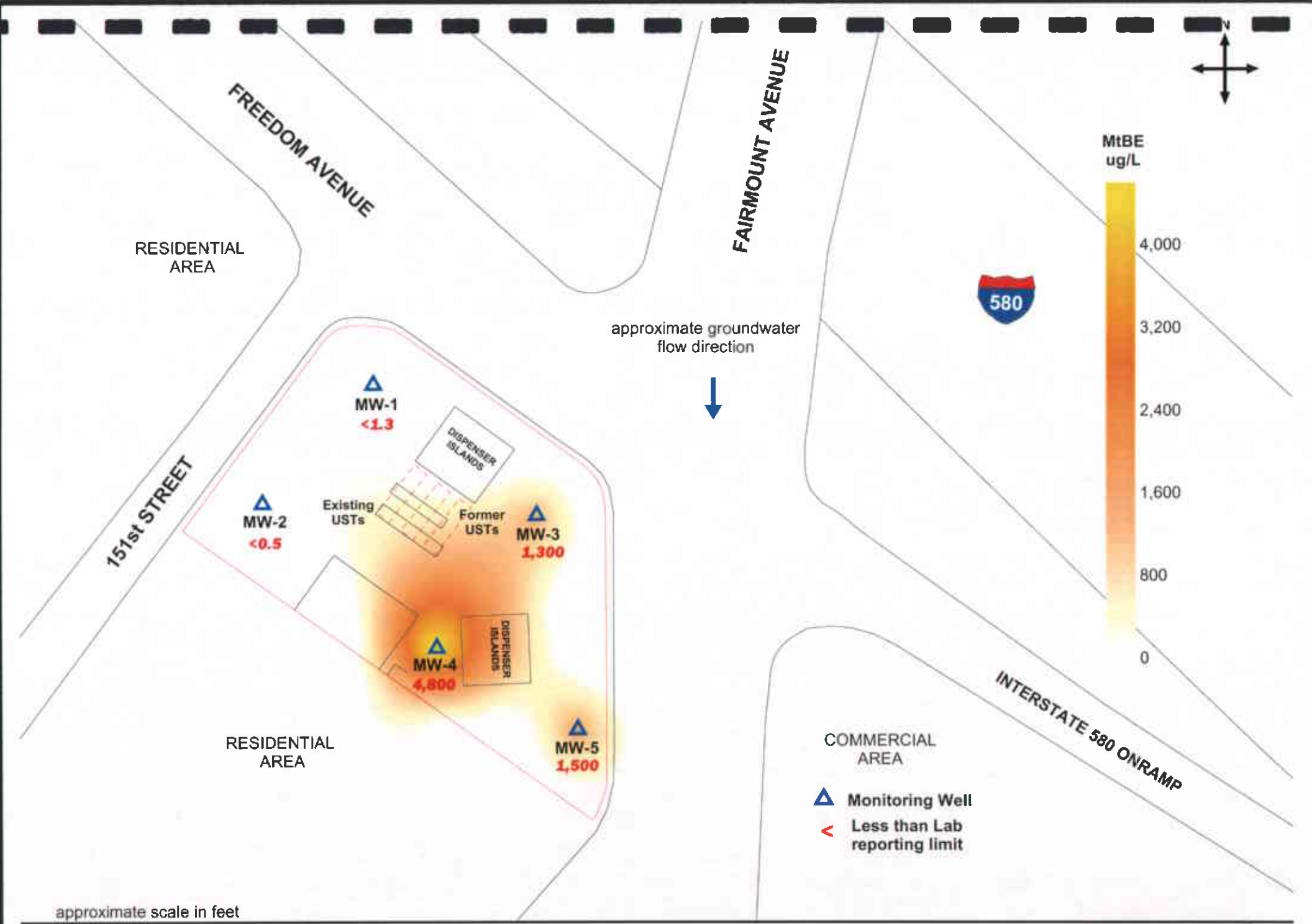


Figure 6: Contour map of MtBE concentrations in groundwater as confirmed by EPA Method 8260B. August 8, 2002.

SOMA ENVIRONMENTAL ENGINEERING, INC.

Tables

Table 1

Groundwater Elevation Data, August 8, 2002

15101 Freedom Avenue, San Leandro, CA

Monitoring Well	Top of Casing Elevation [1] (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)
MW-1	51.71	23.31	28.40	0
MW-2	49.66	21.41	28.25	0
MW-3	51.16	22.88	28.28	0
MW-4	50.54	22.50	28.04	0
MW-5	47.79	19.80	27.99	0

Notes:

Monitoring wells were surveyed by Kier and Wright Civil Engineer & Land Surveyors.

Surveying was conducted on May 7, 2002.

[1] : Top of casing elevations were surveyed to an assumed datum of 67.07 M.S.L

Table 2

Historical Groundwater Elevation Data

15101 Freedom Avenue, San Leandro, CA

Date	MW-1	MW-2	MW-3	MW-4	MW-5
Aug 2002	**28.40**	**28.25**	**28.28**	**28.04**	**27.99**
Jun 2002	28.86	26.83	28.88	28.76	28.77

Notes:

The first time SOMA monitored this Site was in May 2002.

Table 3

Field Measurements at the Time of Sampling, August 8, 2002

15101 Freedom Avenue, San Leandro, CA

Monitoring Well	pH	Temp (°C)	E.C. (uS/cm)
MW-1	6.85	21.17	1309
MW-2	7.09	20.67	1505
MW-3	7.25	22.22	1255
MW-4	7.02	20.94	1581
MW-5	7.23	21.89	1215

Table 4

Groundwater Analytical Data, August 8, 2002

15101 Freedom Avenue, San Leandro, CA

Monitoring Well	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MtBE [1] (µg/L) 8260B/8021B	Total Lead (µg/L)
MW-1	9,100	590	2.6	830	362	<1.3 / <10	<3.0
MW-2	2,700	4.6	<0.5	310	140	<0.5 / <2.0	<3.0
MW-3	40,000	5,800	1,100	1,600	6,500	1,300 / 1,600	12
MW-4	3,800	70	<5.0	300	115	4,800 / 5,300	3.9
MW-5	18,000	1,000	660	950	1,720	1,500 / 1,500	4.8

Notes:

< : Not detected above laboratory reporting limits.

[c] Presence confirmed, but confirmation concentration differed by more than a factor of two.

[1] MtBE analyzed by EPA Method 8021B, and confirmed by EPA Method 8260B.

Table 5

Historical Groundwater Analytical Data: TPH-g, MtBE, BTEX, & Lead

15101 Freedom Avenue, San Leandro, CA

Monitoring Well	Date	TPH-g (µg/L)	MtBE[1] (µg/L) 8260B/8021B	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	Total Lead (µg/L)
MW-1	**Aug 2002**	**9,100**	**<1.3 / <10**	**590**	**2.6**	**830**	**362**	**<3.0**
	May 2002	5,700	2	360	4.5	340	450	<3
MW-2	**Aug 2002**	**2,700**	**<0.5 / <2.0**	**4.6**	**<0.5**	**310**	**140**	**<3.0**
	May 2002	3,100	56	67	8	250	215	<3
MW-3	**Aug 2002**	**40,000**	**1,300 / 1,600**	**5,800**	**1,100**	**1,600**	**6,500**	**12**
	May 2002	44,000	2,400	6,000	900	1,500	6,200	15
MW-4	**Aug 2002**	**3,800**	**4,800 / 5,300**	**70**	**<5.0**	**300**	**115**	**3.9**
	May 2002	880	12,000	25	1.0[C]	110	52	<3
MW-5	**Aug 2002**	**18,000**	**1,500 / 1,500**	**1,000**	**660**	**950**	**1,720**	**4.8**
	May 2002	25,000	1,800	1,000	1,200	1,100	3,060	3.5

Notes:

<: Not detected above the laboratory reporting limit.

