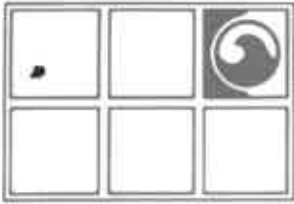


GSZ



**GROUNDWATER  
TECHNOLOGY, INC.**  
OIL RECOVERY SYSTEMS

4080 Pike Lane, Suite D, Concord, CA 94520-1227 (415) 671-2347

September 22, 1987

Mr. Peter Johnson  
Regional Water Quality Control Board  
1111 Jackson St., Rm. 6040  
Oakland, CA 94607

CALIFORNIA REGIONAL WATER  
SEP 22 1987  
QUALITY CONTROL BOARD

RE: Bay Center Project, Emeryville, Ca.

Dear Mr. Johnson:

Mr. Kaczmarek of the Martin Company has requested I transmit the "Report of Further Subsurface Hydrocarbon Investigation, Emeryville, California Bay Center Project September 8, 1987". We hope this additional information will assist in your approval of our NPDES permit for this site.

If you have any questions, please feel free to contact myself or Jan Jacobson at (415) 671-2387.

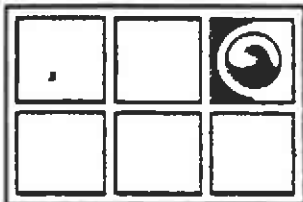
Sincerely,  
GROUNDWATER TECHNOLOGY, INC.

*Joyce Miley*

Joyce M. Miley  
Project Manager

JMM:jd

Enclosure



**GROUNDWATER  
TECHNOLOGY**

A DIVISION OF OIL RECOVERY SYSTEMS, INC.

4080 Pike Lane, Suite D, Concord, CA 94520-1227 (415) 671-2387

**REPORT OF  
FURTHER SUBSURFACE HYDROCARBON INVESTIGATION  
EMERYVILLE, CALIFORNIA  
BAY CENTER PROJECT  
SEPTEMBER 8, 1987**

**Prepared for:**

Mr. Walt Kaczmarek  
The Martin Company  
4256 Hacienda Drive  
Suite 101  
Pleasanton, CA 94566

**Prepared by:**

Groundwater Technology, Inc.  
4080 Pike Lane, Suite D  
Concord, CA 94520

*Kelly A. Kline*

Kelly A. Kline  
Project Geologist

*Joyce M. Miley<sup>GM</sup>*

Joyce M. Miley  
Project Manager

R203 799 8200

## TABLE OF CONTENTS

INTRODUCTION .....	1
SCOPE OF WORK .....	1
SOIL BORINGS .....	3
SOIL SAMPLING .....	5
MONITORING WELL INSTALLATION .....	5
WATER SAMPLING ANALYSES .....	6
CLOSURE .....	7
FIGURE 1 - SITE LOCATION MAP	
FIGURE 2 - SITE PLAN	
FIGURE 3 - GROUNDWATER GRADIENT MAP	
APPENDIX I - DRILL LOGS	
APPENDIX II - STANDARD OPERATING PROCEDURES	
APPENDIX III - LABORATORY RESULTS	



REPORT OF  
FURTHER SUBSURFACE HYDROCARBON INVESTIGATION  
EMERYVILLE, CALIFORNIA  
BAY CENTER PROJECT  
SEPTEMBER 8, 1987

INTRODUCTION

This report presents the results of the additional Phase I work performed by Groundwater Technology, Inc. (GTI) as requested by EMCON Associates at the Bay Center Project located in Emeryville, California (See Figure 1, Site Location Map).

SCOPE OF WORK

The purpose of the investigation conducted by GTI was to provide a general assessment of the hydrocarbon contamination underlying the site. Specifically, the scope of services was as follows:

- 1) Assess subsurface conditions at the site by drilling seven soil borings.
- 2) Continuously obtain undisturbed soil samples from each boring at approximately the 21 through 25-foot depth.
- 3) Install monitoring wells in each of the seven soil borings.





FIGURE 1  
SITE LOCATION MAP



MARTIN COMPANY  
EMERYVILLE, CALIFORNIA



GROUNDWATER  
TECHNOLOGY

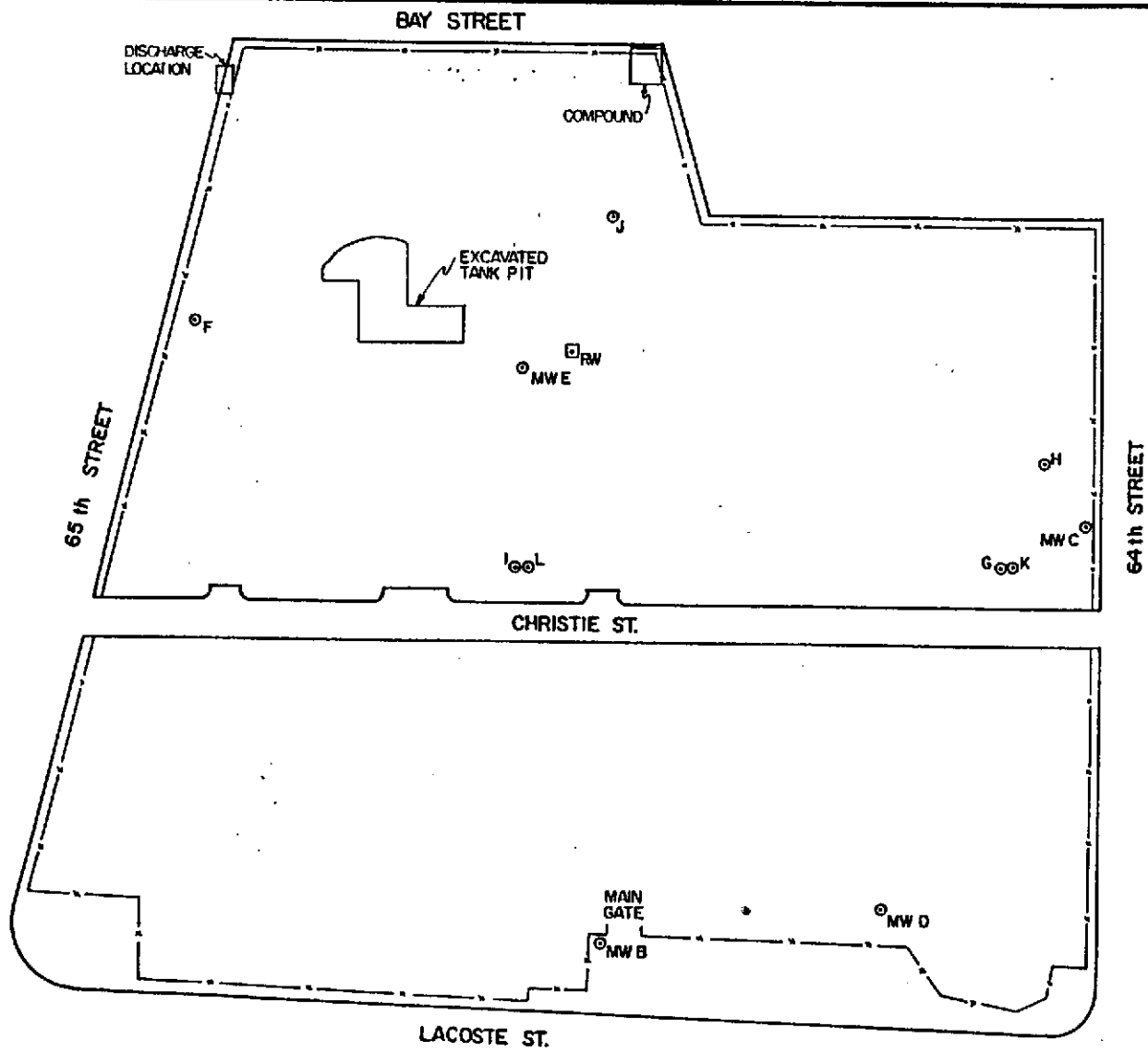
- 4) Survey all new monitoring wells.
- 5) Monitor each well to determine the depth to water for preparation of a groundwater gradient map.
- 6) Conduct analyses of water samples from each monitoring well by U.S. Environmental Protection Agency (EPA) Methods 418.1, 602, 3020/7421, and 3005/6010.
- 7) Prepare a report presenting the results of the further site investigation.

