File No. 11-92-528-ST

PRELIMINARY SOIL AND GROUNDWATER ASSESSMENT IN THE VICINITY OF FORMER UNDERGROUND TANKS FOR LIVERMORE HONDA LOCATED AT 3800 FIRST STREET LIVERMORE, CALIFORNIA

AUGUST 16, 1993

PREPARED FOR:
MR. EDWIN SPENCER
880 COLUMBINE COURT
DANVILLE, CALIFORNIA 94526

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

SOIL TECH ENGINEERING, INC.

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

August 16, 1993

File No. 11-92-528-ST

Mr. Edwin Spencer
880 Columbine Court
Danville, California 94526

SUBJECT: PRELIMINARY SOIL AND GROUNDWATER ASSESSMENT IN THE VICINITY OF FORMER UNDERGROUND STORAGE TANKS FOR LIVERMORE HONDA Located at 3800 First Street, in Livermore, California

Dear Mr. Spencer:

This letter summarizes the results of our recent soil and groundwater investigation in the vicinity of former underground storage tanks for the property located at 3800 First Street, in Livermore, California. The work performed was in accordance with our work plan dated April 2, 1993, to comply with request of Alameda County Health Care Services Agency (ACHCSA) in their letter dated January 27, 1993. The scope of this investigation included removal of affected soil, installation of monitoring wells, sampling and analysis of the soil and water samples, along with our recommendations.

Our investigation revealed that no dissolved hydrocarbons in the tested soil and groundwater. We recommend that one more round

of water sampling. If no pollutants are detected then a request to the state and local regulatory agencies should be made for site closure.

Please submit this report to Alameda County Health Department and California Regional Water Quality Control Board (CRWQCB).

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

Sincerely,

SOIL TECH ENGINEERING, INC.

NOORI AMELI
PROJECT ENGINEER

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

FRANK HAMEDI-FARD
GENERAL MANAGER

File No. 11-92-528-SI

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File No. 11-92-528-SI

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ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY'S LETTER

File No. 11-92-528-ST

PRELIMINARY SOIL & GROUNDWATER ASSESSMENT IN THE VICINITY OF FORMER UNDERGOUND TANKS FOR LIVERMORE HONDA LOCATED AT 3800 FIRST STREET LIVERMORE, CALIFORNIA AUGUST 16, 1993

INTRODUCTION:

This report summarizes the results of preliminary assessment of soil and groundwater in the vicinity of former underground tanks nest at the Livermore Honda facility located at 3800 First Street, in Livermore, California (Figure 1). The work was undertaken after hydrocarbon constituents were detected in the soil samples from two feet below former underground fuel storage tanks areas.

A work plan for preliminary site assessment (PSA) at Livermore Honda located at 3800 First Street in Livermore, was requested by the Alameda County Department of Environmental Health-UST Oversight Program (ACDEH--USTOP) in a letter dated January 27, 1993 (Appendix "G"). STE prepared a work plan dated April 2, 1993, and it was approved by the ACDEH.

PURPOSE:

The object of this investigation was to explore the soils and groundwater in the vicinity of former tanks nest at the referenced site for presence of dissolved hydrocarbons petroleum.

SCOPE OF WORK:

The approved work plan presented the overall scope of work for site remediation, which included the additional soil excavation of former fuel tank area a monitoring procedures, conduct a preliminary subsurface and groundwater investigation by drilling several exploratory borings and converting three of the borings into monitoring wells.

The scope of work was to assess the presence and possible extent of fuel hydrocarbon contamination in soil and groundwater in the vicinity of removed underground storage tanks. The scope of work were:

1. Prepare health and safety plan.

2. Obtain all necessary permits.

3. Expand the former underground tank excavation and remove soil containing high levels of hydrocarbons.

4. Sample the excavated material for proper disposal.

5. Drill exploratory soil borings and install three groundwater monitoring wells.

6. Develop and sample wells.

7. Analyze soil and water samples at a certified laboratory.

8. Evaluate data and prepare a technical report.

SITE LOCATION:

The site is located at 3800 First Street, in Livermore, California, at the intersection of First Street and Portola Avenue (Figure 1). The site is approximately a triangular-shaped parcel that is bordered to the north by Portola Avenue, to the east and south First Street and a light industrial complex to the west. Currently the site is used as an auto dealership. A site map (Figure 2) showing the location of the building, the former fuel storage tanks and the location of borings, and monitoring wells are shown in Figure 3.

PREVIOUS INVESTIGATION:

In December 1992, three underground storage tanks were removed. A 2,000 gallon and 550 gallon tanks contained gasoline; and a 550 gallon tank contained waste oil (Figure 2). The tanks were removed by Alpha Geo Services and the required soil sampling were performed by STE. Laboratory results of soil sample analysis indicated a presence of moderate levels of TPH as gasoline [98 milligrams per kilogram (mg/Kg)], and BTEX concentrations were less than 1 mg/kg in the gasoline tank are. The waste oil tank excavation area also

showed very low levels of TPH as diesel (1.6 mg/kg), Toluene, Ethylbenzene, and Total Xylenes were less than 0.1 mg/Kg. The concentration of TOG was 95 mg/Kg. No Volatile Organic Compounds were detected in the waste oil soil sample.

FIELD ACTIVITIES:

HEALTH AND SAFETY:

As required by OSHA Regulation 29 CFR.1910.120, STE prepared a Site Health and Safety Plan (HSP) based on known site conditions and suspected contaminants. All STE's personnel and subcontractors conducting the excavating and other field activities were in compliance with the site-specific HSP.

EXCAVATION OF THE AFFECTED SOILS:

Excavation of the affected soil in the former fuel tank area was conducted on July 8, 1993, under the observation of STE's engineer. The excavated soil was stored on-site onto a thick visqueen sheet and covered for further soil characterization and disposal.

Upon completion of the excavation, soil samples were collected from the four side walls (S-1-11 to S-4-11) at the depth of 11 feet below grade, and a bottom sample at 12 feet below grade (B-1-12), to document removal of affected soils. Figure 3 shows the excavated area and soil sampling location.

The samples were collected with a hand sampling device directly from the excavator's bucket. Soil samples from soil excavation were collected in thin-walled, 4-inch long by 2-inch outside diameter-steam cleaned brass tubes appropriate to the analysis to be performed. The tubes were immediately trimmed and sealed with aluminum foil and plastic end caps. The soil samples were sealed with duct tape and labeled. All samples were refrigerated until delivery, under chain-of-custody, to the State-Certified laboratory.

The five confirmation soil samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg), Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), and Total Oil & Grease (TOG). Table 1 summarizes the analytical results. No TPHg, BTEX or TOG were detected above the detection limit. The analytical report with chemical test procedures and STE's chain-of-custody document are included in Appendix "E".

BACKFILLING:

Following removal of affected soil and confirmation sampling of the sidewalls and bottom, the excavation pit was backfilled with 8 feet of gravel and 4 feet of clean baserock. Placement of backfill material was performed in 2-foot lifts and compacted by a rubber wheeled loader. All backfilling and paving was conducted by Alpha Geo Services.

SOIL BORINGS:

The present investigation consist of four soil borings which were drilled on June 30, July 1 and July 7, 1993, in the vicinity of former fuel tanks area. The approximate boring locations are shown on Figure 3. The borings were drilled using a Mobile drill rig B-40L equipped with eight-inch diameter, hollow-stem, continuous flight augers. A project engineer observed the drilling operations and prepared a log of each soil boring (Appendix "D").

The four soil borings were drilled to depths of 50 to 65 feet below grade. Groundwater was first encountered at depths of approximately 47 to 65 feet below grade in the borings while drilling.

SOIL SAMPLING:

Soil samples were collected at five-foot intervals by advancing a modified California sampler through the hollow-stem of the augers. The sampler was driven a maximum of 18 inches, using a 140-pound hammer with a 30-inch drop.

For each sampling interval, the soil samples were retained in four-inch long by two-inch diameter brass liners within the sampler. The soil sample in brass liner was retained for chemical analysis by covering both ends of the liner with Teflon sheeting, and sealing with plastic end caps and duct tape. The samples were

then labeled and stored in a chilled ice chest. Selected samples were later transported on ice to the laboratory using STE's chain-of-custody documentation.

Soil samples in brass liners were described by STE's engineer using the Unified Soil Classification System. The description are shown on the boring logs presented in Appendix "D".

MONITORING WELL CONSTRUCTION:

Following the completion of each boring, three of four exploratory borings were converted into monitoring wells (Figure 3). The wells were constructed of two-inch diameter Schedule 40, flush threaded PVC well casing. The wells were installed in accordance with the requirements of the Alameda County Zone 7 Water Agency. A copy of the permit is presented in Appendix "F". The well construction details are presented along with the borings in Appendix "F".

After the wells were completed, they were developed by pumping and surging to clean and stabilize the soils around the screens. Each well was developed with a surface bailer until approximately ten well casing volumes were removed. No free product or petroleum odor were observed in these wells. The drill cuttings were stored on-site in a covered soil pile.

RESULTS

SOIL DESCRIPTION:

As shown on the boring logs in Appendix "D", the native soils encountered below surface grade consist predominantly of inter-bedded sandy silty clay with gravel.

