RO-473

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First Quarter 2003
GROUNDWATER MONITORING REPORT
TEXACO GASOLINE SERVICE STATION
15101 FREEDOM AVENUE
SAN LEANDRO, CALIFORNIA

March 21, 2003

Project 2551

Prepared for

Mr. Mohammad Pazdel
35840 Alcazar Court
Fremont, California

Prepared by

SOMA Environmental Engineering, Inc.
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March 21, 2003

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:

Enclosed for your review is a copy of SOMA's "First Quarter 2003 Groundwater Monitoring Report" for the subject property.

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

REGISTERED PROFESSIONAL ENGINEER
MANSOUR SEPEHR
No. C042928
Exp. 3-31-04
CIVIL
STATE OF CALIFORNIA

Enclosure

cc: Mr. Mohammad Pazdel 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 First Quarter 2003 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 First Quarter 2003 groundwater monitoring event conducted at the Site on February 21, 2003. 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 Alameda County Health Care Services (ACHCS):

- Total petroleum hydrocarbons as gasoline (TPH-g)
- Benzene, toluene, ethylbenzene, and total xylenes (collectively referred to as BTEX)
- Methyl tertiary Butyl Ether (MtBE)
- 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 from the Site, which consisted of approximately 250 feet of product piping and six dispensers. Paradiso Mechanical, Inc. removed the old USTs and installed the new USTs. The on-site participating agency was the ACHCS. During the upgrade of the USTs, petroleum chemicals were detected in subsurface soils beneath the old USTs. As a result, an over-excavation of the UST cavity was performed.

After excavating and removing the product piping and three USTs, they 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 from beneath the product piping at a depth of 5 feet bgs. In order to define the vertical extent of the 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 8260B 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 MtBE 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, the extent of petroleum hydrocarbons, and MtBE contamination beneath the Site. After installing the wells, they were developed and sampled. Figure 2 displays the locations of the monitoring wells. Appendix A shows the table of elevations and coordinates, as surveyed by Kier & Wright Civil Engineer & Land Surveyors in May 2002.

2.0 FIELD ACTIVITIES

On February 21, 2003, 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.

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.

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.

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. 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 all of the samples and was submitted along with the samples to the laboratory. On that same day, February 21, 2003, 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, and gasoline oxygenates. Samples for TPH-g measurement were prepared using EPA Method 5030B and analyzed using Method 8015B(M). Samples for BTEX measurements were prepared using EPA

Method 5030B and analyzed using EPA Method 8021B. MtBE and gasoline oxygenates measurements were prepared using EPA Method 5030B and analyzed using EPA Method 8260B.

4.0 RESULTS

The following sections provide the results of field measurements and laboratory analyses for the February 21, 2003 groundwater monitoring event.

4.1 Field Measurements

Table 1 presents the calculated groundwater elevations at each groundwater monitoring well. As Table 1 shows, depths to groundwater ranged from 18.70 feet in monitoring well MW-5 to 22.62 feet in monitoring well MW-1. The corresponding groundwater elevations ranged from 29.06 feet in monitoring well MW-4 to 29.15 feet in monitoring well MW-2.

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. Since the previous monitoring event, groundwater elevations have increased by approximately 1 to 1.5 feet throughout the Site. This can be attributed to the water table ascending closer to the ground surface due to the wetter climate during this monitoring event. The groundwater elevation in monitoring well MW-2, as recorded for June 2002, was erroneous and the low groundwater elevation was probably the result of the initial well development. The groundwater elevations for monitoring well MW-2, since the initial monitoring in June 2002, closely match the other existing on-site wells.

The groundwater elevation contour map in feet is displayed in Figure 3. As shown in Figure 3, in general, the groundwater flows southward. The approximate average groundwater gradient on-site is 0.0007 feet/feet. However,

based on this event, as well as, previous monitoring events, the groundwater elevation throughout the Site is fairly consistent, with only a slight deviation from well to well.

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 6.73 in monitoring well MW-1 to 6.91 in monitoring well MW-2. The temperature measurements ranged from 20.30 °C in monitoring well MW-4 to 22.00 °C in monitoring well MW-5. The slight variation in temperature may reflect the changes in the ambient temperature during the sampling event. EC ranged from 1,246 µS/cm in monitoring well MW-5 to 1,534 µS/cm in monitoring well MW-4. In general, the field measurements stayed fairly consistent throughout the Site from well to well.

The field measurements taken during the First Quarter 2003 monitoring event are shown in Appendix A.

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 are the most impacted, with the exception of MtBE, which seems to peak in monitoring well MW-4. 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 890 µg/L in monitoring well MW-2 to 39,000 µg/L in monitoring well MW-3. Figure 4 displays the contour map of TPH-g concentrations in the groundwater on February 21, 2003. The highest reported TPH-g concentration was in monitoring well MW-3, which is near the dispenser

islands and former USTs. Also, a TPH-g concentration of 12,000 µg/L was detected in monitoring well MW-5.

As shown in Table 4, the least impacted location during this monitoring event by BTEX analytes was in the vicinity of MW-2. BTEX concentrations in MW-2 were 1.7 µg/L, 0.80 µg/L, 68 µg/L, and 38.92 µg/L, respectively. However, the BTEX concentrations detected in MW-2 may have been misrepresentative due to matrix interferences during the analytical testing. The lab designated this by a "C" flag; see the "C" flag in the lab report, attached as Appendix B, for further clarification. The highest BTEX concentrations were detected in MW-3 at 5,500 µg/L, 1,500 µg/L, 2,000 µg/L, and 8,600 µg/L, respectively. Figure 5 displays the contour map of benzene concentrations in the groundwater on February 21, 2003. Similar to the results for TPH-g, the highest benzene concentration was detected in monitoring well MW-3, near the dispenser islands.

Table 4 shows the results of the MtBE analysis by EPA Method 8260B. MtBE concentrations were detected in monitoring wells MW-3, MW-4 and MW-5. MtBE concentrations for monitoring wells MW-3, MW-4, and MW-5 were 1,300 µg/L, 6,600 µg/L, and 860 µg/L, respectively. Figure 6 displays the contour map of MtBE concentrations in the groundwater on February 21, 2003. As shown in Figure 6, the highest MtBE concentration was detected in the vicinity of the dispenser islands, in monitoring well MW-4. This can be attributed to the southerly groundwater gradient and location of the product piping from the existing USTs to the dispenser islands.

Table 5 presents the historical groundwater analytical data. The following concentration trends were observed for TPH-g, BTEX, and MtBE since the previous monitoring event.

- TPH-g concentrations decreased in all monitoring wells.

- All BTEX analytes decreased in monitoring wells MW-1 and MW-5. Benzene decreased significantly in MW-5. Toluene was the only BTEX constituent to increase in MW-2. Benzene and toluene both increased in MW-3, while ethylbenzene decreased. Toluene and total xylenes were the only BTEX constituents to increase in MW-4.
- Historically, MtBE has remained below the laboratory reporting limit in MW-1 and MW-2. MtBE increased in MW-3 and to a greater degree in MW-4. MtBE decreased in MW-5.

Table 6 shows the results of gasoline oxygenates analytical results from the groundwater samples collected during the First Quarter 2003. TBA was the only gasoline oxygenate detected in MW-1 and MW-2. TBA was below the laboratory reporting limit in MW-5 and was detected at a maximum of 1,600 µg/L in monitoring well MW-4. Figure 7 displays the contour map of TBA concentrations in the groundwater on February 21, 2003. As shown in Figure 7, the highest TBA concentration was detected near the dispenser islands in monitoring well MW-4.

As shown in Table 6, DIPE was below the laboratory reporting limit in all wells. ETBE was only detected in MW-4 at 22 µg/L. TAME was below laboratory reporting limit in monitoring wells MW-1, MW-2, and MW-4. TAME was detected in MW-3 and MW-5 at 320 µg/L and 280 µg/L, respectively. Figure 8 displays the contour map of TAME concentrations in the groundwater on February 21, 2003. As shown in Figure 8, the highest TAME concentration was detected in monitoring well MW-3, near the USTs. Also, a high TAME concentration was detected in monitoring well MW-5, in the southeastern corner of the Site.

Table 7 displays the historical analytical results of gasoline oxygenates in the groundwater sampled at the Site. In compliance with a request from the ACHCS, dated July 2, 2002, SOMA had the groundwater samples analyzed for gasoline oxygenates for the first time during the Third Quarter 2002 monitoring event.

The following concentration trends were observed for gasoline oxygenates since the previous monitoring event.

- TBA increased in monitoring wells MW-1 and MW-3, and significantly increased in MW-4. TBA decreased in MW-2 and MW-5.
- DIPE has remained below the laboratory reporting limit in all monitoring wells. ETBE has remained below the laboratory reporting limit in all monitoring wells, with the exception of MW-4. ETBE increased in MW-4.
- TAME has historically remained below the laboratory reporting limit in MW-1 and MW-2. TAME increased in MW-3 and decreased in MW-4 and MW-5.

Appendix B includes the laboratory report and COC form for the First Quarter 2003.

5.0 CONCLUSION AND RECOMMENDATIONS

The results of the February 21, 2003 groundwater monitoring event can be summarized as follows:

1. The groundwater flow direction is to the south. The approximate average groundwater gradient on-site is 0.0007 feet/feet. However, based on this event, as well as, previous monitoring events, the groundwater elevation throughout the Site is fairly consistent, with a only a slight deviation from well to well.

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 in the vicinity of the former USTs. 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 the well to the dispenser islands. Monitoring well MW-4 is located west of the dispenser islands that were remodeled in May 1999. However, MtBE is still significantly lower in MW-4 than the concentration during the initial monitoring event in May 2002, where MtBE was detected at 12,000 µg/L.

4. In compliance with a request from the ACEHS, gasoline oxygenates were analyzed for the first time during the Third Quarter 2002. During this monitoring event TBA was found to be present in all monitoring wells, with the exception of MW-5. Historically, DIPE and ETBE were below the laboratory limit in all monitoring wells, with the exception of a slight increase in ETBE in monitoring well MW-4. TAME was only detected in monitoring wells MW-3 and MW-5. TAME decreased to non-detectable levels in MW-4 and also decreased in MW-5.

5. Due to the following factors SOMA recommends a further site investigation to determine the extent of the chemical concentrations south of monitoring well MW-5 and along Fairmont Avenue, east of the Site.

   - High TPH-g and benzene concentrations were detected in monitoring well MW-3.
   - The highest concentration of MtBE was detected in monitoring well MW-4.
   - Both MtBE and TBA concentrations increased significantly since the previous monitoring event, and
   - Residential housing is located near the Site.

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

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

SOMA Environmental Engineering Inc., September 26, 2002. "Third Quarter 2002 Groundwater Monitoring Report, Texaco Gasoline Service Station, 15101 Freedom Avenue, San Leandro, California".

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

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".

Figures

Figure 1: Site vicinity map.

SOMA
ENVIRONMENTAL ENGINEERING, INC.

