

File No. 8-90-420-GI

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STIP 3814

QUARTERLY GROUNDWATER SAMPLING  
FOR THE PROPERTY  
LOCATED AT 5175 BROADWAY STREET  
OAKLAND, CALIFORNIA 94611  
MARCH 10, 1992

PREPARED FOR:  
MR. MOHAMMAD MEHDIZADEH  
150 RANDOM WAY  
PLEASANT HILL, CALIFORNIA 94523

BY:  
SOIL TECH ENGINEERING, INC.  
298 BROKAW ROAD  
SANTA CLARA, CALIFORNIA 95050

SOIL TECH ENGINEERING, INC.

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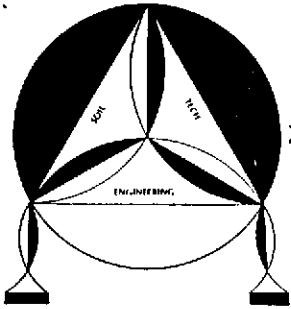
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GeoChem Labs Analytical Report and Chain-of-Custody



# SOIL TECH ENGINEERING

*Soil, Foundation and Geological Engineers*

298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 496-0265 OR (408) 496-0266

March 10, 1992

File No. 8-90-420-GI

Mr. Mohammad Mездizadeh  
150 Random Way  
Pleasant Hill, California 94523

**Reference:** Third Quarter Groundwater Sampling for the Site  
Located at 5175 Broadway Street, in  
Oakland, California

Dear Mr. Mездizadeh:

This report presents the results of the third quarter groundwater sampling performed during March 4, 1992, by Soil Tech Engineering, Inc. (STE), at the subject site located at 5175 Broadway Street, in Oakland, California (Figure 1).

The scope of work for this sampling was to:

- 1) Measured depth-to-groundwater and liquid-hydrocarbon thickness (if present) in the five on-site wells.
- 2) Collect groundwater samples from the on-site wells for analyses of Total Petroleum Hydrocarbons as gasoline (TPHg) and Hydrocarbon constituents, Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX).

- 3) Updated the database for water level/liquid-hydrocarbon level measurements and groundwater data.
- 4) Review results and prepare a report of the investigation.

**SITE DESCRIPTION AND BACKGROUND:**

The site is located at 5175 Broadway Street, in Oakland, California. The area in the vicinity of the site consist of mainly a residential and light commercial (Figure 1).

**TANK REMOVAL AND SAMPLING:**

In January 1990, Tank Protect Engineering, Inc. (TPE), was retained to supervise the removal of underground fuel tanks and to conduct soil sampling, soil excavation, soil treatment and disposal. In addition, TPE installed three monitoring wells on-site.

Initial analytical results of soil samples taken after the tank removal showed moderate levels of Total Petroleum Hydrocarbons as Gasoline (TPHg) in two locations. The rest of the samples showed TPHg ranging from non-detected to less than 120 parts per million (ppm). Due to the presence of elevated levels of TPHg detected in the excavation, TPE installed three on-site monitoring wells (MW-1 to MW-3), as required by state and local regulatory

agencies (Figure 2). TPE's preliminary groundwater assessment also indicated that the shallow groundwater had been impacted.

The Alameda County Health Department (ACHD) requested the property owner to conduct further investigation in order to define the extent of dissolved hydrocarbon contamination in the groundwater.

Soil Tech Engineering, Inc. (STE), was retained in September 1990 to conduct monitoring and sampling of the on-site monitoring wells. The objective of the quarterly groundwater sampling program was to monitor seasonal and long-term variations in the conditions of the shallow aquifer beneath the site and to assess the direction of the groundwater flow for further investigation.

STE sampled the three on-site groundwater monitoring wells (MW-1 to MW-3) on September 26, 1990, and January 14, 1991. The sampling was conducted in accordance with ACHD and California Regional Water Quality Control Board (CRWQCB) guidelines and STE's Standard Operating Procedures (SOP) included in Appendix "B".

The three on-site wells contained moderate to high levels of dissolved hydrocarbons. A comparison of the September 1990 sampling with TPE's analytical results of April 1990 showed an increase in dissolved hydrocarbons in wells MW-1 and MW-2. In well MW-3 (the down-gradient well), TPHg and Toluene levels decreased, whereas Benzene, Ethylbenzene and Total Xylenes increased slightly.