LABORATORY SOIL ANALYSIS:

Soil samples from the soil borings were selected to be analyzed by Argon Mobile Labs for Total Petroleum Hydrocarbons as gasoline (TPHg), Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) using EPA Method 8020 and 5030. The chemical results are summarized in Table 2. The analytical report with chemical test procedures and STE's chain-of-custody document are included in Appendix "E".

As shown in Table 2, none of the selected soil samples showed TPHg or BTEX above the detection limit.

LABORATORY WATER ANALYSIS:

After the wells were constructed and developed, groundwater samples were collected. Prior to sample collection, four well casing volumes were removed. The water generated through well development and purging were stored on-site in approved 55-gallon drums pending laboratory analysis to determine a proper disposal.

The groundwater samples were analyzed by Argon Mobile Labs for analysis of TPHd, TPHg, BTEX and TOG using modified EPA Method 8015/8020 and 3510/5520, and Halogenated Volatile Organic per EPA Method 601. Proper chain-of-custody documentation accompanied the samples.

Table 3 summarizes the results of the groundwater analyses from the three on-site monitoring wells (STMW-1 to STMW-3). No TPHd, TPHg, BTEX, TOG or VOC's were detected in any of the three water samples. The laboratory analytical data sheets and chain-of-custody forms for the samples are included in Appendix "E".

GROUNDWATER DEPTH SURVEY:

Ground elevation and water depth survey was conducted to estimate groundwater gradient and flow direction. The survey was conducted approximately two weeks after completion of the monitoring well construction and development activities. To estimate the gradient and flow direction, depths-to-groundwater were measured relative to an arbitrarily established datum at the nearby power pole assumed to be 100 feet above sea level. Well casing and ground surface elevations, and depth and elevation of groundwater are summarized on Table 4. A groundwater map developed from the survey is shown on Figure 3.

As indicated in the groundwater contour map in Figure 3. Groundwater appears to flow toward southerly direction. The map is an approximation of localized groundwater conditions and actual conditions may vary.

SUMMARY:

The results of this study are summarized as follows:

- The site is immediately underlain by native soils consisting predominantly of interbedded sandy gravelly silty clay.
- The soil samples taken after additional excavation of the former fuel tank area showed no TPHg, BTEX or TOG. This indicates that most of the grossly contamination soil were removed.
- Laboratory chemical analyses of soil samples collected from borings detected none of the petroleum hydrocarbons constituents analyzed. Gasoline and the BTEX compounds were not detected in any of the soil samples analyzed.
- Groundwater was encountered between the depths of 47 and 65 feet while drilling. The water samples detected no TPH, BTEX or VOC's in groundwater samples from the three on-site wells.
- Groundwater contours map using top of groundwater elevation data indicates a groundwater flow to the southerly direction.

CONCLUSIONS AND RECOMMENDATIONS:

Neither the selected soil samples from the borings, excavation and the water samples from the three on-site wells detected TPHd, TPHg, BTEX and VOC's. STE believes that removed of the additional contaminated soil will reduce the potential impact to the deep groundwater.

Thus, STE recommends one more round of sampling in October 1993, and if the results detected no dissolved petroleum hydrocarbons, then a request should be made to ACDEH and the Regional Water Quality Control Board (RWQCB) for proper site closure.

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 near-surface groundwater monitoring.

This service does not make Soil Tech Engineering, Inc., liable for future maintenance, repairs, damages, injury to a 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 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.

File No. 11-92-528-ST

TABLE 1
SOIL ANALYTICAL RESULTS
FROM FORMER FUEL TANK EXCAVATION
IN
MILLIGRAMS PER KILOGRAM (mg/Kg)

Date	Sample Number	Depth feet	TPHg	B	T	E	X	TOG
7/08/93	S-1-11	11	ND	ND	ND	ND	ND	ND
	S-2-11	11	ND	ND	ND	ND	ND	ND
	S-3-11	11	ND	ND	ND	ND	ND	ND
	S-4-11	11	ND	ND	ND	ND	ND	ND
	B-1-12	12	ND	ND	ND	ND	ND	ND

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

File No. 11-92-528-ST

TABLE 2
SOIL ANALYTICAL RESULTS
FROM EXPLORATORY BORINGS
IN
MILLIGRAMS PER KILOGRAM (mg/Kg)

Date	Sample Number	Depth feet	TPHg	B	T	E	X
7/01/93	B-1-10	10	ND	ND	ND	ND	ND
	B-1-15	15	ND	ND	ND	ND	ND
	B-1-20	20	ND	ND	ND	ND	ND
	B-1-40	40	ND	ND	ND	ND	ND
	STMW-1-10	10	ND	ND	ND	ND	ND
	STMW-1-15	15	ND	ND	ND	ND	ND
	STMW-1-20	20	ND	ND	ND	ND	ND
	STMW-1-40	40	ND	ND	ND	ND	ND
6/30/93	STMW-2-10	10	ND	ND	ND	ND	ND
	STMW-2-15	15	ND	ND	ND	ND	ND
	STMW-2-20	20	ND	ND	ND	ND	ND
	STMW-2-40	40	ND	ND	ND	ND	ND

TABLE 2 CONT'D
SOIL ANALYTICAL RESULTS
FROM EXPLORATORY BORINGS
IN
MILLIGRAMS PER KILOGRAM (mg/Kg)

Date	Sample Number	Depth feet	TPHg	B	T	E	X
7/07/93	STMW-3-10	10	ND	ND	ND	ND	ND
	STMW-3-15	15	ND	ND	ND	ND	ND
	STMW-3-20	20	ND	ND	ND	ND	ND
	STMW-3-40	40	ND	ND	ND	ND	ND

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

File No. 11-92-528-ST

TABLE 3
GROUNDWATER ANALYSES
IN
MILLIGRAMS PER MILLION (ppm)

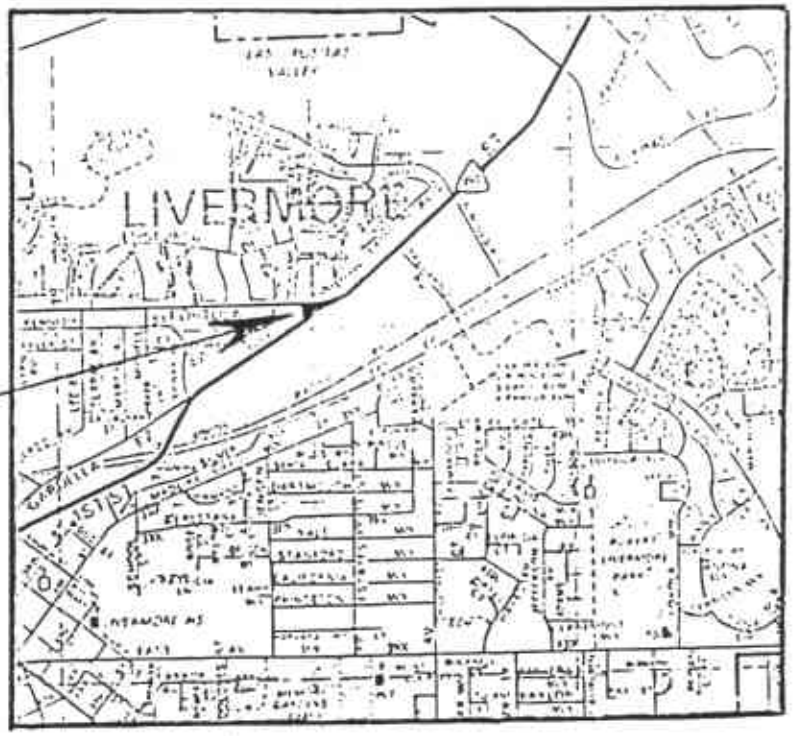
Date	Well No.	TPHd	TPHg	B	T	E	X	TOG	VOC's
7/29/93	STMW-1	ND	ND	ND	ND	ND	ND	ND	ND
	STMW-2	ND	ND	ND	ND	ND	ND	ND	ND
	STMW-3	ND	ND	ND	ND	ND	ND	ND	ND

VOC's - Volatile Organic Compounds
TPHd - Total Petroleum Hydrocarbons as diesel
TPHg - Total Petroleum Hydrocarbons as gasoline
BTEX - Benzene, Toluene, Ethylbenzene, Total Xylenes
ND - Not Detected (Below Laboratory Detection Limit)

TABLE 4
GROUNDWATER MONITORING DATA
MEASUREMENT IN FEET

Date	Well No./ Elevation	Depth-to-Water	Groundwater Elevation	FFP Thickness	Odor
7/27/93	STMW-1 (55.99)	60.00	101.51	None	None
	STMW-2 (54.27)	65.00	95.82	None	None
	STMW-3 (45.69)	45.52	98.85	None	None

FFP - Free Floating Products.



