RO-473

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OFF-SITE
SOIL & GROUNDWATER INVESTIGATION

AT

FORMER TEXACO STATION
15101 Freedom Avenue
San Leandro, California

November 5, 2003

Project 2552

Prepared for

Mr. Mohammed Pazdel
15101 Freedom Avenue
San Leandro, California

Prepared by

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

RO-473

ENVIRONMENTAL ENGINEERING, INC
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November 6, 2003

Ms. Eva Chu
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

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

Dear Ms. Chu:

As requested in your letter of August 29, 2003, enclosed for your review is SOMA's report entitled "Off-Site Soil & Groundwater Investigation" for the subject site.

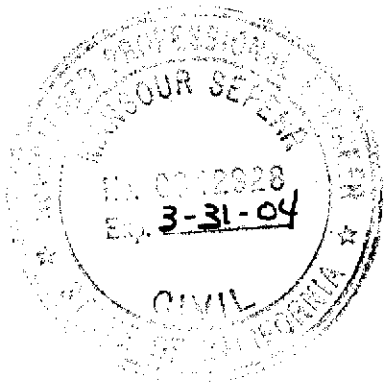
Thank you for your time in reviewing this report. If you have any questions or comments, please call me at (925) 244-6600.

Sincerely,

Mansour Sepehr, Ph.D., PE
Principal Hydrogeologist

Enclosure

cc: Mr. Mohammad Pazdel w/enclosure



CERTIFICATION

This report has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Mohammed Pazdel, the property owner of 15101 Freedom Avenue, San Leandro, California to comply the Alameda County Health Care Services' request, dated August 29, 2003.

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. Mohammed Pazdel, the property owner of 15101 Freedom Avenue, San Leandro, California. This report is being prepared based on workplan approval letters, dated August 20 and 29, 2003, from the Alameda County Health Care Services (ACHCS).

As shown in Figure 1, the property is located at 15101 Freedom Avenue, San Leandro, California (the "Site"). The Site is situated between 151st Street and Fairmont Avenue with Freedom Avenue bordering the Site on the northeast and residential properties on the southwest. Currently, there are three underground storage tanks (USTs) at the Site: one 20,000-gallon gasoline UST, one 8,000-gallon gasoline UST, and one 6,000-gallon diesel UST.

1.1 Background

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 the "Freedom ARCO Station". To comply with the UST upgrade regulations, in 1999, three 10,000-gallon single-walled USTs were removed and replaced by new double-walled fuel tanks. During the UST upgrade, petroleum hydrocarbon contaminants were detected in the subsurface soils beneath the old USTs.

Mr. Pazdel subsequently retained SOMA to conduct an on-site soil and groundwater investigation involving the installation of five groundwater monitoring wells, as illustrated in Figure 2. Soil and groundwater analytical results indicated that elevated petroleum hydrocarbon contamination existed on the eastern half of

the Site and that the contaminated groundwater plume had probably migrated to the south/southeast. With residential properties downgradient from the Site, SOMA recommended an off-site soil and groundwater investigation. After reviewing SOMA's report, the ACHCS requested a workplan that was approved in a letter dated August 29, 2003. This report presents the findings of SOMA's off-site soil and groundwater investigation.

1.2 Previous Activities

On May 20, 1999, Geo-Logic oversaw the removal of three 10,000-gallon USTs, approximately 250 feet of product piping, and six dispensers at the Site. Paradiso Mechanical, Inc. removed and over-excavated the old USTs. The on-site overseeing agency was the ACHCS.

After excavation and removal, the three USTs and product piping were transported to the ECI 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 (T1W, T2W, T3W, T1E, T2E, T3E, and an additional soil sample at T1W) were collected from the west and east sides of the tank excavation pit ranging in depth from 12 to 14 feet below ground surface (bgs). In addition, six soil samples (P1, P2, P4, P5, P6, and P7) were collected from beneath the dispensers ranging in depth from 2.5 to 3 feet bgs. One soil sample (P3) was collected from beneath the product lines at 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. Stockpile soil samples were also collected on May 21, 1999.

On June 2, 1999, additional soil samples were collected during over-excavation of the product piping and from the bottom of the tank excavation pit. An additional soil sample (P12) was collected from beneath the product piping at a depth of 5 feet bgs. Three additional soil samples were collected in the western portion of

the tank cavity and ranged in depth from 16.5 to 24.5 feet bgs, to help define the vertical extent of the hydrocarbon contamination.

The soil samples collected during the removal and over-excavation activities were submitted to Calcoast Analytical in Emeryville, California. Soil samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-g) using EPA Method 8015, benzene, toluene, ethylbenzene and xylene (BTEX) and Methyl tertiary Butyl Ether (MtBE) using EPA Method 8020. The presence of MtBE was confirmed using EPA Method 8260B. Total lead was analyzed using EPA Method 6010A. The concentration of TPH-g in the soil samples ranged from 0.76 mg/Kg (P3-2.5 ft bgs) to 4,000 mg/Kg (T1W-24.5 ft bgs). Benzene concentrations ranged from 28 mg/Kg (T1W-13.5 ft bgs) to non-detectable levels (P2 through P6, and P14) at depths ranging from 2.5 to 3 feet bgs.

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

In July 2001, CSS Environmental Services (CSS), of San Rafael, California, at the request of the ACHCS, conducted an additional site investigation to further investigate potential petroleum hydrocarbon contamination discovered during the removal and upgrade of USTs at the Site. During that investigation, CSS drilled five temporary well boreholes (SB-1 through SB-5) using the direct-push method. The soil borings were advanced to the maximum depth of 31 feet. It appeared that the groundwater beneath the Site is semi-confined so that after drilling, groundwater stabilized at depths of 17 to 20 feet bgs. The results of that investigation indicated that the petroleum-impacted soils were generally encountered below a 19-foot depth interval and were predominantly present within the capillary fringe, just above the saturated zone. The maximum concentrations of TPH-g and BTEX in the soil samples collected between 19 and 25.5 feet bgs were 470, 2.6, 16, 12, and 73 mg/Kg, respectively. MtBE was not detected in any

of the soil samples at the analytical method reporting limit of 0.005 mg/Kg. 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 SB-2.

In April 2002, SOMA performed an on-site soil and groundwater investigation involving the installation of five monitoring wells to a total depth of 30 feet. Soil samples collected from the capillary fringe contained TPH-g ranging from 23,000 µg/Kg in borehole MW-1 to 1,500,000 µg/Kg in borehole MW-5. Benzene ranged from non-detectable levels (less than 5.3 ug/Kg) in borehole MW-2 to 750 µg/Kg in borehole MW-3. Elevated levels of toluene, ethylbenzene and xylenes and strong petroleum hydrocarbon odors were reported in soil samples collected from borehole MW-5. Toluene was reported to range from 30 µg/Kg (borehole MW-4) to 5,200 µg/Kg (borehole MW-5). Ethylbenzene was reported to range from 220 µg/Kg (borehole MW-1) to 20,000 µg/Kg (borehole MW-5). Xylenes were reported to range from 167 µg/Kg (borehole MW-2) to 67,000 µg/Kg (borehole MW-5). MtBE was not detected in the soil samples. However, laboratory reporting limits for this constituent were as high as 2,000 µg/Kg.

Since May 2002, SOMA has performed quarterly groundwater monitoring at the Site. Historically, elevated levels of petroleum hydrocarbons have been detected in the groundwater with TPH-g as high as 52,000 µg/L (MW-3), benzene at 6,100 µg/L (MW-3) and MtBE at 7,800 µg/L (MW-4). With elevated levels of petroleum hydrocarbons in the most downgradient well MW-5, it appeared that the petroleum hydrocarbon contamination in the groundwater migrated beyond the Site's southern boundary.

Figure 2 illustrates the locations of the groundwater monitoring wells.

1.3 Regional Geology

The U. S. Geological Survey (USGS) mapped the Site on Late Pleistocene age (10,000 to 70,000 years old) alluvium consisting of irregularly interbedded clay, silt, sand and gravel. Due to the age of this alluvium, these stream-deposited sediments are typically more consolidated than alluvial deposits of Holocene age.

In developed urban areas such as the Bay Area, earthwork construction often involves the emplacement of artificial fill derived from nearby cuts or quarries. Artificial fill is emplaced over native earth materials to provide level building pads and base rock for roadways.

1.4 Site Hydrogeology

Based on the on-site monitoring well borehole logs, underlying sediments generally consists of stiff to hard silty clay and clayey silt with intervening layers of medium dense to very dense sand/gravel sediments.

On the west side of the Site, silt/clay sediments predominate with an occasional discontinuous layer of sand/gravel sediments. In these boreholes and borehole MW-4, below approximately 20 to 25 feet bgs, slight to moderate petroleum hydrocarbon odors were encountered and decreased substantially with depth in the underlying silty clay aquitard.

On the east side of the Site, a two- to nine-foot thick sand/gravel layer was encountered below approximate depths of 13 to 16 feet bgs. Below approximately 20 feet bgs, strong petroleum hydrocarbon vapors were encountered in boreholes MW-3 and MW-5 that also decrease substantially in the subjacent clay aquitard.

Groundwater was first encountered at approximately 25 to 29 feet bgs. Groundwater levels later stabilized to approximately 21 to 23 feet bgs, indicating the presence of confined/semi-confined water-bearing zones.

1.5 Nature and Extent of Groundwater Contamination

Based on SOMA's prior investigation, the most contaminated on-site plumes exist along the eastern and southeastern boundaries of the Site. Quarterly monitoring events have documented that the on-site groundwater flows to the south and occasionally to the east.

With elevated concentrations of the Site's related contaminants at such close proximity to the eastern and southern property lines, it was concluded that the groundwater plume had probably migrated off-site to the south/southeast. The results of the initial investigation did not delineate the downgradient extent of the groundwater chemical plumes. Due to the high solubility and mobility of MtBE, it is expected that the MtBE plume has already migrated beyond the Site's southern boundary.

2.0 SCOPE OF WORK

Based on SOMA's approved workplan dated July 22, 2003, the scope of work involved performing an off-site soil and groundwater investigation to evaluate the lateral extent of the soil and groundwater contamination. The ACHCS approved the workplan contingent upon adding a borehole between TWB-1 and TWB-4, advancing the boreholes beyond 30 feet bgs to at least 40 feet bgs, continuously collecting soil samples from the capillary fringe to the bottom of the borehole, and submitting selected soil sample from this interval for laboratory analysis. To implement the approved workplan, SOMA complied with the ACHCS directive and incorporated these additional tasks into the following scope of work:

- Permit acquisition and preparation of a site health and safety plan
- Sensitive Receptor Survey
- Drilling temporary well boreholes and collecting soil and grab groundwater samples
- Laboratory analysis of the soil and groundwater samples
- Grouting the temporary well boreholes.

The following is a brief description of each of the above tasks.

3.0 Field Investigation

3.1 Permit Acquisition and Preparation of a Site Health and Safety Plan

To evaluate the lateral extent of the off-site soil and groundwater contamination, SOMA conducted this soil and groundwater investigation by performing a sensitive receptor survey, borehole drilling, soil sample collection, temporary well installation, and collecting and analyzing grab groundwater samples. Before drilling, SOMA personnel obtained drilling and encroachment permits from the Alameda County Public Works Agency (ACPWA) attached as Appendix A.

Prior to commencing field activity, SOMA prepared a site-specific health and safety plan (HASP). The HASP was designed to address safety provisions during field activities. The safety plan provided procedures to protect the field crew from physical and chemical hazards resulting from drilling and sampling. The HASP established personnel responsibilities, general safe work practices, field procedures, personal protective equipment standards, decontamination procedures, and emergency action plans.

3.2 Sensitive Receptor Survey

SOMA personnel contacted local utility districts to complete the sensitive receptor survey. To locate water supply wells for this survey, SOMA personnel contacted the Department of Water Resources (DWR). Based on the 2,000-foot radius search conducted by DWR, SOMA plotted water supply wells in the Site's vicinity. SOMA personnel also accessed published government maps of the Site's vicinity to locate creeks, lakes and other water bodies within a 0.5 mile radius of the Site. The Sensitive Receptor Survey results are illustrated in Figure 3a and 3b.

Gravel or sand bedding for underground street utilities can transmit groundwater contaminants a considerable distance from their source areas and impact sensitive receptors. SOMA personnel contacted the City of San Leandro, Alameda County Public Works Agency, East Bay Municipal Utility District and the Oro Loma Sanitary District to locate water and sewer mains near the Site. Subsurface utility maps are attached as Appendix B.

3.3 Drilling and Collecting Soil and Groundwater Samples

On September 11, 16, 17 and October 1, 2003, six temporary well boreholes, TWB-1 through TWB-6 were advanced at the locations shown in Figure 4. SOMA initially subcontracted Precision Sampling, Inc. (PSI) to complete the field exploration, however, PSI drilled the first borehole, TWB-4, to only 17.5 feet bgs where borehole was terminated at refusal. SOMA then subcontracted Woodward Drilling, Inc. (WDI) to complete this and the other five boreholes to the completion depth required by the ACHCS.

Using a PowerProbe sampling rig, WDI advanced the temporary well boreholes to a depth of at least 40 feet bgs. Using direct-push technology (DPT), the drilling crew drove a hollow steel sampler lined with plastic tubing to the designated depth and collected continuous soil cores in 4-foot long sections. With 4-foot long polyethylene tubing to contain the continuous soil cores, SOMA's field geologist

observed the full length of the core. The field geologist logged the soil lithology, looked for any evidence of petrochemical contamination (i.e., odor or peculiar colors), and field-screened the soil cores with a photo-ionization detector (PID). The geologic logs are presented in Appendix C.

3.3.1 Soil Sampling

SOMA's field geologist collected soil samples from each temporary well borehole to represent water-bearing zones below the capillary fringe for chemical analysis. These samples were submitted to characterize the water-bearing zones and select screen intervals for future off-site monitoring well installations.

Field personnel collected soil samples by cutting a section of the sediment-filled polyethylene tubing with a clean hacksaw, covering both ends of the soil tube with Teflon tape, and capping the taped ends of the core liner. A permanent marking pen was used to label each tube with the sample ID, the date, the time, and the sampler's initials. Once sealed and labeled, the soil samples were placed on ice in a cooler pending laboratory analysis.

3.3.2 Groundwater Sampling

Due to the high permeability of the water-bearing sediments underlying most of the off-site investigation areas, water samples were collected on the drilling dates. When caving occurred, the drilling crew emplaced a 1-inch diameter PVC casing fitted with 0.01" factory slots to collect groundwater samples. To prevent surficial contamination, rain, or surface water, from entering the boreholes after collecting the groundwater samples, the drilling crew emplaced a six-inch thick bentonite seal near the top of the borehole. Over the bentonite-sealed boreholes in the asphalt-covered areas, the field crew placed a 2-inch thick concrete patch for additional protection until the boreholes were grouted on October 27, 2003.

SOMA's field geologist collected the grab groundwater samples using disposable ½-inch and 1½ -inch diameter poly bailers or a Watera™ sampler fitted with narrow gauge plastic tubing. When the first two collection devices were not feasible, a peristaltic pump was used. The Watera™ device consists of a narrow-gauge check-valve that fits into a piece of plastic tubing to collect groundwater samples with minimal disturbance. To avoid cross-contamination between each temporary well, field personnel used a new disposable bailer or fitted the decontaminated Watera™ sampler or peristaltic pump with a new piece of tubing.

Samples were immediately transferred into 40-mL VOA vials, pre-preserved with hydrochloric acid, and amber liter bottles where sufficient groundwater was encountered. The 40-mL vials were properly sealed to prevent the inclusion of any air bubbles and eliminate headspace in the vial. The vials and other containers were placed in an ice chest and delivered with a chain of custody form (COC) to the laboratory for chemical analyses.

3.4 Laboratory Analysis

Soil and groundwater samples collected from the boreholes were analyzed for TPH-g using EPA Method 8015M, BTEX using EPA Method 8021, and gas oxygenates using EPA 8260B. Appendices D and E include the laboratory analytical reports for the soil and groundwater analytical results.

4.0 RESULTS

The following is a brief description of the results from our investigation conducted in accordance with the ACHCS-approved workplan for the Site.

4.1 Sensitive Receptor Survey

SOMA personnel obtained well location information from the DWR, and contacted utility providers to complete these surveys.

4.1.1 Water Well Survey

To obtain information for the water well portion of the Sensitive Receptor Survey, SOMA personnel contacted the DWR. Based on the 2,000-foot radius search conducted by DWR, there are fourteen water supply wells within 2,000 feet of the subject property. Due to the up or cross-gradient location and distance from the source of release, wells #3 through #14 are not considered to be potential receptors. As shown in Figure 3a, one well (#1 at 1575 153rd Street) is located approximately 850 feet south of the Site. The other well is located somewhere along Oriole Street. The location of this well is ambiguous because the driller of well #2 apparently did not note the street address for this well.

4.1.2 Water Bodies

Based on USGS topographic maps, there is no water body within a 0.5-mile radius of the Site. As shown in Figure 3b, the nearest water body, Estudillo Canal, is located about 0.6 miles southwest of the Site. The next closest water body is San Leandro Creek, located approximately 1.5 miles south of the Site. These water bodies are located considerably more than 2,000 feet from the Site, and are not considered probable sensitive receptors.

4.1.3 Adjacent Underground Utilities

To determine the preferred flow path and to further evaluate the potential exposure of each sensitive receptor, SOMA personnel contacted local utility providers to determine the location and alignment of adjacent water and sewer lines. As shown in Appendix B, the Oro Loma Sanitary District (OLSD) provided a utility map that shows a sewer line located approximately 40 feet southeast of the Site along 153rd Street that slopes to the southwest. The OLSD map indicates that the depth of this line is 4.8 feet bgs. The map also shows a sewer main located approximately 80 feet east of the Site, along Fairmont Avenue, that slopes to the south/southwest. The map provided by the OLSD indicates that the depth to the top of the sewer main is 10.2 feet bgs. Given the minimum groundwater

depths as shallow as approximately 19 feet bgs, this utility is probably not submerged. Based on the same data, the sewer line along 153rd Avenue does not appear to be submerged and is not considered a preferential pathway for the contaminated groundwater.

4.2 Hydrogeology and Nature of Off-Site Contamination

The lithologic logs of temporary boreholes along with the existing logs of the groundwater monitoring wells were used to construct geologic cross-sections A-A' and B-B'. Figure 4 shows the location of the geologic cross-sections while Figures 5 and 6 show the geologic cross-sections A-A' and B-B'. As shown in the borehole logs, attached as Appendix C, and the geologic cross-sections, there are approximately 2.5 (TWB-4) to 9.5 feet (TWB-6) of dark gray silt/clay sediments underlying surficial fill materials. Beneath the silt/clay sediments, in boreholes TWB-1, TWB-2, TWB-3, TWB-4, were approximately 6.5 to 22 feet of unsaturated sand/clay and silt/clay with occasional layers of sandy silt.

As shown in the geologic cross-sections there are two distinct water-bearing zones beneath the on- and off-site areas. The shallowest water-bearing zone generally occurs at 21 to 30 feet bgs. As shown in cross-section A-A' and B-B', the first water-bearing zone is underlain by a 2- to 10-foot thick silty clay aquitard.

The shallowest first water-bearing zone was encountered in borehole TWB-1 at approximately 11.5 feet bgs. No petroleum hydrocarbon odor was noted in the upper portion of this shallow water-bearing zone. Beneath a very moist sandy clay lense, at 17.5 to 19.5 feet, this water-bearing zone is highly contaminated with abundant pockets of gasoline free product. Underlying this highly contaminated zone, at 28 feet bgs, is a two-foot thick aquitard of very stiff to hard and damp silty clay. Beneath this aquitard, at approximately 30 to 32 feet bgs is a moderately contaminated second water-bearing zone of sand interbedded with clayey sand. A slight to moderate petroleum hydrocarbon odor was noted in this

zone. Underlying this second water-bearing zone is an aquitard of silty clay with no petroleum hydrocarbon odor.

In borehole TWB-2, the first water-bearing zone occurs between approximately 27.5 and 30 feet bgs. This water-bearing zone consisted of gravelly sand with no petroleum hydrocarbon odor. Underlying the first water-bearing zone was a very stiff and damp one-foot thick silty clay aquitard. Beneath this aquitard, at approximately 31 to 34 feet bgs was the second water-bearing zone consisting of gravelly sand and sand/clay sediments with a stringer of gravelly sand. No petroleum hydrocarbon odors were noted in the second water-bearing zone. Below the second water-bearing zone, this subsurface exploration encountered an aquitard of very stiff to hard and damp silty clay with no petroleum hydrocarbon odor.

Borehole TWB-3 was drilled to approximately 30 feet bgs before the drill rig broke down. In this borehole, the first water-bearing zone of wet sand stringers was encountered between approximately 20 and 21 feet bgs. No petroleum hydrocarbon contamination was noted in borehole TWB-3.

As discussed above, PSI advanced borehole TWB-4 to refusal at approximately 17.5 feet bgs where no groundwater was encountered. In borehole TWB-4A, WDI advanced an adjacent borehole that was continuously sampled from 17.5 to 40 feet bgs. At approximately 30 feet bgs, the first water-bearing zone was encountered. This approximately 10-foot thick zone consists of approximately two feet of sand/clay sediments overlying four feet of clean sand, which overlies about 4 feet of silt/sand sediments. Beneath this first water-bearing zone was an aquitard of very stiff to hard and damp silty clay. No petroleum hydrocarbon contamination was noted throughout boreholes TWB-4 and 4A.

In borehole TWB-5, the first water-bearing zone was encountered at approximately 16 feet bgs. This approximately 8-foot thick zone consists of about

seven feet of very moist sand/clay sediments with wet sand stringers overlying 1-foot of gravelly sand. Beneath this zone was a 2.5-foot thick aquitard of very stiff to hard and damp sandy silt with some clay overlying silty clay. Beneath this aquitard, at approximately 32 to 39 feet bgs was a second water-bearing zone of silt/sand sediments. No petroleum hydrocarbon odor was noted in this zone. Beneath the second water-bearing zone was an aquitard of very stiff and damp silty clay. No petroleum hydrocarbon contamination was noted throughout borehole TWB-5.

In borehole TWB-6, the first water-bearing zone was encountered at approximately 20 to 25.5 feet bgs. This first zone consists of very moist sandy clay with a stringer of wet silty sand. Beneath this first water-bearing zone was a 2.5-foot thick aquitard of very stiff to hard and damp silty clay. Underlying this aquitard, at approximately 28 to 42.5 feet bgs, was a second water-bearing zone of silty sand and silty clay with stringers of wet sand overlying seven feet of clean sand. Underlying the second water-bearing zone was an aquitard of very stiff to hard and damp silty clay. No petroleum hydrocarbon contamination was noted throughout borehole TWB-6.

Table 1 summarizes the observations during the drilling of the temporary boreholes.

4.3 Analytical Results

4.3.1 Soil

As shown in Table 2, soil analytical results indicate that the lab detected TPH-g at a maximum level of 4,000,000 ug/Kg in borehole TWB-1. In borehole TWB-1, the lab detected toluene at 12,000 µg/Kg, ethylbenzene at 56,000 to 84,000 µg/Kg, and total xylenes at 182,000 to 365,000 µg/Kg. In TWB-1, benzene, MtBE, and 1,2 DCA were not detected above elevated laboratory reporting limits of 500, 4.8 and 4.8 µg/Kg, respectively. TWB-1 is located closest to the most contaminated

portion of the Site, which is approximately 125 feet south of the southern property line.

In borehole TWB-2, the lab detected TPH-g at 29,000 µg/Kg, ethylbenzene at 53 µg/Kg, and total xylenes at 288 µg/Kg. No gas oxygenates were detected in this borehole and no petroleum hydrocarbon compounds or gas oxygenates were detected in boreholes TWB-3, TWB-4, TWB-5 and TWB-6.

4.3.2 Groundwater Analytical Results

As shown in Table 3 and Figures 6 through 8, groundwater analytical results indicate that petroleum hydrocarbons were detected in three of the temporary wells with the highest TPH-g and BTEX levels encountered in temporary well TWB-1. In this temporary well, the lab detected TPH-g at 410,000 ug/L, benzene at 2,200 ug/L, toluene at 1,300 µg/L, ethylbenzene at 1,300 µg/L, and total xylenes at 25,700 µg/L. No MtBE or other gas oxygenates were detected in this borehole above laboratory reporting limits.

In temporary well TWB-2, the lab detected TPH-g at 1,700 µg/L, ethylbenzene at 31 µg/L, and total xylenes at 51 µg/L. Gas oxygenates MtBE and 1,2 DCE were detected in this borehole at 34 and 4.7 µg/L, respectively.

The lab detected only TPH-g in temporary well TWB-3 at 150 µg/L and traces of gas oxygenates in TWB-4A. No BTEX was detected in temporary wells TWB-3, TWB-4A, TWB-5 and TWB-6.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The results of SOMA's current and prior soil and groundwater investigations confirm the existence of an off-site petroleum hydrocarbon plume. Based on the results of this investigation, groundwater contaminants have migrated off-site at

least 300 feet to the southeast with free product extending at least 100 feet south of the Site.

The results of this investigation indicate that nearby utilities are considerably shallower than the highest historical on-site groundwater levels and do not appear to be submerged. The non-submerged utilities do not appear to be preferential flow paths for site-related contaminants migrating off-site.

The results of this investigation document that there are two downgradient water supply wells in close proximity of the Site. SOMA recommends testing the water supply wells for constituents of concern to evaluate if these wells have been impacted by the site-related contaminants.

Due to the presence of at least two distinct water-bearing zones in the on- and off-site areas, SOMA recommends installing off-site groundwater monitoring wells to evaluate and monitor the extent of the groundwater plumes. The results will help verify the groundwater flow direction and determine the stability of the chemical plumes. These off-site wells will be screened in the proper water-bearing zones. When the plume stability and other relevant parameters have been determined, SOMA will evaluate all the available data to determine the most effective and economical mode of remediation.

6.0 REFERENCES

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SOMA Environmental Engineering, Inc., October 2, 2002. "Workplan to Conduct Soil and Groundwater Investigation at Former Texaco Service Station, 15101 Freedom Avenue, San Leandro, California".

SOMA Environmental Engineering, Inc., June 5, 2002. "Soil and Groundwater Investigation at Former Texaco Service Station, 15101 Freedom Avenue, San Leandro, California".

SOMA Environmental Engineering, Inc., March 23, 2003. "Workplan to Conduct Off-Site Soil and Groundwater Investigation at Former Texaco Service Station, 15101 Freedom Avenue, San Leandro, California".

