File No. 7-93-556-SI

ENVIRONMENTAL SITE ASSESSMENT OF CONTAMINATED SOIL & GROUNDWATER FOR THE PROPERTY LOCATED AT 2740 98TH AVENUE OAKLAND, CALIFORNIA

MARCH 8, 1995

PREPARED FOR:

MR. KIYOUMARS GHOFRANI

FREEWAY STATION AND SERVICE

2740 98TH AVENUE

OAKLAND, CALIFORNIA 94605

BY:

SOIL TECH ENGINEERING, INC.

298 BROKAW ROAD

SANTA CLARA, CALIFORNIA 95050

SOIL TECH ENGINEERING, INC.

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SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers
298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 496-0265 OR (408) 496-0266

March 8, 1995

File No. 7-93-556-SI

Mr. Kiyoumars Ghofrani
Freeway Station and Service
2740 98th Avenue
Oakland, California 94605

SUBJECT: ENVIRONMENTAL SITE ASSESSMENT OF CONTAMINATED SOIL AND GROUNDWATER FOR THE PROPERTY Located at 2740 98th Avenue, in Oakland, California

Dear Mr. Ghofrani:

Enclosed is a copy of the preliminary site assessment report, dated March 8, 1995, for your property located at 2740 98th Avenue, in Oakland, California.

The report describes the results of field activities conducted to define the extent of soil and groundwater contamination detected in the vicinity of fuel product lines and underground fuel storage tanks in our initial phase of the preliminary site assessment.

We installed three groundwater monitoring wells in the vicinity of the underground tank fuel system.

The results of our initial groundwater depth survey indicated that the local groundwater gradient is steep to the east. Therefore, we believe the depth to groundwater in an existing well to the east of the site building is anomalously high. It appears as though a branch of the active Hayward Fault crosses the site from northwest to southeast. The fault may be affecting the local groundwater gradient.

Analysis of soil and groundwater samples indicate there has been no hydrocarbon contamination in the vicinity of our soil borings or groundwater monitoring wells which are south and west of the fuel product lines and underground fuel storage tanks. **A rainbow colored sheen was noted on the water surface in the existing water well in the east side of the site.**

Recommendations are made in our report to conduct a quarterly monitoring and sampling program of the on-site wells for at least one year. We also recommend an additional site assessment be conducted. This assessment should include a preliminary geologic investigation to evaluate the possible location of the Hayward fault at the site and its possible effects on the local groundwater gradient and the installation of two additional groundwater monitoring wells, one to the east of the fuel product lines, the preliminary down-gradient direction, and one to the east of the site building to check the anomalously high groundwater there as indicated by the existing well.

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

Sincerely,

SOIL TECH ENGINEERING, INC.

Robert Baker

ROBERT BAKER
PROJECT GEOLOGIST

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

N. Ameli

NOORI AMELI
PROJECT ENGINEER

FRANK HAMEDI-FARD
GENERAL MANAGER

File No. 7-93-556-SI

ENVIRONMENTAL SITE ASSESSMENT OF CONTAMINATED SOIL AND GROUNDWATER FOR THE PROPERTY LOCATED AT 2740 98TH AVENUE OAKLAND, CALIFORNIA MARCH 8, 1995

INTRODUCTION:

This document presents a preliminary site assessment conducted by Soil Tech Engineering, Inc. (STE) for the Freeway Station and Service, located 2740 98th Avenue, in Oakland, California (Figure 1). The purpose of this investigation was to assess the extent of subsurface petroleum hydrocarbon contamination at the subject site.

The preliminary subsurface investigation was conducted in accordance with STE's work plan dated December 1994, in order to comply with Alameda County Department of Environmental Health-Environmental Protection Division (ACDEH-EPD) and the California Regional Water Quality Control Board (CRWQCB) requirements.

The investigation of this site was prompted by evidence of a fuel release detected beneath the fuel product lines during replacement by E&G Construction Company.

SITE LOCATION:

The site is in Oakland on the southeasterly corner of 98th Avenue and Stanley Avenue, which bound the property on the north

and east. Bishop O'Dowd High School is situated on a hill above and to the northwest of the site across 98th Avenue. On the south, the site is bordered by homes and business establishments; the surrounding area has similar types of use. The subject site contains a 2,000 square foot structure set on an approximately 9,000 square foot paved parcel. Figure 2 shows the building, fuel tanks, borings and monitoring wells.

The ground surface at the site slopes down to the southeast away from the site through a linear valley between two southeast trending hills.

BACKGROUND/SITE HISTORY:

There are four underground storage tanks located on the subject property. A Phase I Environmental Site Assessment for the subject site was conducted by Northwest Envirocon, Inc. (NE) of Sacramento. The detail of the site assessment is described in a report, dated July 22, 1992, prepared by Northwest Envirocon, Inc. According to NE report, the building on-site is 26 years old. It has probably been used as an automobile service station since 1966. Based on information obtained from the NE report, there are two 10,000 gallon tanks and one 5,000 gallon tank used for the storage of gasoline, and 500 gallon tank used for the storage of waste oil. Based on the same report, the three gasoline storage tanks were installed in July of 1975 and are constructed of fiberglass. The reason new fiberglass tanks were installed is not known. The waste

oil tank is constructed of metal. An installation date for this tank could not be confirmed. These tanks are tested yearly for tightness by American River Testing of Sacramento. Tightness refers to a precision test which determines the integrity of the tank. This test is required annually by the State of California.

According to NE report, in May of 1989, there was an accidental spill of an unknown quantity of waste oil during removal of waste oil by Evergreen Environmental Services. The oil drained into exposed soil, leached onto/into a collection pipe that emptied into Stanley Avenue and drained down Stanley Avenue approximately fifty feet. In response to this spill, the following actions were taken: The waste oil was removed by U.S. Waste Oil Group, and three top soil samples were sent to Brown and Caldwell Laboratories for Total Oil & Grease (TOG) analysis. Three grab soil samples were taken at the Stanley Street fence line and were composited into one sample. Composite soil result showed TOG concentration to be 170 milligrams per kilogram (mg/Kg). No further remediation was performed for this spill.

In June 18, 1993, E&G Construction removed the product pipeline and conducted a soil sampling in the pipeline trenches. Eight soil samples were collected from the depth of approximately 3.5 feet below grade, under the supervision of Alameda County Health Department Inspector, Mr. Ron Owcarz. Five of the shallow soil samples detected elevated levels of Total Petroleum Hydrocarbons as gasoline (TPHg) ranging from 310 mg/Kg to a maximum of 2,900 mg/Kg.

