R0134

ETIC ENGINEERING

SUPPLEMENTAL SITE INVESTIGATION REPORT AND DUAL-PHASE EXTRACTION PILOT TEST WORKPLAN

VAL STROUGH CHEVROLET
327 34th STREET
OAKLAND, CALIFORNIA

Prepared For:

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1.0 INTRODUCTION

ETIC Engineering, Inc. (ETIC) has prepared this *Supplemental Site Investigation Report and Dual-Phase Extraction Pilot Test Workplan,* on behalf of the Strough Family Trust of 1983, for the Val Strough Chevrolet site located at 327 34th Street, Oakland, California (Figure 1). The investigation and proposed remedial pilot test is part of the investigation workplan prepared by ETIC dated 17 September 2003[1]. The investigation workplan was prepared at the request of the Alameda County Health Care Services Agency (ACHCSA) in a letter dated 15 July 2003[2] (Appendix A).

This report presents the results of the supplemental site investigation performed during December 2003 and includes a workplan to conduct a high vacuum dual-phase extraction (DPE) pilot test.

1.1 Objectives

The objectives of the supplemental investigation included:

- Complete groundwater characterization by evaluating the lateral and vertical extent of the separate phase and dissolved phase petroleum hydrocarbon concentrations in groundwater,
- Complete source area characterization by evaluating the lateral and vertical extent of residual petroleum hydrocarbons and its volatile constituents in soil in the vicinity of the former underground storage tanks (USTs), and
- Evaluate the appropriate remedial technology to reduce the residual concentrations of hydrocarbons in soil and reduce separate phase and dissolved phase concentrations of hydrocarbons in groundwater.

1.2 Site Investigation Scope of Work

The site investigation focused on collecting additional soil and groundwater data for evaluating the extent of hydrocarbons in soils near the former USTs and on evaluating the extent of hydrocarbons in groundwater. Figure 2 is a site plan showing the existing monitoring well network and the supplemental site investigation boring locations. The investigation consisted of the following scope of work:

- Two soil borings (SB1 and SB2, Figure 2) were advanced in the vicinity of existing wells MW2 and MW3 to depths of approximately 35 feet below ground surface (bgs). The purpose of the soil borings was to collect soil analytical data in the vicinity of MW2 where

1 ETIC 2003. Supplemental Site Investigation Workplan-Strough Family Trust of 1983, Val Strough Site, Oakland, California. September 17.
2 ACHCSA 2003. Fuel Leak Case No. RO0000134. Val Strough Chevrolet, 327 34th St., Oakland, CA. July 15.

the highest petroleum hydrocarbon concentrations were detected. Discrete depth soil samples were collected at approximately 10, 15, 25, and 35 feet bgs.

- Soil samples were analyzed for Total Petroleum Hydrocarbons as gasoline, diesel, and motor oil (TPH-g, TPH-d, TPH-mo, respectively) by Cal EPA-modified EPA Method 8015; and for benzene, toluene, ethylbenzene, and total xylenes (BTEX), methyl tertiary butyl ether (MTBE), t-butanol (TBA), di-isopropyl ether (DIPE), ethyl t-butyl ether (ETBE), t-amyl methyl ether (TAME), ethylene dibromide (EDB), and 1,2-dichloroethane (1,2-DCA) by EPA Method 8260B.

- One hydropunch boring (HP1) was advanced downgradient/crossgradient of MW6 (see Figure 2) and a groundwater grab sample was collected from the boring. The location of this boring was based on the detection of MTBE in MW6 (170 ug/L) and the direction of groundwater flow beneath the southeastern portion of the site.

- One hydropunch boring (HP2) was advanced between MW5 and MW6 (see Figure 2). The purpose and location of this boring was to collect additional downgradient groundwater data. Groundwater sampling was attempted at this location; however, no water entered the casing.

- One hydropunch boring (HP3) was advanced southwest of the former release/source area (see Figure 2) and a groundwater grab sample was collected from the boring. The purpose and location of this boring was to collect data in the predominant downgradient flow direction from the former USTs.

- Groundwater grab samples were analyzed for TPH-g, TPH-d, TPH-mo, BTEX, MTBE, TBA, DIPE, ETBE, TAME, EDB, and 1,2-DCA.

Protocols and procedures for collecting groundwater grab samples are included in Appendix B.

2.0 SITE SETTING AND SUMMARY OF PREVIOUS INVESTIGATIONS

2.1 Site Setting

Val Strough Chevrolet is an active automobile dealership and service center located at 327 34th Street, Oakland, California, on the southwest corner of the intersection of Broadway (Auto Row) and 34th Street (Figure 1). The property is located south of Interstate 580. Land use in the area is primarily mixed commercial.

The site topography has a slight downward grade toward the south. The site is located in the greater San Francisco Bay area, approximately 2 miles east of the San Francisco Bay. The nearest surface water body is Lake Merritt, which is located approximately 1 mile south of the site.

2.1.1 Regional Geology and Hydrogeology

Geologically the area is underlain by the Quaternary Temescal Formation, which consists of interfingering layers of clayey gravel, sandy silty clay, and various clay-silt-sand mixtures. The formation varies in thickness to a maximum depth of approximately 60 feet. Underlying the Temescal Formation is the Quaternary Alameda Formation, which consists of unconsolidated continental and marine gravels, sands, silts, and clays, with some shells and organic material in various places. The formation has a maximum known thickness of 1,050 feet. The site is located at an elevation of approximately 61 feet above mean sea level.

The site is located in the East Bay Plain Groundwater Basin. Regional flow of groundwater is southwest toward the San Francisco Bay.

2.1.2 Site Geology and Hydrogeology

The geology and hydrogeology of the site is derived from data collected during previous investigations supplemented with data from this investigation. Figures 3 and 4 are geologic cross-sections showing the generalized geologic units beneath the site in addition to the soil analytical data discussed later in the report.

In general, the site is underlain by alluvium comprised of silt and clay from the surface to depths ranging from 15 to 20 feet bgs. Silty sand and fine-grained sand mixed with thin clay layers are encountered from approximately 20 feet bgs to the total depth explored of 35 feet bgs.

In December 2003, groundwater depths were measured at an average depth of 20.5 feet bgs. Figure 5 shows a rose diagram with cumulative measured flow directions for the shallow groundwater beneath the site. As shown in the rose diagram, the prevailing groundwater flow direction has been toward the southwest, with an average hydraulic gradient of approximately 0.03 to 0.02 foot/foot. The rose diagram was prepared using groundwater monitoring data from July 1993 through December 2003. Figure 5 also shows the groundwater elevation contours based on the depth to

water measurements collected in December 2003.

2.2 Summary of Previous Investigations

The site contained two USTs beneath the sidewalk on the 34th Street side of the property and a fuel dispenser inside the building (Figure 2). The USTs were subsequently removed and soil and groundwater investigations were performed. Below is a description of the environmental activities performed at the site:

- A 1,000-gallon UST, used for storing unleaded gasoline, was installed in 1975 and a 1,000-gallon waste-oil UST was installed prior to 1949. Between 4 and 5 March 1993, the two USTs were excavated and removed. Based on the material stored in the USTs, the chemicals of potential concern (COPCs) at the site include TPH-g, TPH-d, TPH-mo, BTEX, and MTBE. Confirmation soil samples were collected at the bottom of each end of the UST excavations, at depths of approximately 9.5 to 11 feet bgs. Soil samples collected beneath the gasoline UST contained maximum TPH-g concentrations of 130 milligrams per kilogram (mg/kg), toluene at 0.20 mg/kg, ethylbenzene at 4.9 mg/kg, and total xylenes at 7.8 mg/kg. Soil samples collected beneath the waste-oil UST contained TPH-d at 96 and 7 mg/kg. Table 1 presents the historical soil analytical data.

- In July 1993, GeoPlexes, Inc. installed three groundwater monitoring wells (MW1-MW3) downgradient of the former USTs. A total of 5 soil samples, collected from each boring as part of the well installations, were submitted to a state-certified laboratory for analysis. Soil samples from MW1 were below laboratory reporting limits for the COPCs. Soil samples from MW2 contained elevated TPH-g concentrations ranging from 2,000 to 10,000 mg/kg and benzene from 7.2 to 100 mg/kg in the same sampling interval. Soil samples from boring MW3 (downgradient of MW2) contained TPH-g at a maximum concentration of 1,400 mg/kg. The highest concentrations of TPH-g and benzene were detected in soils within the capillary fringe (approximately 20 feet bgs). Upon completion of MW3, approximately ¼ inch of separate phase hydrocarbons (SPH) was observed in this well. The SPH consisted of gasoline-range hydrocarbons.

- In June 1998, two additional groundwater monitoring wells (MW4 and MW5) and one soil boring (B-6) were installed to further characterize the lateral extent of dissolved hydrocarbons in groundwater. The monitoring wells were completed to a total depth of 31 feet bgs and B-6 was advanced to 26 feet bgs. COPCs were not detected above laboratory reporting limits except for trace levels of BTEX compounds and MTBE in the saturated soil sample (25 feet bgs), benzene at 0.045 mg/kg and MTBE at 62 mg/kg.

- In July 2000, two additional groundwater monitoring wells (MW6 and MW7) were installed on the east and west sides of a box culvert in the eastern portion of the site. The box culvert (a former tributary of Glen Echo Creek) is located near the Broadway Street edge of the site (below the parking lot area). The box culvert was investigated in July 2000 and consists of a

reinforced concrete box measuring 5 feet by 6 feet. The depth of the top of the culvert is approximately 17 feet bgs. A cave-in occurred along the box culvert during the winter of 1983. The caved-in section of the culvert was replaced and lined with a 5-foot-diameter pipe. The flow-line in the culvert at the time was 22.5 feet bgs.

- Groundwater monitoring activities have been performed at the site since 1993. The most recent groundwater monitoring event was conducted in December 2003. The December 2003 data showed MW2 and MW3 contained measurable SPH. Well MW1 contained low concentrations of xylenes and TPH-d (1.1 µg/L and 58 µg/L, respectively), well MW4 contained MTBE at a concentration of 1,000 µg/L, well MW5 contained MTBE at a concentration of 1.5 µg/L, and well MW6 contained MTBE at a concentration of 190 µg/L and TPH-d at a concentration of 51 µg/L. Table 2 presents the cumulative groundwater quality data collected at the site.

3.0 SITE INVESTIGATION

Before beginning the field activities the proposed boring locations were marked and Underground Service Alert was contacted. ETIC subcontracted Subdynamic of San Jose, California, a private subsurface utility locator, to survey the proposed boring locations for subsurface utilities. Boring locations are shown on Figure 2. A drilling permit was obtained from the Alameda County Department of Public Works. The borings were first cleared by hand-augering and probing up to 5 feet bgs prior to drilling. Soil boring, soil sampling, and groundwater sampling procedures are presented in Appendix B.

3.1 Drilling of Borings

On 18 December 2003, soil borings SB1 and SB2 and hydropunch borings HP1-HP3 were installed by Vironex Environmental of San Leandro, California (C57 License #705927), using a limited-access Geoprobe single tube and a Geoprobe 6610 Dual Tube (DT) track rig. The soil borings were advanced using the hydraulic push method and were completed to depths of approximately 35 feet bgs. The hydropunch borings were advanced using the Geoprobe single tube rig equipped with a HydroPunch sampler. The HydroPunch unit was advanced to the depth of anticipated groundwater and a groundwater grab sample was collected.

The soil borings were logged to the total depth explored and selected soil samples were collected from each boring for laboratory analysis. No soil samples were collected from the hydropunch borings.

3.2 Soil Sample Collection

Soil samples were collected in polyethylene terephthalate glycol liners, examined for soil characteristics, and screened in the field with an organic vapor analyzer (OVA) to determine the relative hydrocarbon content. Lithologic descriptions and OVA measurements are shown on the soil boring logs presented in Appendix C. Selected soil samples for chemical analysis were sealed with Teflon tape, capped, labeled, and placed in a cooler filled with ice and submitted to Severn Trent Analytical Laboratory (STL), a California-certified analytical laboratory, for chemical analysis.

Upon completion, each boring was grouted with a cement grout containing less than 5 percent pure sodium bentonite.

3.3 Grab Groundwater Sampling

Groundwater grab samples were collected using a HydroPunch sampler equipped with a 4-foot stainless steel screen. Groundwater grab samples were collected through factory cleaned polyethylene tubing equipped with a check valve and were put into 40-ml VOA vials, labeled, and placed in a cooler filled with ice and submitted to STL for analysis.

4.0 SITE INVESTIGATION RESULTS

Soil and groundwater analytical results from the site investigation are summarized in Tables 3 and 4. Copies of the STL analytical reports and chain-of-custody documentation are provided in Appendix D. A discussion of the analytical results is provided below.

4.1 Soil Sampling Results

Selected soil samples were collected for laboratory analysis from borings SB1 and SB2. The soil samples were analyzed for TPH-d, TPH-mo (using silica gel clean-up), and TPH-g by EPA Method 8015M; and for BTEX, MTBE, TBA, DIPE, ETBE, TAME, EDB, and 1,2-DCA by EPA Method 8260B. The soil analytical results are summarized below:

- TPH-g concentrations were detected in two of the eight samples collected. In boring SB1 TPH-g was detected at approximately 15 feet bgs and 25 feet bgs at 15 mg/kg and 1,100 mg/kg, respectively. TPH-g was not detected above the laboratory reporting limit below 25 feet bgs in SB1. TPH-g concentrations were not detected above laboratory reporting limits in the soil samples from SB2.
- TPH-d concentrations were detected in six of the eight samples analyzed. The concentrations detected ranged from 1.2 mg/kg (SB2, 24.5-25 feet bgs) to a maximum of 95 mg/kg (SB1, 25-25.5 feet bgs). TPH-d was not detected above the laboratory reporting limit below 25 feet bgs in SB1.
- Maximum BTEX concentrations detected in SB1 (25-25.5 feet bgs) included benzene at 9.7 mg/kg, toluene at 130 mg/kg, ethylbenzene at 52 mg/kg, and total xylenes at 360 mg/kg. Benzene was not detected above the laboratory reporting limit below 25 feet bgs in SB1. Maximum BTEX concentrations detected in SB2 (24.5-25 feet bgs) included benzene at 0.0051 mg/kg, ethylbenzene at 0.019 mg/kg, and total xylenes at 0.021 mg/kg. Benzene was not detected above the laboratory reporting limit below 25 feet bgs in SB2.
- MTBE was detected in three of the eight samples at a maximum concentration of 6.3 mg/kg (SB1, 25-25.5 feet bgs). MTBE was not detected above the laboratory reporting limit below 25 feet bgs in SB1 and SB2.
- TBA was detected in two of the eight samples at concentrations of 0.096 mg/kg (SB1, 14.5-15 feet bgs) and 0.011 mg/kg (SB2, 24.5-25 feet bgs). Samples collected below these depths did not contain TBA at concentrations above the laboratory reporting limits.
- No other analytes were detected above laboratory reporting limits.

The soil analytical results are summarized in Table 3 and Figure 6.

4.2 Groundwater Sampling Results

Groundwater grab samples were collected from borings HP1 and HP3. Several attempts were made to collect a groundwater grab sample from HP2 with no success. The groundwater grab samples were submitted to STL and analyzed for TPH-d and TPH-mo with silica gel clean-up by EPA

Method 8015M; TPH-g by EPA Method 8015M; and BTEX, MTBE, TBA, DIPE, ETBE, TAME, EDB, and 1,2-DCA by EPA Method 8260B. The groundwater analytical results are summarized below:

- TPH-g was detected at a concentration of 410 µg/L in boring HP1 (26-30 feet bgs). The laboratory noted the reported detection contained a discrete peak in addition to gasoline.
- TPH-d was detected in HP1 and HP3 at concentrations of 180 µg/L (26-30 feet bgs) and 75 µg/L (32-36 feet bgs), respectively.
- BTEX compounds were not detected above laboratory reporting limits in the groundwater grab samples, except for HP1, which contained total xylenes at a concentration of 11 µg/L.
- MTBE was detected in HP1 and HP3 at concentrations of 480 µg/L and 0.55 µg/L, respectively.
- 1,2-DCA was detected in HP3 at a concentration of 1.3 µg/L.
- No other analytes were detected above the laboratory reporting limits.

The groundwater analytical results for HP1 and HP3 are shown in Table 4 and Figure 7.

5.0 SITE CHARACTERIZATION SUMMARY

5.1 Source Characterization

A review of the historical soil analytical data (Table 1) combined with the soil analytical data collected during this investigation (Table 3) shows that the highest concentrations of TPH-g, BTEX, and MTBE are concentrated in the vadose and capillary fringe soils adjacent to the former UST fuel dispenser and monitoring well MW2 (Figures 3, 4 and 6). Well MW3 is the most downgradient location where capillary fringe soils contained TPH-g and BTEX concentrations above the laboratory reporting limits.

In general, the highest detected concentrations of TPH-g and BTEX were detected in the granular soils of the capillary fringe (approximately 20 feet bgs). Samples collect below the water table, with the exception of the soil sample from SB1 at 25 feet bgs, had concentrations of TPH-g and BTEX at least one order of magnitude lower than samples higher up the soil column. Soil samples collected below the 25 foot depth were below the laboratory reporting limits for TPH-g, BTEX, and MTBE.

On the basis of the data presented herein and illustrated in Figures 3 and 4, the source of the petroleum hydrocarbons impacting the groundwater appears to be confined to the vadose and capillary fringe soils between the former gasoline UST and well MW3. Residual concentrations of hydrocarbons have been detected in the saturated soils but the concentrations are below laboratory reporting limits below 25 feet bgs.

5.2 Extent of Hydrocarbons in Groundwater

The main mass area of petroleum hydrocarbons in groundwater is defined by wells MW2, MW3 and MW4. The SPH is only observed in monitoring wells MW2 and MW3. Nearby monitoring wells MW1 (approximately 50 feet east of MW2 and 50 feet NE of MW3) and MW4 (approximately 50 feet SE of MW3) have never reported any measurable SPH.

The extent of hydrocarbons in groundwater is defined by downgradient and crossgradient monitoring wells MW5, MW6, and MW7. The highest concentrations of dissolved constituents are located in well MW4. The groundwater data collected from wells MW5, MW6, and MW7 show little variation in the concentrations of TPH-g, BTEX, and MTBE over the last 2 years of groundwater monitoring (Table 2).

The groundwater analytical data collected from HP1 (downgradient of MW6) yielded consistent concentrations with those observed in MW6. The groundwater analytical data collected from HP3 indicate that hydrocarbons have not migrated laterally to that location.

In order to investigate the presence of hydrocarbons in groundwater between wells MW5 and MW6, an additional soil boring or hydropunch should be installed prior to final remedial activities.