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Tables

Table 1
Field Observations During Drilling
15101 Freedom Avenue
San Leandro, California

Borehole No.	Distance from the Site (ft)	Water-Bearing Zone (Depth in feet bgs)	Observation
TWB-1	125	1st WBZ (11.5-28)	Free product w/ strong PHC* odor in lower portion
		2nd WBZ (30-32)	Moderate PHC odor
TWB-2	265	1st WBZ (27.5-30)	No PHC odor
		2nd WBZ (31-34)	No PHC odors
TWB-3	290	1st WBZ (20-21)	No PHC odors
		2nd WBZ	Terminated at 30 feet bgs – WBZ Not observed
TWB-4/4A	750	1st WBZ (30-40)	No PHC odors
		2nd WBZ	2nd WBZ not observed
TWB-5	460	1st WBZ (16-24)	No PHC odors
		2nd WBZ (32-39)	No PHC odors
TWB-6	530	1st WBZ (20-20.5)	No PHC odors
		2nd WBZ (28-42.5)	No PHC odors

NOTE: All distances and depths are approximate.
* PHC: Petroleum Hydrocarbon

Table 2

Soil Analytical Data

Petroleum Hydrocarbon and Gas Oxygenate Analyses

September 16,17, and October 1, 2003

15101 Freedom Avenue, San Leandro, California

Sample Id.	TPH-g (ug/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl-Benzene (µg/kg)	Total Xylenes (µg/kg)	MtBE* (µg/kg)	1,2 DCE (µg/kg)
TWB-1 @ 16-16.5	<1,000	<5.2	<5.2	<5.2	<5.2	<4.8	<4.8
TWB-1 @ 18-18.5	1,800[Y]	<5.2	<5.2	<5.2	<5.2	<4.8	<4.8
TWB-1 @ 21.5-22	3,300,000	<500	<500	56,000	182,000	<1,800	<1,800
TWB-1 @ 24-24.5	4,000,000	<1,000	12,000	84,000	365,000	<1,300	<1,300
TWB-2 @ 22-20.5	29,000[Y]	<25	<25	53	288[C]	<4.8	<4.8
TWB-2 @ 29.5-30	<990	<5.0	<5.0	<5.0	<5.0	<4.5	<4.5
TWB-2 @ 31-31.5	1,600	<5.3	<5.3	9.7[C]	7.5	<4.6	<4.6
TWB-2 @ 33-33.25	<1,100	<5.4	<5.4	<5.4	<5.4	<4.6	<4.6
TWB-3 @ 20-20.5	<1,000	<5.2	<5.2	<5.2	<5.2	<4.9	<4.9
TWB-4A @ 33-33.5	<1,100	<5.3	<5.3	<5.3	<5.3	<5.0	<5.0
TWB-5 @ 32-32.5	<1,100	<5.3	<5.3	<5.3	<5.3	<4.4	<4.4
TWB-6 @ 20-20.5	<1,000	<5.2	<5.2	<5.2	<5.2	<4.5	<4.5
TWB-6 @ 28-30	<960	<4.8	<4.8	<4.8	<4.8	<4.7	<4.7
TWB-6 @ 38-39	<1,100	<5.4	<5.4	<5.4	<5.4	<4.8	<4.8

Notes:

Petroleum Hydrocarbons analyzed by EPA 8015 and 8021

Gas Oxygenates analyzed by EPA 3260B - all other gas oxygenates not detected above laboratory detection limits

< : not detected above laboratory reporting limits.

[H]: Heavier hydrocarbons contributed to the quantitation

[Y]: Sample exhibits chromatographic pattern that does not resembe standard.

[C]: Presence confirmed but RPD between columns exceeds 40%.

Table 3

Groundwater Analytical Data
Petroleum Hydrocarbon and Gas Oxygenate Analyses
September 16,17, and October 1, 2003
15101 Freedom Avenue, San Leandro, California

Sample Id.	TPH-g (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl-benzene (ug/l)	Xylenes (ug/l)	MtBE (ug/l)	1,2 DCA (ug/l)
TWB-1	410,000	2,200[C]	1,300[C]	9,400	25,700	<20	<20
TWB-2	1,700	<0.5	<0.5	31	51	34	5
TWB-3	150[HY]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TWB-4A	<50	<0.5	<0.5	<0.5	<0.5	2	<0.5
TWB-5	<50	<0.5	<0.5	<0.5	<0.5	<0.5	2
TWB-6	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Notes:
Petroleum Hydrocarbons analyzed by EPA 8015 and 8021
Gas Oxygenates analyzed by EPA 3260B - all other gas oxygenates not detected above laboratory detection limits
< : not detected above laboratory reporting limits.
[H]: Heavier hydrocarbons contributed to the quantitation
[Y]: Sample exhibits chromatographic pattern that does not resembe standard.
[C]: Presence confirmed but RPD between columns exceeds 40%.

Figures

Figure 1: Site vicinity map.

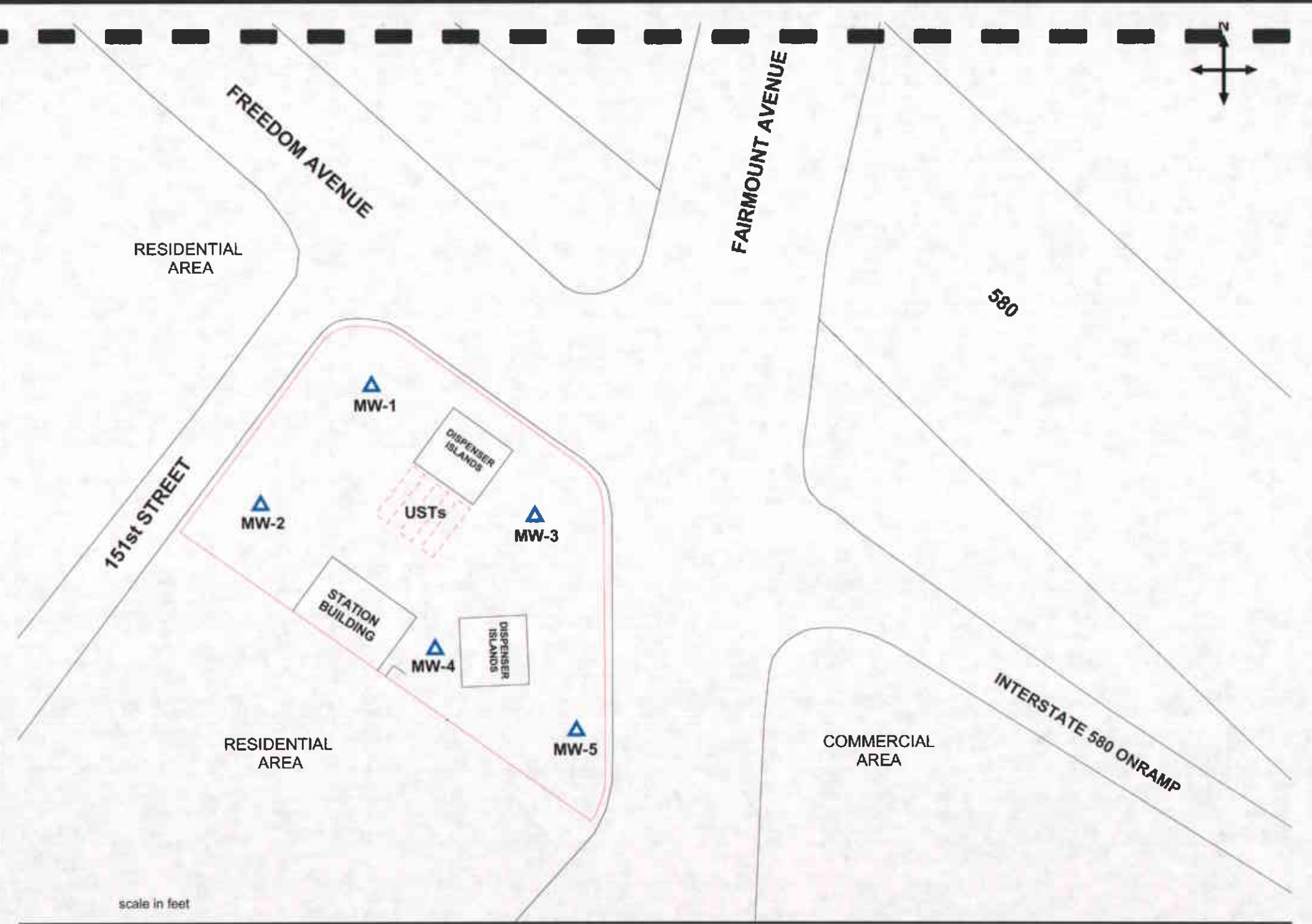
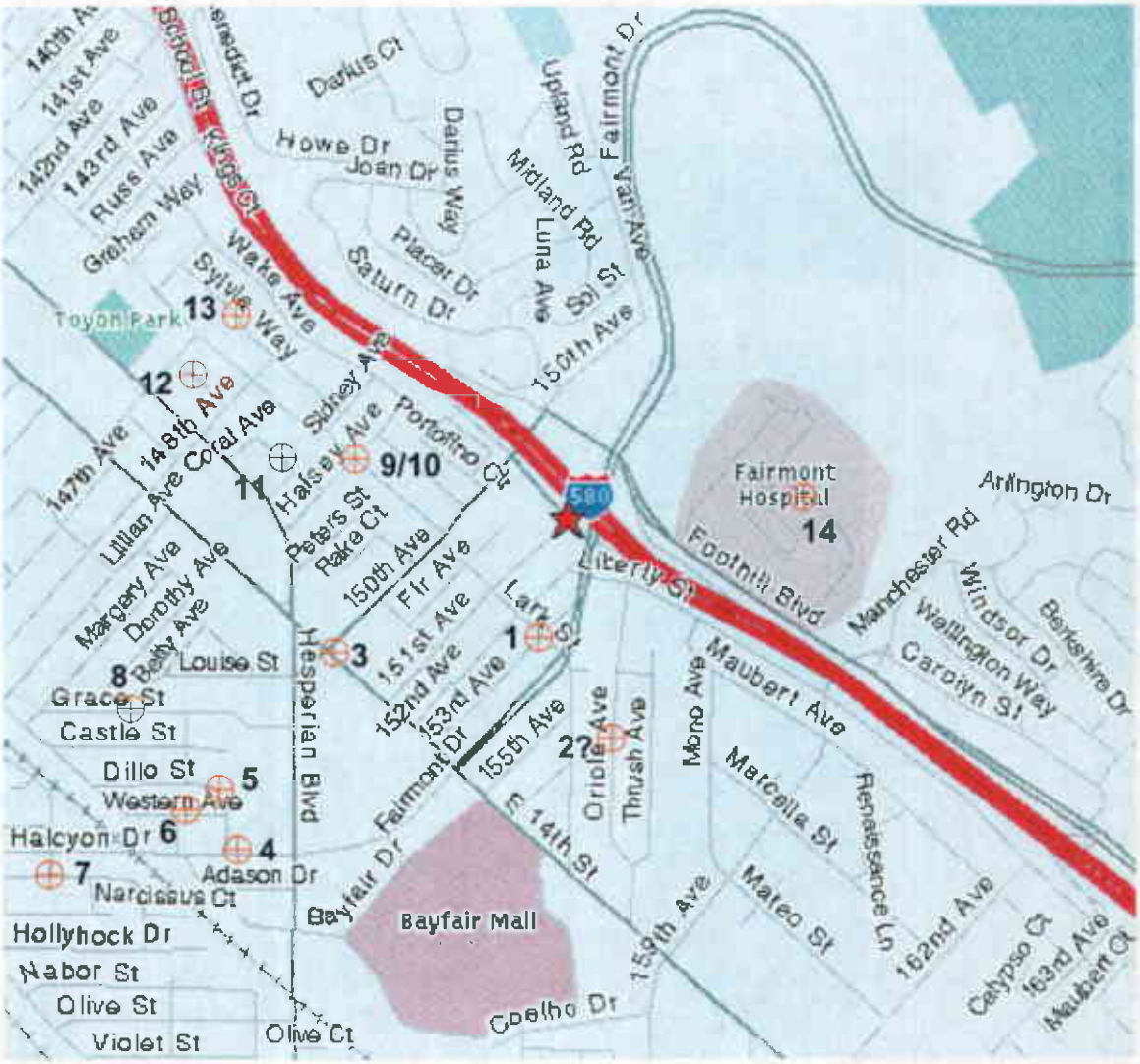


Figure 2: Site map showing locations of groundwater monitoring wells.

SOMA ENVIRONMENTAL ENGINEERING, INC.



approximate scale
0.75 inches = 1,000 feet

Figure 3a: Sensitive receptor survey: water supply wells.

Figure 3b: Sensitive Receptor Survey: Nearest water bodies.

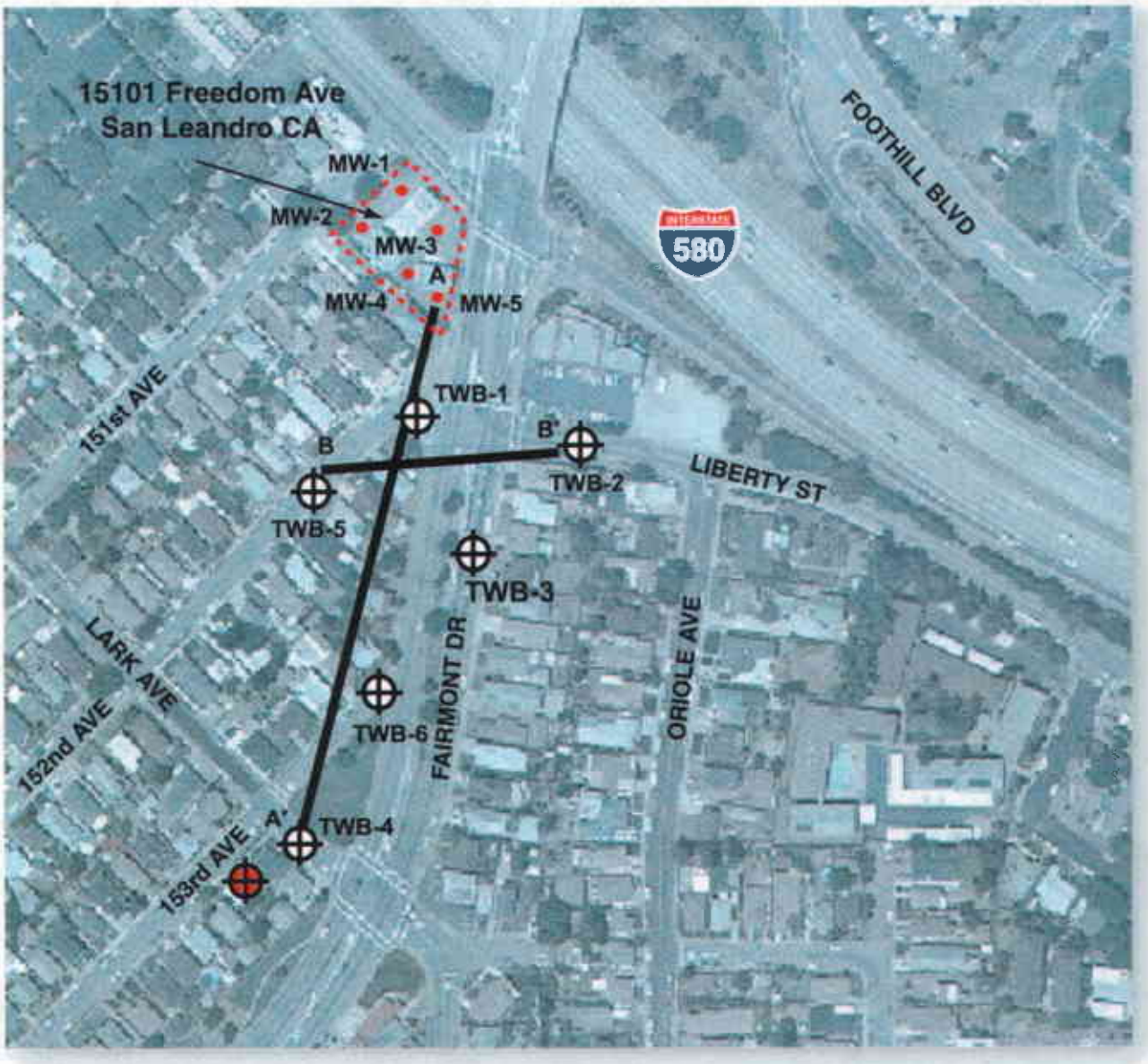


Figure 4: Locations of off-site temporary well boreholes and geologic cross sections.

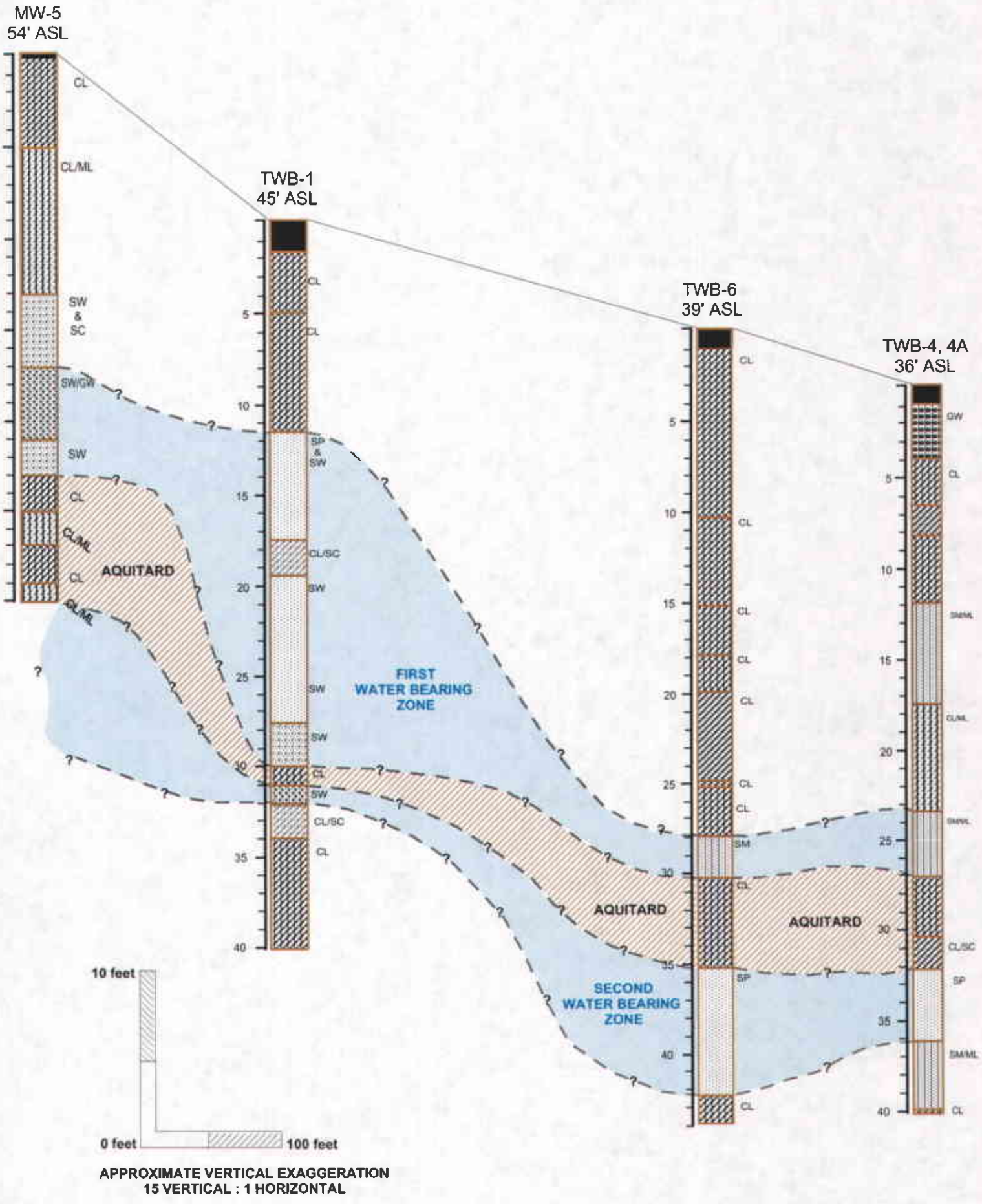


Figure 5: Geologic Cross Section A - A'.

ENVIRONMENTAL ENGINEERING, INC.

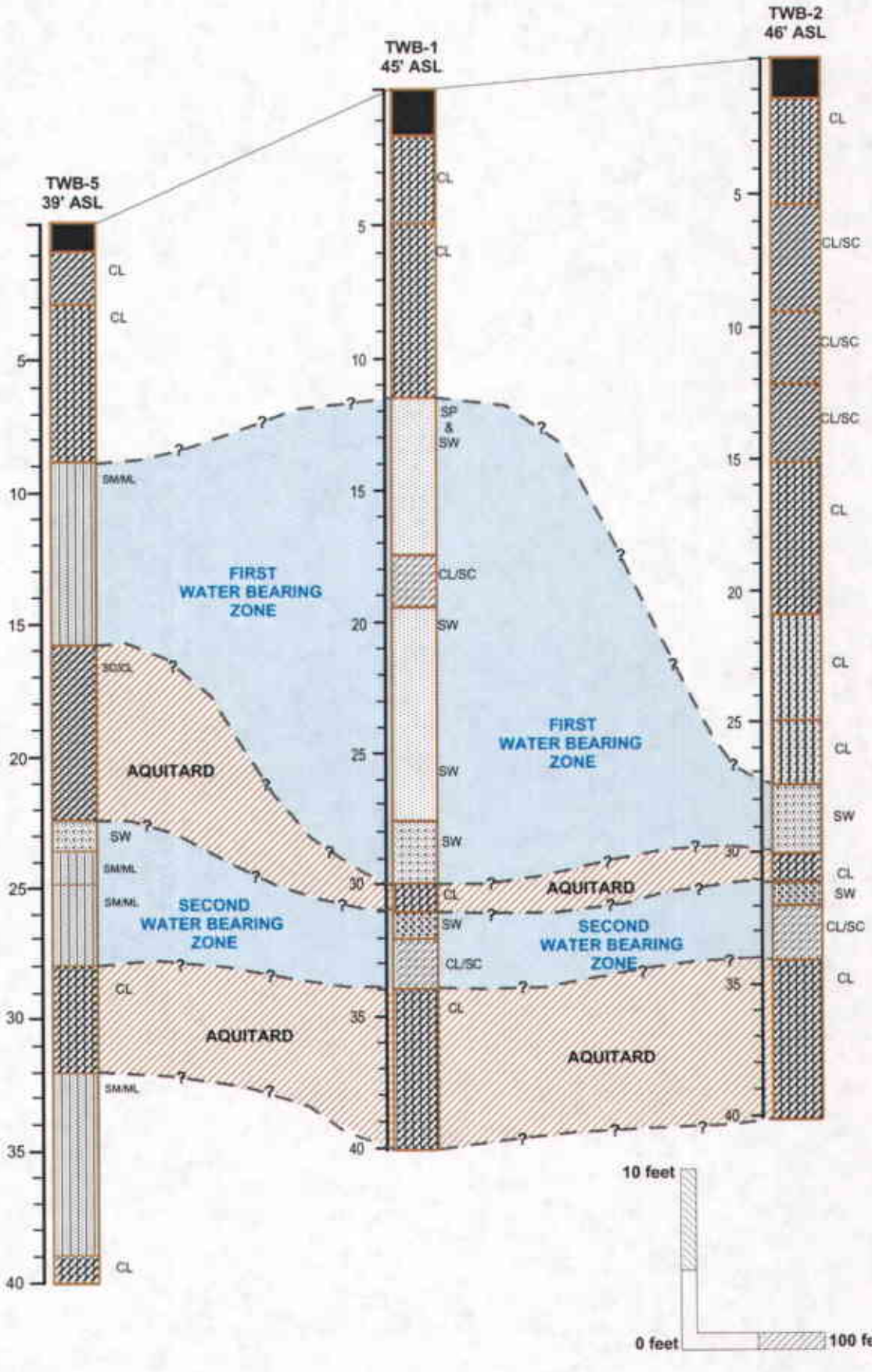


Figure 6: Geologic Cross Section B - B'.

SOMA ENVIRONMENTAL ENGINEERING, INC.