#### SOIL BORINGS

The purpose of the soil borings was to further explore the site for the presence of subsurface hydrocarbon contamination, and to obtain a definition of the vertical and areal extent of the contamination, if encountered. Five of the borings were drilled to an approximate depth of 25 feet, as per EMCON Associates recommendations. These five borings, MW-F, through MW-J, were continuously sampled from approximately the 21 through 25 foot depth (See Appendix I - Drill Logs). Two additional borings were requested by The Martin Company. These two borings, MW-K and MW-L were drilled to approximately 15 feet and placed beside MW-G and MW-I respectively (See Site Plan - Figure 2).

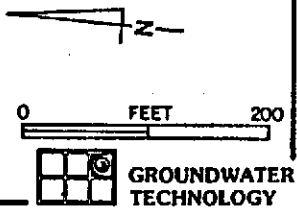
All of the soil borings were drilled with a truck-mounted drill rig using 7.5-inch outside-diameter (O.D.) hollow-stem augers. The drilling was performed under the direction of a GTI field





**LEGEND**  
 ○ MONITORING WELL  
 □ RECOVERY WELL

FIGURE 2  
 SITE PLAN



MARTIN COMPANY  
 EMERYVILLE, CALIFORNIA

geologist who also maintained a continuous log of the materials encountered in accordance with the Unified Soil Classification System (See Appendix I - Drill Logs).

#### SOIL SAMPLING

Soil samples were obtained during drilling using a 2.5-inch O.D. split-spoon sampler lined with three, 2-inch by 6-inch brass sample tubes. The sampler was driven 18 inches at each point. Samples were collected at 5 foot intervals beginning at a depth of 13.5 feet below the ground surface to approximately 20 feet. Between 21 feet through approximately 25 to 26 feet continuous samples were taken to more accurately log the soils encountered. The collected samples were sealed, capped and packed on ice in an insulated cooler for possible delivery to the laboratory for analysis. Each sample was labeled with the boring identification, time of day and depth collected. A Chain-of-Custody Manifest was included with the samples at all times (See Appendix II, Standard Operating Procedures).

#### MONITORING WELL INSTALLATION

Groundwater monitoring wells were installed in all of the borings immediately after drilling. The wells were constructed with 0.020 inch machine slotted, PVC well screen and 2-inch blank casing. In monitoring wells MW-F through MW-J, 5 feet of well screen was installed in the bottom of each of the borings with blank casing installed to approximately 3 to 4 feet above ground as per EMCON Associates recommendations. The construction of MW-K and MW-L, consisted of well screen from the bottom of each

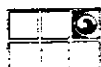




boring to 5-feet below the ground surface. Blank casing was then installed to approximately 3 to 4 feet above ground surface. A gravel pack consisting of Lonestar No. 2 sand was placed in the annulus from the bottom of each boring to approximately one foot above the well screen interval. The wells were completed with a bentonite seal and cement grout to the surface (See Appendix I - Drilling Logs). 4-inch steel pipes were installed to protect the well heads. After installation, well heads for all the wells were surveyed to a common datum for elevation control, and subsequent gradient determination.

#### WATER SAMPLING ANALYSES

On August 30, 1987 wells MW-F through MW-L were developed, purged and sampled. The monitoring wells were developed and purged by hand bailing and sampled with an EPA approved Teflon<sup>R</sup> sampler. The samples were labeled immediately with job identification number, the sample number, date, time and type of analysis requested. The samples were then stored on ice in a thermally insulated cooler until delivery to GT Environmental Laboratories where they were then analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX), lead, arsenic, total petroleum hydrocarbons, and total volatile hydrocarbons. Chain-of-Custody Manifests were completed and enclosed as required. Analyses were performed by EPA Methods 3020/7421, 3005/6010, 418.1 and a Modified 602. (See Laboratory Results - Appendix III).



