RO134

ETIC ENGINEERING

LETTER OF TRANSMITTAL

1333 Broadway, Suite 1015
Oakland, California 94612

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

DATE: March 11, 2005		
PROJECT NO.	TASK	DEPT
TMSFT1		
RE: Former Val Strough Chevrolet		
327 34th Street		
Oakland, California		

TO: Don Strough
Strough Family Trust
PO Box 489
Orinda, CA 94563

ENCLOSED ARE THE FOLLOWING ITEMS:

NO. COPIES	DESCRIPTION
1	*Fourth Quarter* 2004 Groundwater Monitoring and Interim Remedial Action Report

THESE ARE TRANSMITTED AS CHECKED BELOW:

☐ For your use ☐ As requested ☒ For review and comment ☐ For your information ☐ Other:

MESSAGE:

Mr. Strough,

ETIC Engineering, Inc. is pleased to submit the enclosed copies of the above referenced report. We have distributed additional copies of the report as noted below.

ETIC appreciates the opportunity to provide the Strough Family Trust of 1983 with environmental consulting services. If you have any questions or comments, please contact me at (510) 208-1600, extension 11.

COPY TO:

SIGNED Katherine Brandt
Katherine Brandt

Cc: Jonathan Redding, Wendel Rosen Black and Dean, 1111 Broadway, 24th Floor, Oakland, California 94607
Greg Brandt, Wendel Rosen Black and Dean, 1111 Broadway, 24th Floor, Oakland, California 94607
Don Hwang, Hazardous Materials Specialist, Alameda County Health Care Services Agency, 1131 Harbor Bay Parkway, Suite 250, Alameda, California 94502-6577

Sent via: ☐ Federal Express Priority ☐ Federal Express Standard ☐ Federal Express 2-Day ☐ Express Mail ☒ First Class Mail
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ETIC ENGINEERING

March 11, 2005

Mr. Don Strough
Strough Family Trust
PO Box 489
Orinda, CA 94563

RE: Strough Family Trust 327 34th Street, Oakland, California
Site ID# 3035

Mr. Strough,

ETIC Engineering, Inc. is pleased to submit the enclosed copy of the *Fourth Quarter 2004 Groundwater Monitoring and Interim Remedial Action Report* for the above-referenced site. Note that this report includes a response to the 4 February 2005 Alameda County Health Cares Services Agency (ACHCSA) request for an Addendum to the Interim Remedial Action Plan to describe planned verification monitoring activities associated with temporary dual-phase extraction at the site. We are requesting concurrence from the ACHCSA for the responses to their February 2005 letter. We have distributed additional copies of the report as noted below.

ETIC appreciates the opportunity to provide the Strough Family Trust of 1983 with environmental consulting services. If you have any questions or comments, please contact me at (510) 208-1600, extension 11.

Sincerely,
ETIC Engineering, Inc.

Katherine Brandt

Katherine Brandt
Project Manager

Cc: Mr. Gregory Brandt, Esq., Wendel Rosen Black & Dean, 1111 Broadway, 24th Floor, Oakland, California 94607
Mr. Jonathan Redding, Esq., Wendel Rosen Black & Dean, 1111 Broadway, 24th Floor, Oakland, California 94607
Mr. Don Hwang, Hazardous Materials Specialist, Alameda County Health Care Services Agency, 1131 Harbor Bay Parkway, Alameda, California 94502-6577

FOURTH QUARTER 2004
GROUNDWATER MONITORING
AND INTERIM REMEDIAL ACTION REPORT

FORMER VAL STROUGH CHEVROLET
327 34th STREET
OAKLAND, CALIFORNIA

Prepared For:

Mr. Don Strough
Strough Family Trust of 1983
PO Box 489
Orinda, California 94563

Prepared By:

ETIC Engineering, Inc.
1333 Broadway, Suite 1015
Oakland, California 94612

March 11, 2005

ETIC ENGINEERING

Fourth Quarter 2004 Groundwater Monitoring and Interim Remedial Action Report

Former Val Strough Chevrolet
327 34th Street
Oakland, California

March 11, 2005

Prepared for:

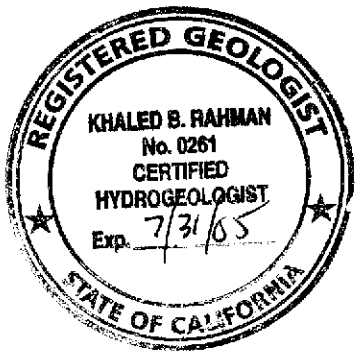
Mr. Don Strough
Strough Family Trust of 1983
PO Box 489
Orinda, California 94563

Prepared by:

ETIC Engineering, Inc.
1333 Broadway, Suite 1015
Oakland, California 94612

Katherine Brandt
Project Manager

Khaled Rahman, R.G., C.Hg.
Senior Geologist



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SITE CONTACTS

Site Name:	Former Val Strough Chevrolet
Site Address:	327 34th Street Oakland, California
Consultant:	ETIC Engineering, Inc. 1333 Broadway, Suite 1015 Oakland, California 94612 (510) 208-1600
ETIC Project Manager:	Katherine A. Brandt
Regulatory Oversight:	Don Hwang Alameda County Health Care Services Agency 1131 Harbor Bay Parkway, Suite 250 Alameda, California 94502-6577 (510) 567-6746

1.0 INTRODUCTION

At the request of the Strough Family Trust of 1983, ETIC Engineering, Inc. has prepared this *Fourth Quarter 2004 Groundwater Monitoring and Interim Remedial Action Report* for the former Val Strough Chevrolet site located in Oakland, California. This report documents the procedures and findings of the 13 December 2004 groundwater monitoring event. Groundwater monitoring results, well construction details, and groundwater monitoring plan are provided in the attached figures and tables. Groundwater monitoring protocols, field data, and analytical results are provided in the attached appendices. In addition, the status of the interim remedial action and recent correspondence with the Alameda County Health Care Services Agency (ACHCSA) are summarized, and a response to the 4 February 2005 ACHCSA request for an Addendum to the Interim Remedial Action Plan is provided.

1.1 GENERAL SITE INFORMATION

Site name:	Former Val Strough Chevrolet
Site address:	327 34th Street, Oakland, California
Current property owner:	Strough Family Trust of 1983
Current site use:	Automotive Dealership and Service Center
Current phase of project:	Groundwater monitoring, temporary (DPE) system installation
Tanks at site:	Two former tanks (1 gasoline, 1 waste-oil) removed in 1993
Number of wells:	7 (all onsite)

1.2 GROUNDWATER MONITORING SUMMARY

Gauging and sampling date:	13 December 2004
Wells gauged and sampled:	MW2, MW3 and MW4
Wells gauged only:	MW1, MW5, MW6 and MW7
Groundwater flow direction:	South-southwest
Groundwater gradient:	0.005
Separate-phase hydrocarbons:	0.08 feet observed in well MW2
Laboratory:	Severn Trent Laboratories, Inc. San Francisco of Pleasanton, California (STL)
Analyses performed:	Total Petroleum Hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl t-butyl ether (MTBE) by EPA Method 8260B. Total Extractable Petroleum Hydrocarbon (TEPH) with Silica Gel Clean-up by modified EPA Method 8015.

1.3 INTERIM REMEDIAL ACTION SUMMARY

Permits: Appropriate Bay Area Air Quality Management District (BAAQMD) and East Bay Municipal Utility District (EBMUD) discharge permits have been acquired. The City of Oakland Building and Fire Departments have inspected and approved the temporary remediation system construction.

System Construction: Wells MW2 and MW3 are connected to the DPE unit via underground piping. The DPE unit consists of a liquid-ring pump, knock-out vessel, and thermal oxidizer. Propane is used as a supplemental fuel for the thermal oxidizer. Temporary system installation was completed in December 2004.

Operational Status: The DPE unit was initially "test fired" in December 2004 once construction was complete. Based on data collected during initial operation, the DPE unit required modification to the motor for more efficient operation. The motor was customized in January 2005 and the system began operation in February 2005. Operational results will be described in the next quarterly report.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

Site Location and Land Use: The former Val Strough Chevrolet site is an automobile dealership and service center located on the southwest corner of the intersection of Broadway (Auto Row) and 34th Street (see Figure 1). The site is inactive but redevelopment is underway. The property is located south of Interstate 580. Land use in the area is primarily commercial.

The site is located at an elevation of approximately 61 feet above mean sea level (Environmental Data Resources, Inc. [EDR], 2003), and topography slopes slightly toward the south. The site is located 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 (see Figure 1).

Site Features: The site consists of a multi-story building with adjacent parking lot (see Figure 2). The former underground storage tanks (USTs) and fuel dispenser were located near the northwestern portion of the site. Seven monitoring wells and several soil borings are located at the site. Well construction details for the site wells are presented in Table 1.

Underground Utilities: A box culvert for a former tributary of Glen Echo Creek that drains to Lake Merritt is located beneath the parking lot near Broadway (see Figure 2). The box culvert consists of a reinforced concrete box measuring 5 feet by 6 feet. The depth of the top of the culvert is approximately 17 feet below ground surface (bgs). During the winter of 1983, a section of the culvert caved-in and was replaced with a 5-foot-diameter pipe.

Other utilities at the site, namely sanitary sewer, electrical, and natural gas, are generally less than two feet bgs. A storm drain flows to the east along the northern border of 34th Street, approximately 40 feet north of the site, and is diverted into the box culvert. A sanitary sewer lateral from the site connects to a sanitary sewer line running beneath 34th Street approximately 40 feet north of the site. A second sanitary sewer line runs beneath the southern portion of the site building. These sanitary sewer lines connect to a main line which runs beneath Broadway. The natural gas service is located on the east side of the property. The water service appears to enter the site from the north.