E&G Construction excavated additional soil from three locations (1, 4 & 5) where TPHg levels were 550 mg/Kg, 1,900 mg/Kg and 2,900 mg/Kg, respectively, to a depth of approximately 12 to 13 feet below grade. Three confirmation soil samples (A-1, B-1 and C-1) were collected on July 1 and 2, 1993. Two of the three soil samples detected no TPHg, and one sample detected TPHg level of 15 mg/Kg. **The lateral extent of TPHg or impact to groundwater was not evaluated at that time.**

Alameda county Health Department requested a preliminary site assessment in a letter, dated September 1, 1993. However, in a letter dated October 5, 1993, the Department agreed to conducting 4 exploratory soil borings in the vicinity of the contaminated areas and to collect one grab water sample to assess whether the groundwater has been impacted.

Soil Tech Engineering, Inc. (STE) was retained to conduct a preliminary site assessment near the product lines excavation area. In March 1994, four soil borings were drilled near the product line area. Groundwater was encountered between 6 to 12 feet below grade. A total of ten soil samples were collected from the four borings, and one water sample was collected from boring 1. The water sample did detect low to moderate elevated levels of Total Petroleum Hydrocarbons as gasoline (TPHg) and BTEX. Five out of 10 soil samples also detected low to elevated levels of TPHg. The detail of the soil investigation is described in STE's report dated April 21, 1994. Figure 2 shows the approximate locations of the exploratory borings.

PRESENT FIELD ACTIVITIES:

SOIL BORING AND INSTALLATION OF MONITORING WELLS:

Three groundwater monitoring wells were installed in soil borings advanced on the site on February 10 and 13, 1995.

Permits to install groundwater monitoring wells were obtained from Alameda County--Zone 7 Water Agency prior to drilling. A copy of the well permit is included in the Appendix "G" of this report. All utility lines were located prior to drilling.

STE conducted the field work for this phase of the assessment between February 10 and 23, 1995. Field work included the advancement of three soil borings (STMW-1, STMW-2 and STMW-3), soil sampling, installation of three monitoring wells, development of the wells, water sampling and chemical analyses of soil and groundwater samples. The approximate locations of the monitoring wells and the approximate location of the underground storage tank cluster and the fuel product lines are shown in Figure 2. Each boring was drilled to a depth of approximately 20 feet below grade. During drilling operations, soil samples were collected at approximately 6 feet and 11 feet below grade in STMW-1; at 6 feet, 10½ feet and 16 feet below grade in STMW-2; and at 6 feet below grade in STMW-3. Soil samples were classified in the field according to the Unified Soil Classification System by STE's geologist and were retained for chemical analysis.

During drilling, a slight petroleum odor was detected in STMW-1 and STMW-3 at a depth of 6 feet below grade. Laboratory analysis of samples at these depths did not detect contamination. The odor may have come from naturally occurring organic debris.

Each soil sample was labeled with an identification number, sealed and stored in a chilled ice chest until delivery to a certified analytical laboratory. The completed exploratory boring logs are included in Appendix "D" of this report.

The three borings (STMW-1, STMW-2 and STMW-3) were converted to groundwater monitoring wells. The drilling, soil sampling and construction of the on-site wells were conducted in accordance with STE's Standard Operating Procedures (SOP) included in this report.

The boring for STMW-2 was drilled on February 13, 1995. The boring was dry when completed. A 15 foot section of slotted pipe with a 5 foot section of solid pipe on top of it was left in the borehole over night. On February 14, 1995, groundwater was found in the pipe and the boring was completed as a well.

An apparent water bearing zone was encountered at approximately 9 feet below grade in STMW-3 on February 13, 1995. The well set in this soil boring was dry on February 14, 1995. Water was approximately 7 feet below grade in STMW-1 during drilling and several days after setting the well.

The well heads of the three monitoring wells were protected by traffic rated road boxes placed flush with grade.

After the wells were completed, they were developed by hand bailing and surging to clean the soil around the well screens. STMW-1 and STMW-2 were developed with a bailer until at least 6 to 8 volumes of groundwater contained in the well casing were removed. Tap water was added to STMW-3, and an attempt was made to clean the bore by surging with a bailer.

SOIL AND GROUNDWATER SAMPLING:

Soil Sampling:

A total of 6 soil samples were collected from the monitoring well borings. The samples were submitted to a certified analytical laboratory. Proper chain-of-custody documentation accompanied the soil samples to the laboratory. All of the soil samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg), Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX).

Groundwater Sampling:

Groundwater samples were collected from wells STMW-1 and STMW-2. Well STMW-3 was dry at the time we collected our initial samples on February 23, 1995.

The groundwater samples were also submitted to state certified laboratory for analysis of TPHg and BTEX. Proper chain-of-custody

documentation accompanied the water samples to the laboratory. The two water samples were analyzed for TPHg and BTEX.

GROUNDWATER DEPTH SURVEY:

We used the three groundwater monitoring wells that we installed on February 10 and 13 , and an existing 7-inch diameter well behind the station building to attempt to determine groundwater gradient. The existing well is designated W-4 in this report. The top of the casings of all four wells at the site were measured relative to an arbitrarily established datum assumed to be 100 feet above sea level. Well casing elevations and water elevation and depth are summarized in Table 1. **The groundwater gradient beneath the site appears to be disrupted by a branch of the Hayward fault that may cross the site. The groundwater surface elevation appears to be anomalously high in STMW-1 and anomalously low in STMW-3 just 42 feet to the southeast.** Using initial data from our three wells, the gradient appears to be steep to the east. The existing well W-4 is southeast of our well STMW-2 and east of our dry well STMW-3. The groundwater surface elevation in W-4 was higher than both STMW-2 and STMW-3 on February 23, 1995. With a steep easterly groundwater gradient, the groundwater surface elevation should be lower in W-4 than both STMW-2 and STMW-3.

Further investigation of the location of the Hayward fault and its possible affects on groundwater in the area are needed to attempt to accurately define groundwater gradients at the site.

SITE STRATIGRAPHY AND HYDROGEOLOGY:

Dorothy Radbruch's 1969 U.S. Geological Survey map GQ-769, Areal and Engineering Geology of the Oakland East Quadrangle, California, Scale 1:24,000, shows a branch of the active Hayward fault crossing the site in a southeasterly direction. There is an active spring at the base of the hill across 98th Avenue. The spring is probably related to the Hayward fault. She describes bedrock in the valley the site is in as Temescal Formation of Pleistocene age. Temescal Formation in the area is alluvial material derived from the Berkeley Hills. Temescal formation was encountered in our soil borings at depths from 8 to 11 feet below grade. It consists of a light yellowish-brown fat clay with 5% to 10% medium grained angular sand. It is over consolidated and of stiff to hard consistency. A dark olive-grey sandy fat clay that is firm to stiff overlies the Temescal Formation at the site to a depth of 8 to 11 feet below grade. There is approximately 3½ to 4 feet of fill in the southwest corner of the site that consists of a brown stiff fat clay with sand.