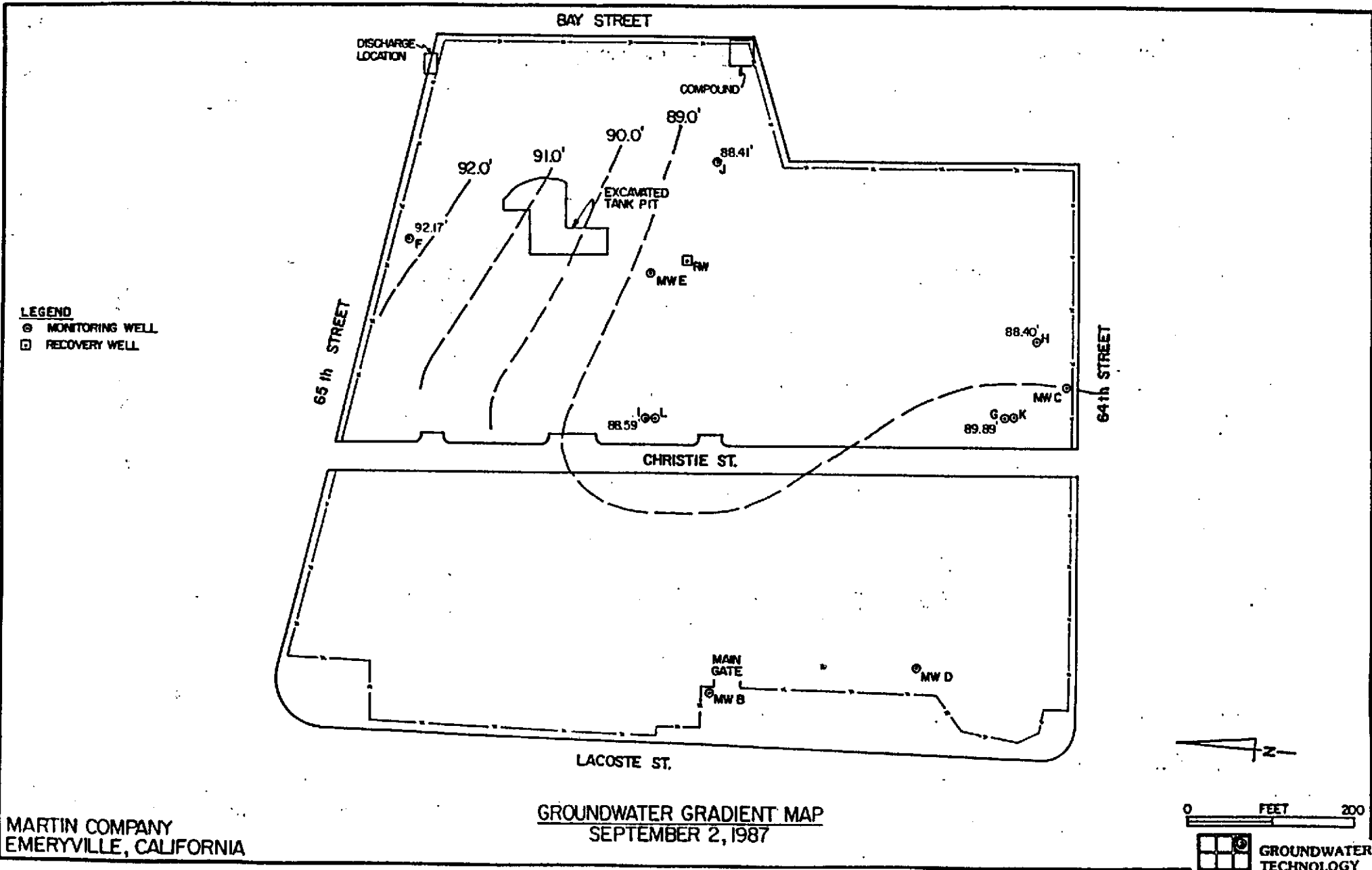
BAY CENTER PROJECT/EMERYVILLE  
SEPTEMBER 1987

On September 2, 1987, the recovery well was also sampled and all of the monitoring wells were monitored for depth to water. The recovery well water sampled was analyzed using the same previously mentioned EPA Methods. (See Laboratory Results - Appendix III). The depth to water measurements were used to generate a groundwater gradient map (See Groundwater Gradient Map - Figure 3).

#### CLOSURE

Groundwater Technology, Inc. would like to thank The Martin Company for the opportunity to conduct this assessment. Should you have any questions or require additional information with respect to this site please contact us in our Concord office.







**Monitoring Well F**

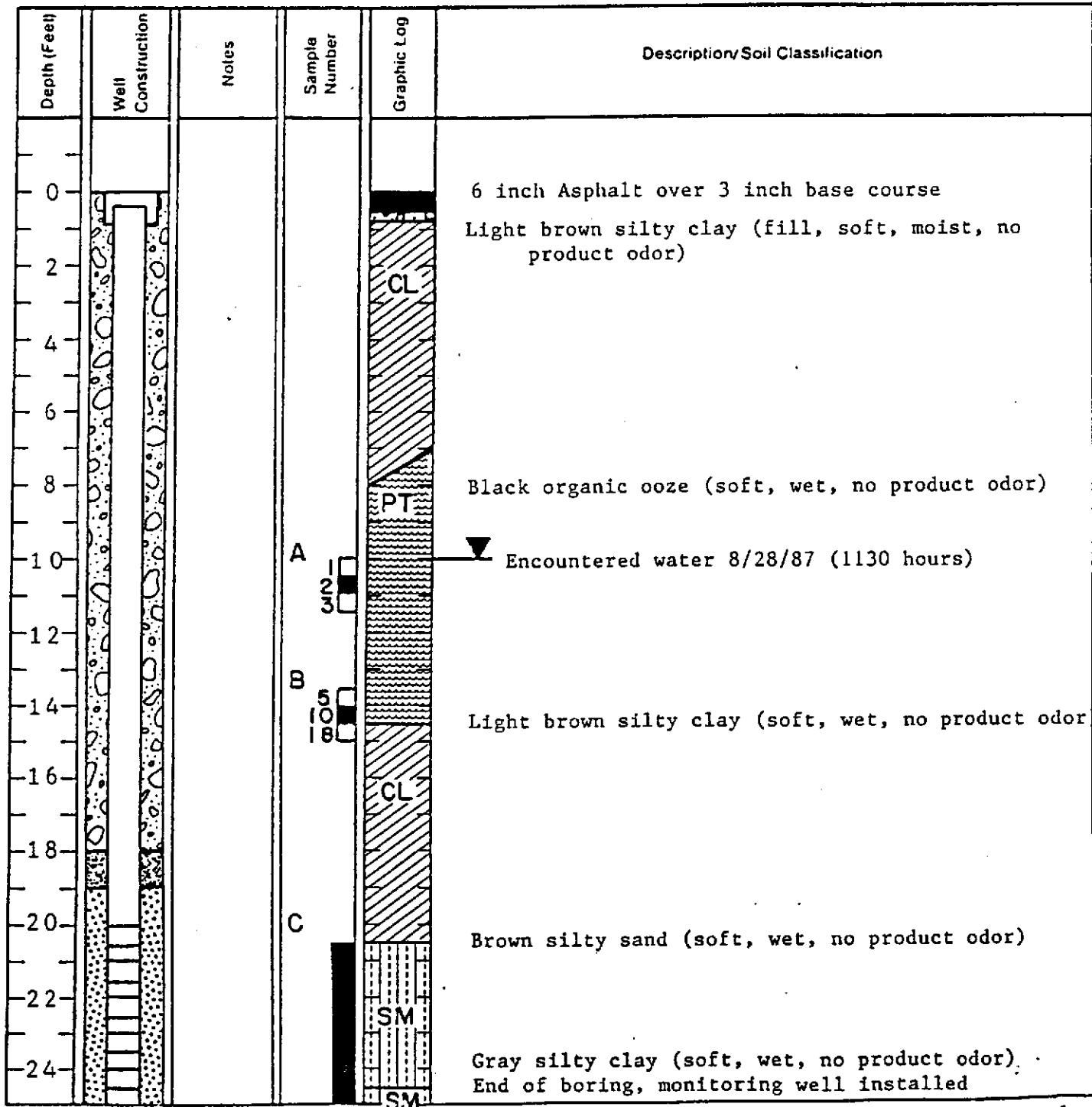
**Drilling Log**

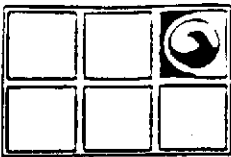
Project Martin Co./Emeryville Owner The Martin Company  
 Location Emeryville, CA Project Number 203 799 8200  
 Date Drilled 8/28/87 Total Depth of Hole 25 ft. Diameter 7.5 in.  
 Surface Elevation \_\_\_\_\_ Water Level, Initial 10 ft. 24-hrs.  
 Screen: Dia. 2 in. Length \_\_\_\_\_ Slot Size .020 in.  
 Casing: Dia. 2 in. Length 20 ft. Type PVC  
 Drilling Company Sierra Pacific Drilling Method Hollow Stem Auger  
 Driller Todd Byard Log by Kelly Kline