6.0 PROPOSED REMEDIAL PILOT TEST

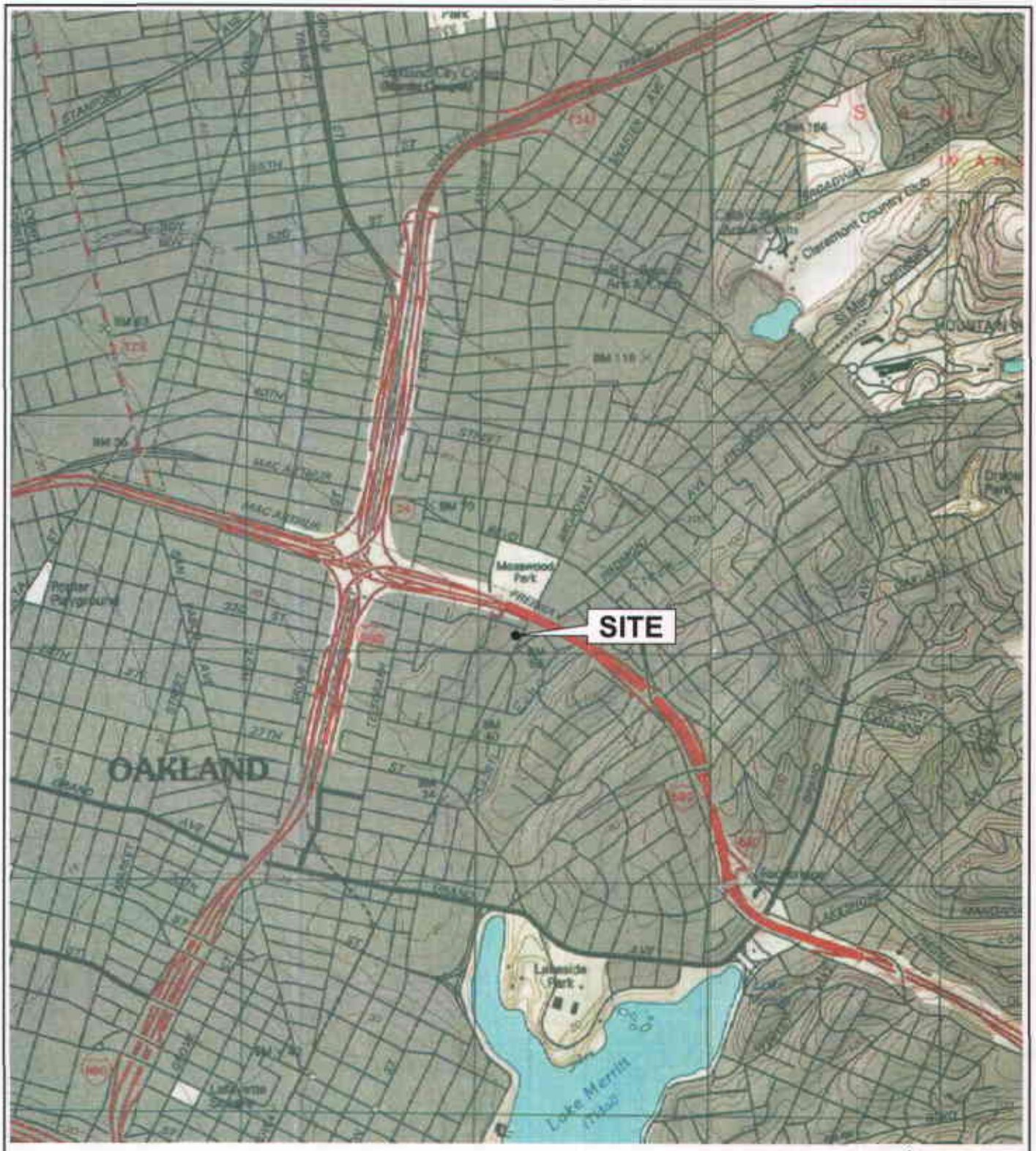
Based on ETIC's experience at sites with similar subsurface conditions, high vacuum dual-phase extraction (DPE) should be the most appropriate technology for interim SPH removal at this site. Given that:

- Hydrocarbons have generally been detected in the vadose and capillary fringe soils near the former source area,
- the main mass of hydrocarbons in groundwater is defined to a relatively small area near the former source area, and
- the hydrocarbon mass is located within the footprint of an active service center.

ETIC proposes that a DPE pilot test be performed. The purpose of the DPE pilot test is two-fold: to evaluate the reduction of the mass of petroleum hydrocarbons near the source area soils and groundwater, and to evaluate the effectiveness of this technology for source removal and obtaining site closure.

ETIC has prepared a workplan for conducting a DPE pilot test as Appendix E to this report. The workplan outlines the procedures and test design. Upon completion of the DPE pilot test, a schedule of implementation will be provided.

Figures



N

0 2,000

Scale (feet)

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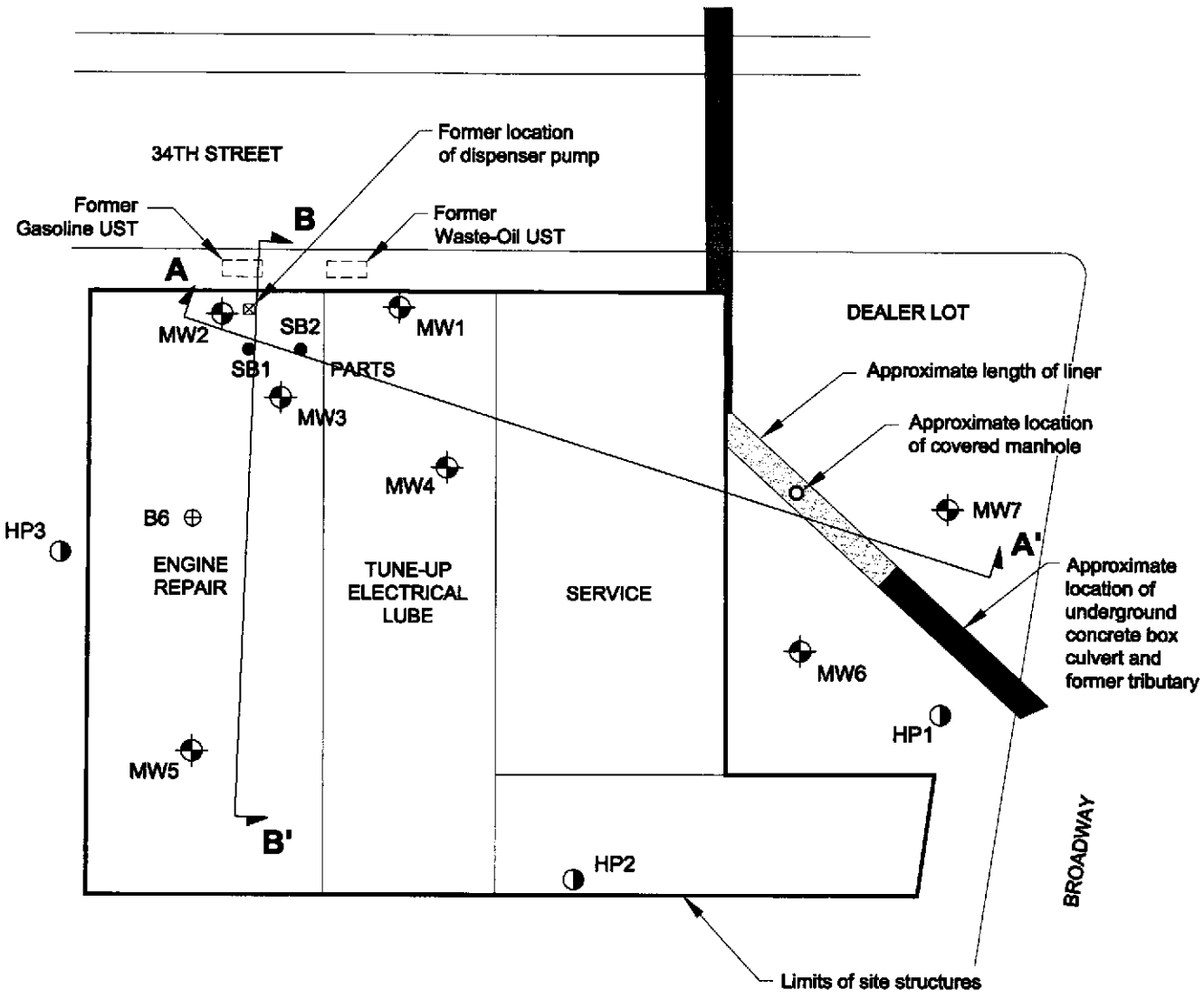
SITE LOCATION MAP
VAL STROUGH CHEVROLET
327 34TH STREET
OAKLAND, CALIFORNIA

FIGURE: 1

FILENAME: SITEMAP0304.DWG 03/25/04



LEGEND:

- Groundwater monitoring well
- Previous soil boring
- Soil boring (December 2003)
- Hydropunch (December 2003)
- Culvert liner
- Underground concrete box culvert
- Line of geologic cross section

N

0 25 50

Scale (feet)

FILENAME: SITEMAP0204.DWG 02/25/04

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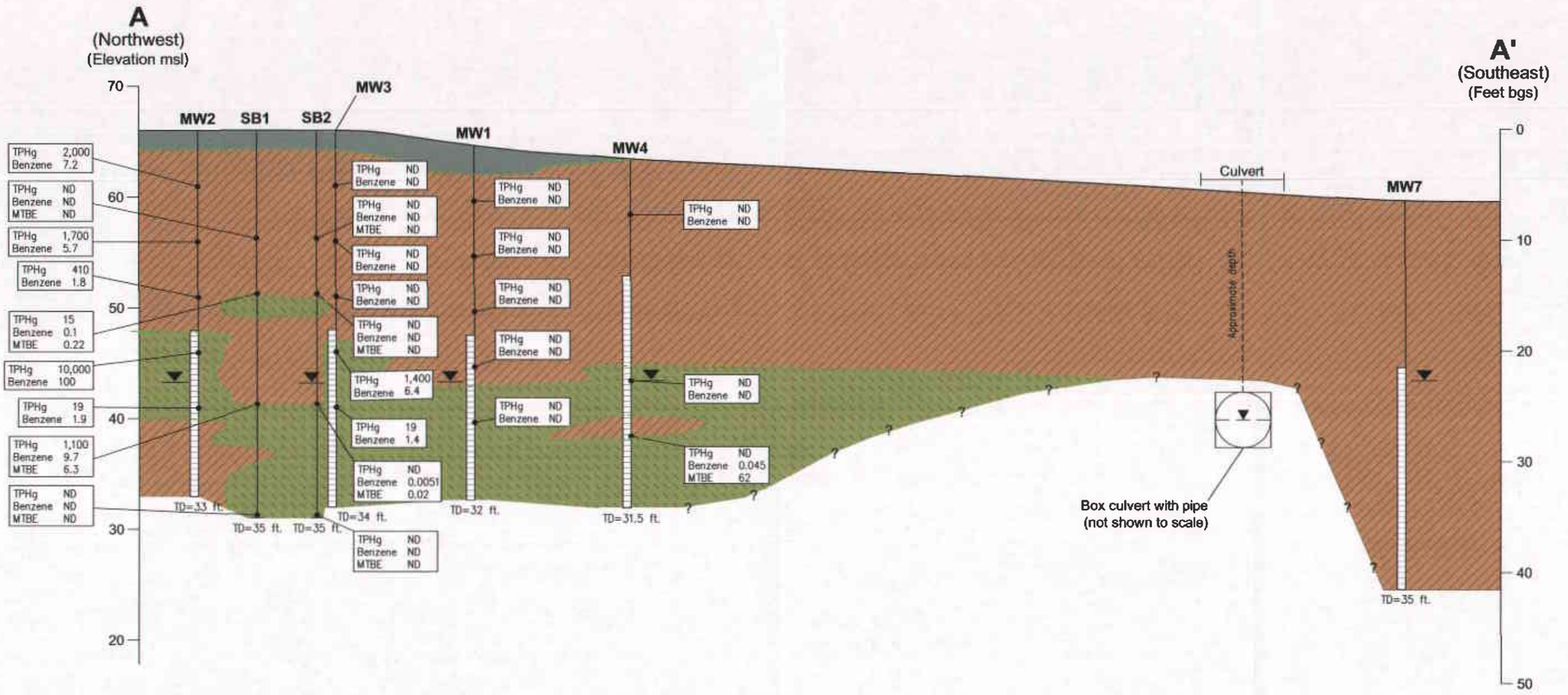
SITE PLAN
VAL STROUGH CHEVROLET
327 34TH STREET
OAKLAND, CALIFORNIA

FIGURE: 2



NOTE:
MW1, MW2 and MW3 soil analytical data from July 1993.
MW4 soil analytical data from June 1998.
SB1 and SB2 soil analytical data from December 2003.
Analytical data reported in milligrams per kilogram (mg/kg).

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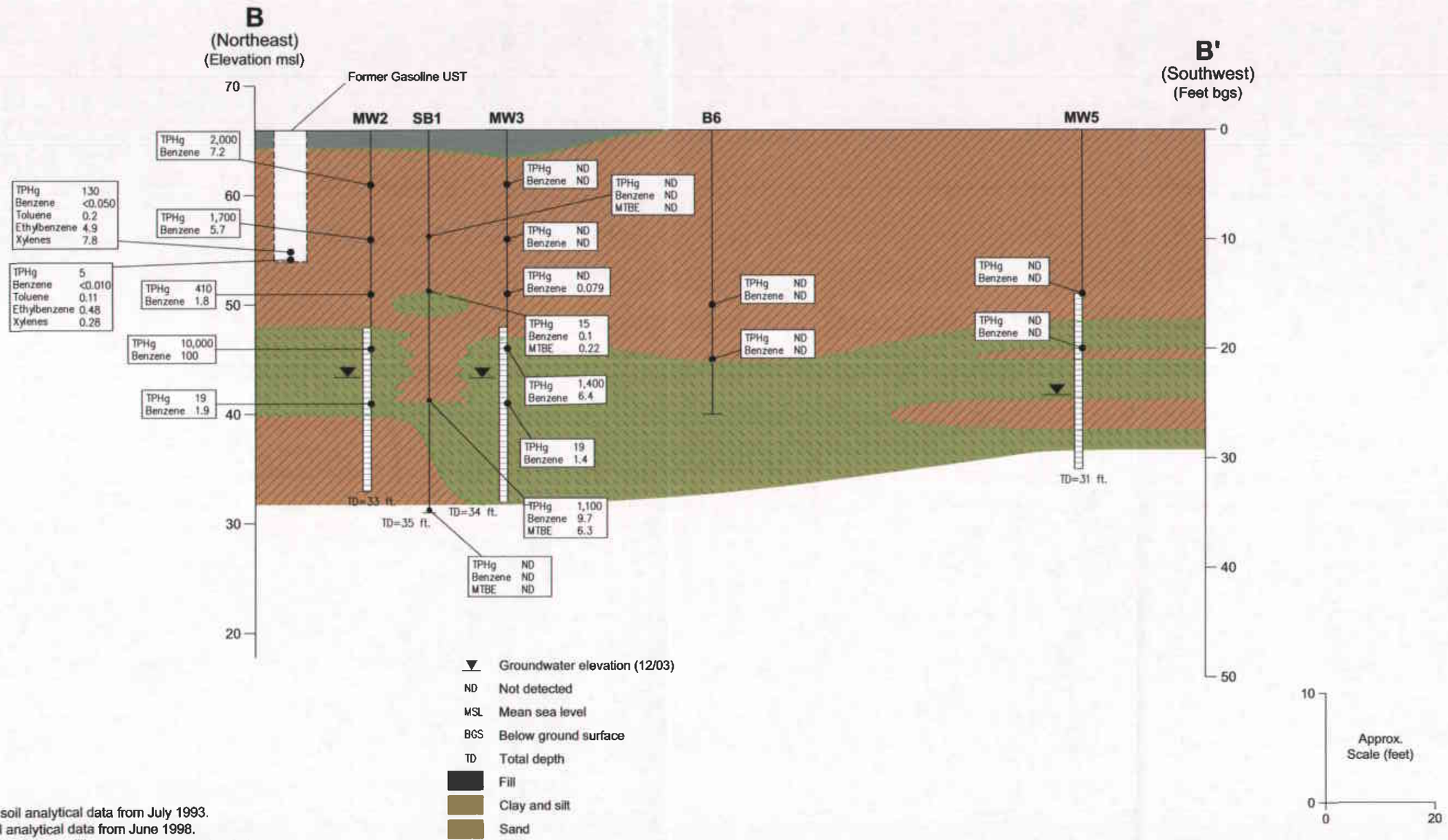
GEOLOGIC CROSS-SECTION A-A'
VAL STROUGH CHEVROLET
327 34TH STREET
OAKLAND, CALIFORNIA

FIGURE: 3



NOTE:
MW2 and MW3 soil analytical data from July 1993.
B6 and MW5 soil analytical data from June 1998.
Analytical data reported in milligrams per kilogram (mg/kg).

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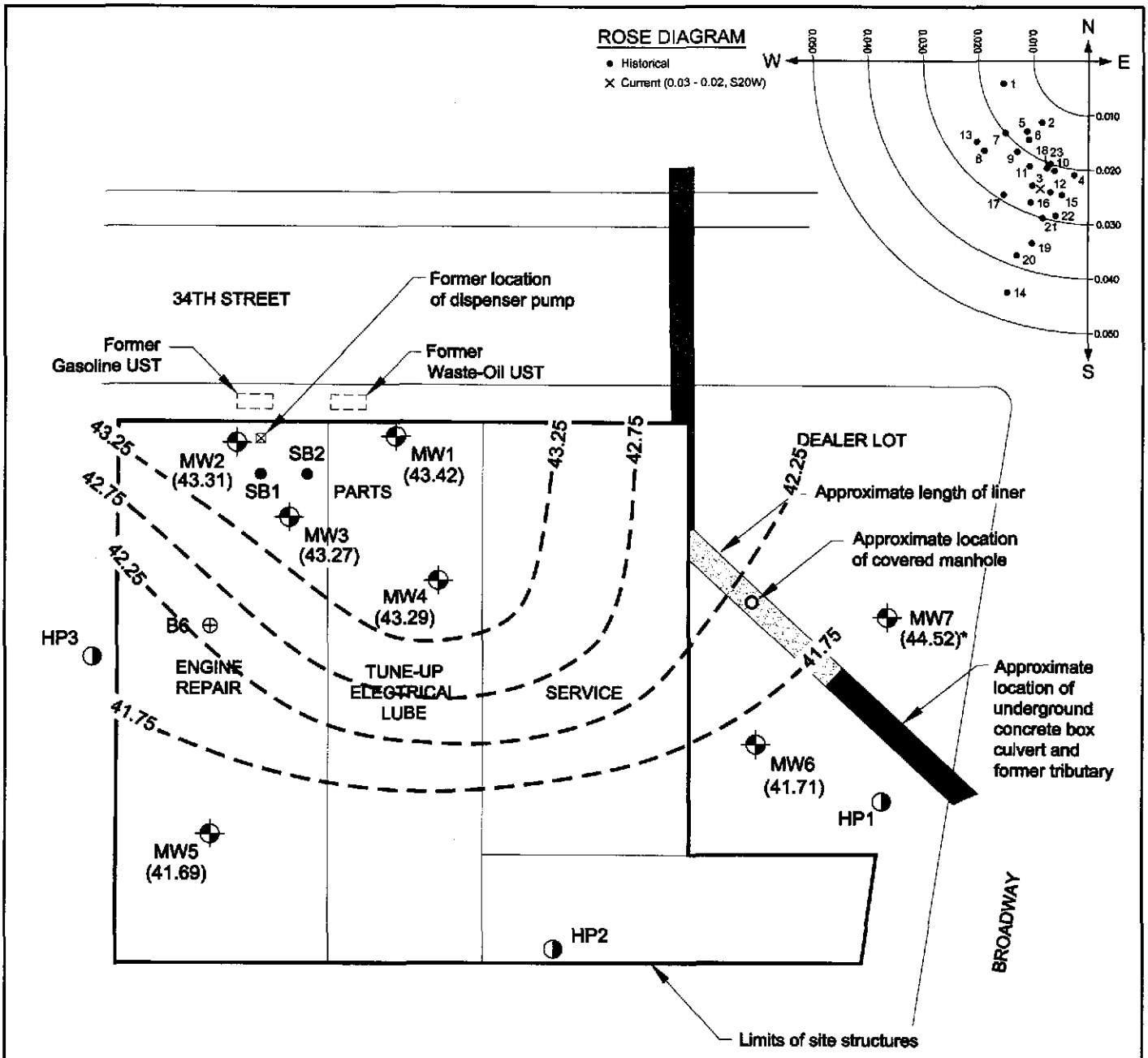
GEOLOGIC CROSS-SECTION B-B'
VAL STROUGH CHEVROLET
327 34TH STREET
OAKLAND, CALIFORNIA

FIGURE: 4

FILENAME: CROSS-SECTIONS0224.DWG 02/25/04



LEGEND:

- Groundwater monitoring well
- Previous soil boring
- Soil boring (December 2003)
- Hydropunch (December 2003)
- Culvert liner
- Underground concrete box culvert
- 43.0 Groundwater elevation contour (December 2003 data)
- * Not used in contouring

0 25 50
Scale (feet)