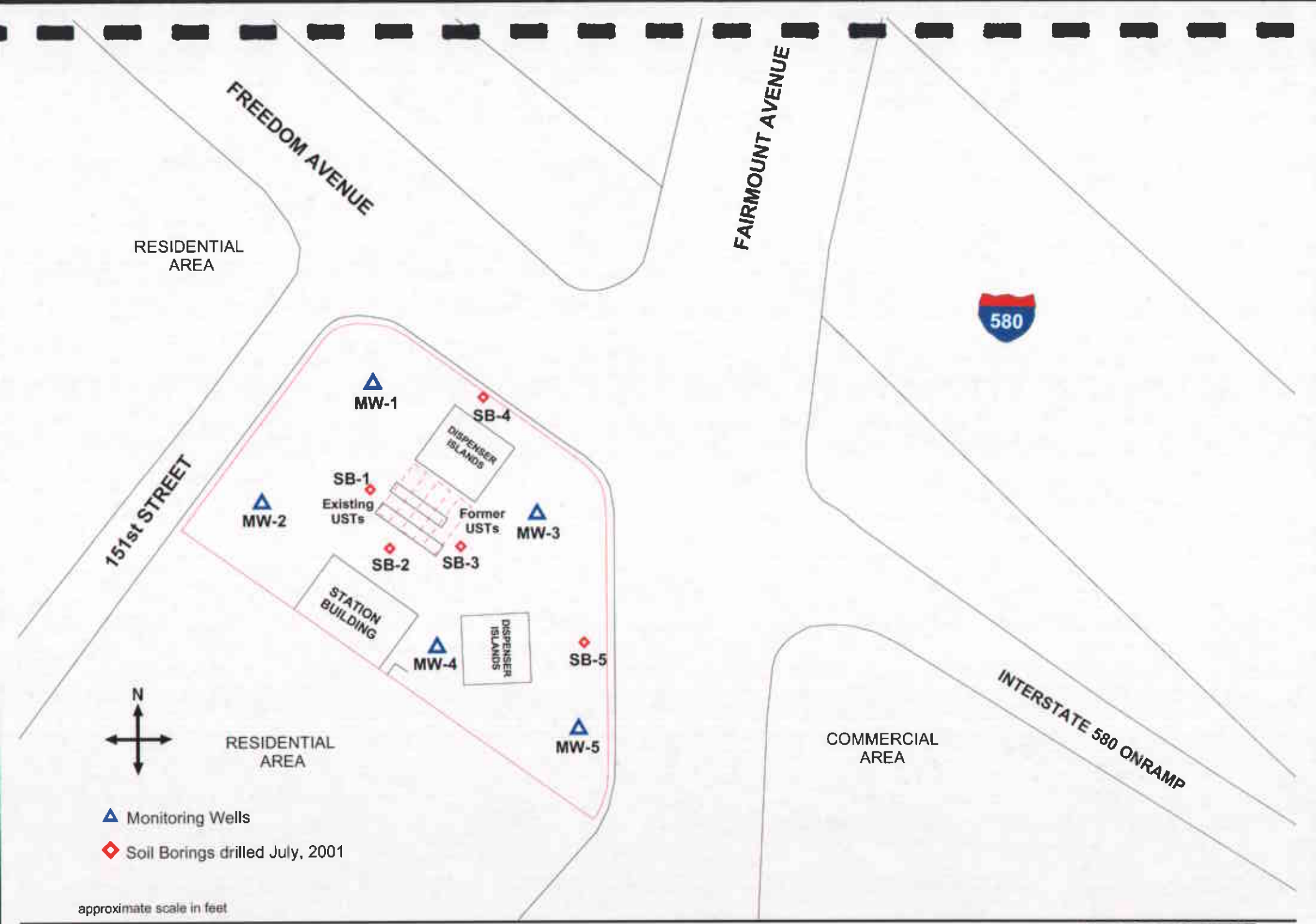

Figure 2: Site map showing locations of groundwater monitoring wells and soil borings.

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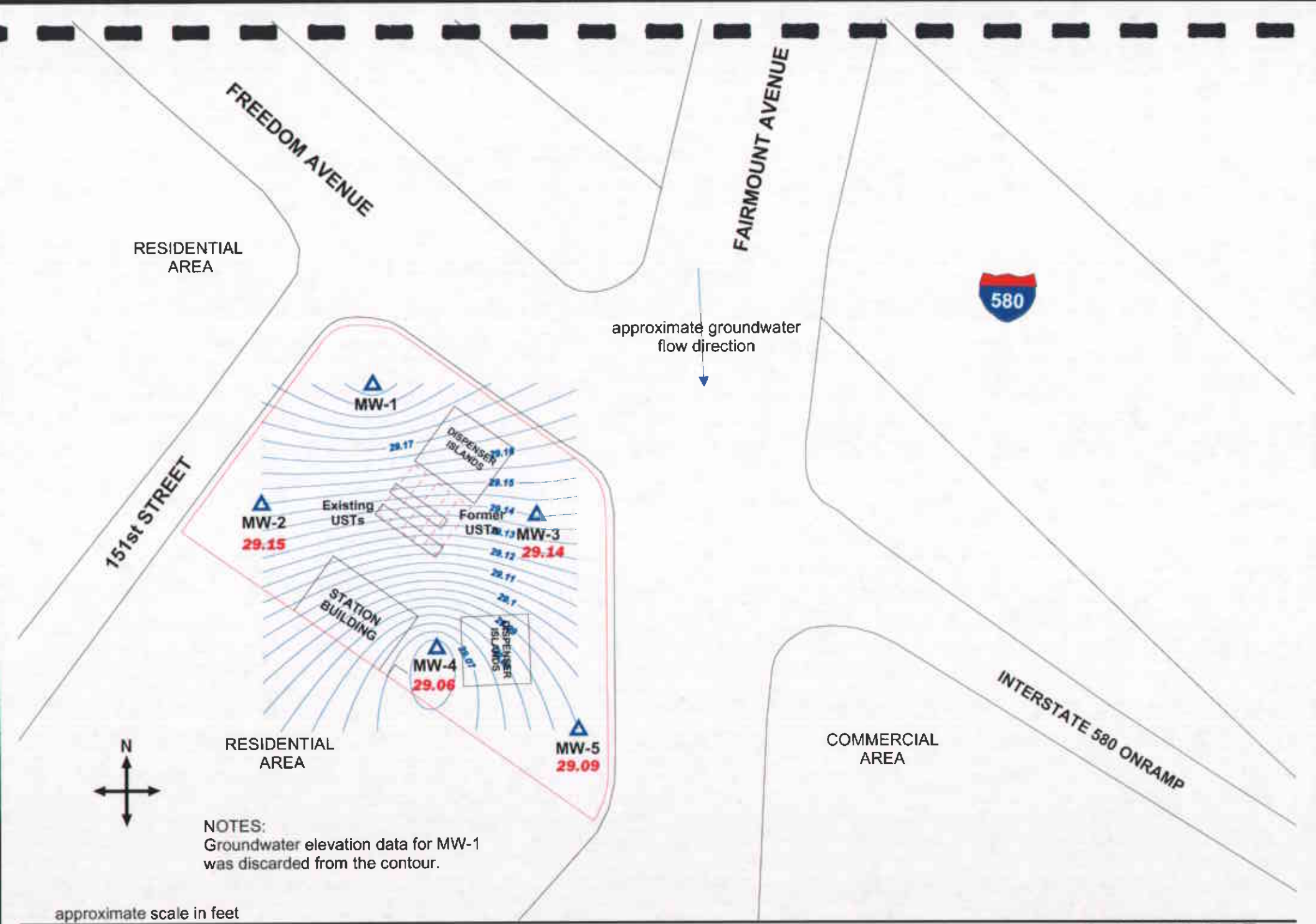

Figure 3: Groundwater elevation contour map in feet.
February 21, 2003.

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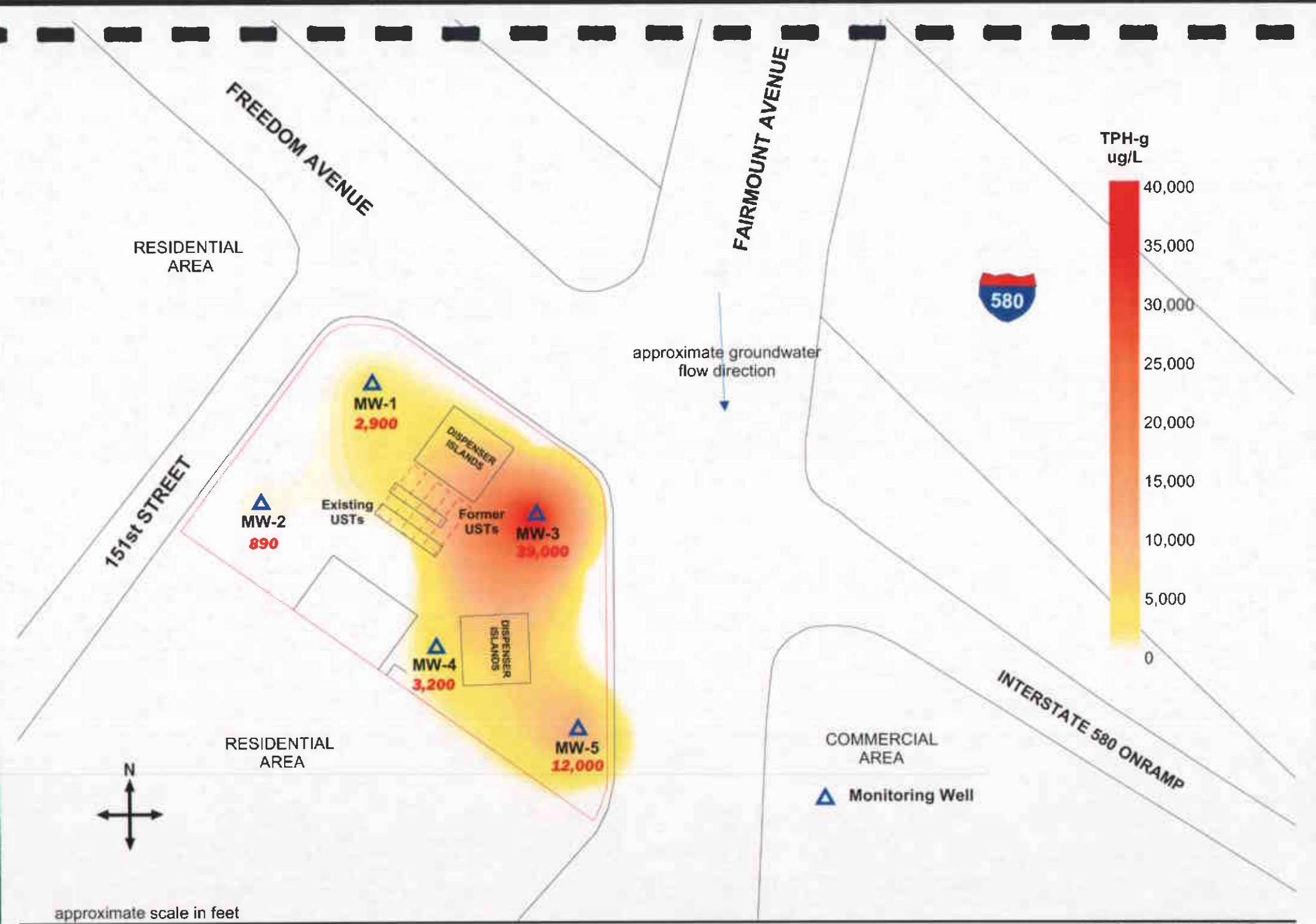

Figure 4: Contour map of TPH-g concentrations in groundwater.
February 21, 2003.