[C] Presence confirmed, but confirmation concentration differed by more than a factor of two.

[1] MtBE analyzed by EPA Method 8021B, and confirmed by EPA Method 8260B.

The first time SOMA monitored this Site was in May 2002.

Table 6
Gasoline Oxygenates, August 8, 2002
15101 Freedom Avenue, San Leandro, CA

Monitoring Well	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
MW-1	78	<1.3	<1.3	<1.3
MW-2	21	<0.5	<0.5	<0.5
MW-3	<330	<8.3	<8.3	330
MW-4	1500	<17	<17	18
MW-5	<250	<6.3	<6.3	510

Notes:
<: Not detected above the laboratory reporting limit.

Table 7
Historical Gasoline Oxygenates Results
15101 Freedom Avenue, San Leandro, CA

Monitoring Well	Date	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
MW-1	**Aug 2002**	**78**	**<1.3**	**<1.3**	**<1.3**
MW-2	**Aug 2002**	**21**	**<0.5**	**<0.5**	**<0.5**
MW-3	**Aug 2002**	**<330**	**<8.3**	**<8.3**	**330**
MW-4	**Aug 2002**	**1500**	**<17**	**<17**	**18**
MW-5	**Aug 2002**	**<250**	**<6.3**	**<6.3**	**510**

Notes:
August 8, 2002 was the first time that samples were analyzed for Gasoline Oxygenates
<: Not detected above the laboratory reporting limit.
TBA: tert-Butyl Alcohol
DIPE: Isopropyl Ether
ETBE: Ethyl tert-Butyl Ether
TAME: Methyl tert-Amyl Ether

Appendix A

Field Notes, Laboratory Reports and
Chain of Custody Form

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-1	Project No.:	2551
Casing Diameter:	4 inches	Address:	15101 Freedom Ave.
Depth of Well:	30.10 feet		San Leandro, CA
Top of Casing Elevation:	51.71 feet	Date:	August 8, 2002
Depth to Groundwater:	23.31 feet	Sampler:	Roger Papler
Groundwater Elevation:	28.40 feet		
Height of Water Column:	6.79 feet		
Purged Volume:	12 gallons		

Purging Method: Bailer ☐ Pump ☑

Sampling Method: Bailer ☑ Pump ☐

Sheen: Yes ☐ No ☒ Describe: _____

Color: Yes ☐ No ☒ Describe: _____

Odor: Yes ☒ No ☐ Describe: Slight Petroleum ltr

Field Measurements

Time	Volume (gal.)	pH	Temp °C	E.C. (µs/cm)
11:34 A	1	6.88	29.50	1572
11:38 A	4	6.78	22.28	1251
11:42 A	8	6.80	21.72	1284
11:46 A	12	6.85	21.17	1309
11:55 A Sampled → 4 VOAs + 1 500 ml poly				

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-2	Project No.:	2551
Casing Diameter:	4 inches	Address:	15101 Freedom Ave.
Depth of Well:	30.0 feet		San Leandro, CA
Top of Casing Elevation:	49.66 feet	Date:	August 8, 2002
Depth to Groundwater:	21.41 feet	Sampler:	Roger Papler
Groundwater Elevation:	28.25 feet		
Height of Water Column:	8.59 feet		
Purged Volume:	12 gallons		

Purging Method: Bailer ☐ Pump ☑

Sampling Method: Bailer ☑ Pump ☐

Sheen:	Yes ☐ No ☒	Describe:	
Color:	Yes ☐ No ☒	Describe:	
Odor:	Yes ☒ No ☐	Describe:	slight petroleum HC

Field Measurements

Time	Volume (gal.)	pH	Temp °C	E.C. (µs/cm)
1035 A	1	7.25	22.39	1907
1038 A	4	7.15	21.33	1500
1042 A	8	7.09	20.67	1501
1046 A	12	7.09	20.67	1505
1055 A Sampled → 4 VOAs + 1 500 ml poly				

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-3	Project No.:	2551
Casing Diameter:	4 inches	Address:	15101 Freedom Ave.
Depth of Well:	29.90 feet		San Leandro, CA
Top of Casing Elevation:	51.16 feet	Date:	August 8, 2002
Depth to Groundwater:	22.88 feet	Sampler:	Roger Papler
Groundwater Elevation:	28.28 feet		
Height of Water Column:	7.02 feet		
Purged Volume:	12 gallons		

Purging Method: Bailer ☐ Pump ☑

Sampling Method: Bailer ☑ Pump ☐

Sheen:	Yes ☐ No ☒	Describe:	
Color:	Yes ☒ No ☐	Describe:	light green
Odor:	Yes ☒ No ☐	Describe:	~~slight~~ petroleum HC

Field Measurements

Time	Volume (gal.)	pH	Temp °C	E.C. (µs/cm)
3:15 P	0	7.31	25.06	1402
3:19 P	4	7.22	23.94	1265
3:22 P	8	7.23	22.78	1255
3:25 P	12	7.25	22.22	1255
3:30 Sampled → 4 VOA + 1	500ml	poly		

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-4	Project No.:	2551
Casing Diameter:	4 inches	Address:	15101 Freedom Ave.
Depth of Well:	30.1 feet		San Leandro, CA
Top of Casing Elevation:	50.54 feet	Date:	August 8, 2002
Depth to Groundwater:	22.50 feet	Sampler:	Roger Papler
Groundwater Elevation:	28.04 feet		
Height of Water Column:	7.6 feet		
Purged Volume:	12 gallons		

Purging Method: Bailer ☐ Pump ☑

Sampling Method: Bailer ☒ Pump ☐

Sheen:	Yes ☐ No ☒	Describe:	
Color:	Yes ☐ No ☒	Describe:	
Odor:	Yes ☐ No ☒	Describe:	

Field Measurements

Time	Volume (gal.)	pH	Temp °C	E.C. (µs/cm)
12:36	1	7.07	30.33	1760
12:40	4	7.04	22.11	1567
12:44	8	7.02	21.17	1585
12:48	12	7.02	20.94	1581
12:55 Sampled → 4 VOA + 500 ml poly				

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-5	Project No.:	2551
Casing Diameter:	4 inches	Address:	15101 Freedom Ave.
Depth of Well:	29.70 feet		San Leandro, CA
Top of Casing Elevation:	47.79 feet	Date:	August 8, 2002
Depth to Groundwater:	19.80 feet	Sampler:	Roger Papler
Groundwater Elevation:	27.99 feet		
Height of Water Column:	9.9 feet		
Purged Volume:	15 gallons		

Purging Method: Bailer ☐ Pump ☒

Sampling Method: Bailer ☒ Pump ☐

Sheen:	Yes ☐	No ☒	Describe:
Color:	Yes ☒	No ☐	Describe: Light brown
Odor:	Yes ☒	No ☐	Describe: Petroleum HC

Field Measurements

Time	Volume (gal.)	pH	Temp °C	E.C. (µs/cm)
1410	0	7.20	26.50	1202
1445	5	7.11	23.78	1205
1450	10	7.19	21.89	1220
1455	15	7.23	21.89	1215
2nd Sampled → 4 VOA		1 500 ml poly		

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

SOMA Environmental Engineering Inc.
2680 Bishop Dr.
Suite 203
San Ramon, CA 94583

Date: 19-AUG-02
Lab Job Number: 160135
Project ID: 2551
Location: 15101 Freedom Avenue

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis.