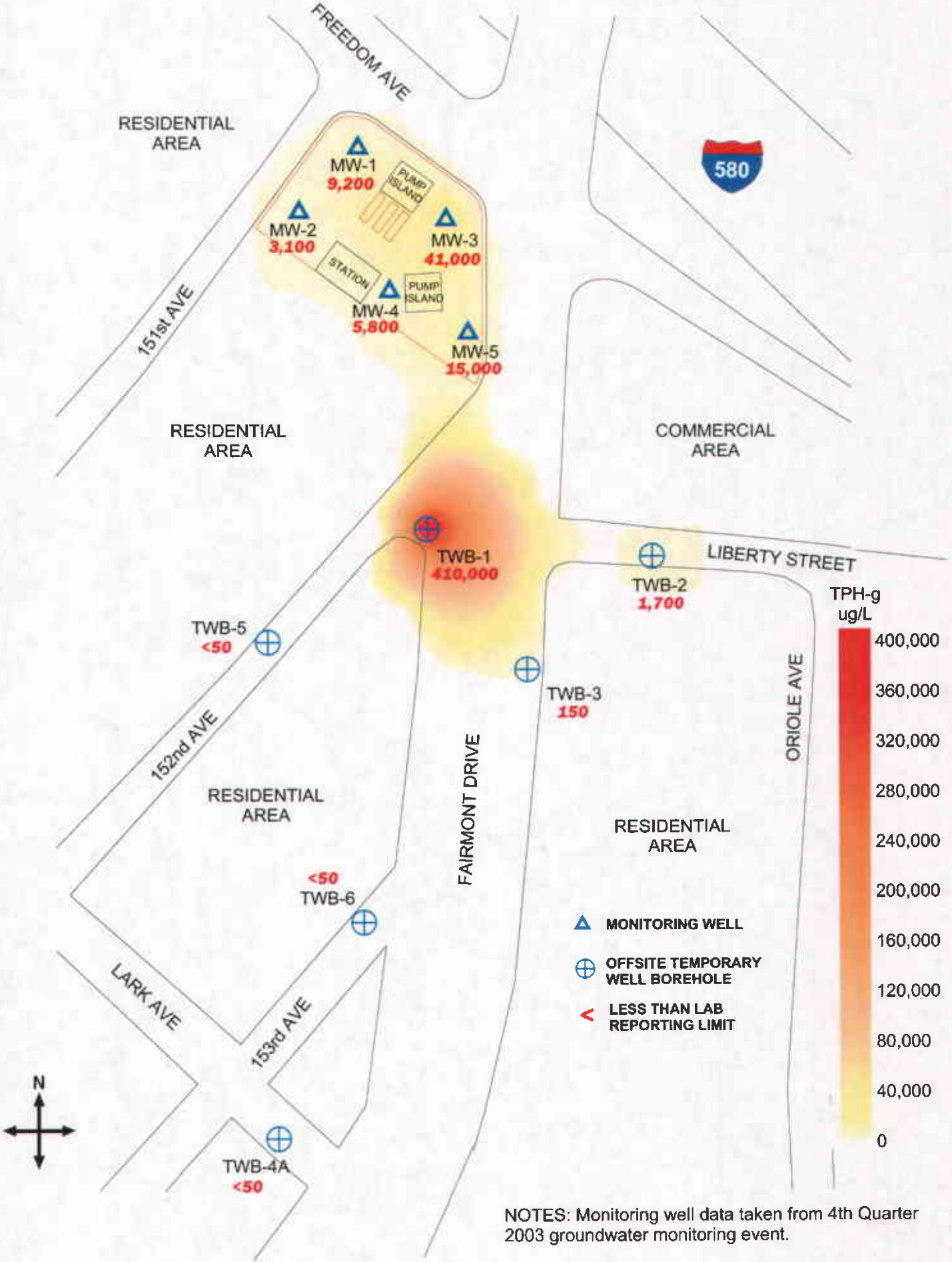
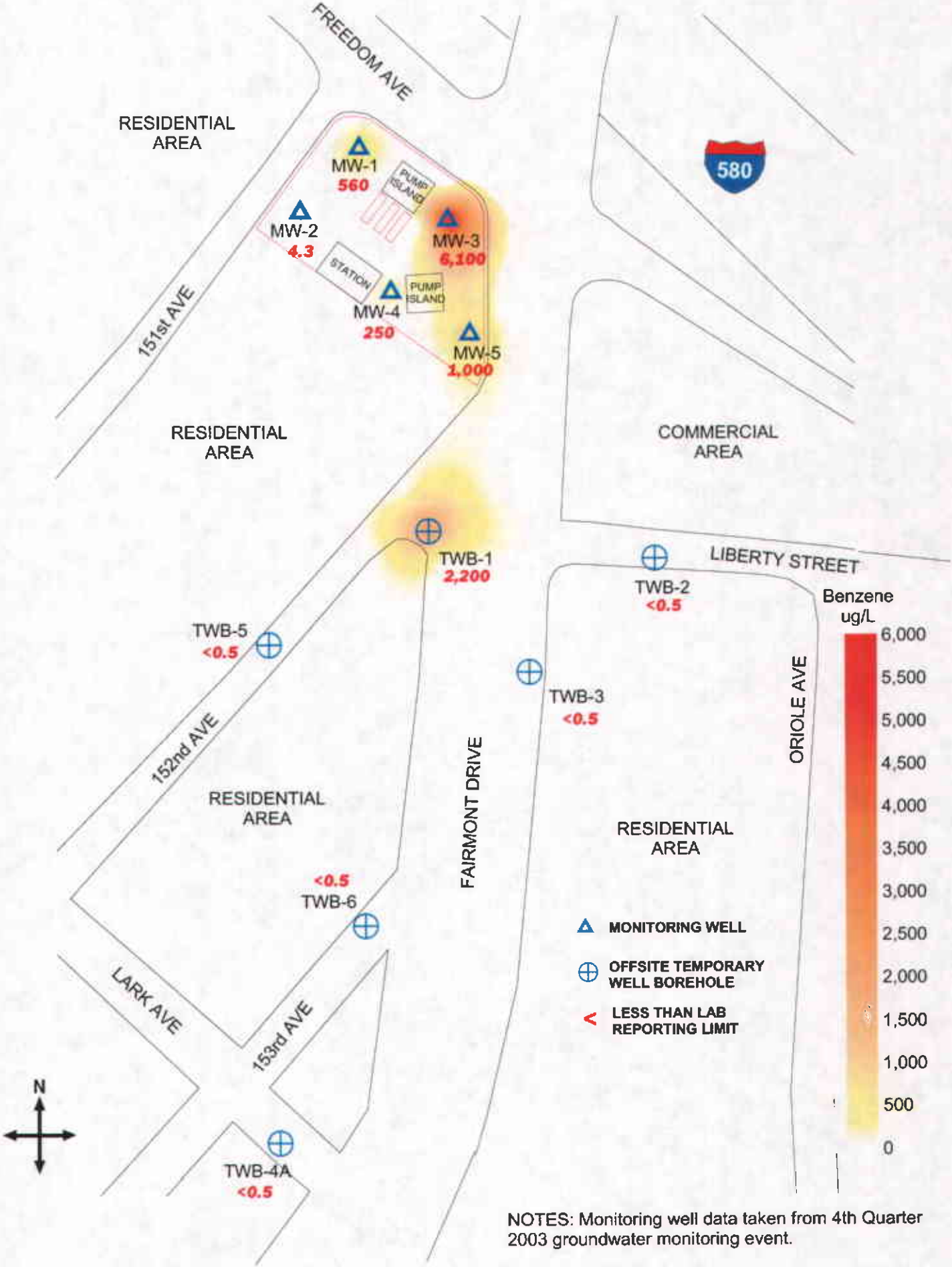


Figure 7: Contour map showing TPH-g concentrations in the groundwater.

ENVIRONMENTAL ENGINEERING, INC.



NOTES: Monitoring well data taken from 4th Quarter 2003 groundwater monitoring event.

Approximate scale in feet
0 50 100

Figure 8: Contour map showing Benzene concentrations in the groundwater.

SOMA ENVIRONMENTAL ENGINEERING, INC.

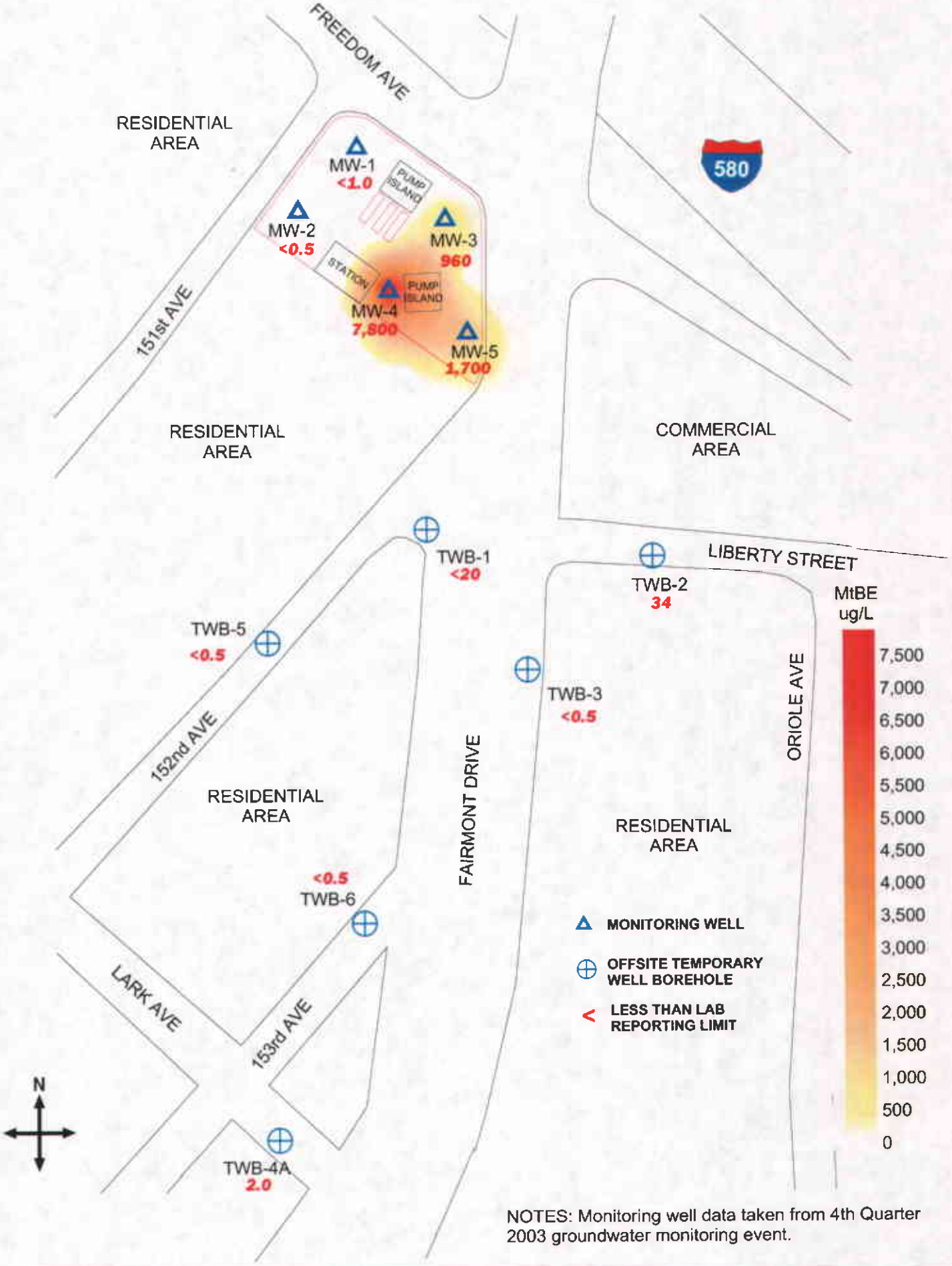


Figure 9: Contour map showing MtBE concentrations in the groundwater.

SOMA ENVIRONMENTAL ENGINEERING, INC.

Appendix A

Drilling and Encroachment Permits

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-6633 James Yoo
FAX (510)782-1939

APPLICANT: PLEASE ATTACH A SITE MAP FOR ALL DRILLING PERMIT APPLICATIONS
DESTRUCTION OF WELLS OVER 45 FEET REQUIRES A SEPARATE PERMIT APPLICATION

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 15101 Freedom Ave.
San Leandro, CA

CLIENT
Name Mohammed Pazdel
Address ~~35840 Alvarado-C~~ Phone
City Fremont CA Zip 94536

APPLICANT
Name Roger W. Papler Fax 925.244.6601
Address ~~2680 Bishop Dr~~ Phone ~~925.244.~~6600
City San Ramon CA Zip 94583

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	( )	General	( )
Water Supply	( )	Contamination	(X)
Monitoring	( )	Well Destruction	( )

PROPOSED WATER SUPPLY WELL USE

New Domestic	( )	Replacement Domestic	( )
Municipal	( )	Irrigation	( )
Industrial	( )	Other	( )

DRILLING METHOD:

Mud Rotary	( )	Air Rotary	( )	Auger	( )
Cable	( )	Other	Direct		

DRILLER'S NAME Precision Sampling, Inc.

DRILLER'S LICENSE NO 657 636 387

WELL PROJECTS
Drill Hole Diameter ____ in. Maximum
Casing Diameter ____ in. Depth ____ ft
Surface Seal Depth ____ ft. Owner's Well Number ____

GEOTECHNICAL PROJECTS
Number of Borings 5-7 Maximum 40- ' as per ACDEH
Hole Diameter 3 in. Depth 30 ft.

ESTIMATED STARTING DATE 9-8-03
ESTIMATED COMPLETION DATE 9-13-03

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] DATE 8-20-03

PLEASE PRINT NAME Roger W. Papler

Rev 3-04-02

FOR OFFICE USE
PERMIT NUMBER W03-0828
WELL NUMBER
APN

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL Conductor casing
Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compatible material.

E. CATHODIC
Fill hole above anode zone with concrete placed by tremie.

F. WELL DESTRUCTION
Send a map of work site. A separate permit is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED [signature] DATE 8/20/03

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD, CA. 94544-1395
PHONE (510) 670-6633 James Yoo FAX (510) 782-1939

PERMIT NO. W03-0828

WATER RESOURCES SECTION
GROUNDWATER PROTECTION ORDINANCE
B#I-GENERAL CONDITIONS: GEOTECHNICAL & CONTAMINATION BOREHOLES

1. Prior to any drilling activities shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that Federal, State, County or to the City and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained.

2. Boreholes shall not be left open for a period of more than **24 hours**. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permits, permittee's, contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statues regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on-or off site storm sewers, dry wells, or waterways or be allowed to move off the property where wok is being completed.

4. Permit is valid only for the purpose specified herein **September 8, to September 15, 2003**. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

5. Drilling Permit(s) can be voided/ canceled only in writing. It is the applicants responsibilities to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

6. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD CA. 94544-1395
PHONE (510) 670-6633 James Yoo
FAX (510)782-1939
APPLICANTS: PLEASE ATTACH A SITE MAP FOR ALL DRILLING PERMIT APPLICATIONS
DESTRUCTION OF WELLS OVER 45 FEET REQUIRES A SEPARATE PERMIT APPLICATION

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 15101 Freedom Ave.
San Leandro, CA

CLIENT
Name Mohammed Pazdel
Address 35840 Alvarez Ct Phone
City Fremont CA Zip 94536

APPLICANT
Name Roger W. Papler
SOMA Env. Eng. Fax 925.244.6601
Address 2680 Bishop Dr. Phone 925.244.6600
City San Ramon CA Zip 94583

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	( )	General	( )
Water Supply	( )	Contamination	(X)
Monitoring	( )	Well Destruction	( )

PROPOSED WATER SUPPLY WELL USE

New Domestic	( )	Replacement Domestic	( )
Municipal	( )	Irrigation	( )
Industrial	( )	Other	( )

DRILLING METHOD:

Mud Rotary	( )	Air Rotary	( )	Auger	( )
Cable	( )	Other	Woodward Drilling		

DRILLER'S NAME Precision Sampling, Inc.

DRILLER'S LICENSE NO C57 636 387 C

WELL PROJECTS
Drill Hole Diameter _____ in. Maximum
Casing Diameter _____ in. Depth _____ ft
Surface Seal Depth _____ ft Owner's Well Number _____

GEOTECHNICAL PROJECTS
Number of Borings 5-7 Maximum 10-15 per boring
Hole Diameter 3 in. Depth 30 ft

ESTIMATED STARTING DATE 9-8-03
ESTIMATED COMPLETION DATE 9-15-03

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE _____ DATE 8/26/03

PLEASE PRINT NAME Roger W Papler

Rev 3-04-02

FOR OFFICE USE
PERMIT NUMBER W03-0828
WELL NUMBER
APN

PERMIT CONDITIONS
Circled Permit Requirements Apply

A. GENERAL:
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted original Department of Water Resources Well Completion Report.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL / Contamination
Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two feet replaced in kind or with compatible material.

E. CATHODIC
Fill hole inside zone with concrete placed by tremie.

F. WELL DESTRUCTION
Send a copy of work plan. A separate permit is required for wells deeper than 45 feet.

G. SPECIAL CONDITIONS

NOTE: One application must be submitted for each well or well destruction. Multiple borings on one application are acceptable for geotechnical and contamination investigations.

APPROVED _____ DATE 8/27/03

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
399 ELMHURST ST. HAYWARD, CA. 94544-1395
PHONE (510) 670-6633 James Yoo FAX (510) 782-1939

PERMIT NO. W03-0828

WATER RESOURCES SECTION
GROUNDWATER PROTECTION ORDINANCE
R#1-GENERAL CONDITIONS: GEOTECHNICAL & CONTAMINATION BOREHOLES

1. Prior to any drilling activities shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that Federal, State, County or to the City and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained.

2. Boreholes shall not be left open for a period of more than **24 hours**. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permits, permittee's, contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statues regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on-or off site storm sewers, dry wells, or waterways or be allowed to move off the property where wok is being completed.

4. Permit is valid only for the purpose specified herein **September 8, to September 15, 2003**. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

5. Drilling Permit(s) can be voided/ canceled only in writing. It is the applicants responsibilities to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

6. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.

Work Order (WO)* Number: 80001
*This WO is ___ / is not ✓ open for charges.

Permit Number: R03 LD 4316
Permit Issuance Date: 9/9/03
Permit Expiration Date: 9/8/04

COUNTY OF ALAMEDA PUBLIC WORKS AGENCY

399 Elmhurst St., Hayward, CA 94544 - Phone: (510)670-5429 - Fax: (510)293-0960

ROADWAY ENCROACHMENT PERMIT

This Permit is issued in accordance with Chapter 12.08 of the Alameda County Ordinance Code

Name & Address of Property Owner:
Mohammed [illegible]
[illegible] Ct
Fairfield CA 94533
Phone Number:

Name & Address of Contractor:
Precision Sampling
1400 S. 50th St
Richmond CA
Phone Number: 510-237-4575

Job Site Address:
Site vicinity south of
16101 Freedom

(This statement to be completed by the Agency)
This permit is issued to the owner ___ / contractor ___;
if "owner" is checked, he/she is ___ / is not ___ exempt from the requirement that work in the roadway be performed by a licensed contractor.

The Applicant intends to perform the following work scope:
Environmental site characterization & soil gas survey. Probes & [illegible] borings

Licensed Contractor Declaration:
I hereby affirm, under penalty of perjury, that I hold the following contractor's license, which is in full force and effect, under the applicable provisions of the State Business and Professions Code.

License Class and No. C57# 636387
Contractor's Signature: [signature]

Worker's Compensation Insurance Declaration:
I hereby affirm, under penalty of perjury, that I will, during the performance of any and all work authorized by this permit, satisfy the requirements of the State Labor Code with regard to Worker's Compensation Insurance, as declared below:
___ I will maintain a certificate of consent to self-insure.
✓ I will maintain the following insurance policy:
Carrier's Name and Policy No.: Liberty Mutual
WC2-B71-072329-013
___ I will not employ any person in any manner so as to become subject to the worker's compensation laws of the State.
Owner's/Contractor's Signature: [signature]

All work and/or access shall be performed in accordance with the requirements of Chapter 12.08 and, unless otherwise specified below, shall be fully compliant with each of the terms and conditions of the attached General Provisions:

Bond Information:	Insp. Fee ___ or Deposit ___: $50
BY: [signature], Alameda County	Work Completed (Date): ___ Inspector:

I certify that the information that I have entered into this permit application is correct, and I agree to comply with all of the terms and conditions and other requirements of the issued Permit.

Signature of Applicant: ______ Date: ______

The Permittee is responsible for notifying the Inspection Office listed on the back of this form.

THIS PERMIT IS INCOMPLETE WITHOUT THE ATTACHED GENERAL PROVISIONS

** TOTAL PAGE.02 **

- All encroachments authorized by this Permit shall be subject to inspection by a County representative.

- The planned inspections will be performed by the County office(s) designated below; unless otherwise indicated, it shall be the Permittee's responsibility to notify the designated office(s) – prior to the start of the encroachment.

___	Case 1:-	The work described in this Permit must be inspected and accepted by the County. Contact the Permit Inspection Office at 670-6601 at least 24 hours in advance to arrange for the required tests and inspections.
___	Case 2:-	The work described in this Permit must be inspected and accepted by the County. Contact Traffic Engineering at 670-6456 or 670-5599 at least 24 hours in advance to arrange for the required tests and inspections.
___	Case 3:-	Some or all of the work described in this Permit must be inspected by the following representative of the County:
___	Case 4:-	Notification of the County is not required.

- If the face of this Permit is marked to indicate that the assigned County WO is open for charges, a job account will be opened and the assigned inspectors will charge the actual cost of all required tests and inspections against this account. All cost overruns must be resolved prior to close-out of this Permit. Any underruns will returned to the Permittee as soon as possible following the close-out.

CAUTION!

Most traffic signals and some streetlights are connected to their power sources with underground wiring. Many signals are also wired to traffic detector loops buried in the roadway. None of these County-owned wiring runs are included in the Underground Service Alert (USA) review and marking processes.

If you intend to excavate the roadway right-of-way within 500' of a traffic signal, or wherever the streetlight wiring is underground, you must contact the County traffic signal maintenance office for the necessary review and marking.

IF YOU ARE CLOSE TO SIGNALS OR STREET LIGHTS,
CALL ERIK DAYTON AT (510) 670-5537,
AT LEAST 48 HRS. IN ADVANCE OF YOUR PLANNED DIG.

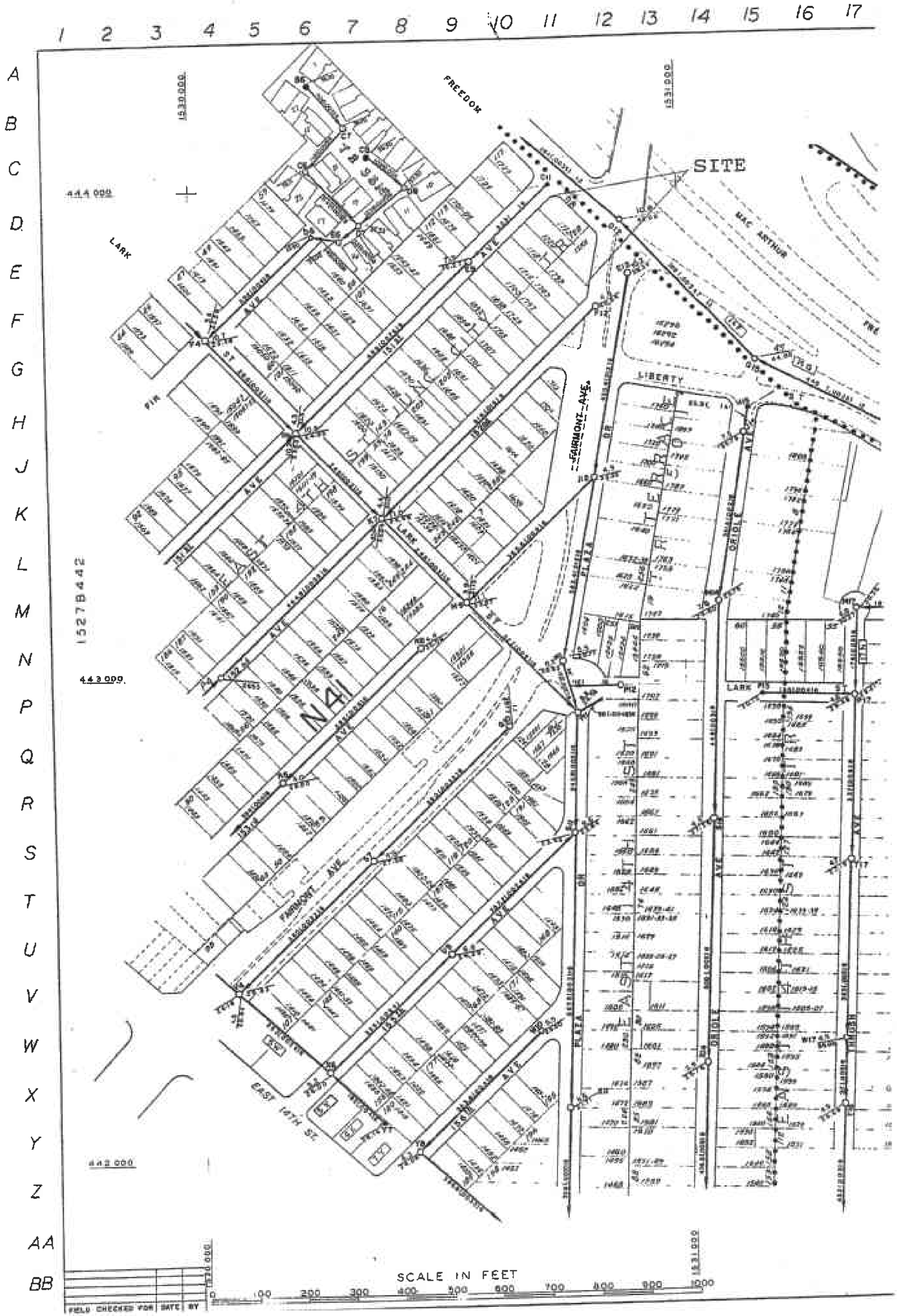
WARNING!

If you fail to notify us – and dig through or damage our loops or wire runs – you will be charged for the cost of our emergency repairs ($300 - $500, or more)!

Revised 4/5/01

Appendix B

Subsurface Utility Maps



SITE
FREEDOM
LARK
MAC ARTHUR
LIBERTY
FAIRMONT AVE
PLAZA DR
ORIOLE AVE
LARK ST
FIR
EAST 14TH ST
444 000
443 000
442 000
1530 000
1531 000
1527 B 442
SCALE IN FEET
0 100 200 300 400 500 600 700 800 900 1000
FIELD CHECKED FOR DATE BY

Appendix C

Borehole Logs

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-1

Boring Location:

See Site Map.

Project: 2552

Site Location: Intersection of 152nd and Liberty St.

Drilling Method: DPT

Driller: Woodward

Logged By: R. Papler

Date Drilled: October 1, 2003

Casing Elevation: NA

Depth to 1st Groundwater: 16 ft

Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED (core / split spoon)	GW LEVEL	WELL DIAGRAM
				7" Asphalt over 15" Baserock			NO TEMPORARY WELL CONSTRUCTED
10		CL		SILTY CLAY: dark gray; medium stiff; moist; plastic. Low estimated permeability (LEK). No petroleum hydrocarbon (PHC) odor.			
4	5						
10		CL		SILTY CLAY w/ some Sand and Gravel: light gray brown becoming gray brown below 8'; v. stiff; damp, becoming moist below 8'; 5-10% v. fine sand and gravel w/ some caliche at 5-5.5'. LEK. No PHC odor.		
6	10			As above.			
10		SP & SW		SAND interbedded w/ GRAVELLY SAND: olive gray; medium dense; moist becoming wet below 16'; fine to coarse w/ 15-20% subangular-subrounded gravel to 1 1/2". HEK. No PHC odor.		▽	
29	15						
40		CL/SC		SANDY CLAY/CLAYEY SAND: olive gray; medium stiff; v. moist; 40-60% v. fine to fine sand; medium high plasticity. HEK-MEK. Moderate PHC odor.			
68							
245	20	SW		SAND w/ some Gravel: olive gray; medium dense; moist becoming wet at free product below 24'; fine to coarse; 5-10% subrounded gravel to 3/4". HEK. Strong PHC odor.			
226							
285	25						SLUFF

SOMA ENVIRONMENTAL ENGINEERING, INC.	GEOLOGIC LOG OF BOREHOLE TWB-1	Page 2 of 2

Boring Location:

See Site Map.