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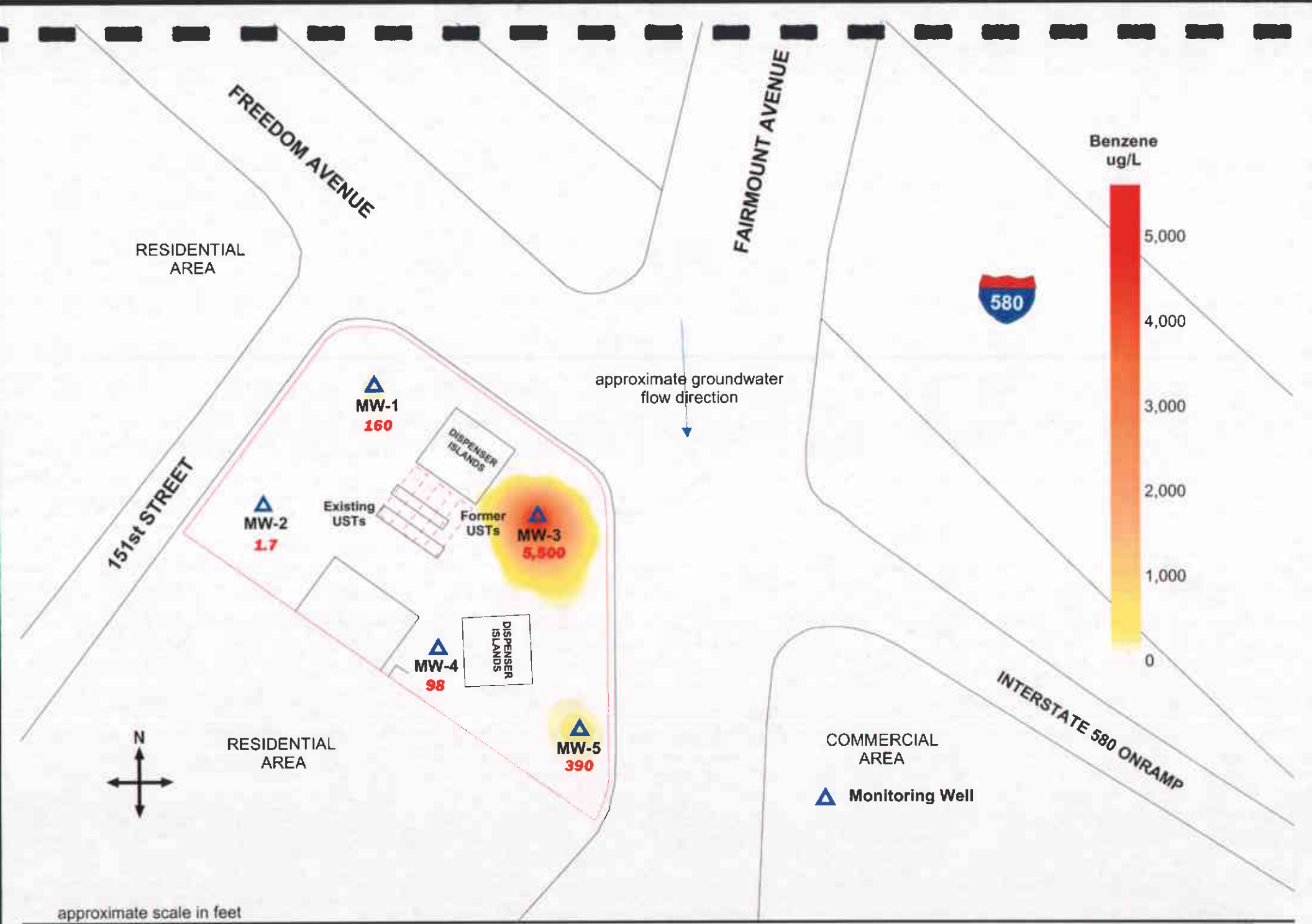

Figure 5: Contour map of Benzene concentrations in groundwater.
February 21, 2003.

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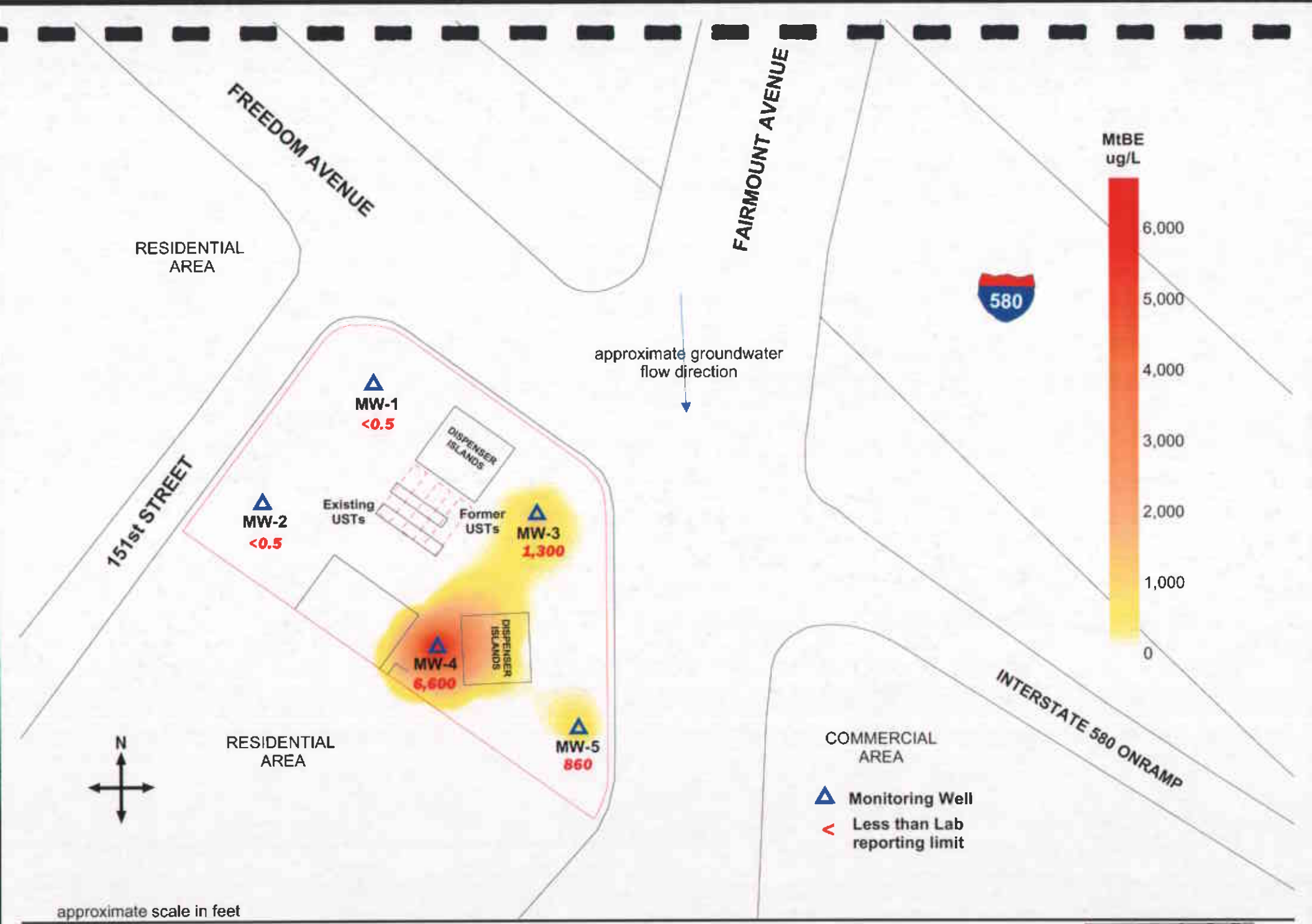

Figure 6: Contour map of MtBE concentrations in groundwater (EPA Method 8260B). February 21, 2003.

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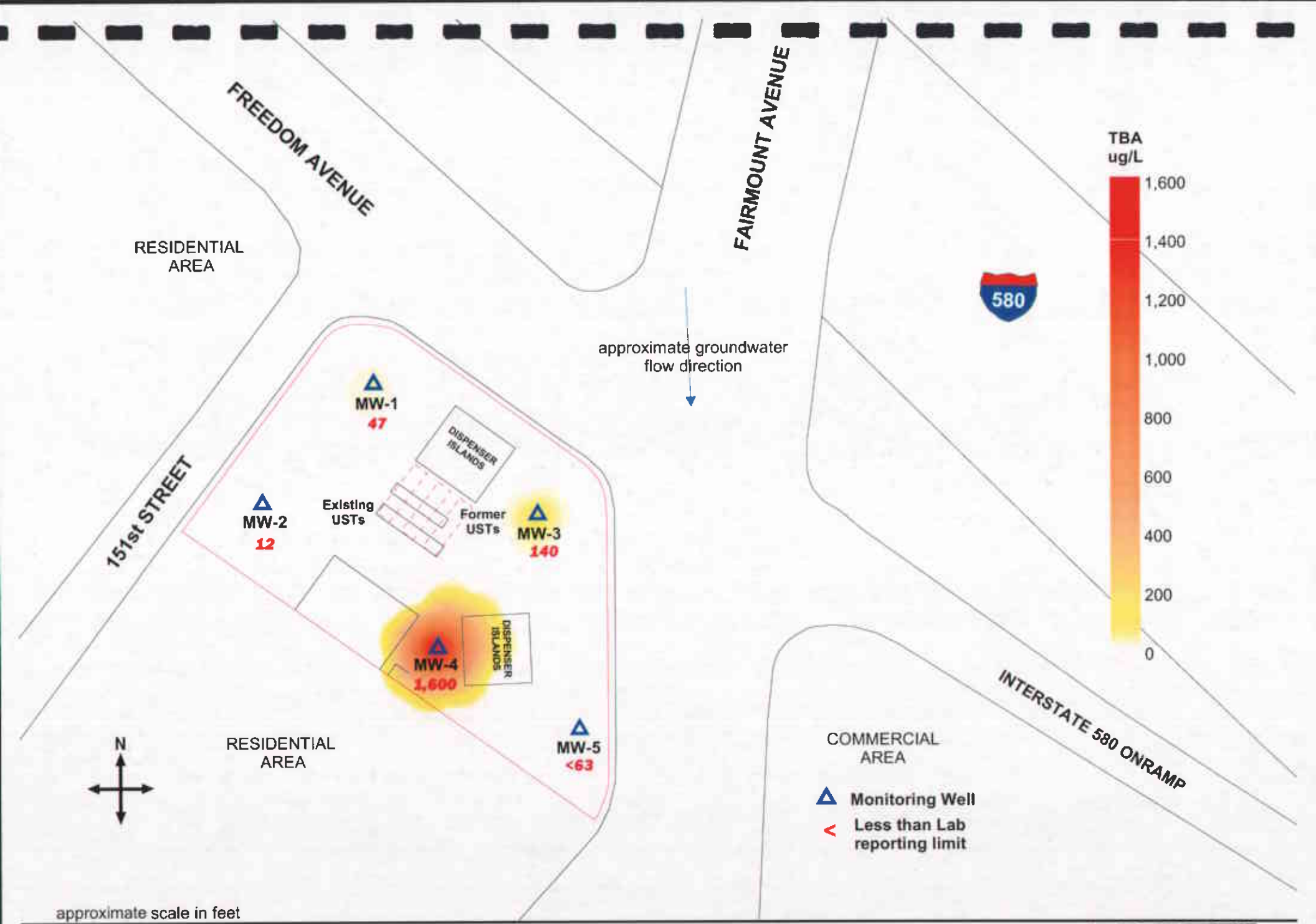


Figure 7: Contour map of TBA concentrations in groundwater.
February 21, 2003.