Reviewed by: _____
Project Manager

Reviewed by: _____
Operations Manager

Curtis & Tompkins, Ltd.

Laboratory Number: **160135**
Client: **SOMA Environmental Engineering Inc.**
Project Name: **15101 Freedom Ave.**
Project #: **2551**
Receipt Date: **8/8/02**

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for five water samples received from the above referenced project on August 8th, 2002. The samples were received cold and intact.

TVH/BTXE/MTBE (EPA 8015B(M)/8021B):

In the blank for batch number 74390 m,p-xylenes were detected at 0.79 ug/L. The concentration of m,p-xylenes in the samples reported from this batch were greater than ten times the amount found in the blank.

The recovery of MTBE was greater than the acceptable QC limit in the matrix spike and its duplicate for batch number 74394 (C&T ID# 160135-002). This proved to be a matrix effect when this matrix spike and its duplicate were reanalyzed. The concentration of ethylbenzene in the same matrix spike and its duplicate was such that it rendered the spike amount insignificant.

No other analytical problems were encountered.

Gasoline Oxygenates by GC/MS (EPA 8260B):

No analytical problems were encountered.

Lead (EPA 6010B):

No analytical problems were encountered.

CHAIN OF CUSTODY FORM

Page 1 of 1

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510)486-0900 Phone
(510)486-0532 Fax

C&T LOGIN # 160135

Analyses

Sampler: R W Patler

Project No: 2551

Report To: Tony Perini / Roger Patler

Project Name: Patel/SL 15101 Freedom

Company: SOMA Env. Eng

Project P.O.: —

Telephone: (925) 244-6600

Turnaround Time: standard

Fax: (925) 244-6601

Laboratory Number	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO_4	HNO_3	ICE	Field Notes
	MW-1	8/9/02 1155A				5	X			X	Mon. Well MW-1
	MW-2	1055A				5	X			X	MW-2
	MW-3	320P				5	X			X	MW-3
	MW-4	1256P				5	X			X	MW-4
	MW-5	245P				5	X			X	MW-5
						5					

For Laboratory Use

TPH-g 8015
BTEX & MTBE 8021
MTBE confirm 8260B
Ltd Oxygenates 8260B
Total Lead

Preservation Correct? Yes ☐ No ☐ N/A

Received On Ice ☑ Cold ☐ Ambient Intact ☑

Notes: PLs confirm positive MTBE results by using EPA 8260B
Note MW-3 & MW-5 not preserved

For Pb samples -001, -002, -003 & -005 were preserved w/ HNO_3 in the lab. 8-9-02

RELINQUISHED BY:	RECEIVED BY:
RW Patler 8/9/02 505P DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

Signature

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	8015B(M)
Matrix:	Water	Sampled:	08/08/02
Units:	ug/L	Received:	08/08/02

Field ID:	MW-1	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	74390
Lab ID:	160135-001	Analyzed:	08/10/02

Analyte	Result	RL
Gasoline C7-C12	9,100	250

Surrogate	%REC	Limits
Trifluorotoluene (FID)	112	68-145
Bromofluorobenzene (FID)	113	66-143

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	74394
Lab ID:	160135-002	Analyzed:	08/10/02

Analyte	Result	RL
Gasoline C7-C12	2,700	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	120	68-145
Bromofluorobenzene (FID)	117	66-143

Field ID:	MW-3	Diln Fac:	25.00
Type:	SAMPLE	Batch#:	74390
Lab ID:	160135-003	Analyzed:	08/10/02

Analyte	Result	RL
Gasoline C7-C12	40,000	1,300

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	68-145
Bromofluorobenzene (FID)	108	66-143

Field ID:	MW-4	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	74394
Lab ID:	160135-004	Analyzed:	08/10/02

Analyte	Result	RL
Gasoline C7-C12	3,800	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	117	68-145
Bromofluorobenzene (FID)	119	66-143