Project: 2552
Site Location: Intersection of 152nd and Liberty St.
Drilling Method: DPT
Driller: Woodward
Logged By: R. Papler

Date Drilled: October 1, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 16 ft
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED: core	SAMPLED: split spoon	GW LEVEL	WELL DIAGRAM
286			SW	SILTY SAND: gray; medium dense; moist; fine to coarse; poorly sorted; 30% silt. MEK. Slight to mode[illegible] odor.				
55								
28			CL	SILTY CLAY: olive gray mottled gray brown; v stiff to hard; damp to moist; high plasticity w/ some caliche at 29-29.5'. Slight PHC odor.				
	30							
19			SP&SC	SAND interbedded w/ CLAYEY SAND: olive gray and mottled; medium dense; moist to v moist; fine to medium. HEK. Slight PHC odor.				
			CL	SILTY CLAY: olive gray; medium; moist to v moist; high plasticity with occasional caliche. LEK. No PHC odor.				SLUFF
17			CL	SILTY CLAY w/ some Sand: gray brown mottled olive gray; medium stiff becoming stiff below 36'; v. moist becoming damp below 36'; high plasticity. LEK. No PHC odor				
	35							
				As above.				
	40							
	45							
				Total Depth: 40 ft bgs. Groundwater first encountered at 16 ft. Later stabilized to 17.5 ft. Caved in to 24 ft bgs.				
	50							

SOMA ENVIRONMENTAL ENGINEERING, INC.	GEOLOGIC LOG OF BOREHOLE TWB-2	Page 1 of 2

Boring Location:

See Site Map.

Project: 2552
Site Location: 1760 Fairmont Ave.
Drilling Method: DPT
Driller: Woodward
Logged By: R. Papler

Date Drilled: October 1, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 29 ft
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED (core / split spoon)	GW LEVEL	WELL DIAGRAM
				5" Asphalt over 3" Concrete over 10" Baserock.			
3			CL	SILTY CLAY: dark gray becoming medium dark brownish gray w/ depth; med. stiff to stiff; moist; high plasticity. Low estimated permeability (LEK). Slight petroleum hydrocarbon (PHC) odor.			
0	5			As above grading to sandy clay below 4.5'			
0			CL/SC	SANDY CLAY/CLAYEY SAND: light gray brown; v. stiff; damp; medium plasticity; 40-60% v fine sand. LEK. No PHC odor.			
	10		CL/SC	SANDY CLAY/CLAYEY SAND w/ some Gravel: light gray brown; v. stiff to dense; damp; 40-60% v fine sand. LEK-MEK. No PHC odor.			
0			CL/SC	SANDY CLAY/CLAYEY SAND: light gray brown; v. stiff; medium dense; moist becoming v moist at 15'; 40-60% v fine to medium coarse sand; medium plasticity w/ damp gravelly sand stringers at 12.5'-12.75' and 14.75'-15.25'. MEK. No PHC odor.			
	15					▼	
66			CL	SILTY CLAY: olive gray mottled light gray brown above 16'; v stiff to hard; damp becoming v moist at 20.5'; medium to high plasticity w/ moist clayey sand/gravelly sand stringer at 19'-19.5'. LEK. No PHC odor.			
75	20						
12			CL	CLAYEY SILT/SILTY CLAY: light gray brown mottled olive gray; v stiff to hard; medium plasticity w/ some caliche at 22.5'-24.5' and 25.5'-27.25' w/ stringer of v moist sandy clay at 23.5'-24'.			
	25						

NO TEMPORARY WELL CONSTRUCTED

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-2

Boring Location:

See Site Map.

Project: 2552

Site Location: Intersection of 152nd and Liberty St.

Drilling Method: DPT

Driller: Woodward

Logged By: R. Papler

Date Drilled: October 1, 2003

Casing Elevation: NA

Depth to 1st Groundwater: 29 ft

Approved by: M. Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED: core	SAMPLED: split spoon	GW LEVEL	WELL DIAGRAM
2			CL	As above grading to light gray brown mottled white with abundant caliche				NO TEMPORARY WELL CONSTRUCTED
1			SW	GRAVELLY SAND: light olive gray; dense; moist becoming wet below 29'; medium to coarse sand; 15% subangular to rounded gravel to 1". HEK. No PHC odor.			▽	
2	30		CL	SILTY CLAY with some Sand and Gravel: light gray brown; v stiff; damp; med. to high plasticity w/ 5-10% v fine sand and gravel to 1 1/2". LEK. No PHC odor.				
2			SW	GRAVELLY SAND: As above.				
0			CL/SC	CLAYEY SAND/SANDY CLAY: gray brown; stiff to medium stiff; loose; v moist to wet; 40 to 60% v fine to fine sand; medium plasticity w/ stringer of wet gravelly sand at 33'-33.25'. LEK-MEK. No PHC odor.				
0	35		CL	SILTY CLAY w/some Sand: light gray brown; v stiff to hard; damp; medium to high plasticity; 5-10% v fine sand with some caliche. LEK. No PHC odor.				SLUFF
	40							
	45							
	50			Total Depth: 40 ft bgs. Caved in to 38 ft bgs. Groundwater first encountered at 29 ft. Later stabilized to 15 ft.				

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-3

Boring Location:

See Site Map.

Project: 2552
Site Location: 1660 Fairmont Ave.

Drilling Method: DPT
Driller: Woodward
Logged By: R. Papler

Date Drilled: Sept 17, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 20.5 ft
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED: core	SAMPLED: split spoon	GW LEVEL	WELL DIAGRAM
				10" Asphalt over 36" (?) Baserock.				
	5			No recovery				
0	10		CL	SILTY CLAY: dark gray; medium stiff; moist; high plasticity w/ minor caliche. Low estimated permeability (LEK). No petroleum hydrocarbon (PHC) odor.				
0	15		CL	SILTY CLAY/CLAYEY SILT w/ some Sand: light to medium gray brown; v stiff to hard; damp becoming moist below 14.5'; medium plasticity; <10-15% v fine sand w/ occassional angular gravel to 1 1/2". LEK. No PHC odor.				
0			CL	SILTY CLAY w/ some Sand: olive gray brown becoming olive gray w/ depth; v stiff to hard; damp becoming v moist w/ depth; <10-15% v fine sand w/ stringer of wet sand at 20.5' and wet gravelly sand at 21'. LEK. No PHC odor.				
1	20						▽	
0			CL	SANDY CLAY w/ some Gravel: gray brown; medium stiff; v moist becoming moist w/ depth; 20-40% v fine sand; <10% well rounded gravel to 1". LEK-MEK. No PHC odor.				
	25		CL	SILTY CLAY w/ some Sand: gray brown; v stiff to hard; damp; med plasticity; <10% v fine sand. LEK. No PHC odor.				

NO TEMPORARY WELL CONSTRUCTED

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-3

Boring Location:

See Site Map.

Project: 2552
Site Location: 1660 Fairmont

Drilling Method: DPT
Driller: Woodward
Logged By: R. Papler

Date Drilled: Sept 17, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 20.5 ft
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED: core	SAMPLED: split spoon	GW LEVEL	WELL DIAGRAM
0			CL	SILTY CLAY w/ some Sand: gray brown; v stiff to hard; damp; med plasticity; <10% v fine sand. LEK. No PHC odor.				NO TEMPORARY WELL CONSTRUCTED
0				SANDY CLAY: gray brown, stiff to v stiff; damp; medium plasticity; 30-40% v fine sand w/ some caliche. LEK-MEK. No PHC odor. Drilling rig breakdown @ 2:45 pm.				
	30							
	35							
	40							
	45							
	50			Total Depth: 30 ft. Groundwater first encountered at 20.5 ft.				

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-4

Boring Location:

See Site Map.

Project: 2552
Site Location: 15301 Lark Ave.

Drilling Method: DPT
Driller: PSI
Logged By: R. Papler

Date Drilled: Sept 11, 2003
Casing Elevation: NA
Depth to 1st Groundwater: NA
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED: core	SAMPLED: split spoon	GW LEVEL	WELL DIAGRAM
				12" Asphalt and Baserock.				NO TEMPORARY WELL CONSTRUCTED
0			GW	SILTY GRAVEL w/ some Sand: yellowish brown; medium dense; moist; <20% silt; <10% v fine sand. Medium estimated permeability (MEK). No petroleum hydrocarbon (PHC) odor.				
0	5		CL	SILTY CLAY: dark gray grading light gray w/ depth; stiff to v stiff; moist; highly plastic. LEK. No PHC odor.				
0			CL	SANDY CLAY/CLAYEY SAND: light gray; medium stiff; moist; medium plasticity; 40-70% v fine sand w/ gravelly sand stringer at 7.25'-8.25'. MEK-LEK. No PHC odor.				
0	10		CL	SILTY CLAY: dark to medium gray brown grading light gray brown w/ depth; v stiff; moist; highly plastic w/ some charcoal fragments w/ caliche increasing w/ depth. LEK. No PHC odor.				
0	15		SM/ML	SANDY SILT w/ some Clay: light gray brown; v stiff; damp; slight to medium plasticity; 40% v fine sand w/ clayey silt stringer at 12'-12.5' w/ silty sand stringer at 13'-13.5' w/ fine gravel below15' w/ some caliche grading more clayey w/ depth. LEK. No PHC odor.				
	20			Total Depth: 17.5 ft bgs at refusal. No first groundwater encountered.				
	25							

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-4A

Boring Location:

See Site Map.

Project: 2552
Site Location: 15301 Lark Ave.

Drilling Method: DPT
Driller: Woodward
Logged By: R. Papler

Date Drilled: Sept 16, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 30.5 ft
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED (core / split spoon)	GW LEVEL	WELL DIAGRAM
	5			Not Sampled - See TWB-4			
	10						
	15						
0	20		CL/ML	CLAYEY SILT w/ some Sand: light gray brown; hard; damp becoming moist below 22'; slight to medium plasticity; <10% v fine sand w/ silty clay stringer at 20'-20.5' w/ caliche and occassional fine gravel below 20'. LEK. No PHC odor.			
0	25		SM/ML	SANDY SILT w/ some Clay: gray brown; v. stiff to hard; moist; slightly plastic; 30-40% v fine sand w/ occassional gravel to 1/4". LEK-MEK. No PHC odor.			

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-4A

Boring Location:

See Site Map.

Project: 2552
Site Location: 1660 Fairmont

Drilling Method: DPT
Driller: Woodward
Logged By: R. Papler

Date Drilled: Sept 16, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 30.5 ft
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED (core / split spoon)	GW LEVEL	WELL DIAGRAM
0			SM/ML	SANDY SILT w/ some Clay: gray brown; v. stiff to hard; moist; slightly plastic; 30-40% v fine sand w/ occassional gravel to 1/4". LEK-MEK. No PHC odor.			
0			CL	SILTY CLAY: gray brown; dard; damp; medium to high plasticity w/ caliche below 24'. LEK. No PHC odor.			
	30					▽	
0			CL/SC	SANDY CLAY/CLAYEY SAND: gray brown; soft; wet; 40-60% v fine to fine sand w/ silty sand stringer at 30.5'-30.75' w/ occassional gravel to 1/2". MEK. No PHC odor.			
0			SP	SAND: light brownish gray; medium dense to dense; wet; fine to 32.75'; fine to medium below 32.75'; well sorted. MEK-HEK. No PHC odor.			SLUFF
	35						
0			SM/ML	SANDY SILT/SILTY SAND: light brownish gray to light gray brown; soft becoming medium dense to dense below 38.75'; wet becoming damp to moist below 38.75' w/ wet silty sand stringer at 38.25'-38.75'. LEK-MEK. No PHC odor.			
0	40		CL	SILTY CLAY w/ some Sand: light gray; v stiff to hard; damp, medium plasticity; <10% v fine sand. LEK. No PHC odor.			
	45						
	50						

Total Depth: 40 ft bgs.
Caved in to 31 ft.
Groundwater first encountered at 30.25 ft bgs.

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-5

Boring Location:

See Site Map.

Project: 2552
Site Location: 152 Street

Drilling Method: DPT
Driller: Woodward

Logged By: R. Papler

Date Drilled: Sept 16, 2003

Casing Elevation: NA

Depth to 1st Groundwater: 16.5 ft

Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED: core	SAMPLED: split spoon	GW LEVEL	WELL DIAGRAM
				4" Asphalt over 8" Baserock.				
			CL	SANDY CLAY/SILTY CLAY: dark gray brown; moist; plastic. Medium to low estimated permeability (MEK-LEK). No petroleum hydrocarbon (PHC) odor. (fill)				
0	5		CL	SILTY CLAY: dark gray; medium stiff; moist; high plasticity. LEK. No PHC odor. As above grading to light gray below 8.5'.			▼	
0	10		SM/ML	SANDY SILT w/ some Clay: light gray brown; hard to v stiff; damp becoming moist w/ depth; slight plasticity; 20-40% v fine sand; <10-15% clay w/ caliche at 10'-11'. LEK. No PHC odor.				
0	15		SC/CL	SANDY CLAY/CLAYEY SAND: gray brown; soft to medium stiff; v moist; high plasticity; 40-60%v fine to fine sand w/ stringers of wet sand at 18' and wet gravelly sand at 19.25'. MEK-HEK. No PHC odor.			▽	
0	20							
1			SW	GRAVELLY SAND: light brownish gray, medium dense to dense; wet; fine to coarse; 15-20% subangular to rounded gravel to 3/4". HEK. No PHC odor.				
2	25		SM/ML	SANDY SILT w/ some Clay: gray brown; v. stiff to hard; damp to moist; slight plasticity; 15-30% v fine sand; <10-15% clay. LEK. No PHC odor.				

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-5

Boring Location:

See Site Map.

Project: 2552
Site Location: 152 Street

Drilling Method: DPT
Driller: Woodward
Logged By: R. Papler

Date Drilled: Sept 16, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 16.5 ft
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED: core	SAMPLED: split spoon	GW LEVEL	WELL DIAGRAM
0			SM/ML	SANDY SILT w/ some Clay: gray brown; v. stiff to hard; damp to moist; slight plasticity; 15-30% v fine sand; <10-15% clay. LEK. No PHC odor.				
0	30		CL	SILTY CLAY: gray brown; medium stiff; moist to v moist; high plasticity. LEK. No PHC odor.				SLUFF
0	35		SM/ML	SILTY SAND/SANDY SILT w/ some Clay; gray brown; medium dense to loose; wet; 40-60% v fine sand; <10-15% clay. MEK. No PHC odor. As above w/ stringer of moist sand clay at 38'-38.25'.				
0	40		CL	SILTY CLAY w/ some Sand: gray brown; v stiff; damp; <10-15% v fine sand decreasing w/ depth. LEK. No PHC odor.				
	45			Total Depth: 40 ft bgs. Caved in to 30 ft. Groundwater first encountered at 33 ft bgs.				
	50							

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-6

Boring Location:

See Site Map.

Project: 2552
Site Location: 621 153 Street

Drilling Method: DPT
Driller: Woodward
Logged By: R. Papler

Date Drilled: Sept 17, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 20 ft
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED (core / split spoon)	GW LEVEL	WELL DIAGRAM
				4" Asphalt over 8" baserock.			
	5		CL	SILTY CLAY: dark gray; medium stiff; moist; high plasticity. Low estimated permeability (LEK). No petroleum hydrocarbon (PHC) odor.			
0				As Above			
	10			As above grading to light gray below 8' w/ charcoal fragments and caliche.			
1			CL	SILTY CLAY/CLAYEY SILT w/ some Sand: light gray brown; v stiff to hard; damp; medium plasticity. LEK. No PHC odor.			
	15			As above grading sandier w/ occassional angular gravel to 3/4".			
1			CL	SILTY CLAY w/ some Sand: gray brown; v stiff; moist becoming v moist w/ depth; high plasticity; <10% v fine sand grading sandier w/ depth w/ 1" stringer of v. moist medium to coarse sand at 17.9'. LEK. No PHC odor.			
0			CL	SILTY CLAY/CLAYEY SILT w/ some Sand: light gray brown; v stiff to hard; damp; medium plasticity. LEK. No PHC odor.			
	20					▽	
5			CL	SANDY CLAY: gray brown; soft to medium stiff; v. moist; high plasticity; 30-40% v fine sand w/ stringer of wet silty sand at 20' w/ minor caliche. MEK-LEK. No PHC odor.			
	25						

SOMA ENVIRONMENTAL ENGINEERING, INC.

GEOLOGIC LOG OF BOREHOLE TWB-6

Boring Location:

See Site Map.

Project: 2552
Site Location: 152 Street

Drilling Method: DPT
Driller: Woodward
Logged By: R. Papler

Date Drilled: Sept 16, 2003
Casing Elevation: NA
Depth to 1st Groundwater: 20 ft
Approved By: M Sepehr, PE

PID ppm	DEPTH	GRAPHIC LOG	SOIL CLASS.	GEOLOGIC DESCRIPTION	SAMPLED (core / split spoon)	GW LEVEL	WELL DIAGRAM
				SANDY CLAY: gray brown; soft to medium stiff; v. moist; high plasticity; 30-40% v fine sand w/ stringer of wet silty sand at 20' w/ minor caliche. MEK-LEK. No PHC odor.			
			CL	SILTY CLAY w/ some Sand: gray brwon; v stiff to hard; damp; medium plasticity w/ occassional subrounded gravel to 1/4" w/ minor caliche below 27.75'. LEK. No PHC odor.			
			SM	SILTY SAND: gray brown; loose; wet; 50-70% v fine to medium sand. MEK-HEK. No PHC odor.			
	30		CL	SILTY CLAY w/ some Sand: gray brown; v stiff to moist becoming v moist below 31.5'. medium plasticity; <10% v fine sand w/ stringer of gravelly clay at 31.25'-31.75' w/ wet clayey sand at 32'-32.5' w/ wet fine sand at 32.5'-33'. LEK. No PHC odor.			SLUFF
	35		SP	SAND: gray brown; loose to medium dense; set; fine to medium; v well sorted w/ stringer of clayey sand at 39.75'-40'. HEK-MEK. No PHC odor.			
	40		CL	SILTY CLAY: light gray; v stiff to hard; damp; high plasticity w/ occassional angular gravel to 1/2" w/ some caliche below 44.5'. LEK. No PHC odor.			
	45			Total Depth: 44 ft bgs. Caved in to 28 ft bgs.			
	50						

Appendix D

Laboratory Reports of Soil Analytical and Chain of Custody Form

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

ANALYTICAL REPORT

Prepared for:

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

Date: 02-OCT-03
Lab Job Number: 167652
Project ID: 2552
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

SOIL

CHAIN OF CUSTODY FORM

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

C&T LOGIN # 167652

Sampler: RW Pepler

Report To: Joyce Bobek

Company: SOMA

Telephone: (925) 244.6600

Fax: (925) 244.6601

Project No: 2652

Project Name: Pazdel / SL: 5101 Freedom Ave

Project P.O.: —

Turnaround Time: standard

Analyses

Laboratory Number (For Laboratory Use)	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO	Preservative: HNO_3	Preservative: ICE	Field Notes	TPH g 8015B	BTEX & MTBE 8021	MTBE confirm 8260B	oxygenates 8260B
-1	TWB-3 @20-20.5	17 Sept '03	X			1				X	Temporary Well Borehole -3	X	X		X
2	TWB-4A@23-23.5	16 Sept '03	X			1				X	-4A	X	X		X
3	TWB-5@15.75-16		X			1				X	-5				
4	TWB-5@29.5-30		X			1				X	-5				
5	TWB-5@31.75-32		X			1				X	-5				
6	TWB-5@32-32.5		X			1				X	-5	X	X		X
7	TWB-6@17-17.5	17 Sept '03	X			1				X	-6				
8	TWB-6@19.5-20		X			1				X	-6				
9	TWB-6@20-20.5		X			1				X	-6	X	X		X
10	TWB-6@28-30		X			1				X	-6	X	X		X
11	TWB-6@38-39		X			1				X	-6	X	X		X
	~~TWB-2~~														
	~~TWB-4~~														

Notes: EDF
confirm positive MTBE detections w/ 8260B

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
X [signature]	17 Sept 2003 / 1840		
		X [signature]	9/17/03 1840

Signature

CONTINENT

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Soil	Batch#:	84634
Basis:	as received	Received:	09/17/03
Diln Fac:	1.000		

Field ID:	TWB-3@20-20.5	Sampled:	09/17/03
Type:	SAMPLE	Analyzed:	09/18/03
Lab ID:	167652-001		

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.0	mg/Kg	8015B
Benzene	ND	5.2	ug/Kg	EPA 8021B
Toluene	ND	5.2	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.2	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.2	ug/Kg	EPA 8021B
o-Xylene	ND	5.2	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	98	56-144	8015B
Bromofluorobenzene (FID)	116	51-142	8015B
Trifluorotoluene (PID)	85	45-150	EPA 8021B
Bromofluorobenzene (PID)	101	42-138	EPA 8021B

Field ID:	TWB-4A@33-33.5	Sampled:	09/16/03
Type:	SAMPLE	Analyzed:	09/18/03
Lab ID:	167652-002		

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.1	mg/Kg	8015B
Benzene	ND	5.3	ug/Kg	EPA 8021B
Toluene	ND	5.3	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.3	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.3	ug/Kg	EPA 8021B
o-Xylene	ND	5.3	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	100	56-144	8015B
Bromofluorobenzene (FID)	116	51-142	8015B
Trifluorotoluene (PID)	86	45-150	EPA 8021B
Bromofluorobenzene (PID)	101	42-138	EPA 8021B

ND= Not Detected
RL= Reporting Limit

1.0

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Soil	Batch#:	84634
Basis:	as received	Received:	09/17/03
Diln Fac:	1.000		

Field ID: TWB-5@32-32.5
Type: SAMPLE
Lab ID: 167652-006

Sampled: 09/16/03
Analyzed: 09/18/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.1	mg/Kg	8015B
Benzene	ND	5.3	ug/Kg	EPA 8021B
Toluene	ND	5.3	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.3	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.3	ug/Kg	EPA 8021B
o-Xylene	ND	5.3	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	95	56-144	8015B
Bromofluorobenzene (FID)	110	51-142	8015B
Trifluorotoluene (PID)	83	45-150	EPA 8021B
Bromofluorobenzene (PID)	98	42-138	EPA 8021B

Field ID: TWB-6@20-20.5
Type: SAMPLE
Lab ID: 167652-009

Sampled: 09/17/03
Analyzed: 09/19/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.0	mg/Kg	8015B
Benzene	ND	5.2	ug/Kg	EPA 8021B
Toluene	ND	5.2	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.2	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.2	ug/Kg	EPA 8021B
o-Xylene	ND	5.2	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	93	56-144	8015B
Bromofluorobenzene (FID)	110	51-142	8015B
Trifluorotoluene (PID)	79	45-150	EPA 8021B
Bromofluorobenzene (PID)	95	42-138	EPA 8021B

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Soil	Batch#:	84634
Basis:	as received	Received:	09/17/03
Diln Fac:	1.000		

Field ID: TWB-6@28-30 Sampled: 09/17/03
Type: SAMPLE Analyzed: 09/19/03
Lab ID: 167652-010

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	0.96	mg/Kg	8015B
Benzene	ND	4.8	ug/Kg	EPA 8021B
Toluene	ND	4.8	ug/Kg	EPA 8021B
Ethylbenzene	ND	4.8	ug/Kg	EPA 8021B
m,p-Xylenes	ND	4.8	ug/Kg	EPA 8021B
o-Xylene	ND	4.8	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	94	56-144	8015B
Bromofluorobenzene (FID)	110	51-142	8015B
Trifluorotoluene (PID)	80	45-150	EPA 8021B
Bromofluorobenzene (PID)	95	42-138	EPA 8021B

Field ID: TWB-6@38-39 Sampled: 09/17/03
Type: SAMPLE Analyzed: 09/19/03
Lab ID: 167652-011

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.1	mg/Kg	8015B
Benzene	ND	5.4	ug/Kg	EPA 8021B
Toluene	ND	5.4	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.4	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.4	ug/Kg	EPA 8021B
o-Xylene	ND	5.4	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	95	56-144	8015B
Bromofluorobenzene (FID)	111	51-142	8015B
Trifluorotoluene (PID)	81	45-150	EPA 8021B
Bromofluorobenzene (PID)	95	42-138	EPA 8021B

Type: BLANK Analyzed: 09/18/03
Lab ID: QC226184

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.0	mg/Kg	8015B
Benzene	ND	5.0	ug/Kg	EPA 8021B
Toluene	ND	5.0	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.0	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.0	ug/Kg	EPA 8021B
o-Xylene	ND	5.0	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	95	56-144	8015B
Bromofluorobenzene (FID)	110	51-142	8015B
Trifluorotoluene (PID)	82	45-150	EPA 8021B
Bromofluorobenzene (PID)	96	42-138	EPA 8021B

ND= Not Detected
RL= Reporting Limit

1.0

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8021B
Type:	LCS	Basis:	as received
Lab ID:	QC226185	Diln Fac:	1.000
Matrix:	Soil	Batch#:	84634
Units:	ug/Kg	Analyzed:	09/18/03

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12		NA		
Benzene	50.00	47.49	95	80-121
Toluene	50.00	47.78	96	80-120
Ethylbenzene	50.00	45.37	91	79-120
m,p-Xylenes	100.0	101.0	101	76-120
o-Xylene	50.00	48.59	97	80-120

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		85	45-150
Bromofluorobenzene (PID)		98	42-138

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Type:	LCS	Basis:	as received
Lab ID:	QC226186	Diln Fac:	1.000
Matrix:	Soil	Batch#:	84634
Units:	mg/Kg	Analyzed:	09/18/03

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	5.494	110	80-120
Benzene		NA		
Toluene		NA		
Ethylbenzene		NA		
m,p-Xylenes		NA		
o-Xylene		NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		108	56-144
Bromofluorobenzene (FID)		113	51-142
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Field ID:	TWB-3@20-20.5	Diln Fac:	1.000
MSS Lab ID:	167652-001	Batch#:	84634
Matrix:	Soil	Sampled:	09/17/03
Units:	mg/Kg	Received:	09/17/03
Basis:	as received	Analyzed:	09/18/03

Type: MS Lab ID: QC226224

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<0.09400	10.00	10.49	105	24-134
Benzene			NA		
Toluene			NA		
Ethylbenzene			NA		
m,p-Xylenes			NA		
o-Xylene			NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		116	56-144
Bromofluorobenzene (FID)		119	51-142
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

Type: MSD Lab ID: QC226225

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.75	8.692	81	24-134	26	32
Benzene		NA				
Toluene		NA				
Ethylbenzene		NA				
m,p-Xylenes		NA				
o-Xylene		NA				

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		96	56-144
Bromofluorobenzene (FID)		99	51-142
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	84630
Units:	ug/Kg	Received:	09/17/03
Basis:	as received	Analyzed:	09/18/03

Field ID:	TWB-3@20-20.5	Diln Fac:	0.9804
Type:	SAMPLE	Sampled:	09/17/03
Lab ID:	167652-001		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	98
MTBE	ND	4.9
Isopropyl Ether (DIPE)	ND	4.9
Ethyl tert-Butyl Ether (ETBE)	ND	4.9
Methyl tert-Amyl Ether (TAME)	ND	4.9
1,2-Dichloroethane	ND	4.9
1,2-Dibromoethane	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	95	74-128
1,2-Dichloroethane-d4	87	76-130
Toluene-d8	98	80-120
Bromofluorobenzene	97	76-125