SOMA ENVIRONMENTAL ENGINEERING, INC.

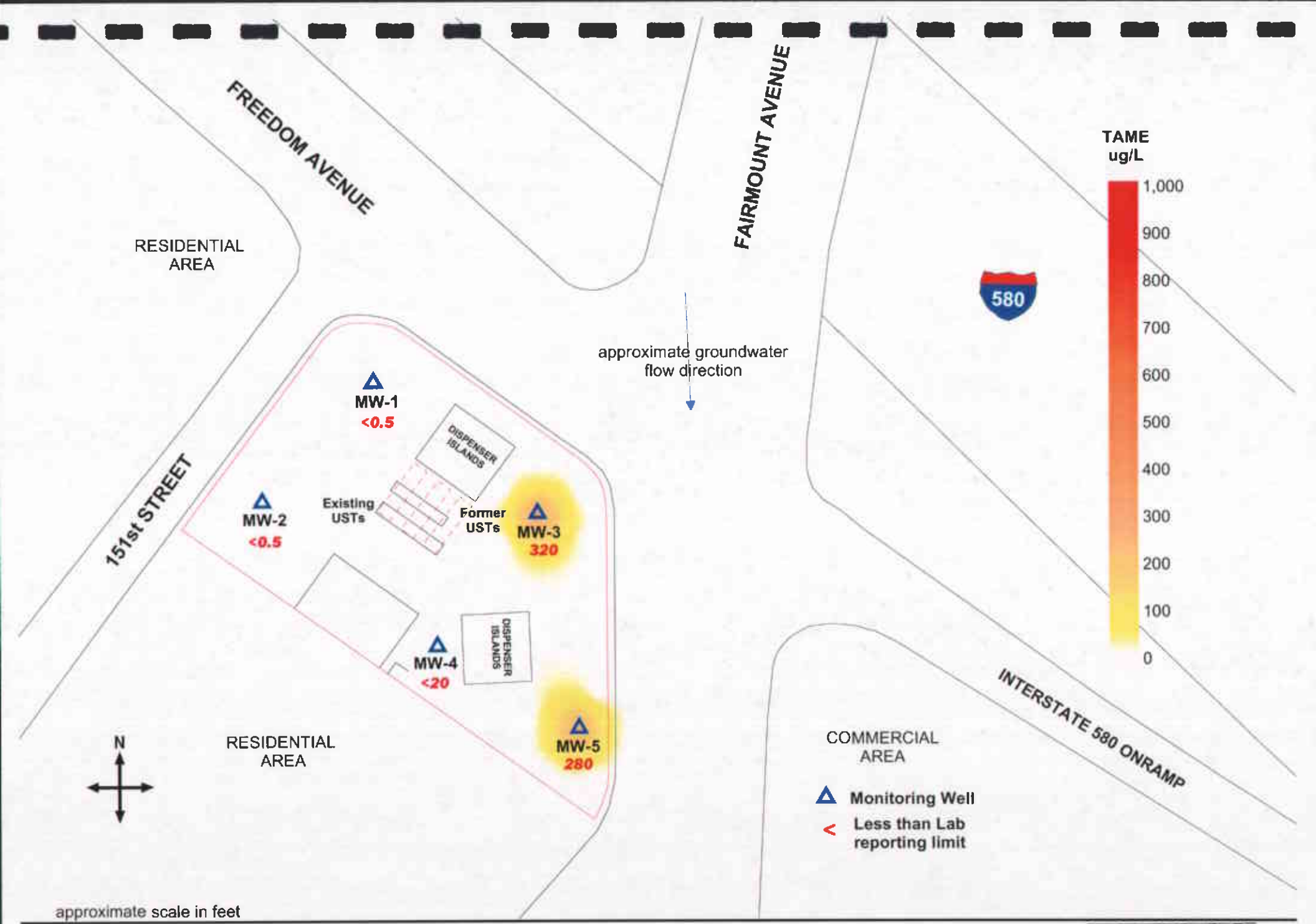


Figure 8: Contour map of TAME concentrations in groundwater.
February 21, 2003.

SOMA ENVIRONMENTAL ENGINEERING, INC.

Tables

Table 1
Groundwater Elevation Data
February 21, 2003
15101 Freedom Avenue, San Leandro, CA

Monitoring Well	Top of Casing Elevation [1] (feet)	Depth to Water (feet)	Groundwater Elevation (feet)
MW-1	51.71	22.62	29.09
MW-2	49.66	20.51	29.15
MW-3	51.16	22.02	29.14
MW-4	50.54	21.48	29.06
MW-5	47.79	18.70	29.09

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
Feb 2003	**29.09**	**29.15**	**29.14**	**29.06**	**29.09**
Nov 2002	28.13	27.87	27.97	27.73	27.65
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.
*: The groundwater elevation recorded during the Second Quarter 2002 for monitoring well MW-2 was erronous.
This was probably due the initial development of the well. Since the initial monitoring of MW-2
the elevations recorded for MW-2 have closely matched the other existing wells.

Table 3

Field Measurements at the Time of Sampling

February 21, 2003

15101 Freedom Avenue, San Leandro, CA

Monitoring Well	pH	Temp (°C)	E.C. (uS/cm)
MW-1	6.73	21.20	1392
MW-2	6.91	20.60	1361
MW-3	6.82	21.80	1328
MW-4	6.74	20.30	1534
MW-5	6.81	22.00	1246

Table 4

Groundwater Analytical Data

February 21, 2003

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 8260B [1] (µg/L)	Total Lead (µg/L)
MW-1	2,900	160	1.6 C	170	211	<0.5	NA
MW-2	890	1.7 C	0.80 C	68	38.92 C	<0.5	NA
MW-3	39,000	5,500	1,500	2,000	8,600	1,300	NA
MW-4	3,200	98	66	220	360	6,600	NA
MW-5	12,000	390	71	770	1,100	860	NA

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 8260B.

NA Not Analyzed

Table 5
Historical Groundwater Analytical Data: TPH-g, MtBE, BTEX, & Lead
15101 Freedom Avenue, San Leandro, CA

Monitoring Well	Date	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MtBE[1] (µg/L) 8260B	Total Lead (µg/L)
MW-1	**Feb 2003**	**2,900**	**160**	**1.6 C**	**170**	**211**	**<0.5**	**NA**
	Nov 2002	7,900	570	3.1	680	392	< 1.0	NA
	Aug 2002	9,100	590	2.6	830	362	<1.3	<3.0
	May 2002	5,700	360	4.5	340	450	2	<3
MW-2	**Feb 2003**	**890**	**1.7 C**	**0.80 C**	**68**	**38.92 C**	**<0.5**	**NA**
	Nov 2002	3,400	4.6	< 0.5	310	160	< 0.5	NA
	Aug 2002	2,700	4.6	<0.5	310	140	<0.5	<3.0
	May 2002	3,100	67	8	250	215	56	<3
MW-3	**Feb 2003**	**39,000**	**5,500**	**1,500**	**2,000**	**8,600**	**1,300**	**NA**
	Nov 2002	47,000	5,300	1,200	2,200	8,600	1,000	NA
	Aug 2002	40,000	5,800	1,100	1,600	6,500	1,300	12
	May 2002	44,000	6,000	900	1,500	6,200	2,400	15
MW-4	**Feb 2003**	**3,200**	**98**	**66**	**220**	**360**	**6,600**	**NA**
	Nov 2002	5,100	150	10	460	258	2,400	NA
	Aug 2002	3,800	70	<5.0	300	115	4,800	3.9
	May 2002	880	25	1.0[C]	110	52	12,000	<3
MW-5	**Feb 2003**	**12,000**	**390**	**71**	**770**	**1,100**	**860**	**NA**
	Nov 2002	16,000	1,300	380	930	1,550	1,200	NA
	Aug 2002	18,000	1,000	660	950	1,720	1,500	4.8
	May 2002	25,000	1,000	1,200	1,100	3,060	1,800	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.

NA Not Analyzed

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

Table 6
Gasoline Oxygenates
February 21, 2003
15101 Freedom Avenue, San Leandro, CA

Monitoring Well	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
MW-1	47	<0.5	<0.5	<0.5
MW-2	12	<0.5	<0.5	<0.5
MW-3	140	<5.0	<5.0	320
MW-4	1600	<20	22	<20
MW-5	<63	<3.1	<3.1	280

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	**Feb 2003**	**47**	**<0.5**	**<0.5**	**<0.5**
	Nov 2002	42	< 1.0	< 1.0	< 1.0
	Aug 2002	78	<1.3	<1.3	<1.3
MW-2	**Feb 2003**	**12**	**<0.5**	**<0.5**	**<0.5**
	Nov 2002	15	<0.5	<0.5	<0.5
	Aug 2002	21	<0.5	<0.5	<0.5
MW-3	**Feb 2003**	**140**	**<5.0**	**<5.0**	**320**
	Nov 2002	85	< 1.3	<1.3	220
	Aug 2002	<330	<8.3	<8.3	330
MW-4	**Feb 2003**	**1600**	**<20**	**22**	**<20**
	Nov 2002	580	< 5.0	6	13
	Aug 2002	1500	<17	<17	18
MW-5	**Feb 2003**	**<63**	**<3.1**	**<3.1**	**280**
	Nov 2002	66	< 2.0	< 2.0	560
	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

Table of Elevations & Coordinates on Monitoring Wells Measured by Kier Wright Civil Engineers Surveyors, Inc., and Field Measurements of Physical and Chemical Parameters of Groundwater Samples

Survey Date 05/07/02
Job No. A02545

Table of Elevations & Coordinates

On Monitoring Wells
Texaco Service Station
15101 Freedom Avenue
San Leandro, California