The great difference in depth to groundwater at the site may be related to the influence of the Hayward fault. More groundwater monitoring wells may be necessary to define groundwater gradient at the site.

ANALYTICAL RESULTS:

SOIL RESULTS:

Soil analytical results are summarized in Table 2. TPHg and BTEX were below laboratory detection limits in all the soil samples and the composite sample.

GROUNDWATER RESULTS:

Groundwater analytical results are summarized in Table 3. TPHg and BTEX were below laboratory detection limits in both groundwater samples.

SUMMARY:

The data collected during our preliminary investigation indicated the following:

1. The soils beneath the site consist of firm to stiff sandy fat clays overlying stiff to hard fat clays.
2. TPHg and BTEX were not detected in soil or groundwater samples collected from the wells installed at the site during this phase of work.

3. The groundwater gradient may be affected at the site by a branch of the active Hayward fault. Further investigation of the location of the fault and its possible affects on movement of groundwater in the area are needed to accurately define the groundwater gradient at the site.

4. Depth to groundwater at the site varied from approximately 7 feet to greater than 19½ feet below ground surface.

5. Because the Hayward fault possibly complicates the determination of groundwater gradients at the site, the possible impact of leaks from fuel product lines was inconclusive during this phase of the site assessment. Considering the information we've gathered, it does appear however that the down-gradient direction is to the east.

RECOMMENDATION:

This report must be submitted to the Alameda County Department of Environmental Health-Environmental Protection Division (ACDEH-EPD) and the Regional Water Quality Control Board (RWQCB).

We recommend continued monitoring of the three wells installed in this phase of the site assessment including monthly groundwater depth measurements for the first three months and quarterly groundwater sampling and analysis of the wells. The next scheduled quarterly groundwater sampling event would be in late May 1995.

We recommend a preliminary geologic investigation to evaluate the possible location of the Hayward fault at the site and its possible affects on the groundwater gradient. We also recommend two more groundwater monitoring wells be installed, one to the east of the fuel product lines, and one to the east of the site building.

LIMITATIONS AND UNIFORMITY OF CONDITIONS:

The monitoring well installation services or soil and water sampling for pollution on this project was a direct request by Soil Tech Engineering, Inc.'s client. These installations were performed to meet the existing requirements for fuel leak regulations.

This service does not make Soil Tech Engineering, Inc. liable for further maintenance, repairs, damage, injury to third party or any other elements causing future problems.

The locations of these monitoring wells are approximate and should not be used for any reference point, surveying, or any other uses except studying groundwater.

Any recommendations that were made in this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings.

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 State and Local Environmental Agency.

The findings of this report are based on the results of an independent laboratory and are valid as of the present date. 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.

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TABLE 1
GROUNDWATER MONITORING DATA

Date	Well No./ Elevation	Water Level Elevation	Water Depth in feet	FFP Thickness	Odor
2/23/95	STMW-1 (101.33)	94.56	6.77	None	None
	STMW-2 (98.89)	81.70	17.19	None	None
	STMW-3 (98.99)	<79.49	Dry	None	None
	W-4 (90.50)	83.78	6.72	Rainbow Sheen	None

FFP - Free Floating Product

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TABLE 2
SUMMARY OF SOIL SAMPLES RESULTS
IN
MILLIGRAMS PER KILOGRAM (mg/Kg)

Date	Sample No.	Depth Feet	TPHg	B	T	E	X
2/10/95	STMW-1-6	6	ND	ND	ND	ND	ND
	STMW-1-11	11	ND	ND	ND	ND	ND
2/13/95	STMW-2-6	6	ND	ND	ND	ND	ND
	STMW-2-10½	10½	ND	ND	ND	ND	ND
	STMW-2-16	16	ND	ND	ND	ND	ND
	STMW-3-6	6	ND	ND	ND	ND	ND
	SP-1,2,3,4	-	ND	ND	ND	ND	ND

TPHg - Total Petroleum Hydrocarbons as gasoline
BTEX - Benzene, Toluene, Ethylbenzene, Total Xylenes
ND - Not Detected (Below Laboratory Detection Limit)

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TABLE 3
SUMMARY OF GROUNDWATER SAMPLES RESULTS
IN
MICROGRAMS PER LITER (µg/L)

Date	Sample No.	TPHg	B	T	E	X
2/23/95	STMW-1	ND	ND	ND	ND	ND
	STMW-2	ND	ND	ND	ND	ND
	STMW-3	NA	NA	NA	NA	NA
	W-4	NA	NA	NA	NA	NA

TPHg - Total Petroleum Hydrocarbons as gasoline
BTEX - Benzene, Toluene, Ethylbenzene, Total Xylenes
ND - Not Detected (Below Laboratory Detection Limit)
NA - Not Analyzed

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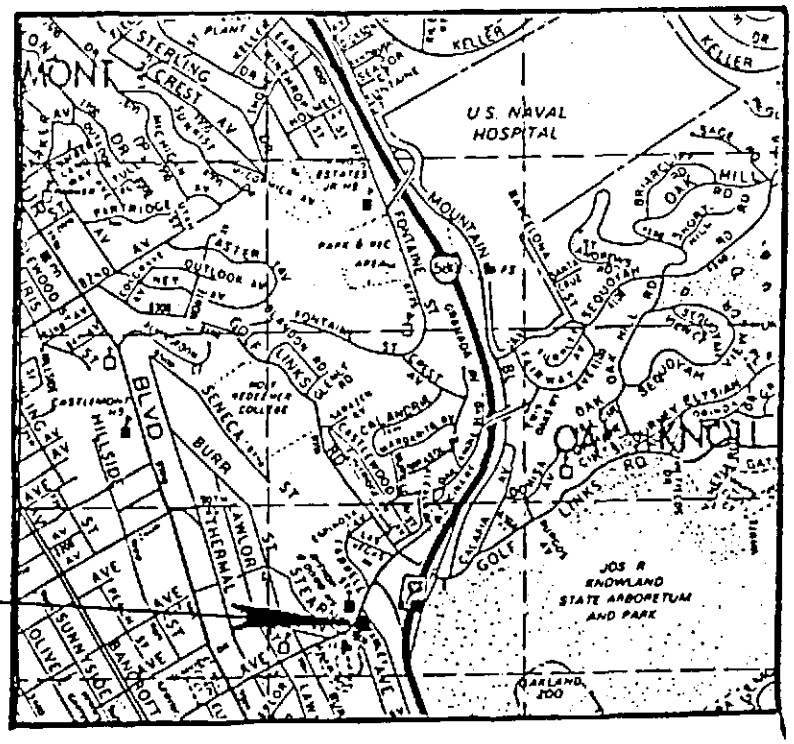

Site Location

Thomas Brothers Map 1993 Edition
San Francisco, Alameda
and Contra Costa Counties

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Figure 1

SOIL TECH ENGINEERING, INC.