Sketch Map

See Site Plan

Notes





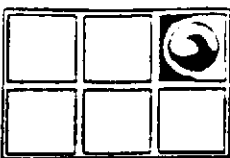
**Monitoring Well G**

**Drilling Log**

Project Martin Co./Emeryville Owner The Martin Company  
 Location Emeryville, CA Project Number 203 799 8200  
 Date Drilled 8/28/87 Total Depth of Hole 25 ft. Diameter 7.5 in.  
 Surface Elevation \_\_\_\_\_ Water Level, Initial 12 ft. 24-hrs \_\_\_\_\_  
 Screen: Dia. 2 in. Length \_\_\_\_\_ 5 ft. Slot Size .020 in.  
 Casing: Dia. 2 in. Length \_\_\_\_\_ 20 ft. Type PVC  
 Drilling Company Sierra Pacific Drilling Method Hollow Stem Auger  
 Driller Todd Byard Log by Kelly Kline

Sketch Map  
  
See Site Plan  
  
Notes

Depth (Feet)	Well Construction	Notes	Sample Number	Graphic Log	Description/Soil Classification
0					6 inch Asphalt over 3 inch base course
2					Dark brown clayey silt (fill, soft, moist, no product odor)
4				ML	
6					Dark black silty clay (soft, moist, no product odor) (grades gravelly) (gravels cease)
8				CL	
10					(grades light gray)
12					Encountered water 8/28/87 (1430 hours)
14			A		
16					Black organic ooze (soft, wet, no product odor)
18				PT	
20			B		
22					Light brown clayey sand (soft, wet, no product odor)
24				SC	
					Light brown silty sand (soft, wet, no product odor)
				SM	
					End of boring, monitoring well installed



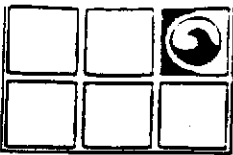
Monitoring Well H

Drilling Log

Project Martin Co./Emeryville Owner The Martin Company  
 Location Emeryville, CA Project Number 203 799 8200  
 Date Drilled 8/29/87 Total Depth of Hole 25.5 ft Diameter 7.5 in.  
 Surface Elevation \_\_\_\_\_ Water Level, Initial 12 ft 24-hrs \_\_\_\_\_  
 Screen: Dia. 2 in. Length \_\_\_\_\_ 5 ft Slot Size .020 in.  
 Casing: Dia. 2 in. Length \_\_\_\_\_ 20.5 ft Type PVC  
 Drilling Company Sierra Pacific Drilling Method Hollow Stem Auger  
 Driller Lynn Pera Log by Kelly Kline

Sketch Map  
  
See Site Plan  
  
Notes

Depth (Feet)	Well Construction	Notes	Sample Number	Graphic Log	Description/Soil Classification
0					6 inch Asphalt over 3 inch base course
2					Dark brown silt (fill, soft, moist, no product odor) (grades black)
4				MH	
6					
8				GM	Brown silty gravel (stiff, moist, no product odor) Dark black clayey silt (soft, moist, no product odor)
10				ML	
12					▼ Encountered water 8/29/87 (1000 hours)
14			A 3 2 1	PT	Black organic ooze (soft, wet, slight product odor)
16					
18			B 12		
20			16 12	CL	Light brown silty clay (soft, wet, no product odor)
22				SC	Light brown clayey sand (soft, wet, no product odor)
24			6 14 100 306	CL	Light brown clay (soft, wet, no product odor)
				SC	Light brown clayey sand (soft, wet, no product odor)
				CL	Light brown silty clay (soft, wet no product odor)



Depth (Feet)	Well Construction	Notes	Sample Number	Graphic Log	Description/Soil Classification (Color, Texture, Structures)
26				SC	Light brown clayey sand (soft, wet, no product odor) End of boring, install monitoring well
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					

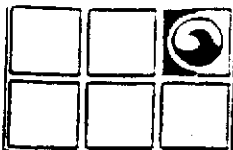


Project Martin Co./Emeryville Owner The Martin Company  
 Location Emeryville, CA Project Number 203 799 8200  
 Date Drilled 8/29/87 Total Depth of Hole 25.5 ft Diameter 7.5 in.  
 Surface Elevation \_\_\_\_\_ Water Level, Initial 12 ft 24-hrs \_\_\_\_\_  
 Screen: Dia 2 in. Length \_\_\_\_\_ 5 ft Slot Size .020 in.  
 Casing: Dia 2 in. Length \_\_\_\_\_ 20.5 ft Type PVC  
 Drilling Company Sierra Pacific Drilling Method Hollow Stem Auger  
 Driller Lynn Pera Log by Kelly Kline

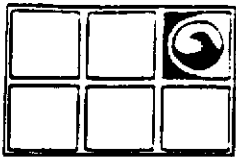
Sketch Map  
  
See Site Plan  
  
Notes

Depth (Feet)	Well Construction	Notes	Sample Number	Graphic Log	Description/Soil Classification
0					6 inch Asphalt over 3 inch base
0 - 1				ML	Greenish clayey silt (fill, soft, moist, no product odor)
1 - 3					Black clayey sand (fill, soft, moist, no product odor)
3 - 12				SC	
12					▼ Encountered water 8/29/87 (1300 hours)
12 - 13					Black organic ooze (soft, wet, slight product odor)
13 - 16				PT	
16 - 18			A		Brown silty clay (soft, wet, no product odor)
18 - 19			5	CL	
19 - 20			13		Brown clayey sand (soft, wet, no product odor)
20 - 21			19	SC	
21 - 22			B		Brown silty clay (soft, wet, no product odor)
22 - 23			10	CL	
23 - 24			11		Brown sandy clay (soft, wet, no product odor)
24 - 25			17	CL	
25 - 26			6		Brown clayey sand (soft, wet, no product odor)
26 - 27			10	SC	
27 - 28			5		