Water Supply Well Search: The EDR Report (2003) indicated that there are no federal US Geological Survey wells and no public water supply wells located within a 1-mile radius of the site. No water supply wells were identified by the Alameda County Department of Public Works within a ½-mile radius of the site.

2.2 SUMMARY OF PREVIOUS INVESTIGATIONS AND MONITORING ACTIVITIES

As presented in previous site reports, the USTs were removed and multiple investigations, including installation of seven monitoring wells, were conducted. In addition, a routine groundwater monitoring program has been in-place since 1993. The following summarizes the findings of these activities.

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

Groundwater is typically measured at 17 to 23 feet bgs in the site wells. As shown in the modified rose diagram on Figure 2, the historic monitoring data indicate a prevailing groundwater flow direction toward the southwest, with an average hydraulic gradient of approximately 0.03 to 0.02 foot/foot. It should be noted that groundwater does not appear to be significantly influenced by underground utilities, including the box culvert (see Figure 2).

Primary Sources: Two USTs (one gasoline and one used oil) were located beneath the sidewalk along 34th Street on the north side of the property. A fuel dispenser was located inside the building (see Figure 2). These primary sources of hydrocarbons were removed from the site in 1993.

Constituents of Potential Concern: Based on the material stored in the USTs and the results of previous subsurface investigations at the site, the constituents of potential concern (COPCs) at the site include TPH-g, BTEX and MTBE. TPH-d and TPH-mo are not routinely reported in groundwater samples and are considered secondary COPCs for the site.

Residual Source Area: Separate phase hydrocarbons (SPHs) have been intermittently observed in wells MW2 and MW3, and elevated concentrations of TPH-g, BTEX, and MTBE are limited to the vadose and capillary fringe soils adjacent to the former UST fuel dispenser, near these wells. These findings indicate that most of the residual hydrocarbon mass is localized near the former USTs and fuel dispenser, herein referred to as the source area.

Hydrocarbon Distribution in Groundwater: The hydrocarbon mass in groundwater within the source area is defined by wells MW2, MW3 and MW4. SPH has been historically observed only in monitoring wells MW2 and MW3 (see Table 2). Due to the SPH presence, groundwater has not been regularly sampled in source area wells MW2 and MW3 during most of the recent monitoring events. Nearby monitoring wells MW1 (approximately 50 feet east of MW2 and 50 feet northeast of MW3) and MW4 (approximately 50 feet southeast of MW3) have not reported measurable SPH (see Table 2). The highest concentrations of dissolved constituents are typically reported in well MW4, where relatively low and stable/decreasing levels define the extent of the source area.

The extent of dissolved hydrocarbons in groundwater is largely defined by downgradient and crossgradient monitoring wells MW5, MW6 and MW7, which show stable concentrations of TPH-g, BTEX, and MTBE over the last two years (see Table 2). Fuel oxygenates (Tertiary Amyl Methyl Ether, Ethyl Tertiary Butyl Ether, Di-Isopropyl Ether, and Tertiary Butyl Alcohol and Ethanol) and the lead scavengers (Ethylene Dibromide and Ethylene Dichloride) were near or below reporting limits in previously analyzed grab groundwater samples for the site (see Table 3). These data suggest that hydrocarbons in groundwater are largely limited to the property boundaries, and that the plume is stable and has limited potential for offsite migration.

Dual Phase Extraction Pilot Test: In March 2004, ETIC performed a high vacuum dual-phase extraction (DPE) pilot test at the site. As summarized in the June 2004 *Dual Phase Extraction Pilot Test and Interim Remedial Action Plan* (DPE Report and IRAP), vacuum was applied to source area wells MW2 and MW3 while water and vacuum levels were observed in nearby monitoring wells. The DPE pilot test induced more than 1 foot of drawdown up to 50 feet from the extraction wells and an estimated radius of vacuum influence of 55 to 70 feet. Based on vapor flowrates and hydrocarbon concentrations in the vaporstream during the short-term pilot test, removal rates of approximately 90 pounds of hydrocarbons per day were estimated. These findings suggest that DPE can successfully remove hydrocarbons from the site subsurface and induce vacuum influence across the source area.

Interim Remedial Action: The DPE Report and IRAP described the planned reduction of residual petroleum hydrocarbon mass in the source area through temporary DPE system installation and operation. In brief, the remediation scheme consists of a liquid-ring pump which applies high vacuum to source area wells MW2 and MW3 to extract soil-vapor and groundwater simultaneously. A knockout vessel is used to separate the soil-vapor and water streams and the extracted vapor is treated using a thermal oxidizer (with propane as a supplemental fuel) and extracted water is treated using aqueous-phase granular activated carbon. The DPE system is currently operating and initial field readings indicate successful mass removal from the source area wells.

20 August 2004 ACHCSA Correspondence: In a 20 August 2004 correspondence, the ACHCSA provided general concurrence with the scope of work presented in the DPE Report and IRAP and requested performance of additional activities, including preparation of a work plan for source characterization and shallow soil remediation. In our 26 October 2004 *Technical Memorandum*, ETIC presented a review of site data and concluded that the source area was adequately characterized and that the planned DPE interim remedial action would address the shallow soil remediation by the ACHCSA.

4 February 2005 ACHSCA Correspondence: In a 4 February 2005 correspondence, the ACHCSA provided concurrence with initiation of DPE interim remedial activities and requested an Addendum to the Interim Remedial Action Plan for verification monitoring of DPE interim remediation. The following presents ETIC response to this request.

During operation, hydrocarbon concentrations in vapor and water are anticipated to decline, resulting in reduction in mass removal rates. When mass removal rates near asymptotic levels (anticipated at approximately one month of operation), DPE operations will cease temporarily (2 to 4 weeks) to allow the subsurface to re-equilibrate. Following re-equilibration, the system will be restarted and operated until mass removal rates near asymptotic levels. This process will be repeated one or more times. Limited vapor- and aqueous-phase mass removal rates, along with the absence of SPH and declining hydrocarbons concentrations in the extraction wells will be used to evaluate the need for continued DPE operation.

As described in our 24 June 2004 DPE Report and IRAP, the effectiveness of interim remedial action activities will be evaluated through multiple lines of evidence. The following provides a brief summary:

- Extracted water entering and exiting the carbon vessels will be analyzed on a biweekly basis to comply with EBMUD permit conditions and to evaluate carbon breakthrough. These data will also be used with groundwater extraction rates to evaluate mass removal rates in the aqueous phase.
- Extracted vapors entering and exiting the thermal oxidizer will be monitored using a PID on a weekly basis to comply with BAAQMD permit conditions and determine the effectiveness of the treatment system. In addition, the operational temperature of the thermal oxidizer, which is continuously monitored, provides a qualitative gauge of hydrocarbon concentration in the extracted vapors. These data, along with monthly laboratory analyses of vapor samples, will be used with vapor extraction rates to evaluate mass removal rates in the vapor phase.
- Groundwater monitoring at the site, including extraction wells MW2 and MW3, will continue on a quarterly basis. Additional groundwater samples from these extraction wells will be collected monthly to evaluate the effectiveness of the DPE system. The absence of SPH and declining hydrocarbon concentrations in these wells will also be used to evaluate the system effectiveness.

3.0 PROTOCOLS FOR GROUNDWATER MONITORING

The following sections of this report present information relevant to the methods employed during the collection of groundwater samples from site wells. The scope of work for the quarterly groundwater monitoring event at the site included:

- Checking for SPH in the wells.
- Gauging depth to groundwater in the wells.
- Purging wells to be sampled.
- Collecting and analyzing groundwater samples from scheduled wells with no observed SPH.
- Calculating the groundwater gradient and flow direction.
- Preparing this report summarizing the results of the monitoring event.

3.1 GROUNDWATER GAUGING

The wells were opened prior to gauging to allow the groundwater level to equilibrate with atmospheric pressure. The depth to groundwater and depth to SPH, if present, were then measured to the nearest 0.01 feet using an electronic water level meter or optical interface probe. The measurements were made from a permanent reference point at the top of the well casing.

The groundwater elevation map (see Figure 2) for this monitoring event was constructed using depth-to-groundwater measurements collected during the current sampling event. Depth-to-groundwater measurements and calculated groundwater elevations are presented in Table 2. Field data forms are presented in Appendix B.

3.2 WELL PURGING

Approximately of three well casing volumes of water were purged from each well using a WaTerra inertial pump. Field parameters including pH, temperature, and electrical conductance were measured during purging. After purging and prior to sampling, the water level was checked to ensure that the well had recharged to at least 80 percent of its pre-purge water level. Field protocols are presented in Appendix A.

3.3 GROUNDWATER SAMPLING

After purging, groundwater in each well was sampled using dedicated tubing and a WaTerra inertial pump. The samples were submitted to STL San Francisco of Pleasanton, California, a state-certified laboratory. Groundwater analytical results and chain-of-custody documentation are presented in Appendix C.

4.0 RESULTS

4.1 SEPARATE-PHASE HYDROCARBON MONITORING

Wells were monitored for the presence of SPH using a disposable bailer and/or interface probe. SPH (0.08 feet) was observed in well MW2. Approximately ¼ inch of SPH was removed from well MW2 prior to sampling. SPH was not observed in the other site wells.

4.2 GROUNDWATER ELEVATION AND GRADIENT

Groundwater elevations in the site wells during this monitoring event ranged from 41.72 feet above mean sea level (msl) at wells MW5 and MW6 to 44.06 feet msl at well MW1 (see Figure 2). Groundwater flow is generally to the south-southwest with a hydraulic gradient of approximately 0.005 foot/foot. At the request of the ACHCSA, a rose diagram is also presented on Figure 2.