Well No.	Northing	Easting	Elevation
MW-1	5106.89	4812.60	51.71 -Top of PVC casing, North side @ Punch Mark 52.08 – Top North Rim of Box
MW-2	5056.82	4766.17	49.66 – Top of PVC Casing, North Side @ Punch Mark 50.19 - Top North Rim of Box
MW-3	5051.97	4881.26	51.16 - Top of PVC Casing, North side @ Punch Mark 51.60 - Top North Rim of Box
MW-4	4996.14	4839.06	50.54 – Top of PVC Casing, North side @ Punch Mark 50.98 - Top North Rim of Box
MW-5	4961.75	4898.20	47.79 – Top of PVC Casing, North side @Punch Mark 48.25 - Top North Rim of Box
Building Corner	5035.26	4796.09	
Building Corner	5009.72	4831.30	
Building Corner	4979.40	4808.97	
Building Corner	5005.06	4773.92	

Benchmark: Alameda County Benchmark "Fair-580"
Alameda County disc stamped "Fair-580 – 1976" set in the top of the Northwesterly concrete walk at the Northwest corner of the Fairmont Drive over-crossing of I-580, 1' southeast of the northwesterly concrete bridge rail, 1.9' southwesterly of the northeasterly end of the northwest concrete walk for the bridge.
Elevation = 67.07 M.S.L. Datum

Kier & Wright Civil Engineer & Land Surveyors, Inc.
1233 Quarry Lane, Suite 145 ♦ PLEASANTON, CALIFORNIA 94566 ♦ (925) 249-6555 ♦ (925) 249-6563

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:**	21-Feb-03
Depth to Groundwater:	22.62 feet	**Sampler:**	Tony Perini
Groundwater Elevation:	29.09 feet		
Water Column Height:	7.48 feet		
Purged Volume:	13 gallons		

Purging Method:	**Bailer**	☐	**Pump**	■
Sampling Method:	**Bailer**	■	**Pump**	☐

Color:	**Yes**	☐	**No**	☑	**Describe:** _____
Sheen:	**Yes**	☐	**No**	☑	**Describe:** _____
Odor:	**Yes**	☐	**No**	☑	**Describe:** _____

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
10:07 Am	1.0	6.85	20.8	1278
10:10 Am	6.0	6.80	21.2	1139
10:13 Am	10	6.76	21.3	1361
10:15 Am	12	6.73	21.2	1392
10:30 Am	sampled			

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-2	**Project No.:**	2551
Casing Diameter:	4 inches	**Address:**	15101 Freedom Ave.
Depth of Well:	30 feet		San Leandro, CA
Top of Casing Elevation:	49.66 feet	**Date:**	21-Feb-03
Depth to Groundwater:	20.51 feet	**Sampler:**	Tony Perini
Groundwater Elevation:	29.15 feet		
Water Column Height:	9.49 feet		
Purged Volume:	16 gallons		

Purging Method:	**Bailer**	☐	**Pump**	■
Sampling Method:	**Bailer**	■	**Pump**	☐

Color:	**Yes** ☐	**No** ☑	**Describe:**	_____
Sheen:	**Yes** ☐	**No** ☑	**Describe:**	_____
Odor:	**Yes** ☐	**No** ☑	**Describe:**	_____

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
9:20 Am	1.0	7.00	19.60	226
9:22 Am	4.0	6.89	20.40	1313
9:25 Am	8.0	6.87	20.60	1317
9:30 Am	16	6.91	20.60	1361
9:45 Am	samples			

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:**	21-Feb-03
Depth to Groundwater:	22.02 feet	**Sampler:**	Tony Perini
Groundwater Elevation:	29.14 feet		
Water Column Height:	7.88 feet		
Purged Volume:	14 gallons		

Purging Method:	Bailer ☐		Pump ■	
Sampling Method:	Bailer ■		Pump ☐	
Color:	Yes ☑	No ☐	**Describe:**	slight blackish
Sheen:	Yes ☑	No ☐	**Describe:**	sheen
Odor:	Yes ☑	No ☐	**Describe:**	slight petro

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
1:01 PM	1.5	6.87	22.9	1194
1:04 PM	6.0	6.80	22.0	1334
1:07 PM	10	6.81	21.9	1325
1:10 PM	14	6.82	21.8	1328
1:15 PM	sampled			

ENVIRONMENTAL ENGINEERING, INC

Well No.:	MW-4	**Project No.:**	2551
Casing Diameter:	4 inches	**Address:**	15101 Freedom Ave.
Depth of Well:	30.10 feet		San Leandro, CA
Top of Casing Elevation:	50.54 feet	**Date:**	21-Feb-03
Depth to Groundwater:	21.48 feet	**Sampler:**	Tony Perini
Groundwater Elevation:	29.06 feet		
Water Column Height:	8.62 feet		
Purged Volume:	14 gallons		

Purging Method:	**Bailer**	☐	**Pump**	■
Sampling Method:	**Bailer**	■	**Pump**	☐

Color:	**Yes**	☑	**No** ☐	**Describe:**	cloudy
Sheen:	**Yes**	☐	**No** ☑	**Describe:**	
Odor:	**Yes**	☑	**No** ☐	**Describe:**	slight petro

Field Measurements:

Time	Vol (gallons)	pH	Temp (° C)	E.C. (µs/cm)
10:53 AM	1.0	6.77	19.80	1348
10:56 AM	6.0	6.76	20.20	1540
10:59 AM	10	6.75	20.30	1542
11:02 AM	14	6.74	20.30	1534
11:05 AM	sampled			

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:**	21-Feb-03
Depth to Groundwater:	18.70 feet	**Sampler:**	Tony Perini
Groundwater Elevation:	29.09 feet		
Water Column Height:	11 feet		
Purged Volume:	16 gallons		

Purging Method:	**Bailer**	☐		**Pump**	■
Sampling Method:	**Bailer**	■		**Pump**	☐
Color:	**Yes**	☑	**No** ☐	**Describe:**	cloudy
Sheen:	**Yes**	☐	**No** ☑	**Describe:**	
Odor:	**Yes**	☑	**No** ☐	**Describe:**	slight petro

Field Measurements:

Time	Vol (gallons)	pH	Temp (°C)	E.C. (µs/cm)
12:04 PM	1.0	6.90	22.80	1350
12:07 PM	6.0	6.83	22.10	1313
12:09 PM	10	6.82	22.0	1287
12:12 PM	14	6.81	22	1247
12:13 PM	16	6.81	22	1246

12:15 PM Samples

Appendix B

Laboratory Report and

Chain of Custody Form

for the

First Quarter 2003 Monitoring Event

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: 07-MAR-03
Lab Job Number: 163785
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:	**163459**
Client:	**SOMA Environmental Engineering Inc.**
Project Name:	**15101 Freedom Ave., San Leandro**
Project #:	**2551**
Receipt Date:	**02/21/2003**

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for five water samples received from the above referenced project on February 21, 2003. The samples were received cold and intact.

Total Volatile Hydrocarbons (TVH):

The trifluorotoluene surrogate recoveries for the matrix spikes and samples MW-1 (163785-001) and MW-4 (163785-004) are above acceptance limits due to the coelution of the surrogate peaks with hydrocarbon peaks. The associated bromofluorobenzene surrogate recoveries are acceptable, and therefore, there is no affect on the quality of the sample results.

No other analytical problems were encountered.

BTXE:

No analytical problems were encountered.

Gasoline Oxygenates:

No analytical problems were encountered.

CHAIN OF CUSTODY

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

C&T LOGIN # 163785

Sampler: TONY PERINI

Project No: 2551

Report To: Tony Perini

Project Name: 15101 Freedom Ave.,San Leandro

Company : SOMA Environmental

Turnaround Time: Standard

Telephone: 925-244-6600

Fax: 925-244-6601

Analyses

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	TPHg 8015	BTEX + MtBE 8021 GC	MtBE Confirmation 8260 GCMS	Gasoline Oxygenates	~~Total Lead~~
-1	MW-1	2/21/03 10:30 AM		✓		4 VOA	✓			✓	✓	✓	✓	✓	
-2	MW-2	9:45 AM		✓											
-3	MW-3	1:15 PM		✓											
-4	MW-4	11:05 AM		✓											
-5	MW-5	12:15 PM		✓		↓	↓			↓					

Received: ☒ On Ice ☒ Cold ☐ Ambient ☒ Intact

Preservation Correct? ☒ Yes ☐ No ☐ N/A

Notes: EDF OUTPUT REQUIRED

RELINQUISHED BY:	RECEIVED BY:
TONY PERINI 2/21/03	2-21-03 2:20 pm
Tony Perini 2:20 PM DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551		
Matrix:	Water	Sampled:	02/21/03
Units:	ug/L	Received:	02/21/03
Batch#:	79448	Analyzed:	02/25/03

Field ID:	MW-1	Lab ID:	163785-001
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL	Analysis
Gasoline C7-C12	2,900	50	8015B
Benzene	160	0.50	EPA 8021B
Toluene	1.6 C	0.50	EPA 8021B
Ethylbenzene	170	0.50	EPA 8021B
m,p-Xylenes	170	0.50	EPA 8021B
o-Xylene	41	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	173 *	68-145	8015B
Bromofluorobenzene (FID)	123	66-143	8015B
Trifluorotoluene (PID)	135	53-143	EPA 8021B
Bromofluorobenzene (PID)	116	52-142	EPA 8021B

Field ID:	MW-2	Lab ID:	163785-002
Type:	SAMPLE	Diln Fac:	1.000

Analyte	Result	RL	Analysis
Gasoline C7-C12	890	50	8015B
Benzene	1.7 C	0.50	EPA 8021B
Toluene	0.80 C	0.50	EPA 8021B
Ethylbenzene	68	0.50	EPA 8021B
m,p-Xylenes	38	0.50	EPA 8021B
o-Xylene	0.92 C	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	133	68-145	8015B
Bromofluorobenzene (FID)	125	66-143	8015B
Trifluorotoluene (PID)	111	53-143	EPA 8021B
Bromofluorobenzene (PID)	117	52-142	EPA 8021B

Field ID:	MW-3	Lab ID:	163785-003
Type:	SAMPLE	Diln Fac:	20.00

Analyte	Result	RL	Analysis
Gasoline C7-C12	39,000	1,000	8015B
Benzene	5,500	10	EPA 8021B
Toluene	1,500	10	EPA 8021B
Ethylbenzene	2,000	10	EPA 8021B
m,p-Xylenes	6,200	10	EPA 8021B
o-Xylene	2,400	10	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	143	68-145	8015B
Bromofluorobenzene (FID)	136	66-143	8015B
Trifluorotoluene (PID)	128	53-143	EPA 8021B
Bromofluorobenzene (PID)	125	52-142	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
D= Not Detected
L= Reporting Limit