Site Location

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

Page 51 A5

Figure 1

M1

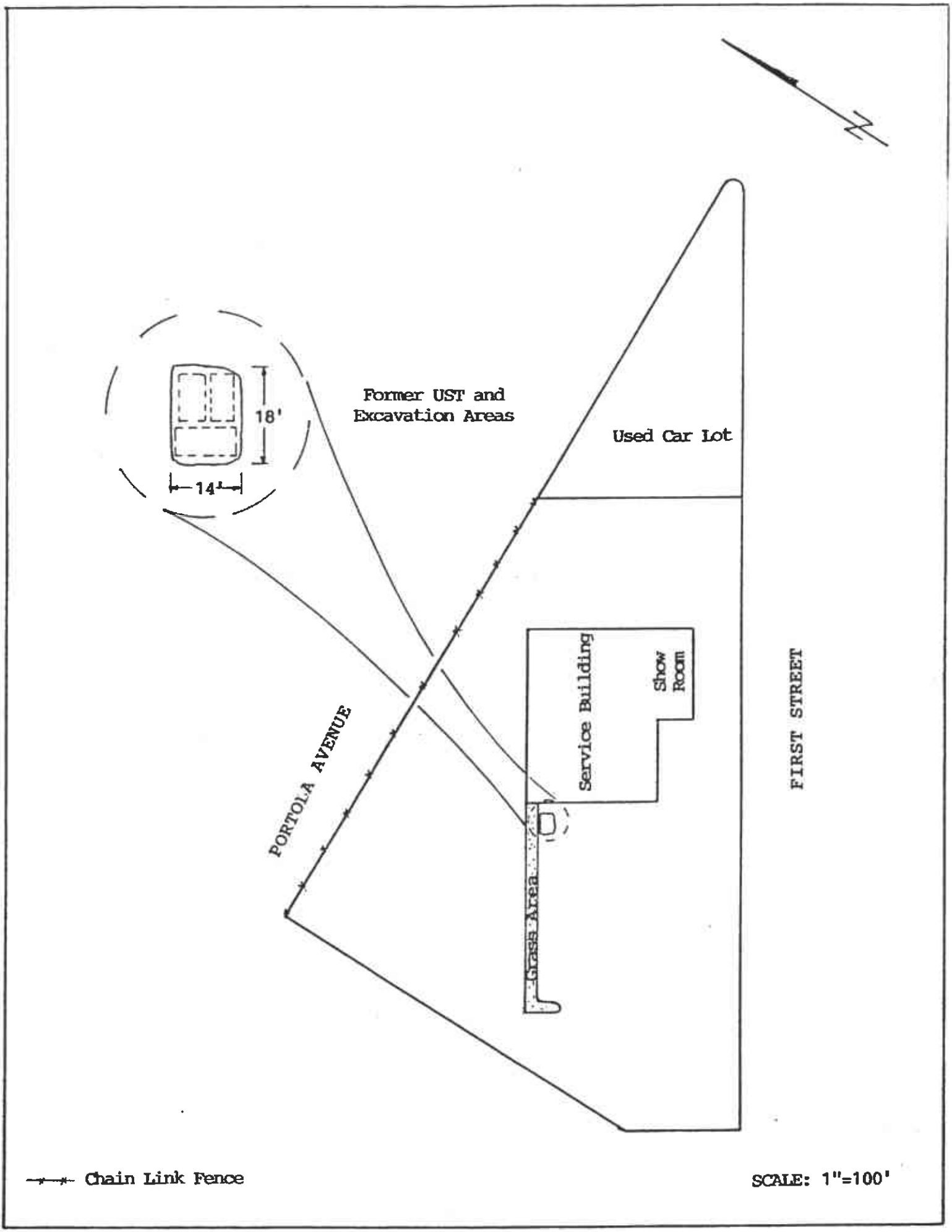


Figure 2

SOIL TECH ENGINEERING, INC.

M2

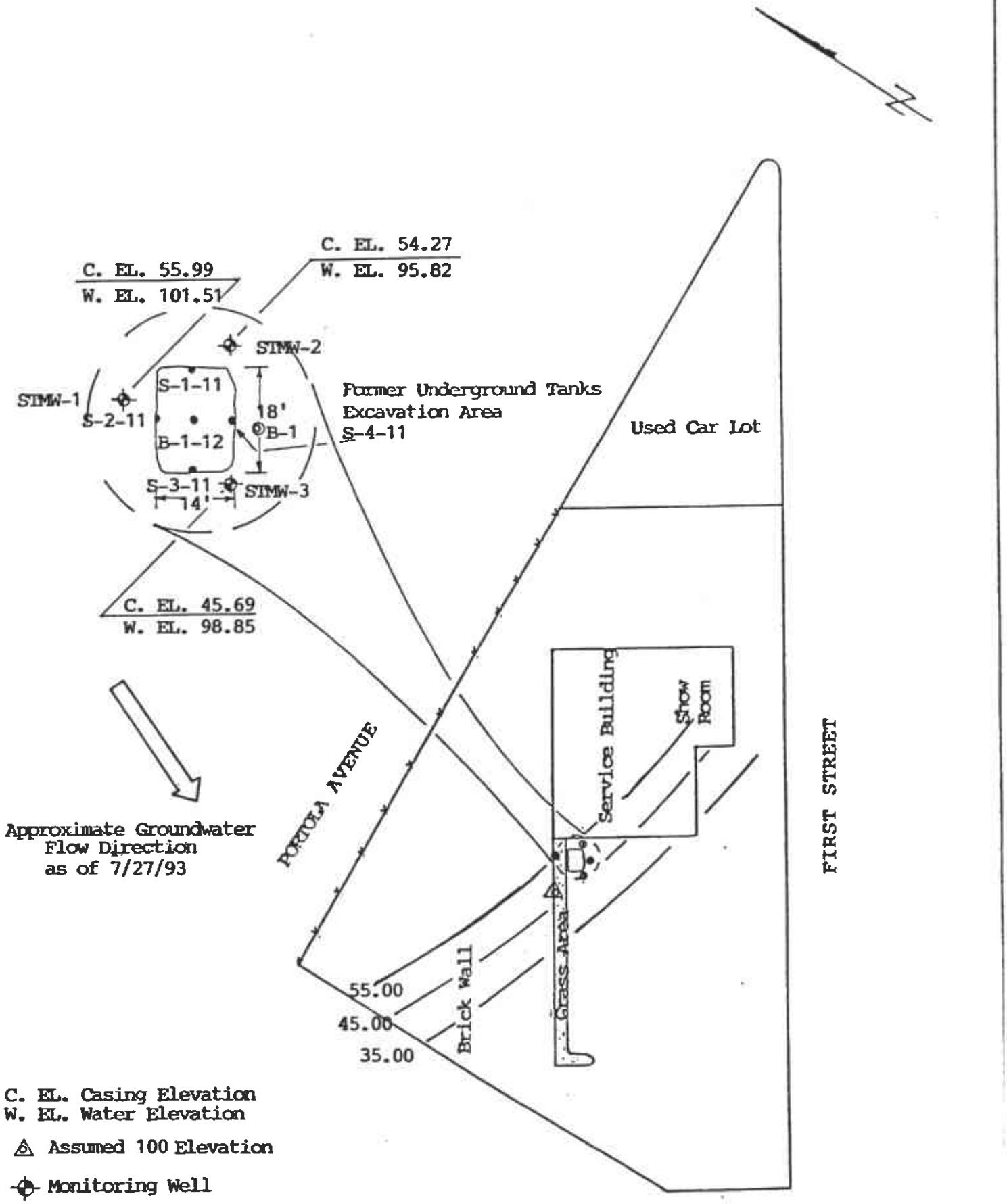


Figure 3

SOIL TECH ENGINEERING, INC.

M3

A P P E N D I X "C"

Argon Mobile Labs

3008 McKittrick Ct., Suite N • Ceres, CA 95307 • (209) 537-7836

SOIL TECH ENGINEERING, INC.
298 Brokaw Rd
Santa Clara, CA 95050

Date Sampled: 07/27/93
Date Received: 07/27/93
Date Reported: 08/03/93

Project ID: 11-92-528-ST
Sample ID: STMW-3

Lab Number: T307303
Matrix: Water

TPH-gas/BTXE

ANALYTE	Detection Limit ppb	Sample Results ppb
Total Petroleum Hydrocarbons as Gasoline	50	<50
Benzene	0.5	<0.5
Toluene	0.5	<0.5
Xylenes	0.5	<0.5
Ethylbenzene	0.5	<0.5

QA/QC: 97% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/8015/602
ppb = ug/L

ARGON MOBILE LABS

Hiram Cueto
Lab Director

Argon Mobile Labs

3008 McKittrick Ct., Suite N • Ceres, CA 95307 • (209) 537-7836

SOIL TECH ENGINEERING, INC.
298 Brokaw Rd
Santa Clara, CA 95050

Date Sampled: 07/27/93
Date Received: 07/27/93
Date Reported: 08/03/93

Project ID: 11-92-528-ST
Sample ID: STMW-2

Lab Number: T307302
Matrix: Water

TPH-gas/BTXE

ANALYTE	Detection Limit ppb	Sample Results ppb
Total Petroleum Hydrocarbons as Gasoline	50	<50
Benzene	0.5	<0.5
Toluene	0.5	<0.5
Xylenes	0.5	<0.5
Ethylbenzene	0.5	<0.5

QA/QC: 114% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/8015/602
ppb = ug/L