M1

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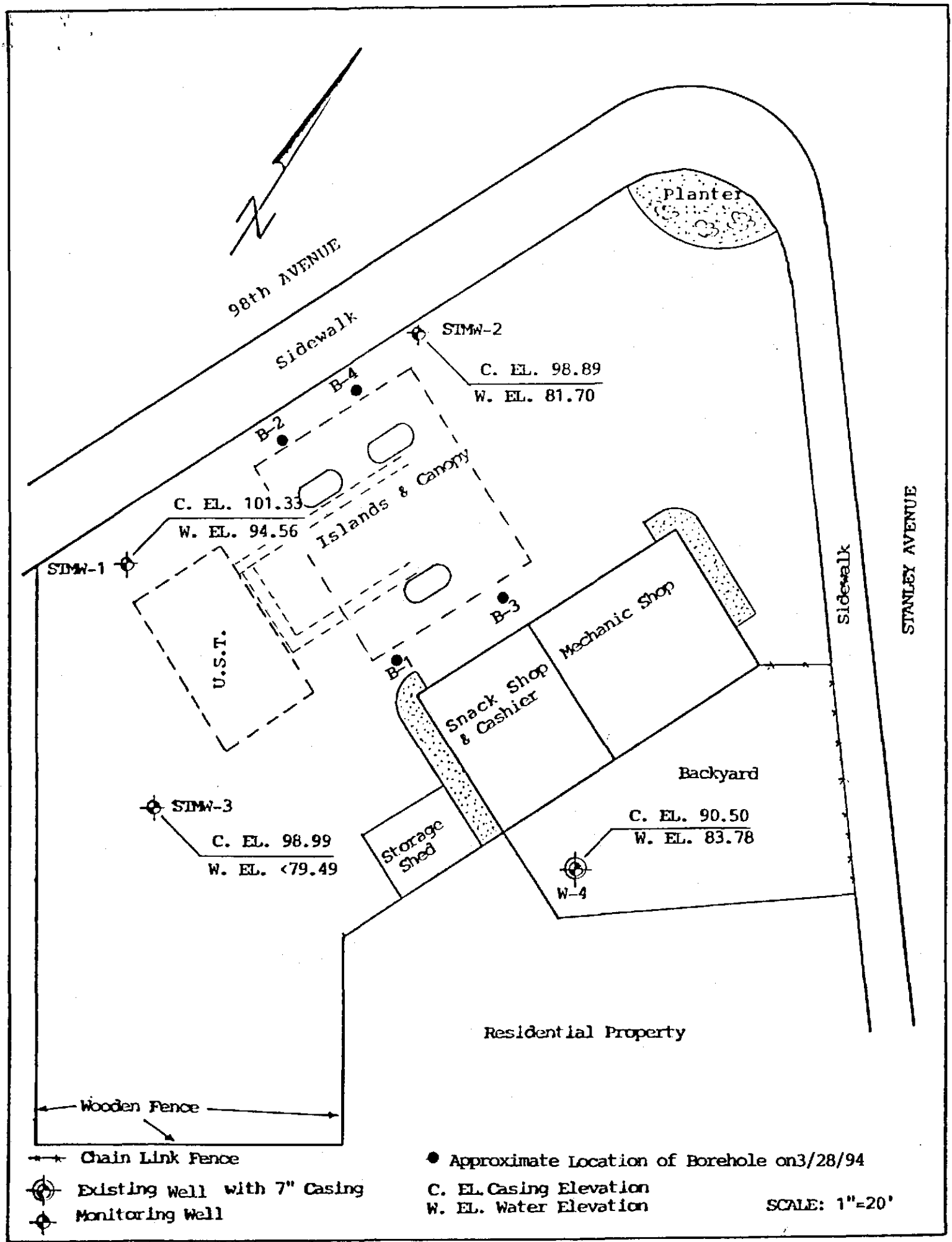

Figure 2

SOIL TECH ENGINEERING, INC.

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DRILLING AND SOIL SAMPLING PROCEDURE

A truck-mounted drill rig, using a continuous flight hollow stem auger was used in drilling the soil borings to the desired depths.

Prior to drilling, all drilling equipment (auger, pin, drilling head) were thoroughly steam-cleaned to minimize the possibility of cross-contamination and/or vertical migration of possible contaminants.

In addition, prior to obtaining each individual soil sample, all sampling tools, including the split-spoon sampler and brass liners were thoroughly washed in a Trisodium Phosphate (TSP) solution followed by a rinse in clean water.

During the drilling operation, relatively undisturbed soil samples were taken from the required depth by forcing a 2-inch I.D. split-spoon sampler insert with a brass liner into the ground at various depths by means of a 140-lb. hammer falling 30-inches or by hydraulic forces.

The samplers contained relatively undisturbed soil. In general, the first section of soil from the sampler (shoe) was used in the field for lithologic inspection and evidence of contamination. The selected brass liner was immediately trimmed, the ends of the brass liner were covered tightly with aluminum foil and

plastic caps, sealed with tape, labelled, placed in a plastic bag and stored in a cold ice chest in order to minimize the escape of any volatiles present in the samples. Soil samples for analysis were then sent to a state-certified hazardous waste laboratory accompanied by a chain-of-custody record.

Soil samples collected at each sampling interval were inspected for possible contamination (odor or peculiar colors). Soil vapor concentrations was measured in the field by using a Photoionization Detector (PID), PhotoVac Tip Air Analyzer. The soil sample was sealed in a Zip-Loc plastic bag and placed in the sun to enhance volatilization of the hydrocarbons from the sample. The purpose of this field analysis is to qualitatively determine the presence or absence of hydrocarbons and to establish which soil samples will be analyzed at the laboratory. The data was recorded on the drilling log at the depth corresponding to the sampling point.

Other soil samples may be collected to document the stratigraphy and estimate relative permeability of the subsurface materials.

Soil tailings that are obtained during drilling are stored at the site, pending the analytical test results to determine proper disposal.

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MONITORING WELL INSTALLATION

The boreholes for the monitoring wells were hand augered with a diameter of at least two inches larger than the casing outside diameter (O.D.).

The monitoring wells were cased with threaded, factory-perforated and blank, schedule 40 P.V.C. The perforated interval consisted of slotted casing, generally 0.010 to 0.040 inch wide by 1.5 inch long slot size, with 42 slots per foot (slots which match formation grain size as determined by field grain-size distribution analysis). A P.V.C. cap was fastened to the bottom of the casing (no solvents, adhesive, or cements were used), the well casing was thoroughly washed and steam-cleaned.