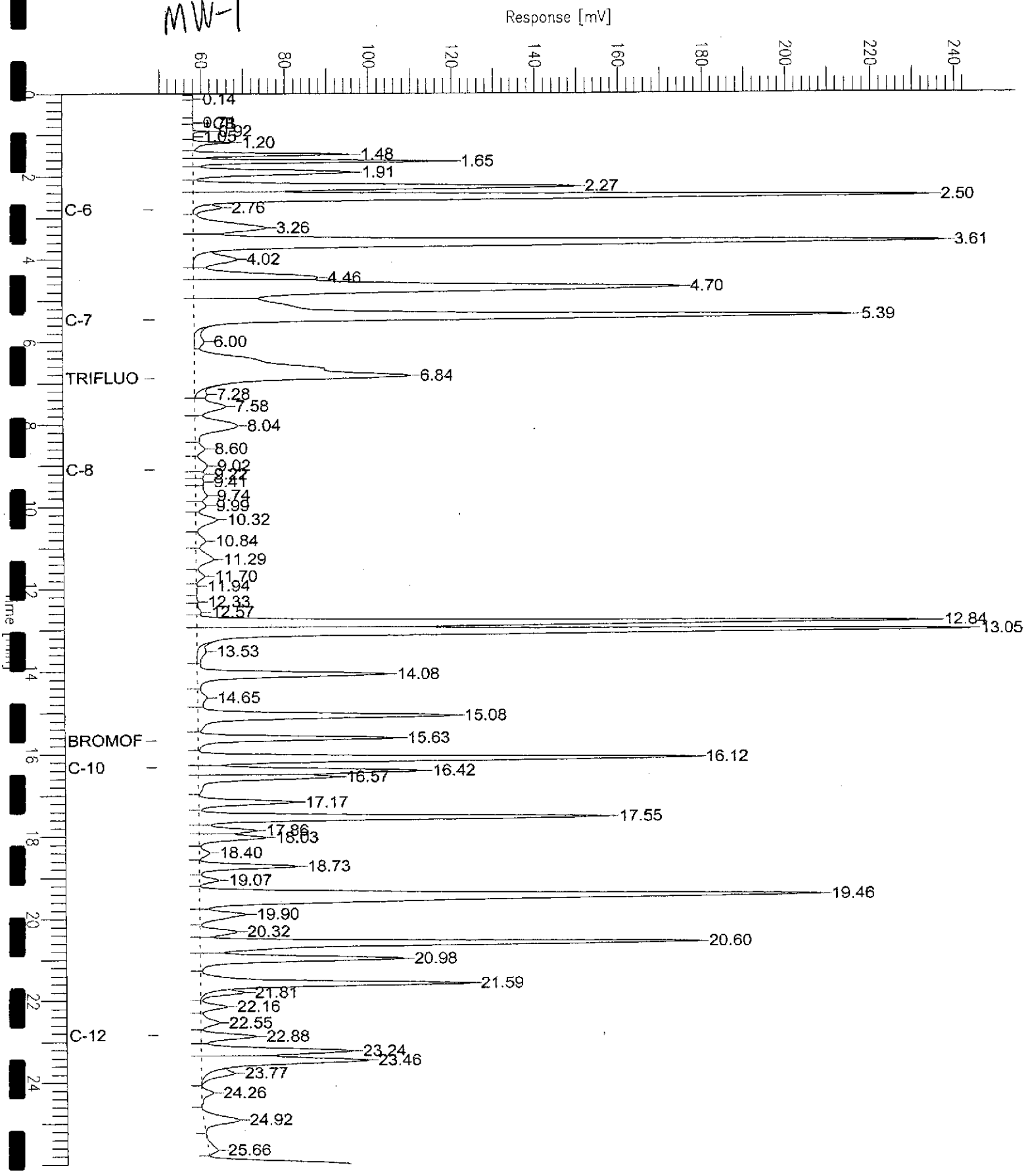
1.0

GC04 TVH 'J' Data File FID

Sample Name : mss,163785-001,79448
File Name : G:\GC04\DATA\056J007.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 49 mV

Sample #: c1 Page 1 of 1
Date : 2/25/03 02:07 PM
Time of Injection: 2/25/03 01:41 PM
Low Point : 48.69 mV High Point : 243.34 mV
Plot Scale: 194.6 mV

MW-1

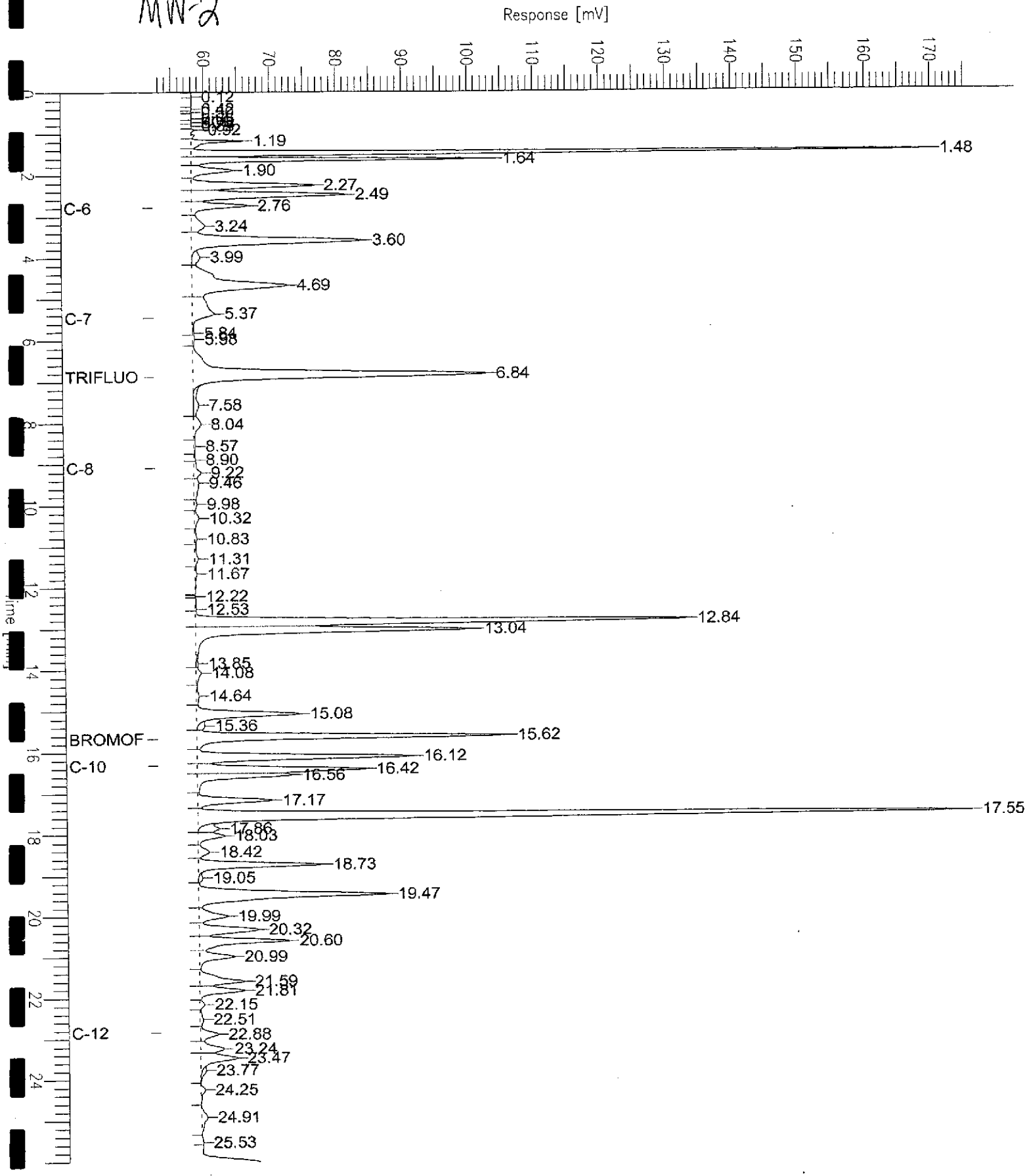


GC04 TVH 'J' Data File FID

Sample Name : 163785-002,79448
File Name : G:\GC04\DATA\056J006.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 52 mV

Sample #: c1 Page 1 of 1
Date : 2/25/03 01:31 PM
Time of Injection: 2/25/03 01:05 PM
Low Point : 52.20 mV High Point : 175.53 mV
Plot Scale: 123.3 mV

MW-2

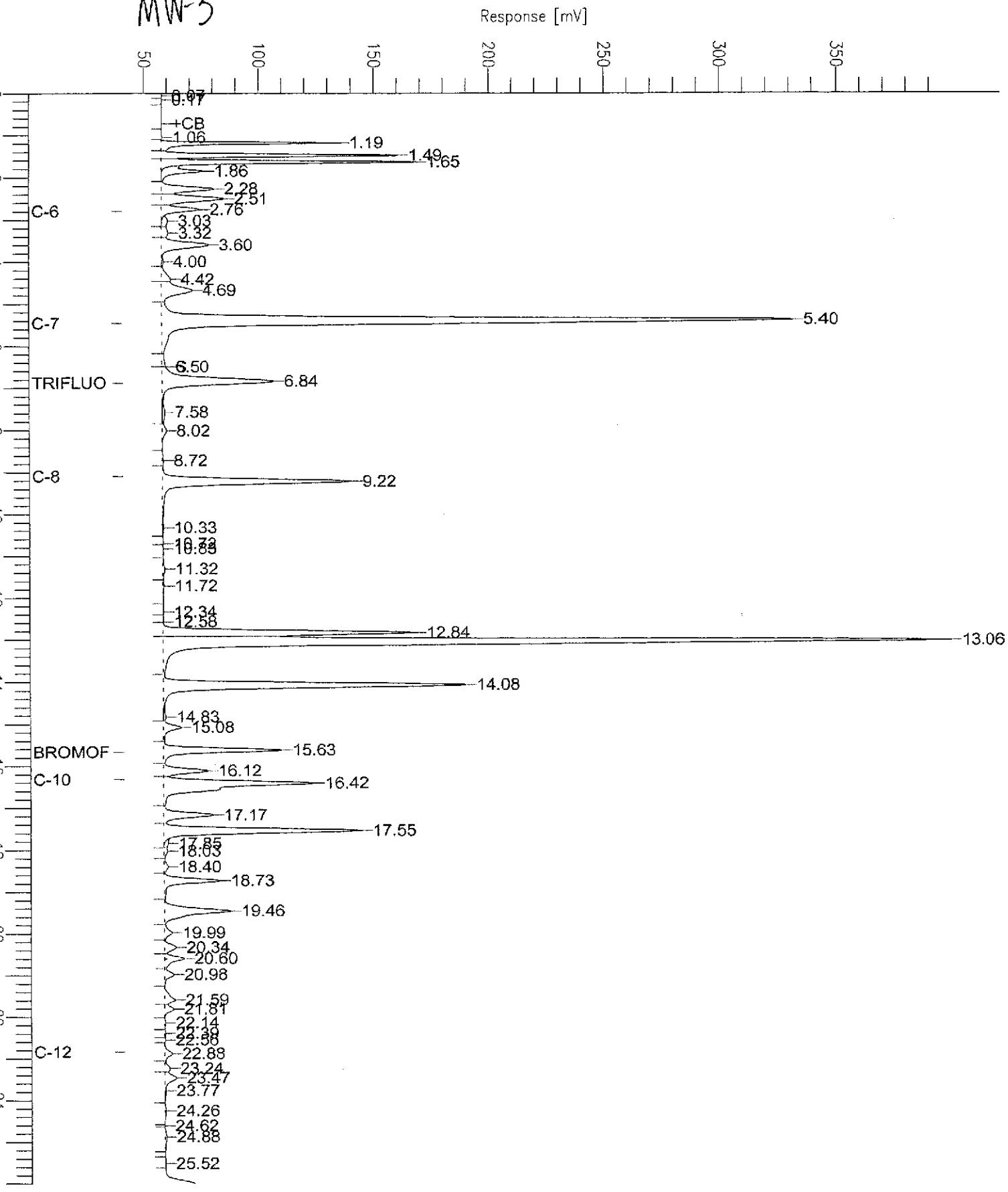


GC04 TVH 'J' Data File FID

Sample Name : 163785-003,79448
FileName : G:\GC04\DATA\056J009.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 41 mV