Field ID:	TWB-4A@33-33.5	Diln Fac:	1.000
Type:	SAMPLE	Sampled:	09/16/03
Lab ID:	167652-002		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	5.0
1,2-Dichloroethane	ND	5.0
1,2-Dibromoethane	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	97	74-128
1,2-Dichloroethane-d4	87	76-130
Toluene-d8	95	80-120
Bromofluorobenzene	99	76-125

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

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	84630
Units:	ug/Kg	Received:	09/17/03
Basis:	as received	Analyzed:	09/18/03

Field ID:	TWB-5@32-32.5	Diln Fac:	0.8772
Type:	SAMPLE	Sampled:	09/16/03
Lab ID:	167652-006		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	88
MTBE	ND	4.4
Isopropyl Ether (DIPE)	ND	4.4
Ethyl tert-Butyl Ether (ETBE)	ND	4.4
Methyl tert-Amyl Ether (TAME)	ND	4.4
1,2-Dichloroethane	ND	4.4
1,2-Dibromoethane	ND	4.4

Surrogate	%REC	Limits
Dibromofluoromethane	95	74-128
1,2-Dichloroethane-d4	88	76-130
Toluene-d8	95	80-120
Bromofluorobenzene	98	76-125

Field ID:	TWB-6@20-20.5	Diln Fac:	0.8929
Type:	SAMPLE	Sampled:	09/17/03
Lab ID:	167652-009		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	89
MTBE	ND	4.5
Isopropyl Ether (DIPE)	ND	4.5
Ethyl tert-Butyl Ether (ETBE)	ND	4.5
Methyl tert-Amyl Ether (TAME)	ND	4.5
1,2-Dichloroethane	ND	4.5
1,2-Dibromoethane	ND	4.5

Surrogate	%REC	Limits
Dibromofluoromethane	98	74-128
1,2-Dichloroethane-d4	89	76-130
Toluene-d8	94	80-120
Bromofluorobenzene	100	76-125

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

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	84630
Units:	ug/Kg	Received:	09/17/03
Basis:	as received	Analyzed:	09/18/03

Field ID:	TWB-6@28-30	Diln Fac:	0.9434
Type:	SAMPLE	Sampled:	09/17/03
Lab ID:	167652-010		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	94
MTBE	ND	4.7
Isopropyl Ether (DIPE)	ND	4.7
Ethyl tert-Butyl Ether (ETBE)	ND	4.7
Methyl tert-Amyl Ether (TAME)	ND	4.7
1,2-Dichloroethane	ND	4.7
1,2-Dibromoethane	ND	4.7

Surrogate	%REC	Limits
Dibromofluoromethane	97	74-128
1,2-Dichloroethane-d4	90	76-130
Toluene-d8	96	80-120
Bromofluorobenzene	99	76-125

Field ID:	TWB-6@38-39	Diln Fac:	0.9615
Type:	SAMPLE	Sampled:	09/17/03
Lab ID:	167652-011		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	96
MTBE	ND	4.8
Isopropyl Ether (DIPE)	ND	4.8
Ethyl tert-Butyl Ether (ETBE)	ND	4.8
Methyl tert-Amyl Ether (TAME)	ND	4.8
1,2-Dichloroethane	ND	4.8
1,2-Dibromoethane	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	86	74-128
1,2-Dichloroethane-d4	87	76-130
Toluene-d8	93	80-120
Bromofluorobenzene	112	76-125

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

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	84630
Units:	ug/Kg	Received:	09/17/03
Basis:	as received	Analyzed:	09/18/03

Type: BLANK
Lab ID: QC226167

Diln Fac: 1.000

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	NA	
MTBE	ND	5.0
Isopropyl Ether (DIPE)	NA	
Ethyl tert-Butyl Ether (ETBE)	NA	
Methyl tert-Amyl Ether (TAME)	NA	
1,2-Dichloroethane	ND	5.0
1,2-Dibromoethane	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	91	74-128
1,2-Dichloroethane-d4	83	76-130
Toluene-d8	94	80-120
Bromofluorobenzene	97	76-125

Type: BLANK
Lab ID: QC226168

Diln Fac: 1.000

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	5.0
1,2-Dichloroethane	ND	5.0
1,2-Dibromoethane	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	92	74-128
1,2-Dichloroethane-d4	87	76-130
Toluene-d8	96	80-120
Bromofluorobenzene	97	76-125

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

5.0

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC226164	Diln Fac:	1.000
Matrix:	Soil	Batch#:	84630
Units:	ug/Kg	Analyzed:	09/18/03

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)		NA		
MTBE	50.00	41.69	83	73-121
Isopropyl Ether (DIPE)		NA		
Ethyl tert-Butyl Ether (ETBE)		NA		
Methyl tert-Amyl Ether (TAME)		NA		

Surrogate	%REC	Limits
Dibromofluoromethane	85	74-128
1,2-Dichloroethane-d4	78	76-130
Toluene-d8	94	80-120
Bromofluorobenzene	95	76-125

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Soil	Diln Fac:	1.000
Units:	ug/Kg	Batch#:	84630
Basis:	as received	Analyzed:	09/18/03

Type: BS Lab ID: QC226165

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	250.0	247.3	99	70-130
MTBE		NA		
Isopropyl Ether (DIPE)	50.00	44.53	89	70-130
Ethyl tert-Butyl Ether (ETBE)	50.00	44.15	88	70-130
Methyl tert-Amyl Ether (TAME)	50.00	42.24	84	70-130

Surrogate	Result
Dibromofluoromethane	NA
1,2-Dichloroethane-d4	NA
Toluene-d8	NA
Bromofluorobenzene	NA

Type: BSD Lab ID: QC226166

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	250.0	251.1	100	70-130	2	20
MTBE		NA				
Isopropyl Ether (DIPE)	50.00	45.90	92	70-130	3	20
Ethyl tert-Butyl Ether (ETBE)	50.00	45.33	91	70-130	3	20
Methyl tert-Amyl Ether (TAME)	50.00	43.52	87	70-130	3	20

Surrogate	Result
Dibromofluoromethane	NA
1,2-Dichloroethane-d4	NA
Toluene-d8	NA
Bromofluorobenzene	NA

NA= Not Analyzed
RPD= Relative Percent Difference

7.0

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167652	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	167659-001	Batch#:	84630
Matrix:	Soil	Sampled:	09/18/03
Units:	ug/Kg	Received:	09/18/03
Basis:	as received	Analyzed:	09/19/03

Type: MS Lab ID: QC226257

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.2100	50.00	42.83	86	48-133

Surrogate	%REC	Limits
Dibromofluoromethane	93	74-128
1,2-Dichloroethane-d4	84	76-130
Toluene-d8	96	80-120
Bromofluorobenzene	99	76-125

Type: MSD Lab ID: QC226258

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	45.82	92	48-133	7	20

Surrogate	%REC	Limits
Dibromofluoromethane	93	74-128
1,2-Dichloroethane-d4	86	76-130
Toluene-d8	95	80-120
Bromofluorobenzene	102	76-125

RPD= Relative Percent Difference

8.0

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: 16-OCT-03
Lab Job Number: 167941
Project ID: 2552
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: _____ for JG
Operations Manager

Curtis & Tompkins, Ltd.

Laboratory Number: **167941**
Client: **SOMA Environmental Engineering Inc.**
Project: **2552**
Request Date: **10/2/2003**

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for eight soil samples requested from the above referenced project on October 2, 2003. The samples were received on ice and intact.

Total Volatile Hydrocarbons:

In sample TWB-2@31-31.5, the surrogate recoveries are outside control limits. The sample was rerun and results confirm.

No other analytical problems were encountered.

Purgeable Organics (EPA 8260):

The recovery for MTBE in the blank spike duplicate of batch 85167 is outside acceptance limits. Another set of blank spikes were analyzed in this batch for MTBE and results are acceptable.

No other analytical problems were encountered.

SOMA

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 # 167941

Project No: 2552
Project Name: Pardee/SL: 1501 Freedom
Project P.O.: -
Turnaround Time: standard

Sampler: R W Papler
Report To: Joyce B
Company: SOMA
Telephone: (925) 244-6600
Fax: (925) 244-6601

Laboratory Number	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO	HNO_3	ICE	Field Notes	Analyses: TPH-g	BTEX + MTBE	MTBE confirm	Low Oxygenates 8260B
For Lab Use Only -1	TWB-1@16.5'	10/1/03 3:00p	X			1				X	Temp. Well Borehole TWB-1	X	X		X
-2	TWB-1@18.5'	3:15p	X			1				X		X	X		X
-3	TWB-1@21.5'	3:30p	X			1				X		X	X		X
-4	TWB-1@24.5'	3:45p	X			1				X		X	X		X
-5	TWB-2@20.5'	11:15a	X			1				X	TWB-2	X	X		X
-6	TWB-2@29.5'	12:00p	X			1				X		X	X		X
-7	TWB-2@31'	12:30p	X			1				X		X	X		X
-8	TWB-2@33.5'	12:45p	X			1				X		X	X		X

Notes: EDF Required

RELINQUISHED BY:

1 Oct 2003 / 9:15p DATE/TIME	RW Papler
DATE/TIME	
Joyce Bobek 10/2/03 11:32am DATE/TIME	Joyce Bobek

RECEIVED BY:

Oct 1, 2003 9:15 PM DATE/TIME	M. Sepeta
DATE/TIME	
10/2/03 11:32 am DATE/TIME	George Lumbre

Signature

Acid intact from refrigerator cold

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Soil	Sampled:	10/01/03
Basis:	as received	Received:	10/02/03

Field ID:	TWB-1@16-16.5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	85063
Lab ID:	167941-001	Analyzed:	10/04/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.0	mg/Kg	8015B
Benzene	ND	5.2	ug/Kg	EPA 8021B
Toluene	ND	5.2	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.2	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.2	ug/Kg	EPA 8021B
o-Xylene	ND	5.2	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	100	56-144	8015B
Bromofluorobenzene (FID)	100	51-142	8015B
Trifluorotoluene (PID)	85	45-150	EPA 8021B
Bromofluorobenzene (PID)	88	42-138	EPA 8021B

Field ID:	TWB-1@18-18.5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	85063
Lab ID:	167941-002	Analyzed:	10/04/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	1.8 Y	1.0	mg/Kg	8015B
Benzene	ND	5.2	ug/Kg	EPA 8021B
Toluene	ND	5.2	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.2	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.2	ug/Kg	EPA 8021B
o-Xylene	ND	5.2	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	102	56-144	8015B
Bromofluorobenzene (FID)	107	51-142	8015B
Trifluorotoluene (PID)	87	45-150	EPA 8021B
Bromofluorobenzene (PID)	92	42-138	EPA 8021B

J= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Soil	Sampled:	10/01/03
Basis:	as received	Received:	10/02/03

Field ID:	TWB-1@21.5-22	Diln Fac:	100.0
Type:	SAMPLE	Batch#:	85101
Lab ID:	167941-003	Analyzed:	10/07/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	3,300	100	mg/Kg	8015B
Benzene	ND	500	ug/Kg	EPA 8021B
Toluene	ND	500	ug/Kg	EPA 8021B
Ethylbenzene	56,000	500	ug/Kg	EPA 8021B
m,p-Xylenes	140,000	500	ug/Kg	EPA 8021B
o-Xylene	42,000	500	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	136	56-144	8015B
Bromofluorobenzene (FID)	138	51-142	8015B
Trifluorotoluene (PID)	84	45-150	EPA 8021B
Bromofluorobenzene (PID)	94	42-138	EPA 8021B

Field ID:	TWB-1@24-24.5	Diln Fac:	200.0
Type:	SAMPLE	Batch#:	85101
Lab ID:	167941-004	Analyzed:	10/06/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	4,000	200	mg/Kg	8015B
Benzene	ND	1,000	ug/Kg	EPA 8021B
Toluene	12,000 C	1,000	ug/Kg	EPA 8021B
Ethylbenzene	84,000	1,000	ug/Kg	EPA 8021B
m,p-Xylenes	280,000	1,000	ug/Kg	EPA 8021B
o-Xylene	85,000	1,000	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	132	56-144	8015B
Bromofluorobenzene (FID)	135	51-142	8015B
Trifluorotoluene (PID)	86	45-150	EPA 8021B
Bromofluorobenzene (PID)	98	42-138	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Soil	Sampled:	10/01/03
Basis:	as received	Received:	10/02/03

Field ID:	TWB-2@20-20.5	Diln Fac:	5.000
Type:	SAMPLE	Batch#:	85101
Lab ID:	167941-005	Analyzed:	10/06/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	29 Y	5.0	mg/Kg	8015B
Benzene	ND	25	ug/Kg	EPA 8021B
Toluene	ND	25	ug/Kg	EPA 8021B
Ethylbenzene	53	25	ug/Kg	EPA 8021B
m,p-Xylenes	68 C	25	ug/Kg	EPA 8021B
o-Xylene	220	25	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	100	56-144	8015B
Bromofluorobenzene (FID)	120	51-142	8015B
Trifluorotoluene (PID)	69	45-150	EPA 8021B
Bromofluorobenzene (PID)	88	42-138	EPA 8021B

Field ID:	TWB-2@29.5-30	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	85101
Lab ID:	167941-006	Analyzed:	10/06/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	0.99	mg/Kg	8015B
Benzene	ND	5.0	ug/Kg	EPA 8021B
Toluene	ND	5.0	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.0	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.0	ug/Kg	EPA 8021B
o-Xylene	ND	5.0	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	88	56-144	8015B
Bromofluorobenzene (FID)	111	51-142	8015B
Trifluorotoluene (PID)	66	45-150	EPA 8021B
Bromofluorobenzene (PID)	86	42-138	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Soil	Sampled:	10/01/03
Basis:	as received	Received:	10/02/03

Field ID:	TWB-2@31-31.5	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	85101
Lab ID:	167941-007	Analyzed:	10/06/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	1.6	1.1	mg/Kg	8015B
Benzene	ND	5.3	ug/Kg	EPA 8021B
Toluene	ND	5.3	ug/Kg	EPA 8021B
Ethylbenzene	9.7 C	5.3	ug/Kg	EPA 8021B
m,p-Xylenes	7.5	5.3	ug/Kg	EPA 8021B
o-Xylene	ND	5.3	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	46 *	56-144	8015B
Bromofluorobenzene (FID)	56	51-142	8015B
Trifluorotoluene (PID)	31 *	45-150	EPA 8021B
Bromofluorobenzene (PID)	41 *	42-138	EPA 8021B

Field ID:	TWB-2@33-33.25	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	85063
Lab ID:	167941-008	Analyzed:	10/04/03

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.1	mg/Kg	8015B
Benzene	ND	5.4	ug/Kg	EPA 8021B
Toluene	ND	5.4	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.4	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.4	ug/Kg	EPA 8021B
o-Xylene	ND	5.4	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	100	56-144	8015B
Bromofluorobenzene (FID)	102	51-142	8015B
Trifluorotoluene (PID)	86	45-150	EPA 8021B
Bromofluorobenzene (PID)	88	42-138	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

1.1

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Soil	Sampled:	10/01/03
Basis:	as received	Received:	10/02/03

Type:	BLANK	Batch#:	85063
Lab ID:	QC227862	Analyzed:	10/03/03
Dil'n Fac:	1.000		

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.0	mg/Kg	8015B
Benzene	ND	5.0	ug/Kg	EPA 8021B
Toluene	ND	5.0	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.0	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.0	ug/Kg	EPA 8021B
o-Xylene	ND	5.0	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	98	56-144	8015B
Bromofluorobenzene (FID)	103	51-142	8015B
Trifluorotoluene (PID)	83	45-150	EPA 8021B
Bromofluorobenzene (PID)	87	42-138	EPA 8021B

Type:	BLANK	Batch#:	85101
Lab ID:	QC228010	Analyzed:	10/06/03
Dil'n Fac:	1.000		

Analyte	Result	RL	Units	Analysis
Gasoline C7-C12	ND	1.0	mg/Kg	8015B
Benzene	ND	5.0	ug/Kg	EPA 8021B
Toluene	ND	5.0	ug/Kg	EPA 8021B
Ethylbenzene	ND	5.0	ug/Kg	EPA 8021B
m,p-Xylenes	ND	5.0	ug/Kg	EPA 8021B
o-Xylene	ND	5.0	ug/Kg	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	89	56-144	8015B
Bromofluorobenzene (FID)	111	51-142	8015B
Trifluorotoluene (PID)	68	45-150	EPA 8021B
Bromofluorobenzene (PID)	86	42-138	EPA 8021B

*= Value outside of QC limits; see narrative
C= Presence confirmed, but RPD between columns exceeds 40%
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

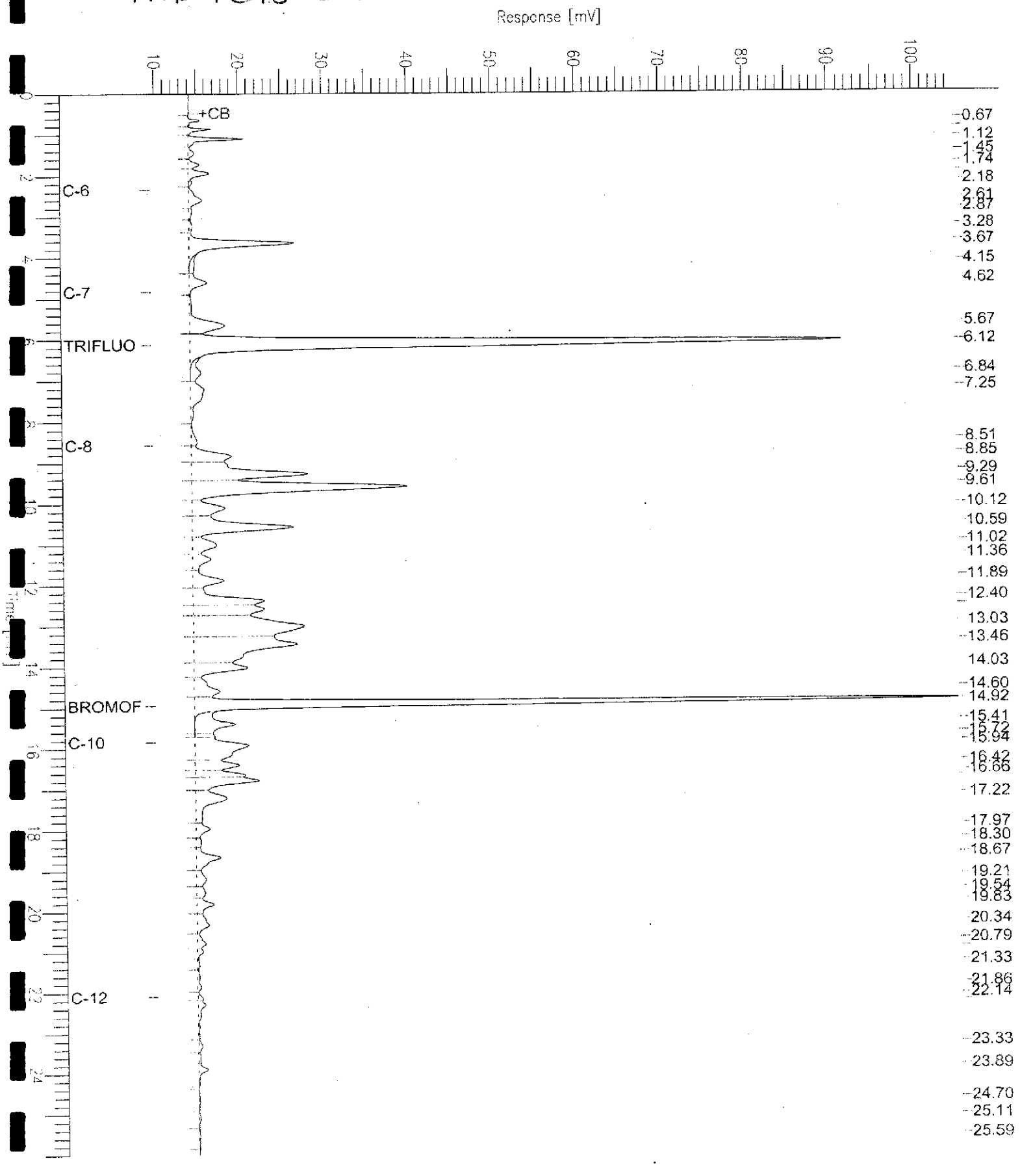
1.1

GC07 TVH 'A' Data File RTX 502

Sample Name : 167941-002,85063
File Name : G:\GC07\DATA\276A024.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 10 mV

Sample #: a
Date : 10/4/03 04:32 AM
Time of Injection: 10/4/03 04:06 AM
Low Point : 9.59 mV High Point : 104.90 mV
Plot Scale: 95.3 mV

TWB-1@18-18.5

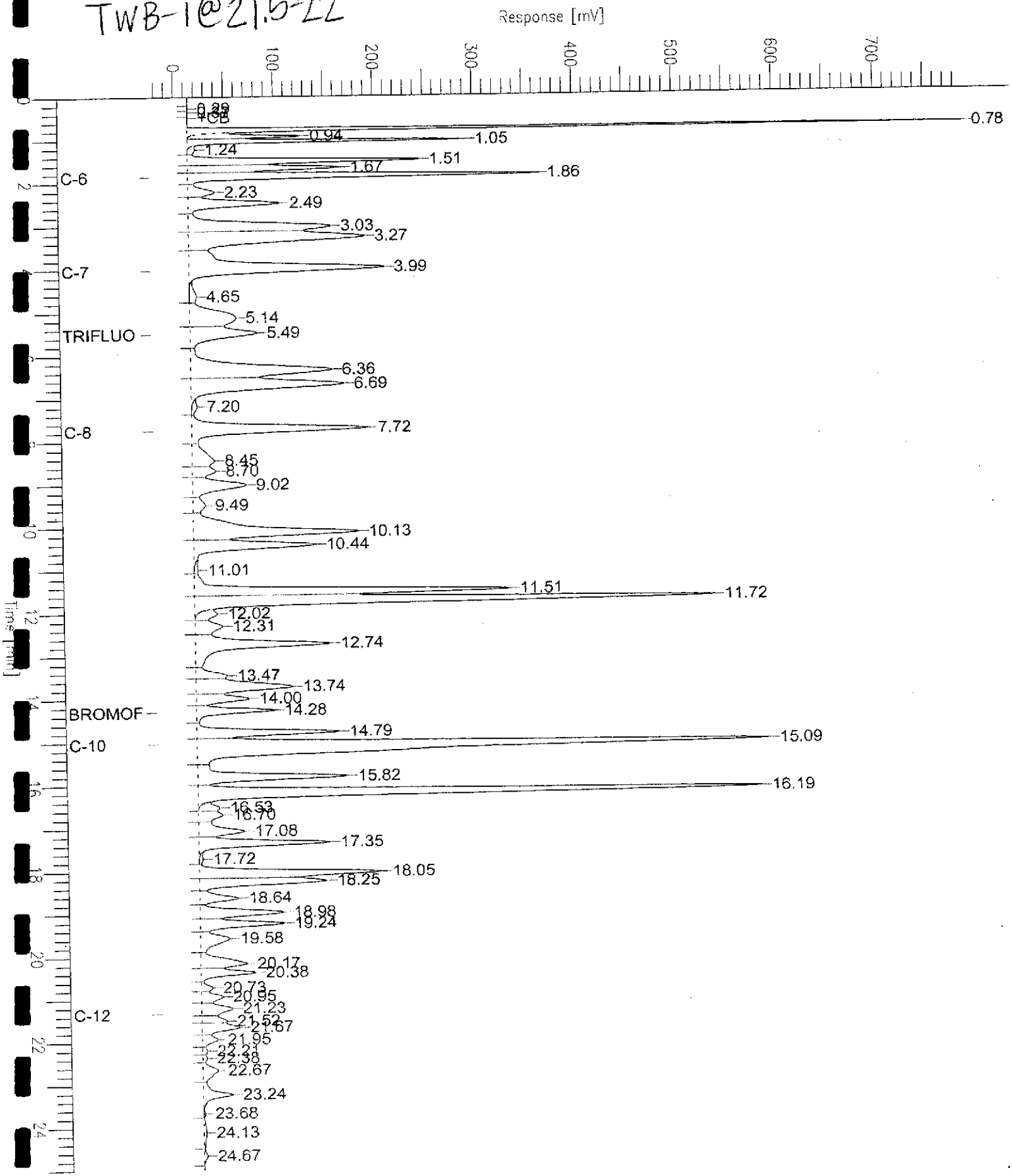


Chromatogram

Sample Name : 167941-003,85101
File Name : G:\GC05\DATA\279G021.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -24 mV

Sample #: a
Date : 10/7/03 01:51 AM
Time of Injection: 10/7/03 01:26 AM
Low Point : -24.43 mV High Point : 789.20 mV
Plot Scale: 813.6 mV

TWB-1@21.5-22

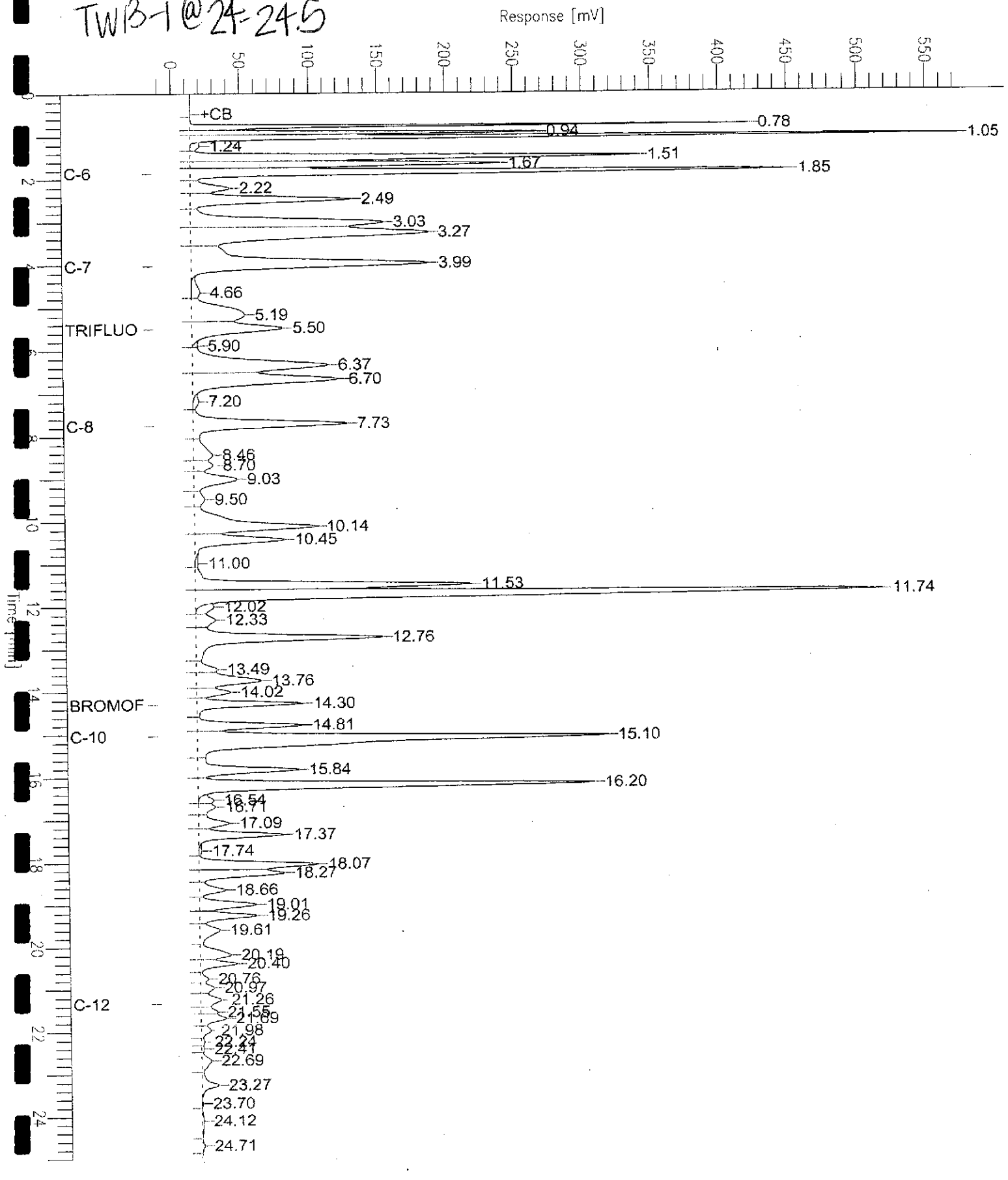


Chromatogram

Sample Name : 167941-004,85101
File Name : G:\GC05\DATA\279G012.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -14 mV