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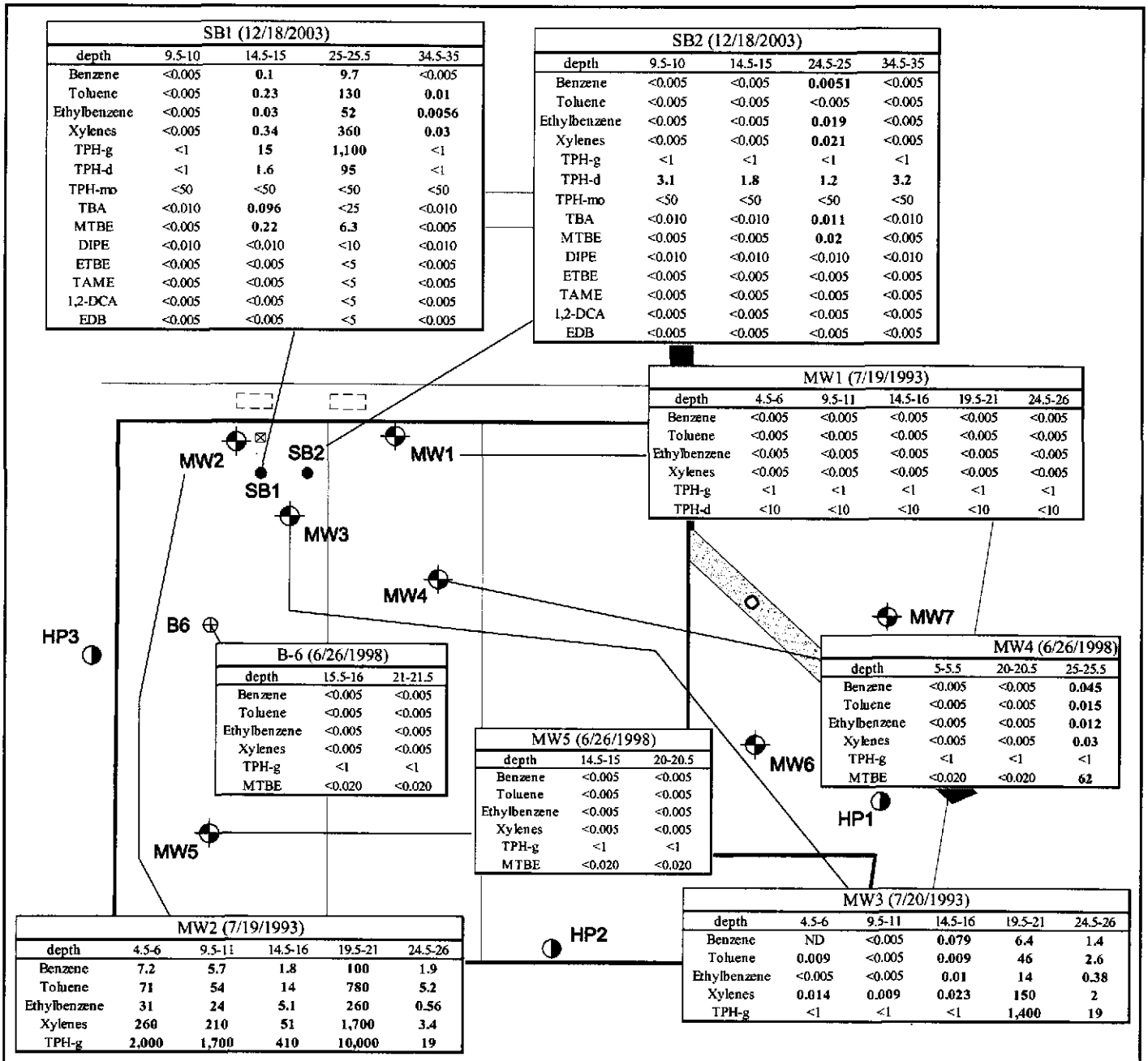
DECEMBER 2003 GROUNDWATER CONTOUR MAP AND ROSE DIAGRAM
VAL STROUGH CHEVROLET
327 34TH STREET
OAKLAND, CALIFORNIA

FIGURE: 5

FILENAME: SITEMAP0204.DWG 02/25/04



FILENAME: SITEMAP0204.DWG 02/25/04

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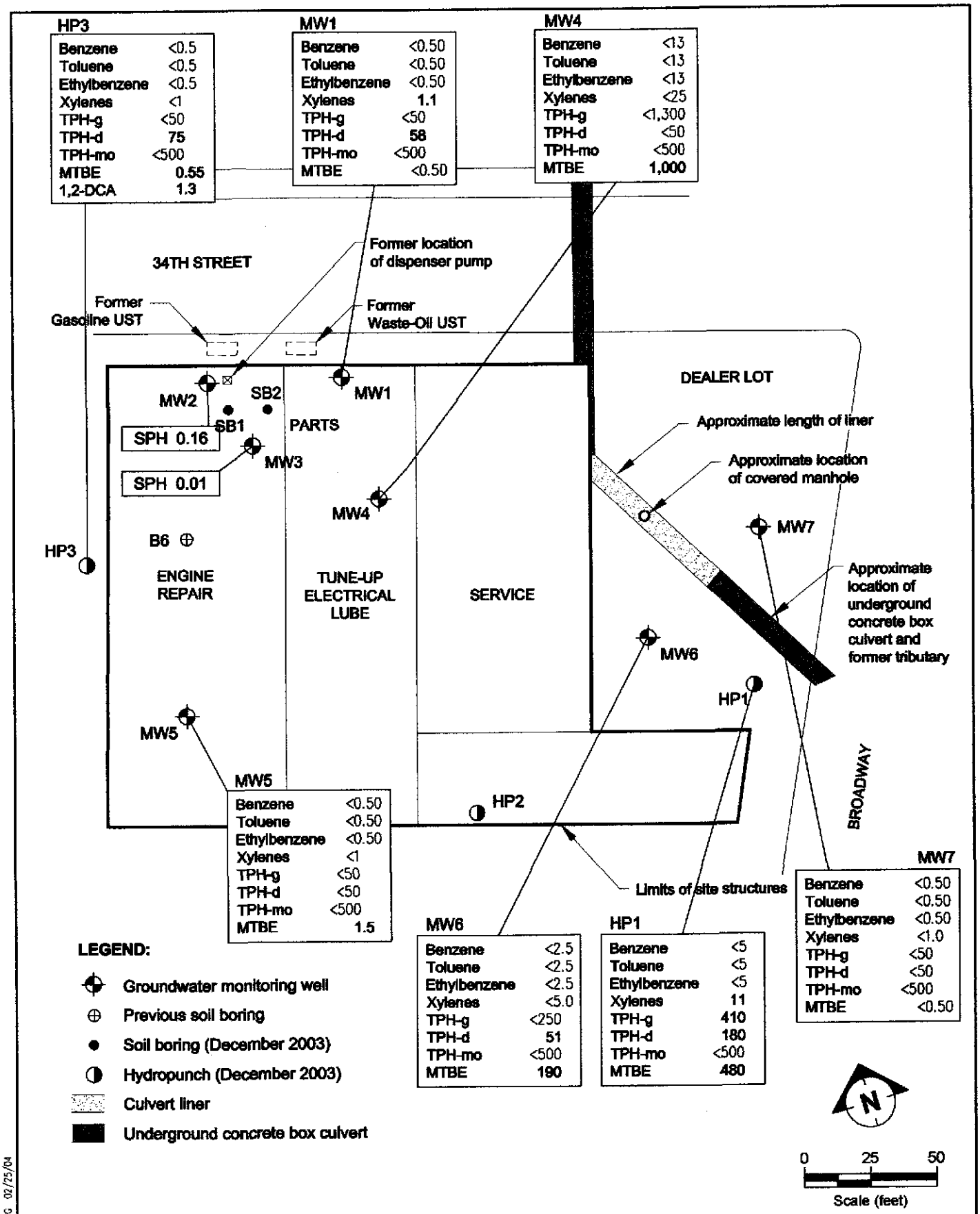
CUMULATIVE SOIL ANALYTICAL DATA (mg/kg)
VAL STROUGH CHEVROLET
327 34TH STREET
OAKLAND, CALIFORNIA

FIGURE: 6



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DECEMBER 2003 GROUNDWATER ANALYTICAL DATA (ug/L)
VAL STROUGH CHEVROLET
327 34TH STREET
OAKLAND, CALIFORNIA

FIGURE: 7

FILENAME: SITEMAP0204.DWG 02/25/04

Tables

Table 1
Historical Soil Analytical Data
Val Strough Chevrolet
327 34th Street
Oakland, California

Well Number	Date	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-g	TPH-d	TPH-mo	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	Oil & Grease
MW1	7/19/1993	4.5-6	<0.005	<0.005	<0.005	<0.005	<1	<10	--	--	--	--	--	--	--	--	<0.050
MW1	7/19/1993	9.5-11	<0.005	<0.005	<0.005	<0.005	<1	<10	--	--	--	--	--	--	--	--	<0.050
MW1	7/19/1993	14.5-16	<0.005	<0.005	<0.005	<0.005	<1	<10	--	--	--	--	--	--	--	--	<0.050
MW1	7/19/1993	19.5-21	<0.005	<0.005	<0.005	<0.005	<1	<10	--	--	--	--	--	--	--	--	<0.050
MW1	7/19/1993	24.5-26	<0.005	<0.005	<0.005	<0.005	<1	<10	--	--	--	--	--	--	--	--	<0.050
MW2	7/19/1993	4.5-6	**7.2**	**71**	**31**	**260**	**2,000**	--	--	--	--	--	--	--	--	--	--
MW2	7/19/1993	9.5-11	**5.7**	**54**	**24**	**210**	**1,700**	--	--	--	--	--	--	--	--	--	--
MW2	7/19/1993	14.5-16	**1.8**	**14**	**5.1**	**51**	**410**	--	--	--	--	--	--	--	--	--	--
MW2	7/19/1993	19.5-21	**100**	**780**	**260**	**1,700**	**10,000**	--	--	--	--	--	--	--	--	--	--
MW2	7/19/1993	24.5-26	**1.9**	**5.2**	**0.56**	**3.4**	**19**	--	--	--	--	--	--	--	--	--	--
MW3	7/20/1993	4.5-6	ND	**0.009**	<0.005	**0.014**	<1	--	--	--	--	--	--	--	--	--	--
MW3	7/20/1993	9.5-11	<0.005	<0.005	<0.005	**0.009**	<1	--	--	--	--	--	--	--	--	--	--
MW3	7/20/1993	14.5-16	**0.079**	**0.009**	**0.01**	**0.023**	<1	--	--	--	--	--	--	--	--	--	--
MW3	7/20/1993	19.5-21	**6.4**	**46**	**14**	**150**	**1,400**	--	--	--	--	--	--	--	--	--	--
MW3	7/20/1993	24.5-26	**1.4**	**2.6**	**0.38**	**2**	**19**	--	--	--	--	--	--	--	--	--	--
MW4	6/26/1998	5-5.5	<0.005	<0.005	<0.005	<0.005	<1	--	--	--	<0.020	--	--	--	--	--	--
MW4	6/26/1998	20-20.5	<0.005	<0.005	<0.005	<0.005	<1	--	--	--	<0.020	--	--	--	--	--	--
MW4	6/26/1998	25-25.5	**0.045**	**0.015**	**0.012**	**0.03**	<1	--	--	--	**62**	--	--	--	--	--	--
MW5	6/26/1998	14.5-15	<0.005	<0.005	<0.005	<0.005	<1	--	--	--	<0.020	--	--	--	--	--	--
MW5	6/26/1998	20-20.5	<0.005	<0.005	<0.005	<0.005	<1	--	--	--	<0.020	--	--	--	--	--	--
B-6	6/26/1998	15.5-16	<0.005	<0.005	<0.005	<0.005	<1	--	--	--	<0.020	--	--	--	--	--	--
B-6	6/26/1998	21-21.5	<0.005	<0.005	<0.005	<0.005	<1	--	--	--	<0.020	--	--	--	--	--	--
Tank Removal Sampling Data																	
TA001	3/4/1993	11	<0.010	**0.11**	**0.48**	**0.28**	**5.0**	--	--	--	--	--	--	--	--	--	--
TA002	3/4/1993	11	<0.080	**0.2**	**4.9**	**7.8**	**130**	--	--	--	--	--	--	--	--	--	--
TA003	3/5/1993	9	<0.005	<0.005	**0.014**	**0.018**	<1	**96**	--	--	--	--	--	--	--	--	<0.050
TA004	3/5/1993	9	<0.005	<0.005	<0.005	<0.005	<1	**7.0**	--	--	--	--	--	--	--	--	<0.050

Concentrations reported in milligrams per kilogram

TPH-g	Total Petroleum Hydrocarbons as gasoline.	TBA	t-butyl alcohol
TPH-d	Total Petroleum Hydrocarbons as diesel.	DIPE	di-isopropyl ether
TPH-mo	Total Petroleum Hydrocarbons as motor oil.	ETBE	ethyl t-butyl ether
MTBE	Methyl tertiary butyl ether.	TAME	t-amyl methyl ether
--	Not analyzed.	1,2-DCA	1,2-dichloroethane
		EDB	ethylene dibromide

Table 2
Cumulative Groundwater Analytical Data
Val Strough Chevrolet
327 34th Street
Oakland, California

Well Number	Date	Casing Elevation (feet)		Depth to Water (feet)	GW Elevation (feet)	SPH Thickness (feet)	Concentration (µg/L) Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	Concentration (mg/L) CO_2 (lab)	DO (field)	pH (field)	Fe(II)	Mn	SO_4	$N\text{-}NH_3$	$N\text{-}NO_3$	$o\text{-}PO_4$
MW1	07/27/93	100.00	a	20.79	79.21	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	--	--	--	--	--	--	--	--	--	--	--
MW1	10/02/97	100.00	a	21.22	78.78	0.00	<0.50	<0.50	<0.50	<0.50	<50	--	--	<2.0	--	--	--	--	--	--	--	--	--
MW1	06/30/98	100.00	a	18.21	81.79	0.00	<0.50	<0.50	2.1	0.6	84	--	--	2.1	204	5	6.16	0.15	0.046	55	<0.10	<0.10	2
MW1	07/29/98	100.00	a	18.74	81.26	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	08/26/98	100.00	a	19.28	80.72	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	10/01/98	100.00	a	19.93	80.07	0.00	<1.0	<1.0	<1.0	<1.0	<50	--	--	<2.0	192	3.6	6.49	--	--	--	--	--	--
MW1	10/30/98	100.00	a	20.22	79.78	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	11/30/98	100.00	a	19.99	80.01	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	12/28/98	100.00	a	19.81	80.19	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	01/25/99	100.00	a	19.62	80.38	0.00	<1.0	<1.0	<1.0	<1.0	<50	--	--	<2.0	389	3.4	6.72	--	--	--	--	--	--
MW1	02/26/99	100.00	a	17.18	82.82	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	03/24/99	100.00	a	17.28	82.72	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	05/12/99	100.00	a	17.91	82.09	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	12/15/99	100.00	a	21.01	78.99	0.00	<0.50	<0.50	<0.50	<0.50	<50	--	--	<0.50	--	3.31	6.52	--	--	--	--	--	--
MW1	03/20/00	100.00	a	16.25	83.75	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	07/20/00	100.00	a	19.63	80.37	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	3.4	120	7.37	6.66	0.13	<0.01	54	<0.10	3.4	<0.2
MW1	10/11/00	100.00	a	20.80	79.20	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	04/10-11/01	100.00	a	18.81	81.19	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	1.2	117	NR	NR	<0.10	0.045	57	<0.10	6.6	0.15
MW1	07/10/01	100.00	a	20.51	79.49	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	11/20/01	64.69	b	21.36	43.33	0.00	<0.50	1.3	<0.50	0.81	<50	<50	<300	<2.0	--[c]	0.65	6.47	0.32	1.8	63	<0.10	--	<0.20
MW1	02/19/02	64.69	b	18.95	45.74	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	05/21/02	64.69	b	19.82	44.87	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	<2.0	120	0.96	6.25	<0.10	0.5	58	<0.10	5.5	<0.20
MW1	06/27/03	64.69	b	19.93	44.76	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	09/29/03	64.69	b	21.24	43.45	0.00	<0.50	<0.50	<0.50	<1.0	<50	<50	<500	<0.50	--	--	--	--	--	--	--	--	--
MW1	**12/12/03**	**64.69**	**b**	**21.27**	**43.42**	**0.00**	**<0.50**	**<0.50**	**<0.50**	**1.1**	**<50**	**58**	**<500**	**<0.50**	--	--	--	--	--	--	--	--	--
MW2	07/27/93	101.27	a	22.10	79.17	0.00	10,000	27,000	2,900	20,000	120,000	--	--	--	--	--	--	--	--	--	--	--	--
MW2	10/02/97	101.27	a	22.91	78.36	0.43	*	*	*	*	*	--	--	*	--	--	--	--	--	--	--	--	--
MW2	06/30/98	101.27	a	19.69	81.58	0.45	7,300	18,000	2,500	15,600	72,000	--	--	5,500	185	2.2	5.98	--	--	--	--	--	--
MW2	07/29/98	101.27	a	20.11	81.16	0.29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	08/26/98	101.27	a	20.54	80.73	0.08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	10/01/98	101.27	a	21.52	79.75	0.42	6,400	17,000	2,600	17,000	84,000	--	--	2,000	--	2.7	6.47	--	--	--	--	--	--
MW2	10/30/98	101.27	a	21.54	79.73	0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	11/30/98	101.27	a	21.21	80.06	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	12/28/98	101.27	a	21.10	80.17	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	01/25/99	101.27	a	20.80	80.47	0.01	9,000	26,000	3,800	27,500	130,000	--	--	5,800	386	0.3	6.69	--	--	--	--	--	--
MW2	02/26/99	101.27	a	18.00	83.27	sheen	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	03/24/99	101.27	a	18.27	83.00	trace	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	05/12/99	101.27	a	19.08	82.19	trace	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	12/15-16/99	101.27	a	22.42	78.85	0.025	*	*	*	*	*	*	*	*	--	*	*	--	--	--	--	--	--
MW2	03/20/00	101.27	a	17.09	84.18	0.026	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	07/20/00	101.27	a	20.86	80.41	0.017	*	*	*	*	*	*	*	*	*	0.88	6.37	*	*	*	*	*	*
MW2	10/11/00	101.27	a	22.10	79.17	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	04/10-11/01	101.27	a	19.98	81.29	0.00	8,000	22,000	2,600	23,500	150,000	1,500	<600	3,600	168	NR	NR	3.1	2.5	16	0.14	0.19	<0.20
MW2	07/10/01	101.27	a	21.85	79.42	0.00	5,900	15,000	2,300	12,100	83,000	5,700	<1,500	2,800	--	--	--	--	--	--	--	--	--

Table 2
Cumulative Groundwater Analytical Data
Val Strough Chevrolet
327 34th Street
Oakland, California