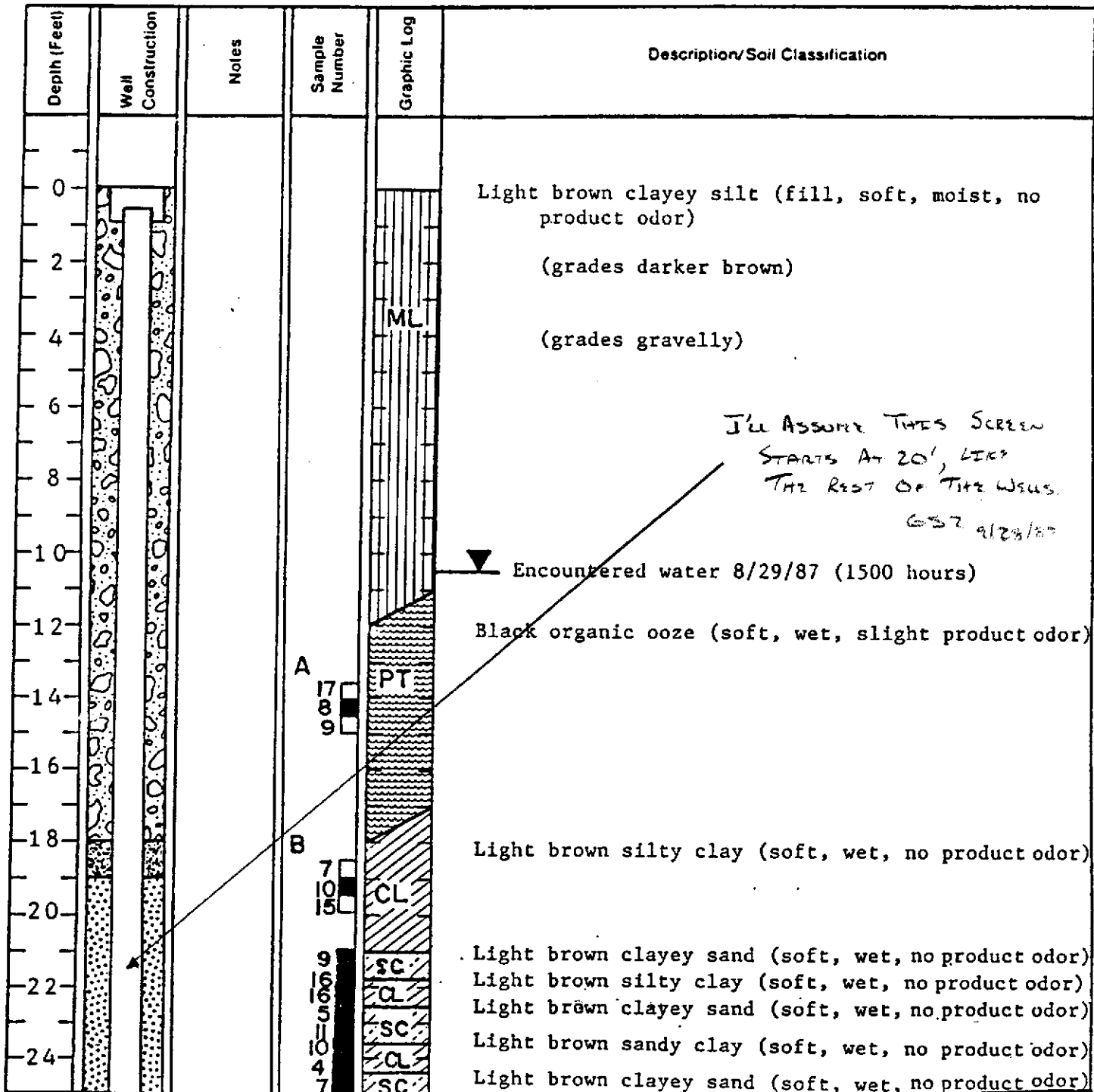


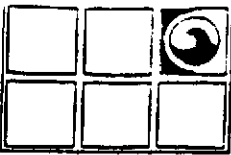
Depth (Feet)	Well Construction	Notes	Sample Number	Graphic Log	Description/Soil Classification (Color, Texture, Structures)
26				SC	Brown clayey sand (cont'd) End of boring, monitoring well installed
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					



Project Martin Co./Emeryville Owner The Martin Company  
 Location Emeryville, CA Project Number 203 799 8200  
 Date Drilled 8/29/87 Total Depth of Hole 25.5 ft Diameter 7.5 in.  
 Surface Elevation \_\_\_\_\_ Water Level, Initial 10.5 ft 24-hrs. \_\_\_\_\_  
 Screen: Dia. 2 in. Length \_\_\_\_\_ 20.5 ft Slot Size .020 in.  
 Casing: Dia. 2 in. Length \_\_\_\_\_ 5 ft Type PVC  
 Drilling Company Sierra Pacific Drilling Method Hollow Stem Auger  
 Driller Lynn Pera Log by Kelly Kline

Sketch Map  
  
See Site Plan  
  
Notes





Depth (Feet)	Well Construction	Notes	Sample Number	Graphic Log	Description/Soil Classification (Color, Texture, Structures)
26				SC	Light brown clayey sand (cont'd) End of boring, installed monitoring well
28					
30					
32					
34					
36					
38					
40					
42					
44					
46					
48					
50					
52					
54					
56					
58					



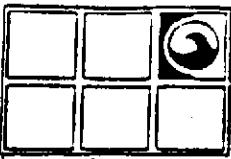
Monitoring Well K

Drilling Log

Project Martin Co./Emeryville Owner The Martin Company  
 Location Emeryville Project Number 203 799 8200  
 Date Drilled 8/28/87 Total Depth of Hole 15 ft. Diameter 7.5 in.  
 Surface Elevation \_\_\_\_\_ Water Level, Initial 12 ft. 24-hrs. \_\_\_\_\_  
 Screen: Dia. 2 in. Length \_\_\_\_\_ Slot Size .020 in.  
 Casing: Dia. 2 in. Length 5 ft. Type PVC  
 Drilling Company Sierra Pacific Drilling Method Hollow Stem Auger  
 Driller Todd Byard Log by Kelly Kline

Sketch Map  
  
See Site Plan  
  
Notes

Depth (Feet)	Well Construction	Notes	Sample Number	Graphic Log	Description/Soil Classification
0					6 inch Asphalt over 3 inch base course
2					Light brown clayey silt (fill, soft, moist, no product odor)
4					(grades darker brown)
6				ML	(grades gravelly)
8					(gravels cease)
10					
12					Encountered water 8/29/87 (1600 hours)
14		A		PT	Black organic ooze (soft, wet, no product odor)
16					End of boring, installed monitoring well
18					
20					
22					
24					



**Monitoring Well** L

Project Martin Co./Emeryville Owner The Martin Company  
 Location Emeryville, CA Project Number 203 799 8200  
 Date Drilled 8/29/87 Total Depth of Hole 15 ft. Diameter 7.5 in.  
 Surface Elevation \_\_\_\_\_ Water Level, Initial 11 ft. 24-hrs \_\_\_\_\_  
 Screen: Dia 2 in. Length \_\_\_\_\_ Slot Size .020 in.  
 Casing: Dia 2 in. Length 5 ft. Type PVC  
 Drilling Company Sierra Pacific Drilling Method Hollow Stem Auger  
 Driller Lynn Pera Log by Kelly Kline

Sketch Map

See Site Plan

---

Notes

Depth (Feet)	Well Construction	Notes	Sample Number	Graphic Log	Description/Soil Classification
0					Greenish clayey silt (fill, soft, moist, no product odor)
2				ML	Black clayey silt (fill, soft, moist, no product odor)
4					(grades gravelly)
6				ML	
8					
10					
12					Encountered water 8/29/87 (1130 hours)
14		A			
16				PT	Black organic ooze (soft, wet, no product odor) End of boring, installed monitoring well
18					
20					
22					
24					