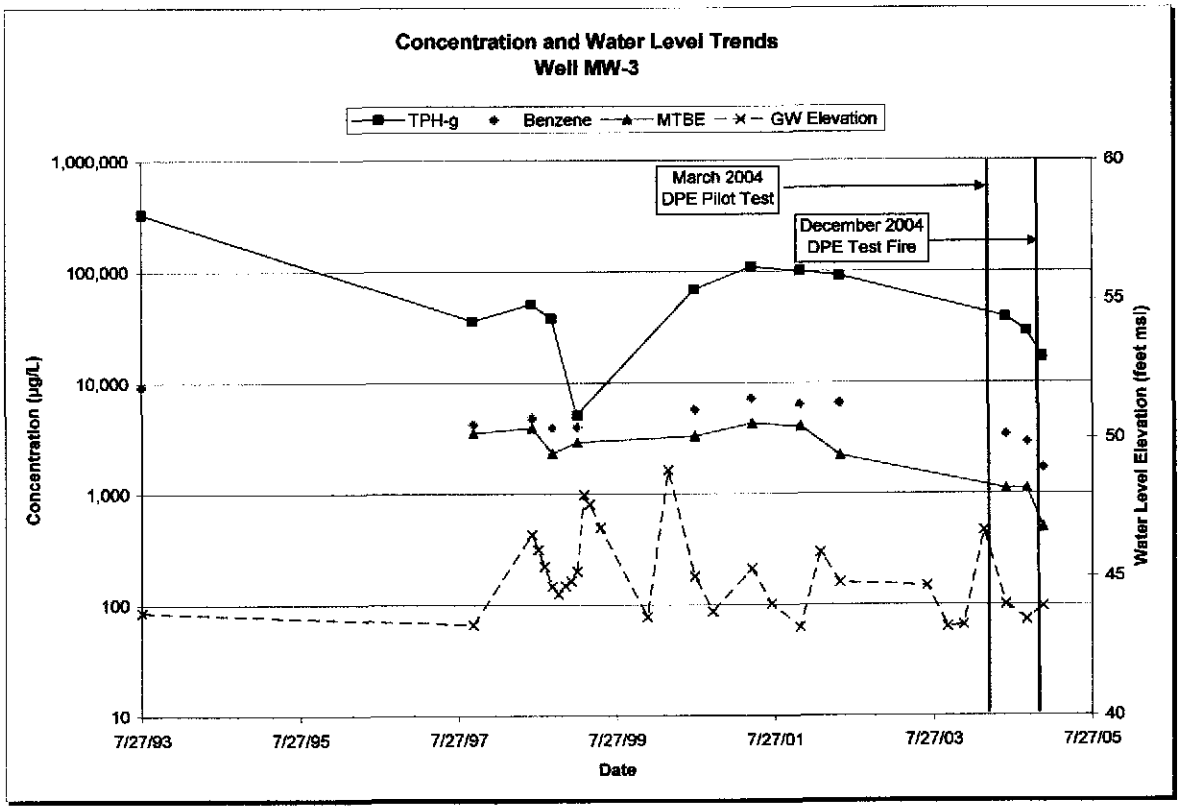
4.3 GROUNDWATER ANALYTICAL RESULTS

Groundwater samples were collected from wells MW2, MW3 and MW4. Samples were analyzed by STL for TPH-g, BTEX, MTBE, and TEPH with silica gel clean-up. Analytical results for this and prior monitoring events are presented in Table 2. Analytical results for this monitoring event are presented on Figure 3. Copies of the chain-of-custody and laboratory analytical reports for the groundwater samples are presented in Appendix C.

4.4 FINDINGS

The following observations are made comparing the results of the December 2004 monitoring event with the results of the previous monitoring events. Note that the DPE system was test fired 3 days prior to the December 2004 monitoring event.

- SPH was reported in well MW2, which is consistent with recent monitoring events.
- TPH-g was detected in the wells sampled (MW2, MW3 and MW4), which reported concentrations at 47,000 µg/L, 17,000 µg/L and 740 µg/L, respectively. As mentioned above, well MW3 has reported SPH sheen during monitoring events prior to the DPE pilot test in March 2004. As shown on the graph below, the absence of SPH and reported TPH-g concentration in well MW3 represent a decline in hydrocarbon concentration at this well location, most likely in response to the DPE pilot test. TPH-g concentration in well MW4 is generally consistent with previous monitoring events.



- BTEX concentrations were below the laboratory reporting limits in monitoring well MW4. BTEX concentrations in well MW2 had concentrations of 3,700 µg/L, 12,000 µg/L, 1,900 µg/L, and 10,000 µg/L, respectively. Well MW2 did contain 0.08 feet of SPH.
- MTBE concentrations ranged from 490 µg/L in well MW3 to 1,200 µg/L in wells MW2. These findings are generally consistent with previous monitoring events.

- TPH-d concentrations were below laboratory reporting limits in the monitoring well MW4. Wells MW2 and MW3 reported concentrations of 2,600 µg/L and 1,300 µg/L, respectively.
- TPH-mo concentrations were below laboratory reporting limits in each of the monitoring wells sampled.

Based on these findings, SPH and elevated concentrations of TPH-g, TPH-d, BTEX and MTBE are largely limited to the source area (MW2 and MW3) and the hydrocarbon plume is stable to declining and largely limited to the property boundaries. Temporary DPE activities will remove hydrocarbon mass from the source area, further stabilizing the plume and limiting the potential for offsite migration.

5.0 PLANNED SITE ACTIVITIES

5.1 INTERIM REMEDIAL ACTION

As mentioned previously, the DPE unit customized for the site during January 2005 and the DPE system began operation in February 2005. System operational and monitoring results will be presented in the next quarterly report.

5.2 MONITORING ACTIVITIES

The next quarterly monitoring event is currently scheduled for mid-March 2005. Groundwater will be monitored in accordance with the groundwater monitoring schedule presented as Table 4.

6.0 REFERENCES

Alameda County Health Cares Services Agency. 2004. Fuel Leak Case No. RO0000134, Val Strough Chevrolet, 327-34th St., Oakland, California. August 20.

Alameda County Health Cares Services Agency. 2005. Fuel Leak Case No. RO0000134, Val Strough Chevrolet, 327-34th St., Oakland, California. February 4.

Environmental Data Resources. 2003. EDR Radius Map with GeoCheck, Strough Family Trust, 327 34th Street, Oakland, California. September 10.

ETIC Engineering, Inc. 2003. Supplemental Site Investigation Workplan, Fuel Case No. RO0000134, Val Strough Chevrolet, 327 34th Street, Oakland, California. September 17.

ETIC Engineering, Inc. 2003. Third Quarter 2003 Groundwater Monitoring Report, Strough Family Trust of 1983, 327 34th Street, Oakland, California. October.

ETIC Engineering, Inc. 2004. Supplemental Site Investigation Report and Dual-Phase Extraction Pilot Test Workplan, Strough Family Trust of 1983, 327 34th Street, Oakland, California. February.

ETIC Engineering, Inc. 2004. First Quarter 2004 Groundwater Monitoring Report, Strough Family Trust of 1983, 327 34th Street, Oakland, California. May .

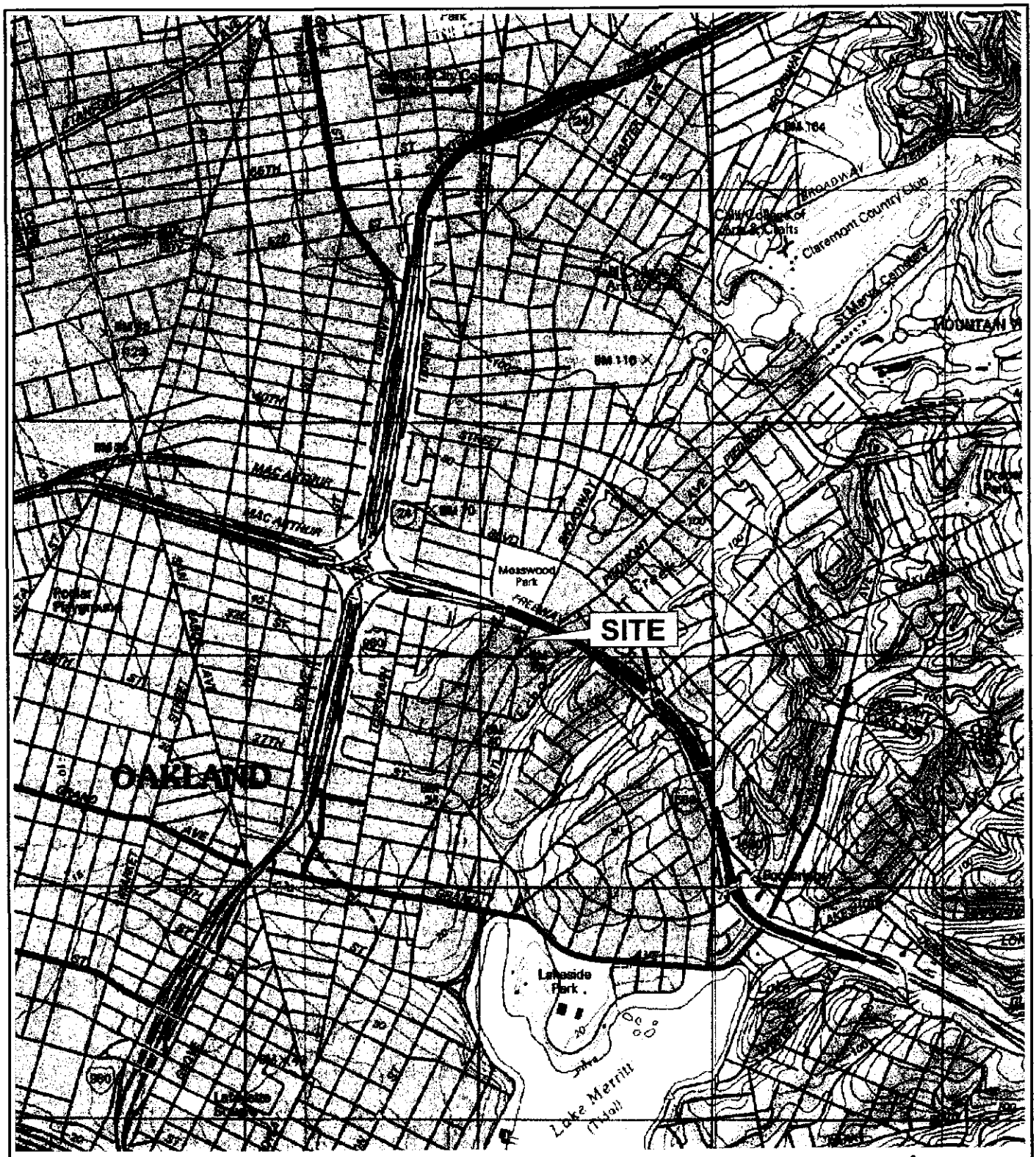
ETIC Engineering, Inc. 2004. Dual Phase Extraction Pilot Test Report and Interim Remedial Action Plan, Strough Family Trust of 1983, Former Val Strough Chevrolet, 327 34th Street, Oakland, California. June.