Well Number	Date	Casing Elevation (feet)		Depth to Water (feet)	GW Elevation (feet)	SPH Thickness (feet)	Concentration (µg/L)								Concentration (mg/L)								
							Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	CO_2 (lab)	DO (field)	pH (field)	Fe(II)	Mn	SO_4	$N\text{-}NH_3$	$N\text{-}NO_3$	$o\text{-}PO_4$
MW2	11/20/01	65.95	b	22.75	43.20	0.00	--	--	--	--	--	--	--	--	120	NR	6.15	1.8	2	16	<0.10	--	<0.20
MW2	02/19/02	65.95	b	20.12	45.83	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	05/21/02	65.95	b	21.10	44.85	0.00	8,600	25,000	3,500	26,000	150,000	31,000	<3,000	4,800	160	0.88	5.99	3.9	1.7	13	<0.10	0.54	<0.20
MW2	06/27/03	65.95	b	21.48	44.47	0.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW2	09/29/03	65.95	b	23.04	42.91	0.48	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2[c]	**12/12/03**	**65.95**	**b**	**22.75**	**43.31**	**0.16**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3	07/27/93	101.29	a	22.28	79.01	0.02	9,100	24,000	5,300	33,000	330,000	--	--	--	--	--	--	--	--	--	--	--	--
MW3	10/02/97	101.29	a	22.71	78.58	0.03	4,200	11,000	1,800	10,600	36,000	--	--	3,500	--	--	--	--	--	--	--	--	--
MW3	06/30/98	101.29	a	19.47	81.82	0.00	4,800	11,000	1,200	7,100	51,000	--	--	3,900	300	2	6.03	1.4	9.8	13	1.4	<0.10	2.4
MW3	07/29/98	101.29	a	20.01	81.28	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	08/26/98	101.29	a	20.62	80.67	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	10/01/98	101.29	a	21.33	79.96	0.00	3,900	8,500	1,200	6,000	38,000	--	--	2,300	240	2	6.65	--	--	--	--	--	--
MW3	10/30/98	101.29	a	21.62	79.67	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	11/30/98	101.29	a	21.31	79.98	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	12/28/98	101.29	a	21.15	80.14	0.06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	01/25/99	101.29	a	20.79	80.50	0.00	4,000	10000	1200	6700	5,100	--	--	2900	238	1	7.01	--	--	--	--	--	--
MW3	02/26/99	101.29	a	18.02	83.27	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	03/24/99	101.29	a	18.37	82.92	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	05/12/99	101.29	a	19.22	82.07	0.0083	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	12/15-16/99	101.29	a	22.43	78.86	0.00	*	*	*	*	*	*	*	*	--	*	*	--	--	--	--	--	--
MW3	03/20/00	101.29	a	17.14	84.15	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	07/20/00	101.29	a	20.98	80.31	0.00	5,700	14,000	1,600	9,300	69,000	2,900	<300	3,300	128	2.05	6.73	3.9	6.6	20	<0.10	0.55	<0.20
MW3	10/11/00	101.29	a	22.24	79.05	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	04/10-11/01	101.29	a	20.70	80.59	0.00	7,200	<0.001	2,300	12,900	110,000	4,700	<1,500	4,300	137	NR	NR	1	6	8.2	<0.10	0.13	<0.20
MW3	07/10/01	101.29	a	21.97	79.32	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	11/20/01	65.99	b	22.80	43.19	0.00	6,300	16,000	2,400	14,900	100,000	5,900	<900	4,000	120	2.93	6.67	0.84	12	31	<0.10	--	<0.20
MW3	02/19/02	65.99	b	20.11	45.88	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	05/21/02	65.99	b	21.20	44.79	0.00	6,500	17,000	2,200	12,700	91,000	14,000	<3,000	2,200	130	1.01	6.62	4.2	9.6	25	<0.10	0.77	<0.20
MW3	06/27/03	65.99	b	21.32	44.67	sheen	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW3	09/29/03	65.99	b	22.79	43.20	sheen	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3[c]	**12/12/03**	**65.99**	**b**	**22.73**	**43.27**	**0.01**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW4	06/30/98	98.65	a	16.93	81.72	0.00	22,000	930	850	2,100	10,000	--	--	1,800	222	2.6	6.18	0.14	4.3	14	0.8	0.8	1.5
MW4	07/29/98	98.65	a	17.48	81.17	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	08/26/98	98.65	a	18.65	80.00	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	10/01/98	98.65	a	18.74	79.91	0.00	570	46	130	36	1,100	--	--	1,300	320	3.4	<0.001	--	--	--	--	--	--
MW4	10/30/98	98.65	a	19.02	79.63	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	11/30/98	98.65	a	18.74	79.91	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	12/28/98	98.65	a	18.60	80.05	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	01/25-26/99	98.65	a	18.32	80.33	0.00	230	<8.3	<8.3	<8.3	290	--	--	1,300	475	6.7	7	--	--	--	--	--	--
MW4	02/26/99	98.65	a	15.81	82.84	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	03/24/99	98.65	a	16.01	82.64	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	05/12/99	98.65	a	17.71	80.94	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	12/15-16/99	98.65	a	19.83	78.82	0.00	5.8	<0.50	<0.50	<0.50	<50	--	--	1,400	--	1.75	7.02	--	--	--	--	--	--

Table 2
Cumulative Groundwater Analytical Data
Val Strough Chevrolet
327 34th Street
Oakland, California

Well Number	Date	Casing Elevation (feet)		Depth to Water (feet)	GW Elevation (feet)	SPH Thickness (feet)	Concentration (µg/L) Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	Concentration (mg/L) CO_2 (lab)	DO (field)	pH (field)	Fe(II)	Mn	SO_4	$N\text{-}NH_3$	$N\text{-}NO_3$	$o\text{-}PO_4$
MW4	03/20/00	98.65	a	14.9	83.75	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	07/20/00	98.65	a	18.38	80.27	0.00	91	4.6	19	12.9	210	<50	<300	1,500	126	3.88	6.67	9.5	5.3	11	<0.10	0.04	<0.20
MW4	10/11/00	98.65	a	19.61	79.04	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	04/10-11/01	98.65	a	17.55	81.10	0.00	110	<5.0	<5.0	<5.0	350	<50	<300	1,100	107	NR	NR	0.8	6.3	10	<0.10	<0.05	<0.20
MW4	07/10/01	98.65	a	19.34	79.31	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	11/20/01	63.35	b	20.16	43.19	0.00	<2.5	4	<2.5	3.7	96	<50	<300	2,500	130	0.83	6.51	1.6	10	11	<0.10	--	<0.20
MW4	02/19/02	63.35	b	17.34	46.01	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	05/21/02	63.35	b	18.57	44.78	0.00	340	5.7	70	<1.0	940	83	<300	1,600	150	1.65	6.32	3.1	8.4	9	<0.10	0.06	<0.20
MW4	06/27/03	63.35	b	18.72	44.63	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW4	09/29/03	63.35	b	20.11	43.24	0.00	<5.0	<5.0	<5.0	<10	1,100	<50[d]	<500	1,700	--	--	--	--	--	--	--	--	--
MW4	**12/12/03**	**63.35**	**b**	**20.06**	**43.29**	**0.00**	**<13**	**<13**	**<13**	**<25**	**<1,300**	**<50**	**<500**	**1,000**	--	--	--	--	--	--	--	--	--
MW5	06/30/98	100.9	a	20.60	80.30	0.00	<0.50	<0.50	<0.50	<0.50	<50	--	--	23	220	4.3	6.1	--	--	--	--	--	--
MW5	07/29/98	100.9	a	21.52	79.38	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	08/26/98	100.9	a	22.21	78.69	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	10/01/98	100.9	a	22.95	77.95	0.00	<1.0	<1.0	<1.0	<1.0	<50	--	--	<2.0	256	4.8	6.71	--	--	--	--	--	--
MW5	10/30/98	100.9	a	23.23	77.67	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	11/30/98	100.9	a	23.12	77.78	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	12/28/98	100.9	a	23.18	77.72	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	01/25-26/99	100.9	a	22.61	78.29	0.00	<1.0	<1.0	<1.0	<1.0	<50	--	--	<2.0	305	9.7	7.04	--	--	--	--	--	--
MW5	02/26/99	100.9	a	19.78	81.12	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	03/24/99	100.9	a	20.25	80.65	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	05/12/99	100.9	a	21.06	79.84	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	12/15-16/99	100.9	a	24.19	76.71	0.00	<0.50	<0.50	<0.50	<0.50	<50	--	--	<0.50	--	2.72	7.19	--	--	--	--	--	--
MW5	03/20/00	100.9	a	19.15	81.75	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	07/20/00	100.9	a	21.84	79.06	0.00	<0.50	0.98	<0.50	<0.50	<50	<50	<300	1.9	134	5.58	6.35	0.11	0.017	49	<0.10	3.9	<0.20
MW5	10/11/00	100.9	a	23.4	77.50	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	04/10-11/01	100.9	a	22.3	78.60	0.00	<0.50	2.6	<0.50	0.6	<50	<50	<300	1.5	183	66	NR	<0.10	0.042	45	<0.10	2.9	0.11
MW5	07/10/01	100.9	a	23.64	77.26	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	11/20/01	65.59	b	24.65	40.94	0.00	0.83	12	1.2	11	140	860	2,500	10	--[e]	66	6.01	0.2	2.5	42	<0.10	--	<0.20
MW5	02/19/02	65.59	b	22.37	43.22	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	05/21/02	65.59	b	23.10	42.49	0.00	<0.50	<0.50	<0.50	<0.50	<50	2,200	<300	<2.0	140	66	6.3	<0.1	0.22	44	<0.10	3	<0.20
MW5	06/27/03	65.59	b	23.07	42.52	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	09/29/03	65.59	b	24.38	41.21	0.00	<0.50	0.52	7.1	35	100	<50[d]	<500	1.4	--	--	--	--	--	--	--	--	--
MW5	**12/12/03**	**65.59**	**b**	**23.90**	**41.69**	**0.00**	**<0.50**	**<0.50**	**<0.50**	**<1**	**<50**	**<50**	**<500**	**1.5**	--	--	--	--	--	--	--	--	--
MW6	07/20/00	96.60	a	18.30	78.30	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	160	122	2.72	6.66	120	1.9	53	6	0.05	<0.20
MW6	10/11/00	96.60	a	18.69	77.91	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW6	04/10-11/01	96.60	a	17.85	78.75	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	180	142	NR	NR	22	2.2	0.69	5.2	<0.05	<0.20
MW6	07/10/01	96.60	a	18.43	78.17	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW6	11/20/01	59.60	b	18.67	40.93	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	450	100	2.03	6.44	29	5.2	1.1	3.4	--	<0.20
MW6	02/19/02	59.60	b	17.40	42.20	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW6	05/21/02	59.60	b	17.68	41.92	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	170	100	0.76	6.6	11	3.4	1.4	8.9	0.65	<0.20
MW6	06/27/03	59.60	b	17.73	41.87	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW6	09/29/03	59.60	b	18.48	41.12	0.00	<1.0	<1.0	<1.0	<2.0	230[d]	<50	<500	340	--	--	--	--	--	--	--	--	--

Table 2
Cumulative Groundwater Analytical Data
Val Strough Chevrolet
327 34th Street
Oakland, California

Well Number	Date	Casing Elevation (feet)		Depth to Water (feet)	GW Elevation (feet)	SPH Thickness (feet)	Concentration (µg/L)								Concentration (mg/L)								
							Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-g	TPH-d	TPH-mo	MTBE	CO_2 (lab)	DO (field)	pH (field)	Fe(II)	Mn	SO_4	$N\text{-}NH_3$	$N\text{-}NO_3$	$o\text{-}PO_4$
MW6	**12/12/03**	**59.60**	**b**	**17.89**	**41.71**	**0.00**	**<2.5**	**<2.5**	**<2.5**	**<5.0**	**<250**	**51**	**<500**	**190**	--	--	--	--	--	--	--	--	--
MW7	07/20/00	96.75	a	15.93	80.82	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	<0.50	32.2	7.15	7.43	<0.1	0.002	7.5	<0.10	2.6	0.13
MW7	10/11/00	96.75	a	16.90	79.85	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW7	04/10-11/01	96.75	a	15.80	80.95	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	<0.50	77.6	NR	NR	0.18	0.048	49	<0.10	2.7	0.31
MW7	07/10/01	96.75	a	16.71	80.04	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW7	11/20/01	59.47	b	16.17	43.30	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	<2.0	62	0.96	7.11	0.16	1.8	63	<0.10	--	<0.20
MW7	02/19/02	59.47	b	14.92	44.55	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW7	05/21/02	59.47	b	15.18	44.29	0.00	<0.50	<0.50	<0.50	<0.50	<50	<50	<300	<0.50	68	1.03	7.57	0.11	0.35	51	<0.10	2.8	0.11
MW7	06/27/03	59.47	b	16.28	43.19	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW7	09/29/03	59.47	b	16.88	42.59	0.00	<0.50	<0.50	<0.50	<1.0	<50	<50	<500	0.62	--	--	--	--	--	--	--	--	--
MW7	**12/12/03**	**59.47**	**b**	**14.95**	**44.52**	**0.00**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<50**	**<50**	**<500**	**<0.50**	--	--	--	--	--	--	--	--	--

SPH Separate-phase hydrocarbons.
CO_2 Carbon dioxide.
DO Dissolved oxygen.
Fe(II) Ferrous iron.
Mn Manganese.
SO_4 Sulfate.
$N\text{-}NH_3$ Ammonia.
$N\text{-}NO_3$ Nitrate.
$o\text{-}PO_4$ Ortho-Phosphate.
GW Groundwater.
TPH-g Total Petroleum Hydrocarbons as gasoline.
TPH-d Total Petroleum Hydrocarbons as diesel.
TPH-mo Total Petroleum Hydrocarbons as motor oil.
MTBE Methyl tertiary butyl ether.
NR Not reported.
µg/L Micrograms per liter.
mg/L Milligrams per liter.
* Free product; sample not analyzed.
-- Not analyzed or not sampled.
< Less than the laboratory reporting limits.
a Elevations are referenced to monitoring well MW1, with assumed datum of 100.00 feet.
b Elevations based on a survey conducted August 2002 and referenced benchmark with known elevation (NGVD 29) of 60.40 feet above mean sea level.
c Analysis not conducted due to broken sample containers.
d Hydrocarbon reported in the gasoline range does not match laboratory gasoline standard.
e Groundwater elevation in wells with product are corrected by multiplying the specific gravity of gasoline (0.69) by the product thickness and adding this value to the water elevation.

Table 3
December 2003 Soil Analytical Data
Val Strough Chevrolet
327 34th Street
Oakland, California

Well Number	Date	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-g	TPH-d	TPH-mo	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB
SB1	12/18/2003	9.5-10	<0.005	<0.005	<0.005	<0.005	<1	<1	<50	<0.010	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005
SB1	12/18/2003	14.5-15	**0.1**	**0.23**	**0.03**	**0.34**	**15**	**1.6**	<50	**0.096**	**0.22**	<0.010	<0.005	<0.005	<0.005	<0.005
SB1	12/18/2003	25-25.5	**9.7**	**130**	**52**	**360**	**1,100**	**95**	<50	<25	**6.3**	<10	<5	<5	<5	<5
SB1	12/18/2003	34.5-35	<0.005	**0.01**	**0.0056**	**0.03**	<1	<1	<50	<0.010	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005
SB2	12/18/2003	9.5-10	<0.005	<0.005	<0.005	<0.005	<1	**3.1**	<50	<0.010	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005
SB2	12/18/2003	14.5-15	<0.005	<0.005	<0.005	<0.005	<1	**1.8**	<50	<0.010	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005
SB2	12/18/2003	24.5-25	**0.0051**	<0.005	**0.019**	**0.021**	<1	**1.2**	<50	**0.011**	**0.02**	<0.010	<0.005	<0.005	<0.005	<0.005
SB2	12/18/2003	34.5-35	<0.005	<0.005	<0.005	<0.005	<1	**3.2**	<50	<0.010	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005

Concentrations reported in milligrams per kilogram

TPH-g	Total Petroleum Hydrocarbons as gasoline.	TBA	t-butyl alcohol
TPH-d	Total Petroleum Hydrocarbons as diesel.	DIPE	di-isopropyl ether
TPH-mo	Total Petroleum Hydrocarbons as motor oil.	ETBE	ethyl t-butyl ether
MTBE	Methyl tertiary butyl ether.	TAME	t-amyl methyl ether
--	Not analyzed.	1,2-DCA	1,2-dichloroethane
		EDB	ethylene dibromide

Table 4
Hydropunch Groundwater Grab Sample Analytical Data
Val Strough Chevrolet
327 34th Street
Oakland, California

Boring ID	Date	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-g	TPH-d	TPH-mo	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB
HP1	12/18/2003	26-30	<5.0	<5.0	<5.0	**11**	**410**	**180**	<500	<50	**480**	<10	<5.0	<5.0	<5.0	<5.0
HP3	12/18/2003	32-36	<0.50	<0.50	<0.50	<1.0	<50	**75**	<500	<5.0	**0.55**	<1.0	<0.50	<0.50	**1.3**	<0.50

Concentrations reported in micrograms per liter

TPH-g	Total Petroleum Hydrocarbons as gasoline.
TPH-d	Total Petroleum Hydrocarbons as diesel.
TPH-mo	Total Petroleum Hydrocarbons as motor oil.
TBA	t-butyl alcohol.
MTBE	Methyl tertiary butyl ether.
DIPE	di-isopropyl ether.
ETBE	ethyl t-butyl ether.
TAME	t-amyl methyl ether.
1,2-DCA	1,2-dichloroethane.
EDB	ethylene dibromide.
<	less than the laboratory reporting limits.

ETIC ENGINEERING

Appendix A

Alameda County Health Care Services Letter
Dated 15 July 2003

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

July 15, 2003

Don Strough
Strough Family Trust of 1983
PO Box 489
Orinda, CA 94563

Dear Mr. Strough:

Subject: Fuel Leak Case No. RO0000134, Val Strough Chevrolet, 327-34th St., Oakland, CA

Alameda County Environmental Health staff has reviewed "Site Investigation and Groundwater Monitoring...November 2001 to November 2002", dated January 8, 2003, by Subsurface Consultants, Inc. We request that you address the following technical comments and send us the technical reports requested below.

TECHNICAL COMMENTS

1. Site Characterization - Up to 330,000 micrograms/liter (ug/l) Total Volatile Petroleum Hydrocarbons-Gasoline (TVPH-G), 31,000 ug/l TEH-Diesel (TEH-D), 2,500 ug/l TEH-Oil (TPH-O), 10,000 ug/l benzene, and 5,800 ug/l methyl tertiary-butyl ether (MTBE) have been detected in onsite monitoring wells. The lateral and vertical extent of your dissolved contaminant plume is undefined. Please propose additional sampling locations to define the plumes associated with your site in the Work Plan requested below. Include geologic cross-sections and show soil and groundwater analytical results, utility conduits, well screens, etc., and explain your rationale for the additional sampling locations. You may want to consider performing an investigation to quickly define the location of the contaminant plume downgradient from the release site prior to installing the permanent monitoring network. That will allow you to optimize the location and depth of the permanent wells, thereby reducing the cost of the monitoring work. Collection of groundwater samples using a one-time direct push water sampling tool would be appropriate for this investigation.

2. Source Characterization - Up to 10,000 mg/kg Total Petroleum Hydrocarbons-Gasoline (TPH-G) and 1,400 mg/kg TPH-G were detected in contaminated soil collected from downgradient borings MW-2 and MW-3. Thus, the source area has not been delineated. We request that you propose additional borings to delineate the lateral and vertical extent of soil contamination in the source area. Please propose boring locations in the Work Plan requested below.

3. Preferential Pathway Survey – We request that you perform a preferential pathway study that details the potential migration pathways and potential conduits (wells, utilities, pipelines, etc.) for horizontal and vertical migration that may be present in the vicinity of the site.
   a) Utility Survey - Please submit map(s) and cross-sections showing the location and depth of all utility lines and trenches (including sewers, storm drains, pipelines, trench backfill, etc.) within and near the site and plume area(s). Evaluate the probability of the contaminant plumes encountering preferential pathways and conduits that could spread the contamination, particularly in the vertical direction to deeper water aquifers. Please submit with the Work Plan requested below.
   b) Well Survey – Locate wells within a quarter mile radius of the site. Show the location of the wells and the site on a map and tabulate well construction details for each well. Please submit with the Work Plan requested below.

4. Historical Hydraulic Gradients – Please show using a rose diagram with magnitude and direction; include cumulative groundwater gradients in all future reports submitted for this site.

5. "Underground Storage Tank Unauthorized Release (Leak) / Contamination Site Report" - Please complete (enclosed).

6. Groundwater Monitoring Frequency – Currently all the wells are sampled semiannually. Due to the high contaminant concentrations found and to better determine the effect of the residual soil contamination on the groundwater plume, please increase the monitoring frequency to quarterly.

7. Groundwater Analyses – We request that you include the other fuel oxygenates Tertiary Amyl Methyl Ether (TAME), Ethyl Tertiary Butyl Ether (ETBE), Di-Isopropyl Ether (DIPE), and Tertiary Butyl Alcohol (TBA), Ethanol by EPA Method 8260 and the lead scavengers, Ethylene Dibromide (EDB), Ethylene Dichloride (EDC) for analyses of grab and monitoring well groundwater samples, and for the lead scavengers, EDB and EDC, also perform analyses on soil samples. If any of the latter compounds are detected, and are determined to be of concern (poses a risk to human health, the environment, or water resources) it is to be incorporated into your regular monitoring plan.

8. Source Cleanup Required - The soil contamination in the source area appears to be contributing to the high contaminant concentrations in groundwater. Please submit a proposal to reduce residual soil contamination in the Work Plan requested below.

TECHNICAL REPORT REQUEST

Please submit the following technical reports to Alameda County Environmental Health (Attention: Don Hwang), according to the following schedule:

- September 15, 2003 - Work Plan
- October 31, 2003 - 3rd Quarter 2003 Groundwater Monitoring Report
- 60 days after Work Plan approval - Soil and Water Investigation Report
- January 31, 2004 - 4th Quarter 2003 Groundwater Monitoring Report

If you have any questions, I may be reached at (510) 567-6746.