APPENDIX II  
STANDARD OPERATING PROCEDURES

GROUNDWATER TECHNOLOGY  
STANDARD OPERATING PROCEDURE.  
CONCERNING GROUNDWATER MONITORING  
SOP 8

Groundwater monitoring of wells at the site shall be conducted using an ORS Interface Probe and Surface Sampler. The Interface Probe is a hand held, battery operated device for measuring depth to petroleum product and depth to water as measured from an established datum (i.e., top of the well casing which has been surveyed). Product thickness is then calculated by subtracting the depth to product from the depth to water. In addition, water elevations are adjusted for the presence of fuel with the following calculation:

$$\begin{aligned} (\text{Product Thickness}) (.8) + (\text{Water Elevation}) \\ = \text{Corrected Water Elevation} \end{aligned}$$

Note: The factor of 0.8 accounts for the density difference between water and petroleum hydrocarbons.

The Interface Probe consists of a dual sensing probe utilizing an optical liquid sensor and electrical conductivity to distinguish between water and petroleum products. A coated steel measuring tape transmits the sensor's signals to the reel assembly, where an audible alarm sounds a continuous tone when the sensor is immersed in petroleum product and an oscillating tone when immersed in water. The Interface Probe is accurate to 1/16-inch.

A Surface Sampler shall be used for visual inspection of the groundwater to note sheens (difficult to detect with the Interface Probe), odors, microbial action, etc.

The Surface Sampler used consists of a 12-inch long cast acrylic tube with a Delrin ball which closes onto a conical surface creating a seal as the sampler is pulled up. The sampler is calibrated in inches and centimeters for visual inspection of product thickness.

To reduce the potential for cross contamination between wells the monitorings shall take place in order from the least to most contaminated wells. Wells containing free product should be monitored last. Between each monitoring the equipment shall be washed with laboratory grade detergent and double rinsed with distilled water.

GROUNDWATER TECHNOLOGY  
STANDARD OPERATING PROCEDURE  
CONCERNING WATER SAMPLING METHODOLOGY  
SOP 9

Prior to water sampling, each well shall be purged by pumping a minimum of four well volumes or until the discharge water indicates stabilization of temperature, conductivity, and pH. If the well is evacuated before four well volumes are removed or stabilization is achieved, the sample should be taken when the water level in the well recovers to 80% of its initial level.

Retrieval of the water sample, sample handling and sample preservation shall be conducted in accordance with Groundwater Technology Laboratory Standard Operating Procedure (GTL SOP 10) concerning Sampling For Volatiles in Water". The sampling equipment used shall consist of a teflon and/or stainless steel samplers, which meets EPA regulations. Glass vials with teflon lids should be used to store the collected samples.

To insure sample integrity, each vial shall be filled with the sampled water such that the water stands above the lip of the vial. The cap should then be quickly placed on the vial and tightened securely. The vial should then be checked to ensure that air bubbles are not present prior to labeling of the sample. Label information should include a sample identification number, job identification, date, time, type of analysis requested and the sampler's name. Chain-of-Custody forms shall be completed.

The vials should be immediately placed in high quality coolers for shipment to the laboratory. The coolers should be packed with sufficient ice or freezer packs to ensure that the samples are kept below 4C. Samples which are received above 10 C. will be considered substandard. To minimize sample degradation the prescribed analysis shall take place within seven days of sample collection unless specially prepared acidified vials are used.

To minimize the potential for cross contamination between wells, all the well development and water sampling equipment which contacts the groundwater shall be cleaned between each well sampling. As a second precautionary measure, the wells shall be sampled in order of increasing contaminant concentrations as established by previous analysis.



GROUNDWATER TECHNOLOGY LABORATORY (GTL)  
STANDARD OPERATING PROCEDURE  
CONCERNING SAMPLING FOR VOLATILES IN WATER (DISSOLVED GASOLINE,  
SOLVENTS, ETC.).  
SOP 10

1. Use only vials properly washed and baked.
2. Use clean sampling equipment. Scrub with Alconox or equivalent laboratory detergent and water followed by a thorough water rinse. Complete with a distilled water rinse.

Sampling equipment which has come into contact with liquid hydrocarbons (free product) should be regarded with suspicion. Such equipment should have tubing and cables replaced and all resilient parts washed with laboratory detergent solution, as above. Visible deposits may have to be removed with hexane, breath methanol fumes. Solvent washing should be followed by detergent washing as above.

This procedure is valid for volatile organics analysis only. For extractable organics (for example, pesticides, or base neutrals for EPA method 625) a final rinse with pesticide grade isopropyl alcohol, followed by overnight or oven drying, will be necessary.

3. Take duplicate samples. Mark on forms as a single sample with two containers to avoid duplication of analysis.
4. Take a site blank using distilled water or known uncontaminated source. This sample will be run at the discretion of the project manager.
5. Fill out labels and forms as much as possible ahead of time. Use an indelible laundry marker or a Space pen.

6. Preservatives are required for some types of samples. Use specially prepared vials from GTL, marked as indicated below, or use the appropriate field procedure (SOP 12 for acidification). Make note on forms that samples were preserved. Always have extra vials in case of problems. For samples from dissolved gasoline sites or other samples should be acidified below pH 2 with sulfuric acid. Use vials with care and keep them upright. Eye protection, foot protection, and disposable vinyl gloves are required for handling. Samples designated for expedited service and analyzed within seven (7) days of sampling will be acceptable without preservation.

Acid causes burns. Glasses or goggles (not contacts) are necessary for protection of the eyes. Wash eyes with fresh water for 15 minutes if contact occurs and seek medical attention. Rinse off hands frequently with water during handling.

For sampling chlorinated drinking water supplies for chlorinated volatiles, samples shall be preserved with sodium thiosulfate. Use vials labeled "CONTAINS THIOSULFATE". No particular cautions are necessary.

7. Fill vial to overflowing with water, avoiding turbulence and bubbling as much as possible. Water should stand above lip of vial.
8. Carefully but quickly slip cap onto vial. Avoid dropping the teflon disc from cap by not inverting cap until in contact with vial. Disc should have teflon face toward the water. Also avoid touching white teflon face with dirty fingers.
9. Tighten cap securely, invert vial and tap against hand to see that there are no bubbles inside.
10. Label vial using indelible ink as follows:
  - a) Sample I.D. No. (and "Groundwater Technology" if not on preprinted label).
  - b) Job I.D. No.
  - c) Date and Time.
  - d) Type of analysis requested.
  - e) Your name.