ETIC Engineering, Inc. 2004. Second Quarter 2004 Groundwater Monitoring Report, Strough Family Trust of 1983, 327 34th Street, Oakland, California. August.

ETIC Engineering, Inc. 2004. Response to Technical Comments, Strough Family Trust of 1983, 327 34th Street, Oakland, California. October.

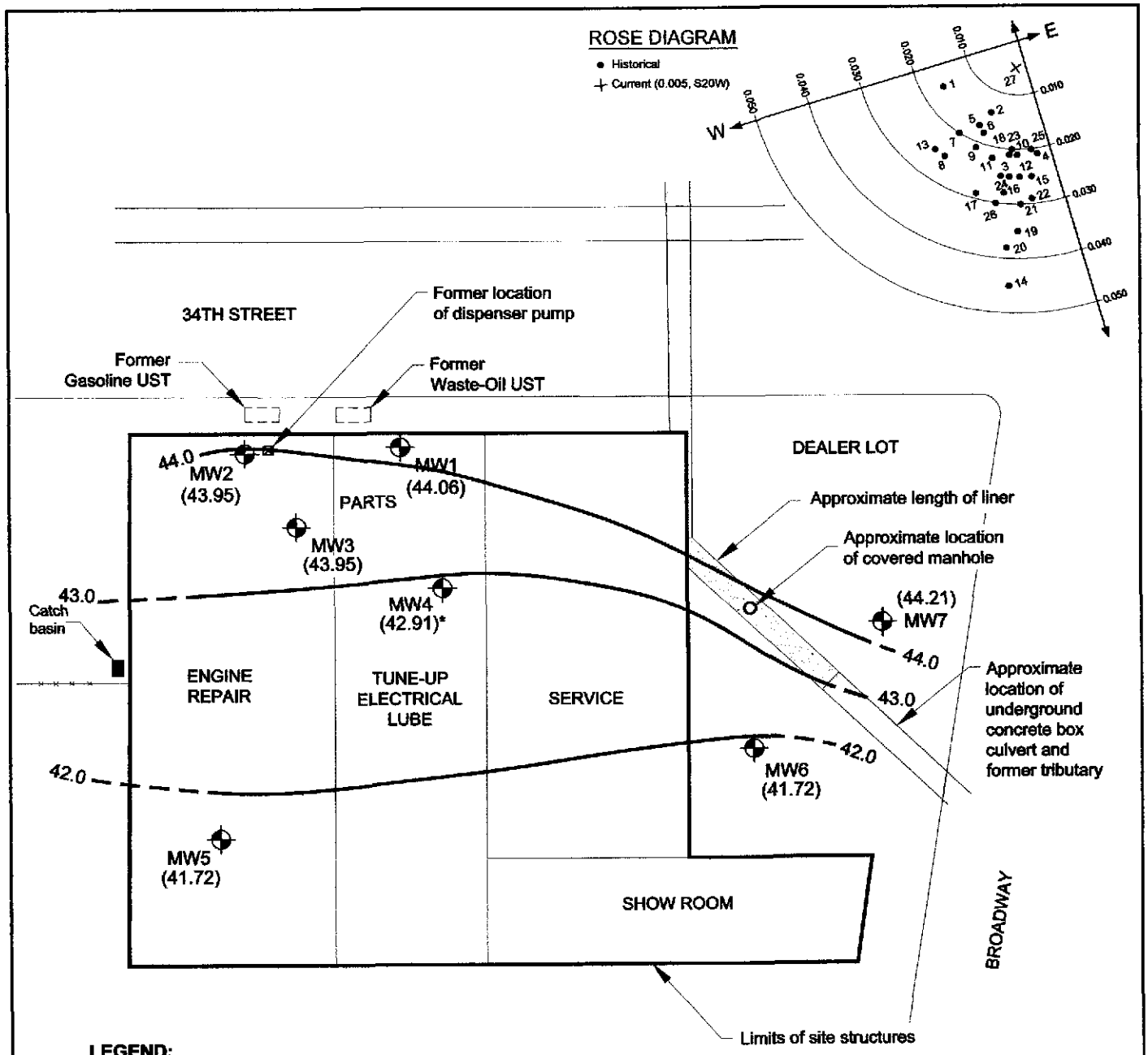
ETIC Engineering, Inc. 2004. Third Quarter 2004 Groundwater Monitoring Report, Strough Family Trust of 1983, 327 34th Street, Oakland, California. October.

Figures



ETIC ENGINEERING	SITE LOCATION MAP VAL STROUGH CHEVROLET 327 34TH STREET OAKLAND, CALIFORNIA	FIGURE: 1

FILENAME: QM_DEC2004.DWG 1/6/2005



LEGEND:

- Groundwater monitoring well
- 43.5 Groundwater elevation contour
- SPH Separate phase hydrocarbons
- * Not used for calculation of groundwater contour

N

0 25 50

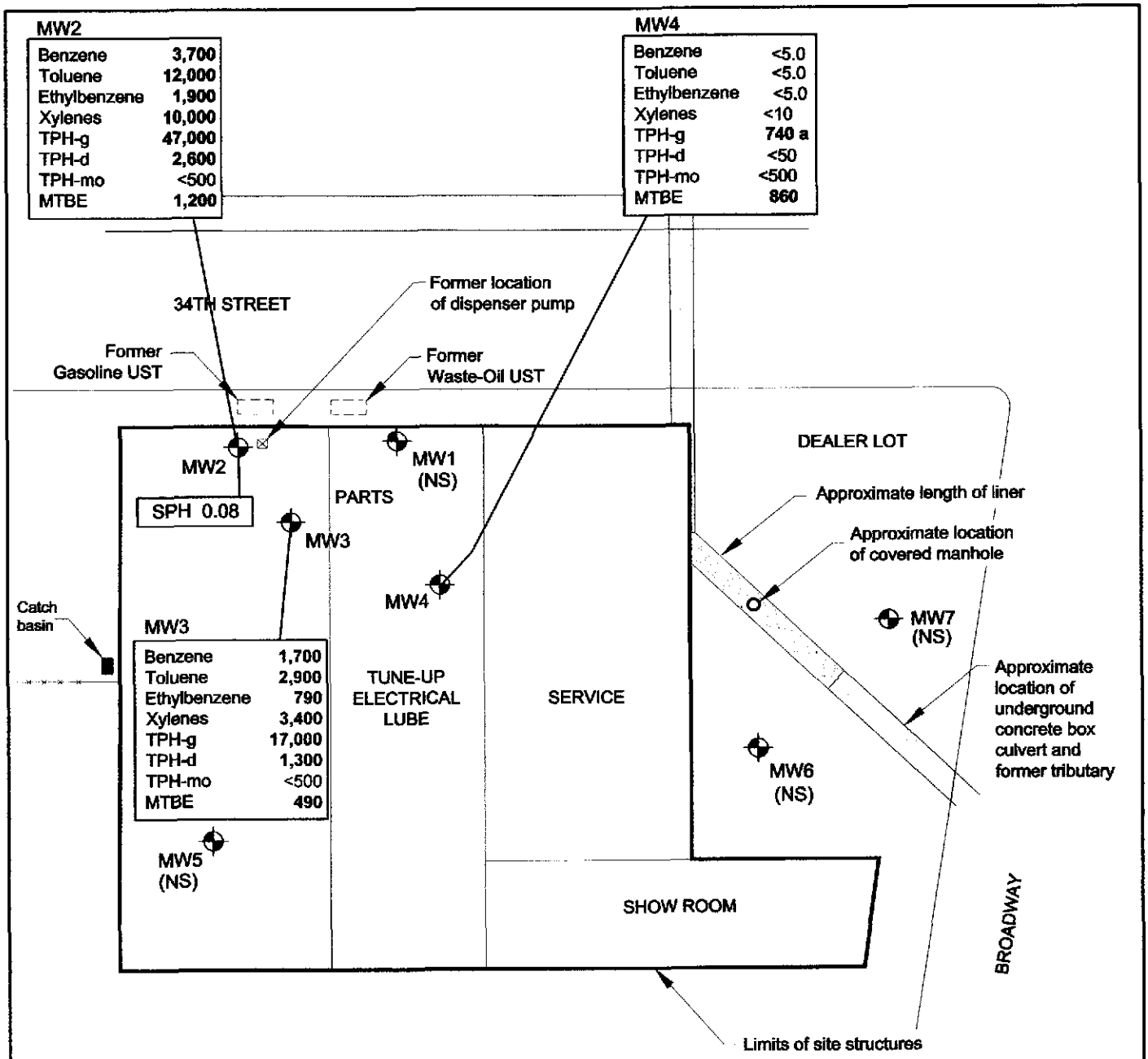
Scale (feet)