Sincerely,

Don Hwang
Hazardous Materials Specialist
Local Oversight Program

C: Katherine Brandt, ETIC Engineering, Inc., 1333 Broadway, Suite 1015, Oakland, CA 94612
Donna Drogos
File

ETIC ENGINEERING

Appendix B

Field Protocols

PROTOCOLS FOR INSTALLATION, SAMPLING, AND ABANDONMENT OF SINGLE TUBE DIRECT PUSH BORINGS

SUBSURFACE CLEARANCE SURVEY PROCEDURES

Prior to drilling, the proposed locations of borings will be marked with white paint. Underground Service Alert (USA) will be contacted one week prior to subsurface activities and a "ticket" will be issued for this investigation. USA members will mark underground utilities in the delineated areas using standard color code identifiers.

Once USA has marked the site, all proposed borehole locations will be investigated by subsurface clearance surveys to ensure clearance of any possible buried hazards (pipelines, drums, tanks). Subsurface clearance surveys use several geophysical methods to locate shallow buried man-made objects. The geophysical methods include electromagnetic induction (EMI) profiling, ground penetrating radar (GPR), and/or magnetic surveying. The choice of methods depends on targets of interest, site hydrology, and potential interference from surrounding cultural features.

SOIL CORING PROCEDURES

Prior to drilling, all boreholes will be cleared by hand auger to 4 feet below ground surface. Soil and groundwater samples will be collected for lithologic and chemical analysis using a direct driven single tube soil coring system. A hydraulic hammer will drive sampling rods into the ground to collect continuous or discrete soil cores. As the rods are advanced, soil is driven into an approximately 1.5-inch-diameter sample barrel that is attached to the end of the rods. Soil samples are collected in sleeves inside the sample barrel as the rods are advanced. After being driven 2 to 4 feet (depending on the sample interval and the length of the sample barrel), the rods are removed from the borehole. The sleeves containing the soil samples are removed from the sample barrel, and can then be preserved for chemical analyses or used for lithologic identification. Samples to be preserved for chemical analyses are sealed with Teflon tape and caps and placed in a cooler with ice. After adding new sleeves, the drive sampler and rods are then lowered back into the borehole to the previous depth and the process is repeated until the desired depth is reached.

All drive casing, sample barrels, rods, and tools will be cleaned with Alconox or equivalent detergent and deionized water. All soil will be contained in 55-gallon drums or stockpiles at the project site for later disposal.

HYDROPUNCH GROUNDWATER SAMPLING PROCEDURES

The HydroPunch sampler will be assembled with the expendable drive point, the drive head, the protective sheath, the inner stainless steel screen (or PVC) and the O-ring seal. A drive rod will be added to the top of the sampler and the entire assembly will be driven into the subsurface using the percussion of the hydraulic hammer. By adding a series of hardened steel, hollow drive rods, the sampler will be advanced to the desired depth. Once the desired depth is achieved, the rods will be retracted to expose the stainless steel screen to groundwater. Extraction of groundwater will be performed using tubing, which will be inserted down the center of the rods into the stainless screen sampler. The most common methods of extracting the groundwater are a bailer, a check valve, or a peristaltic pump, depending upon the volume desired, and the local protocols. Groundwater samples will be collected in 40mL HCl preserved VOA's, labeled and placed in a cooler with ice. If groundwater does not enter the borehole after a given period of time, the HydroPunch may be pulled up a greater distance to expose more of the formation, the boring may be advanced until a zone of

higher permeability is encountered, or the boring may be terminated without collecting a water sample at that given depth.

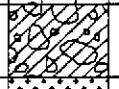
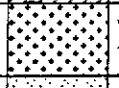
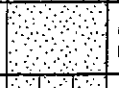
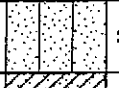
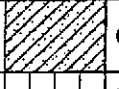
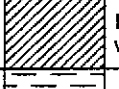
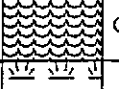
BOREHOLE GROUTING

On completion of sampling, boreholes will be abandoned with a cement grout containing less than 5 percent pure sodium bentonite. The grout will be allowed to free-fall in the boring or pumped through a grouting tube positioned at the bottom of the borehole depending on the subsurface conditions and/or the requirements of the local oversight agency. Boreholes will be resurfaced to match the surrounding conditions.

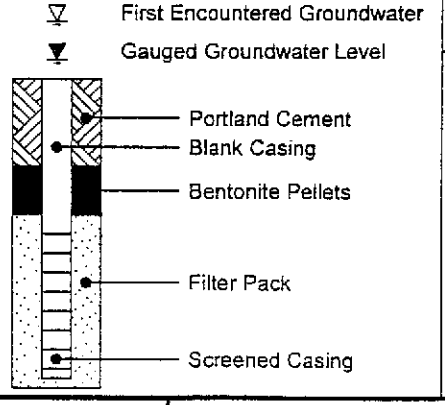
ETIC ENGINEERING

Appendix C

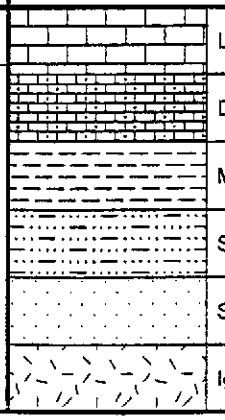
Boring Logs

MAJOR DIVISIONS			TYPICAL NAMES		
COARSE-GRAINED SOILS More than half is coarser than No. 200 sieve	GRAVELS more than half coarse fraction is larger than No. 4 sieve size	Clean gravels with little or no fines	GW		Well graded gravels with or without sand, little or no fines.
			GP		Poorly graded gravels with or without sand, little or no fines.
		Gravels with over 12% fines	GM		Silty gravels, silty gravels with sand.
			GC		Clayey gravels, clayey gravels with sand.
	SANDS more than half coarse fraction is smaller than No. 4 sieve size	Clean sands with little or no fines	SW		Well graded sands with or without gravel, little or no fines.
			SP		Poorly graded sands with or without gravels, little or no fines.
		Sands with over 12% fines	SM		Silty sands with or without gravel.
			SC		Clayey sands with or without gravel.
FINE-GRAINED SOILS More than half is finer than No. 200 sieve	SILTS AND CLAYS liquid limit 50% or less		ML		Inorganic silts and very fine sands, rock flour, silts with sands and gravels.
			CL		Inorganic clays of low to medium plasticity, clays with sands and gravels, lean clays.
			OL		Organic silts or clays of low plasticity.
	SILTS AND CLAYS liquid limit greater than 50%		MH		Inorganic silts, micaceous or diatomaceous, fine sandy or silty soils, elastic silts.
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays or clays of medium to high plasticity.
HIGHLY ORGANIC SOILS			PT		Peat and other highly organic soils.

SYMBOLS



DRILL LOG ROCK TYPES



ETIC ENGINEERING

UNIFIED SOIL CLASSIFICATION SYSTEM DESCRIPTIONS AND SYMBOLS USED ON ETIC DRILL LOGS

ETIC ENGINEERING

LOG OF SOIL BORING: **SB1**

COORDINATES:

ELEVATION TOP OF CASING:

CASING BELOW SURFACE:

DRILLING COMPANY: Vironex

LICENSE NUMBER: C57# 705927

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

DRILLING AND SAMPLING METHODS: Hand Auger to 4 ft bgs. Drilled with Geoprobe 66DT Single tube Direct-push Track Rig. Soil sampled with 5 ft macrocore.

				START	FINISH
WATER LEVEL	▽ 28				
TIME	0940			TIME 1230	TIME 1000
DATE	12/18/03			DATE 12/15/03	DATE 12/18/03
REFERENCE	GS				

SURFACE CONDITIONS: Concrete to 6".

DESCRIPTION BY: B. Gilbert

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION
				0		Concrete, 2" roadbase.
				1	CL	SILTY CLAY: yellowish brown (10YR 5/6), stiff to hard, dry to moist, low plasticity, rare very fine sand.
				2		
				3		
				4		
60	60	-		5		Color change to light olive brown (2.5Y 5/4), soft, dry, common black organic nodules, rust stains.
				6		
				7		
				8	ML	SANDY SILT: light olive brown (2.5Y 5/4), hard, low plasticity, very fine sand, dry, black organic nodules, rust stains.
			0.4	9		
60	60	-		10	SP	Soil sample (SB1-9.5-10). SILTY SAND: yellowish brown (10YR 5/8), dry, low plasticity, very fine to fine sand, common rust stains.
				11	CL	SILTY CLAY: yellowish brown (10YR 5/4), mottled with dark greenish brown (10YR 4/2), soft, dry, low to medium plasticity, rare very fine sand.
				12	ML	SANDY SILT: dark yellowish brown (10YR 4/4), soft, medium plasticity, very fine sand, organic nodules, rust stains.
				13		GRAVELLY SILT: dark gray (5Y 4/1), hard, dry, low to medium plasticity, rare very fine sand, minor gravel to 1/4"; 3" gravel lense at 13.5 ft, angular gravel to 1".
			130	14	ML	
60		-		15	SM	Soil sample (SB1-14.5-15). SILTY SAND: dark yellowish brown (10YR 4/4), dry, non plastic, very fine to fine sand.
				16		
				17	CL	SILTY CLAY: yellowish brown (10YR 5/6), soft, dry, medium plasticity, hydrocarbon odor, black organic nodules, rust stains.
	24			18		
			1,068	19	ML	SANDY SILT: dark yellowish brown (10YR 4/6), soft, dry, non plastic, very fine sand, minor medium to coarse sand, rare gravel to 1/4", hydrocarbon odor.
				20		

DETAILS

Cement Grout from surface to 35 ft bgs.

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

LOG OF SOIL BORING: **SB1**

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	AIR SAMPLE	WATER SAMPLE	SOIL SAMPLE	RECOVERED	GRAPHIC LOG	
60	6	-		21						Becomes mottled with olive gray silt (5Y 4/2), minor gravel to 1/2". Sleeve stuck in sampler; no recovery.
				22						
				23					ML	
				24						
24	24	-	>9,999	25			X			Soil sample (SB1-25-25.5). Damp to moist, medium plasticity, rare very fine sand, rare gravel to 1/4".
				26						
				27					SP	SILTY SAND: gray (5Y 5/1), loose, moist, non plastic, very fine to fine sand.
36	36	-		28					GP	Decrease in sand content, increase in silt content. SANDY GRAVEL: dark olive gray (5Y 3/2), wet, fine to coarse sand, subangular gravel to 1/2", hydrocarbon odor.
			50	29					ML	SANDY SILT: dark gray (5Y 4/1), soft, damp to moist, non plastic, very fine sand.
60	60	-		30					SM	SILTY SAND: dark yellowish brown (10YR 4/4), loose, wet, very fine to fine sand, rare coarse sand.
				31					SP	GRAVELLY SAND with SILT: olive gray (5Y 4/2), soft (silt), wet, very fine to coarse sand, subangular gravel to 1/2".
				32						
				33						
			130	34					SM	SILTY SAND: dark yellowish brown (10YR 4/4), loose, moist, non plastic, very fine to fine sand.
				35			X			Soil sample (SB1-34.5-35). Boring terminated at 35 ft bgs.
				36						
				37						
				38						
				39						
				40						
				41						
				42						
				43						
				44						
				45						

Cement Grout from surface to 35 ft bgs.

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

LOG OF SOIL BORING: **SB2**

COORDINATES:

ELEVATION TOP OF CASING:

CASING BELOW SURFACE:

DRILLING COMPANY: Vironex

LICENSE NUMBER: C57# 705927

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

DRILLING AND SAMPLING METHODS: Hand Auger to 4 ft bgs. Drilled with Geoprobe 66DT Single tube Direct-push Track Rig. Soil sampled with 5 ft macrocore.

				START	FINISH
WATER LEVEL ▽	25				
TIME	25			TIME 1310	TIME 1200
DATE	12/18/03			DATE 12/15/03	DATE 12/18/03
REFERENCE	GS				

SURFACE CONDITIONS: Concrete to 6".

DESCRIPTION BY: B. Gilbert

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	GRAPHIC LOG	DESCRIPTION	DETAILS
				0		Concrete, 2" roadbase.	
				1		CLAYEY SILT: dark brown (2.5YR 3/4), soft, dry, low plasticity.	
				2	ML		
				3			
				4		Color change to dark yellowish brown (10YR 4/4), rust stains.	
				5	CL	SILTY CLAY: dark yellowish brown (10YR 4/6), soft, dry, low plasticity.	
60	60	-		6		CLAYEY SILT: dark yellowish brown (10YR 4/4), hard, dry, low plasticity.	
				7			
				8	ML		Cement Grout from surface to 35 ft bgs.
				9		Increase in sand content, rare gravel to 1/4", rust stains.	
			0.0	10		Soil sample (SB2-9.5-10).	
30	30	-				Color change to light yellowish brown (2.5Y 6/3).	
				11		SANDY SILT with GRAVEL: dark yellowish brown (10YR 4/6), hard, dry, non plastic, very fine to fine sand, trace gravel to 1/2".	
				12			
30	30	-		13	ML		
			5.2	14		3" gravel lense, subangular gravel to 1".	
				15		Soil sample (SB2-14.5-15).	
30	30	-				Color change to olive (5Y 5/4), decrease in sand and gravel content.	
				16		SILTY SAND with GRAVEL: olive gray (5Y 4/2), loose, dry, very fine to fine sand, gravel to 1/2", rust stains.	
				17	SP		
30	30	-		18		SILTY CLAY with GRAVEL: olive (5Y 4/3), mottled with dark yellowish brown silty clay (10YR 4/6), soft, dry, medium plasticity, gravel to 1/4".	
				19	CL		
			47.2	20			

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

LOG OF SOIL BORING: SB2

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	GRAPHIC LOG	
30	30	-		21	ML	CLAYEY SILT with GRAVEL: dark yellowish brown (10YR 4/6), hard, dry, low plasticity, rare medium sand, gravel to 1/4", rust stains.
				22		
30	30	-		23	CL	SILTY CLAY: light yellowish brown (2.5Y 6/4), soft, dry, medium plasticity.
			80.8	24	ML	CLAYEY SILT: light olive brown (2.5Y 3/3), soft, damp, low plasticity. Soil sample (SB2-24.5-25).
30	30	-		25		SILTY SAND: light olive brown (2.5Y 5/4), gray mottling, dense, damp, very fine sand.
				26		
				27		
30	30	-		28	SM	Becomes wet, increase in silt content.
			1.5	29		
30	30	-		30		
				31		
				32	CL	SILTY CLAY: light olive brown (2.5Y 5/3), hard, damp, low plasticity, rare very fine sand, rare gravel to 1/4".
30	30	-		33	SP	SILTY SAND: light olive brown (2.5Y 5/4), loose, wet, non plastic, very fine to fine sand.
			5.5	34		
				35	CL	Soil sample (SB2-34.5-35). SILTY CLAY: light olive brown (2.5Y 5/3), hard, damp, low plasticity, rare very fine sand, rare gravel to 1/4". Boring terminated at 35 ft bgs.
				36		
				37		
				38		
				39		
				40		
				41		
				42		
				43		
				44		
				45		

AIR SAMPLE | WATER SAMPLE | SOIL SAMPLE | RECOVERED

Cement Grout from surface to 35 ft bgs.

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

LOG OF SOIL BORING: **HP1**

COORDINATES:

ELEVATION TOP OF CASING:

CASING BELOW SURFACE:

DRILLING COMPANY: Vironex

LICENSE NUMBER: C57# 705927

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

DRILLING AND SAMPLING METHODS: Hand Auger to 4 ft bgs. Drilled with Geoprobe 66DT Single tube Direct-push Track Rig. Groundwater sampled with 4 ft hydropunch.

				START	FINISH
WATER LEVEL					
TIME				TIME 1345	TIME 1745
DATE				DATE 12/15/03	DATE 12/18/03
REFERENCE					

SURFACE CONDITIONS: Asphalt to 6".

DESCRIPTION BY: B. Gilbert

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	AIR SAMPLE	WATER SAMPLE	SOIL SAMPLE	RECOVERED	GRAPHIC LOG
				0					
				1					SP
				2					
				3					CL
				4					
				5					
				6					
				7					
				8					
				9					
				10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

Asphalt and roadbase.

GRAVELLY SAND with CLAY (Fill): low plasticity, medium sand, gravel to 1", wood and brick pieces.

SILTY CLAY: very dark brown (10YR 2/2), soft, dry, high plasticity.

Advanced hydropunch sampler to 30 ft bgs.

DETAILS

Cement grout from surface to 30 ft bgs.

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

LOG OF SOIL BORING:

HP1

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	AIR SAMPLE	WATER SAMPLE	SOIL SAMPLE	RECOVERED	GRAPHIC LOG
				21					
				22					
				23					
				24					
				25					
				26					
				27					
				28					
				29					
				30					
				31					
				32					
				33					
				34					
				35					
				36					
				37					
				38					
				39					
				40					
				41					
				42					
				43					
				44					
				45					

Hydropunch sample 26-30 ft (HP1-26-30).

Hydropunch boring terminated at 30 ft bgs.

Cement grout from surface to 30 ft bgs.

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

LOG OF SOIL BORING: **HP2**

COORDINATES:

ELEVATION TOP OF CASING:

CASING BELOW SURFACE:

DRILLING COMPANY: Vironex

LICENSE NUMBER: C57# 705927

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

DRILLING AND SAMPLING METHODS: Hand Auger to 4 ft bgs. Drilled with Geoprobe 66DT Single tube Direct-push Track Rig. Groundwater samples attempted with 4 ft hydropunch.

				START	FINISH
WATER LEVEL					
TIME				TIME 1415	TIME 1630
DATE				DATE 12/15/03	DATE 12/18/03
REFERENCE					

SURFACE CONDITIONS: Concrete to 7".

DESCRIPTION BY: B. Gilbert

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	AIR SAMPLE	WATER SAMPLE	SOIL SAMPLE	RECOVERED	GRAPHIC LOG	DESCRIPTION	DETAILS
				0						Concrete, 2" roadbase.	
				1						SANDY SILT: dark yellowish brown (10YR 4/6), hard, dry, non plastic, very fine to fine sand.	
				2					ML		
				3							
				4						Advanced hydropunch sampler to 40 ft bgs.	
				5							
				6							
				7							
				8							
				9							Cement grout from surface to 40 ft bgs.
				10							
				11							
				12							
				13							
				14							
				15							
				16							
				17							
				18							
				19							
				20							

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

LOG OF SOIL BORING:

HP2

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	AIR SAMPLE	WATER SAMPLE	SOIL SAMPLE	RECOVERED	GRAPHIC LOG
				21					
				22					
				23					
				24					
				25					
				26					
				27					
				28					
				29					
				30					
				31					
				32					
				33					
				34					
				35					
				36					
				37					
				38					
				39					
				40					
				41					
				42					
				43					
				44					
				45					

Hydropunch groundwater sample attempted from 24 to 28 ft bgs (pulled up 4 ft from initial 28 to 32 ft attempt); dry. No sample collected.

Hydropunch groundwater sample attempted from 28 to 32 ft bgs; dry. No sample collected.

Hydropunch groundwater sample attempted from 32 to 36 ft bgs; dry. No sample collected.

Hydropunch groundwater sample attempted from 36 to 40 ft bgs; dry. No sample collected.

Hydropunch boring terminated at 40 ft bgs.

Cement grout from surface to 40 ft bgs.

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

LOG OF SOIL BORING: **HP3**

COORDINATES:

ELEVATION TOP OF CASING:

CASING BELOW SURFACE:

DRILLING COMPANY: Vironex

LICENSE NUMBER: C57# 705927

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

DRILLING AND SAMPLING METHODS: Hand Auger to 4 ft bgs. Drilled with Geoprobe 66DT Single tube Direct-push Track Rig. Groundwater sampled with 4 ft hydropunch.

				START	FINISH
WATER LEVEL					
TIME				TIME 1215	TIME 1330
DATE				DATE 12/15/03	DATE 12/18/03
REFERENCE					

SURFACE CONDITIONS: Asphalt to 3".