11. Unless the fabric type label is used, place scotch tape over the label to preserve its integrity.
12. For Chain of Custody reasons, sample vial should be wrapped end-for-end with scotch tape or evidence tape and signed with indelible ink where the end of the tape seals on itself. The septum needs to be covered.
13. Chill samples immediately. Samples to be stored should be kept at 4°C (39°F). Samples received at the laboratory above 10°C (as measured at glass surface by a thermocouple probe), after overnight shipping will be considered substandard, so use a high quality cooler with sufficient ice or freezer packs. (Coolers are available from GTL).
14. Fill out Chain of Custody.



# Environmental Laboratories

A division of Groundwater Technology, Inc.

## Western Region

4080-C Pike Ln., Concord, CA 94520  
 (415) 685-7852  
 In CA: (800) 544-3422  
 Outside CA: (800) 423-7143

08/01/87

Page 1 of 2

mh

PROJECT MGR: Joyce Miley  
 Groundwater Technology, Inc.  
 4080-D Pike Lane  
 Concord, CA. 94520

PROJECT #: 203-799-8200-2

LOCATION: Emeryville, CA

SAMPLED: 08-30-87 BY: K. Kline  
 RECEIVED: 08-31-87 BY: K. Castro  
 ANALYZED: 08-31-87 BY: P. Sweet  
 MATRIX: Water J. Floro

### TEST RESULTS (ppb)

COMPOUNDS	MDL	LAB #	6002	6003	6004	6005	6006
		I.I.D. #	MW-F	MW-G	MW-H	MW-I	MW-J
Benzene	0.5		<0.5	<0.5	10.9	<0.5	<0.5
Ethylbenzene	0.5		<0.5	<0.5	7.9	<0.5	<0.5
Toluene	0.5		<0.5	<0.5	6.5	<0.5	<0.5
Xylenes	0.5		<0.5	<0.5	30.3	<0.5	<0.5
Total BTEX	0.5		<0.5	<0.5	55.6	<0.5	<0.5
Chlorobenzene	--		--	--	--	--	--
1,2 DCB	--		--	--	--	--	--
1,3 DCB	--		--	--	--	--	--
1,4 DCB	--		--	--	--	--	--
MEK	--		--	--	--	--	--
MIBK	--		--	--	--	--	--
Misc. Hydrocarbons (C4-12)	0.5		<0.5	<0.5	16.2	<0.5	<0.5
Total Volatile Hydrocarbons	0.5		<0.5	<0.5	71.9	<0.5	<0.5

\*1

-- = Not Requested. MDL = Method Detection Limit; compound below this level would not be detected.

MEK = Methyl Ethyl Ketone MIBK = Methyl Isobutyl Ketone

METHODS: Modified EPA Method 602.

Total Volatile Hydrocarbons is the summation of Total BTEX and Miscellaneous Hydrocarbons.

\*1 = Sample foamed during purge indicating possible presence of surfactants. Sample was diluted 1:1

Multiply detection limits by 2.



# Environmental Laboratories

A division of Groundwater Technology, Inc.

**Western Region**

4080-C Pike Ln., Concord, CA 94520  
 (415) 685-7852  
 In CA: (800) 544-3422  
 Outside CA: (800) 423-7143

PROJECT MGR: Joyce Miley  
 PROJECT #: 203-799-8200-2  
 LOCATION: Emeryville

TEST RESULTS (ppb)

COMPOUNDS	MDL	LAB #	6007	6008			
		I.D.#	MW-K	MW-L			
Benzene	0.5		<0.5	<0.5			
Ethylbenzene	0.5		<0.5	<0.5			
Toluene	0.5		<0.5	<0.5			
Xylenes	0.5		<0.5	<0.5			
Total BTEX	0.5		<0.5	<0.5			
Chlorobenzene	--		--	--			
1,2 DCB	--		--	--			
1,3 DCB	--		--	--			
1,4 DCB	--		--	--			
MEK	--		--	--			
MIBK	--		--	--			
Misc. Hydrocarbons (C4-C12)	0.5		<0.5	<0.5			
Total Volatile Hydrocarbons	0.5		<0.5	<0.5			

-- = Not Requested DCB = Dichlorobenzene MEK = Methyl Ethyl Ketone  
 MIBK = Methyl Isobutyl Ketone  
 MDL = Method Detection Limit; compound below this level would not be detected.  
 METHOD: Modified EPA Method 602.  
 Total Volatile Hydrocarbons is the summation of Total BTEX and  
 Miscellaneous Hydrocarbons.

*Safy Khalifa*  
 SAFY KHALIFA, Ph.D., Director



A division of Groundwater Technology, Inc.

Western Region  
4080-C Pike Ln., Concord, CA 94520  
(415) 685-7852  
In CA: (800) 544-3422  
Outside CA: (800) 423-7143

09/01/87 RW  
PROJECT MGR: Joyce Miley  
Groundwater Technology, Inc.  
4080-D Pike Lane  
Concord, CA. 94520

PROJECT #: 203-799-8200-1  
LOCATION: Emeryville, CA.  
SAMPLED: 08-30-87 BY: K. Kline  
RECEIVED: 08-31-87 BY: K. Castro  
ANALYZED: 09-01-87 BY: K. Patton  
MATRIX: Water R. Bly

TEST RESULTS (ppm)

PARAMETER	Units	MDL	LAB #	5995	5996	5997
			I. D. #	MW-F	MW-G	MW-H
Total Petroleum Hydrocarbons:		1		< 1	< 1	< 1

MDL = Method Detection Limit.  
METHOD: EPA 418.1



# Environmental Laboratories

A division of Groundwater Technology, Inc.

**Western Region**  
4080-C Pike Ln., Concord, CA 94520  
(415) 685-7852  
In CA: (800) 544-3422  
Outside CA: (800) 423-7143

PROJECT MGR: Joyce Miley  
PROJECT #: 203-799-8200-1  
LOCATION: Emeryville, CA.

TEST RESULTS (ppm)

PARAMETER	Unité	MDL	LAB #	5998	5999	6000
			I.D.#	MW-I	MW-J	MW-K
Total Petroleum Hydrocarbons		1		< 1	< 1	< 1

MDL = Method Detection Limit.  
METHOD: EPA 418.1



# Environmental Laboratories

A division of Groundwater Technology, Inc.

### Western Region

4080-C Pike Ln., Concord, CA 94520  
 (415) 685-7852  
 In CA: (800) 544-3422  
 Outside CA: (800) 423-7143

PROJECT MGR: Joyce Milay  
 PROJECT #: 203-799-8200-1  
 LOCATION: Emeryville, CA

TEST RESULTS (ppm)

PARAMETER	Units	MDL	LAB #	I.D.#	6001	MW-L
Total Petroleum Hydrocarbons		1			< 1	

MDL = Method Detection Limit.  
 METHOD: EPA 418.1

*Safy Khalifa*  
 SAFY KHALIFA, Ph.D., Director





# Environmental Laboratories

A division of Groundwater Technology, Inc.

**Western Region**  
 4080-C Pike Ln., Concord, CA 94520  
 (415) 685-7852  
 In CA: (800) 544-3422  
 Outside CA: (800) 423-7143

09-03-87

Page 1 of 2

mh

PROJECT MGR: Joyce Miley  
 Groundwater Technology, Inc.  
 4080-D Pike Lane  
 Concord, CA. 94520

PROJECT #: 203-799-8200-3  
 LOCATION: Emeryville, CA.