ETIC ENGINEERING

DECEMBER 2004 GROUNDWATER CONTOUR MAP AND ROSE DIAGRAM
FORMER VAL STROUGH CHEVROLET
327 34TH STREET
OAKLAND, CALIFORNIA

FIGURE: **2**

FILENAME: GM_DEC2004.DWG 1/19/2005



LEGEND:

⊕	Groundwater monitoring well
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
SPH	Separate-Phase Hydrocarbons
a	Sample contains discrete peak in gasoline range not matching typical fuel pattern
NS	Not Sampled

All concentrations are reported in micrograms per liter (ug/L)

N

0 25 50

Scale (feet)

ETIC ENGINEERING

DECEMBER 2004 GROUNDWATER ANALYTICAL DATA
FORMER VAL STROUGH CHEVROLET
327 34TH STREET
OAKLAND, CALIFORNIA

FIGURE: **3**

FILENAME: GW_DEC2004.DWG 1/6/2005

Tables

TABLE 1 WELL CONSTRUCTION DETAILS
STROUGH FAMILY TRUST, 327 34th STREET, OAKLAND, CALIFORINA

Well ID	Well Installation Date	Top-of-Casing Elevation[a] (feet)	Casing Material	Total Depth of Borehole (ft bgs)	Casing Diameter (inches)	Screened Interval (ft bgs)	Slot Size (inches)	Filter Pack Interval (ft bgs)	Filter Pack Material
MW1	07/19/93	64.69	PVC	32	2	17-32	0.020	15-32	Gravel Pack
MW2	07/20/93	65.95	PVC	33	2	18-33	0.020	16-33	Gravel Pack
MW3	07/20/93	65.99	PVC	34	2	18-34	0.020	16-34	Gravel Pack
MW4	06/26/98	63.35	PVC	31	2	15-31	0.020	13-31.5	Lonestar #3 Sand
MW5	06/26/98	65.59	PVC	31	2	15-31	0.020	13-31.5	Lonestar #3 Sand
MW6	07/17/00	59.60	PVC	31.5	2	10-30	0.020	8-30	Lonestar #3 Sand
MW7	07/17/00	59.47	PVC	36.5	2	15-35	0.020	13-35	Lonestar #3 Sand

a Elevations based on a survey conducted August 2002 and referenced benchmark with known elevation (NGVD 29) of 60.40 feet above mean sea level.
PVC Polyvinyl chloride.
ft bgs Feet below ground surface.

TABLE 2 CUMULATIVE GROUNDWATER ANALYTICAL DATA
STROUGH FAMILY TRUST, 327 34th STREET OAKLAND, CALIFORNA

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	$N\text{-}NH_3$	$N\text{-}NO_3$	$o\text{-}PO_4$
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	--	--	--	--	--	--	--	--	--
MW1	03/15/04	64.69	b	18.18	46.51	0.00	<0.50	<0.50	<0.50	<1.0	<50	<50	<500	<0.50	--	0.14	--	--	--	--	--	--	--
MW1	06/24/04	64.69	b	20.48	44.21	0.00	<0.50	<0.50	<0.50	<1.0	<50	<50	<500	<0.50	--	0.15	--	--	--	--	--	--	--
MW1	09/29/04	64.69	b	21.37	43.32	0.00	<0.50	0.51	<0.50	<1.0	<50	<50	<500	<0.50	--	1.01	6.42	--	--	--	--	--	--
MW1	**12/13/04**	**64.69**	**b**	**20.63**	**44.06**	**0.00**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	*	*	*	*	*	*	*	*	--	*	*	--	--	--	--	--	--

TABLE 2 CUMULATIVE GROUNDWATER ANALYTICAL DATA
STROUGH FAMILY TRUST, 327 34th STREET OAKLAND, CALIFORINA

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	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	--	--	--	--	--	--	--	--	--
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	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2[c]	03/15/04	65.95	b	19.24	46.72	0.01	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2[c]	06/24/04	65.95	b	22.10	44.06	0.31	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2[c]	09/29/04	65.95	b	22.81	43.14	sheen	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW2[c]	**12/13/04**	**65.95**	**b**	**22.06**	**43.95**	**0.08**	**3,700**	**12,000**	**1,900**	**10,000**	**47,000**	**2,600**	**<500**	**1,200**	--	**0.27**	**6.63**	*	*	*	*	*	*
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	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3[c]	03/15/04	65.99	b	19.32	46.67	sheen	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MW3[c]	06/24/04	65.99	b	21.99	44.00	0.00	3,400	7,700	1,000	4,800	39,000	1,700	<500	1,100	--	0.07	--	--	--	--	--	--	--
MW3[c]	09/29/04	65.99	b	22.54	43.45	0.00	2,900	6,700	980	4,300	29,000	2,200	<500	1,100	--	0.80	6.42	--	--	--	--	--	--
MW3[c]	**12/13/04**	**65.99**	**b**	**22.06**	43.93	**0.00**	**1,700**	**2,900**	**790**	**3,400**	**17,000**	**1,300**	**<500**	**490**	--	**0.16**	**6.7**	--	--	--	--	--	--

TABLE 2 CUMULATIVE GROUNDWATER ANALYTICAL DATA
STROUGH FAMILY TRUST, 327 34th STREET OAKLAND, CALIFORNA

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	06/30/98	98.65	a	16.93	81.72	0.00	2,200	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	--	--	--	--	--	--
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	--	--	--	--	--	--	--	--	--
MW4	03/15/04	63.35	b	16.89	46.46	0.00	1.5	<0.50	<0.50	<1.0	54[d]	<50	<500	41	--	0.16	--	--	--	--	--	--	--
MW4	06/24/04	63.35	b	19.31	44.04	0.00	69	<5.0	<5.0	<10	920[d]	<50	<500	1,100	--	0.15	--	--	--	--	--	--	--
MW4	09/29/04	63.35	b	20.20	43.15	0.00	<5.0	<5.0	<5.0	<10	940[g]	<50	<500	1,200	--	0.13	6.63	--	--	--	--	--	--
MW4	**09/29/04**		**b**	**20.44**	**-20.44**	**0.00**	**<5.0**	**<5.0**	**<5.0**	**<10**	**740**	**<50**	**<500**	**860**	--	**0.58**	**6.84**	--	--	--	--	--	--
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

TABLE 2 CUMULATIVE GROUNDWATER ANALYTICAL DATA
STROUGH FAMILY TRUST, 327 34th STREET OAKLAND, CALIFORINA

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	$N\text{-}NH_3$	$N\text{-}NO_3$	$o\text{-}PO_4$
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	--[c]	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	--	--	--	--	--	--	--	--	--
MW5	03/15/04	65.59	b	20.82	44.77	0.00	<0.50	<0.50	<0.50	<1.0	<50	<50	<500	<0.50	--	6.4	--	--	--	--	--	--	--
MW5	06/24/04	65.59	b	23.57	42.02	0.00	<0.50	<0.50	<0.50	<1.0	<50	130[f]	<500	0.79	--	5.56	--	--	--	--	--	--	--
MW5	09/29/04	65.59	b	24.44	41.15	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW5	**12/13/04**	**65.59**	**b**	**23.87**	**41.72**	**0.00**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	--	--	--	--	--	--	--	--	--
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	--	--	--	--	--	--	--	--	--
MW6	03/15/04	59.60	b	16.46	43.14	0.00	<1.0	<1.0	<1.0	<2.0	200	<50	<500	220	--	0.11	--	--	--	--	--	--	--
MW6	06/24/04	59.60	b	17.97	41.63	0.00	<1.0	<1.0	<1.0	<2.0	130	<50	<500	190	--	0.05	--	--	--	--	--	--	--
MW6	09/29/04	59.60	b	18.55	41.05	0.00	<0.50	0.61	<0.50	1.2	210[g]	<50	<500	190	--	0.37	6.60	--	--	--	--	--	--
MW6	**12/13/04**	**59.60**	**b**	**17.88**	**41.72**	**0.00**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	--	--	--	--	--	--	--	--	--
MW7	03/15/04	59.47	b	14.77	44.70	0.00	<0.50	<0.50	<0.50	<1.0	<50	<50	<500	<0.50	--	0.54	--	--	--	--	--	--	--
MW7	06/24/04	59.47	b	16.33	43.14	0.00	<0.50	<0.50	<0.50	<1.0	<50	300[f]	<500	<0.50	--	0.20	--	--	--	--	--	--	--
MW7	09/29/04	59.47	b	16.88	42.59	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW7	**12/13/04**	**59.47**	**b**	**15.26**	**44.21**	**0.00**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE 2 CUMULATIVE GROUNDWATER ANALYTICAL DATA
STROUGH FAMILY TRUST, 327 34th STREET OAKLAND, CALIFORINA

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	$N\text{-}NH_3$	$N\text{-}NO_3$	$o\text{-}PO_4$

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.
* SPH present; not sampled.
-- 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 LPH are corrected by multiplying the specific gravity of gasoline (0.69) by the LPH thickness and adding this value to the water elevation.
f Hydrocarbon reported is in the early diesel range, and does not match the laboratory diesel standard.
g Sample contained discrete peak in gasoline range and identified by lab as MTBE.

TABLE 3 HISTORICAL GRAB GROUNDWATER ANALYTICAL DATA
STROUGH FAMILY TRUST, 327 34th STREET OAKLAND, CALIFORINA

			Concentrations (µg/L)													
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

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.