DESCRIPTION BY: B. Gilbert

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	AIR SAMPLE	WATER SAMPLE	SOIL SAMPLE	RECOVERED	GRAPHIC LOG	DESCRIPTION	DETAILS
				0					SP	Asphalt. *GRAVELLY SAND (Fill): minor* silt, dry, fine to coarse sand, subrounded gravel to 1/2".	
				1						SILTY CLAY: brown (10YR 5/3), soft, dry, high plasticity, rare very fine sand.	
				2					CL		
				3						Color change to dark brown (10YR 3/3), increase in silt content, moist.	
				4						Advanced hydropunch sampler to 36 ft bgs.	
				5							
				6							
				7							
				8							
				9							Cement grout from surface to 30 ft bgs.
				10							
				11							
				12							
				13							
				14							
				15							
				16							
				17							
				18							
				19							
				20							

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

CLIENT	SITE NUMBER	LOCATION
Strough Family Trust	TMSFT	327 34th Street Oakland, CA

LOG OF SOIL BORING:

HP3

INCHES DRIVEN	INCHES RECOVER	BLOWS / 6" SAMPLER	OVA READING	DEPTH (feet)	AIR SAMPLE	WATER SAMPLE	SOIL SAMPLE	RECOVERED	GRAPHIC LOG
				21					
				22					
				23					
				24					
				25					
				26					
				27					
				28					
				29					
				30					
				31					
				32					
				33					
				34					
				35					
				36					
				37					
				38					
				39					
				40					
				41					
				42					
				43					
				44					
				45					

Hydropunch sample 32-36 ft bgs (HP3-32-36).

Hydropunch boring terminated at 36 ft bgs.

Cement grout from surface to 30 ft bgs.

LOG OF SOIL BORING STROUGHLOGS.GPJ ETIC.GDT 2/11/04

ETIC ENGINEERING

Appendix D

Laboratory Reports and Chain-of-Custody Documentation

SEVERN TRENT STL

Submission#: 2003-12-0714

ETIC Oakland

December 30, 2003

1333 Broadway, Suite 1015
Oakland, CA 94612

Attn.: Luis Fraticelli

Project#: TMSFT1.1
Project: Strought Family Trust

Attached is our report for your samples received on 12/19/2003 19:09
This report has been reviewed and approved for release. Reproduction of this report is permitted only in its entirety.

Please note that any unused portion of the samples will be discarded after 02/02/2004 unless you have requested otherwise.
We appreciate the opportunity to be of service to you. If you have any questions, please call me at (925) 484-1919.
You can also contact me via email. My email address is: vvancil@stl-inc.com

Sincerely,

Vincent Vancil
Project Manager

SEVERN TRENT STL

Submission #: 2003-12-0714

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
HP3-32-36`	12/18/2003 13:10	Water	9
HP1-26-30`	12/18/2003 17:20	Water	10

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030B
Test(s): 8260B
Sample ID: **HP3-32-36`**
Lab ID: 2003-12-0714 - 9
Sampled: 12/18/2003 13:10
Extracted: 12/25/2003 19:10
Matrix: Water
QC Batch#: 2003/12/25-01.69

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	5.0	ug/L	1.00	12/25/2003 19:10	
Methyl tert-butyl ether (MTBE)	0.55	0.50	ug/L	1.00	12/25/2003 19:10	
Di-isopropyl Ether (DIPE)	ND	1.0	ug/L	1.00	12/25/2003 19:10	
Ethyl tert-butyl ether (ETBE)	ND	0.50	ug/L	1.00	12/25/2003 19:10	
tert-Amyl methyl ether (TAME)	ND	0.50	ug/L	1.00	12/25/2003 19:10	
1,2-DCA	1.3	0.50	ug/L	1.00	12/25/2003 19:10	
EDB	ND	0.50	ug/L	1.00	12/25/2003 19:10	
Benzene	ND	0.50	ug/L	1.00	12/25/2003 19:10	
Toluene	ND	0.50	ug/L	1.00	12/25/2003 19:10	
Ethylbenzene	ND	0.50	ug/L	1.00	12/25/2003 19:10	
Total xylenes	ND	1.0	ug/L	1.00	12/25/2003 19:10	
Surrogate(s)						
1,2-Dichloroethane-d4	93.0	76-114	%	1.00	12/25/2003 19:10	
Toluene-d8	93.5	88-110	%	1.00	12/25/2003 19:10	

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030B
Sample ID: **HP1-26-30`**
Sampled: 12/18/2003 17:20
Matrix: Water
Analysis Flag: o (See Legend and Note Section)

Test(s): 8260B
Lab ID: 2003-12-0714 - 10
Extracted: 12/26/2003 20:26
QC Batch#: 2003/12/26-02.62

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	50	ug/L	10.00	12/26/2003 20:26	
Methyl tert-butyl ether (MTBE)	480	5.0	ug/L	10.00	12/26/2003 20:26	
Di-isopropyl Ether (DIPE)	ND	10	ug/L	10.00	12/26/2003 20:26	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/L	10.00	12/26/2003 20:26	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/L	10.00	12/26/2003 20:26	
1,2-DCA	ND	5.0	ug/L	10.00	12/26/2003 20:26	
EDB	ND	5.0	ug/L	10.00	12/26/2003 20:26	
Benzene	ND	5.0	ug/L	10.00	12/26/2003 20:26	
Toluene	ND	5.0	ug/L	10.00	12/26/2003 20:26	
Ethylbenzene	ND	5.0	ug/L	10.00	12/26/2003 20:26	
Total xylenes	11	10	ug/L	10.00	12/26/2003 20:26	
Surrogate(s)						
1,2-Dichloroethane-d4	92.5	76-114	%	10.00	12/26/2003 20:26	
Toluene-d8	90.3	88-110	%	10.00	12/26/2003 20:26	

Fuel Oxygenates by 8260B

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Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B
Method Blank
MB: 2003/12/25-01.69-017

Water

Test(s): 8260B
QC Batch # 2003/12/25-01.69
Date Extracted: 12/25/2003 13:17

Compound	Conc.	RL	Unit	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	5.0	ug/L	12/25/2003 13:17	
Methyl tert-butyl ether (MTBE)	ND	0.5	ug/L	12/25/2003 13:17	
Di-isopropyl Ether (DIPE)	ND	1.0	ug/L	12/25/2003 13:17	
Ethyl tert-butyl ether (ETBE)	ND	0.5	ug/L	12/25/2003 13:17	
tert-Amyl methyl ether (TAME)	ND	0.5	ug/L	12/25/2003 13:17	
1,2-DCA	ND	0.5	ug/L	12/25/2003 13:17	
EDB	ND	0.5	ug/L	12/25/2003 13:17	
Benzene	ND	0.5	ug/L	12/25/2003 13:17	
Toluene	ND	0.5	ug/L	12/25/2003 13:17	
Ethylbenzene	ND	0.5	ug/L	12/25/2003 13:17	
Total xylenes	ND	1.0	ug/L	12/25/2003 13:17	
Surrogates(s)					
1,2-Dichloroethane-d4	90.0	76-114	%	12/25/2003 13:17	
Toluene-d8	93.8	88-110	%	12/25/2003 13:17	

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
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Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B
Method Blank
MB: 2003/12/26-02.62-025

Water

Test(s): 8260B
QC Batch # 2003/12/26-02.62
Date Extracted: 12/26/2003 18:25

Compound	Conc.	RL	Unit	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	5.0	ug/L	12/26/2003 18:25	
Methyl tert-butyl ether (MTBE)	ND	0.5	ug/L	12/26/2003 18:25	
Di-isopropyl Ether (DIPE)	ND	1.0	ug/L	12/26/2003 18:25	
Ethyl tert-butyl ether (ETBE)	ND	0.5	ug/L	12/26/2003 18:25	
tert-Amyl methyl ether (TAME)	ND	0.5	ug/L	12/26/2003 18:25	
1,2-DCA	ND	0.5	ug/L	12/26/2003 18:25	
EDB	ND	0.5	ug/L	12/26/2003 18:25	
Benzene	ND	0.5	ug/L	12/26/2003 18:25	
Toluene	ND	0.5	ug/L	12/26/2003 18:25	
Ethylbenzene	ND	0.5	ug/L	12/26/2003 18:25	
Total xylenes	ND	1.0	ug/L	12/26/2003 18:25	
Surrogates(s)					
1,2-Dichloroethane-d4	92.4	76-114	%	12/26/2003 18:25	
Toluene-d8	98.8	88-110	%	12/26/2003 18:25	

Fuel Oxygenates by 8260B

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Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2003/12/25-01.69**

LCS 2003/12/25-01.69-058 Extracted: 12/25/2003 Analyzed: 12/25/2003 12:58
LCSD 2003/12/25-01.69-040 Extracted: 12/25/2003 Analyzed: 12/25/2003 12:40

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Methyl tert-butyl ether (MTBE)	22.6	21.1	25.0	90.4	84.4	6.9	65-165	20		
Benzene	20.0	21.3	25.0	80.0	85.2	6.3	69-129	20		
Toluene	25.4	22.3	25.0	101.6	89.2	13.0	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	434	473	500	86.8	94.6		76-114			
Toluene-d8	543	492	500	108.6	98.4		88-110			

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
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Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2003/12/26-02.62**

LCS 2003/12/26-02.62-048 Extracted: 12/26/2003 Analyzed: 12/26/2003 18:48
LCSD 2003/12/26-02.62-003 Extracted: 12/26/2003 Analyzed: 12/26/2003 18:03

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Methyl tert-butyl ether (MTBE)	22.0	19.9	25.0	88.0	79.6	10.0	65-165	20		
Benzene	18.9	20.9	25.0	75.6	83.6	10.1	69-129	20		
Toluene	23.8	25.6	25.0	95.2	102.4	7.3	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	503	454	500	100.6	90.8		76-114			
Toluene-d8	476	495	500	95.2	99.0		88-110			

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Legend and Notes

Analysis Flag

o

Reporting limits were raised due to high level of analyte present in the sample.

SEVERN TRENT STL

Submission #: 2003-12-0714

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Luis Fraticelli

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Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
SB1-9.5-10`	12/18/2003 08:39	Soil	1
SB1-14.5-15	12/18/2003 08:41	Soil	2
SB1-25-25.5`	12/18/2003 09:37	Soil	3
SB1-34.5-35`	12/18/2003 09:59	Soil	4
SB2-9.5-10`	12/18/2003 10:45	Soil	5
SB2-14.5-15`	12/18/2003 10:52	Soil	6
SB2-24.5-25`	12/18/2003 11:13	Soil	7
SB2-34.5-35`	12/18/2003 11:37	Soil	8
HP3-32-36`	12/18/2003 13:10	Water	9
HP1-26-30`	12/18/2003 17:20	Water	10

TEPH w/ Silica Gel Clean-up

ETIC Oakland
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Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s):	3550/8015M	Test(s):	8015M
Sample ID:	**SB1-9.5-10'**	Lab ID:	2003-12-0714 - 1
Sampled:	12/18/2003 08:39	Extracted:	12/22/2003 13:47
Matrix:	Soil	QC Batch#:	2003/12/22-05.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	ND	1.0	mg/Kg	1.00	12/23/2003 08:45	
Motor Oil	ND	50	mg/Kg	1.00	12/23/2003 08:45	
Surrogate(s)						
o-Terphenyl	96.3	60-130	%	1.00	12/23/2003 08:45	

TEPH w/ Silica Gel Clean-up

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 3550/8015M
Sample ID: **SB1-14.5-15**
Sampled: 12/18/2003 08:41
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 2
Extracted: 12/22/2003 13:47
QC Batch#: 2003/12/22-05.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	1.6	1.0	mg/Kg	1.00	12/23/2003 09:10	ndp
Motor Oil	ND	50	mg/Kg	1.00	12/23/2003 09:10	
Surrogate(s)						
o-Terphenyl	96.9	60-130	%	1.00	12/23/2003 09:10	

TEPH w/ Silica Gel Clean-up

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 3550/8015M
Sample ID: **SB1-25-25.5'**
Sampled: 12/18/2003 09:37
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 3
Extracted: 12/22/2003 13:47
QC Batch#: 2003/12/22-05.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	95	1.0	mg/Kg	1.00	12/23/2003 09:35	ndp
Motor Oil	ND	50	mg/Kg	1.00	12/23/2003 09:35	
Surrogate(s)						
o-Terphenyl	96.8	60-130	%	1.00	12/23/2003 09:35	

TEPH w/ Silica Gel Clean-up

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 3550/8015M
Sample ID: **SB1-34.5-35**
Sampled: 12/18/2003 09:59
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 4
Extracted: 12/22/2003 13:47
QC Batch#: 2003/12/22-05.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	ND	1.0	mg/Kg	1.00	12/23/2003 10:00	
Motor Oil	ND	50	mg/Kg	1.00	12/23/2003 10:00	
Surrogate(s)						
o-Terphenyl	96.0	60-130	%	1.00	12/23/2003 10:00	

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Luis Fraticelli

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Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 3550/8015M
Sample ID: **SB2-9.5-10`**
Sampled: 12/18/2003 10:45
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 5
Extracted: 12/22/2003 13:47
QC Batch#: 2003/12/22-05.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	3.1	1.0	mg/Kg	1.00	12/23/2003 08:45	ndp
Motor Oil	ND	50	mg/Kg	1.00	12/23/2003 08:45	
Surrogate(s)						
o-Terphenyl	94.7	60-130	%	1.00	12/23/2003 08:45	

SEVERN TRENT STL

Submission #: 2003-12-0714

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Luis Fraticelli

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Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 3550/8015M
Sample ID: **SB2-14.5-15**
Sampled: 12/18/2003 10:52
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 6
Extracted: 12/22/2003 13:47
QC Batch#: 2003/12/22-05.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	1.8	1.0	mg/Kg	1.00	12/23/2003 09:10	ndp
Motor Oil	ND	50	mg/Kg	1.00	12/23/2003 09:10	
Surrogate(s)						
o-Terphenyl	91.8	60-130	%	1.00	12/23/2003 09:10	

SEVERN TRENT STL

Submission #: 2003-12-0714

TEPH w/ Silica Gel Clean-up

ETIC Oakland
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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 3550/8015M
Sample ID: **SB2-24.5-25`**
Sampled: 12/18/2003 11:13
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 7
Extracted: 12/22/2003 13:47
QC Batch#: 2003/12/22-05.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	1.2	1.0	mg/Kg	1.00	12/23/2003 09:35	ndp
Motor Oil	ND	50	mg/Kg	1.00	12/23/2003 09:35	
Surrogate(s)						
o-Terphenyl	93.4	60-130	%	1.00	12/23/2003 09:35	

TEPH w/ Silica Gel Clean-up

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 3550/8015M
Sample ID: **SB2-34.5-35`**
Sampled: 12/18/2003 11:37
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 8
Extracted: 12/22/2003 13:47
QC Batch#: 2003/12/22-05.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	3.2	1.0	mg/Kg	1.00	12/23/2003 10:00	ndp
Motor Oil	ND	50	mg/Kg	1.00	12/23/2003 10:00	
Surrogate(s)						
o-Terphenyl	105.6	60-130	%	1.00	12/23/2003 10:00	

TEPH w/ Silica Gel Clean-up

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 3510/8015M
Sample ID: **HP3-32-36`**
Sampled: 12/18/2003 13:10
Matrix: Water

Test(s): 8015M
Lab ID: 2003-12-0714 - 9
Extracted: 12/22/2003 11:19
QC Batch#: 2003/12/22-03.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	75	50	ug/L	1.00	12/23/2003 12:58	ndp
Motor Oil	ND	500	ug/L	1.00	12/23/2003 12:58	
Surrogate(s)						
o-Terphenyl	80.9	50-120	%	1.00	12/23/2003 12:58	

TEPH w/ Silica Gel Clean-up

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 3510/8015M
Sample ID: **HP1-26-30`**
Sampled: 12/18/2003 17:20
Matrix: Water

Test(s): 8015M
Lab ID: 2003-12-0714 - 10
Extracted: 12/22/2003 11:19
QC Batch#: 2003/12/22-03.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	180	50	ug/L	1.00	12/23/2003 13:23	ndp
Motor Oil	ND	500	ug/L	1.00	12/23/2003 13:23	
Surrogate(s)						
o-Terphenyl	80.8	50-120	%	1.00	12/23/2003 13:23	

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 3510/8015M
Method Blank
MB: 2003/12/22-03.10-001

Water

Test(s): 8015M
QC Batch # 2003/12/22-03.10
Date Extracted: 12/22/2003 11:19

Compound	Conc.	RL	Unit	Analyzed	Flag
Diesel	ND	50	ug/L	12/22/2003 16:12	
Motor Oil	ND	500	ug/L	12/22/2003 16:12	
Surrogates(s)					
o-Terphenyl	85.1	60-130	%	12/22/2003 16:12	

TEPH w/ Silica Gel Clean-up

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Project: TMSFT1.1
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Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 3550/8015M
Method Blank
MB: 2003/12/22-05.10-003

Soil

Test(s): 8015M
QC Batch # 2003/12/22-05.10
Date Extracted: 12/22/2003 13:47

Compound	Conc.	RL	Unit	Analyzed	Flag
Diesel	ND	1	mg/Kg	12/23/2003 15:21	
Motor Oil	ND	50	mg/Kg	12/23/2003 15:21	
Surrogates(s)					
o-Terphenyl	92.6	60-130	%	12/23/2003 15:21	

TEPH w/ Silica Gel Clean-up

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Project: TMSFT1.1
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Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 3510/8015M

Test(s): 8015M

Laboratory Control Spike **Water** **QC Batch # 2003/12/22-03.10**

LCS 2003/12/22-03.10-002 Extracted: 12/22/2003 Analyzed: 12/22/2003 16:12
LCSD 2003/12/22-03.10-003 Extracted: 12/22/2003 Analyzed: 12/22/2003 16:43

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Diesel	946	958	1000	94.6	95.8	1.3	60-130	25		
Surrogates(s)										
o-Terphenyl	18.3	18.1	20.0	91.3	90.7		60-130	0		

TEPH w/ Silica Gel Clean-up

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Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 3550/8015M

Test(s): 8015M

Laboratory Control Spike **Soil** **QC Batch # 2003/12/22-05.10**

LCS 2003/12/22-05.10-001 Extracted: 12/22/2003 Analyzed: 12/23/2003 09:19
LCSD 2003/12/22-05.10-002 Extracted: 12/22/2003 Analyzed: 12/23/2003 09:45

Compound	Conc.	mg/Kg	Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Diesel	38.2	37.5	41.0	93.2	90.4	3.1	60-130	25		
Surrogates(s)										
o-Terphenyl	19.5	18.9	20.0	97.7	94.3		60-130	0		

TEPH w/ Silica Gel Clean-up

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Legend and Notes

Result Flag

ndp

Hydrocarbon reported does not match the pattern of our Diesel standard

SEVERN TRENT STL

Submission #: 2003-12-0714

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Luis Fraticelli

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Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
SB1-9.5-10`	12/18/2003 08:39	Soil	1
SB1-14.5-15	12/18/2003 08:41	Soil	2
SB1-34.5-35`	12/18/2003 09:59	Soil	4
SB2-9.5-10`	12/18/2003 10:45	Soil	5
SB2-14.5-15`	12/18/2003 10:52	Soil	6
SB2-24.5-25`	12/18/2003 11:13	Soil	7
SB2-34.5-35`	12/18/2003 11:37	Soil	8

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030B
Sample ID: **SB1-9.5-10`**
Sampled: 12/18/2003 08:39
Matrix: Soil

Test(s): 8260B
Lab ID: 2003-12-0714 - 1
Extracted: 12/30/2003 11:31
QC Batch#: 2003/12/30-01.62

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	10	ug/Kg	1.00	12/30/2003 11:31	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/Kg	1.00	12/30/2003 11:31	
Di-isopropyl Ether (DIPE)	ND	10	ug/Kg	1.00	12/30/2003 11:31	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/Kg	1.00	12/30/2003 11:31	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/Kg	1.00	12/30/2003 11:31	
1,2-DCA	ND	5.0	ug/Kg	1.00	12/30/2003 11:31	
EDB	ND	5.0	ug/Kg	1.00	12/30/2003 11:31	
Benzene	ND	5.0	ug/Kg	1.00	12/30/2003 11:31	
Toluene	ND	5.0	ug/Kg	1.00	12/30/2003 11:31	
Ethyl benzene	ND	5.0	ug/Kg	1.00	12/30/2003 11:31	
Total xylenes	ND	5.0	ug/Kg	1.00	12/30/2003 11:31	
Surrogate(s)						
1,2-Dichloroethane-d4	96.1	70-121	%	1.00	12/30/2003 11:31	
Toluene-d8	109.0	81-117	%	1.00	12/30/2003 11:31	