SAMPLED: 08-30-87 BY: K. Kline  
 RECEIVED: 08-31-87 BY: K. Castro  
 ANALYZED: 9/1-2/87 BY: P. Voitoff  
 MATRIX: Water S. Khalifa

## TEST RESULTS (ppm)

COMPOUNDS	MDL	LAB #	6009	6010	6011	6012	6013
		I.I.D. #	MW-F	MW-G	MW-H	MW-I	MW-J
Aluminum							
Antimony							
Arsenic	1		<1	<1	<1	<1	<1
Barium							
Beryllium							
Cadmium							
Calcium							
Cobalt							
Copper							
Gallium							
Germanium							
Gold							
Iron							
Total Lead	0.02		<0.02	.181	<0.02	<0.02	<0.02
Lithium							
Magnesium							
Manganese							
Molybdenum							
Nickel							
Potassium							
Selenium							
Silver							
Sodium							
Strontium							
Thallium							
Tin							
Tungsten							
Vanadium							
Zinc							
Zirconium							

-- = Not Requested. MDL = Method Detection Limit; compound below this level would not be detected.

METHODS: Lead = 3020/7421. Arsenic = 3005/6010.



# Environmental Laboratories

A division of Groundwater Technology, Inc.

PROJECT MGR: Joyce Miley  
 PROJECT #: 203-799-8200-3  
 LOCATION: Emeryville, CA.

**Western Region**  
 4080-C Pike Ln., Concord, CA 94520  
 (415) 685-7852  
 In CA: (800) 544-3422  
 Outside CA: (800) 423-7143

TEST RESULTS (ppm)

COMPOUNDS	MDL	LAB # I.I.D. #	6014 MW-K	6015 MW-L			
Aluminum							
Antimony							
Arsenic	1		<1	1			
Barium							
Beryllium							
Cadmium							
Calcium							
Cobalt							
Copper							
Gallium							
Germanium							
Gold							
Iron							
Total Lead	0.02		5.45	6.90			
Lithium							
Magnesium							
Manganese							
Molybdenum							
Nickel							
Potassium							
Selenium							
Silver							
Sodium							
Strontium							
Thallium							
Tin							
Tungsten							
Vanadium							
Zinc							
Zirconium							

-- = Not Requested.

MDL = Method Detection Limit; compound below this level would not be detected.

METHODS:

*Safy Khalifa*  
 SAFY KHALIFA, Ph.D., Director



# Environmental Laboratories

A division of Groundwater Technology, Inc.

## Western Region

4080-C Pike Ln., Concord, CA 94520

(415) 685-7852

In CA: (800) 544-3422

Outside CA: (800) 423-7143

PROJECT MGR: Joyce Miley  
Groundwater Technology, Inc.  
4080-D Pike Lane  
Concord, CA. 94520

PROJECT #: 203-799-8200-4

LOCATION: Emeryville, CA

SAMPLED: 09-02-87

BY: S. Kranyak

RECEIVED: 09-02-87

BY: K. Castro

ANALYZED: 09-03-87

BY: P. Sweet

MATRIX: Water

J. Floro

### TEST RESULTS (ppb)

COMPOUNDS	MDL	LAB #	6074				
		II.D.#	RW				
Benzene	0.5		47687				
Ethylbenzene	0.5		1534				
Toluene	0.5		10140				
Xylenes	0.5		7199				
Total BTEX	0.5		66560				
Chlorobenzene	--		--				
1,2 DCB	--		--				
1,3 DCB	--		--				
1,4 DCB	--		--				
MEK	--		--				
MIBK	--		--				
Misc. Hydrocarbons (C4-12)	0.5		27164				
Total Volatile Hydrocarbons	0.5		93724				

-- = Not Requested. MDL = Method Detection Limit; compound below this level would not be detected.

MEK = Methyl Ethyl Ketone MIBK = Methyl Isobutyl Ketone

METHODS: Modified EPA Method 602.

Total Volatile Hydrocarbons is the summation of Total BTEX and Miscellaneous Hydrocarbons.

  
SAFY KHALIFA, Ph.D., Director



# Environmental Laboratories

A division of Groundwater Technology, Inc.

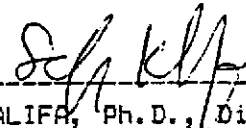
**Western Region**  
4080-C Pike Ln., Concord, CA 94520  
(415) 685-7852  
In CA: (800) 544-3422  
Outside CA: (800) 423-7143

09/04/87 RW  
PROJECT MGR: Joyce Miley  
Groundwater Technology, Inc.  
4080-D Pike Lane  
Concord, CA. 94520  
PROJECT #: 203-799-8200-5  
LOCATION: Emeryville, CA.  
SAMPLED: 09-02-87 BY: S. Kranyak  
RECEIVED: 09-02-87 BY: K. Castro  
ANALYZED: 09-03-87 BY: R. Bly  
MATRIX: Water

## TEST RESULTS (ppm)

PARAMETER	Units	MDL	LAB #	I.D.#	6075	RW
Total Petroleum Hydrocarbons		1			355	

MDL = Method Detection Limit.  
METHOD: EPA 418.1

  
SAFY KHALIFA, Ph.D., Director



# Environmental Laboratories

A division of Groundwater Technology, Inc.

**Western Region**  
 4080-C Pike Ln., Concord, CA 94520  
 (415) 685-7852  
 In CA: (800) 544-3422  
 Outside CA: (800) 423-7143

CS  
 09/08/87

Page 1 of 1

PROJECT MGR: Joyce Miley  
 Groundwater Technology, Inc.  
 4080-D Pike Lane  
 Concord, CA. 94520

PROJECT #: 203-799-8200-6  
 LOCATION: Emeryville, CA.  
 SAMPLED: 09-02-87 BY: S. Kranyak  
 RECEIVED: 09-02-87 BY: K. Castro  
 ANALYZED: 09-04-87 BY: P. Voitoff  
 MATRIX: Water

TEST RESULTS (ppm)

COMPOUNDS	MDL	LAB #	6076				
		I.I.D. #	RW				
Aluminum							
Antimony							
Arsenic	1		< 1				
Barium							
Beryllium							
Cadmium							
Calcium							
Cobalt							
Copper							
Gallium							
Germanium							
Gold							
Iron							
Lead	0.05		< 0.05				
Lithium							
Magnesium							
Manganese							
Molybdenum							
Nickel							
Potassium							
Selenium							
Silver							
Sodium							
Strontium							
Thallium							
Tin							
Tungsten							
Vanadium							
Zinc							
Zirconium							

-- = Not Requested. MDL = Method Detection Limit; compound below this level would not be detected.  
 METHODS: Arsenic 3005/6010.  
 Lead 3005/7421.

*Safy Khalifa*  
 SAFY KHALIFA, Ph.D., Director