ARGON MOBILE LABS

Hiram Cueto
Lab Director

Argon Mobile Labs

3008 McKittrick Ct., Suite N • Ceres, CA 95307 • (209) 537-7836

SOIL TECH ENGINEERING, INC.
298 Brokaw Rd
Santa Clara, CA 95050

Date Sampled: 07/27/93
Date Received: 07/27/93
Date Reported: 08/03/93

Project ID: 11-92-528-ST
Sample ID: STMW-1

Lab Number: T307301
Matrix: Water

TPH-gas/BTXE

ANALYTE	Detection Limit ppb	Sample Results ppb
Total Petroleum Hydrocarbons as Gasoline	50	<50
Benzene	0.5	<0.5
Toluene	0.5	<0.5
Xylenes	0.5	<0.5
Ethylbenzene	0.5	<0.5

QA/QC: Blank is none detected.
104% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/8015/602
ppb = ug/L

ARGON MOBILE LABS

Hiram Cueto
Lab Director

(4)

PROJ. NO.	NAME
11-92-[illegible]-ST	3[illegible] First St. LIVERMORE

SAMPLERS: *(Signature)* [illegible]

	NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED (2)						REMARKS
F307026	16	[illegible]	11[illegible]	✓		STMW-2-20	1	✓						
027	17	[illegible]	11[illegible]	✓		STMW-2-25	1							
028	18	[illegible]	12[illegible]	✓		STMW-2-30	1							
029	19	[illegible]	12[illegible]	✓		STMW-2-40	1	✓						
030	20	[illegible]	13[illegible]	✓		STMW-3-5	1							
031	21	[illegible]	13[illegible]	✓		STMW-3-10	1	✓						
032	22	[illegible]	13[illegible]	✓		STMW-3-15	1	✓						
033	23	[illegible]	14[illegible]	✓		STMW-3-20	1	✓						
034	24	[illegible]	14[illegible]	✓		STMW-3-30	1							
035	25	[illegible]	15[illegible]	✓		STMW-3-40	1	✓						

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[illegible]	7/08/93 [illegible]	[illegible]			

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

Chain OF CUSTODY RECORD

SE 1/2

PROJ. NO.	NAME
11-92-528-3T	3500 First St. LIVERMORE

SAMPLERS: (Signature)

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED (2)						REMARKS
16	1/3/93	11:32	✓		STMW-2-20	1	✓						
17	1/3/93	11:57	✓		STMW-2-25	1							
18	1/3/93	12:25	✓		STMW-2-30	1							
19	1/3/93	12:53	✓		STMW-2-40	1	✓						
20	1/7/93	13:05	✓		STMW-3-5	1							
21	1/7/93	13:22	✓		STMW-3-10	1	✓						
22	1/7/93	13:32	✓		STMW-3-15	1	✓						
23	1/7/93	14:13	✓		STMW-3-20	1	✓						
24	1/7/93	14:34	✓		STMW-3-30	1							
25	1/7/93	15:03	✓		STMW-3-40	1	✓						

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Receive by: (Signature)
	1/08/93 4:02				
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	

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

CHAIN OF CUSTODY RECORD

G-K 1/2

PROJ. NO.	NAME
11-92-528-ST	3560 First st. LIVERMORE

SAMPLERS: (Signature)

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	ANALYSES REQUESTED (2) TPH-G (BTEX)	REMARKS
1	7/1/93	9:25	✓		B-1-5	1		
2	7/1/93	9:45	✓		B-1-10	1	✓	
3	7/1/93	9:55	✓		B-1-15	1	✓	
4	7/1/93	9:55	✓		B-1-20	1	✓	
5	7/1/93	10:25	✓		B-1-30	1		
6	7/1/93	10:45	✓		B-1-40	1	✓	
7	7/1/93	11:35	✓		STMW-1-10	1	✓	
8	7/1/93	11:52	✓		STMW-1-15	1	✓	
9	7/1/93	12:21	✓		STMW-1-20	1	✓	
10	7/1/93	12:47	✓		STMW-1-30	1		
11	7/1/93	15:20	✓		STMW-1-40	1	✓	
12	7/2/93	13:55	✓		STMW-1-55	1		
13	7/2/93	10:15	✓		STMW-2-5	1		
14	7/2/93	10:35	✓		STMW-2-10	1	✓	
15	7/2/93	10:52	✓		STMW-2-15	1	✓	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Receive by: (Signature)
	7/8/93 9:04				
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	

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

Argon Mobile Labs

3008 McKittrick Ct., Suite N • Ceres, CA 95307 • (209) 537-7836

SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-07-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-3-40

Lab No.: T307035
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 105% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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Hiram Cueto
Lab Director

Argon Mobile Labs

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-07-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-3-20

Lab No.: T307033
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 83% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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Lab Director

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-07-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-3-15

Lab No.: T307032
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 94% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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Santa Clara, CA 95050

Date Sampled: 07-07-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-3-10

Lab No.: T307031
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 103% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 06-30-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-2-40

Lab No.: T307029
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 110% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 06-30-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-2-20

Lab No.: T307026
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 126% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING
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Santa Clara, CA 95050

Date Sampled: 06-30-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-2-15

Lab No.: T307025
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 98% Surrogate Spike Recovery
94% Matrix Spike Recovery
1.0% Duplicate Spike Deviation

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING
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Santa Clara, CA 95050

Date Sampled: 06-30-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-2-10

Lab No.: T307024
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 102% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-01-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-1-40

Lab No.: T307021
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 112% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING
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Date Sampled: 07-01-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-1-20

Lab No.: T307019
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 121% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-01-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-1-15

Lab No.: T307018
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 104% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-01-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: STMW-1-10

Lab No.: T307017
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 105% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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Lab Director

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-01-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: B-1-40

Lab No.: T307016
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 100% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-01-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: B-1-20

Lab No.: T307014
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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Lab Director

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-01-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: B-1-15

Lab No.: T307013
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: 106% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

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Lab Director

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SOIL TECH ENGINEERING
298 Brokaw Road
Santa Clara, CA 95050

Date Sampled: 07-01-93
Date Received: 07-08-93
Date Reported: 07-09-93

Project ID: 11-92-528-ST
Sample ID: B-1-10

Lab No.: T307012
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethyl-Benzene	0.005	<0.005

QA/QC: Blank is none detected.
85% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/TPH-LUFT/8020
ppm = mg/Kg

ARGON MOBILE LABS

Hiram Cueto
Lab Director

CHAIN OF CUSTODY

PROJ. NO.	NAME
11-92-523-ST	3500 First St. Livermore

SAMPLERS: (Signature) N. Amelio

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	Analyses Requested (2) TPHG/BTEX T&G						REMARKS
[307071	1	7/8/93	11:25	✓		S-1-11	1	✓	✓					
072	2	7/8/93	11:35	✓		S-2-11	1	✓	✓					
073	3	7/8/93	11:35	✓		S-3-11	1	✓	✓					
074	4	7/8/93	11:32	✓		S-4-11	1	✓	✓					
075	5	7/8/93	11:45	✓		B-1-12	1	✓	✓					

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Receive by: (Signature)
N. Amelio	7/13/93 9:15am	Miriam Cueto			
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	

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

Chain OF CUSTODY RECORD

3-K

PROJ. NO.	NAME
11-92-523-ST	3800 First St. LIVERMORE

SAMPLERS: (Signature) N. Amrhein

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	Analyses Requested (2) TPH G/BTEXX	T&G					REMARKS
1	7/8/93	11:05	✓		S-1-11	1	✓	✓					
2	7/8/93	11:15	✓		S-2-11	1	✓	✓					
3	7/8/93	11:25	✓		S-3-11	1	✓	✓					
4	7/8/93	11:32	✓		S-4-11	1	✓	✓					
5	7/8/93	11:45	✓		B-1-12	1	✓	✓					

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Receive by: (Signature)
N. Amrhein	7/13/93 9:15am	Miriam Cueto			
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	

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

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SOIL TECH ENGINEERING, INC.
298 Brokaw Rd.
Santa Clara, CA 95050

Date Sampled: 07/08/93
Date Received: 07/13/93
Date Reported: 07/19/93

Project ID: 11-92-528-ST

Matrix: Soil

TOTAL OIL & GREASE

Sample Number	Sample Description	Detection Limit	Gravimetric Waste Oil as Petroleum Oil
		ppm	ppm
T307071	S-1-11	50	<50
T307072	S-1-11	50	<50
T307073	S-3-11	50	<50
T307074	S-4-11	50	<50
T307075	B-1-12	50	<50

QA/QC: Freon blank is none detected.
108% Spike Recovery (T307073)
5.9% Duplicate Deviation (T307061)

Note: Analysis was performed by standard EPA methods 3550/5520
ppm = mg/Kg

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Hiram Cueto
Lab Director

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SOIL TECH ENGINEERING, INC.
298 Brokaw Rd
Santa Clara, CA 95050

Date Sampled: 07/08/93
Date Received: 07/13/93
Date Reported: 07/14/93

Project ID: 11-92-528-ST
Sample ID: B-1-12

Lab Number: T307075
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: 96% Surrogate Spike Recovery
92% Matrix Spike Recovery
2.2% Duplicate Deviation