Sample #: a
Date : 10/6/03 07:57 PM
Time of Injection: 10/6/03 07:32 PM
Low Point : -13.76 mV High Point : 573.89 mV
Plot Scale: 587.7 mV

TW13-1 @ 24-24.5



Chromatogram

Sample Name : 167941-005,85101
File Name : G:\GC05\DATA\279G008.raw
Method : TVHBTXB
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -34 mV

Sample #: a
Date : 10/6/03 05:34 PM
Time of Injection: 10/6/03 05:09 PM
Low Point : -33.76 mV High Point : 969.15 mV
Plot Scale: 1002.9 mV

TWB-2@20-20-5

Response [mV]

0 100 200 300 400 500 600 700 800 900

Time [min]

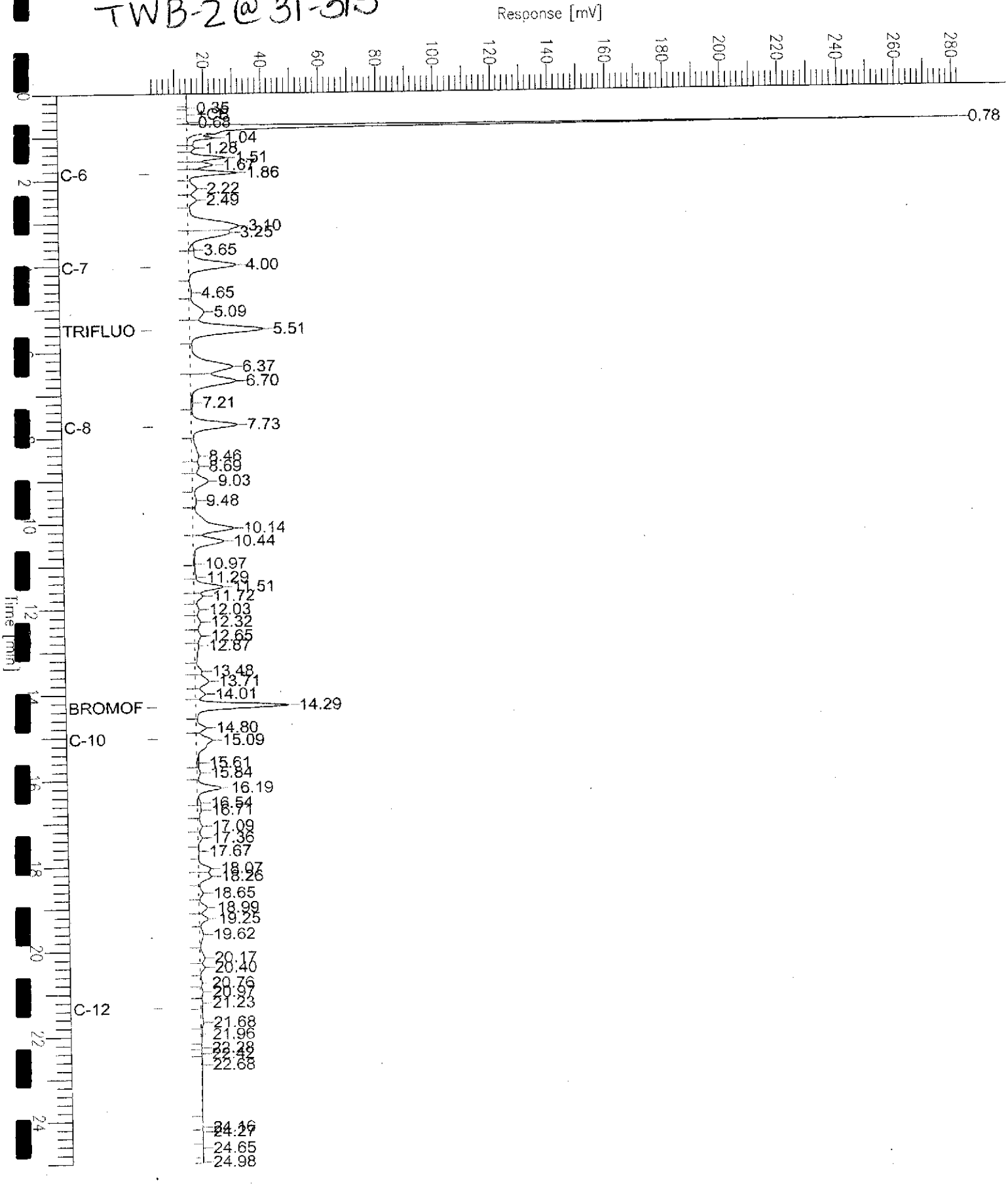
0.18
+CB
0.78
1.51
1.68
C-6
2.24
2.50
3.13
3.68
C-7
4.67
5.10
TRIFLUO
5.52
6.29
6.73
7.23
C-8
7.73
8.48
8.71
9.04
9.53
10.14
10.45
10.79
11.30
11.52
12.05
12.33
12.66
12.91
13.49
13.69
14.02
BROMOF
14.30
C-10
14.81
15.06
15.42
15.63
15.89
16.20
16.74
16.99
17.35
17.75
18.19
18.66
19.00
19.26
19.73
20.20
20.41
20.76
21.08
C-12
21.70
21.99
22.40
22.70
23.14
23.27
23.72
24.20
24.43
24.71

Chromatogram

Sample Name : 167941-007,85101
File Name : G:\GC05\DATA\279G018.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: 1 mV

Sample #: a
Date : 10/7/03 12:11 AM
Time of Injection: 10/6/03 11:46 PM
Low Point : 0.87 mV High Point : 282.31 mV
Plot Scale: 281.4 mV

TWB-2 @ 31-315

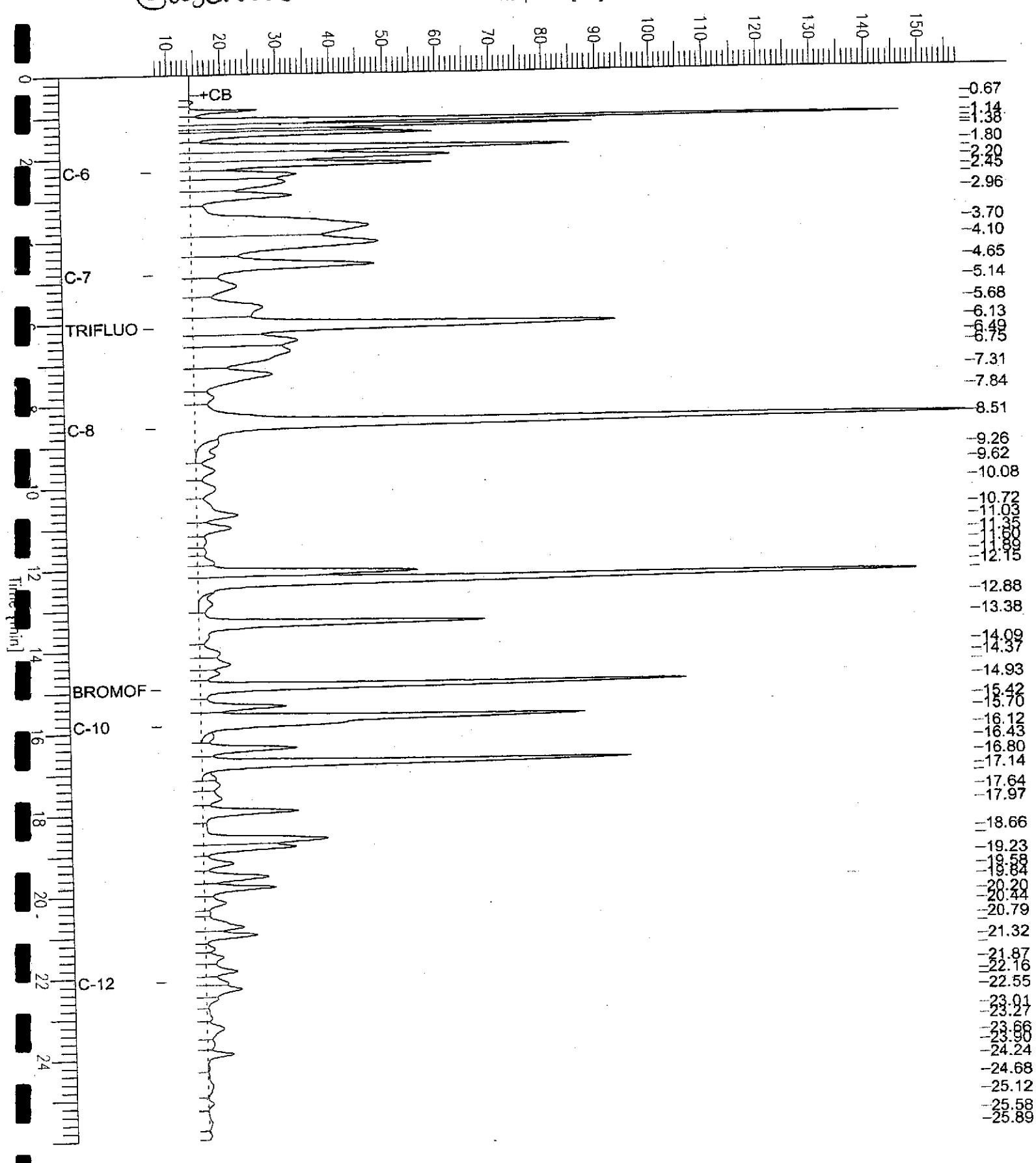


GC07 TVH 'A' Data File RTX 502

Sample Name : ccv/lcs,qc227864,85063,03ws1625,2.5/5000
File Name : G:\GC07\DATA\276A002.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: 1.0 Plot Offset: 7 mV

Sample #:
Date : 10/3/03 01:59 PM
Time of Injection: 10/3/03 01:33 PM
Low Point : 7.03 mV High Point : 157.78 mV
Plot Scale: 150.7 mV

Gasoline

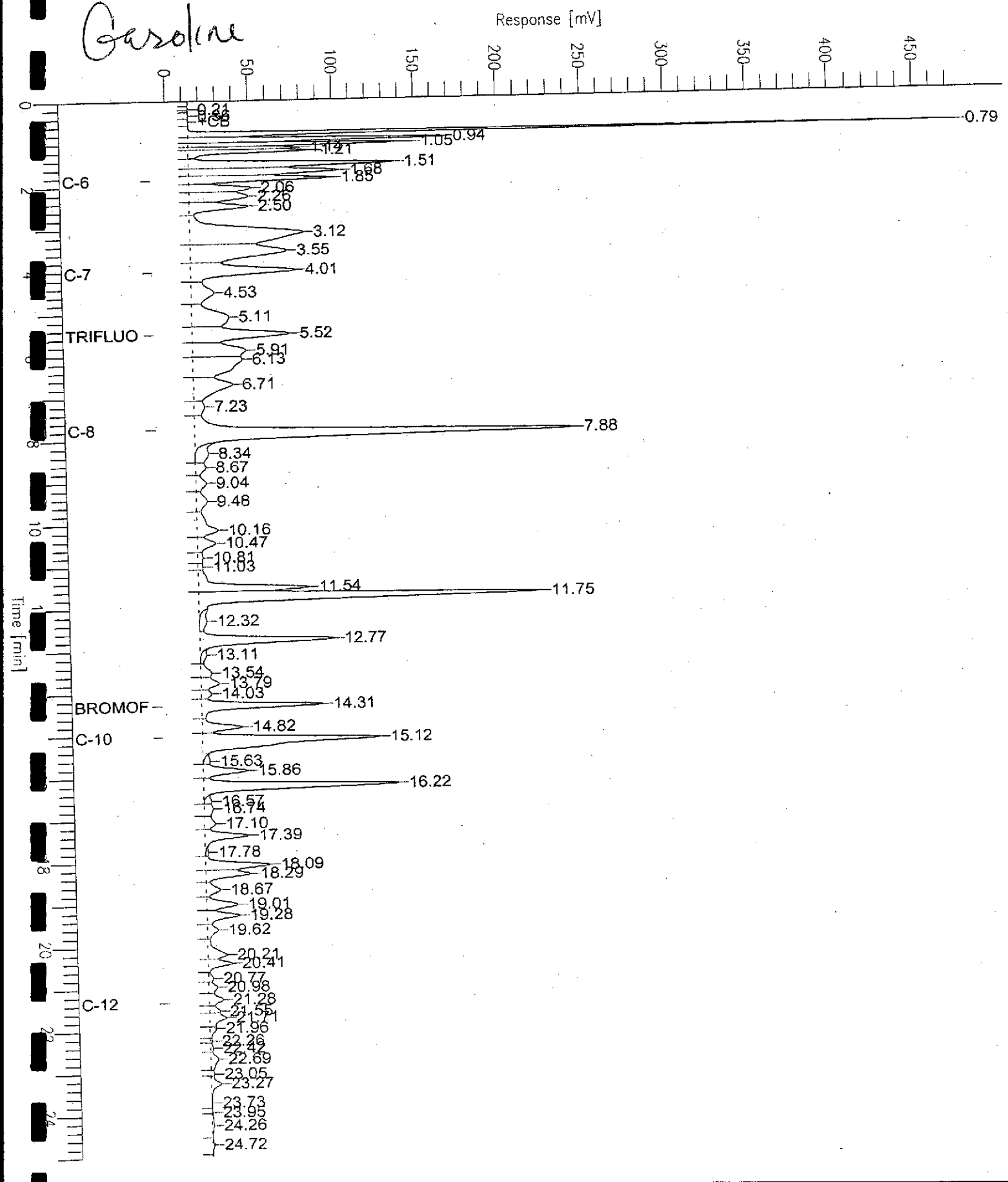


Chromatogram

Sample Name : ccv/lcs,qc228011,85101,03ws1625,5/5000
File Name : g:\gc05\data\279g003.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -9 mV

Sample #:
Date : 10/6/03 03:07 PM
Time of Injection: 10/6/03 02:01 PM
Low Point : -9.20 mV High Point : 476.48 mV
Plot Scale: 485.7 mV

Gasoline



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8021B
Type:	LCS	Basis:	as received
Lab ID:	QC227863	Diln Fac:	1.000
Matrix:	Soil	Batch#:	85063
Units:	ug/Kg	Analyzed:	10/03/03

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12		NA		
Benzene	50.00	51.88	104	80-121
Toluene	50.00	50.17	100	80-120
Ethylbenzene	50.00	51.58	103	79-120
m,p-Xylenes	100.0	111.3	111	76-120
o-Xylene	50.00	52.36	105	80-120

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		84	45-150
Bromofluorobenzene (PID)		88	42-138

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Type:	LCS	Basis:	as received
Lab ID:	QC227864	Diln Fac:	1.000
Matrix:	Soil	Batch#:	85063
Units:	mg/Kg	Analyzed:	10/03/03

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	5.000	5.477	110	80-120
Benzene		NA		
Toluene		NA		
Ethylbenzene		NA		
m,p-Xylenes		NA		
o-Xylene		NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		112	56-144
Bromofluorobenzene (FID)		105	51-142
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

NA= Not Analyzed

3.0

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Type:	LCS	Basis:	as received
Lab ID:	QC228011	Diln Fac:	1.000
Matrix:	Soil	Batch#:	85101
Units:	mg/Kg	Analyzed:	10/06/03

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	10.00	9.786	98	80-120
Benzene		NA		
Toluene		NA		
Ethylbenzene		NA		
m,p-Xylenes		NA		
o-Xylene		NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		112	56-144
Bromofluorobenzene (FID)		130	51-142
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

NA= Not Analyzed

5.0

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8021B
Type:	LCS	Basis:	as received
Lab ID:	QC228012	Diln Fac:	1.000
Matrix:	Soil	Batch#:	85101
Units:	ug/Kg	Analyzed:	10/06/03

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12		NA		
Benzene	100.0	106.1	106	80-121
Toluene	100.0	94.33	94	80-120
Ethylbenzene	100.0	95.18	95	79-120
m,p-Xylenes	200.0	199.1	100	76-120
o-Xylene	100.0	100.0	100	80-120

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		70	45-150
Bromofluorobenzene (PID)		89	42-138

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	167961-002	Batch#:	85063
Matrix:	Soil	Sampled:	10/02/03
Units:	mg/Kg	Received:	10/02/03
Basis:	as received	Analyzed:	10/03/03

Type: MS Lab ID: QC227881

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	<0.09400	10.20	8.681	85	24-134
Benzene			NA		
Toluene			NA		
Ethylbenzene			NA		
m,p-Xylenes			NA		
o-Xylene			NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		121	56-144
Bromofluorobenzene (FID)		112	51-142
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

Type: MSD Lab ID: QC227882

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.42	8.964	86	24-134	1	32
Benzene		NA				
Toluene		NA				
Ethylbenzene		NA				
m,p-Xylenes		NA				
o-Xylene		NA				

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		119	56-144
Bromofluorobenzene (FID)		111	51-142
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

NA= Not Analyzed
RPD= Relative Percent Difference

4.0

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Field ID:	TWB-2@29.5-30	Diln Fac:	1.000
MS Lab ID:	167941-006	Batch#:	85101
Matrix:	Soil	Sampled:	10/01/03
Units:	mg/Kg	Received:	10/02/03
Basis:	as received	Analyzed:	10/07/03

Type: MS Lab ID: QC228088

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.09655	10.20	9.443	92	24-134
Benzene			NA		
Toluene			NA		
Ethylbenzene			NA		
m,p-Xylenes			NA		
o-Xylene			NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		110	56-144
Bromofluorobenzene (FID)		130	51-142
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

Type: MSD Lab ID: QC228089

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.31	9.829	94	24-134	3	32
Benzene		NA				
Toluene		NA				
Ethylbenzene		NA				
m,p-Xylenes		NA				
o-Xylene		NA				

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		114	56-144
Bromofluorobenzene (FID)		133	51-142
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

NA= Not Analyzed
RPD= Relative Percent Difference

7.0

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Basis:	as received	Received:	10/02/03
Sampled:	10/01/03		

Field ID:	TWB-1@16-16.5	Units:	ug/Kg
Type:	SAMPLE	Diln Fac:	0.9615
Lab ID:	167941-001	Batch#:	85093
Matrix:	Soil	Analyzed:	10/06/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	96
MTBE	ND	4.8
Isopropyl Ether (DIPE)	ND	4.8
Ethyl tert-Butyl Ether (ETBE)	ND	4.8
Methyl tert-Amyl Ether (TAME)	ND	4.8
1,2-Dichloroethane	ND	4.8
1,2-Dibromoethane	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	98	74-128
1,2-Dichloroethane-d4	103	76-130
Toluene-d8	101	80-120
Bromofluorobenzene	102	76-125

Field ID:	TWB-1@18-18.5	Units:	ug/Kg
Type:	SAMPLE	Diln Fac:	0.9615
Lab ID:	167941-002	Batch#:	85093
Matrix:	Soil	Analyzed:	10/06/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	96
MTBE	ND	4.8
Isopropyl Ether (DIPE)	ND	4.8
Ethyl tert-Butyl Ether (ETBE)	ND	4.8
Methyl tert-Amyl Ether (TAME)	ND	4.8
1,2-Dichloroethane	ND	4.8
1,2-Dibromoethane	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	100	74-128
1,2-Dichloroethane-d4	104	76-130
Toluene-d8	101	80-120
Bromofluorobenzene	101	76-125

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

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Basis:	as received	Received:	10/02/03
Sampled:	10/01/03		

Field ID:	TWB-1@21.5-22	Units:	ug/Kg
Type:	SAMPLE	Diln Fac:	357.1
Lab ID:	167941-003	Batch#:	85167
Matrix:	Soil	Analyzed:	10/08/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	36,000
MTBE	ND	1,800
Isopropyl Ether (DIPE)	ND	1,800
Ethyl tert-Butyl Ether (ETBE)	ND	1,800
Methyl tert-Amyl Ether (TAME)	ND	1,800
1,2-Dichloroethane	ND	1,800
1,2-Dibromoethane	ND	1,800

Surrogate	%REC	Limits
Dibromofluoromethane	100	74-128
1,2-Dichloroethane-d4	102	76-130
Toluene-d8	102	80-120
Bromofluorobenzene	99	76-125

Field ID:	TWB-1@24-24.5	Units:	ug/Kg
Type:	SAMPLE	Diln Fac:	250.0
Lab ID:	167941-004	Batch#:	85137
Matrix:	Soil	Analyzed:	10/07/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	25,000
MTBE	ND	1,300
Isopropyl Ether (DIPE)	ND	1,300
Ethyl tert-Butyl Ether (ETBE)	ND	1,300
Methyl tert-Amyl Ether (TAME)	ND	1,300
1,2-Dichloroethane	ND	1,300
1,2-Dibromoethane	ND	1,300

Surrogate	%REC	Limits
Dibromofluoromethane	92	74-128
1,2-Dichloroethane-d4	99	76-130
Toluene-d8	89	80-120
Bromofluorobenzene	102	76-125

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

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Basis:	as received	Received:	10/02/03
Sampled:	10/01/03		

Field ID:	TWB-2@20-20.5	Units:	ug/Kg
Type:	SAMPLE	Diln Fac:	0.9615
Lab ID:	167941-005	Batch#:	85132
Matrix:	Soil	Analyzed:	10/07/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	96
MTBE	ND	4.8
Isopropyl Ether (DIPE)	ND	4.8
Ethyl tert-Butyl Ether (ETBE)	ND	4.8
Methyl tert-Amyl Ether (TAME)	ND	4.8
1,2-Dichloroethane	ND	4.8
1,2-Dibromoethane	ND	4.8

Surrogate	%REC	Limits
Dibromofluoromethane	97	74-128
1,2-Dichloroethane-d4	100	76-130
Toluene-d8	102	80-120
Bromofluorobenzene	102	76-125

Field ID:	TWB-2@29.5-30	Units:	ug/Kg
Type:	SAMPLE	Diln Fac:	0.9091
Lab ID:	167941-006	Batch#:	85093
Matrix:	Soil	Analyzed:	10/06/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	91
MTBE	ND	4.5
Isopropyl Ether (DIPE)	ND	4.5
Ethyl tert-Butyl Ether (ETBE)	ND	4.5
Methyl tert-Amyl Ether (TAME)	ND	4.5
1,2-Dichloroethane	ND	4.5
1,2-Dibromoethane	ND	4.5

Surrogate	%REC	Limits
Dibromofluoromethane	97	74-128
1,2-Dichloroethane-d4	101	76-130
Toluene-d8	102	80-120
Bromofluorobenzene	104	76-125

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

8.1

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Basis:	as received	Received:	10/02/03
Sampled:	10/01/03		

Field ID:	TWB-2@31-31.5	Units:	ug/Kg
Type:	SAMPLE	Diln Fac:	0.9259
Lab ID:	167941-007	Batch#:	85093
Matrix:	Soil	Analyzed:	10/06/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	93
MTBE	ND	4.6
Isopropyl Ether (DIPE)	ND	4.6
Ethyl tert-Butyl Ether (ETBE)	ND	4.6
Methyl tert-Amyl Ether (TAME)	ND	4.6
1,2-Dichloroethane	ND	4.6
1,2-Dibromoethane	ND	4.6

Surrogate	%REC	Limits
Dibromofluoromethane	99	74-128
1,2-Dichloroethane-d4	105	76-130
Toluene-d8	104	80-120
Bromofluorobenzene	99	76-125

Field ID:	TWB-2@33-33.25	Units:	ug/Kg
Type:	SAMPLE	Diln Fac:	0.9259
Lab ID:	167941-008	Batch#:	85093
Matrix:	Soil	Analyzed:	10/06/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	93
MTBE	ND	4.6
Isopropyl Ether (DIPE)	ND	4.6
Ethyl tert-Butyl Ether (ETBE)	ND	4.6
Methyl tert-Amyl Ether (TAME)	ND	4.6
1,2-Dichloroethane	ND	4.6
1,2-Dibromoethane	ND	4.6

Surrogate	%REC	Limits
Dibromofluoromethane	99	74-128
1,2-Dichloroethane-d4	102	76-130
Toluene-d8	98	80-120
Bromofluorobenzene	102	76-125

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

8.1

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Basis:	as received	Received:	10/02/03
Sampled:	10/01/03		

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC227981	Batch#:	85093
Matrix:	Soil	Analyzed:	10/06/03
Units:	ug/Kg		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	5.0
1,2-Dichloroethane	ND	5.0
1,2-Dibromoethane	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	98	74-128
1,2-Dichloroethane-d4	106	76-130
Toluene-d8	103	80-120
Bromofluorobenzene	106	76-125

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC228132	Batch#:	85132
Matrix:	Soil	Analyzed:	10/07/03
Units:	ug/Kg		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	5.0
1,2-Dichloroethane	ND	5.0
1,2-Dibromoethane	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	93	74-128
1,2-Dichloroethane-d4	106	76-130
Toluene-d8	103	80-120
Bromofluorobenzene	107	76-125

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

8.1

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Basis:	as received	Received:	10/02/03
Sampled:	10/01/03		