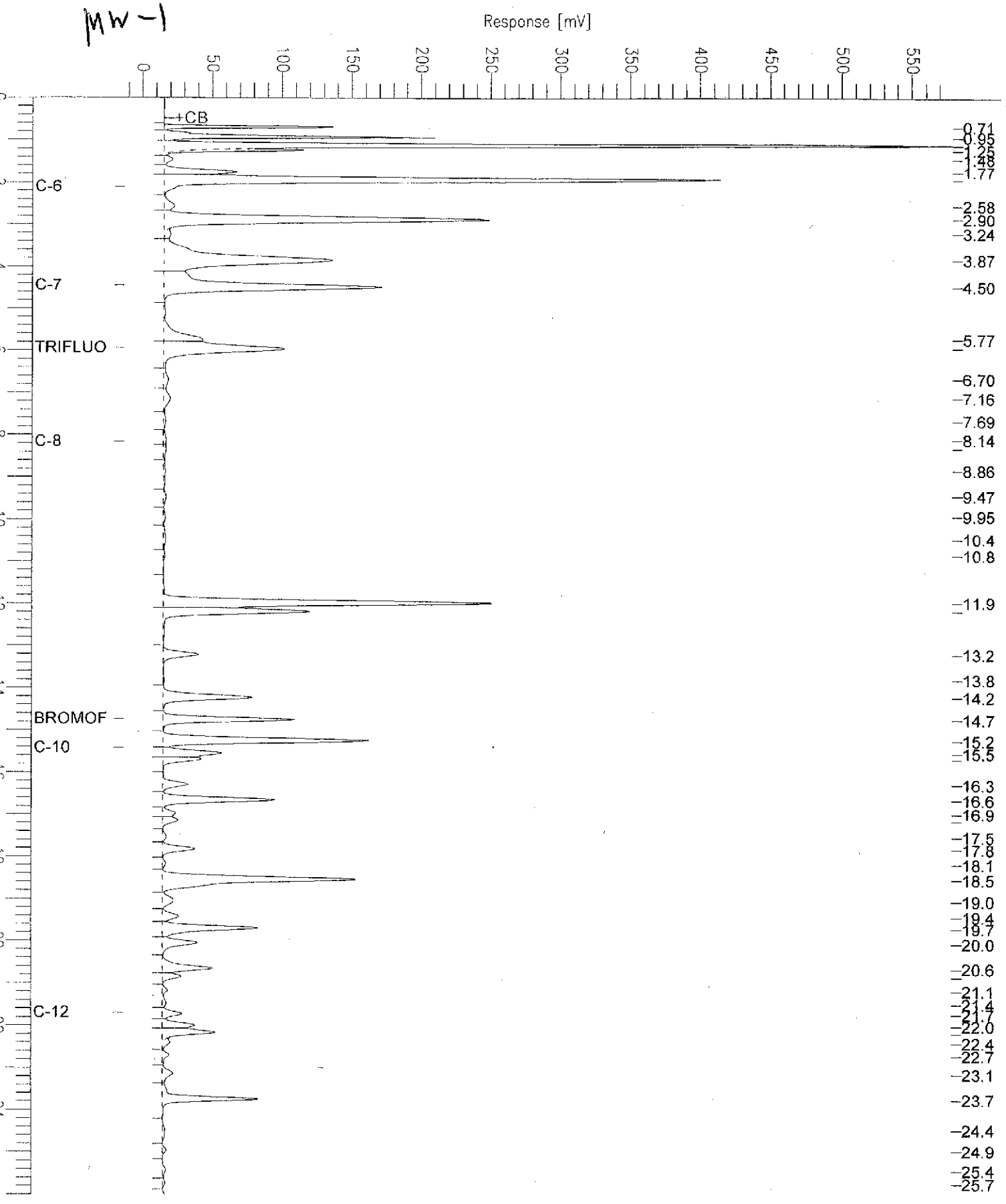
ND= Not Detected
RL= Reporting Limit

GC07 TVH 'A' Data File RTX 502

Sample Name : 160135-001,74390
FileName : G:\GC07\DATA\222A012.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: -13 mV

Sample #: b1 Page 1 of 1
Date : 8/10/02 05:04 PM
Time of Injection: 8/10/02 04:38 PM
Low Point : -13.01 mV High Point : 579.13 mV
Plot Scale: 592.1 mV

MW-1

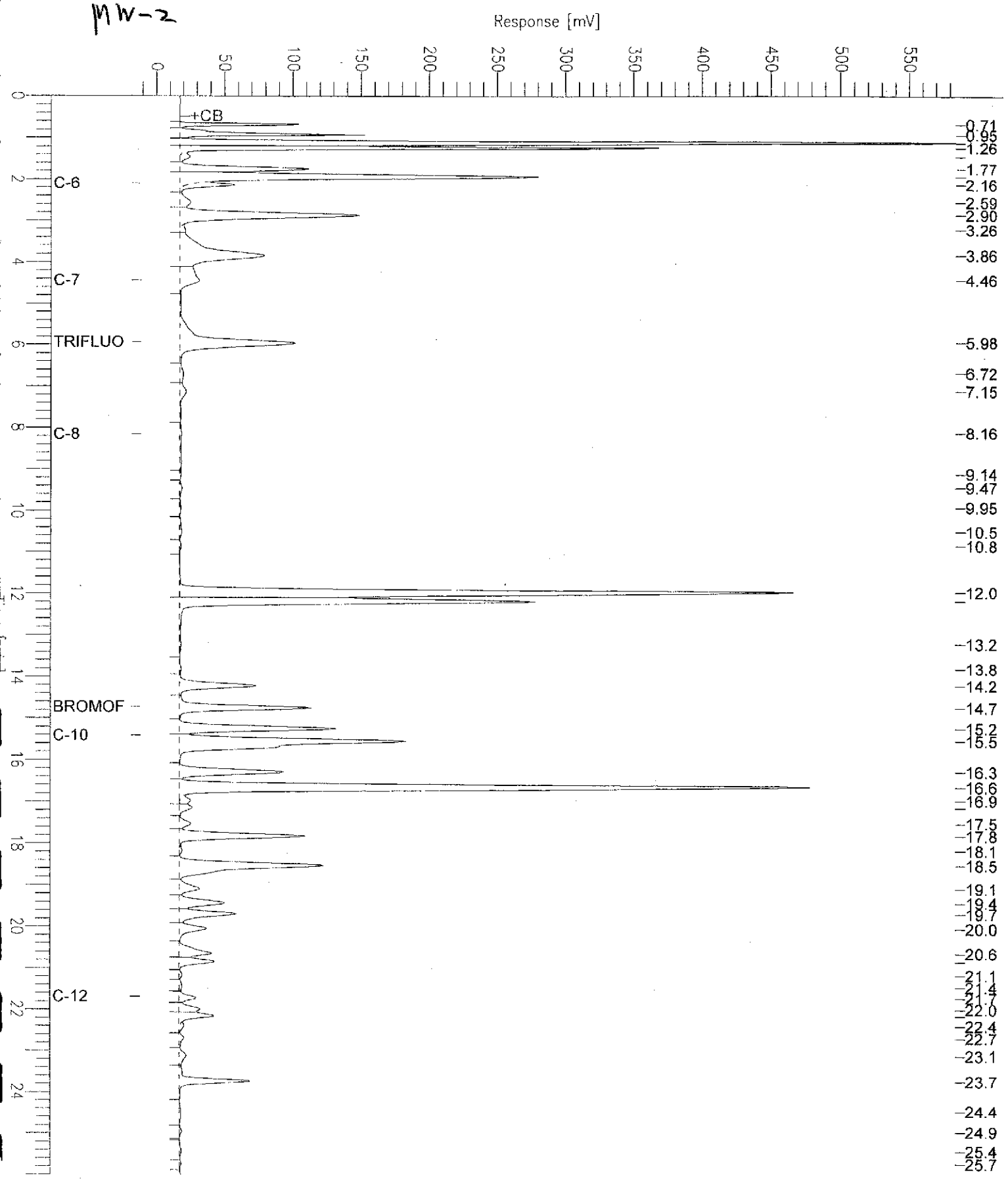


GC07 TVH 'A' Data File RTX 502

Sample Name : mss,160135-002,74394
FileName : G:\GC07\DATA\221A020.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: -11 mV

Sample #: a1 Page 1 of 1
Date : 8/10/02 03:34 AM
Time of Injection: 8/10/02 03:08 AM
Low Point : -11.21 mV High Point : 583.83 mV
Plot Scale: 595.0 mV