Note: Analysis was performed using EPA methods 5030/8015/8020
ppm = mg/Kg

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SOIL TECH ENGINEERING, INC.
298 Brokaw Rd
Santa Clara, CA 95050

Date Sampled: 07/08/93
Date Received: 07/13/93
Date Reported: 07/14/93

Project ID: 11-92-528-ST
Sample ID: S-4-11

Lab Number: T307074
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: 82% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/8015/8020
ppm = mg/Kg

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Lab Director

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SOIL TECH ENGINEERING, INC.
298 Brokaw Rd
Santa Clara, CA 95050

Date Sampled: 07/08/93
Date Received: 07/13/93
Date Reported: 07/14/93

Project ID: 11-92-528-ST
Sample ID: S-3-11

Lab Number: T307073
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: 87% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/8015/8020
ppm = mg/Kg

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Lab Director

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SOIL TECH ENGINEERING, INC.
298 Brokaw Rd
Santa Clara, CA 95050

Date Sampled: 07/08/93
Date Received: 07/13/93
Date Reported: 07/14/93

Project ID: 11-92-528-ST
Sample ID: S-2-11

Lab Number: T307072
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: 83% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/8015/8020
ppm = mg/Kg

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Hiram Cueto
Lab Director

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SOIL TECH ENGINEERING, INC.
298 Brokaw Rd
Santa Clara, CA 95050

Date Sampled: 07/08/93
Date Received: 07/13/93
Date Reported: 07/14/93

Project ID: 11-92-528-ST
Sample ID: S-1-11

Lab Number: T307071
Matrix: Soil

TPH-gas/BTXE

ANALYTE	Detection Limit ppm	Sample Results ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	<1.0
Benzene	0.005	<0.005
Toluene	0.005	<0.005
Xylenes	0.005	<0.005
Ethylbenzene	0.005	<0.005

QA/QC: 90% Surrogate Spike Recovery

Note: Analysis was performed using EPA methods 5030/8015/8020
ppm = mg/Kg

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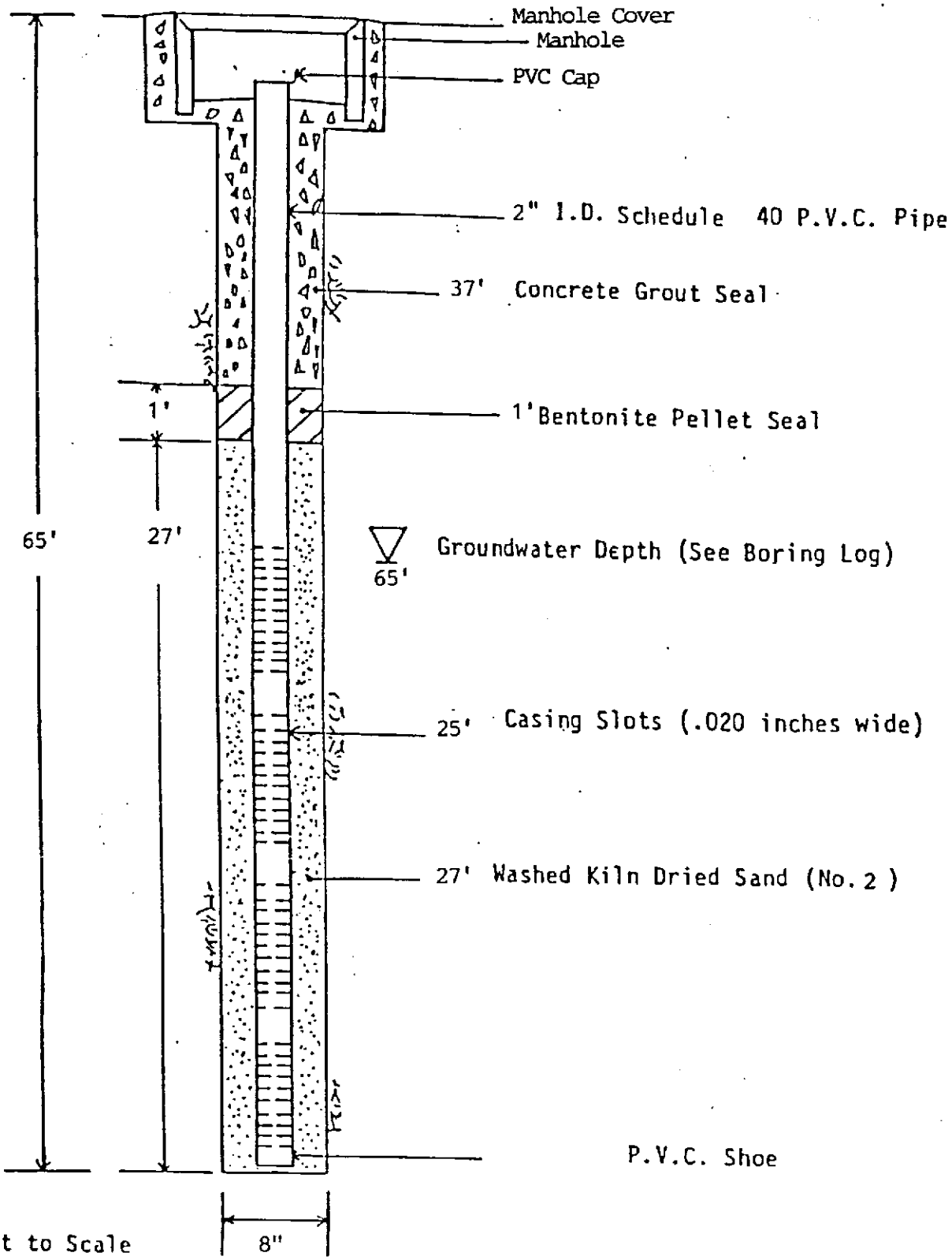
Hiram Cueto
Lab Director

File No. 11-92-528-ST

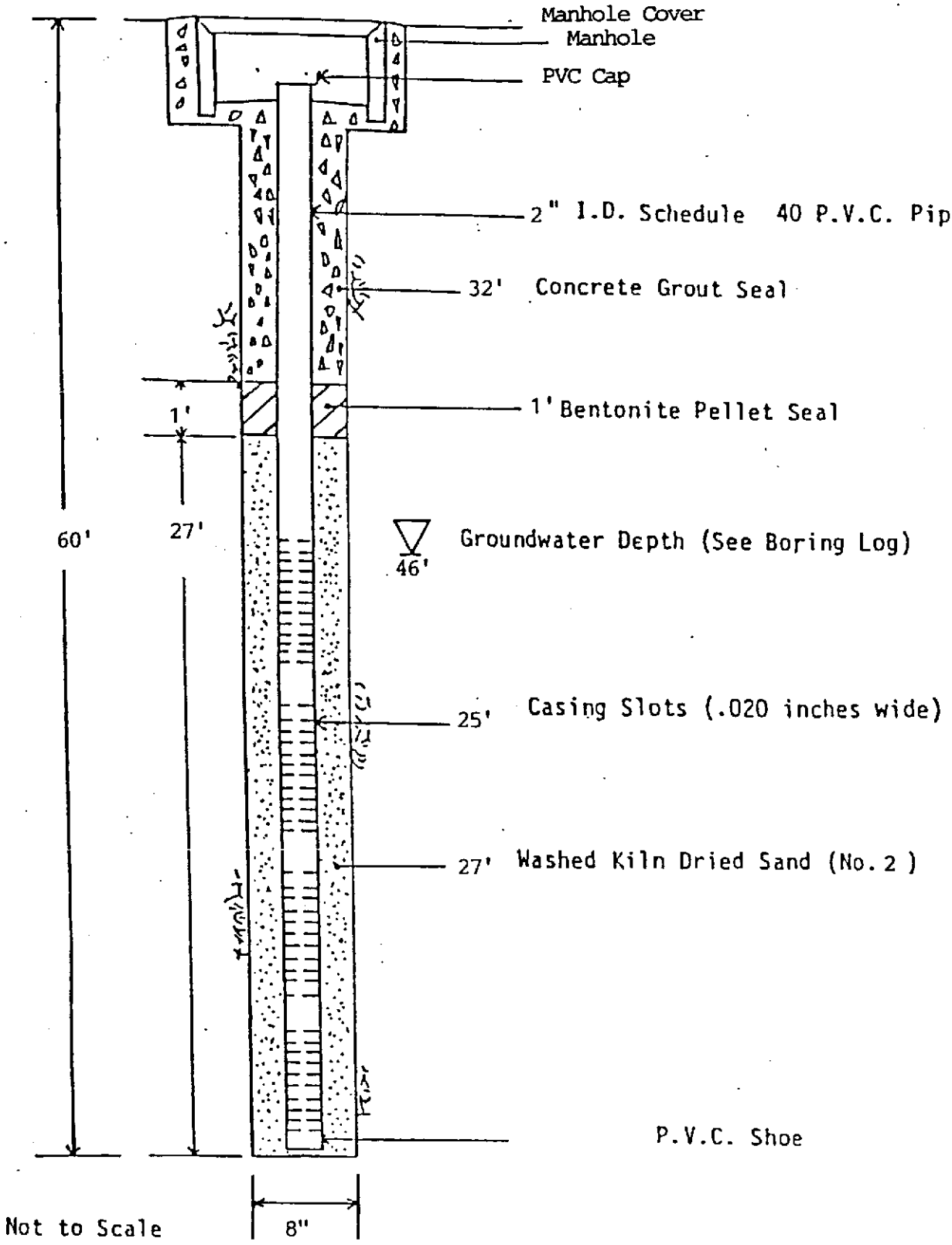
A P P E N D I X "E"

SOIL TECH ENGINEERING, INC.