After setting the casing inside the borehole, kiln-dried sand or gravel-filter material was poured into the annular space to fill from the bottom of the boring to one foot above the perforated interval. A one to two feet thick bentonite plug was placed above this filter material to prevent grout from infiltrating down into the filter material. Approximately one to two gallons of clean water were added to hydrate the bentonite pellets. Then the well was sealed from the top of the bentonite seal to the surface with concrete or neat cement (see Well Construction Detail).

To protect the well from vandalism and surface water contamination, Christy boxes with a special type of Allen screw were installed around the well head, (for wells in parking lots, driveways and building areas). Steel stove pipes with padlocks were usually set over well-heads in landscaped areas.

In general, groundwater monitoring wells extend to the base of the upper aquifer, as defined by the consistent (less than 5 feet thick) clay layer below the upper aquifer, or at least 10 to 15 feet below the top of the upper aquifer, whichever is shallower. The wells do not extend through the laterally extensive clay layer below the upper aquifer. The wells are terminated one to two feet into such a clay layer.

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WELL DEVELOPMENT

For all newly installed groundwater monitoring wells, the well casing, filter pack and adjacent formations were cleared of disturbed sediment and water.

Well development techniques included pumping, bailing, surging, swabbing, jetting, flushing or air lifting by using a stainless steel or Teflon bailer, a submersible stainless steel pump, or air lift pump. The well development continued until the discharged water appeared to be relatively free of all turbidity.

All water and sediment generated by well development were collected in 55-gallon steel drums (Department of Transportation approved), closed-head (17-H) for temporarily storage, and were then disposed of properly, depending on analytical results.

To assure that cross-contamination did not occur between wells, all well development tools were steam-cleaned or thoroughly washed in a Trisodium Phosphate (TSP) solution followed by a rinse in distilled water before each well development.

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GROUNDWATER SAMPLING

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

Prior to purging, the well "Water Sampling Field Survey Forms" was 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.

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Logged By: Robert Baker	Exploratory Boring Log	Boring No. STMW-1
Date Drilled: 2/10/95	Approx. Elevation	Boring Diameter 8-inch
Drilling Method: Mobile drill rig B-40L	Sampling Method	

Depth, Ft.	Sample No.	Field Test for Total Ionization	Penetration Resistance Blows/6"	Unified Soil Classification	DESCRIPTION
1				CH	2-inch asphalt, 6-inch baserock. Dark yellowish-brown sandy gravel with silt. Brown fat clay with sand, moist, stiff, (fill) 15% medium to coarse grained sand. Munsell Soil Color: 10YR 5/3
2					
3					
4				CH	Dark olive-grey sandy, fat clay with gravel, moist, stiff, 25% medium grained sand, 10% gravel, slight petroleum odor. Munsell Soil Color: 5Y 3/2
5					
6	STMW-1-6		300 psi		
7					▽ First groundwater encountered at 7 feet.
8					
9					
10				CH	Light yellowish-brown fat clay with sand, moist, stiff, 10% medium grained angular sand. Munsell Soil Color: 10YR 6/4
11	STMW-1-11		270 psi		
12					
13					
14					
15					
16					

Remarks

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Logged By: Robert Baker	Exploratory Boring Log	Boring No. STMW-1
Date Drilled: 2/10/95	Approx. Elevation	Boring Diameter 8-inch

Drilling Method	Sampling Method
Mobile drill rig B-40L	

Depth, Ft.	Sample No.	Field Test for Total Ionization	Penetration Resistance Blows/Ft.	Unified Soil Classification	DESCRIPTION
17				CH	Light yellowish-brown fat clay with sand, moist, stiff, 10% medium grained angular sand. Munsell Soil Color: 10YR 6/4
18					
19					
20					Boring terminated at 20 feet.
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					

Remarks

File No. 7-93-556-SI

Logged By: Robert Baker	Exploratory Boring Log	Boring No. STMW-2
Date Drilled: 2/13/95	Approx. Elevation	Boring Diameter 8-inch
Drilling Method: Mobile drill rig B-40L	Sampling Method	

Depth, Ft.	Sample No.	Field Test for Total Ionization	Penetration Resistance Blows/6"	Unified Soil Classification	DESCRIPTION
1				CH	2-inch asphalt, 4-inch baserock. Brown fat clay with gravel, moist, stiff, (fill). Munsell Soil Color: 10YR 5/3
2					
3					Dark olive-grey organic fat clay, moist, firm to stiff, with roots and limbs, becomes less organic at 3 feet. Munsell Soil Color: 5Y 3/2
4					
5					
6	STMW-2-6				
7					
8				CH	Light yellowish-brown fat clay, moist, stiff to very stiff, 5% medium grained angular sand. Munsell Soil Color: 10YR 6/4
9					
10					
	STMW-2-10½		40/20"		
11					
12					
13					
14					
15					
16	STMW-2-16				

Remarks

File No. 7-93-556-SI

Logged By: Robert Baker	Exploratory Boring Log	Boring No. STMW-2
Date Drilled 2/13/95	Approx. Elevation	Boring Diameter 8-inch

Drilling Method: Mobile drill rig B-40L

Sampling Method:

Depth, Ft.	Sample No.	Field Test for Total Ionization	Penetration Resistance Blows/Ft.	Unified Soil Classification	DESCRIPTION
17				CH	Light yellowish-brown fat clay, moist, stiff to very stiff, 5% medium grained angular sand. Munsell Soil Color: 10YR 6/4
18					
19					
20					Boring terminated at 20 feet.
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					

Remarks

File No. 7-93-556-SI

Logged By: Robert Baker	Exploratory Boring Log	Boring No. STMW-3
Date Drilled: 2/13/95	Approx. Elevation	Boring Diameter 8-inch
Drilling Method: Mobile drill rig B-40L	Sampling Method	

Depth, Ft.	Sample No.	Field Test for Total Ionization	Penetration Resistance Blows/6"	Unified Soil Classification	DESCRIPTION
1				CH	2-inch asphalt on 2-inch baserock. Dark olive-grey sandy fat clay, moist, stiff, 15% medium grained angular sand. Munsell Soil Color: 5Y 3/2
2					
3					
4					
5				CH	Becomes more sandy with 25% fine to medium grained sand, moderate petroleum odor at 5 feet.
6	STMW-3-6		28/18"		
7					
8					
9					
10					▽ First groundwater encountered at 9½ feet.
11	No Recovery		26/18"	CH	Light yellowish-brown fat clay with sand, moist, firm to stiff, 10% fine to medium grained angular sand, no odor in cuttings. Munsell Soil Color: 10YR 6/4
12					
13					
14					
15					Becomes lighter brown, wet.
16					Becomes hard.