MW-2

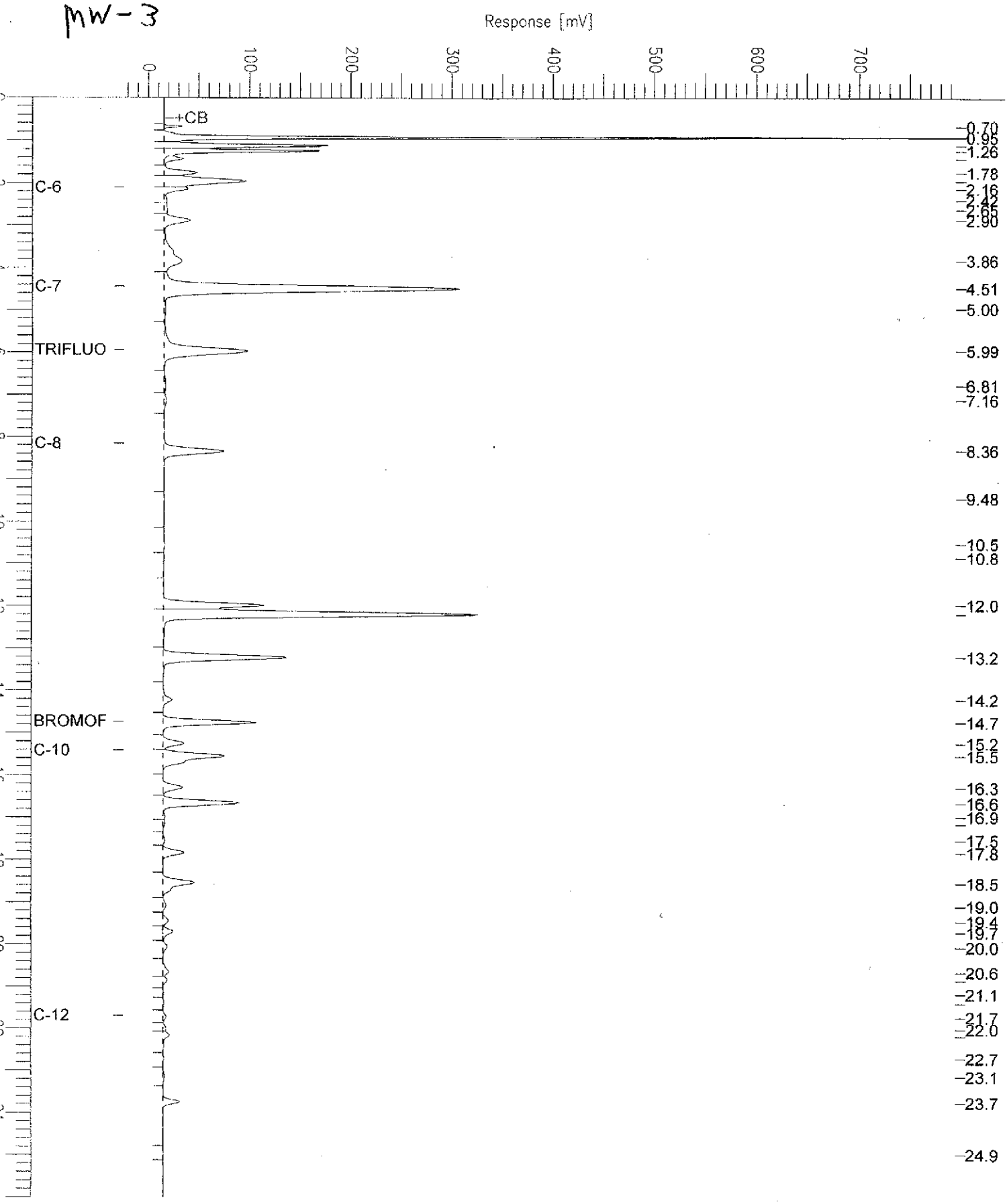


GC07 TVH 'A' Data File RTX 502

Sample Name : 160135-003,74390
FileName : G:\GC07\DATA\222A008.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: -24 mV

Sample #: b7 Page 1 of 1
Date : 8/10/02 02:48 PM
Time of Injection: 8/10/02 02:22 PM
Low Point : -23.59 mV High Point : 794.92 mV
Plot Scale: 818.5 mV

MW-3

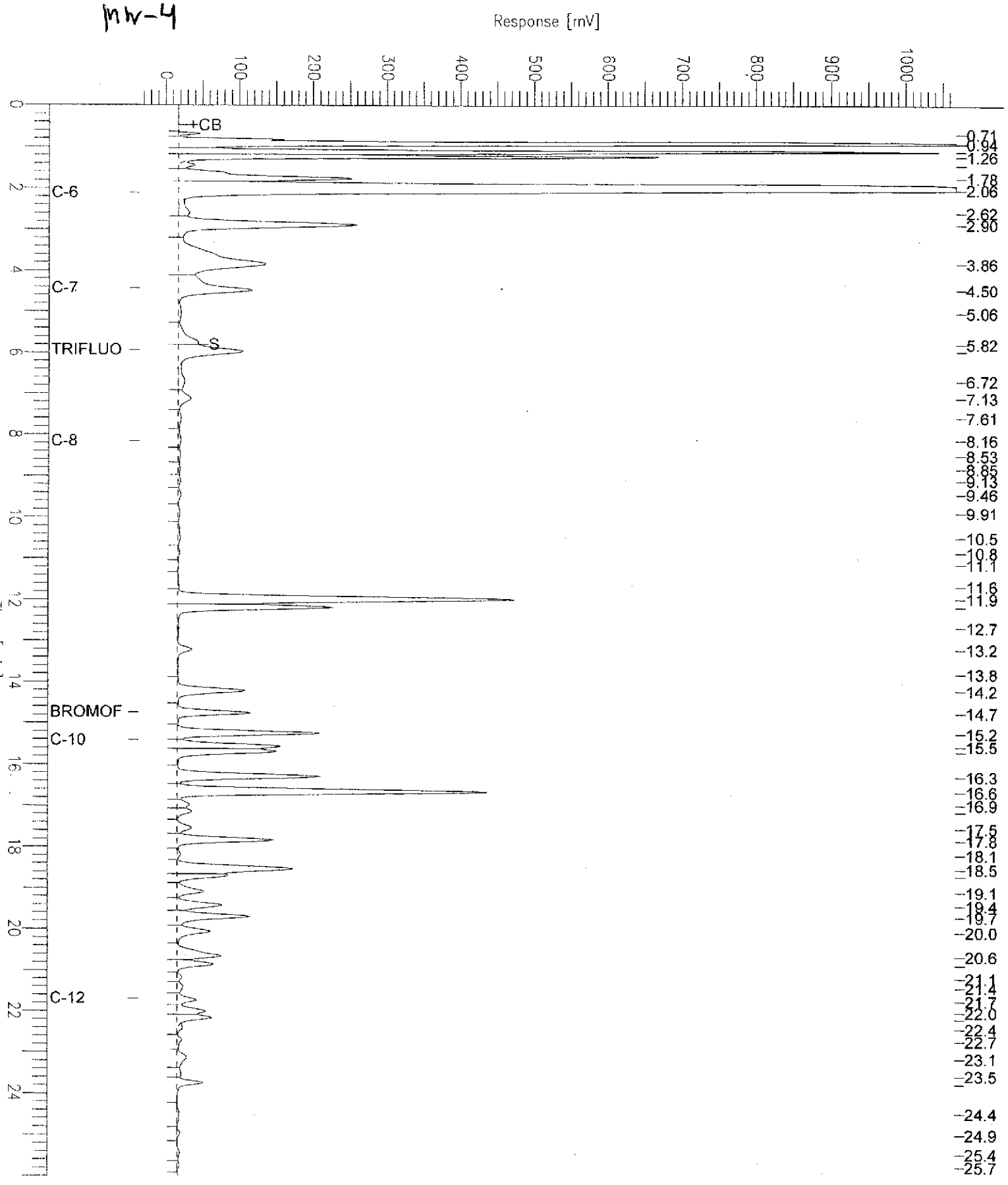


GC07 TVH 'A' Data File RTX 502

Sample Name : 160135-004,74394
FileName : G:\GC07\DATA\221A027.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: -36 mV