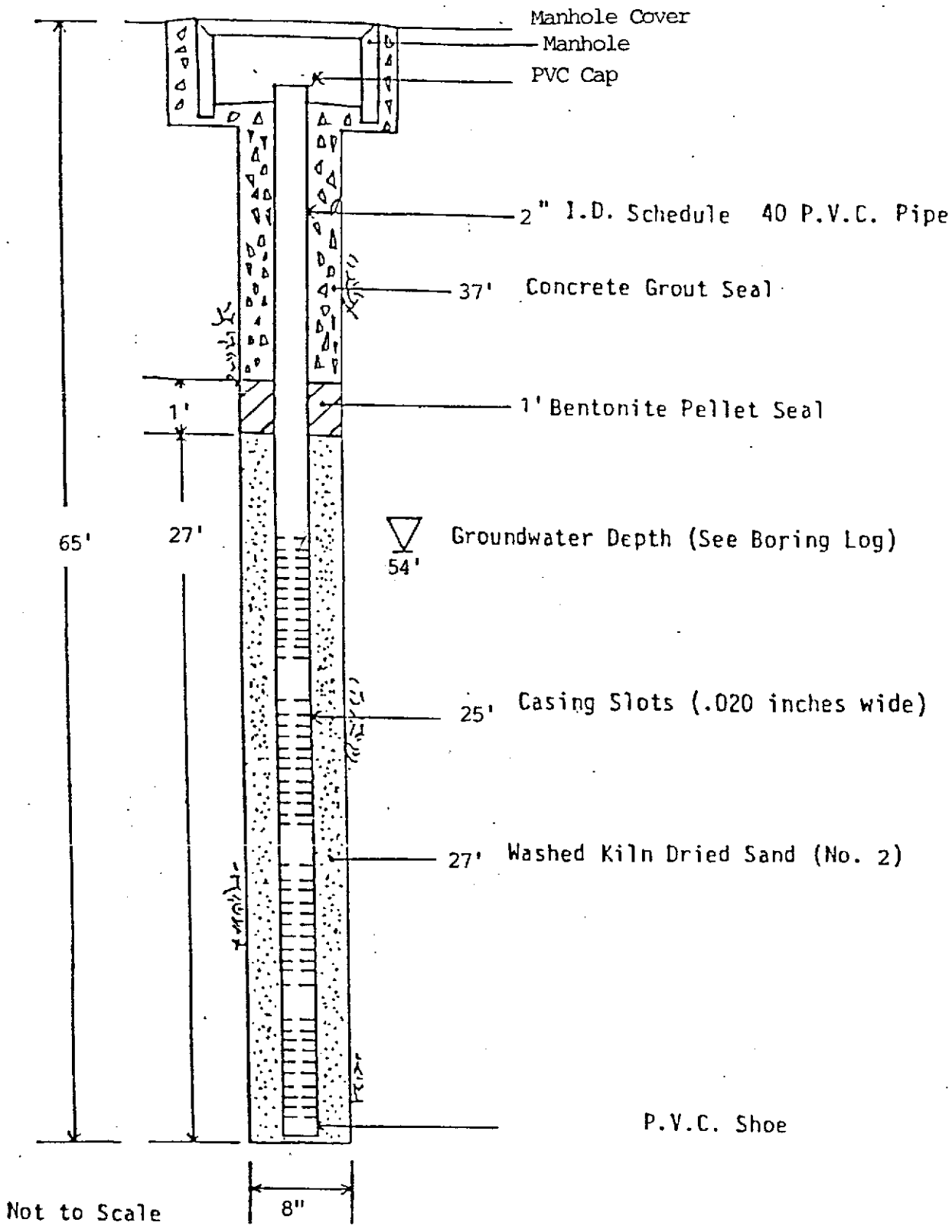
STMW-3

Piezometer Schematic



STMW-2

Piezometer Schematic



SIMW-1

Piezometer Schematic

Logged By	Noori Ameli	Exploratory Boring Log	Boring No	STMW-3
Date Drilled	7/07/93	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
65					▽ First groundwater encountered at 65 feet. Boring terminated at 65 feet.
66					
67					
68					
69					
70					
71					
72					
73					
74					
75					
76					
77					
78					
79					
80					

Remarks

Logged By	Noori Ameli	Exploratory Boring Log	Boring No	STMW-3
Date Drilled	7/07/93	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
49				CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
50					
51					
52					
53					
54					
55					
56					
57				CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
58					
59					
60					
61					
62					
63					
64				CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3

Remarks

Logged By	Noori Ameli	Exploratory Boring Log	Boring No.	STMW-3
Date Drilled	7/07/93	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
33				CL	Color changes to brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
34					
35					
36					
37					
38					
39					
40	STMW-3-40			CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
41					
42					
43					
44					
45					
46					
47					
48					

Remarks

File No. 11-92-528-ST

Logged By: Noori Ameli	Exploratory Boring Log	Boring No. STMW-3
Date Drilled: 7/07/93	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				CL	Color changes to brown silty clay, hard. Munsell Color: HUE 10YR 4/3
18					
19					
20	STMW-3-20			CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
21					
22					
23					
24					
25					
26				CL	Color changes to olive silty clay, hard. Munsell Color: HUE 5Y 4/3
27					
28					
29					
30	STMW-3-30			CL	Olive silty clay, hard. Munsell Color: HUE 5Y 4/3
31					
32					

Remarks

Logged By	Noori Ameli	Exploratory Boring Log	Boring No	STMW-3
Date Drilled	7/07/93	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
1				CL	3-inch asphalt, 4-inch dark greyish-brown baserock. Munsell Color: HUE 2.5Y 4/2 Brown sandy gravelly clay with small to medium size ($\frac{1}{2}$" to 1" diameter) rocks. Munsell Color: HUE 10YR 4/3
2					
3					
4					
5	STMW-3-5			CL	Brown sandy gravelly clay with small to medium size ($\frac{1}{2}$" to 1" diameter) rocks. Munsell Color: HUE 10YR 4/3
6					
7					
8					
9					
10	STMW-3-10			CL	Color changes to olive-grey silty clay, damp, hard. Munsell Color: HUE 5Y 4/2
11					
12					
13					
14					
15	STMW-3-15			CL	Color changes to brown silty clay, hard. Munsell Color: HUE 10YR 4/3
16					

Remarks

Logged By	Noori Ameli	Exploratory Boring Log	Boring No	STMW-2
Date Drilled	6/30/93	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
49				CL	Color changes to brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					Boring terminated at 60 feet.
61					
62					
63					
64					

Remarks

11-92-526-SI

Logged By Noori Ameli	Exploratory Boring Log	Boring No. STMW-2
Date Drilled 6/30/93	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
33				CL	Olive silty clay, hard. Munsell Color: HUE 5Y 4/3
34					
35					
36					
37					
38					
39					
40	STMW-2-40			CL	Color changes to brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
41					
42					
43					
44					
45					
46					▽ First groundwater encountered at 46 feet.
47					
48					

Remarks

File No. 11-92-528-ST

Logged By: Noori Ameli	Exploratory Boring Log	Boring No: STMW-2
Date Drilled: 6/30/93	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				CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
18					
19					
20	STMW-2-20			CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
21					
22					
23				CL	Color changes to olive silty clay, hard. Munsell Color: HUE 5Y 4/3
24					
25	STMW-2-25			CL	Olive silty clay, hard. Munsell Color: HUE 5Y 4/3
26					
27					
28					
29					
30	STMW-2-30			CL	Olive silty clay, hard. Munsell Color: HUE 5Y 4/3
31					
32					

Remarks

Logged By	Noori Ameli	Exploratory Boring Log	Boring No	STMW-2
Date Drilled	6/30/93	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
1				CL	3-inch asphalt, 4-inch dark greyish-brown baserock. Munsell Color: HUE 2.5Y 4/2 Brown sandy gravelly clay with small to medium size ($\frac{1}{2}$" to 1" diameter) rocks. Munsell Color: HUE 10YR 4/3
2					
3					
4					
5	STMW-2-5			CL	Brown sandy gravelly clay with small to medium size ($\frac{1}{2}$" to 1" diameter) rocks. Munell Color: HUE 10YR 4/2
6					
7					
8				CL	Color changes to olive-grey silty clay, damp, stiff. Munsell Color: HUE 5Y 4/2
9					
10	STMW-2-10			CL	Color changes to brown silty clay, hard. Munsell Color: HUE 10YR 4/3
11					
12					
13					
14					
15	STMW-2-15			CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
16					

Remarks

File No 11-92-528-ST

Logged By: Noori Ameli	Exploratory Boring Log	Boring No. STMW-1
Date Drilled: 7/02/93	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
49				CL	Brown silty clay, hard. Munsell Color: HUE 10YR 4/3
50	STMW-1-50			CL	Brown silty clay, hard. Munsell Color: HUE 10YR 4/3
51					
52					
53					
54					▽ First groundwater encountered at 54 feet.
55					
56					
57					
58					
59					
60					
61					
62					
63					
64					Boring terminated at 65 feet.