Sample #: c1 Page 1 of 1
Date : 2/26/03 09:24 AM
Time of Injection: 2/25/03 03:02 PM
Low Point : 40.80 mV High Point : 399.41 mV
Plot Scale: 358.6 mV

MW-3



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551		
Matrix:	Water	Sampled:	02/21/03
Units:	ug/L	Received:	02/21/03
Batch#:	79448	Analyzed:	02/25/03

Field ID: MW-4 Lab ID: 163785-004
Type: SAMPLE Diln Fac: 1.000

Analyte	Result	RL	Analysis
Gasoline C7-C12	3,200	50	8015B
Benzene	98	0.50	EPA 8021B
Toluene	66	0.50	EPA 8021B
Ethylbenzene	220	0.50	EPA 8021B
m,p-Xylenes	200	0.50	EPA 8021B
o-Xylene	160	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	148 *	68-145	8015B
Bromofluorobenzene (FID)	126	66-143	8015B
Trifluorotoluene (PID)	133	53-143	EPA 8021B
Bromofluorobenzene (PID)	121	52-142	EPA 8021B

Field ID: MW-5 Lab ID: 163785-005
Type: SAMPLE

Analyte	Result	RL	Diln Fac	Analysis
Gasoline C7-C12	12,000	100	2.000	8015B
Benzene	390	1.0	2.000	EPA 8021B
Toluene	71	1.0	2.000	EPA 8021B
Ethylbenzene	770	1.0	2.000	EPA 8021B
m,p-Xylenes	910	2.5	5.000	EPA 8021B
o-Xylene	190	1.0	2.000	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Analysis
Trifluorotoluene (FID)	144	68-145	2.000	8015B
Bromofluorobenzene (FID)	125	66-143	2.000	8015B
Trifluorotoluene (PID)	138	53-143	2.000	EPA 8021B
Bromofluorobenzene (PID)	116	52-142	2.000	EPA 8021B

Type: BLANK Diln Fac: 1.000
Lab ID: QC205715

Analyte	Result	RL	Analysis
Gasoline C7-C12	ND	50	8015B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	ND	0.50	EPA 8021B
m,p-Xylenes	ND	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	113	68-145	8015B
Bromofluorobenzene (FID)	113	66-143	8015B
Trifluorotoluene (PID)	106	53-143	EPA 8021B
Bromofluorobenzene (PID)	105	52-142	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
D= Not Detected
L= Reporting Limit

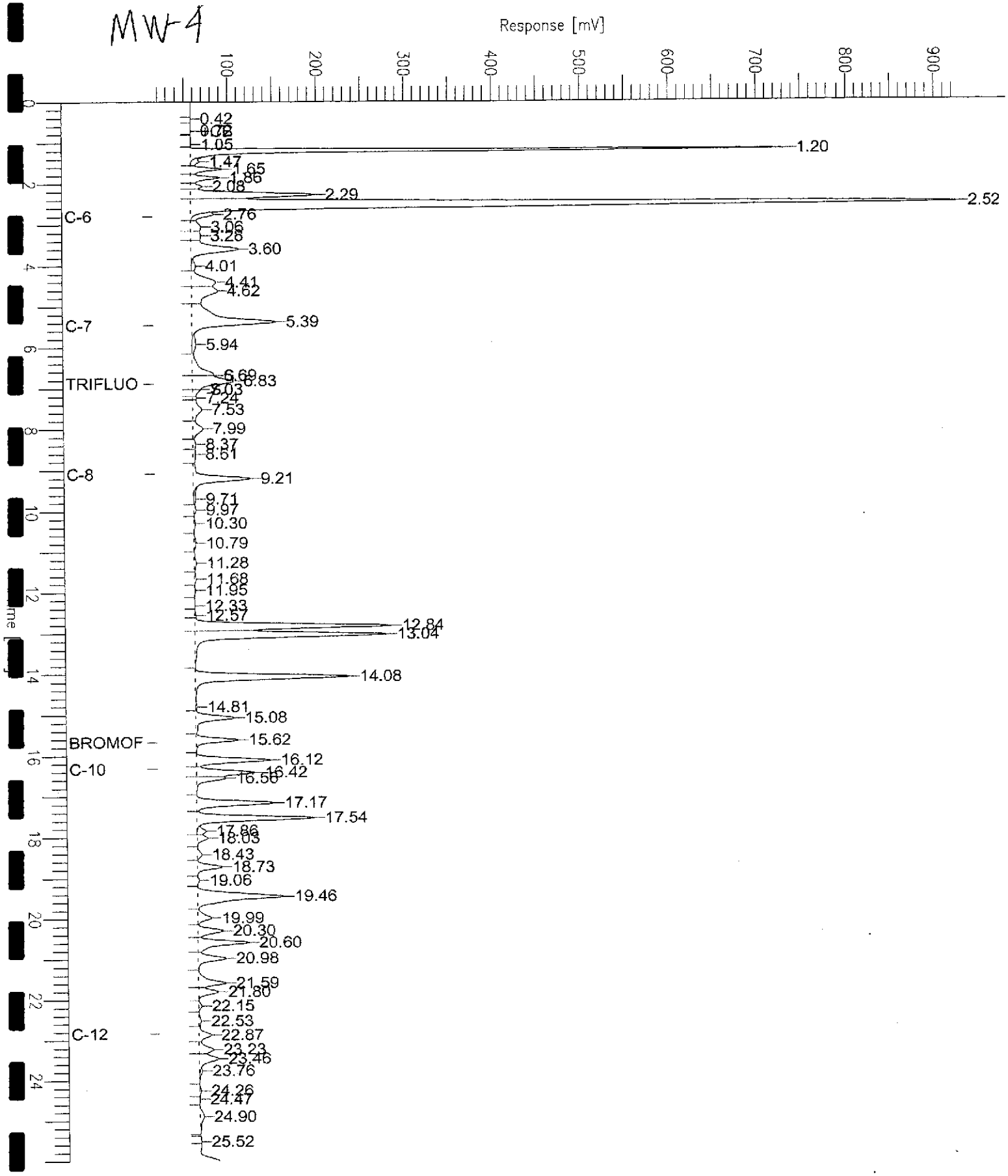
1.0

GC04 TVH 'J' Data File FID

Sample Name : 163785-004,79448
FileName : G:\GC04\DATA\056J005.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 15 mV

Sample #: c1 Page 1 of 1
Date : 2/26/03 09:23 AM
Time of Injection: 2/25/03 12:29 PM
Low Point : 14.63 mV High Point : 927.74 mV
Plot Scale: 913.1 mV

MW-4

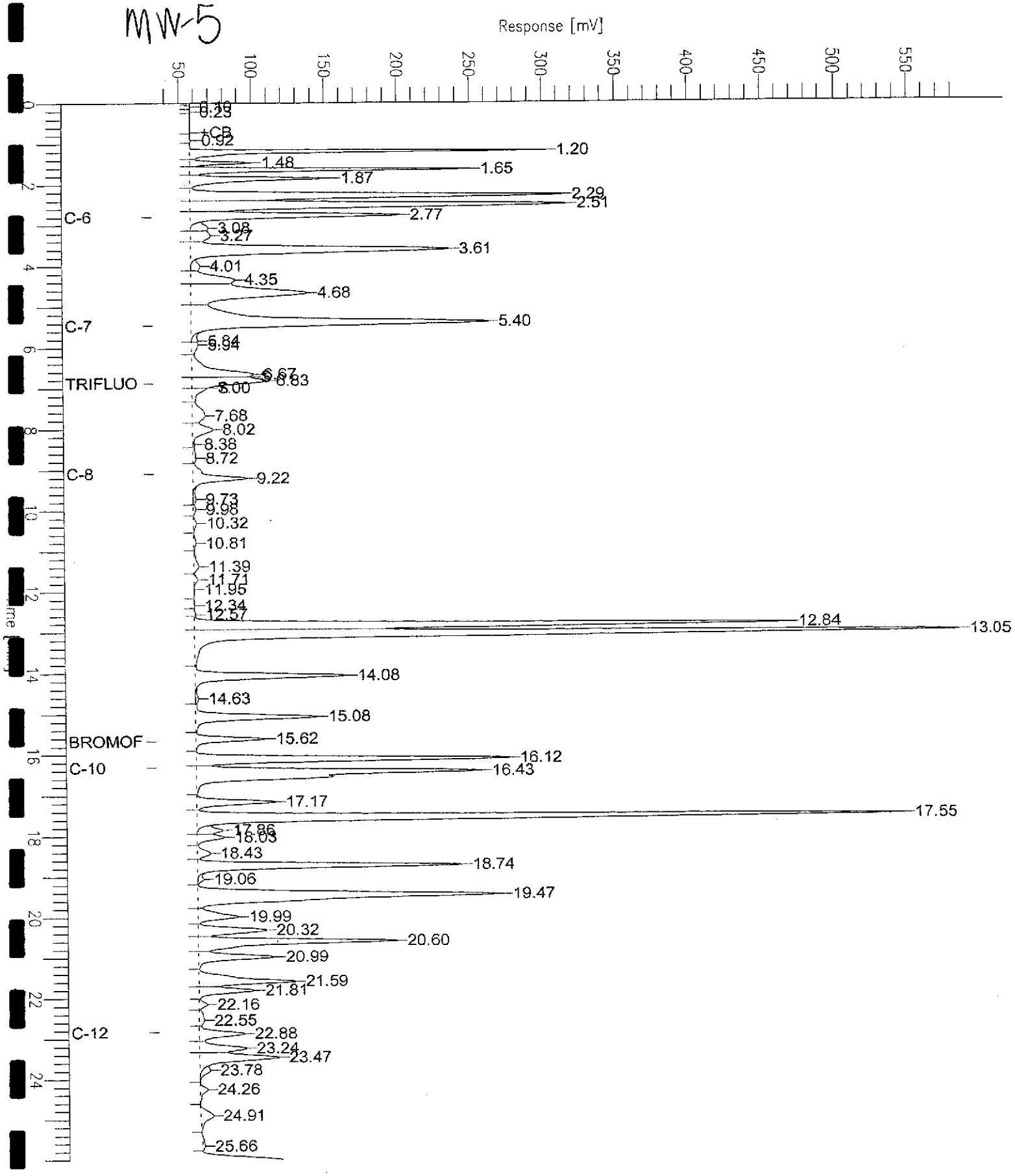


GC04 TVH 'J' Data File FID

Sample Name : 163785-005,79448
FileName : G:\GC04\DATA\056J010.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 32 mV