Sample #: a1 Page 1 of 1
Date : 8/15/02 10:05 AM
Time of Injection: 8/10/02 07:06 AM
Low Point : -35.71 mV High Point : 1068.25 mV
Plot Scale: 1104.0 mV

mw-4



Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	8015B(M)
Matrix:	Water	Sampled:	08/08/02
Units:	ug/L	Received:	08/08/02

Field ID:	MW-5	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	74390
Lab ID:	160135-005	Analyzed:	08/10/02

Analyte	Result	RL
Gasoline C7-C12	18,000	250

Surrogate	%REC	Limits
Trifluorotoluene (FID)	138	68-145
Bromofluorobenzene (FID)	108	66-143

Type:	BLANK	Batch#:	74390
Lab ID:	QC186505	Analyzed:	08/10/02
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	91	68-145
Bromofluorobenzene (FID)	109	66-143

Type:	BLANK	Batch#:	74394
Lab ID:	QC186516	Analyzed:	08/09/02
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene (FID)	95	68-145
Bromofluorobenzene (FID)	109	66-143

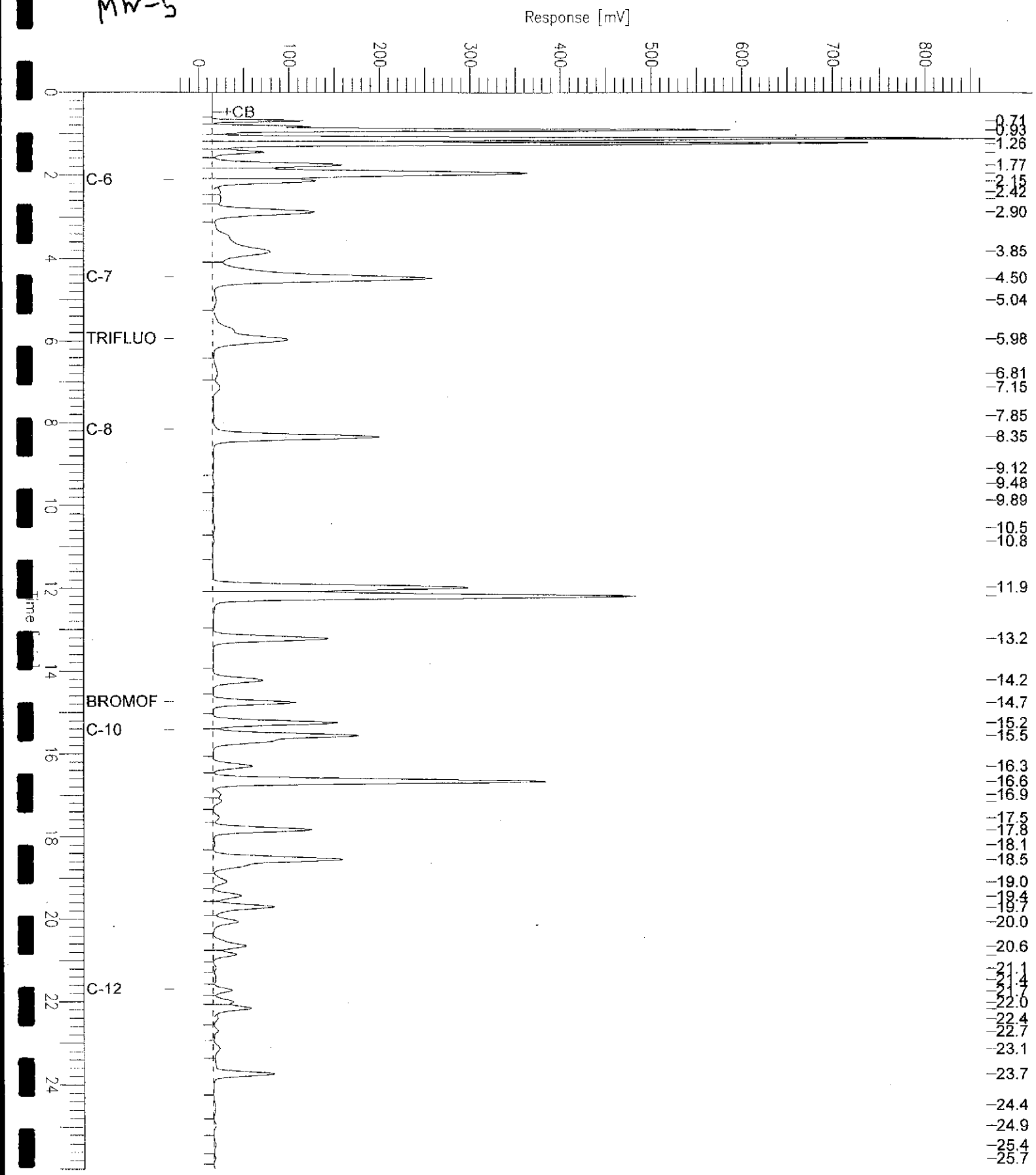
ND= Not Detected
RL= Reporting Limit

GC07 TVH 'A' Data File RTX 502

Sample Name : 160135-005,74390
FileName : G:\GC07\DATA\222A011.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: -27 mV

Sample #: b7 Page 1 of 1
Date : 8/10/02 04:30 PM
Time of Injection: 8/10/02 04:04 PM
Low Point : -27.39 mV High Point : 866.46 mV
Plot Scale: 893.9 mV