The analytical results for groundwater samples collected on January 14, 1991, showed an increase in TPH and BTEX levels in well MW-2 from those reported in September 1990. Well MW-1 also showed a slight increase in TPH and Benzene, but showed a decrease in Toluene, Ethylbenzene and Xylene levels. Well MW-3 showed a substantial decrease in TPH and BTEX.

Per the request of the Alameda County Health Department (ACHD) in a letter dated March 29, 1991, STE installed two additional monitoring wells STMW-1 (STMW-4) and STMW-2 (STMW-5) on June 21, 1991. The July 3, 1991, water sampling results showed low levels of dissolved Total Petroleum Hydrocarbons as gasoline (TPHg) and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) in all five wells. The presence of low levels of TPHg and BTEX in the up-gradient well, STMW-1 (STMW-4), (located in the east corner of the property) indicated a potential off-site source. Based on the water level data, the groundwater direction was west to southwest on July 3, 1991. The detail of this investigation is summarized in STE's report dated July 23, 1991.

The second quarterly sampling was conducted in November 1991. The detail of the sampling is described in STE's report dated November 22, 1991.

**CURRENT FIELD WORK:**

On March 4, 1992, the five on-site wells were purged, monitored, and sampled in accordance with STE's Standard Operating Procedures (Appendix "B"), which follows state and local guidelines. During field observation, STE staff detected mild petroleum odors in wells MW-1, MW-2 and STMW-5. They also found very light petroleum sheen and mild to strong petroleum odors in wells MW-3 and STMW-4. After appropriate purging, no sheen was detected in the wells MW-3 and STMW-4. Table 1 summarizes the groundwater monitoring data.

Based on water elevation data, the groundwater flow direction was in westerly direction on March 4, 1992.

**LABORATORY ANALYSIS:**

The water samples were placed in a cool ice chest and submitted to GeoChem Labs, a state-certified laboratory, with a chain-of-custody record.

The samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg) per EPA Method 5030/8015 and for Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) per EPA Method 602.

**LABORATORY RESULTS:**

Table 2 summarizes the water samples results taken since May 17, 1990. Low to moderate levels of TPHg were detected in all five

wells sampled during this quarter. The TPHg levels ranging from 0.46 parts per million (ppm) to 57 ppm. Low levels of BTEX were also found in all five wells.

**SUMMARY:**

The analytical results of groundwater samples collected in March 4, 1992 showed a slight increase in TPHg levels in wells MW-1, MW-2, STMW-4 and STMW-5 compared to November 11, 1991. In well MW-3, No change in TPHg level, except a substantial decrease in BTEX levels. Ethylbenzene concentrations increased slightly in wells MW-1, MW-2, STMW-4 and STMW-5. Toluene concentrations increased in wells MW-1, STMW-4 and STMW-5 and decreased in well MW-2. Total Xylenes also increased in well MW-1 and decreased in wells MW-2, STMW-4 and STMW-5. Benzene concentrations decreased considerably in all five wells.

TPHg and BTEX levels appears to be increased due to residual soil contamination left in the ground. Recent results continue to detect dissolved hydrocarbon contamination on-site. It appears that the fluctuation of dissolved hydrocarbons in the wells may be due to seasonal effects, except the up-gradient well STMW-4 may be due to the possible off-site source.

**RECOMMENDATIONS:**

Since dissolved hydrocarbons continue to be present in the wells and some of the hydrocarbons constituent decreased and some



have increased in the wells, STE recommends the continuation of the monitoring and sampling of the five wells for one more quarter. The proposed monitoring and sampling program should then be re-evaluated following the fourth quarterly sampling.

A copy of this report should be sent to the Alameda County Health Department and the California Regional Water Quality Control Board.

**SCHEDULE:**

The next monitoring and sampling of the wells will be scheduled in June 1992.

**LIMITATIONS:**

This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are called to the attention of the Local Environmental Agencies.

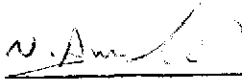
The findings of this report are based on the results of the independent laboratory analyses and are valid at the present date and conditions. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man, on this property or adjacent properties.

File No. 8-90-420-GI

If you have any questions or require additional information,  
please feel free to contact our office at your convenience.

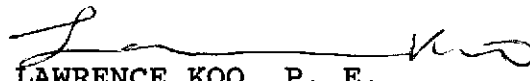
Sincerely,

SOIL TECH ENGINEERING, INC.