Type: BLANK
Lab ID: QC228133
Matrix: Soil

Analyte	Result
tert-Butyl Alcohol (TBA)	NA
MTBE	NA
Isopropyl Ether (DIPE)	NA
Ethyl tert-Butyl Ether (ETBE)	NA
Methyl tert-Amyl Ether (TAME)	NA
1,2-Dichloroethane	NA
1,2-Dibromoethane	NA

Surrogate	Result
Dibromofluoromethane	NA
1,2-Dichloroethane-d4	NA
Toluene-d8	NA
Bromofluorobenzene	NA

Type: BLANK
Lab ID: QC228151
Matrix: Water
Units: ug/L
Diln Fac: 1.000
Batch#: 85137
Analyzed: 10/07/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Isopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
Methyl tert-Amyl Ether (TAME)	ND	5.0
1,2-Dichloroethane	ND	5.0
1,2-Dibromoethane	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	95	74-128
1,2-Dichloroethane-d4	101	76-130
Toluene-d8	102	80-120
Bromofluorobenzene	102	76-125

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

8.1

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Basis:	as received	Received:	10/02/03
Sampled:	10/01/03		

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC228268	Batch#:	85167
Matrix:	Water	Analyzed:	10/08/03
Units:	ug/L		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	100
MTBE	ND	5.0
Diisopropyl Ether (DIPE)	ND	5.0
Ethyl tert-Butyl Ether (ETBE)	ND	5.0
tert-Amyl Methyl Ether (TAME)	ND	5.0
1,2-Dichloroethane	ND	5.0
1,2-Dibromoethane	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	103	74-128
1,2-Dichloroethane-d4	106	76-130
Toluene-d8	100	80-120
Bromofluorobenzene	106	76-125

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

8.1

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC227980	Diln Fac:	1.000
Matrix:	Soil	Batch#:	85093
Units:	ug/Kg	Analyzed:	10/06/03

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)		NA		
MTBE	50.00	50.16	100	73-121
Diisopropyl Ether (DIPE)		NA		
Ethyl tert-Butyl Ether (ETBE)		NA		
Methyl tert-Amyl Ether (TAME)		NA		

Surrogate	%REC	Limits
Dibromofluoromethane	98	74-128
1,2-Dichloroethane-d4	101	76-130
Toluene-d8	101	80-120
Bromofluorobenzene	100	76-125

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC228009	Diln Fac:	1.000
Matrix:	Soil	Batch#:	85093
Units:	ug/Kg	Analyzed:	10/06/03

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	250.0	286.2	114	70-130
MTBE	50.00	51.49	103	73-121
Isopropyl Ether (DIPE)	50.00	48.72	97	70-130
Ethyl tert-Butyl Ether (ETBE)	50.00	49.37	99	70-130
Methyl tert-Amyl Ether (TAME)	50.00	44.84	90	70-130

Surrogate	%REC	Limits
Dibromofluoromethane	97	74-128
1,2-Dichloroethane-d4	106	76-130
Toluene-d8	100	80-120
Bromofluorobenzene	105	76-125

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC228129	Diln Fac:	1.000
Matrix:	Soil	Batch#:	85132
Units:	ug/Kg	Analyzed:	10/07/03

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)		NA		
MTBE	50.00	52.46	105	73-121
Isopropyl Ether (DIPE)		NA		
Ethyl tert-Butyl Ether (ETBE)		NA		
Methyl tert-Amyl Ether (TAME)		NA		

Surrogate	%REC	Limits
Dibromofluoromethane	103	74-128
1,2-Dichloroethane-d4	105	76-130
Toluene-d8	101	80-120
Bromofluorobenzene	101	76-125

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Type:	LCS	Basis:	as received
Lab ID:	QC228130	Diln Fac:	1.000
Matrix:	Soil	Batch#:	85132
Units:	ug/Kg	Analyzed:	10/07/03

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	250.0	257.0	103	70-130
MTBE	50.00	52.46	105	73-121
Isopropyl Ether (DIPE)	50.00	50.34	101	70-130
Ethyl tert-Butyl Ether (ETBE)	50.00	50.46	101	70-130
Methyl tert-Amyl Ether (TAME)	50.00	47.36	95	70-130

Surrogate	%REC	Limits
Dibromofluoromethane	96	74-128
1,2-Dichloroethane-d4	103	76-130
Toluene-d8	103	80-120
Bromofluorobenzene	106	76-125

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC228150	Batch#:	85137
Matrix:	Water	Analyzed:	10/07/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)		NA		
MTBE	50.00	54.26	109	73-121
Diisopropyl Ether (DIPE)		NA		
Ethyl tert-Butyl Ether (ETBE)		NA		
Methyl tert-Amyl Ether (TAME)		NA		

Surrogate	%REC	Limits
Dibromofluoromethane	97	74-128
1,2-Dichloroethane-d4	98	76-130
Toluene-d8	102	80-120
Bromofluorobenzene	103	76-125

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC228152	Batch#:	85137
Matrix:	Water	Analyzed:	10/07/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	250.0	298.5	119	70-130
MTBE	50.00	54.01	108	73-121
Isopropyl Ether (DIPE)	50.00	52.44	105	70-130
Ethyl tert-Butyl Ether (ETBE)	50.00	52.80	106	70-130
Methyl tert-Amyl Ether (TAME)	50.00	47.65	95	70-130

Surrogate	%REC	Limits
Dibromofluoromethane	94	74-128
1,2-Dichloroethane-d4	100	76-130
Toluene-d8	100	80-120
Bromofluorobenzene	107	76-125

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	85167
Units:	ug/L	Analyzed:	10/08/03
Dln Fac:	1.000		

Type: BS Lab ID: QC228266

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	250.0	300.4	120	70-130
MTBE	50.00	56.58	113	73-121
Isopropyl Ether (DIPE)	50.00	59.87	120	70-130
Ethyl tert-Butyl Ether (ETBE)	50.00	61.31	123	70-130
Methyl tert-Amyl Ether (TAME)	50.00	49.57	99	70-130

Surrogate	%REC	Limits
Dibromofluoromethane	98	74-128
1,2-Dichloroethane-d4	101	76-130
Toluene-d8	98	80-120
Bromofluorobenzene	107	76-125

Type: BSD Lab ID: QC228267

Analyte	Spiked	Result	%REC		Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	250.0	320.2	128		70-130	6	20
MTBE	50.00	61.39	123	*	73-121	8	20
Isopropyl Ether (DIPE)	50.00	62.55	125		70-130	4	20
Ethyl tert-Butyl Ether (ETBE)	50.00	65.21	130		70-130	6	20
Methyl tert-Amyl Ether (TAME)	50.00	50.69	101		70-130	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	102	74-128
1,2-Dichloroethane-d4	103	76-130
Toluene-d8	100	80-120
Bromofluorobenzene	106	76-125

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	85167
Units:	ug/L	Analyzed:	10/08/03
Dln Fac:	1.000		

Type: BS Lab ID: QC228264

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)		NA		
MTBE	50.00	56.14	112	73-121
Isopropyl Ether (DIPE)		NA		
Ethyl tert-Butyl Ether (ETBE)		NA		
Methyl tert-Amyl Ether (TAME)		NA		

Surrogate	%REC	Limits
Dibromofluoromethane	105	74-128
1,2-Dichloroethane-d4	104	76-130
Toluene-d8	100	80-120
Bromofluorobenzene	101	76-125

Type: BSD Lab ID: QC228265

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)		NA				
MTBE	50.00	55.92	112	73-121	0	20
Isopropyl Ether (DIPE)		NA				
Ethyl tert-Butyl Ether (ETBE)		NA				
Methyl tert-Amyl Ether (TAME)		NA				

Surrogate	%REC	Limits
Dibromofluoromethane	103	74-128
1,2-Dichloroethane-d4	102	76-130
Toluene-d8	99	80-120
Bromofluorobenzene	103	76-125

NA= Not Analyzed
RPD= Relative Percent Difference

18.0

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Field ID:	TWB-1@16-16.5	Diln Fac:	0.9615
MS Lab ID:	167941-001	Batch#:	85093
Matrix:	Soil	Sampled:	10/01/03
Units:	ug/Kg	Received:	10/02/03
Basis:	as received	Analyzed:	10/06/03

Type: MS Lab ID: QC228047

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.2700	48.08	47.85	100	48-133

Surrogate	%REC	Limits
Dibromofluoromethane	100	74-128
1,2-Dichloroethane-d4	101	76-130
Toluene-d8	103	80-120
Bromofluorobenzene	97	76-125

Type: MSD Lab ID: QC228048

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	48.08	48.35	101	48-133	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	102	74-128
1,2-Dichloroethane-d4	101	76-130
Toluene-d8	99	80-120
Bromofluorobenzene	97	76-125

RPD= Relative Percent Difference

11.0

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Field ID:	TWB-2@20-20.5	Diln Fac:	0.9615
MSS Lab ID:	167941-005	Batch#:	85132
Matrix:	Soil	Sampled:	10/01/03
Units:	ug/Kg	Received:	10/02/03
Basis:	as received	Analyzed:	10/07/03

Type: MS Lab ID: QC228185

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.2700	48.08	47.09	98	48-133

Surrogate	%REC	Limits
Dibromofluoromethane	100	74-128
1,2-Dichloroethane-d4	104	76-130
Toluene-d8	107	80-120
Bromofluorobenzene	103	76-125

Type: MSD Lab ID: QC228186

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	48.08	50.94	106	48-133	8	20

Surrogate	%REC	Limits
Dibromofluoromethane	100	74-128
1,2-Dichloroethane-d4	103	76-130
Toluene-d8	102	80-120
Bromofluorobenzene	99	76-125

RPD= Relative Percent Difference

14.0

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167941	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Field ID:	TWB-1@21.5-22	Diln Fac:	714.3
MSS Lab ID:	167941-003	Batch#:	85137
Matrix:	Soil	Sampled:	10/01/03
Units:	ug/Kg	Received:	10/02/03
Basis:	as received	Analyzed:	10/07/03

Type: MS Lab ID: QC228183

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<200.0	35,710	42,050	118	48-133

Surrogate	%REC	Limits
Dibromofluoromethane	98	74-128
1,2-Dichloroethane-d4	101	76-130
Toluene-d8	97	80-120
Bromofluorobenzene	100	76-125

Type: MSD Lab ID: QC228184

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	35,710	40,280	113	48-133	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	97	74-128
1,2-Dichloroethane-d4	99	76-130
Toluene-d8	94	80-120
Bromofluorobenzene	103	76-125

RPD= Relative Percent Difference

17.0

Appendix E

Laboratory Reports of Groundwater Analytical and Chain of Custody Form

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: 16-OCT-03
Lab Job Number: 167940
Project ID: 2552
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: _____ for JG
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

Laboratory Number: **167940**
Client: **SOMA Environmental Engineering Inc.**
Project: **2552**
Request Date: **10/2/2003**

CASE NARRATIVE

This hardcopy data package contains sample results and batch QC results for two water samples requested from the above referenced project on October 2, 2003. The samples were received on ice and intact.

Total Volatile Hydrocarbons/BTXE:

In sampleTWB-1 the surrogate trifluorotoluene recovery exceeds control limits due to coelution of the surrogate peak with other hydrocarbon peaks. The associated surrogate bromofluorobenzene is acceptable.

No other analytical problems were encountered.

Purgeable Organics (EPA 8260):

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 # 167940

Sampler: RW Pappler
Report To: Joyce Bobek
Company: SOMA
Telephone: (925) 244-6600
Fax: (925) 244-6601

Project No: 2552
Project Name: Pardee/SL: 1510 Freedom
Project P.O.: —
Turnaround Time: Standard

Laboratory Number	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	FP/Waste	# of Containers VOAs	Preservative: HCL	H_2SO	HNO_3	ICE	Other	Field Notes	Analyses: TPH-g 8015	BTEX 8021	Low Oxygenates 8260B
-1	TWB-1	10:00		X			4	X			X		Temp. Well Borehole TWB-1	X	X	X
-2	TWB-2			X			4				X	X	TWB-2	X	X	X
-3	TWB-1 FP				X		1	X			X		TWB-1			

For Laboratory Use

Notes: EDF Required

Hold on TWB-1 Free Product - call Mansour S.

RELINQUISHED BY:

X	RW Pappler	Oct 2003/925p DATE/TIME
		DATE/TIME
Joyce Bobek	Joyce Bobek	10/2/03 11:32 DATE/TIME

Signature

RECEIVED BY:

X	M. Sepehr	Oct 1, 2003 9:25 PM DATE/TIME
		DATE/TIME
	Barry Lumbre	10/2/03 11:32 DATE/TIME

rec'd intact from refrigerator cold

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Water	Sampled:	10/01/03
Units:	ug/L	Received:	10/02/03
Batch#:	85018		

Field ID:	TWB-1	Lab ID:	167940-001
Type:	SAMPLE	Analyzed:	10/03/03

Analyte	Result	RL	Diln Fac	Analysis
Gasoline C7-C12	410,000	2,500	50.00	8015B
Benzene	2,200 C	25	50.00	EPA 8021B
Toluene	1,300 C	25	50.00	EPA 8021B
Ethylbenzene	9,400	25	50.00	EPA 8021B
m,p-Xylenes	19,000	50	100.0	EPA 8021B
o-Xylene	6,700	25	50.00	EPA 8021B

Surrogate	%REC	Limits	Diln Fac	Analysis
Trifluorotoluene (FID)	179 *	57-150	50.00	8015B
Bromofluorobenzene (FID)	127	65-144	50.00	8015B
Trifluorotoluene (PID)	103	54-149	50.00	EPA 8021B
Bromofluorobenzene (PID)	89	58-143	50.00	EPA 8021B

Field ID:	TWB-2	Diln Fac:	1.000
Type:	SAMPLE	Analyzed:	10/02/03
Lab ID:	167940-002		

Analyte	Result	RL	Analysis
Gasoline C7-C12	1,700	50	8015B
Benzene	ND	0.50	EPA 8021B
Toluene	ND	0.50	EPA 8021B
Ethylbenzene	31	0.50	EPA 8021B
m,p-Xylenes	51	0.50	EPA 8021B
o-Xylene	ND	0.50	EPA 8021B

Surrogate	%REC	Limits	Analysis
Trifluorotoluene (FID)	131	57-150	8015B
Bromofluorobenzene (FID)	111	65-144	8015B
Trifluorotoluene (PID)	87	54-149	EPA 8021B
Bromofluorobenzene (PID)	83	58-143	EPA 8021B

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

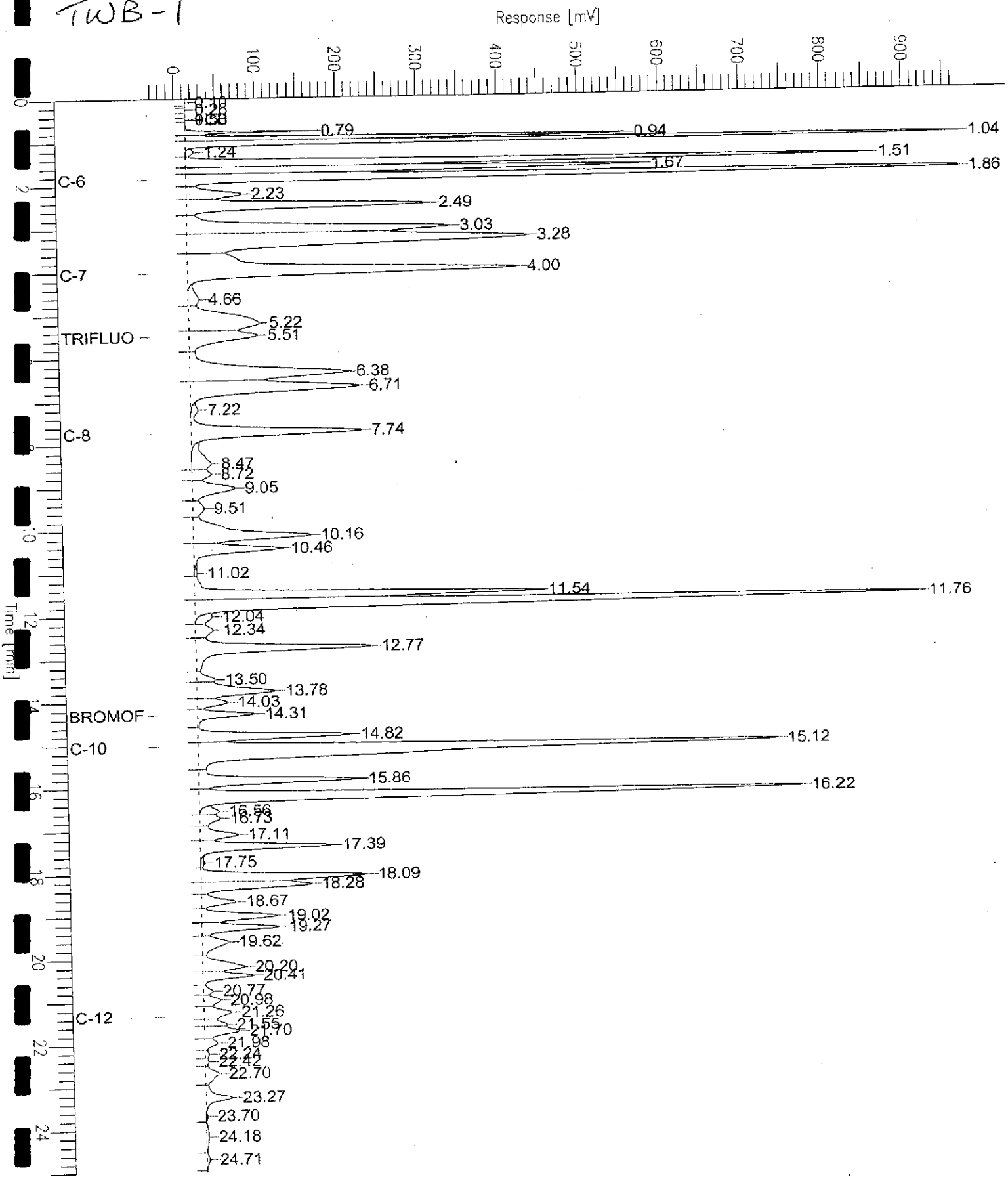
1.0

Chromatogram

Sample Name : 167940-001,85018
File Name : G:\GC05\DATA\275G038.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -34 mV

Sample #: a2.2
Date : 10/3/03 10:29 AM
Time of Injection: 10/3/03 10:04 AM
Low Point : -33.67 mV High Point : 969.47 mV
Plot Scale: 1003.1 mV

TWB-1

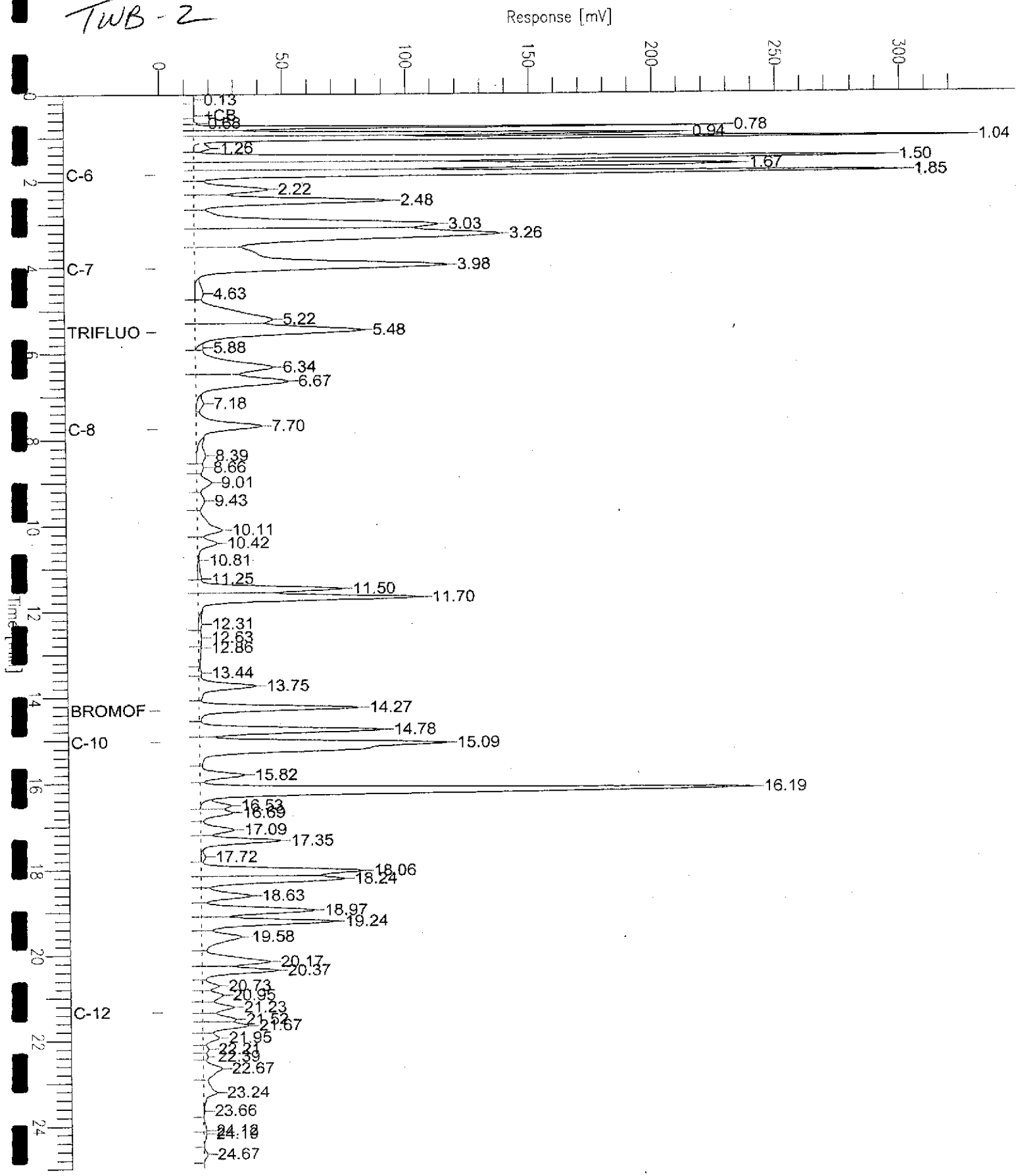


Chromatogram

Sample Name : 167940-002,85018
File Name : G:\GC05\DATA\275G019.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -2 mV

Sample #: a7
Date : 10/2/03 11:29 PM
Time of Injection: 10/2/03 11:04 PM
Low Point : -1.66 mV High Point : 328.01 mV
Plot Scale: 329.7 mV

TWB-2



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Water	Sampled:	10/01/03
Units:	ug/L	Received:	10/02/03
Batch#:	85018		

Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC227681	Analyzed:	10/02/03

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)	91	57-150	8015B
Bromofluorobenzene (FID)	90	65-144	8015B
Trifluorotoluene (PID)	70	54-149	EPA 8021B
Bromofluorobenzene (PID)	71	58-143	EPA 8021B

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

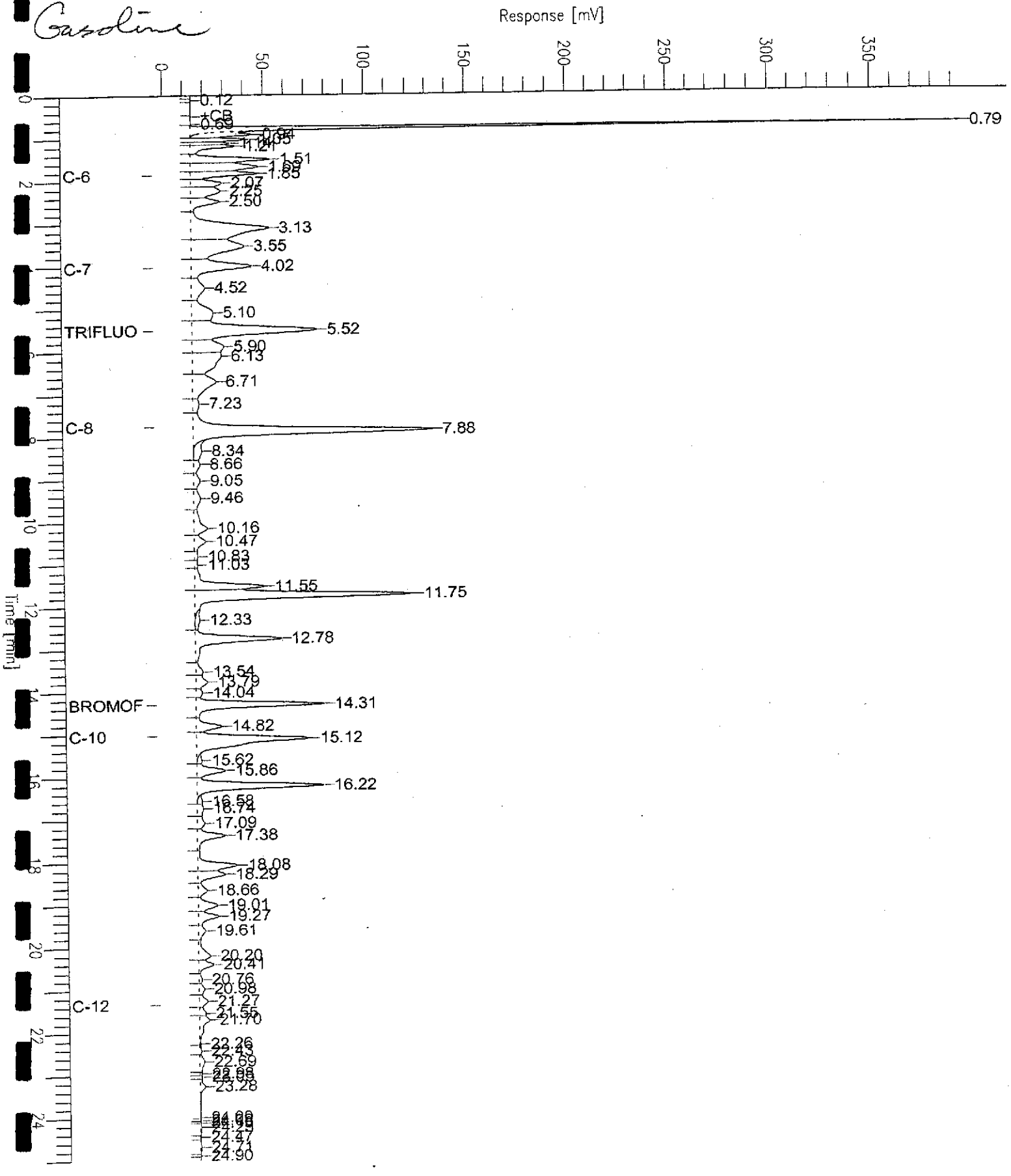
1.0

Chromatogram

Sample Name : ccv/lcs,qc227683,85018,03wb1335,2.5/5000
File Name : G:\GC05\DATA\275G002.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -5 mV