MW-5

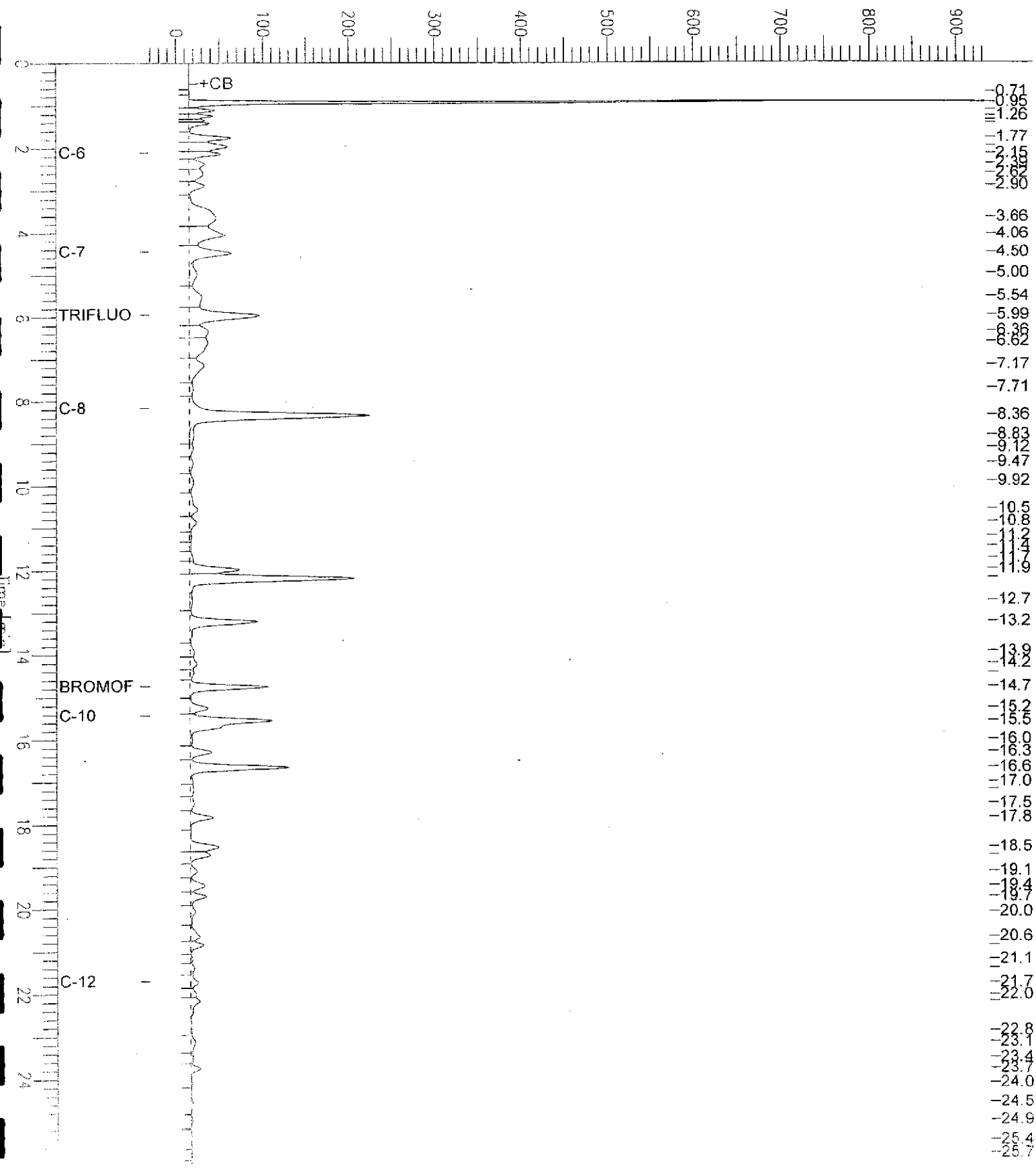


GC07 TVH 'A' Data File RTX 502

Sample Name : ccv/lcs,qc186517,74394,02ws1119,5/5000
FileName : G:\GC07\DATA\221A005.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: -31 mV

Sample #:
Date : 8/9/02 07:03 PM
Time of Injection: 8/9/02 06:37 PM
Low Point : -30.81 mV High Point : 933.20 mV
Plot Scale: 964.0 mV

Gas Standard



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Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	08/08/02
Units:	ug/L	Received:	08/08/02

Field ID:	MW-1	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	74390
Lab ID:	160135-001	Analyzed:	08/10/02

Analyte	Result	RL
MTBE	ND	10
Benzene	590	2.5
Toluene	2.6	2.5
Ethylbenzene	830	2.5
m,p-Xylenes	280	2.5
o-Xylene	82	2.5

Surrogate	%REC	Limits
Trifluorotoluene (PID)	123	53-143
Bromofluorobenzene (PID)	105	52-142

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	74394
Lab ID:	160135-002	Analyzed:	08/10/02

Analyte	Result	RL
MTBE	ND	2.0
Benzene	4.6	0.50
Toluene	ND	0.50
Ethylbenzene	310	0.50
m,p-Xylenes	140	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	104	53-143
Bromofluorobenzene (PID)	109	52-142

Field ID:	MW-3	Diln Fac:	25.00
Type:	SAMPLE	Batch#:	74390
Lab ID:	160135-003	Analyzed:	08/10/02

Analyte	Result	RL
MTBE	1,600	50
Benzene	5,800	13
Toluene	1,100	13
Ethylbenzene	1,600	13
m,p-Xylenes	4,500	13
o-Xylene	2,000	13

Surrogate	%REC	Limits
Trifluorotoluene (PID)	102	53-143
Bromofluorobenzene (PID)	102	52-142

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	08/08/02
Units:	ug/L	Received:	08/08/02

Field ID:	MW-4	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	74390
Lab ID:	160135-004	Analyzed:	08/10/02

Analyte	Result	RL
MTBE	5,300	20
Benzene	70	5.0
Toluene	ND	5.0
Ethylbenzene	300	5.0
m,p-Xylenes	100	5.0
o-Xylene	15	5.0

Surrogate	%REC	Limits
Trifluorotoluene (PID)	100	53-143
Bromofluorobenzene (PID)	102	52-142

Field ID:	MW-5	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	74390
Lab ID:	160135-005	Analyzed:	08/10/02

Analyte	Result	RL
MTBE	1,500	10
Benzene	1,000	2.5
Toluene	660	2.5
Ethylbenzene	950	2.5
m,p-Xylenes	1,300	2.5
o-Xylene	420	2.5

Surrogate	%REC	Limits
Trifluorotoluene (PID)	118	53-143
Bromofluorobenzene (PID)	101	52-142

Type:	BLANK	Batch#:	74390
Lab ID:	QC186505	Analyzed:	08/10/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	0.79	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	92	53-143
Bromofluorobenzene (PID)	99	52-142

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8021B
Matrix:	Water	Sampled:	08/08/02
Units:	ug/L	Received:	08/08/02

Type:	BLANK	Batch#:	74394
Lab ID:	QC186516	Analyzed:	08/09/02
Diln Fac:	1.000		

Analyte	Result	RL
MTBE	ND	2.0
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene (PID)	94	53-143
Bromofluorobenzene (PID)	100	52-142

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC186506	Batch#:	74390
Matrix:	Water	Analyzed:	08/10/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,007	100	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	104	68-145
Bromofluorobenzene (FID)	109	66-143

Curtis & Tompkins, Ltd.

Total Volatile Hydrocarbons

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	8015B(M)
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC186517	Batch#:	74394
Matrix:	Water	Analyzed:	08/09/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,868	93	79-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	103	68-145
Bromofluorobenzene (FID)	110	66-143

Curtis & Tompkins, Ltd.

Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8021B
Matrix:	Water	Batch#:	74390
Units:	ug/L	Analyzed:	08/10/02
Diln Fac:	1.000		

Type: BS Lab ID: QC186553

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	18.87	94	59-135
Benzene	20.00	21.60	108	65-122
Toluene	20.00	21.10	106	67-121
Ethylbenzene	20.00	20.65	103	70-121
m,p-Xylenes	40.00	38.38	96	72-125
o-Xylene	20.00	21.33	107	73-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	93	53-143
Bromofluorobenzene (PID)	98	52-142

Type: BSD Lab ID: QC186554

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	18.68	93	59-135	1	20
Benzene	20.00	21.83	109	65-122	1	20
Toluene	20.00	21.61	108	67-121	2	20
Ethylbenzene	20.00	21.33	107	70-121	3	20
m,p-Xylenes	40.00	39.53	99	72-125	3	20
o-Xylene	20.00	21.74	109	73-122	2	20

Surrogate	%REC	Limits
Trifluorotoluene (PID)	95	53-143
Bromofluorobenzene (PID)	101	52-142

RPD= Relative Percent Difference

8.0

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Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC186520	Batch#:	74394
Matrix:	Water	Analyzed:	08/09/02
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	20.00	20.39	102	59-135
Benzene	20.00	22.54	113	65-122
Toluene	20.00	22.15	111	67-121
Ethylbenzene	20.00	21.82	109	70-121
m,p-Xylenes	40.00	40.76	102	72-125
o-Xylene	20.00	22.76	114	73-122