TABLE 4 GROUNDWATER MONITORING SCHEDULE

STROUGH FAMILY TRUST, 327 34th STREET, OAKLAND, CALIFORNIA

Well Number	Groundwater Gauging Frequency	Groundwater Sampling and Analysis Frequency		
		BTEX and TPH-g	MTBE	TEPH
MW1	Q	S	S	S
MW2	Q	Q	Q	Q
MW3	Q	Q	Q	Q
MW4	Q	Q	Q	Q
MW5	Q	A	A	A
MW6	Q	S	S	S
MW7	Q	A	A	A

Q = Quarterly.
S = Semiannual.
A = Annual.

BTEX = Benzene, toluene, ethylbenzene, total xylenes.
MTBE = Methyl tertiary butyl ether.
TPH-g = Total Petroleum Hydrocarbons as gasoline.
TEPH = Total Extractable Petroleum Hydrocarbons, includes TPH-diesel and TPH-motor oil.

ETIC ENGINEERING

Appendix A

Protocols for Groundwater Monitoring

PROTOCOLS FOR GROUNDWATER MONITORING

GROUNDWATER GAUGING

Wells are opened prior to gauging to allow the groundwater level in the wells to equilibrate with atmospheric pressure. The depth to groundwater and depth to liquid-phase hydrocarbons, if present, are then measured to the nearest 0.01 feet using an electronic water level meter or optical interface probe. The measurements are made from a permanent reference point at the top of the well casing. If less than 1 foot of water is measured in a well, the water is bailed from the well and, if the well does not recover, the well is considered "functionally dry." Wells with a sheen or measurable liquid-phase hydrocarbons are generally not purged or sampled.

WELL PURGING

After the wells are gauged, each well is purged of approximately 3 well casing volumes of water to provide representative groundwater samples for analysis. Field parameters of pH, temperature, and electrical conductance are measured during purging to ensure that these parameters have stabilized before groundwater in a well is sampled. Groundwater in each well is purged using an inertial pump (WaTerra), an electric submersible pump, or a bailer. After the well is purged, the water level is checked to ensure that the well has recharged to at least 80 percent of its original water level.

GROUNDWATER SAMPLING

After purging, groundwater in each well is sampled using dedicated tubing and an inertial pump (WaTerra) or a factory-cleaned disposable bailer. Samples from extraction wells are typically collected from sample ports associated with the groundwater remediation system. Samples collected for volatile organic analysis are placed in Teflon septum-sealed 40-milliliter glass vials. Samples collected for diesel analysis are placed in 1-liter amber glass bottles. Each sample bottle is labeled with the site name, well number, date, sampler's initials, and preservative. The samples are placed in a cooler with ice for delivery to a state-certified laboratory. The information for each sample is entered on a chain-of-custody form prior to transport to the laboratory.

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Appendix B

Field Documents

ETIC Engineering, Inc.

FILE COPY

FIELD SUMMARY REPORT

Client: STrough Family Trust **Station No.:** SFT

Project No.: TMSFT **Task No.:** 6

Sample Team: C. Mitchell **Budgeted time:**

Date: 12/13/04 **Time Billed:**

No. of Drums on Site: 1 **Water** — **Soil** — **Empty**

• **Task:**

QM Sampling (Q4)

• **summary:**

~~All~~ Wells MW1, MW4 thru MW7 Gauged on 12/13/04 with WLM

Wells MW2 and MW3 gauged on 12/13/04 with IP.

- On Site 10:15
- Opened and ~~gauged~~ Wells MW1 thru MW7. (IP detected ≈ .08' of product in MW2. Confirmed with bailer x ¼").
- Purged and Sampled Wells MW2, MW3 and MW4 with Waterra.
- Closed all Wells
- Off Site 13:15
- Drummed purge water on site x30gal.

Christopher L. Mitchell
12/13/04

ETIC
Engineering, Inc.

MONITORING WELL DATA FORM

Client: STROUGH FAMILY TRUST	Date: 12/13/04
Project Number: TMSFT.6	Station Number: SFT
Site Location: 327 34TH ST. OAKLAND , CA.	Samplers: ~~WJ/PP~~ C M, [illegible]

	MONITORING WELL NUMBER	DEPTH TO WATER (TOC)	DEPTH TO PRODUCT (TOC)	APPARENT PRODUCT THICKNESS	AMOUNT OF PRODUCT REMOVED	MONITORING WELL INTEGRITY	DEPTH TO BOTTOM (TOC)	GENERAL FIELD COMMENTS
+	MW1	20.63				OK	30.55	2"
+	MW2*	22.06	21.98	.08	1/4"	OK	32.15	2"
+	MW3*	22.06				OK	32.45	2"
+	MW4	20.44				OK	26.85	2"
+	MW5	23.87				OK	26.35	2"
+	MW6	17.88				OK	27.15	2"
+	MW7	15.26				1x Bolt missing 2x OK	34.75	2"

* POSSIBLE LPH - USE IP AND CONFIRM WITH BAILER

ETIC ENGINEERING
Engineering, Inc.

GROUNDWATER PURGE AND SAMPLE

Project Name: STROUGH FAMILY TRUST	Well No: MW2	Date: 12/13/07	
Project No: TMSFT.6	Personnel: C. Mitchell		

GAUGING DATA

Water Level Measuring Method: WLM / (IP)

WELL PURGE VOLUME CALCULATION	Total Depth (feet)	Depth to Water (feet)	Water Column (feet)	Multiplier for Casing Diameter	Casing Volume (gal)	Total Purge Volume (gal)
	32.15 −	22.06 =	10.09 X	1 (0.04) / (2) (0.16) / 4 (0.64) / 6 (1.44)	1.61 =	4.84

PURGING DATA

Purge Method: (WATERRA) / BAILER / SUB PURGE RATE GPM

Time	12:07	12:09	12:11			
Volume Purge (gal)	2	4	6			
Temperature (C)	18.53°C	18.54°C	18.54°C			
pH	6.63	6.63	6.63			
Spec Cond (umhos)	555uS/cm	595uS/cm	625uS/cm			
DO (mg/L)	.27mg/l	.29mg/l	.27mg/l			
ORP	-149.0	-147.3	-144.9			
Turbidity/Color	S, Lt,	S, Lt,	S, Lt,			
Odor (Y/N)	Y	Y	Y			
Dewatered (Y/N)	N	N	N			

Alkalinity: Strong Odor

Comments/Observations:

SAMPLING DATA

Time Sampled: 12:15 Approximate Depth to Water During Sampling: 23 (feet)

Comments:

Sample Number	Number of Containers	Container Type	Perservative	Volume Filled (mL or L)	Turbidity/ Color	Analysis Method
MW2	3	VOA	HCL	40 ml		HVOCs by 8260B
MW2	2	AMBER	HCL	1L		TPH-D,TEHO

Total Purge Volume: 6 (gallons)	Disposal:	System	
Weather Conditions:	OK	BOLTS	(Y) / N
Condition of Well Box and Casing at Time of Sampling:	OK	CAP & LOCK	(Y) / N
Well Head Conditions Requiring Correction:	None	GROUT	(Y) / N
Problems Encountered During Purging and Sampling:	None	WELL BOX	(Y) / N
Comments:		SECURED	Y / (N)

ETIC ENGINEERING
Engineering, Inc.

GROUNDWATER PURGE AND SAMPLE

Project Name: STROUGH FAMILY TRUST Well No: MW3 Date: 12/13/04

Project No: TMSFT.6 Personnel: C. M. Fehr

GAUGING DATA

Water Level Measuring Method: WLM / (IP)

WELL PURGE VOLUME CALCULATION	Total Depth (feet)		Depth to Water (feet)		Water Column (feet)		Multiplier for Casing Diameter				Casing Volume (gal)		Total Purge Volume (gal)
	32.45	−	22.06	=	10.39	X	1	(2)	4	6	1.66	=	4.98
							0.04	0.16	0.64	1.44			

PURGING DATA

Purge Method: (WATERRA) / BAILER / SUB PURGE RATE GPM

Time	12:42	12:43	12:45			
Volume Purge (gal)	2	4	6			
Temperature (C)	18.50°C	18.52°C	18.52°C			
pH	6.69	6.69	6.70			
Spec Conductumbos)	777µS/cm	771µS/cm	762µS/cm			
DO (mg/L)	.46 mg/l	.18 mg/l	.16 mg/l			
ORP	-124.6	-129.3	-128.9			
Turbidity/Color	S. Hy	S. Hy	S. Hy			
Odor (Y/N)	Y	Y	Y			
Dewatered (Y/N)	N	N	N			

Alkalinity:

Comments/Observations:

SAMPLING DATA

Time Sampled: 12:50 Approximate Depth to Water During Sampling: 23 (feet)

Comments:

Sample Number	Number of Containers	Container Type	Perservative	Volume Filled (mL or L)	Turbidity/ Color	Analysis Method
MW3	3	VOA	HCL	40 ml		HVOCs by 8260B
MW3	2	AMBER	HCL	1L		TPH-D,TEHO

Total Purge Volume: 6 (gallons) Disposal: System

Weather Conditions: CC

Condition of Well Box and Casing at Time of Sampling: CC

Well Head Conditions Requiring Correction: None

Problems Encountered During Purging and Sampling: None

Comments:

BOLTS	(Y)	N
CAP & LOCK	(Y)	N
GROUT	(Y)	N
WELL BOX	(Y)	N
SECURED	Y	(N)

G:\USERS\DFitzgerald\STROUGH FAMILY TRUST (2)\[purge form.xls]Sheet1

ETIC ENGINEERING

Engineering, Inc.

GROUNDWATER PURGE AND SAMPLE

Project Name: STROUGH FAMILY TRUST Well No: MW4 Date: 12/13/04

Project No: TMSFT.6 Personnel: C. M. Tuttle

GAUGING DATA

Water Level Measuring Method: (WLM) / IP

WELL PURGE VOLUME CALCULATION	Total Depth (feet)		Depth to Water (feet)		Water Column (feet)		Multiplier for Casing Diameter				Casing Volume (gal)		Total Purge Volume (gal)
	26.85	−	20.44	=	6.41	X	1	(2)	4	6	1.02	=	3.07
							0.04	0.16	0.64	1.44			

PURGING DATA

Purge Method: (WATERRA) / BAILER / SUB PURGE RATE GPM

Time	11:32	11:33	11:35			
Volume Purge (gal)	1	2	3			
Temperature (C)	18.85°C	18.90°C	18.90°C			
pH	6.87	6.84	6.84			
Spec Cond (umhos)	737 µS/cm	655 µS/cm	611 µS/cm			
DO (mg/L)	.60 mg/L	.65 mg/L	.56 mg/L			
ORP	-17.3	-14.1	-12.4			
Turbidity/Color	S. Ltg	S. Ltg	S. Ltg			
Odor (Y/N)	N	N	N			
Dewatered (Y/N)	N	N	N			

Alkalinity:

Comments/Observations:

SAMPLING DATA

Time Sampled: 11:40 Approximate Depth to Water During Sampling: 21 (feet)

Comments:

Sample Number	Number of Containers	Container Type	Perservative	Volume Filled (mL or L)	Turbidity/ Color	Analysis Method
MW4	3	VOA	HCL	40 ml		HVOCs by 8260B
MW4	2	AMBER	~~HCL~~	1L		TPH-D,TEHO

Total Purge Volume: 3 (gallons) Disposal: System

Weather Conditions: CL BOLTS (Y) / N

Condition of Well Box and Casing at Time of Sampling: CL CAP & LOCK (Y) / N

Well Head Conditions Requiring Correction: None GROUT (Y) / N

Problems Encountered During Purging and Sampling: None WELL BOX (Y) / N

Comments: SECURED (Y) / N

G:\USERS\DFitzgerald\STROUGH FAMILY TRUST (2)\[purge form.xls]Sheet1

ETIC ENGINEERING

Appendix C

Laboratory Analytical Reports

SEVERN TRENT STL

Submission#: 2004-12-0590

FILE COPY

ETIC Oakland

1333 Broadway, Suite 1015
Oakland, CA 94612

Attn.: Kathy Brandt

Project#: TMSFT.9
Project: Strough Family Trust

December 28, 2004

RECEIVED
JAN 5 2005
ETIC ENGINEERING

Kathy

Attached is our report for your samples received on 12/15/2004 16:10
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 01/29/2005 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: ssidhu@stl-inc.com

Sincerely,

Surinder Sidhu

Surinder Sidhu
Project Manager

SEVERN TRENT STL

Submission: 2004-12-0590

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
MW2	12/13/2004 12:15	Water	1
MW3	12/13/2004 12:50	Water	2
MW4	12/13/2004 11:40	Water	3

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Prep(s): 5030B
Sample ID: **MW2**
Sampled: 12/13/2004 12:15
Matrix: Water

Test(s): 8260B
Lab ID: 2004-12-0590 - 1
Extracted: 12/24/2004 14:48
QC Batch#: 2004/12/24-01.68

Analysis Flag: L2 (See Legend and Note Section)

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	47000	10000	ug/L	200.00	12/24/2004 14:48	
Methyl tert-butyl ether (MTBE)	1200	100	ug/L	200.00	12/24/2004 14:48	
Benzene	3700	100	ug/L	200.00	12/24/2004 14:48	
Toluene	12000	100	ug/L	200.00	12/24/2004 14:48	
Ethylbenzene	1900	100	ug/L	200.00	12/24/2004 14:48	
Total xylenes	10000	200	ug/L	200.00	12/24/2004 14:48	
Surrogate(s)						
1,2-Dichloroethane-d4	103.2	73-130	%	200.00	12/24/2004 14:48	
Toluene-d8	99.3	81-114	%	200.00	12/24/2004 14:48	

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Prep(s): 5030B
Test(s): 8260B
Sample ID: **MW3**
Lab ID: 2004-12-0590 - 2
Sampled: 12/13/2004 12:50
Extracted: 12/24/2004 15:05
Matrix: Water
QC Batch#: 2004/12/24-01.68
Analysis Flag: L2 (See Legend and Note Section)

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	17000	1000	ug/L	20.00	12/24/2004 15:05	
Methyl tert-butyl ether (MTBE)	490	10	ug/L	20.00	12/24/2004 15:05	
Benzene	1700	10	ug/L	20.00	12/24/2004 15:05	
Toluene	2900	10	ug/L	20.00	12/24/2004 15:05	
Ethylbenzene	790	10	ug/L	20.00	12/24/2004 15:05	
Total xylenes	3400	20	ug/L	20.00	12/24/2004 15:05	
Surrogate(s)						
1,2-Dichloroethane-d4	97.6	73-130	%	20.00	12/24/2004 15:05	
Toluene-d8	102.0	81-114	%	20.00	12/24/2004 15:05	

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Prep(s): 5030B
Test(s): 8260B
Sample ID: **MW4**
Lab ID: 2004-12-0590 - 3
Sampled: 12/13/2004 11:40
Extracted: 12/23/2004 12:44
Matrix: Water
QC Batch#: 2004/12/23-01.68
Analysis Flag: L2 (See Legend and Note Section)

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Gasoline	740	500	ug/L	10.00	12/23/2004 12:44	Q6
Methyl tert-butyl ether (MTBE)	860	5.0	ug/L	10.00	12/23/2004 12:44	
Benzene	ND	5.0	ug/L	10.00	12/23/2004 12:44	
Toluene	ND	5.0	ug/L	10.00	12/23/2004 12:44	
Ethylbenzene	ND	5.0	ug/L	10.00	12/23/2004 12:44	
Total xylenes	ND	10	ug/L	10.00	12/23/2004 12:44	
Surrogate(s)						
1,2-Dichloroethane-d4	102.3	73-130	%	10.00	12/23/2004 12:44	
Toluene-d8	101.4	81-114	%	10.00	12/23/2004 12:44	

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Batch QC Report

Prep(s): 5030B
Test(s): 8260B

Method Blank **Water** **QC Batch # 2004/12/23-01.68**

MB: 2004/12/23-01.68-027

Date Extracted: 12/23/2004 10:27

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	50	ug/L	12/23/2004 10:27	
Methyl tert-butyl ether (MTBE)	ND	0.5	ug/L	12/23/2004 10:27	
Benzene	ND	0.5	ug/L	12/23/2004 10:27	
Toluene	ND	0.5	ug/L	12/23/2004 10:27	
Ethylbenzene	ND	0.5	ug/L	12/23/2004 10:27	
Total xylenes	ND	1.0	ug/L	12/23/2004 10:27	
Surrogates(s)					
1,2-Dichloroethane-d4	99.2	73-130	%	12/23/2004 10:27	
Toluene-d8	101.2	81-114	%	12/23/2004 10:27	

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Batch QC Report

Prep(s): 5030B — Test(s): 8260B

Method Blank — **Water** — **QC Batch # 2004/12/24-01.68**

MB: 2004/12/24-01.68-033 — Date Extracted: 12/24/2004 08:33

Compound	Conc.	RL	Unit	Analyzed	Flag
Gasoline	ND	50	ug/L	12/24/2004 08:33	
Methyl tert-butyl ether (MTBE)	ND	0.5	ug/L	12/24/2004 08:33	
Benzene	ND	0.5	ug/L	12/24/2004 08:33	
Toluene	ND	0.5	ug/L	12/24/2004 08:33	
Ethylbenzene	ND	0.5	ug/L	12/24/2004 08:33	
Total xylenes	ND	1.0	ug/L	12/24/2004 08:33	
Surrogates(s)					
1,2-Dichloroethane-d4	99.2	73-130	%	12/24/2004 08:33	
Toluene-d8	94.6	81-114	%	12/24/2004 08:33	

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2004/12/23-01.68**

LCS 2004/12/23-01.68-010 Extracted: 12/23/2004 Analyzed: 12/23/2004 10:10
LCSD

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Methyl tert-butyl ether (MTBE)	25.8		25.0	103.2			65-165	20		
Benzene	26.7		25.0	106.8			69-129	20		
Toluene	26.3		25.0	105.2			70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	410		500	82.0			73-130			
Toluene-d8	508		500	101.6			81-114			

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Laboratory Control Spike **Water** **QC Batch # 2004/12/24-01.68**

LCS 2004/12/24-01.68-016 Extracted: 12/24/2004 Analyzed: 12/24/2004 08:16
LCSD

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Methyl tert-butyl ether (MTBE)	25.8		25.0	103.2			65-165	20		
Benzene	25.6		25.0	102.4			69-129	20		
Toluene	25.6		25.0	102.4			70-130	20		
Surrogates(s)										
1,2-Dichloroethane-d4	400		500	80.0			73-130			
Toluene-d8	490		500	98.0			81-114			

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Matrix Spike (MS / MSD) **Water** **QC Batch # 2004/12/23-01.68**

MS/MSD

Lab ID: 2004-12-0595 - 001

MS: 2004/12/23-01.68-017 Extracted: 12/23/2004 Analyzed: 12/23/2004 11:17

Dilution: 1.00

MSD: 2004/12/23-01.68-035 Extracted: 12/23/2004 Analyzed: 12/23/2004 11:35

Dilution: 1.00

Compound	Conc. ug/L			Spk.Level	Recovery %			Limits %		Flags	
	MS	MSD	Sample	ug/L	MS	MSD	RPD	Rec.	RPD	MS	MSD
Benzene	27.9	24.3	ND	25.0	111.6	97.2	13.8	69-129	20		
Toluene	29.2	24.6	ND	25.0	116.8	98.4	17.1	70-130	20		
Methyl tert-butyl ether	31.4	25.6	ND	25.0	125.6	102.4	20.4	65-165	20		R4
Surrogate(s)											
1,2-Dichloroethane-d4	449	474		500	89.7	94.9		73-130			
Toluene-d8	*510*	*508*		*500*	*101.9*	*101.6*		*81-114*			

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Batch QC Report

Prep(s): 5030B

Test(s): 8260B

Matrix Spike (MS / MSD) **Water** **QC Batch # 2004/12/24-01.68**

MS/MSD

Lab ID: 2004-12-0632 - 001

MS: 2004/12/24-01.68-045 Extracted: 12/24/2004 Analyzed: 12/24/2004 10:45
Dilution: 1.00

MSD: 2004/12/24-01.68-003 Extracted: 12/24/2004 Analyzed: 12/24/2004 11:03
Dilution: 1.00

Compound	Conc. ug/L			Spk.Level	Recovery %			Limits %		Flags	
	MS	MSD	Sample	ug/L	MS	MSD	RPD	Rec.	RPD	MS	MSD
Benzene	25.9	26.3	ND	25.0	103.6	105.2	1.5	69-129	20		
Toluene	27.3	26.7	ND	25.0	109.2	106.8	2.2	70-130	20		
Methyl tert-butyl ether	84.6	83.4	54.4	25.0	120.8	116.0	4.1	65-165	20		
Surrogate(s)											
1,2-Dichloroethane-d4	401	418		500	80.1	83.6		73-130			
Toluene-d8	508	510		500	101.6	102.0		81-114			

Fuel Oxygenates by 8260B

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Legend and Notes

Analysis Flag

L2

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

Result Flag

Q6

The concentration reported reflect(s) individual or discrete unidentified peaks not matching a typical fuel pattern.

R4

RPD exceeded method control limit; % recoveries within limits.

SEVERN TRENT STL

Submission: 2004-12-0590

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Samples Reported

Sample Name	Date Sampled	Matrix	Lab #
MW2	12/13/2004 12:15	Water	1
MW3	12/13/2004 12:50	Water	2
MW4	12/13/2004 11:40	Water	3

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Prep(s): 3510/8015M
Sample ID: **MW2**
Sampled: 12/13/2004 12:15
Matrix: Water

Test(s): 8015M
Lab ID: 2004-12-0590 - 1
Extracted: 12/18/2004 06:25
QC Batch#: 2004/12/18-01.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	2600	50	ug/L	1.00	12/20/2004 12:57	Q2
Motor Oil	ND	500	ug/L	1.00	12/20/2004 12:57	
Surrogate(s)						
o-Terphenyl	77.4	60-130	%	1.00	12/20/2004 12:57	

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Prep(s):	3510/8015M	Test(s):	8015M
Sample ID:	**MW3**	Lab ID:	2004-12-0590 - 2
Sampled:	12/13/2004 12:50	Extracted:	12/18/2004 06:25
Matrix:	Water	QC Batch#:	2004/12/18-01.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	1300	50	ug/L	1.00	12/20/2004 13:24	Q2
Motor Oil	ND	500	ug/L	1.00	12/20/2004 13:24	
Surrogate(s)						
o-Terphenyl	76.6	60-130	%	1.00	12/20/2004 13:24	

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Prep(s):	3510/8015M	Test(s):	8015M
Sample ID:	**MW4**	Lab ID:	2004-12-0590 - 3
Sampled:	12/13/2004 11:40	Extracted:	12/18/2004 06:25
Matrix:	Water	QC Batch#:	2004/12/18-01.10

Compound	Conc.	RL	Unit	Dilution	Analyzed	Flag
Diesel	ND	50	ug/L	1.00	12/20/2004 13:51	
Motor Oil	ND	500	ug/L	1.00	12/20/2004 13:51	
Surrogate(s)						
o-Terphenyl	76.7	60-130	%	1.00	12/20/2004 13:51	

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Batch QC Report

Prep(s): 3510/8015M
Test(s): 8015M

Method Blank **Water** **QC Batch # 2004/12/18-01.10**

MB: 2004/12/18-01.10-004
Date Extracted: 12/18/2004 06:25

Compound	Conc.	RL	Unit	Analyzed	Flag
Diesel	ND	50	ug/L	12/20/2004 16:06	
Motor Oil	ND	500	ug/L	12/20/2004 16:06	
Surrogates(s)					
o-Terphenyl	77.8	60-130	%	12/20/2004 16:06	

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Batch QC Report

Prep(s): 3510/8015M

Test(s): 8015M

Laboratory Control Spike **Water** **QC Batch # 2004/12/18-01.10**

LCS 2004/12/18-01.10-005 Extracted: 12/18/2004 Analyzed: 12/20/2004 16:33
LCSD 2004/12/18-01.10-006 Extracted: 12/18/2004 Analyzed: 12/20/2004 17:00

Compound	Conc. ug/L		Exp.Conc.	Recovery %		RPD	Ctrl.Limits %		Flags	
	LCS	LCSD		LCS	LCSD	%	Rec.	RPD	LCS	LCSD
Diesel	759	755	1000	75.9	75.5	0.5	60-130	25		
Surrogates(s)										
o-Terphenyl	17.4	17.3	20.0	87.1	86.3		60-130	0		

TEPH w/ Silica Gel Clean-up

ETIC Oakland
Attn.: Kathy Brandt

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

Project: TMSFT.9
Strough Family Trust

Received: 12/15/2004 16:10

Legend and Notes

Result Flag

Q2

Quantit. of unknown hydrocarbon(s) in sample based on diesel.

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

Reference #: 96691

2004-12-0590

Date 12/13/04 Page 1 of 1

From

Proj.Mgr	KATHY BRANDT
Company	ETIC
Address	1333 BROADWAY,STE. 1015 OAKLAND CA. 94612
Sampler (Signature)	Christopher L. Mitchell
Phone (510)208-1600	Fax/Email(510)208-1604

Analysis Request

Sample ID	Date	Time	Matrix	Preserv.	TPH (EPA 8260) X Gas w/ X BTEX X MTBE	TPH-d and TEPH-o by 8015 with silica gel clean-up	EDF	Number of Containers
~~MW1~~	~~12~~		W	HCL	x	x	x	
MW2	12/13	1215	W	HCL	x	x	x	5
MW3	↓	1250	W	HCL	x	x	x	5
MW4	↓	1140	W	HCL	x	x	x	5
~~MW5~~			W	HCL	x	x	x	
~~MW6~~			W	HCL	x	x	x	
~~MW7~~			W	HCL	x	x	x	

Project Info.

Project Name: OUGH FAMILY TRUST
Project# TMSFT.9
PO#:
Credit Card#:

Sample Receipt

of Containers:
Head Space:
Temp:
Conforms to record:
Other

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

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

GLOBAL ID#

1) Relinquished by:	2) Relinquished by:	3) Relinquished by:
Christopher L. Mitchell 1421	1610	
Signature Time	Signature Time	Signature Time
Christopher L. Mitchell 12/15/04	Jeffords 12/15/04	
Printed Name Date	Printed Name Date	Printed Name Date
ETIC	STL-SF	
Company	Company	Company

1) Received by:	2) Received by:	3) Received by:
0940		Denise Harrington
Signature Time	Signature Time	Signature Time
Jeffords 12/15/04		D. Harrington 1610
Printed Name Date	Printed Name Date	Printed Name Date
STL-SF		STL-SF 12/15/04
Company	Company	Company

Rev 05/01

SEVERN TRENT STL

STL San Francisco

Sample Receipt Checklist

Submission #:2004- 12 - 0590

Checklist completed by: (initials) JB Date: 12/10 /04

Courier name: ☒ STL San Francisco ☐ Client _____

Custody seals intact on shipping container/samples	Yes____	No____	Not Present ✓
Chain of custody present?	Yes ✓	No____	
Chain of custody signed when relinquished and received?	Yes ✓	No____	
Chain of custody agrees with sample labels?	Yes ✓	No____	
Samples in proper container/bottle?	Yes ✓	No____	
Sample containers intact?	Yes ✓	No____	
Sufficient sample volume for indicated test?	Yes ✓	No____	
All samples received within holding time?	Yes ✓	No____	
Container/Temp Blank temperature in compliance (4^{o} C ± 2)?	Temp 2 °C	Yes ✓	No____
Potential reason for > 6°C - Ice melted ☐ Ice in bags ☐ Not enough ice ☐ Not enough blue ice ☐ Samples in boxes ☐			
Sampled < 4hr ago? ☐ Ice not required (e.g. air or bulk sample) ☐	Ice Present	Yes ✓	No____
Water - VOA vials have zero headspace?	No VOA vials submitted____	Yes ✓	No____

(if bubble is present, refer to approximate bubble size and itemize in comments as **S** (small ~O), **M** (medium ~ O) or **L** (large ~ O)

Water - **pH acceptable upon receipt?** ☐ Yes ☐ No

☐ **pH adjusted**– Preservative used: ☐ HNO_3 ☐ HCl ☐ H_2SO_4 ☐ NaOH ☐ ZnOAc –**Lot #(s)** _____

For any item check-listed "No", provided detail of discrepancy in comment section below:

Comments:

Project Management [Routing for instruction of indicated discrepancy(ies)]

Project Manager: (initials) _____ Date: _____/_____/04 Client contacted: ☐ Yes ☐ No

Summary of discussion:

Corrective Action (per PM/Client):