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
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Received: 12/19/2003 19:09

Prep(s): 5030B
Sample ID: **SB1-14.5-15**
Sampled: 12/18/2003 08:41
Matrix: Soil

Test(s): 8260B
Lab ID: 2003-12-0714 - 2
Extracted: 12/30/2003 11:54
QC Batch#: 2003/12/30-01.62

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	96	10	ug/Kg	1.00	12/30/2003 11:54	
Methyl tert-butyl ether (MTBE)	220	5.0	ug/Kg	1.00	12/30/2003 11:54	
Di-isopropyl Ether (DIPE)	ND	10	ug/Kg	1.00	12/30/2003 11:54	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/Kg	1.00	12/30/2003 11:54	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/Kg	1.00	12/30/2003 11:54	
1,2-DCA	ND	5.0	ug/Kg	1.00	12/30/2003 11:54	
EDB	ND	5.0	ug/Kg	1.00	12/30/2003 11:54	
Benzene	100	5.0	ug/Kg	1.00	12/30/2003 11:54	
Toluene	230	5.0	ug/Kg	1.00	12/30/2003 11:54	
Ethyl benzene	30	5.0	ug/Kg	1.00	12/30/2003 11:54	
Total xylenes	340	5.0	ug/Kg	1.00	12/30/2003 11:54	
Surrogate(s)						
1,2-Dichloroethane-d4	88.8	70-121	%	1.00	12/30/2003 11:54	
Toluene-d8	108.0	81-117	%	1.00	12/30/2003 11:54	

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
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Received: 12/19/2003 19:09

Prep(s): 5030B
Test(s): 8260B
Sample ID: **SB1-34.5-35'**
Lab ID: 2003-12-0714 - 4
Sampled: 12/18/2003 09:59
Extracted: 12/27/2003 16:00
Matrix: Soil
QC Batch#: 2003/12/27-01.62

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	10	ug/Kg	1.00	12/27/2003 16:00	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/Kg	1.00	12/27/2003 16:00	
Di-isopropyl Ether (DIPE)	ND	10	ug/Kg	1.00	12/27/2003 16:00	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/Kg	1.00	12/27/2003 16:00	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/Kg	1.00	12/27/2003 16:00	
1,2-DCA	ND	5.0	ug/Kg	1.00	12/27/2003 16:00	
EDB	ND	5.0	ug/Kg	1.00	12/27/2003 16:00	
Benzene	ND	5.0	ug/Kg	1.00	12/27/2003 16:00	
Toluene	10	5.0	ug/Kg	1.00	12/27/2003 16:00	
Ethyl benzene	5.6	5.0	ug/Kg	1.00	12/27/2003 16:00	
Total xylenes	30	5.0	ug/Kg	1.00	12/27/2003 16:00	
Surrogate(s)						
1,2-Dichloroethane-d4	96.6	70-121	%	1.00	12/27/2003 16:00	
Toluene-d8	88.1	81-117	%	1.00	12/27/2003 16:00	

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030B
Test(s): 8260B
Sample ID: **SB2-9.5-10`**
Lab ID: 2003-12-0714 - 5
Sampled: 12/18/2003 10:45
Extracted: 12/27/2003 16:22
Matrix: Soil
QC Batch#: 2003/12/27-01.62

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	10	ug/Kg	1.00	12/27/2003 16:22	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/Kg	1.00	12/27/2003 16:22	
Di-isopropyl Ether (DIPE)	ND	10	ug/Kg	1.00	12/27/2003 16:22	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/Kg	1.00	12/27/2003 16:22	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/Kg	1.00	12/27/2003 16:22	
1,2-DCA	ND	5.0	ug/Kg	1.00	12/27/2003 16:22	
EDB	ND	5.0	ug/Kg	1.00	12/27/2003 16:22	
Benzene	ND	5.0	ug/Kg	1.00	12/27/2003 16:22	
Toluene	ND	5.0	ug/Kg	1.00	12/27/2003 16:22	
Ethyl benzene	ND	5.0	ug/Kg	1.00	12/27/2003 16:22	
Total xylenes	ND	5.0	ug/Kg	1.00	12/27/2003 16:22	
Surrogate(s)						
1,2-Dichloroethane-d4	101.2	70-121	%	1.00	12/27/2003 16:22	
Toluene-d8	97.4	81-117	%	1.00	12/27/2003 16:22	

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030B
Sample ID: **SB2-14.5-15`**
Sampled: 12/18/2003 10:52
Matrix: Soil

Test(s): 8260B
Lab ID: 2003-12-0714 - 6
Extracted: 12/27/2003 16:45
QC Batch#: 2003/12/27-01.62

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	10	ug/Kg	1.00	12/27/2003 16:45	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/Kg	1.00	12/27/2003 16:45	
Di-isopropyl Ether (DIPE)	ND	10	ug/Kg	1.00	12/27/2003 16:45	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/Kg	1.00	12/27/2003 16:45	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/Kg	1.00	12/27/2003 16:45	
1,2-DCA	ND	5.0	ug/Kg	1.00	12/27/2003 16:45	
EDB	ND	5.0	ug/Kg	1.00	12/27/2003 16:45	
Benzene	ND	5.0	ug/Kg	1.00	12/27/2003 16:45	
Toluene	ND	5.0	ug/Kg	1.00	12/27/2003 16:45	
Ethyl benzene	ND	5.0	ug/Kg	1.00	12/27/2003 16:45	
Total xylenes	ND	5.0	ug/Kg	1.00	12/27/2003 16:45	
Surrogate(s)						
1,2-Dichloroethane-d4	106.5	70-121	%	1.00	12/27/2003 16:45	
Toluene-d8	97.9	81-117	%	1.00	12/27/2003 16:45	

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
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Received: 12/19/2003 19:09

Prep(s): 5030B
Sample ID: **SB2-24.5-25**
Sampled: 12/18/2003 11:13
Matrix: Soil

Test(s): 8260B
Lab ID: 2003-12-0714 - 7
Extracted: 12/27/2003 17:07
QC Batch#: 2003/12/27-01.62

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	11	10	ug/Kg	1.00	12/27/2003 17:07	
Methyl tert-butyl ether (MTBE)	20	5.0	ug/Kg	1.00	12/27/2003 17:07	
Di-isopropyl Ether (DIPE)	ND	10	ug/Kg	1.00	12/27/2003 17:07	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/Kg	1.00	12/27/2003 17:07	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/Kg	1.00	12/27/2003 17:07	
1,2-DCA	ND	5.0	ug/Kg	1.00	12/27/2003 17:07	
EDB	ND	5.0	ug/Kg	1.00	12/27/2003 17:07	
Benzene	5.1	5.0	ug/Kg	1.00	12/27/2003 17:07	
Toluene	ND	5.0	ug/Kg	1.00	12/27/2003 17:07	
Ethyl benzene	19	5.0	ug/Kg	1.00	12/27/2003 17:07	
Total xylenes	21	5.0	ug/Kg	1.00	12/27/2003 17:07	
Surrogate(s)						
1,2-Dichloroethane-d4	101.4	70-121	%	1.00	12/27/2003 17:07	
Toluene-d8	85.2	81-117	%	1.00	12/27/2003 17:07	

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
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Received: 12/19/2003 19:09

Prep(s): 5030B
Sample ID: **SB2-34.5-35**
Sampled: 12/18/2003 11:37
Matrix: Soil

Test(s): 8260B
Lab ID: 2003-12-0714 - 8
Extracted: 12/27/2003 17:30
QC Batch#: 2003/12/27-01.62

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	10	ug/Kg	1.00	12/27/2003 17:30	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/Kg	1.00	12/27/2003 17:30	
Di-isopropyl Ether (DIPE)	ND	10	ug/Kg	1.00	12/27/2003 17:30	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/Kg	1.00	12/27/2003 17:30	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/Kg	1.00	12/27/2003 17:30	
1,2-DCA	ND	5.0	ug/Kg	1.00	12/27/2003 17:30	
EDB	ND	5.0	ug/Kg	1.00	12/27/2003 17:30	
Benzene	ND	5.0	ug/Kg	1.00	12/27/2003 17:30	
Toluene	ND	5.0	ug/Kg	1.00	12/27/2003 17:30	
Ethyl benzene	ND	5.0	ug/Kg	1.00	12/27/2003 17:30	
Total xylenes	ND	5.0	ug/Kg	1.00	12/27/2003 17:30	
Surrogate(s)						
1,2-Dichloroethane-d4	98.5	70-121	%	1.00	12/27/2003 17:30	
Toluene-d8	98.7	81-117	%	1.00	12/27/2003 17:30	

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
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Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B
Method Blank
MB: 2003/12/27-01.62-045

Soil

Test(s): 8260B
QC Batch # 2003/12/27-01.62
Date Extracted: 12/27/2003 12:45

Compound	Conc.	RL	Unit	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	10.0	ug/Kg	12/27/2003 12:45	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/Kg	12/27/2003 12:45	
Di-isopropyl Ether (DIPE)	ND	10.0	ug/Kg	12/27/2003 12:45	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/Kg	12/27/2003 12:45	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/Kg	12/27/2003 12:45	
1,2-DCA	ND	5.0	ug/Kg	12/27/2003 12:45	
EDB	ND	5.0	ug/Kg	12/27/2003 12:45	
Benzene	ND	5.0	ug/Kg	12/27/2003 12:45	
Toluene	ND	5.0	ug/Kg	12/27/2003 12:45	
Ethyl benzene	ND	5.0	ug/Kg	12/27/2003 12:45	
Total xylenes	ND	5.0	ug/Kg	12/27/2003 12:45	
Surrogates(s)					
1,2-Dichloroethane-d4	95.8	70-121	%	12/27/2003 12:45	
Toluene-d8	111.8	81-117	%	12/27/2003 12:45	

Fuel Oxygenates by 8260B

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Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B
Method Blank
MB: 2003/12/30-01.62-001

Soil

Test(s): 8260B
QC Batch # 2003/12/30-01.62
Date Extracted: 12/30/2003 10:01

Compound	Conc.	RL	Unit	Analyzed	Flag
tert-Butyl alcohol (TBA)	ND	10.0	ug/Kg	12/30/2003 10:01	
Methyl tert-butyl ether (MTBE)	ND	5.0	ug/Kg	12/30/2003 10:01	
Di-isopropyl Ether (DIPE)	ND	10.0	ug/Kg	12/30/2003 10:01	
Ethyl tert-butyl ether (ETBE)	ND	5.0	ug/Kg	12/30/2003 10:01	
tert-Amyl methyl ether (TAME)	ND	5.0	ug/Kg	12/30/2003 10:01	
1,2-DCA	ND	5.0	ug/Kg	12/30/2003 10:01	
EDB	ND	5.0	ug/Kg	12/30/2003 10:01	
Benzene	ND	5.0	ug/Kg	12/30/2003 10:01	
Toluene	ND	5.0	ug/Kg	12/30/2003 10:01	
Ethyl benzene	ND	5.0	ug/Kg	12/30/2003 10:01	
Total xylenes	ND	5.0	ug/Kg	12/30/2003 10:01	
Surrogates(s)					
1,2-Dichloroethane-d4	93.4	70-121	%	12/30/2003 10:01	
Toluene-d8	94.8	81-117	%	12/30/2003 10:01	

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Soil** **QC Batch # 2003/12/27-01.62**

LCS 2003/12/27-01.62-014 Extracted: 12/27/2003 Analyzed: 12/27/2003 14:14
LCSD 2003/12/27-01.62-022 Extracted: 12/27/2003 Analyzed: 12/27/2003 12:22

Compound	Conc. ug/Kg		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Methyl tert-butyl ether (MTBE)	43.1	37.3	50.0	86.2	74.6	14.4	65-165	20		
Benzene	41.1	39.7	50.0	82.2	79.4	3.5	69-129	20		
Toluene	49.7	59.0	50.0	99.4	118.0	17.1	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	434	545	500	86.8	109.0		70-121			
Toluene-d8	433	474	500	86.6	94.8		81-117			

Fuel Oxygenates by 8260B

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Soil** **QC Batch # 2003/12/30-01.62**

LCS 2003/12/30-01.62-017 Extracted: 12/30/2003 Analyzed: 12/30/2003 09:17
LCSD 2003/12/30-01.62-059 Extracted: 12/30/2003 Analyzed: 12/30/2003 10:59

Compound	Conc. ug/Kg		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Methyl tert-butyl ether (MTBE)	42.7	37.3	50.0	85.4	74.6	13.5	65-165	20		
Benzene	35.5	36.9	50.0	71.0	73.8	3.9	69-129	20		
Toluene	43.6	40.0	50.0	87.2	80.0	8.6	70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	486	448	500	97.2	89.6		70-121			
Toluene-d8	469	462	500	93.8	92.4		81-117			

SEVERN TRENT STL

Submission #: 2003-12-0714

Gas/BTEXFuel Oxygenates by 8260B (High Level)

ETIC Oakland
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Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
SB1-25-25.5`	12/18/2003 09:37	Soil	3

Gas/BTEXFuel Oxygenates by 8260B (High Level)

ETIC Oakland
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Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030B
Test(s): 8260B
Sample ID: **SB1-25-25.5**
Lab ID: 2003-12-0714 - 3
Sampled: 12/18/2003 09:37
Extracted: 12/27/2003 19:23
Matrix: Soil
QC Batch#: 2003/12/27-02.64

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Benzene	9700	5000	ug/Kg	10.00	12/27/2003 19:23	
Toluene	130000	5000	ug/Kg	10.00	12/27/2003 19:23	
Ethyl benzene	52000	5000	ug/Kg	10.00	12/27/2003 19:23	
Total xylenes	360000	5000	ug/Kg	10.00	12/27/2003 19:23	
tert-Butyl alcohol (TBA)	ND	25000	ug/Kg	10.00	12/27/2003 19:23	
Methyl tert-butyl ether (MTBE)	6300	5000	ug/Kg	10.00	12/27/2003 19:23	
Di-isopropyl Ether (DIPE)	ND	10000	ug/Kg	10.00	12/27/2003 19:23	
Ethyl tert-butyl ether (ETBE)	ND	5000	ug/Kg	10.00	12/27/2003 19:23	
tert-Amyl methyl ether (TAME)	ND	5000	ug/Kg	10.00	12/27/2003 19:23	
1,2-DCA	ND	5000	ug/Kg	10.00	12/27/2003 19:23	
EDB	ND	5000	ug/Kg	10.00	12/27/2003 19:23	
Surrogate(s)						
1,2-Dichloroethane-d4	NA	70-121	%	10.00	12/27/2003 19:23	sd
Toluene-d8	NA	81-117	%	10.00	12/27/2003 19:23	sd

Gas/BTEXFuel Oxygenates by 8260B (High Level)

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Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B
Method Blank
MB: 2003/12/27-02.64-024

Soil

Test(s): 8260B
QC Batch # 2003/12/27-02.64
Date Extracted: 12/27/2003 15:24

Compound	Conc.	RL	Unit	Analyzed	Flag
Benzene	ND	500	ug/Kg	12/27/2003 15:24	
Toluene	ND	500	ug/Kg	12/27/2003 15:24	
Ethyl benzene	ND	500	ug/Kg	12/27/2003 15:24	
Total xylenes	ND	500	ug/Kg	12/27/2003 15:24	
tert-Butyl alcohol (TBA)	ND	2500	ug/Kg	12/27/2003 15:24	
Methyl tert-butyl ether (MTBE)	ND	500	ug/Kg	12/27/2003 15:24	
Di-isopropyl Ether (DIPE)	ND	1000	ug/Kg	12/27/2003 15:24	
Ethyl tert-butyl ether (ETBE)	ND	500	ug/Kg	12/27/2003 15:24	
tert-Amyl methyl ether (TAME)	ND	500	ug/Kg	12/27/2003 15:24	
1,2-DCA	ND	500	ug/Kg	12/27/2003 15:24	
EDB	ND	500	ug/Kg	12/27/2003 15:24	
Surrogates(s)					
1,2-Dichloroethane-d4	81.6	70-121	%	12/27/2003 15:24	
Toluene-d8	106.0	81-117	%	12/27/2003 15:24	

Gas/BTEXFuel Oxygenates by 8260B (High Level)

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Soil** **QC Batch # 2003/12/27-02.64**

LCS 2003/12/27-02.64-040 Extracted: 12/27/2003 Analyzed: 12/27/2003 14:40
LCSD 2003/12/27-02.64-002 Extracted: 12/27/2003 Analyzed: 12/27/2003 15:02

Compound	Conc. ug/Kg		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Benzene	10100	9750	10000	101.0	97.5	3.5	69-129	20		
Toluene	10600	10800	10000	106.0	108.0	1.9	70-130	20		
Methyl tert-butyl ether (MTBE)	9620	8850	10000	96.2	88.5	8.3	65-165	20		
Surrogates(s)										
1,2-Dichloroethane-d4	198	188	250	79.2	75.2		70-121			
Toluene-d8	239	243	250	95.6	97.2		81-117			

Gas/BTEXFuel Oxygenates by 8260B (High Level)

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Legend and Notes

Result Flag

sd

Surrogate recovery not reportable due to required dilution.

SEVERN TRENT STL

Submission #: 2003-12-0714

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
SB1-9.5-10`	12/18/2003 08:39	Soil	1
SB1-34.5-35`	12/18/2003 09:59	Soil	4
SB2-9.5-10`	12/18/2003 10:45	Soil	5
SB2-14.5-15`	12/18/2003 10:52	Soil	6
SB2-24.5-25`	12/18/2003 11:13	Soil	7
SB2-34.5-35`	12/18/2003 11:37	Soil	8
HP3-32-36`	12/18/2003 13:10	Water	9
HP1-26-30`	12/18/2003 17:20	Water	10

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s):	5035	Test(s):	8015M
Sample ID:	**SB1-9.5-10**	Lab ID:	2003-12-0714 - 1
Sampled:	12/18/2003 08:39	Extracted:	12/29/2003 17:16
Matrix:	Soil	QC Batch#:	2003/12/29-01.01

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	12/29/2003 17:16	
Surrogate(s)						
4-Bromofluorobenzene-FID	79.0	58-124	%	1.00	12/29/2003 17:16	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s):	5035	Test(s):	8015M
Sample ID:	**SB1-34.5-35`**	Lab ID:	2003-12-0714 - 4
Sampled:	12/18/2003 09:59	Extracted:	12/30/2003 10:12
Matrix:	Soil	QC Batch#:	2003/12/30-01.01

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	12/30/2003 10:12	
Surrogate(s)						
4-Bromofluorobenzene-FID	66.1	58-124	%	1.00	12/30/2003 10:12	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s):	5035	Test(s):	8015M
Sample ID:	**SB2-9.5-10'**	Lab ID:	2003-12-0714 - 5
Sampled:	12/18/2003 10:45	Extracted:	12/29/2003 18:36
Matrix:	Soil	QC Batch#:	2003/12/29-01.01

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	12/29/2003 18:36	
Surrogate(s)						
4-Bromofluorobenzene-FID	73.2	58-124	%	1.00	12/29/2003 18:36	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5035
Sample ID: **SB2-14.5-15`**
Sampled: 12/18/2003 10:52
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 6
Extracted: 12/29/2003 19:03
QC Batch#: 2003/12/29-01.01

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	12/29/2003 19:03	
Surrogate(s)						
4-Bromofluorobenzene-FID	64.2	58-124	%	1.00	12/29/2003 19:03	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5035
Sample ID: **SB2-24.5-25`**
Sampled: 12/18/2003 11:13
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 7
Extracted: 12/29/2003 19:29
QC Batch#: 2003/12/29-01.01

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	12/29/2003 19:29	
Surrogate(s)						
4-Bromofluorobenzene-FID	76.4	58-124	%	1.00	12/29/2003 19:29	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5035
Sample ID: **SB2-34.5-35`**
Sampled: 12/18/2003 11:37
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 8
Extracted: 12/29/2003 19:56
QC Batch#: 2003/12/29-01.01

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	1.00	12/29/2003 19:56	
Surrogate(s)						
4-Bromofluorobenzene-FID	81.0	58-124	%	1.00	12/29/2003 19:56	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030
Sample ID: **HP3-32-36**
Sampled: 12/18/2003 13:10
Matrix: Water