Surrogate	%REC	Limits
Trifluorotoluene (PID)	95	53-143
Bromofluorobenzene (PID)	101	52-142

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Total Volatile Hydrocarbons

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	8015B(M)
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	160096-001	Batch#:	74390
Matrix:	Water	Sampled:	08/06/02
Units:	ug/L	Received:	08/08/02

Type: MS Analyzed: 08/10/02
Lab ID: QC186511

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<17.00	2,000	1,934	97	67-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	106	68-145
Bromofluorobenzene (FID)	110	66-143

Type: MSD Analyzed: 08/11/02
Lab ID: QC186512

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,009	100	67-120	4	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	107	68-145
Bromofluorobenzene (FID)	112	66-143

RPD= Relative Percent Difference

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Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8021B
Field ID:	MW-2	Batch#:	74394
MSS Lab ID:	160135-002	Sampled:	08/08/02
Matrix:	Water	Received:	08/08/02
Units:	ug/L	Analyzed:	08/12/02
Diln Fac:	1.000		

Type: MS Lab ID: QC186518

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.2800	20.00	37.93	190 *	56-146
Benzene	4.644	20.00	28.53	119	52-149
Toluene	<0.2300	20.00	22.81	114	69-130
Ethylbenzene	310.2	20.00	304.7	-27 NM	70-131
m,p-Xylenes	137.3	40.00	176.7	99	68-137
o-Xylene	<0.2600	20.00	23.12	116	73-133

Surrogate	%REC	Limits
Trifluorotoluene (PID)	108	53-143
Bromofluorobenzene (PID)	108	52-142

Type: MSD Lab ID: QC186519

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	20.00	36.73	184 *	56-146	3	30
Benzene	20.00	27.85	116	52-149	2	30
Toluene	20.00	22.32	112	69-130	2	30
Ethylbenzene	20.00	305.1	-25 NM	70-131	0	30
m,p-Xylenes	40.00	176.1	97	68-137	0	30
o-Xylene	20.00	22.78	114	73-133	1	30

Surrogate	%REC	Limits
Trifluorotoluene (PID)	108	53-143
Bromofluorobenzene (PID)	109	52-142

*= Value outside of QC limits; see narrative
NM= Not Meaningful
RPD= Relative Percent Difference

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Gasoline Oxygenates by GC/MS

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	08/08/02
Units:	ug/L	Received:	08/08/02
Batch#:	74438	Analyzed:	08/13/02

Field ID: MW-1 Lab ID: 160135-001
Type: SAMPLE Diln Fac: 2.500

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	78	50
MTBE	ND	1.3
Isopropyl Ether (DIPE)	ND	1.3
Ethyl tert-Butyl Ether (ETBE)	ND	1.3
Methyl tert-Amyl Ether (TAME)	ND	1.3

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-121
1,2-Dichloroethane-d4	105	77-130
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-120

Field ID: MW-2 Lab ID: 160135-002
Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	21	20
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-121
1,2-Dichloroethane-d4	103	77-130
Toluene-d8	97	80-120
Bromofluorobenzene	95	80-120

Field ID: MW-3 Lab ID: 160135-003
Type: SAMPLE Diln Fac: 16.67

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	330
MTBE	1,300	8.3
Isopropyl Ether (DIPE)	ND	8.3
Ethyl tert-Butyl Ether (ETBE)	ND	8.3
Methyl tert-Amyl Ether (TAME)	330	8.3

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-121
1,2-Dichloroethane-d4	102	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	100	80-120

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	08/08/02
Units:	ug/L	Received:	08/08/02
Batch#:	74438	Analyzed:	08/13/02

Field ID: MW-4 Lab ID: 160135-004
Type: SAMPLE Diln Fac: 33.33

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	1,500	670
MTBE	4,800	17
Isopropyl Ether (DIPE)	ND	17
Ethyl tert-Butyl Ether (ETBE)	ND	17
Methyl tert-Amyl Ether (TAME)	18	17

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-121
1,2-Dichloroethane-d4	103	77-130
Toluene-d8	102	80-120
Bromofluorobenzene	101	80-120

Field ID: MW-5 Lab ID: 160135-005
Type: SAMPLE Diln Fac: 12.50

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	250
MTBE	1,500	6.3
Isopropyl Ether (DIPE)	ND	6.3
Ethyl tert-Butyl Ether (ETBE)	ND	6.3
Methyl tert-Amyl Ether (TAME)	510	6.3

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-121
1,2-Dichloroethane-d4	105	77-130
Toluene-d8	101	80-120
Bromofluorobenzene	97	80-120

Type: BLANK Diln Fac: 1.000
Lab ID: QC186696

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	20
MTBE	ND	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-121
1,2-Dichloroethane-d4	106	77-130
Toluene-d8	100	80-120
Bromofluorobenzene	101	80-120

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

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Gasoline Oxygenates by GC/MS

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	74438
Units:	ug/L	Analyzed:	08/13/02
Diln Fac:	1.000		

Type: BS Lab ID: QC186694

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	45.82	92	49-144

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-121
1,2-Dichloroethane-d4	104	77-130
Toluene-d8	95	80-120
Bromofluorobenzene	97	80-120

Type: BSD Lab ID: QC186695

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	49.60	99	49-144	8	21

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-121
1,2-Dichloroethane-d4	105	77-130
Toluene-d8	101	80-120
Bromofluorobenzene	98	80-120

RPD= Relative Percent Difference

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Lead

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3010
Project#:	2551	Analysis:	EPA 6010B
Analyte:	Lead	Sampled:	08/08/02
Matrix:	Water	Received:	08/08/02
Units:	ug/L	Prepared:	08/12/02
Diln Fac:	1.000	Analyzed:	08/14/02
Batch#:	74421		

Field ID	Type	Lab ID	Result	RL
MW-1	SAMPLE	160135-001	ND	3.0
MW-2	SAMPLE	160135-002	ND	3.0
MW-3	SAMPLE	160135-003	12	3.0
MW-4	SAMPLE	160135-004	3.9	3.0
MW-5	SAMPLE	160135-005	4.8	3.0
	BLANK	QC186629	ND	3.0

ND= Not Detected
RL= Reporting Limit

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Lead

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3010
Project#:	2551	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	74421
Matrix:	Water	Prepared:	08/12/02
Units:	ug/L	Analyzed:	08/14/02
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC186630	100.0	86.50	87	78-120		
BSD	QC186631	100.0	89.00	89	78-120	3	20

RPD= Relative Percent Difference

Lead

Lab #:	160135	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 3010
Project#:	2551	Analysis:	EPA 6010B
Analyte:	Lead	Batch#:	74421
Field ID:	ZZZZZZZZZZ	Sampled:	08/06/02
MSS Lab ID:	160119-003	Received:	08/08/02
Matrix:	Water	Prepared:	08/12/02
Units:	ug/L	Analyzed:	08/14/02
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC186632	18.00	100.0	86.80	69	58-129		
MSD	QC186633		100.0	103.0	85	58-129	11	28

RPD= Relative Percent Difference