Sample #: Page 1 of 1
Date : 10/2/03 12:23 PM
Time of Injection: 10/2/03 11:58 AM
Low Point : -4.84 mV High Point : 394.58 mV
Plot Scale: 399.4 mV

Gasoline



Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC227682	Batch#:	85018
Matrix:	Water	Analyzed:	10/02/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12		NA		
Benzene	10.00	11.09	111	78-123
Toluene	10.00	10.05	100	79-120
Ethylbenzene	10.00	10.04	100	80-120
m,p-Xylenes	20.00	20.95	105	76-120
o-Xylene	10.00	10.34	103	80-121

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)	NA		
Bromofluorobenzene (FID)	NA		
Trifluorotoluene (PID)		81	54-149
Bromofluorobenzene (PID)		83	58-143

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC227683	Batch#:	85018
Matrix:	Water	Analyzed:	10/02/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,015	102	80-120
Benzene		NA		
Toluene		NA		
Ethylbenzene		NA		
m,p-Xylenes		NA		
o-Xylene		NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		115	57-150
Bromofluorobenzene (FID)		111	65-144
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

NA= Not Analyzed

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Field ID:	ZZZZZZZZZZ	Batch#:	85018
MSS Lab ID:	167932-002	Sampled:	09/26/03
Matrix:	Water	Received:	10/02/03
Units:	ug/L	Analyzed:	10/02/03
Dil'n Fac:	1.000		

Type: MS Lab ID: QC227748

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	102.2	2,000	2,297	110	76-120
Benzene			NA		
Toluene			NA		
Ethylbenzene			NA		
m,p-Xylenes			NA		
o-Xylene			NA		

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		141	57-150
Bromofluorobenzene (FID)		135	65-144
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

Type: MSD Lab ID: QC227749

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,272	108	76-120	1	20
Benzene		NA				
Toluene		NA				
Ethylbenzene		NA				
m,p-Xylenes		NA				
o-Xylene		NA				

Surrogate	Result	%REC	Limits
Trifluorotoluene (FID)		143	57-150
Bromofluorobenzene (FID)		138	65-144
Trifluorotoluene (PID)	NA		
Bromofluorobenzene (PID)	NA		

NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	10/01/03
Units:	ug/L	Received:	10/02/03

Field ID:	TWB-1	Diln Fac:	40.00
Type:	SAMPLE	Batch#:	85046
Lab ID:	167940-001	Analyzed:	10/04/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	400
MTBE	ND	20
Isopropyl Ether (DIPE)	ND	20
Ethyl tert-Butyl Ether (ETBE)	ND	20
Methyl tert-Amyl Ether (TAME)	ND	20
1,2-Dichloroethane	ND	20
1,2-Dibromoethane	ND	20

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-121
1,2-Dichloroethane-d4	102	77-129
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-123

Field ID:	TWB-2	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	85095
Lab ID:	167940-002	Analyzed:	10/06/03

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	34	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
1,2-Dichloroethane	4.7	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-121
1,2-Dichloroethane-d4	103	77-129
Toluene-d8	99	80-120
Bromofluorobenzene	100	80-123

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	10/01/03
Units:	ug/L	Received:	10/02/03

Type:	BLANK	Batch#:	85046
Lab ID:	QC227805	Analyzed:	10/03/03
Dil'n 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
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-121
1,2-Dichloroethane-d4	102	77-129
Toluene-d8	99	80-120
Bromofluorobenzene	106	80-123

Type:	BLANK	Batch#:	85095
Lab ID:	QC227990	Analyzed:	10/06/03
Dil'n 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
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-121
1,2-Dichloroethane-d4	101	77-129
Toluene-d8	100	80-120
Bromofluorobenzene	101	80-123

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC227988	Batch#:	85095
Matrix:	Water	Analyzed:	10/06/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)		NA		
MTBE	50.00	54.68	109	69-124
Isopropyl Ether (DIPE)		NA		
Ethyl tert-Butyl Ether (ETBE)		NA		
Methyl tert-Amyl Ether (TAME)		NA		

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-121
1,2-Dichloroethane-d4	102	77-129
Toluene-d8	98	80-120
Bromofluorobenzene	102	80-123

NA= Not Analyzed

8.0

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Gasoline Oxygenates by GC/MS

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC227989	Batch#:	85095
Matrix:	Water	Analyzed:	10/06/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	250.0	303.5	121	70-130
MTBE	50.00	55.88	112	69-124
Diisopropyl Ether (DIPE)	50.00	59.32	119	70-130
Ethyl tert-Butyl Ether (ETBE)	50.00	60.35	121	70-130
Methyl tert-Amyl Ether (TAME)	50.00	51.59	103	70-130

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-121
1,2-Dichloroethane-d4	97	77-129
Toluene-d8	98	80-120
Bromofluorobenzene	103	80-123

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	85046
Units:	ug/L	Analyzed:	10/03/03
Dlln Fac:	1.000		

Type: BS Lab ID: QC227801

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)		NA		
MTBE	50.00	55.23	110	69-124
Isopropyl Ether (DIPE)		NA		
Ethyl tert-Butyl Ether (ETBE)		NA		
Methyl tert-Amyl Ether (TAME)		NA		

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-121
1,2-Dichloroethane-d4	99	77-129
Toluene-d8	99	80-120
Bromofluorobenzene	101	80-123

Type: BSD Lab ID: QC227802

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)		NA				
MTBE	50.00	57.00	114	69-124	3	20
Isopropyl Ether (DIPE)		NA				
Ethyl tert-Butyl Ether (ETBE)		NA				
Methyl tert-Amyl Ether (TAME)		NA				

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-121
1,2-Dichloroethane-d4	100	77-129
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-123

NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	85046
Units:	ug/L	Analyzed:	10/03/03
Diln Fac:	1.000		

Type: BS Lab ID: QC227803

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	250.0	305.0	122	70-130
MTBE	50.00	56.92	114	69-124
Isopropyl Ether (DIPE)	50.00	59.33	119	70-130
Ethyl tert-Butyl Ether (ETBE)	50.00	61.28	123	70-130
Methyl tert-Amyl Ether (TAME)	50.00	49.90	100	70-130

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-121
1,2-Dichloroethane-d4	98	77-129
Toluene-d8	97	80-120
Bromofluorobenzene	101	80-123

Type: BSD Lab ID: QC227804

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	250.0	300.4	120	70-130	2	20
MTBE	50.00	56.84	114	69-124	0	20
Isopropyl Ether (DIPE)	50.00	58.23	116	70-130	2	20
Ethyl tert-Butyl Ether (ETBE)	50.00	59.56	119	70-130	3	20
Methyl tert-Amyl Ether (TAME)	50.00	49.23	98	70-130	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-121
1,2-Dichloroethane-d4	99	77-129
Toluene-d8	98	80-120
Bromofluorobenzene	104	80-123

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167940	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	85095
MSS Lab ID:	167990-002	Sampled:	10/02/03
Matrix:	Water	Received:	10/03/03
Units:	ug/L	Analyzed:	10/06/03
Dil'n Fac:	1.000		

Type: MS Lab ID: QC227991

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.08800	50.00	56.75	113	67-127

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-121
1,2-Dichloroethane-d4	97	77-129
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-123

Type: MSD Lab ID: QC227992

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	54.29	109	67-127	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-121
1,2-Dichloroethane-d4	95	77-129
Toluene-d8	99	80-120
Bromofluorobenzene	103	80-123

RPD= Relative Percent Difference

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: 02-OCT-03
Lab Job Number: 167647
Project ID: 2552
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: _____ for JG
Operations Manager

CHAIN OF CUSTODY FORM

Page 1 of 1

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C&T LOGIN # 167647

Project No: 2552
Project Name: Pardee/St.: 1510 Freedom Ave
Project P.O.: —
Turnaround Time: Standard

Sampler: BW Parker
Report To: Joyce Bobek
Company: SOMA
Telephone: (925) 244-6600
Fax: (925) 244-6601

Laboratory Number	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCl	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Preservative: None	Field Notes	Analyses: TPH-g 8015	Analyses: BTEX & MTBE 8021	Analyses: MTBE Confirmation 8260B	Analyses: Vac Compounds 8260B
1	TWB-3	9/16/03 5:15P		x		4	x			x	x	Temporary Well Borehole-3	x	x		x
2	TWB-4A	9/16/03 12:45-1P		x		3				x	x	-4	x	x		x
3	TWB-5	9/16/03 4:45P		x		4				x	x	-5	x	x		x
4	TWB-6	9/17/03 11:15A		x		4				x	x	-6	x	x	x	x
For Laboratory Use																

Notes: EDF
confirm positive MTBE detections w/ 8260B

RELINQUISHED BY:
x [signature] 17 Sept 2003 1640 / 1840 DATE/TIME
DATE/TIME
DATE/TIME

RECEIVED BY:
DATE/TIME
DATE/TIME
x [signature] 9/17/03 1840 DATE/TIME

Signature

COLD & INTACT

Curtis & Tompkins, Ltd.

Curtis & Tompkins Laboratories Analytical Report

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Water	Batch#:	84626
Units:	ug/L	Received:	09/17/03
Diln Fac:	1.000		

Field ID:	TWB-3	Sampled:	09/17/03
Type:	SAMPLE	Analyzed:	09/19/03
Lab ID:	167647-001		

Analyte	Result	RL	Analysis
Gasoline C7-C12	150 H Y	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)	96	57-150	8015B
Bromofluorobenzene (FID)	130	65-144	8015B
Trifluorotoluene (PID)	77	54-149	EPA 8021B
Bromofluorobenzene (PID)	106	58-143	EPA 8021B

Field ID:	TWB-4A	Sampled:	09/16/03
Type:	SAMPLE	Analyzed:	09/18/03
Lab ID:	167647-002		

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)	98	57-150	8015B
Bromofluorobenzene (FID)	134	65-144	8015B
Trifluorotoluene (PID)	78	54-149	EPA 8021B
Bromofluorobenzene (PID)	108	58-143	EPA 8021B

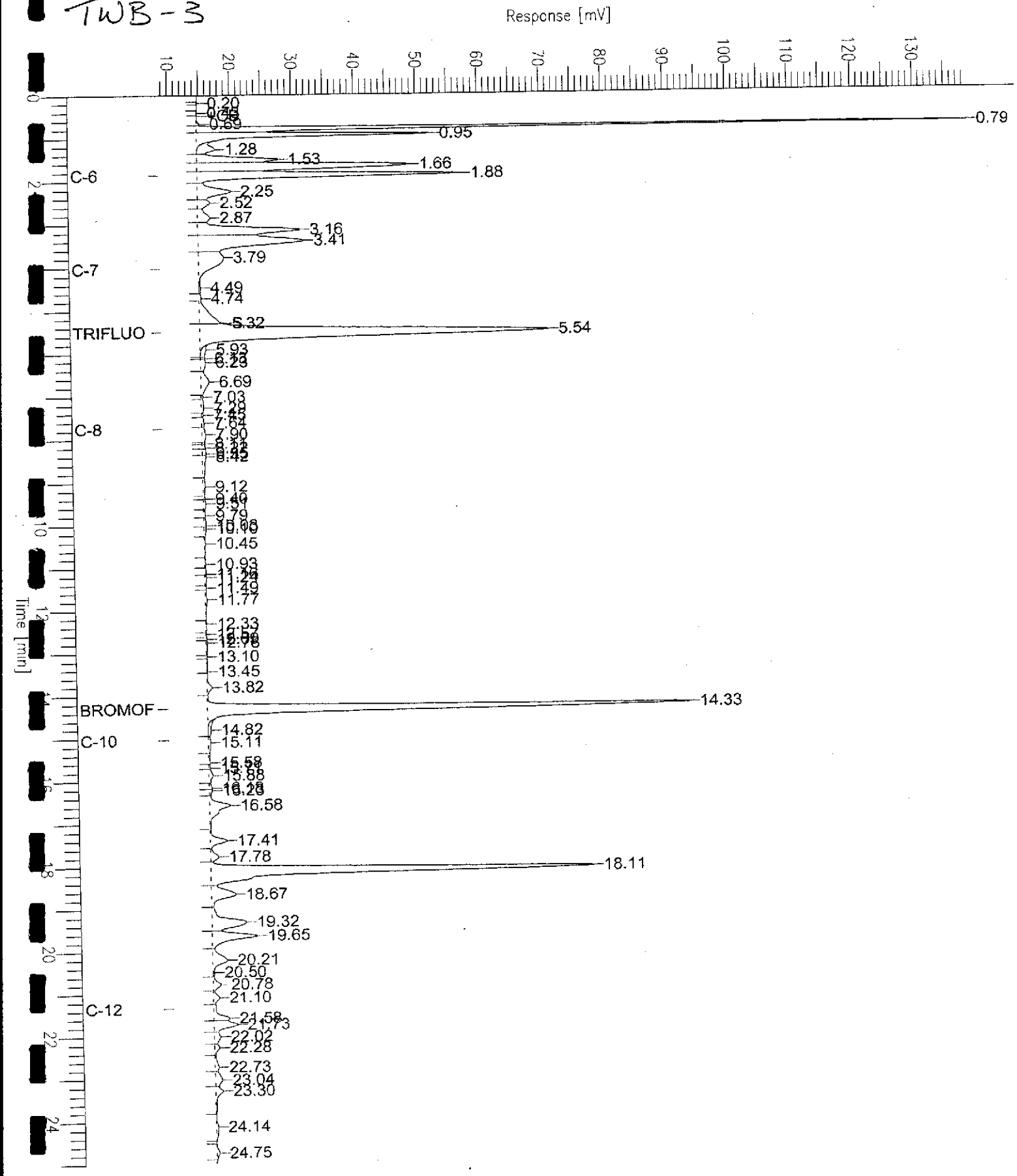
H= Heavier hydrocarbons contributed to the quantitation
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Chromatogram

Sample Name : 167647-001,84626
File Name : G:\GC05\DATA\261G024.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: 9 mV

Sample #: a7
Date : 9/19/03 02:00 PM
Time of Injection: 9/19/03 01:49 AM
Low Point : 8.55 mV High Point : 138.73 mV
Plot Scale: 130.2 mV

TWB-3



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Curtis & Tompkins Laboratories Analytical Report

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Water	Batch#:	84626
Units:	ug/L	Received:	09/17/03
Diln Fac:	1.000		

Field ID:	TWB-5	Sampled:	09/16/03
Type:	SAMPLE	Analyzed:	09/18/03
Lab ID:	167647-003		

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)	98	57-150	8015B
Bromofluorobenzene (FID)	132	65-144	8015B
Trifluorotoluene (PID)	79	54-149	EPA 8021B
Bromofluorobenzene (PID)	109	58-143	EPA 8021B

Field ID:	TWB-6	Sampled:	09/17/03
Type:	SAMPLE	Analyzed:	09/18/03
Lab ID:	167647-004		

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)	96	57-150	8015B
Bromofluorobenzene (FID)	131	65-144	8015B
Trifluorotoluene (PID)	77	54-149	EPA 8021B
Bromofluorobenzene (PID)	106	58-143	EPA 8021B

H= Heavier hydrocarbons contributed to the quantitation
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

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Curtis & Tompkins Laboratories Analytical Report

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552		
Matrix:	Water	Batch#:	84626
Units:	ug/L	Received:	09/17/03
Diln Fac:	1.000		

Type: BLANK
Lab ID: QC226154

Analyzed: 09/18/03

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)	92	57-150	8015B
Bromofluorobenzene (FID)	123	65-144	8015B
Trifluorotoluene (PID)	74	54-149	EPA 8021B
Bromofluorobenzene (PID)	98	58-143	EPA 8021B

H= Heavier hydrocarbons contributed to the quantitation
Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

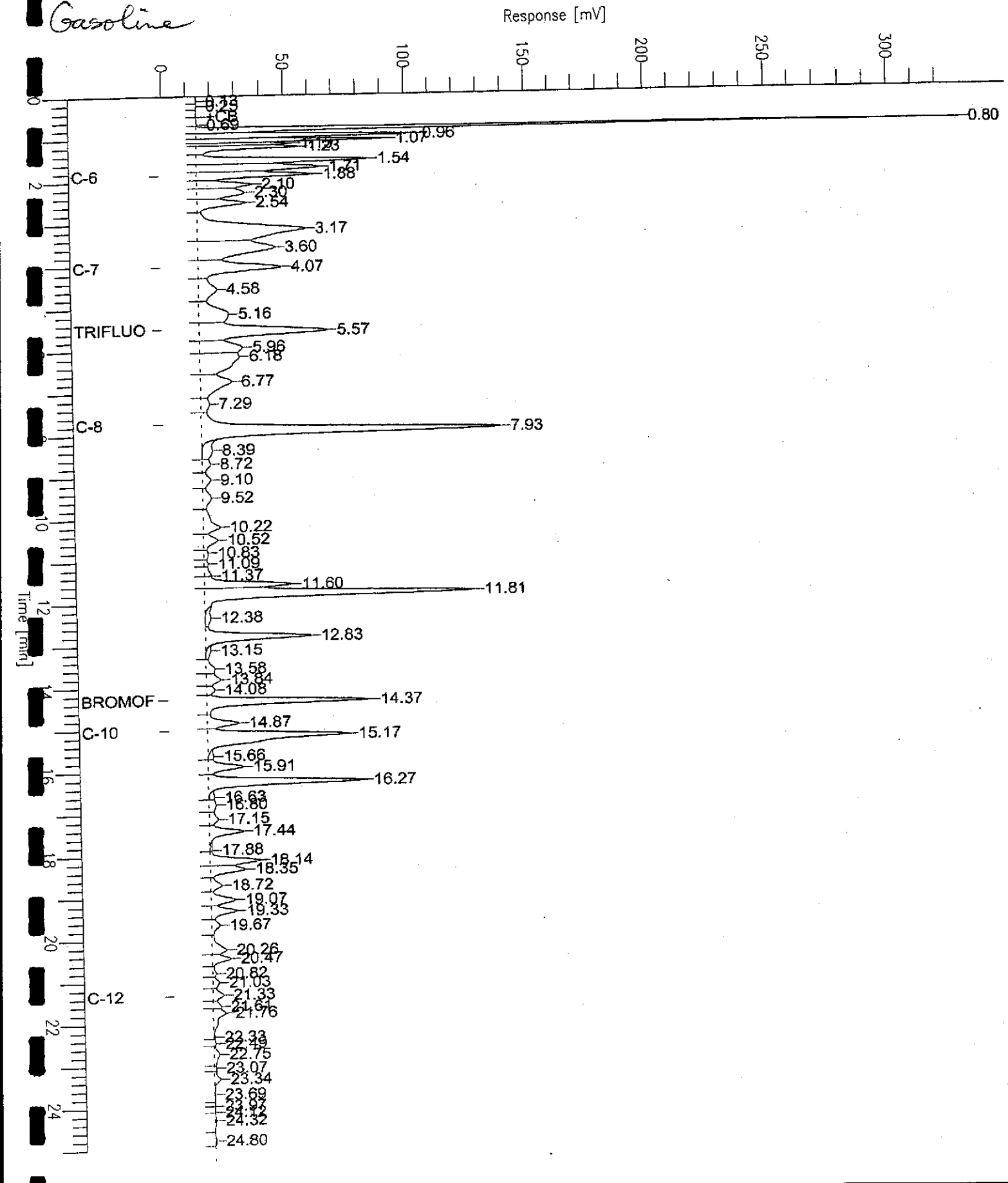
4.0

Chromatogram

Sample Name : ccv/lcs,qc226155,84626,03wsl335,2.5/5000
File Name : G:\GC05\DATA\261G002.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 25.00 min
Scale Factor: 1.0 Plot Offset: -1 mV

Sample #:
Date : 9/18/03 01:07 PM
Time of Injection: 9/18/03 12:42 PM
Low Point : -1.35 mV High Point : 329.96 mV
Plot Scale: 331.3 mV

Gasoline



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Total Volatile Hydrocarbons

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC226155	Batch#:	84626
Matrix:	Water	Analyzed:	09/18/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,067	107	80-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	100	57-150
Bromofluorobenzene (FID)	116	65-144

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Benzene, Toluene, Ethylbenzene, Xylenes

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8021B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC226156	Batch#:	84626
Matrix:	Water	Analyzed:	09/18/03
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Benzene	10.00	9.752	98	78-123
Toluene	10.00	8.989	90	79-120
Ethylbenzene	10.00	9.156	92	80-120
m,p-Xylenes	20.00	19.27	96	76-120
o-Xylene	10.00	9.470	95	80-121

Surrogate	%REC	Limits
Trifluorotoluene (PID)	67	54-149
Bromofluorobenzene (PID)	90	58-143

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Total Volatile Hydrocarbons

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	8015B
Field ID:	ZZZZZZZZZZ	Batch#:	84626
MSS Lab ID:	167650-002	Sampled:	09/17/03
Matrix:	Water	Received:	09/17/03
Units:	ug/L	Analyzed:	09/18/03
Dln Fac:	1.000		

Type: MS Lab ID: QC226242

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	19.75	2,000	2,211	110	76-120

Surrogate	%REC	Limits
Trifluorotoluene (FID)	116	57-150
Bromofluorobenzene (FID)	141	65-144

Type: MSD Lab ID: QC226243

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	2,204	109	76-120	0	20

Surrogate	%REC	Limits
Trifluorotoluene (FID)	110	57-150
Bromofluorobenzene (FID)	136	65-144

RPD= Relative Percent Difference

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Gasoline Oxygenates by GC/MS

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	84647
Units:	ug/L	Received:	09/17/03
Diln Fac:	1.000		

Field ID:	TWB-3	Sampled:	09/17/03
Type:	SAMPLE	Analyzed:	09/18/03
Lab ID:	167647-001		

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
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-121
1,2-Dichloroethane-d4	91	77-129
Toluene-d8	104	80-120
Bromofluorobenzene	103	80-123

Field ID:	TWB-4A	Sampled:	09/16/03
Type:	SAMPLE	Analyzed:	09/18/03
Lab ID:	167647-002		

Analyte	Result	RL
tert-Butyl Alcohol (TBA)	ND	10
MTBE	1.8	0.5
Isopropyl Ether (DIPE)	ND	0.5
Ethyl tert-Butyl Ether (ETBE)	ND	0.5
Methyl tert-Amyl Ether (TAME)	ND	0.5
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-121
1,2-Dichloroethane-d4	88	77-129
Toluene-d8	101	80-120
Bromofluorobenzene	106	80-123

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

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Gasoline Oxygenates by GC/MS

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	84647
Units:	ug/L	Received:	09/17/03
Diln Fac:	1.000		

Field ID:	TWB-5	Sampled:	09/16/03
Type:	SAMPLE	Analyzed:	09/19/03
Lab ID:	167647-003		

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
1,2-Dichloroethane	2.0	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-121
1,2-Dichloroethane-d4	88	77-129
Toluene-d8	101	80-120
Bromofluorobenzene	108	80-123

Field ID:	TWB-6	Sampled:	09/17/03
Type:	SAMPLE	Analyzed:	09/19/03
Lab ID:	167647-004		

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
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-121
1,2-Dichloroethane-d4	89	77-129
Toluene-d8	102	80-120
Bromofluorobenzene	109	80-123

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

1.0

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Gasoline Oxygenates by GC/MS

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	84647
Units:	ug/L	Received:	09/17/03
Diln Fac:	1.000		

Type: BLANK Analyzed: 09/18/03
Lab ID: QC226252

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
1,2-Dichloroethane	ND	0.5
1,2-Dibromoethane	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	93	80-121
1,2-Dichloroethane-d4	87	77-129
Toluene-d8	101	80-120
Bromofluorobenzene	110	80-123

Type: BLANK Lab ID: QC226253

Analyte	Result
tert-Butyl Alcohol (TBA)	NA
MTBE	NA
Isopropyl Ether (DIPE)	NA
Ethyl tert-Butyl Ether (ETBE)	NA
Methyl tert-Amyl Ether (TAME)	NA
1,2-Dichloroethane	NA
1,2-Dibromoethane	NA

Surrogate	Result
Dibromofluoromethane	NA
1,2-Dichloroethane-d4	NA
Toluene-d8	NA
Bromofluorobenzene	NA

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

1.0

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	84647
Units:	ug/L	Analyzed:	09/18/03
Diln Fac:	1.000		

Type: BS Lab ID: QC226248

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)		NA		
MTBE	50.00	47.95	96	69-124
Isopropyl Ether (DIPE)		NA		
Ethyl tert-Butyl Ether (ETBE)		NA		
Methyl tert-Amyl Ether (TAME)		NA		

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-121
1,2-Dichloroethane-d4	88	77-129
Toluene-d8	103	80-120
Bromofluorobenzene	95	80-123

Type: BSD Lab ID: QC226249

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)		NA				
MTBE	50.00	46.61	93	69-124	3	20
Isopropyl Ether (DIPE)		NA				
Ethyl tert-Butyl Ether (ETBE)		NA				
Methyl tert-Amyl Ether (TAME)		NA				

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-121
1,2-Dichloroethane-d4	85	77-129
Toluene-d8	100	80-120
Bromofluorobenzene	97	80-123

NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Gasoline Oxygenates by GC/MS

Lab #:	167647	Location:	15101 Freedom Avenue
Client:	SOMA Environmental Engineering Inc.	Prep:	EPA 5030B
Project#:	2552	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	84647
Units:	ug/L	Analyzed:	09/18/03
Diln Fac:	1.000		

Type: BS Lab ID: QC226250

Analyte	Spiked	Result	%REC	Limits
tert-Butyl Alcohol (TBA)	250.0	226.5	91	70-130
MTBE		NA		
Isopropyl Ether (DIPE)	50.00	57.09	114	70-130
Ethyl tert-Butyl Ether (ETBE)	50.00	52.83	106	70-130
Methyl tert-Amyl Ether (TAME)	50.00	46.51	93	70-130

Surrogate	Result
Dibromofluoromethane	NA
1,2-Dichloroethane-d4	NA
Toluene-d8	NA
Bromofluorobenzene	NA

Type: BSD Lab ID: QC226251

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
tert-Butyl Alcohol (TBA)	250.0	217.3	87	70-130	4	20
MTBE		NA				
Isopropyl Ether (DIPE)	50.00	57.79	116	70-130	1	20
Ethyl tert-Butyl Ether (ETBE)	50.00	53.52	107	70-130	1	20
Methyl tert-Amyl Ether (TAME)	50.00	47.88	96	70-130	3	20

Surrogate	Result
Dibromofluoromethane	NA
1,2-Dichloroethane-d4	NA
Toluene-d8	NA
Bromofluorobenzene	NA

NA= Not Analyzed
RPD= Relative Percent Difference