Remarks

File No 11-92-528-ST

Logged By Noori Ameli	Exploratory Boring Log	Boring No. STMW-1
Date Drilled 7/01/93	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
33				CL	Olive silty clay, hard. Munsell Color: HUE 5Y 4/3
34					
35					
36				CL	Color changes to brown silty clay, hard, damp. Munsell Color : HUE 10YR 4/3
37					
38					
39					
40	STMW-1-40			CL	Brown silty clay, hard. Munsell Color: HUE 10YR 4/3
41					
42					
43					
44					
45					
46					
47					
48					

Remarks

Logged by Noori Ameli	Exploratory Boring Log	Boring No STMW-1
Date Drilled 7/01/93	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				CL	Brown silty clay, hard. Munsell Color: HUE 10YR 4/3
18					
19					
20	STMW-1-20			CL	Brown silty clay, hard. Munsell Color: HUE 10YR 4/3
21					
22					
23					
24					
25					
26				CL	Color changes to olive silty clay, hard. Munsell Color: HUE 5Y 4/3
27					
28					
29					
30	STMW-1-30			CL	Olive silty clay, hard. Munsell Color: HUE 5Y 4/3
31					
32					

Remarks

Logged By Noori Ameli	Exploratory Boring Log	Boring No STMW-1
Date Drilled 7/01/93	Approx. Elevation	Boring Diameter 8-inch
Drilling Method Mobile drill ri B-40L	Sampling Method	

Depth, Ft.	Sample No.	Field Test for Total Ionization	Penetration Resistance Blows/Ft.	Unified Soil Classification	DESCRIPTION
1				CL	Dark brown silty gravelly clay, stiff. Munsell Color: HUE 10YR 3/3
2					
3					
4					
5				CL	Brown sandy gravelly clay with small to medium size ($\frac{1}{2}$" to 1" diameter) rocks. Munsell Color: HUE 10YR 4/3
6					
7					
8					
9					
10	STMW-1-10			CL	Brown sandy gravelly clay with small to medium size ($\frac{1}{2}$" to 1" diameter) rocks.
11					
12					
13					
14					
15	STMW-1-15			CL	Brown silty clay, hard. Munsell Color: HUE 10YR 4/3
16					

Remarks

Logged By	Noori Ameli	Exploratory Boring Log	Boring No	B-1
Date Drilled	7/01/93	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
49				CL	Brown fine sandy clay, moist, stiff. Munsell Color: HUE 10YR 4/3
50					Boring terminated at 50 feet.
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					
64					

Remarks

Logged By	Noori Ameli	Exploratory Boring Log	Boring No.	B-1
Date Drilled	7/01/93	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
33				CL	Olive silty clay, hard. Munsell Color: HUE 5Y 4/3
34				CL	Color changes to brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
35					
36					
37					
38					
39					
40	B-1-40			CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
41					
42					
43					
44					
45					
46					
47					▽ First groundwater encountered at 47 feet.
48				CL	Brown fine sandy clay, moist, stiff. Munsell Color: HUE 10YR 4/3

Remarks

Logged By Noori Ameli	Exploratory Boring Log	Boring No B-1
Date Drilled 7/01/93	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				CL	Color changed to brown silty clay, hard, Munsell Color: HUE 10YR 4/3
18					
19					
20	B-1-20			CL	Brown silty clay, hard, damp. Munsell Color: HUE 10YR 4/3
21					
22					
23					
24					
25				CL	Color changes to olive-silty clay, hard. Munsell Color: HUE 5Y 4/3
26					
27					
28					
29					
30	B-1-30			CL	Olive silty clay, hard. Munsell Color: HUE 5Y 4/3
31					
32					

Remarks

Logged By	Noori Ameli	Exploratory Boring Log	Boring No	B-1
Date Drilled	7/01/93	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
1				CL	3-inch asphalt, 4-inch dark greyish-brown baserock. Munsell Color: HUE 2.5Y 4/2 Brown sandy gravelly clay with small to medium size ($\frac{1}{2}$" to 1" diameter) rocks. Munsell Color: HUE 10YR 4/3
2					
3					
4					
5	B-1-5			CL	Brown sandy gravelly clay with small to medium size ($\frac{1}{2}$" to 1" diameter) rocks. Munsell Color: HUE 10YR 4/3
6					
7					
8					
9					
10	B-1-10			CL	Color changes to olive-grey silty clay, damp, hard. Munsell Clolor: HUE 5Y 4/2
11					
12					
13					
14					
15	B-1-15			CL	Color changed to brown silty clay, hard. Munsell Color: HUE 10YR 4/3
16					

Remarks

File No. 11-92-528-ST

A P P E N D I X "D"

SOIL TECH ENGINEERING, INC.

File No. 11-92=528-ST

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.

File No. 11-92=528-ST

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.

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.

File No. 11-92=528-ST

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 two feet 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 distilled 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 containing about 5% bentonite (see Well Construction Detail).

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.

File No. 11-92=528-ST

DRILLING AND SOIL SAMPLING PROCEDURE

A truck-mounted drill rig, using a continuous, solid-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 distilled 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 were 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

Argon Mobile Labs

3008 McKittrick Ct., Suite N • Ceres, CA 95307 • (209) 537-7836

SOIL TECH ENGINEERING, INC
298 Brokaw Rd.
Santa Clara CA. 95050

Date Sampled: 07/27/93
Date Received: 07/27/93
Date Reported: 07/29/93

Project ID: 11-92-528-ST

Matrix: Water

Sample Number	Sample Description	TPH-Diesel Detection Limit	Total Petroleum Hydrocarbons as Diesel
		ppb	ppb
T307301	STMW-1	50	<50
T307302	STMW-2	50	<50
T307303	STMW-3	50	<50

QA/QC: Blank is none detected.
98% Spike Recovery (T307301)
2.5% Duplicate Spike Deviation

Note: Analysis was performed by EPA methods 3510/TPH-LUFT
ppb = ug/L

ARGON MOBILE LABS

Hiram Cueto
Lab Director

Argon Mobile Labs

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SOIL TECH ENGINEERING, INC.
298 Brokaw Rd.
Santa Clara, CA 95050

Date Sampled: 07/27/93
Date Received: 07/27/93
Date Reported: 08/03/93

Project ID: 11-92-528-ST

Matrix: Water

TOTAL OIL & GREASE

Sample Number	Sample Description	Detection Limit	Gravimetric Waste Oil as Petroleum Oil
		ppm	ppm
T307301	STMW-1	50	<50
T307302	STMW-2	50	<50
T307303	STMW-3	50	<50

QA/QC: Freon blank is none detected.
107% Spike Recovery (T307301)
91% Duplicate Spike Recovery

Note: Analysis was performed by standard EPA methods 3510/5520
ppm = mg/L

ARGON MOBILE LABS

Hiram Cueto
Lab Director

Argon Mobile Labs

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SOIL TECH ENGINEERING, INC.
298 Brokaw Rd.
Santa Clara, CA 95050

Date Sampled: 07/27/93
Date Received: 07/27/93
Date Analyzed: 07/29/93

Project ID: 11-92-528-ST
Sample ID: STMW-1

Lab No: T307301
Matrix: Water

601 Halogenated Volatile Organics

	Det. Lim. (ppb)	Results (ppb)
Bromodichloromethane	1.0	ND
Bromoform	2.0	ND
Bromomethane	0.8	ND
Carbon Tetrachloride	1.2	ND
Chlorobenzene	2.5	ND
Chloroethane	5.2	ND
Chloroform	0.5	ND
2-Chloroethylvinyl ether	1.3	ND
Chloromethane	0.8	ND
Dibromochloromethane	0.9	ND
Dibromomethane	0.9	ND
1,2-Dichlorobenzene	1.5	ND
1,3-Dichlorobenzene	3.2	ND
1,4-Dichlorobenzene	2.4	ND
Dichlorodifluoromethane	2.0	ND
1,1-Dichloroethane	0.7	ND
1,2-Dichloroethane	0.3	ND
1,1-Dichloroethylene	1.3	ND
t-1,2-Dichloroethylene	1.0	ND
Dichloromethane	5.0	ND
1,2-Dichloropropane	4.0	ND
t-1,3-Dichloropropylene	3.4	ND
1,1,2,2-Tetrachloroethane	0.3	ND
1,1,1,2-Tetrachloroethane	0.3	ND
Tetrachloroethylene	0.3	ND
1,1,1-Trichloroethane	0.3	ND
1,1,2-Trichloroethane	0.2	ND
Trichloroethylene	1.2	ND
Trichlorofluoromethane	3.0	ND
Trichloropropane	3.0	ND
Vinyl Chloride	1.8	ND