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NOORODDIN AMELI  
PROJECT ENGINEER



LAWRENCE KOO, P. E.  
C. E. #34928



FRANK HAMEDI-FARD  
GENERAL MANAGER

**TABLE 1**  
**GROUNDWATER MONITORING DATA**  
**IN FEET**

Date	Well Number	Water Depth*	Product Thickness	Petroleum Odor
5/17/90**	MW-1	9.26	Not Available	Not Available
	MW-2	10.00	Not Available	Not Available
	MW-3	12.42	Not Available	Not Available
9/26/90	MW-1	9.92	Not Present	Mild
	MW-2	10.83	Not Present	Mild
	MW-3	13.50	Not Present	Mild
1/14/91	MW-1	9.54	Not Present	Mild
	MW-2	10.63	Not Present	None
	MW-3	12.58	Light Sheen	None
7/03/91	MW-1	9.417	Not Present	Light
	MW-2	10.083	Not Present	Light
	MW-3	12.083	Sheen	Strong
	STMW-1	11.00	Sheen	Mild
	STMW-2	13.917	Not Present	None
11/11/91	MW-1	9.45	Not Present	Mild
	MW-2	10.21	Not Present	Mild
	MW-3	12.29	Light Sheen	Mild
	STMW-4***	11.08	Light Sheen	Strong
	STMW-5****	14.00	Not Present	Light

TABLE 1 CONT'D  
GROUNDWATER MONITORING DATA  
IN FEET

Date	Well Number	Water Depth*	Product Thickness	Petroleum Odor
3/04/92	MW-1	7.93	Not Present	Light
	MW-2	8.70	Not Present	Light
	MW-3	10.26	Dark Brown Sheen	Strong
	STMW-4	9.44	Brown Sheen	Mild
	STMW-5	11.80	Not Present	Very Light

\* = Below Ground Surface

\*\* = Measured by TPE

\*\*\* = STMW-4 is the same well as STMW-1.

\*\*\*\* = STMW-5 is the same well as STMW-2.