Remarks

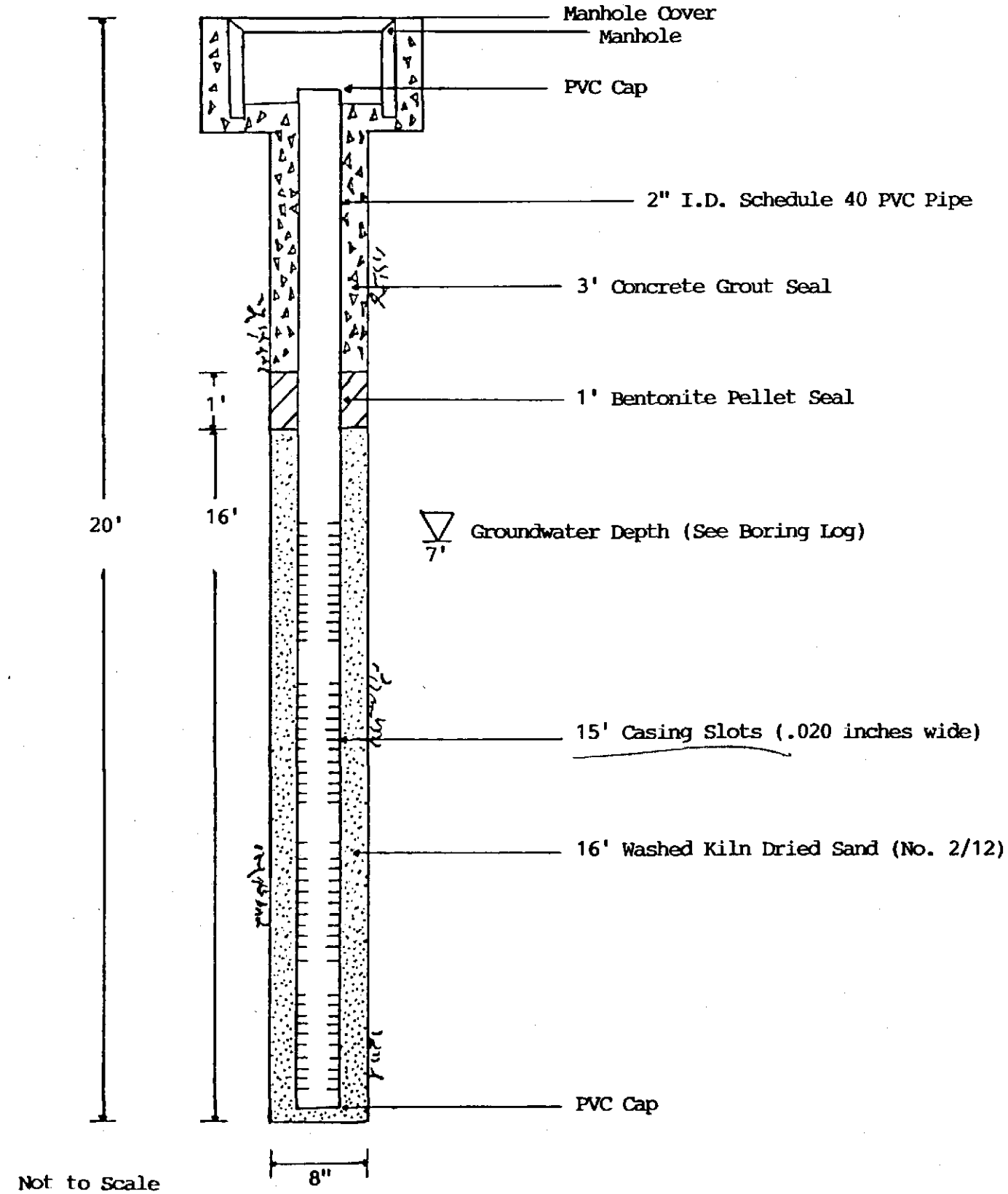
File No. 7-93-556-SI

Logged By: Robert Baker	Exploratory Boring Log	Boring No. STMW-3
Date Drilled: 2/13/95	Approx. Elevation	Boring Diameter: 8-inch

Drilling Method	Sampling Method
Mobile drill rig B-40L	

Depth, Ft.	Sample No.	Field Test for Total Ionization	Penetration Resistance Blows/Ft.	Unified Soil Classification	DESCRIPTION
17				CH	Light yellowish-brown fat clay with sand, moist, firm to stiff, 10% fine to medium grained angular sand, less odor in cuttings. Munsell Soil Color: 10YR 6/4
18					
19					Boring terminated at 19½ feet.
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					