Sample #: c1
Date : 2/26/03 09:24 AM
Time of Injection: 2/25/03 03:38 PM
Low Point : 31.55 mV High Point : 584.02 mV
Plot Scale: 552.5 mV

MW-5



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC205717	Batch#:	79448
Matrix:	Water	Analyzed:	02/25/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,100	105	79-120
Benzene		NA		
Toluene		NA		
Ethylbenzene		NA		
m,p-Xylenes		NA		
o-Xylene		NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		140	68-145
Bromofluorobenzene (FID)		121	66-143
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

NA= Not Analyzed

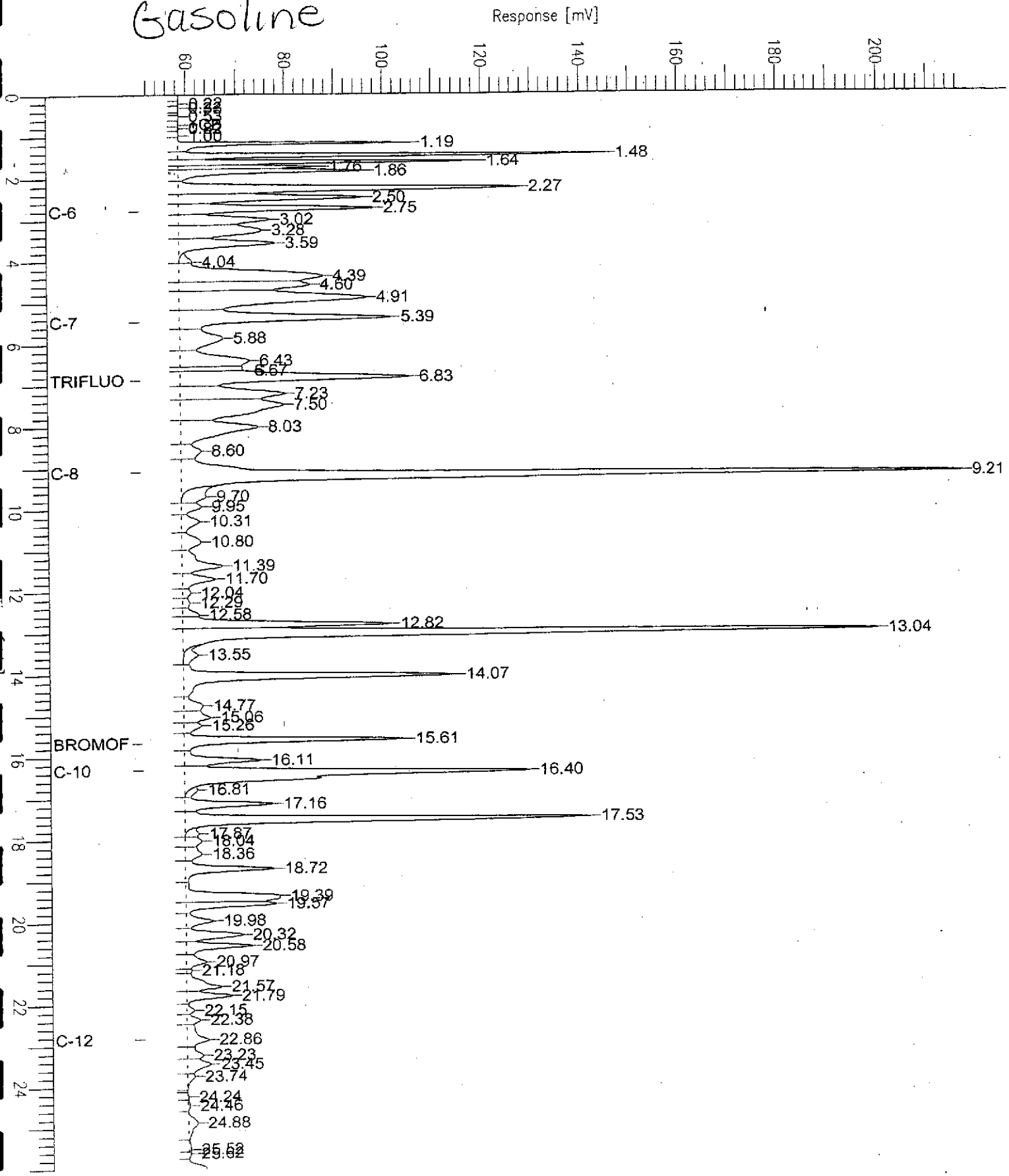
3.0

GC04 TVH 'J' Data File FID

Sample Name : ccv/lcs,qc205717,79448,03ws0291,5/5000
FileName : G:\GC04\DATA\056J001.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 51 mV

Sample #: Page 1 of 1
Date : 2/26/03 09:23 AM
Time of Injection: 2/25/03 08:44 AM
Low Point : 50.66 mV High Point : 216.80 mV
Plot Scale: 166.1 mV

Gasoline



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551		
Type:	BS	Diln Fac:	1.000
Lab ID:	QC205716	Batch#:	79448
Matrix:	Water	Analyzed:	02/25/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	Analysis
Gasoline C7-C12		NA			
Benzene	20.00	19.38	97	65-122	EPA 8021B
Toluene	20.00	19.90	99	67-121	EPA 8021B
Ethylbenzene	20.00	19.46	97	70-121	EPA 8021B
m,p-Xylenes	40.00	40.42	101	72-125	EPA 8021B
o-Xylene	20.00	19.81	99	73-122	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	118	68-145	8015B
Bromofluorobenzene (FID)	118	66-143	8015B
Trifluorotoluene (PID)	113	53-143	EPA 8021B
Bromofluorobenzene (PID)	114	52-142	EPA 8021B

NA= Not Analyzed

2.0

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551		
Type:	BSD	Diln Fac:	1.000
Lab ID:	QC205828	Batch#:	79448
Matrix:	Water	Analyzed:	02/25/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim	Analysis
Gasoline C7-C12		NA					
Benzene	30.00	28.13	94	65-122	3	20	EPA 8021B
Toluene	30.00	29.11	97	67-121	3	20	EPA 8021B
Ethylbenzene	30.00	28.91	96	70-121	1	20	EPA 8021B
m,p-Xylenes	60.00	60.85	101	72-125	0	20	EPA 8021B
o-Xylene	30.00	29.97	100	73-122	1	20	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	114	68-145	8015B
Bromofluorobenzene (FID)	120	66-143	8015B
Trifluorotoluene (PID)	102	53-143	EPA 8021B
Bromofluorobenzene (PID)	113	52-142	EPA 8021B

NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	8015B
Field ID:	MW-1	Batch#:	79448
MSS Lab ID:	163785-001	Sampled:	02/21/03
Matrix:	Water	Received:	02/21/03
Units:	ug/L	Analyzed:	02/26/03
Diln Fac:	1.000		

Type: MS Lab ID: QC205744

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,861	2,000	4,475	81	67-120
Benzene			NA		
Toluene			NA		
Ethylbenzene			NA		
m,p-Xylenes			NA		
o-Xylene			NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		175 *	68-145
Bromofluorobenzene (FID)		135	66-143
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

Type: MSD Lab ID: QC205745

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	4,430	78	67-120	1	20
Benzene		NA				
Toluene		NA				
Ethylbenzene		NA				
m,p-Xylenes		NA				
o-Xylene		NA				

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		174 *	68-145
Bromofluorobenzene (FID)		137	66-143
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

*= Value outside of QC limits; see narrative
NA= Not Analyzed
RPD= Relative Percent Difference

4.0

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	02/21/03
Units:	ug/L	Received:	02/21/03

Field ID:	MW-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	79485
Lab ID:	163785-001	Analyzed:	02/26/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	47	10
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	100	77-130
Toluene-d8	100	80-120
Bromofluorobenzene	96	80-120

Field ID:	MW-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	79485
Lab ID:	163785-002	Analyzed:	02/26/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	12	10
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	96	80-121
1,2-Dichloroethane-d4	100	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-120

Field ID:	MW-3	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	79485
Lab ID:	163785-003	Analyzed:	02/26/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	140	100
MTBE	1,300	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
Methyl tert-Amyl Ether (TAME)	320	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-121
1,2-Dichloroethane-d4	98	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	96	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	02/21/03
Units:	ug/L	Received:	02/21/03

Field ID:	MW-4	Diln Fac:	40.00
Type:	SAMPLE	Batch#:	79462
Lab ID:	163785-004	Analyzed:	02/25/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	1,600	400
MTBE	6,600	20
Isopropyl Ether (DIPE)	ND	20
Ethyl tert-Butyl Ether (ETBE)	22	20
Methyl tert-Amyl Ether (TAME)	ND	20

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-121
1,2-Dichloroethane-d4	101	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	106	80-120

Field ID:	MW-5	Diln Fac:	6.250
Type:	SAMPLE	Batch#:	79485
Lab ID:	163785-005	Analyzed:	02/26/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	63
MTBE	860	3.1
Isopropyl Ether (DIPE)	ND	3.1
Ethyl tert-Butyl Ether (ETBE)	ND	3.1
Methyl tert-Amyl Ether (TAME)	280	3.1

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-121
1,2-Dichloroethane-d4	97	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	95	80-120

Type:	BLANK	Batch#:	79462
Lab ID:	QC205756	Analyzed:	02/25/03
Diln Fac:	1.000		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
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	101	80-121
1,2-Dichloroethane-d4	100	77-130
Toluene-d8	100	80-120
Bromofluorobenzene	109	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	02/21/03
Units:	ug/L	Received:	02/21/03

Type:	BLANK	Batch#:	79485
Lab ID:	QC205853	Analyzed:	02/26/03
Diln Fac:	1.000		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
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	97	80-121
1,2-Dichloroethane-d4	97	77-130
Toluene-d8	99	80-120
Bromofluorobenzene	106	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	79462
Units:	ug/L	Analyzed:	02/25/03
Diln Fac:	1.000		

Type: BS Lab ID: QC205754

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	50.27	101	49-144

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-121
1,2-Dichloroethane-d4	102	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-120

Type: BSD Lab ID: QC205755

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	49.58	99	49-144	1	21

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-121
1,2-Dichloroethane-d4	100	77-130
Toluene-d8	97	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	163785	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2551	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	79485
Units:	ug/L	Analyzed:	02/26/03
Diln Fac:	1.000		

Type: BS Lab ID: QC205851

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	49.17	98	49-144

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-121
1,2-Dichloroethane-d4	99	77-130
Toluene-d8	98	80-120
Bromofluorobenzene	96	80-120

Type: BSD Lab ID: QC205852

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	47.69	95	49-144	3	21

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-121
1,2-Dichloroethane-d4	98	77-130
Toluene-d8	100	80-120
Bromofluorobenzene	96	80-120

RPD= Relative Percent Difference

8.0