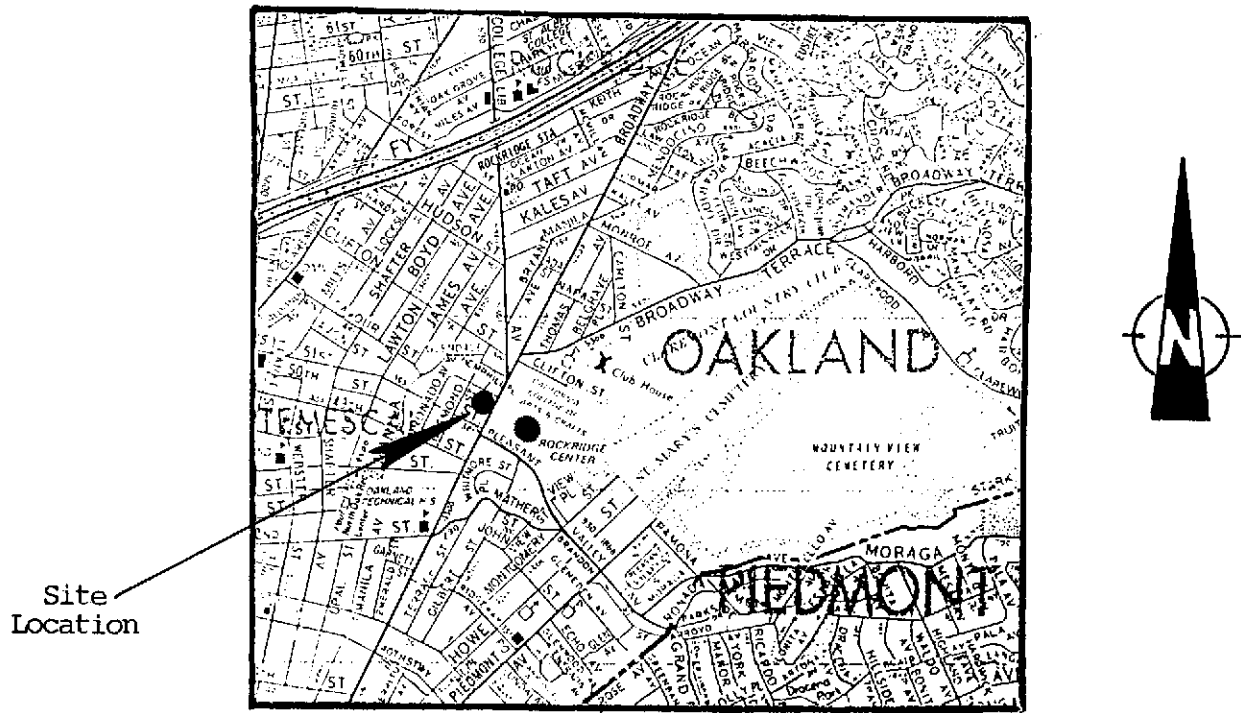
**TABLE 2  
GROUNDWATER ANALYTICAL RESULTS  
IN  
PARTS PER MILLION (ppm)**

Date	Well Number	TPHg	B	T	E	X
4/30/89*	MW-1	0.2	0.018	0.005	0.002	0.012
	MW-2	0.23	0.039	0.018	0.005	0.023
	MW-3	56	3.6	8.6	1.3	7.2
9/26/90	MW-1	1.3	0.055	0.031	0.12	0.1
	MW-2	0.85	0.94	0.005	0.025	0.047
	MW-3	54	5.1	0.42	1.6	8.0
1/14/91	MW-1	1.7	0.057	0.028	0.042	0.053
	MW-2	3.1	0.35	0.083	0.086	0.13
	MW-3	35	2.6	6.6	1.5	5.7
7/03/91	MW-1	0.58	0.032	0.041	0.04	0.055
	MW-2	1.5	0.3	0.052	0.024	0.034
	MW-3	33	4.1	4.3	1.4	4.8
	STMW-1**	3.1	0.61	0.062	0.039	0.15
	STMW-2**	0.69	0.099	0.081	0.019	0.098

**TABLE 2 CONT'D  
GROUNDWATER ANALYTICAL RESULTS  
IN  
PARTS PER MILLION (PPM)**

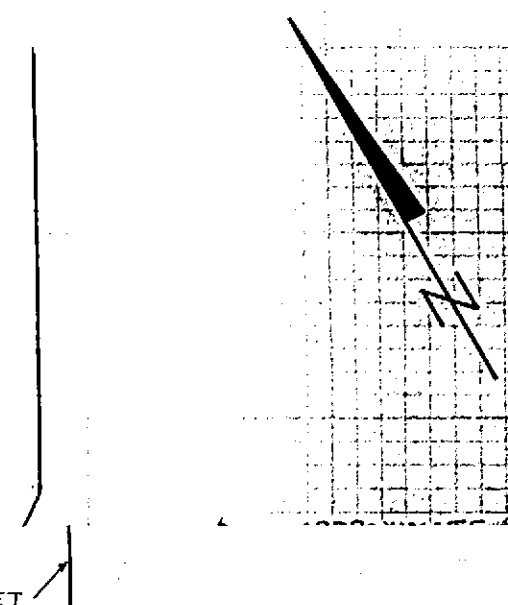
Date	Well Number	TPHg	B	T	E	X
11/11/91	MW-1	0.33	0.02	0.002	0.002	0.011
	MW-2	0.96	0.32	0.015	0.004	0.029
	MW-3	57	3.9	8.4	2.1	14
	STMW-4***	3.6	0.99	0.015	0.003	0.18
	STMW-5****	0.41	0.061	0.002	0.001	0.02
3/04/92	MW-1	0.81	0.011	0.0051	0.0097	0.023
	MW-2	1.5	0.0095	0.0084	0.0098	0.022
	MW-3	57	0.72	0.87	0.81	3.1
	STMW-4***	5.0	0.035	0.02	0.022	0.071
	STMW-5****	0.46	0.013	0.0065	0.011	0.018

TPHg = Total Petroleum Hydrocarbons as gasoline  
 BTEX = Benzene, Toluene, Ethylbenzene, Xylenes  
 \* = Analytical Results from TPE Site Assessment  
 \*\* = Soil Tech Engineering, Inc., Monitoring Wells  
 \*\*\* = STMW-4 is the same well as STMW-1.  
 \*\*\*\* = STMW-5 is the same well as STMW-2.



Thomas Brothers Map 1982 Edition  
Alameda - Contra Costa Counties

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STREET  
FLOW LINE

5175 BROADWAY OAKLAND CA

1"=20'

PROJECT NO 8-90-420GI

FIG-2

DRAWN BY N.A.

3-4-92

SOIL TECH ENGINEERING INC.

298 BROKAW Rd. SANTA CLARA CA 95050



### GROUNDWATER SAMPLING

Prior to collection of groundwater samples, all of the sampling equipment (i.e. bailer, cables, bladder pump, discharge lines and etc...) was cleaned by pumping TSP water solution followed by distilled water.