Test(s): 8015M
Lab ID: 2003-12-0714 - 9
Extracted: 12/26/2003 23:58
QC Batch#: 2003/12/26-01.05

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	ND	50	ug/L	1.00	12/26/2003 23:58	
Surrogate(s)						
4-Bromofluorobenzene-FID	111.6	50-150	%	1.00	12/26/2003 23:58	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

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Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030
Sample ID: **HP1-26-30`**
Sampled: 12/18/2003 17:20
Matrix: Water

Test(s): 8015M
Lab ID: 2003-12-0714 - 10
Extracted: 12/26/2003 15:22
QC Batch#: 2003/12/26-01.05

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	410	50	ug/L	1.00	12/26/2003 15:22	dp
Surrogate(s)						
4-Bromofluorobenzene-FID	99.4	50-150	%	1.00	12/26/2003 15:22	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030
Method Blank

Water

Test(s): 8015M
QC Batch # 2003/12/26-01.05

MB: 2003/12/26-01.05-003

Date Extracted: 12/26/2003 08:09

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	50	ug/L	12/26/2003 08:09	
Surrogates(s)					
4-Bromofluorobenzene-FID	98.0	50-150	%	12/26/2003 08:09	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5035
Method Blank
MB: 2003/12/29-01.01-004

Soil

Test(s): 8015M
QC Batch # 2003/12/29-01.01
Date Extracted: 12/29/2003 08:53

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	12/29/2003 08:53	
Surrogates(s)					
4-Bromofluorobenzene-FID	75.8	58-124	%	12/29/2003 08:53	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5035
Method Blank
MB: 2003/12/30-01.01-003

Soil

Test(s): 8015M
QC Batch # 2003/12/30-01.01
Date Extracted: 12/30/2003 07:06

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	1.0	mg/Kg	12/30/2003 07:06	
Surrogates(s)					
4-Bromofluorobenzene-FID	93.0	58-124	%	12/30/2003 07:06	

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030

Test(s): 8015M

Laboratory Control Spike **Water** **QC Batch # 2003/12/26-01.05**

LCS 2003/12/26-01.05-006 Extracted: 12/26/2003 Analyzed: 12/26/2003 09:43
LCSD 2003/12/26-01.05-007 Extracted: 12/26/2003 Analyzed: 12/26/2003 10:15

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Gasoline	444	434	500	88.8	86.8	2.3	75-125	20		
Surrogates(s)										
4-Bromofluorobenzene-FID	492	480	500	98.4	96.0		50-150			

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5035

Test(s): 8015M

Laboratory Control Spike **Soil** **QC Batch # 2003/12/29-01.01**

LCS 2003/12/29-01.01-010 Extracted: 12/29/2003 Analyzed: 12/29/2003 13:21
LCSD 2003/12/29-01.01-011 Extracted: 12/29/2003 Analyzed: 12/29/2003 13:47

Compound	Conc. mg/Kg		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Gasoline	0.474	0.573	0.500	94.8	114.6	18.9	75-125	35		
Surrogates(s)										
4-Bromofluorobenzene-FID	392	464	500	78.4	92.8		58-124	0		

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5035

Test(s): 8015M

Laboratory Control Spike **Soil** **QC Batch # 2003/12/30-01.01**

LCS 2003/12/30-01.01-004 Extracted: 12/30/2003 Analyzed: 12/30/2003 07:32
LCSD 2003/12/30-01.01-005 Extracted: 12/30/2003 Analyzed: 12/30/2003 07:59

Compound	Conc. mg/Kg		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Gasoline	0.519	0.538	0.500	103.8	107.6	3.6	75-125	35		
Surrogates(s)										
4-Bromofluorobenzene-FID	415	419	500	83.0	83.8		58-124			

Gasoline

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5035

Test(s): 8015M

Matrix Spike (MS / MSD) **Soil** **QC Batch # 2003/12/30-01.01**

SB1-34.5-35' >> MS

Lab ID: 2003-12-0714 - 004

MS: 2003/12/30-01.01-013 Extracted: 12/30/2003 Analyzed: 12/30/2003 11:32
Dilution: 1.00

MSD: 2003/12/30-01.01-014 Extracted: 12/30/2003 Analyzed: 12/30/2003 11:58
Dilution: 1.00

Compound	Conc. mg/Kg			Spk.Level	Recovery %			Limits %		Flags	
	MS	MSD	Sample	mg/Kg	MS	MSD	RPD	Rec.	RPD	MS	MSD
Gasoline	0.608	0.791	ND	0.488	124.6	163.4	26.9	65-135	35		mso
Surrogate(s)											
4-Bromofluorobenzene-FID	317	326		500	63.4	65.2		58-124			

Gasoline

ETIC Oakland
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1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Legend and Notes

Result Flag

dp

Sample contains discrete peak in addition to gasoline.

mso

MS/MSD spike recoveries were out of QC limits due to matrix interference. Precision and Accuracy were verified by LCS/LCSD.

SEVERN TRENT STL

Submission #: 2003-12-0714

Gas/BTEX Compounds (High Level)

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
SB1-14.5-15	12/18/2003 08:41	Soil	2
SB1-25-25.5`	12/18/2003 09:37	Soil	3

Gas/BTEX Compounds (High Level)

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030
Sample ID: **SB1-14.5-15**
Sampled: 12/18/2003 08:41
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 2
Extracted: 12/30/2003 10:38
QC Batch#: 2003/12/30-05.01

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	15	10	mg/Kg	1.00	12/30/2003 10:38	
Surrogate(s)						
4-Bromofluorobenzene-FID	89.7	58-124	%	1.00	12/30/2003 10:38	

Gas/BTEX Compounds (High Level)

ETIC Oakland

Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Prep(s): 5030
Sample ID: **SB1-25-25.5'**
Sampled: 12/18/2003 09:37
Matrix: Soil

Test(s): 8015M
Lab ID: 2003-12-0714 - 3
Extracted: 12/30/2003 09:45
QC Batch#: 2003/12/30-05.01

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	1100	100	mg/Kg	10.00	12/30/2003 09:45	
Surrogate(s)						
4-Bromofluorobenzene-FID	NA	58-124	%	1.00	12/30/2003 09:45	sd

Gas/BTEX Compounds (High Level)

ETIC Oakland

Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030 Test(s): 8015M

Method Blank **Soil** **QC Batch # 2003/12/30-05.01**

MB: 2003/12/30-05.01-001 Date Extracted: 12/30/2003 08:26

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	10	mg/Kg	12/30/2003 08:26	
Surrogates(s)					
4-Bromofluorobenzene-FID	86.6	58-124	%	12/30/2003 08:26	

Gas/BTEX Compounds (High Level)

ETIC Oakland
Attn.: Luis Fraticelli

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Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Batch QC Report

Prep(s): 5030

Test(s): 8015M

Laboratory Control Spike **Soil** **QC Batch # 2003/12/30-05.01**

LCS 2003/12/30-05.01-004 Extracted: 12/30/2003 Analyzed: 12/30/2003 08:52
LCSD 2003/12/30-05.01-005 Extracted: 12/30/2003 Analyzed: 12/30/2003 09:19

Compound	Conc. mg/Kg		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Gasoline	0.687	0.712	0.625	109.9	113.9	3.6	75-125	35		
Surrogates(s)										
4-Bromofluorobenzene-FID	451	461	500	90.2	92.2		58-124	0		

Gas/BTEX Compounds (High Level)

ETIC Oakland
Attn.: Luis Fraticelli

1333 Broadway, Suite 1015
Oakland, CA 94612
Phone: (510) 208-1600 Fax: (510) 208-1604

Project: TMSFT1.1
Strought Family Trust

Received: 12/19/2003 19:09

Legend and Notes

Result Flag

sd

Surrogate recovery not reportable due to required dilution.

SEVERN TRENT SERVICES

STL
Chain of Custody

1220 Quarry Lane • Pleasanton CA 94566-4756
Phone: (925) 484-1919 • Fax: (925) 484-1096
Email: info@chromalab.com

2003-12-0714

Reference #: 81404

Date 12/18/03 Page 1 of 1

From

Proj. Mgr	Luis Fraticelli
Company	ETIC
Address	1333 Broadway, Ste. 1015 Oakland, CA 94612
Sampler (Signature)	[signature]
Phone (510)208-1600	Fax/Email (510)208-1604

Analysis Request

Sample ID	Date	Time	Matrix	Preserv.	~~TPH~~ (EPA 8260) X BTEX X 7 Oxys	TPH-d and TPH-mo by 8015 w/ Silica gel clean-up	EDF	TPH-g by 8015	Number of Containers
SB1-9.5-10'	12/18	839	S	–	X	X	X	X	1
SB1-14.5-15'	12/18	841	S	–	↓	↓	↓	↓	1
SB1-25-25.5'	12/18	939	S	–	↓	↓	↓	↓	1
SB1-34.5-35'	12/18	959	S	–	↓	↓	↓	↓	1
SB2-9.5-10'	12/18	1045	S	–	↓	↓	↓	↓	1
SB2-14.5-15'	12/18	1052	S	–	↓	↓	↓	↓	1
SB2-24.5-25'	12/18	1113	S	–	↓	↓	↓	↓	1
SB2-34.5-35'	12/18	1137	S	–	↓	↓	↓	↓	1
HP3-32-36'	12/18	1310	W	HCl	X	X	X	X	8
HP1-26-30'	12/18	1720	W	HCl	X	X	X	X	8

Project Info.

Project Name: Strough Family Trust
Project# TMSFT1.1
PO#: OAK 115
Credit Card#:

TAT: Std 5 Day | 72h | 48h | 24h

Report: ☐ Routine ☐ Level 2 ☐ Level 3 ☐ Level 4 (EDD)
Special Instructions / Comments

GLOBAL ID#

Sample Receipt

# of Containers:
Head Space:
Temp: 3.2 °C
Conforms to record:
Other

1) Relinquished by:	2) Relinquished by:	3) Relinquished by:
Signature [signature] Time 1014	Signature Time	Signature [signature] Time 1909
Printed Name Mark C. Peterson Date 12/19/03	Printed Name Date	Printed Name B. Mclean Date 12/19/03
Company ETIC Engineering	Company	Company STL-SF

1) Received by:	2) Received by:	3) Received by:
Signature [signature] Time 1150	Signature Time	Signature [signature] Time 1909
Printed Name B. Mclean Date 12/19/03	Printed Name Date	Printed Name Ting Lou Date 12-19-03
Company STL-SF	Company	Company STL SF

ETIC ENGINEERING

Appendix E

Dual-Phase Extraction Pilot Test Workplan

APPENDIX E

DUAL-PHASE EXTRACTION PILOT TEST WORKPLAN

Pilot Test Objective

The primary objective of the high vacuum dual-phase extraction (DPE) pilot test is assess DPE as a remedial option for the subject site. Secondary objectives are to remove separate phase hydrocarbons, and hydrocarbon mass from subsurface soils and groundwater.

Technology Description

High vacuum DPE involves application of a vacuum of up to 29 inches of mercury (in-Hg) to an extraction well through an airtight well seal to simultaneously extract soil vapor, groundwater, and free product, if present, from the subsurface. DPE equipment typically consists of a dedicated extraction "stinger" (1-inch diameter hose) installed in each target well, a vacuum source, a knockout vessel to separate the extracted vapor and liquid mix, and treatment and/or collection systems for the vapor and liquid streams.

Test Design

DPE will be conducted on two existing wells (MW2 and MW3) during a 24-hour mass removal event. The duration, scope, and/or protocol for the test may be modified based on field conditions encountered during the tests. Individual DPE tests will be performed on wells MW2 and MW3, while gauging of water level and vacuum/pressure will be conducted in observation wells near the extraction wells. Initially, brief step vacuum tests will be conducted to determine the well response (e.g., vapor and groundwater flow rate) at various DPE stinger depths and applied vacuum levels. The applied vacuum will be increased in increments to the maximum vacuum achievable by the system; the test will advance to the next step when vapor flow rates have generally stabilized. A DPE test for each of the two wells will be conducted at the vacuum levels and stinger depths intended to approximate permanent system installation. Following these individual DPE tests, the wells will be used as extraction points simultaneously.

Equipment

- **Wells:** As previously indicated, wells MW2 and MW3 will be used as extraction wells for individual well tests as well as during the combined well test. Wells MW2 and MW3 (when not being used for extraction) and other monitoring wells will be used as observation wells.

- **Connection at the Extraction Wellhead:** Vacuum will be applied to a 1-inch diameter hose ("stinger"). The well head will be sealed to ensure that only vapor and water from the subsurface are extracted. The stinger will be marked such that the length of hose in the well can be recorded. Vacuum gauges at the wellhead will be used to monitor the vacuum level in the stinger and in the well casing.

- **Construction of Observation Wellheads:** If necessary, the wellheads will be modified to accommodate a diptube for water level measurements and a pressure gauge, while maintaining an airtight well seal. This will enable calculation of the piezometric head in the well through measurement of the depth-to-water in the well casing and the induced vacuum (or pressure).

- **DPE Unit:** The vacuum source will be a high vacuum pump rated at approximately 150 nominal cubic feet per minute (cfm), and capable of developing a vacuum of approximately 29 in-Hg. The unit will incorporate a water knockout to separate the liquid and vapor phases. A water meter will be used to monitor the amount of water produced during the tests. Gauges or handheld instruments will enable monitoring of the vacuum level, vapor flow rate, vapor temperature, and other parameters.

- **Abatement:** After the vapor and liquid are separated in the knockout, they will be routed through abatement equipment. During the test, extracted vapors will be treated with a thermal/catalytic oxidizer. The thermal/catalytic oxidizer will be monitored and operated in accordance with the Bay Area Air Quality Management District Authority to Construct/Permit to Operate (BAAQMD AC/PTO). Groundwater generated during the test will be treated onsite and discharged or stored and disposed.

Monitoring

The general monitoring parameters and frequency for extraction wells, observation wells, DPE system, and other parameters are summarized in the tables below. Adjustments to the following program may be made during testing activities based on conditions encountered in the field.

Step Vacuum Tests
Extraction Well - Monitoring Parameters and Frequency

Parameter	Monitoring Method	Monitoring Frequency and Notes
Stinger vacuum	Vacuum gauge at wellhead	Noted at start of each step.
Stinger depth	Lengths marked on stinger	Noted at start of each step.
Well casing vacuum	Vacuum gauge at wellhead	Periodically throughout the test.
Bleed air flow rate	Flow meter at wellhead	Periodically throughout the test.
Vapor flow rate	Thermal anemometer	Periodically throughout the test.

Step Vacuum Tests
DPE System - Monitoring Parameters and Frequency

Parameter	Monitoring Method	Frequency and Notes
Vacuum at unit	Vacuum gauge on DPE unit	Periodically throughout the test
Extracted vapor flow rate	Measured after knockout with VelociCalc thermal anemometer	Periodically until stabilization, then as step increases applied vacuum.
Extracted liquid flow rate	Measured periodically by totalizing water meters at effluent of the knockout transfer pump.	At end of each step.

Constant Vacuum Tests Extraction Well - Monitoring Parameters and Frequency		
Parameter	**Monitoring Method**	**Monitoring Frequency and Notes**
Stinger vacuum	Vacuum gauge at wellhead	Periodically throughout the test.
Stinger depth	Lengths marked on stinger	Noted at start of each step, and whenever a change is made. Rationale for change should also be noted.
Well casing vacuum	Vacuum gauge at wellhead	Periodically throughout the test.
Bleed air flow rate	Flow meter at wellhead	Periodically throughout the test.
Vapor flow rate	Thermal anemometer	Periodically throughout the test. Monitored after knockout.
Groundwater flow	Totalizing water meter	Knockout to be pumped out by operating transfer pump in "hand" mode at the end of each step and change in operational parameters.

Constant Vacuum Tests Observation Well – Monitoring Parameters and Frequency		
Parameter	**Monitoring Method**	**Monitoring Frequency and Notes**
Depth to water	Electronic water level meter	Periodically throughout test.
Induced vacuum in well casing	Vacuum gauge at wellhead	Periodically throughout test.

Constant Vacuum Tests DPE System - Monitoring Parameters and Frequency		
Parameter	**Monitoring Method**	**Frequency and Notes**
Hydrocarbons in extracted soil vapor	Samples will be collected in Tedlar bags and analyzed for Total petroleum hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tertiary butyl ether (MTBE) using EPA Methods 8015-M/8020 or equivalent. In addition, volatile organic compounds in soil vapor will be monitored using a flame ionization detector (FID).	FID readings at intervals for first hour of test; and less often thereafter. Samples will be collected at the beginning and end of each constant vacuum test.
Oxygen, carbon dioxide, methane in extracted soil vapor	Samples collected in Tedlar bags and analyzed using EPA Method 3C or equivalent.	At beginning and end of one constant vacuum test, if needed.
Vacuum at unit	Magnehelic gauge on DPE unit.	Periodically throughout the test.
Extracted vapor flow rate	Measured after knockout with VelociCalc thermal anemometer.	Periodically throughout the test.
Extracted liquid flow rate	Measured periodically by totalizing water meters at effluent of the knockout transfer pump.	Periodically throughout the test.

DPE Pilot Test Report

ETIC will prepare a technical report that will include a summary of the pilot test and an evaluation of the data generated from the test. Specifically, the evaluation will include analysis of the following.

- **Operational Parameters:** Measurements recorded at the extraction well(s) during each constant vacuum test will be used to evaluate the relationship between applied vacuum, stinger depth, vapor flowrate, and groundwater extraction rate.

- **Zone of DPE Influence:** The actual zone of DPE influence will be estimated based on piezometric head values calculated from vacuum readings and water levels at the extraction and observation wells.

- **Extracted Vapor Concentrations:** FID readings will be used to estimate hydrocarbon concentration variations during the constant vacuum tests. FID readings will be supplemented with laboratory analysis of Tedlar bag vapor samples for TPH-g, BTEX, and MTBE, as noted in the above tables. In addition, oxygen, carbon dioxide and methane concentrations in Tedlar bag will be used if needed to evaluate the contribution of atmospheric air to the vapor stream and presence of biodegradation.

- **Extracted Groundwater Concentrations:** Groundwater samples from extraction wells and the knockout tank will be used to evaluate TPH-g, BTEX, and MTBE concentration variations during selected constant vacuum tests.

- **Mass Removal:** The mass and rate of hydrocarbon removal will be estimated based on vapor flow rate, FID readings, groundwater extraction rates, and hydrocarbon concentrations.

- **Assessment of DPE:** If feasible and effective, the test results will be used to assess DPE as a remedial alternative for the site. If DPE appears to be feasible, ETIC will prepare an analysis of the cost to install and operate a DPE system versus excavation of the source area.

- **Design Parameters:** If DPE is deemed feasible and effective, the test results will be used to develop design parameters including DPE well design and layout, and vapor and groundwater treatment system design. If warranted, this information will be reviewed and used to apply for air and sewer discharge permits.

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ETIC ENGINEERING

5 March 2004

Alameda County

MAR 0 8 2004

Environmental Health

Mr. Don Hwang
Hazardous Materials Specialist
Local Oversight Program
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: **Supplemental Site Investigation Report and Dual-Phase Extraction Pilot Test Workplan**
Val Strough Chevrolet
327 34th Street
Oakland, California

Dear Mr. Don Hwang:

ETIC Engineering, Inc. is pleased to submit to you the *Supplemental Site Investigation Report and Dual-Phase Extraction Pilot Test Workplan* for the Val Strough Chevrolet site located at 327 34th Street, Oakland, California. The report presents the results of the supplemental investigation conducted in December 2003, the data from which are used to evaluate the impact to soil and groundwater at the subject site. The report includes an evaluation of potential remedial actions to reduce the petroleum hydrocarbons and volatile constituents in the soil and groundwater and recommends a remedial approach and workplan to perform a pilot test.

Please not that I will serve as Project Manager on this project from this point forward. Please direct all your questions to me at (510) 208-1600, extension 11.

Sincerely,
ETIC Engineering, Inc.

Katherine Brandt

Katherine A. Brandt
Project Manager

Enclosure: Supplemental Site Investigation Report and Dual-Phase Extraction Pilot Test Workplan

C: w/enclosure: Jonathan Redding, Wendel Rosen Black and Dean, 1111 Broadway, 24th Floor, Oakland, California 94607
C: w/enclosure: Don Strough, Strough Family Trust, 2 Sea View Avenue, Piedmont, CA 94611