QA/QC: 100% Surrogate Spike Recovery 4-Bromofluorobenzene
Note: ppb = ug/L

Argon Mobile Labs

Hiram Cueto
Lab Director

Argon Mobile Labs

3008 McKittrick Ct., Suite N • Ceres, CA 95307 • (209) 537-7836

SOIL TECH ENGINEERING, INC.
298 Brokaw Rd.
Santa Clara, CA 95050

Date Sampled: 07/27/93
Date Received: 07/27/93
Date Analyzed: 07/29/93

Project ID: 11-92-528-ST
Sample ID: STMW-2

Lab No: T307302
Matrix: Water

601 Halogenated Volatile Organics

	Det. Lim. (ppb)	Results (ppb)
Bromodichloromethane	1.0	ND
Bromoform	2.0	ND
Bromomethane	0.8	ND
Carbon Tetrachloride	1.2	ND
Chlorobenzene	2.5	ND
Chloroethane	5.2	ND
Chloroform	0.5	ND
2-Chloroethylvinyl ether	1.3	ND
Chloromethane	0.8	ND
Dibromochloromethane	0.9	ND
Dibromomethane	0.9	ND
1,2-Dichlorobenzene	1.5	ND
1,3-Dichlorobenzene	3.2	ND
1,4-Dichlorobenzene	2.4	ND
Dichlorodifluoromethane	2.0	ND
1,1-Dichloroethane	0.7	ND
1,2-Dichloroethane	0.3	ND
1,1-Dichloroethylene	1.3	ND
t-1,2-Dichloroethylene	1.0	ND
Dichloromethane	5.0	ND
1,2-Dichloropropane	4.0	ND
t-1,3-Dichloropropylene	3.4	ND
1,1,2,2-Tetrachloroethane	0.3	ND
1,1,1,2-Tetrachloroethane	0.3	ND
Tetrachloroethylene	0.3	ND
1,1,1-Trichloroethane	0.3	ND
1,1,2-Trichloroethane	0.2	ND
Trichloroethylene	1.2	ND
Trichlorofluoromethane	3.0	ND
Trichloropropane	3.0	ND
Vinyl Chloride	1.8	ND

QA/QC: 99% Surrogate Spike Recovery 4-Bromofluorobenzene
Note: ppb = ug/L

Argon Mobile Labs

Hiram Cueto
Lab Director

Argon Mobile Labs

3008 McKittrick Ct., Suite N • Ceres, CA 95307 • (209) 537-7836

SOIL TECH ENGINEERING, INC.
298 Brokaw Rd.
Santa Clara, CA 95050

Date Sampled: 07/27/93
Date Received: 07/27/93
Date Analyzed: 07/29/93

Project ID: 11-92-528-ST
Sample ID: STMW-3

Lab No: T307303
Matrix: Water

601 Halogenated Volatile Organics

	Det. Lim. (ppb)		Results (ppb)
Bromodichloromethane	1.0		ND
Bromoform	2.0		ND
Bromomethane	0.8		ND
Carbon Tetrachloride	1.2		ND
Chlorobenzene	2.5		ND
Chloroethane	5.2		ND
Chloroform	0.5		ND
2-Chloroethylvinyl ether	1.3		ND
Chloromethane	0.8		ND
Dibromochloromethane	0.9		ND
Dibromomethane	0.9		ND
1,2-Dichlorobenzene	1.5		ND
1,3-Dichlorobenzene	3.2		ND
1,4-Dichlorobenzene	2.4		ND
Dichlorodifluoromethane	2.0		ND
1,1-Dichloroethane	0.7		ND
1,2-Dichloroethane	0.3		ND
1,1-Dichloroethylene	1.3		ND
t-1,2-Dichloroethylene	1.0		ND
Dichloromethane	5.0		ND
1,2-Dichloropropane	4.0		ND
t-1,3-Dichloropropylene	3.4		ND
1,1,2,2-Tetrachloroethane	0.3		ND
1,1,1,2-Tetrachloroethane	0.3		ND
Tetrachloroethylene	0.3		ND
1,1,1-Trichloroethane	0.3		ND
1,1,2-Trichloroethane	0.2		ND
Trichloroethylene	1.2		ND
Trichlorofluoromethane	3.0		ND
Trichloropropane	3.0		ND
Vinyl Chloride	1.8		ND

QA/QC: 97% Surrogate Spike Recovery 4-Bromofluorobenzene
Note: ppb = ug/L

Argon Mobile Labs

Hiram Cueto
Lab Director

CHAIN OF CUSTODY RECORD

AML

PROJ. NO.	NAME
11-93-523-3T	3800 1st. St. LIVERMORE

SAMPLERS: *(Signature)*

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	TPHG/BTEX	TPHD	TOG	8010	REMARKS
1	7/27/93	12[52]		✓	STMW-1	4	✓	✓	✓	✓	
2	7/27/93	13[12]		✓	STMW-2	4	✓	✓	✓	✓	
3	7/27/93	13[32]		✓	STMW-3	4	✓	✓	✓	✓	

ANALYSES REQUESTED (2)

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Receive by: *(Signature)*
[illegible]	7/27/93 14[30]	[illegible]			
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	

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

298 [illegible] ■ (408) 496-0265 OR (408) 496-0266

CHAIN OF CUSTODY RECORD

ML

PROJ. NO.	NAME
11-92-528-ST	3802 1st. St. LIVERMORE

SAMPLERS: *(Signature)*

N. A

NO.	DATE	TIME	SOIL	WATER	LOCATION	CONTAINER	Analyses Requested (2) TPHG/BTEX	TPHD	TOG	8015			REMARKS
1	7/27/93	12[23]		✓	STMW-1	4	✓	✓	✓	✓			
2	7/27/93	13[10]		✓	STMW-2	4	✓	✓	✓	✓			
3	7/27/93	13[52]		✓	STMW-3	4	✓	✓	✓	✓			

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Receive by: *(Signature)*
	7/27/93 14[20]				
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	

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

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

File No. 11-92-528-ST

A P P E N D I X "F"

SOIL TECH ENGINEERING, INC.

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 3800 First Street
Livermore, CA 94550

CLIENT
Name Mr. Edwin Spencer
Address 880 Columbine Ct. Voice 510-837-6204
City Danville, CA Zip 94526

APPLICANT
Name Alpha Geo Services Fax 408-988-3343
Address 298 Brokaw Road Voice 408-988-1032
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. ___

WELL PROJECTS

Drill Hole Diameter	8	in.	Maximum Depth	65	ft.
Casing Diameter	2	in.			
Surface Seal Depth	30-35	ft.	Number	3	

GEOTECHNICAL PROJECTS

Number of Borings	___		Maximum Depth	___	ft.
Hole Diameter	___	in.			

ESTIMATED STARTING DATE 7/8/93
ESTIMATED COMPLETION DATE 7/8/93

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

APPLICANT'S SIGNATURE [signature] Date 7/8/93

FOR OFFICE USE

PERMIT NUMBER 93367
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 [signature] Date 8 Jul 93
Wyman Hong

91092

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

File No. 11-92-528-ST

A P P E N D I X "G"

SOIL TECH ENGINEERING, INC.

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

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
80 Swan Way, Rm 200
Oakland, CA 94621
(510) 271-4530

StID 2937

January 27, 1993

Edwin Spencer
880 Columbine Ct
Danville, CA 94526

Subject: PSA for Livermore Honda, 3800 First St., Livermore

Dear Mr. Spencer:

This office has completed review of the file for the above referenced site. When three underground storage tanks (USTs) were removed in December 1992, soil samples taken from native soil beneath the USTs exhibited up to 98 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G) and 95 ppm total oil and grease (TOG).

At this time additional investigations are required to determine the lateral and vertical extent, and severity of soil and ground water contamination which may have resulted from the unauthorized release of fuel products at this site. Such an investigation shall be in the form of a **Preliminary Site Assessment**, or PSA. The information gathered by the PSA will be used to determine an appropriate course of action to remediate the site, if deemed necessary. The PSA must be conducted in accordance with the RWQCB Staff Recommendations for the Initial Evaluation and Investigation of Underground Tanks, the State Water Resources Control Board LUFT Field Manual, and Article 11 of Title 23, California Code of Regulations. The major elements of such an investigation are summarized in the attached Appendix A.

The PSA proposal is due **within 45 days** of the date of this letter. Once the proposal is approved, field work should commence within 60 days. A report must be submitted within 45 days after the completion of this phase of work at the site. Subsequent reports are to be submitted quarterly until this site qualifies for RWQCB "sign off." All reports and proposals must be submitted under seal of a California Registered Geologist, Certified Engineering Geologist, or Registered Civil Engineer.

Enclosed is a UST Unauthorized Release/Contamination Site Report which must be completed **within 15 days** and returned to this office.

Please be advised that this is a formal request for technical reports pursuant to Title 23, CCR, Section 2722(c). Any extensions of the stated deadlines, or modifications of the required tasks, must be confirmed in writing by either this agency or the RWQCB. Copies of all proposals and reports must

also be sent to Mr. Eddy So of the RWQCB.

Should you have any questions about the content of this letter, please contact me at (510) 271-4530.

Sincerely,

Eva Chu
Hazardous Materials Specialist

enclosures

cc: Eddy So, RWQCB
Gil Jensen, Alameda County District Attorney's Office
Danielle Stefani, Livermore Fire Department
Edgar Howell/files

hondal