Remarks

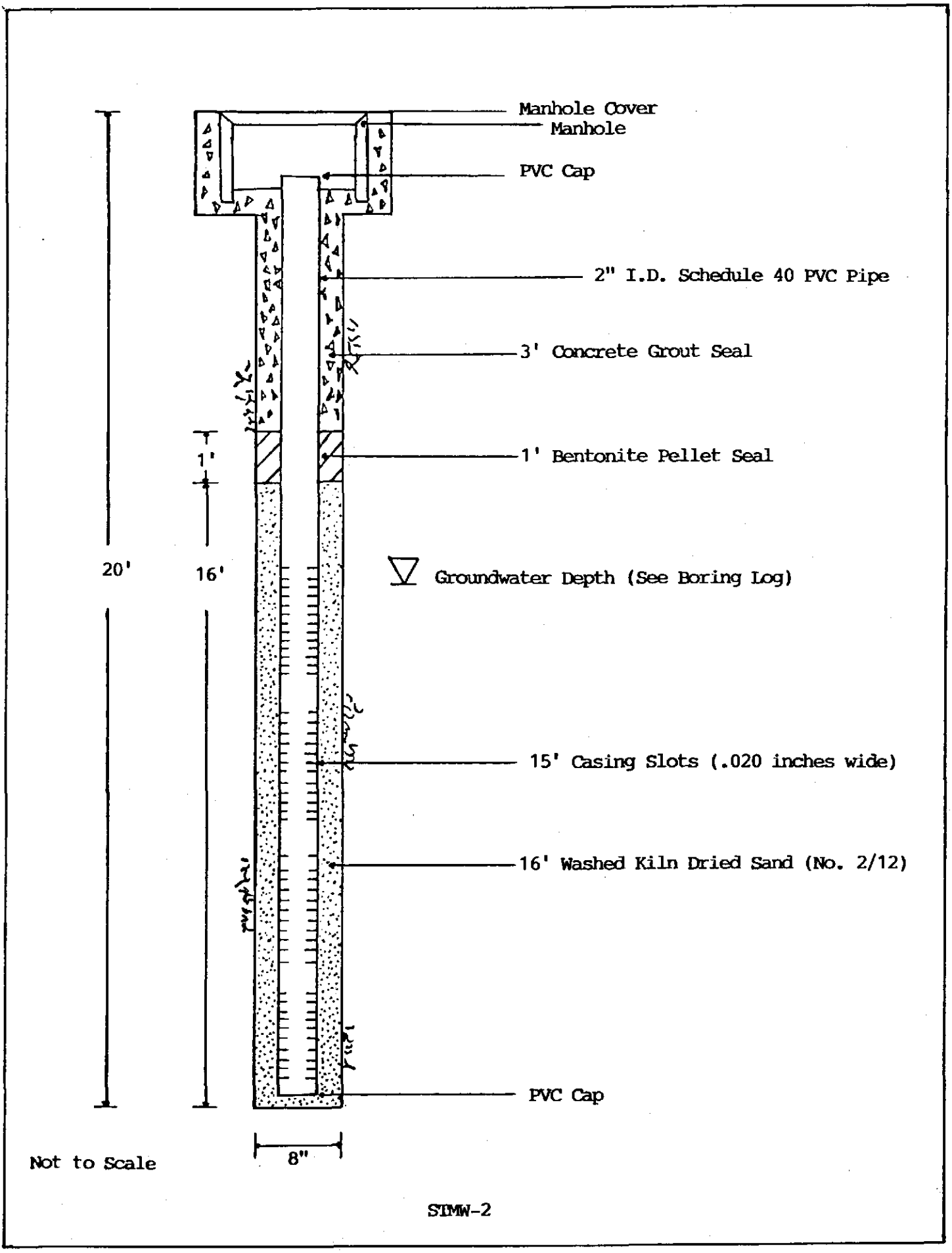


SIMW-1

Piezometer Schematic

PS1

SOIL TECH ENGINEERING, INC.

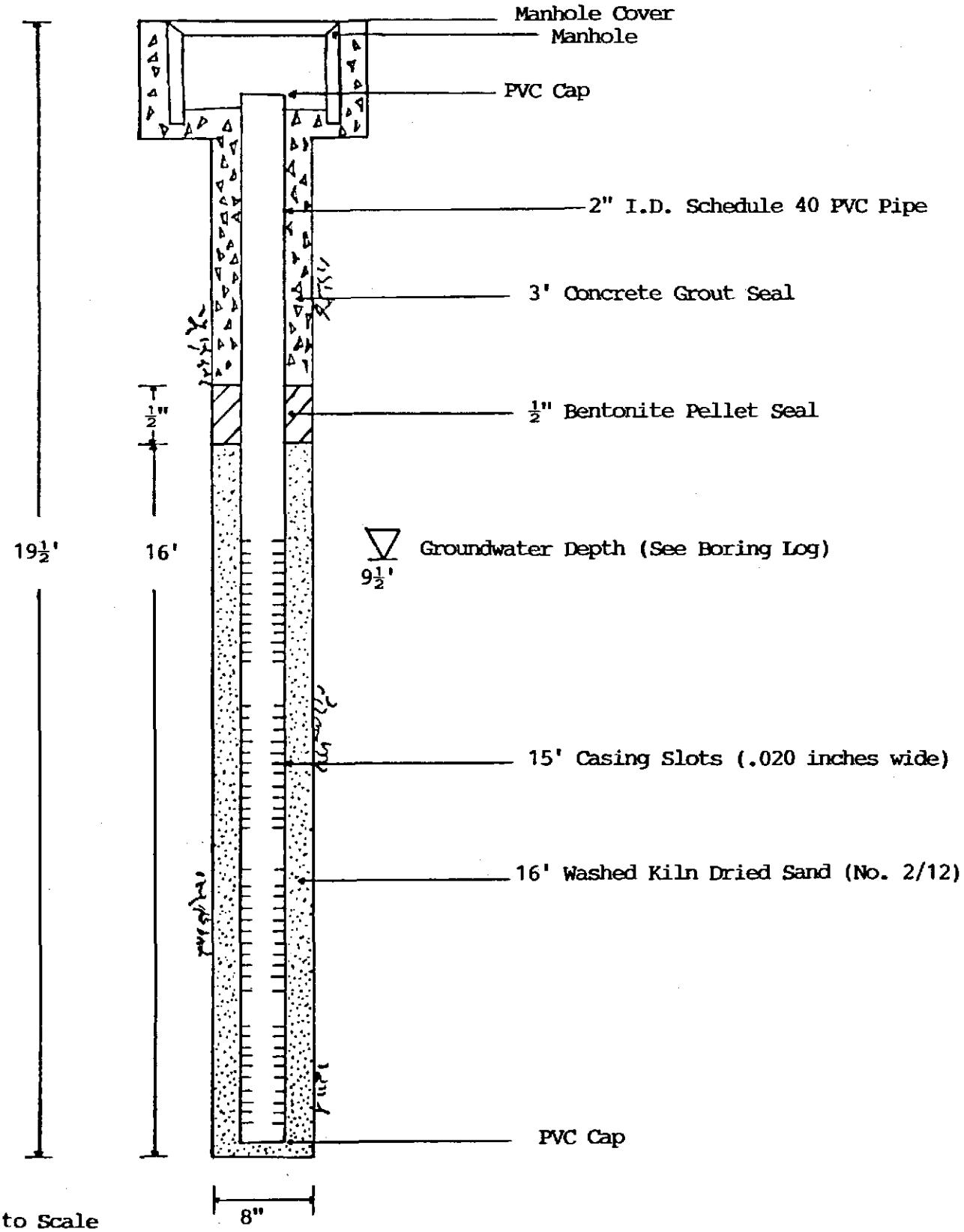


STMW-2

Piezometer Schematic

PS2

SOIL TECH ENGINEERING, INC.



STMW-3

Piezometer Schematic

PS3

SOIL TECH ENGINEERING, INC.

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

February 17, 1995 PEL # 9502051

SOIL TECH ENGINEERING

Attn: Noori Ameli

Re: Six soil samples for Gasoline/BTEX analysis.

Project name: Freeway Service Station
Project number: 7-93-556-SI

Date sampled: Feb 10-13, 1995 Date submitted: Feb 15, 1995
Date extracted: Feb 15-16, 1995 Date analyzed: Feb 15-16, 1995

RESULTS:

SAMPLE I.D.	Gasoline (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylene (ug/Kg)
STMW-1-6	N.D.	N.D.	N.D.	N.D.	N.D.
STMW-1-11	N.D.	N.D.	N.D.	N.D.	N.D.
STMW-2-6	N.D.	N.D.	N.D.	N.D.	N.D.
STMW-2-10.5	N.D.	N.D.	N.D.	N.D.	N.D.
STMW-2-16	N.D.	N.D.	N.D.	N.D.	N.D.
STMW-3-6	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	106.2%	82.0%	103.2%	92.3%	103.1%
Detection limit	1.0	5.0	5.0	5.0	5.0
Method of Analysis	5030 / 8015	8020	8020	8020	8020