Prior to purging, the well "Water Sampling Field Survey Forms" were filled out (depth to water and total depth of water column were measured and recorded). The well was then bailed or pumped to remove four to ten well volumes or until the discharged water temperature, conductivity and pH stabilized. "Stabilized" is defined as three consecutive readings within 15% of one another.

The groundwater sample was collected when the water level in the well recovered to 80% of its static level.

Forty milliliter (ml.), glass volatile organic analysis (VOA) vials with Teflon septa were used as sample containers. The groundwater sample was decanted into each VOA vial in such a manner that there was a meniscus at the top. The cap was quickly placed over the top of the vial and securely tightened. The VOA vial was then inverted and tapped to see if air bubbles were present. If none were present, the sample was labeled and refrigerated for delivery under chain-of-custody to the laboratory. The label information would include a sample identification number, job identification number, date, time, type of analysis requested, and the sampler's name.



# GEOCHEM LABS

Precision Environmental Analytical Laboratory

GCL # 0392018

Date: Mar. 06, 1992

SOIL TECH ENGINEERING

Attn: Noori Ameli

Re: Five water samples for Gasoline/BTEX analysis.

Project name: 5175 Broadway -Oakland

Project number: 8-90-420-GI

Date sampled: Mar. 04, 1992

Date submitted: Mar. 05, 1992

Date extracted: Mar. 05-06, 1992

Date analyzed: Mar. 05-06, 1992

## RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
MW-1	810	11	5.1	9.7	23
MW-2	1500	9.5	8.4	9.8	22
MW-3	57000	720	870	810	3100
STMW-4	5000	35	20	22	71
STMW-5	460	13	6.5	11	18
Blank Spiked	N.D.	N.D.	N.D.	N.D.	N.D.
Recovery	90.0%	105.6%	100.5%	86.5%	83.3%
Duplicate Spiked					
Recovery	95.7%	101.2%	104.8%	95.1%	93.4%
Detection limit	50	0.5	0.5	0.5	0.5
Method of Analysis	5030 / 8015	602	602	602	602

David Duong  
Laboratory Director

CHAIN OF CUSTODY RECORD

GEO CREM

PROJ. NO. 8-90-420-G		NAME 5175 Broadway Oakland				CON-TAINER	ANALYSES REQUESTED @ TPHG/BTEX					GCL # 0392018
SAMPLERS: (Signature) N. [Signature]												INV #
NO.	DATE	TIME	SOIL	WATER	LOCATION							
1	3/4/92	13 <sup>00</sup>		✓	MW-1	2	✓					
2	3/4/92	13 <sup>20</sup>		✓	MW-2	2	✓					
3	3/4/92	13 <sup>50</sup>		✓	MW-3	2	✓					
4	3/4/92	14 <sup>15</sup>		✓	STMW-4	2	✓					
5	3/4/92	14 <sup>45</sup>		✓	STMW-5	2	✓					
Relinquished by: (Signature) N. [Signature]		Date / Time 3/5/92 11 <sup>00</sup>		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Receive by: (Signature)		
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature) [Signature]		Date / Time 3/5/92 11 <sup>00</sup>		Remarks				



SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

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CHAIN OF CUSTODY RECORD

GEO CREM

PROJ. NO. 8-20-420-G		NAME 5175 Broadway Oakland				CONTAINER	ANALYSES REQUESTED TPHG/BTEX					GCL # 0392018
SAMPLERS: (Signature) N. [Signature]												INV # 22714
NO.	DATE	TIME	SOIL	WATER	LOCATION							
1	3/4/92	13 <sup>00</sup>		✓	MW-1	2	✓					
2	3/4/92	13 <sup>20</sup>		✓	MW-2	2	✓					
3	3/4/92	13 <sup>50</sup>		✓	MW-3	2	✓					
4	3/4/92	14 <sup>15</sup>		✓	STMW-4	2	✓					
5	3/4/92	14 <sup>55</sup>		✓	STMW-5	2	✓					
Relinquished by: (Signature) N. [Signature]		Date / Time 3/5/92 11 <sup>00</sup>		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
Relinquished by: (Signature)		Date / Time		Received by: (Signature)		Relinquished by: (Signature)		Date / Time		Received by: (Signature)		
Relinquished by: (Signature)		Date / Time		Received for Laboratory by: (Signature) [Signature]		Date / Time 3/5/92 11 <sup>00</sup>		Remarks				



**SOIL TECH ENGINEERING**

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