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

CHAIN OF CUSTODY RECORD

PEL

PROJ. NO. 7-93-554 ST

NAME: Freeway Service Station

SAMPLERS (Signature): Bob Baker

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED (2) TPHg/BTEX	REMARKS
STMW-1-6	2/10/95	11:45A	X			Liner	✓	
STMW-1-13	2/10/95	11:60A	X			↓	✓	
STMW-2-6	2/13/95	10:50	X			Brass Liner	✓	
STMW-2-10	2/13/95	11:00	X				✓	
STMW-2-16	2/13/95	11:20	X				✓	
STMW-3-6	2/13/95	13:40	X			↓	✓	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Receive by: (Signature)
Bob Baker	2/15/95 9:40				
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)	Date / Time	Remarks	
			2/15/95 9:40 AM		

SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers
298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

CHAIN OF CUSTODY RECORD

PEL

PROJ NO. 7-93-554 ST

NAME: Freeway Service Station

SAMPLERS. (Signature): Bob Baker

PEL # 9502051

INV # 25678

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED (2) TPHg / BTEX
ST MW-1-6	2/10/95	11:45A	X			Liner	✓
ST MW-1-11	2/10/95	11:50A	X			↓	✓
ST MW-2-6	2/13/95	10:50	X			Brass Liner	✓
ST MW-2-10	2/13/95	11:00	X				✓
ST MW-2-16	2/13/95	11:20	X				✓
ST MW-3-6	2/13/95	13:40	X			↓	✓

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Receive by: (Signature)
Bob Baker	2/15/95 9:40				
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)	Date / Time	Remarks	
			2/15/95 9:40 AM		

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

February 17, 1995 PEL # 9502048

SOIL TECH ENGINEERING

Attn: Noori Ameli

Re: One composited soil sample for Gasoline/BTEX analysis.

Project name: 2740 98th Ave., - Oakland
Project number: 7-93-556-SI

Date sampled: Feb 10, 1995 Date submitted: Feb 15, 1995
Date extracted: Feb 15-16, 1995 Date analyzed: Feb 15-16, 1995

RESULTS:

SAMPLE I.D.	Gasoline (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylene (ug/Kg)
SP-1,2,3,4	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	106.2%	82.0%	103.2%	92.3%	103.1%
Detection limit	1.0	5.0	5.0	5.0	5.0
Method of Analysis	5030 / 8015	8020	8020	8020	8020

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

CHAIN OF CUSTODY RECORD

PEL

PROJ. NO.	NAME
7-93-556-5I	2740 98th. Av. OAKLAND

SAMPLERS: *(Signature)* N. A...

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED (2) TPHG/BTE&X	REMARKS
1	2/10/95	16[12]	✓		SP-1	1	✓	COMP.
2	2/10/95	16[15]	✓		SP-2	1	✓	
3	2/10/95	16[20]	✓		SP-3	1	✓	
4	2/10/95	16[25]	✓		SP-4	1	✓	

COMP.

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Receive by: *(Signature)*
N. A...	2/15/95 940				
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)*	Date / Time	Remarks	
			02/15/95		

SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers
298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

CHAIN OF CUSTODY RECORD

PEL

PROJ. NO.	NAME
7-93-556-5I	2740 98th. Av. OAKLAND

SAMPLERS: (Signature)

PEL # 9502048

INV # 25675

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	Analyses Requested (2) TPHG/BTEX	
1	2/14/95	16[12]	✓		SP-1	1	✓	Comp.
2	2/14/95	16[15]	✓		SP-2	1	✓	
3	2/14/95	16[22]	✓		SP-3	1	✓	
4	2/14/95	16[23]	✓		SP-4	1	✓	

Comp.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Receive by: (Signature)
	2/15/95 940				
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)	Date / Time	Remarks	
			02/15/95		

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

March 02, 1995 PEL # 9502088

SOIL TECH ENGINEERING

Attn: Noori Ameli

Re: Two water samples for Gasoline/BTEX analysis.

Project name: 2740 98th Ave., - Oakland
Project number: 7-93-556-SI

Date sampled: Feb 23, 1995 Date submitted: Feb 27, 1995
Date extracted: Feb 27-28, 1995 Date analyzed: Feb 27-28, 1995

RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylene (ug/L)
STMW-1	N.D.	N.D.	N.D.	N.D.	N.D.
STMW-2	N.D.	N.D.	N.D.	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	92.7%	96.1%	94.1%	101.3%	107.7%
Detection limit	50	0.5	0.5	0.5	0.5
Method of Analysis	5030 / 8015	602	602	602	602

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

CHAIN OF CUSTODY RECORD

PEL

PROJ. NO.	NAME
7-93-556-5I	2740 98th. Av. OAKLAND

SAMPLERS. *(Signature)*

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED (2) TPHG/BTEX	REMARKS
1	2/23/95	14[20]		✓	STMW-1	2	✓	
2	2/23/95	14[35]		✓	STMW-2	2	✓	

Relinquished by: *(Signature)*	Date / Time	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)***
		TYANN CAM			
Relinquished by: *(Signature)*	**Date / Time**	**Received for Laboratory by: *(Signature)***	**Date / Time**	**Remarks**	
	2/27/95 10:10	PEL			

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

298 PROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

PEL

CHAIN OF CUSTODY RECORD

PROJ. NO.	NAME
7-93-556-5I	2740 98th. Av. OAKLAND

SAMPLERS: (Signature)

PEL # 9502088

INV # 25715

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED (2) TPHG / BTEX
1	2/23/95	14:20		✓	STMW-1	2	✓
2	2/23/95	14:35		✓	STMW-2	2	✓

Relinquished by: (Signature)	Date / Time	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)
		TIFFANY COM			
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
	2/27/95 10:20	PEL			

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

299 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 2740 98th Avenue
Oakland, CA 94605

CLIENT
Name Mr. Kiyoumars Ghofrani
Address 2740 98th Avenue Voice 510-562-4505
City Oakland, CA Zip 94605

APPLICANT
Name Soil Tech Engineering, Inc.
Fax 408-988-3343
Address 298 Brokaw Road Voice 408-496-0265
City Santa Clara, CA Zip 95050

TYPE OF PROJECT

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

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. 507520

WELL PROJECTS

Drill Hole Diameter	8	in.	Maximum		
Casing Diameter	2	in.	Depth	20	ft.
Surface Seal Depth	6	ft.	Number	3	

GEOTECHNICAL PROJECTS

Number of Borings			Maximum		
Hole Diameter		in.	Depth		ft.

ESTIMATED STARTING DATE 12/7/94
ESTIMATED COMPLETION DATE 12/9/94

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

APPLICANT'S SIGNATURE [signature] Date 11/16/94

FOR OFFICE USE

PERMIT NUMBER 94745
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 17 Nov 94
Wyman Hong

91992

3 CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED