



February 6, 2001

#559

WORKPLAN
for
ADDITIONAL SOIL AND GROUNDWATER ASSESSMENT
at
Oakland Truck Stop
8255 San Leandro Street
Oakland, California

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
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1.0 INTRODUCTION

This submittal presents Aqua Science Engineers, Inc. (ASE)'s workplan for a soil and groundwater assessment at the Oakland Truck Stop located at 8255 San Leandro Street in Oakland, California (Figure 1). The proposed site assessment activities were initiated by Mr. Nissan Saidian, owner of the property, as requested by the Alameda County Health Care Services Agency (ACHCSA).

2.0 BACKGROUND INFORMATION

The subject site is currently a truck stop that has been in operation since the early 1960s.

2.1 March 1998 Underground Storage Tank (UST) Removal

In March 1998, W.A. Craig, Inc. removed one 500-gallon waste oil UST and two 4,000-gallon gasoline USTs from the site. Up to 460 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G), 930 ppm total petroleum hydrocarbons as diesel (TPH-D), 5.8 ppm benzene, 1.7 ppm toluene, 8.2 ppm ethyl benzene, 3.3 ppm total xylenes and 0.64 ppm methyl tertiary butyl ether (MTBE) were detected in soil samples collected from the gasoline UST excavations at the time of the removal. Up to 3,600 ppm TPH-G, 21,000 ppm TPH-D, 2.1 ppm benzene, 8 ppm toluene, 18 ppm ethyl benzene, 15 ppm total xylenes and 8.1 ppm MTBE were detected in soil samples collected from the waste oil UST excavation. Water samples collected from the UST excavations contained up to 5,500 parts per billion (ppb) TPH-G, 880,000 ppb TPH-D, 580 ppb benzene, 12 ppb toluene, 180 ppb ethyl benzene, 39 ppb total xylenes and 1,900 ppb MTBE. W.A. Craig reported that all contaminated soil from both the gasoline and waste oil UST excavations was removed based on visual, olfactory and photoionization detector readings. This contaminated soil was transported from the site for disposal in a Class II landfill. The excavations were backfilled with clean imported material.

2.2 February 1999 Soil and Groundwater Assessment

In February 1999, Penn Environmental drilled 13 soil borings at the site and constructed monitoring wells in four of the borings (Figure 2, from Penn Environmental report). Relatively low hydrocarbon concentrations were detected in soil samples collected near the former waste oil USTs, and relatively low to moderate hydrocarbon concentrations were detected in groundwater samples collected from these borings. Soil samples

collected from borings B-4, B-6, B-8 and MW-3 contained TPH-G concentrations over 100 ppm and benzene concentrations over 1 ppm. All of these borings are in the vicinity of the existing gasoline USTs. Soil samples collected from the remaining borings contained much lower TPH-G and benzene, toluene, ethyl benzene, and total xylenes (collectively known as BTEX) concentrations in soil. Soil samples collected from all of the borings contained TPH-D concentrations over 100 ppm except for samples collected from borings B-7 and B-9, at the southern and western corners of the site. Up to 68,000 ppb TPH-G, 62,000 ppb TPH-D, 24,000 ppb benzene, 390 ppb toluene, 2,000 ppb ethyl benzene, 2,300 ppb total xylenes and 28,000 ppb MTBE were detected in groundwater samples collected from these monitoring wells/borings. Once again, the highest TPH-G and BTEX concentrations were in the wells/borings drilled near the existing USTs, although the highest TPH-D concentrations (between 25,000 ppb and 62,000 ppb) were detected in groundwater samples collected from monitoring well MW-1 and borings B-1 and B-2, all in the vicinity of the dispensers. Elevated MTBE concentrations (up to 7,800 ppb) were also detected in groundwater samples collected from borings in the dispenser area.

2.3 August 1999 Quarterly Groundwater Monitoring

In August 1999, ASE performed quarterly groundwater monitoring for the site. Monitoring well MW-1 contained free-floating hydrocarbons believed to be diesel. Groundwater samples collected from monitoring well MW-3 contained 56,000 ppb TPH-G, 10,000 ppb TPH-D, 17,000 ppb benzene, 2,600 ppb toluene, 2,600 ppb ethyl benzene, 1,200 ppb total xylenes and 6,100 ppb MTBE. Much lower hydrocarbon concentrations were detected in groundwater samples collected from monitoring wells MW-2 and MW-4, located near the former waste oil USTs. In addition, the groundwater samples collected from monitoring wells MW-2 and MW-4, near the former waste oil USTs, were also analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated bi-phenols (PCBs), cadmium, chromium, lead, nickel and zinc. No SVOCs, PCBs or VOCs were detected in these samples other than 11 ppb isopropyl benzene. The only metal concentration that exceeded California Department of Health Services (DHS) maximum contaminant levels (MCLs) for drinking water was lead in the groundwater sample collected from monitoring well MW-4 at 260 ppb. The groundwater flow direction was to the west. See Tables One, Two and Three for tabulated results from this and subsequent groundwater samplings.

2.4 December 1999 Monitoring Well Installation

In December 1999, ASE constructed monitoring wells MW-5 and MW-6 at the site (Figure 3). Free-floating hydrocarbons were still present on the groundwater surface of monitoring well MW-1. High hydrocarbon concentrations, including benzene, ethyl benzene and MTBE concentrations exceeding DHS MCLs for drinking water, were detected in groundwater samples collected from monitoring well MW-2. Benzene concentrations in groundwater samples collected from monitoring wells MW-2 and MW-6 exceeded DHS MCLs for drinking water. The MTBE concentration in groundwater samples collected from monitoring wells MW-3, MW-4 and MW-5 also exceeded DHS MCLs for drinking water. MTBE was confirmed in monitoring well MW-3 by EPA Method 8260. Most of these concentrations were similar to previous results. No dissolved lead was detected in groundwater samples collected from monitoring well MW-4 this quarter. The groundwater flow direction was to the southwest.

2.5 March 2000 Quarterly Groundwater Monitoring

In March 2000, ASE conducted a groundwater monitoring at the site. The analytical results from this sampling showed very similar hydrocarbon concentrations to the previous sampling results except that high MTBE concentrations (12,000 ppb) were detected in the groundwater sample collected from monitoring well MW-6. Free-floating hydrocarbons were still present in monitoring well MW-1.

2.6 May and June 2000 Soil and Groundwater Assessment

In May and June 2000, ASE drilled eight soil borings at the site (Figure 3). Soil samples collected from borings BH-A and BH-B contained TPH-G and TPH-D concentrations over 100 ppm. Boring BH-B also contained BTEX concentrations over 1 ppm, including 2.3 ppm benzene. Soil samples collected from borings BH-G and BH-H contained TPH-G over 100 ppm and over 1,000 ppm TPH-D; however, all of the BTEX concentrations were below 1 ppm. Soil samples collected from borings BH-C, BH-D, BH-E, and BH-F did not contain any significant concentrations of TPH-G, TPH-D or BTEX. MTBE concentrations detected in soil samples collected from borings BH-C and BH-D exceeded 1 ppm. Lower concentrations of MTBE were detected in soil samples collected from borings BH-B, BH-G and BH-H. The analytical results are tabulated in Tables Four and Five.

Relatively high TPH-G, TPH-D and BTEX concentrations were detected in groundwater samples collected from borings BH-A and BH-B, west and

southwest of the former USTs. Groundwater samples collected from these borings contained TPH-G as high as 51,000 ppb, TPH-D as high as 120,000 ppb and benzene as high as 4,000 ppb. The MTBE concentration in boring BH-A, which contained the highest BTEX concentrations, was only 46 ppb. Groundwater samples collected from borings BH-C, BH-D and BH-E, along the southern property line and south of the existing USTs, contained TPH-MO as high as 11,000 ppb, MTBE as high as 42,000 ppb and TBA as high as 6,800 ppb. No TPH-G or BTEX was detected in the groundwater samples collected from these borings. ~~A very high TPH-D concentration of 2,200,000 ppb was detected in groundwater samples collected from boring BH-G on the pump island.~~ TPH-G and MTBE were also detected in groundwater samples collected from boring BH-G at 120,000 ppb and 170 ppb, respectively. This boring is east of monitoring well MW-1, which contains free-floating hydrocarbons. The remaining two borings, BH-F and BH-H, both drilled in the eastern portion of the property, contained TPH-D and/or TPH-MO at concentrations as high as 1,400 ppb, but did not contain detectable concentrations of BTEX or oxygenates. These analytical results are tabulated in Tables Six and Seven.

3.0 OUTLINE OF PROPOSED SCOPE OF WORK (SOW)

The purpose of this assessment is to further define the extent of soil and groundwater contamination at the site, to define sensitive receptors in the site vicinity, and to assess the risk associated with the presence of soil and groundwater contamination beneath the site. The scope of work for this project is to:

- 1) Obtain a drilling permit from the Alameda County Public Works Agency and an excavation permit from the City of Oakland to drill in San Leandro Street.
- 2) Contract with a subsurface utility locator to mark underground utility lines in the site vicinity.
- 3) Drill one soil boring east of the site in the eastern parking lane of San Leandro Street using a Geoprobe or similar type of drill rig. Collect soil and groundwater samples for analysis.
- 4) Following collection of the soil and groundwater samples, backfill the boring described in task 3 with neat cement placed by tremie pipe.

- 5) Drill three soil borings on the site using a hollow-stem auger drill rig. Collect soil samples for analysis.
- 6) Analyze at least one soil sample collected from each boring described in tasks 3 and 5 at a CAL-EPA certified analytical laboratory for TPH-G, TPH-D, TPH-MO, BTEX and fuel oxygenates by EPA Method 8260.
- 7) Construct groundwater monitoring wells in each boring described in task 5.
- 8) Develop each new monitoring well using surge block agitation and pump and/or bailer evacuation.
- 9) Collect groundwater samples from each of the nine site monitoring well for analyses, including the three new wells described is task 7.
- 10) Analyze the groundwater samples at a CAL-EPA certified analytical laboratory for TPH-G, TPH-D, TPH-MO, BTEX and fuel oxygenates by EPA Method 8260.
- 11) Survey the top of casing elevation of each new well relative to the existing site wells, and determine the groundwater flow direction and gradient beneath the site.
- 12) Conduct step drawdown and constant rate pumping tests for the site.
- 13) Conduct a survey of nearby receptors including surrounding buildings, surface water bodies and water supply wells within 2,000-feet of the site.
- 14) Prepare a report presenting results from this assessment.

4.0 DETAILS OF PROPOSED SOW

Details of the assessment are presented below.

sealed and placed in the sun for approximately 10 minutes. After the hydrocarbons have been allowed to volatilize, the OVM will measure the vapor through a small hole, punched in the bag. These OVM readings will be used as a screening tool only since these procedures are not as rigorous as those used in an analytical laboratory.

A groundwater sample will be collected from the boring. Drilling will be halted at the water table and a Powerpunch or similar type device will be utilized to collect groundwater samples from the boring. The groundwater samples will be contained in 40-ml volatile organic analysis (VOA) vials, preserved with hydrochloric acid and sealed without headspace. The samples will then be labeled with the site location, sample designation, date and time the samples were collected, and the initials of the person collecting the samples. The samples will then be sealed in plastic bags and cooled in an ice chest with wet ice for transport to a state-certified analytical laboratory under chain-of-custody.

All sampling equipment will be cleaned in buckets with brushes and a TSP or Alconox solution, then rinsed twice with tap water. Rinsates will be contained on-site in 55-gallon steel drums and stored on-site until off-site disposal can be arranged.

TASK 4 - BACKFILL THE BORING WITH NEAT CEMENT

Following collection of the soil and groundwater samples, the borehole described in Task 3 will be backfilled with neat cement placed by tremie pipe.

TASK 5 - DRILL THREE SOIL BORINGS AT THE SITE

ASE will drill three soil borings at the site in the locations shown on Figure 4. These borings will be drilled using a limited access drill rig equipped with hollow-stem augers. The southern-most boring will be drilled using 10-inch diameter hollow-stem augers, which will allow for the construction of a 4-inch diameter monitoring well to be utilized for the planned pump tests. The other two borings will be drilled using 8-inch diameter hollow-stem augers, for the installation of 2-inch diameter monitoring wells. A qualified ASE geologist will direct the drilling.

Undisturbed soil samples will be collected at least every 5-feet, at lithographic changes, and from just above the water table for subsurface hydrogeologic description and possible chemical analysis. The ASE geologist will describe the samples according to the Unified Soil

Classification System. The samples will be collected in acetate tubes using a drive sampler advanced as the boring progresses. Each sample will be immediately removed from the sampler, trimmed, sealed with Teflon tape and plastic caps, secured with duct tape, labeled with the site location, sample designation, date and time the sample was collected, and the initials of the person collecting the sample. The samples will be placed into an ice chest containing wet ice for delivery under chain of custody to a CAL-EPA certified analytical laboratory.

Soil from the remaining tubes not sealed for analysis will be removed for hydrogeologic description and will be screened for volatile compounds with an organic vapor meter (OVM). Soil will be screened by emptying the soil from one of the tubes into a plastic bag. The bag will be sealed and placed in the sun for approximately 10 minutes. After the hydrocarbons have been allowed to volatilize, the OVM will measure the vapor through a small hole punched in the bag. These OVM readings will be used as a screening tool only since these procedures are not as rigorous as those used in an analytical laboratory.

All sampling equipment will be cleaned in buckets with brushes and a trisodium phosphate (TSP) or Alconox solution, then rinsed twice with tap water. Rinsates will be contained on-site in 55-gallon steel drums until off-site disposal can be arranged.

TASK 6 - ANALYZE AT LEAST ONE SOIL SAMPLE FROM EACH BORING

At least one soil sample from each boring will be analyzed at a CAL-EPA certified environmental laboratory for TPH-D and TPH-MO by modified EPA Method 3510/8015M, and TPH-G, BTEX and oxygenates by EPA Method 8260. The soil sample that appears most contaminated based on odors, staining and/or OVM readings will be analyzed. If there is no indication of contamination in any of the samples, the sample collected from just above the water table (the capillary zone) will be selected for analysis.

TASK 7 - COMPLETE THE BORINGS AS MONITORING WELLS

ASE will complete the borings described in task 5 as groundwater monitoring wells. The southern-most monitoring well will be constructed with 4-inch diameter, flush-threaded, schedule 40, 0.020-inch factory slotted PVC well screen and blank casing in the 10-inch diameter boring. The other monitoring wells will be constructed with 2-inch diameter, flush-threaded, schedule 40, 0.020-inch factory slotted PVC well screen and blank casing in 8-inch diameter borings. The well casing in each well

will be lowered through the augers and #3 Monterey sand will be placed in the annular space between the well casing and the borehole to approximately 1-foot above the screened interval. Approximately 0.5-foot of bentonite pellets will be placed on top of the sand pack and hydrated with deionized water. This bentonite layer will prevent the cement sanitary seal from infiltrating into the sand pack. Cement mixed with 3 to 5 percent bentonite powder by volume will be used to fill the annular space between the bentonite layer and the surface to prevent surface water from infiltrating into the well. The well head will be protected by a locking well plug and an at-grade, traffic-rated well box (See Figure 5 - Typical Monitoring Well).

The well will be screened to monitor the first water-bearing zone encountered. ASE anticipates that the wells will be screened between 4-feet below ground surface (bgs) and 14-feet bgs.

TASK 8 - DEVELOP THE MONITORING WELLS

The new monitoring wells will be developed after waiting at least 72 hours after well construction. The wells will be developed using at least two episodes of surge block agitation and bailer and/or pump evacuation. At least ten well casing volumes of water will be removed during the development, and development will continue until the water appears to be reasonably clear. The well development purge water will be stored temporarily on-site in sealed and labeled 55-gallon steel drums until off-site disposal can be arranged.

TASK 9 - SAMPLE THE MONITORING WELLS

After waiting 72 hours after the well development of the new wells, ASE will collect groundwater samples from all nine groundwater monitoring wells. Prior to purging and sampling, the groundwater surface in each well will be checked for sheen or free-floating hydrocarbons. The thickness of any free-floating hydrocarbons will be measured with an oil/water interface probe and an acrylic bailer lowered slowly to the groundwater surface and filled approximately half full for direct observation. ASE will also measure the depth to groundwater in all site wells prior to purging water from any well. Prior to sampling, each well will be purged of at least four well casing volumes of groundwater. The temperature, pH and electrical conductivity of evacuated water will be monitored during the well purging, and purging will continue beyond four well casing volumes if these parameters have not stabilized. Groundwater samples will be collected from each well using disposable polyethylene

bailers. Groundwater samples will be decanted from the bailers into 40-ml glass volatile organic analysis (VOA) vials, preserved with hydrochloric acid, and sealed without headspace. The samples will then be labeled with the site location, sample designation, date and time the samples were collected, and the initials of the person collecting the samples. In the event that free-floating product is present in a well, then a sample will be collected of the product for analysis. The samples will be placed into an ice chest with ice for transport to the analytical laboratory under chain of custody. Purged groundwater will be stored temporarily on-site in sealed and labeled 55-gallon steel drums until off-site disposal can be arranged.

TASK 10 - ANALYZE THE GROUNDWATER SAMPLES

The groundwater samples will be analyzed by a CAL-EPA certified analytical laboratory for TPH-D and TPH-MO by modified EPA Method 3510/8015M, and TPH-G, BTEX and oxygenates by EPA Method 8260.

TASK 11 - SURVEY THE TOP OF CASING ELEVATION OF EACH WELL

ASE will survey the top of casing elevation of each well relative to a site datum. These elevations will be used with the depth to groundwater measurements to determine the groundwater flow direction and gradient beneath the site.

TASK 12 - CONDUCT STEP DRAWDOWN AND CONSTANT RATE PUMPING TESTS FOR THE SITE

A step drawdown test will be conducted to estimate sustainable pumping rates for a constant rate pumping test. Pumping rates for this test will be determined in the field but rates of 0.5, 1, and 2 gallons per minute are planned. Higher pumping rates will also be used if pumping at higher rates can be sustained. Data will be collected manually as well as with a data logger and pressure transducer. Groundwater produced during this test will be stored on-site in sealed and labeled 55-gallon steel drums until off-site disposal can be arranged.

Based on the results of the step drawdown test, a 1,000-minute constant rate pumping test will be designed to determine the hydraulic conductivity and transmissivity in the water-bearing zone and to calculate the capture zone radius. Water levels will be measured in all site monitoring wells prior to pumping. If possible, pressure transducers will be placed in the monitoring wells and water levels will be recorded with a data logger. Manual water level measurements will also be collected as a

backup from these wells. Purged water from this test will be contained in an appropriately sized Baker Tank.

Results of these tests, as well as all data collected during this test, will be presented in a report.

TASK 13 - EVALUATION OF NEARBY RECEPTORS

when?
will this be prepared

ASE will prepare an evaluation of nearby receptors for the preparation of a Tier 1 Risk Assessment. Maps will be prepared showing surrounding buildings. Surface water bodies within a 2,000-foot radius of the site will be identified. ASE will also conduct an area well survey to identify water supply wells within 2,000-feet of the site. Records from the California Department of Water Resources and Alameda County Public Works Agency will be reviewed for the preparation of the area well survey.

TASK 14 - PREPARE A SUBSURFACE ASSESSMENT REPORT

ASE will prepare a subsurface assessment report outlining the methods and findings of this assessment. This report will include a summary of the results, the site background and history, description of the well construction, development and sampling, tabulated soil and groundwater analytical results, pump test results, conclusions and recommendations. Formal boring logs, analytical reports, and chain of custody documents will be included as appendices. This report will be submitted under the seal of a California registered civil engineer or geologist.

The report will also include an evaluation of the potential risk related to the subsurface soil and groundwater contamination. Contaminant concentrations detected at the site will be compared to the appropriate values in the Tier 1 Lookup Tables in the "Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater" document from the California Regional Water Quality Control Board dated August 2000. Based on this evaluation, a recommendation will be made as to the next appropriate course of action.

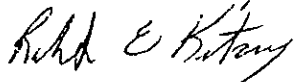
5.0 SCHEDULE

ASE will proceed with this project immediately upon approval of this workplan by the ACHCSA and approval of the costs from the UST Cleanup Fund.

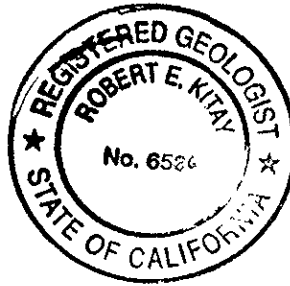
Should you have any questions or comments, please call us at (925) 820-9391.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.



Robert E. Kitay, R.G., R.E.A.
Senior Geologist



cc: Mr. Nissan Saidian, 5733 Medallion Court, Castro Valley, CA 94522

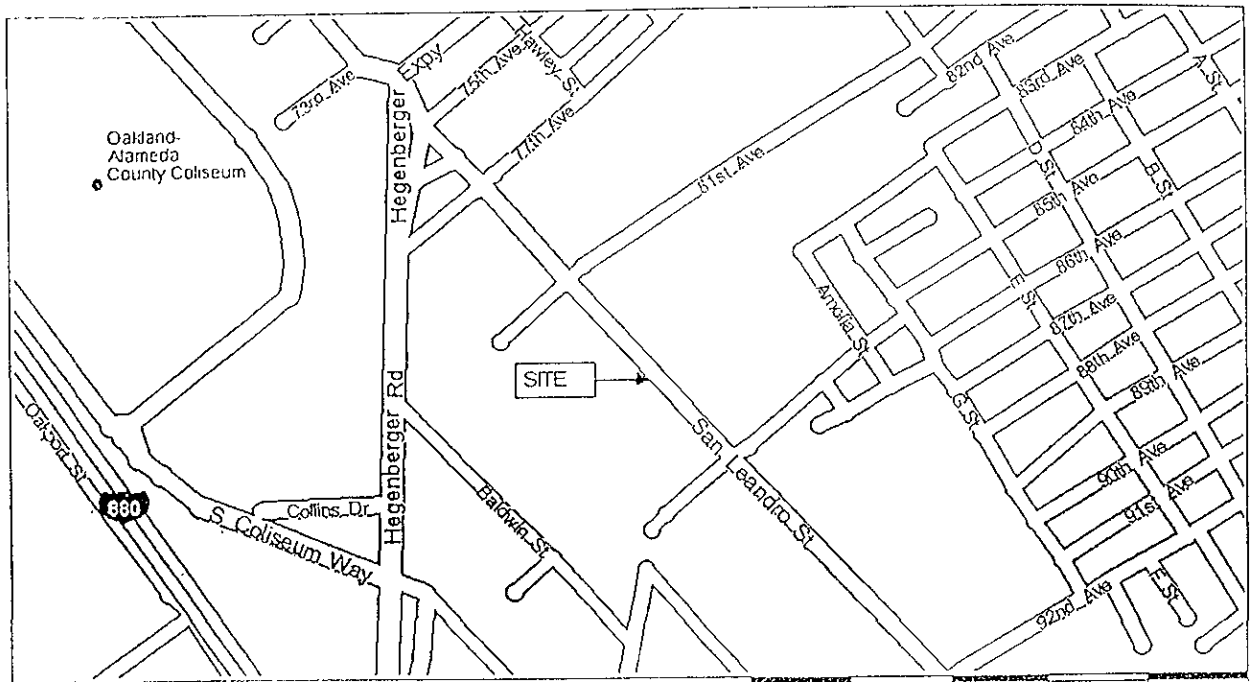
Mr. Barney Chan, Alameda County Health Care Services Agency,
1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94502

Mr. Chuck Headlee, California Regional Water Quality Control Board,
San Francisco Bay Region, 1515 Clay Street, Suite 1400, Oakland, CA
94612

FIGURES



NORTH



0 mi 0.1 0.2 0.3 0.4 0.5

LOCATION MAP

OAKLAND TRUCK STOP
8255 SAN LEANDRO STREET
OAKLAND, CALIFORNIA

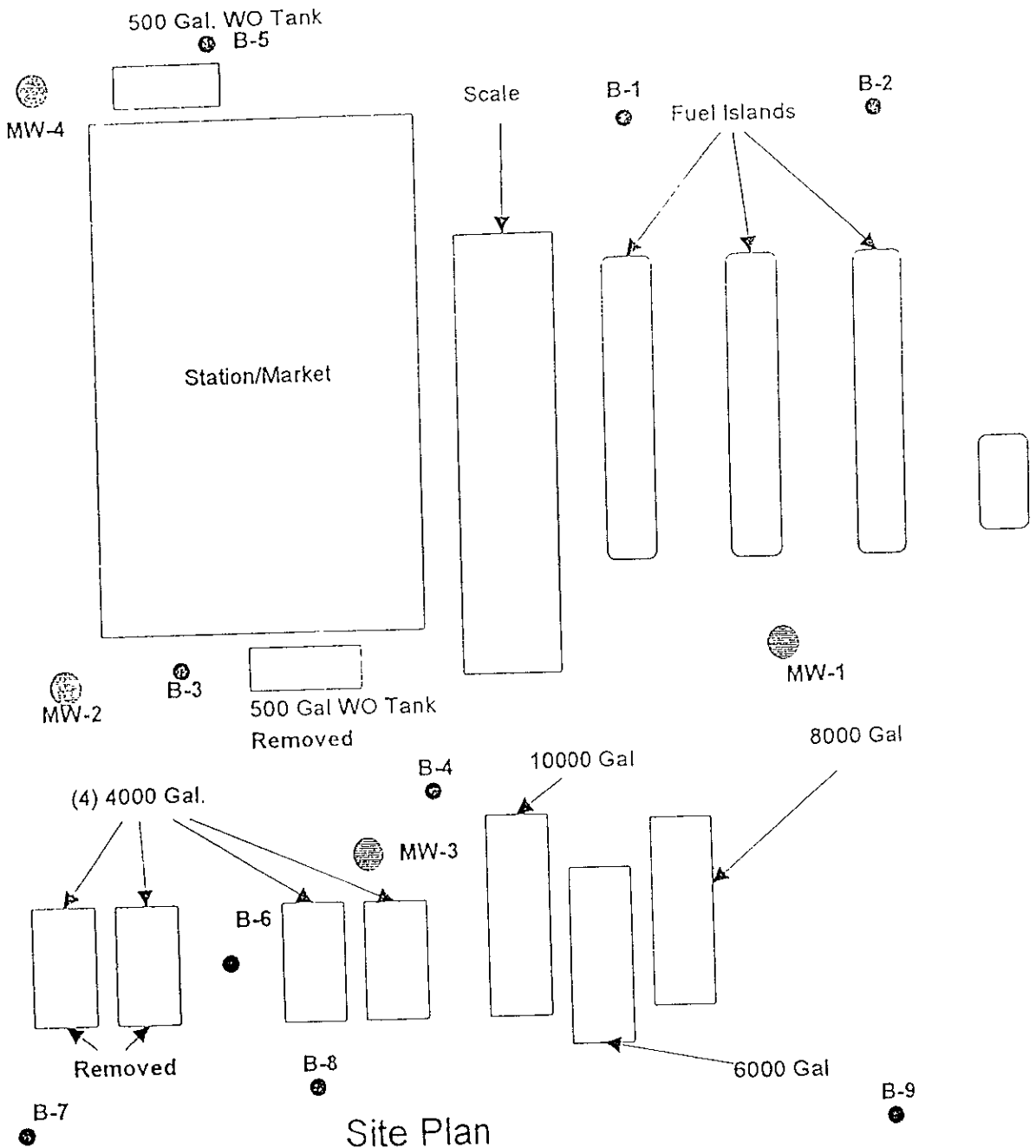
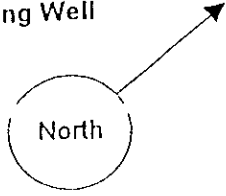
AQUA SCIENCE ENGINEERS, INC

Figure 1

FIGURE 2

● - Boring Location

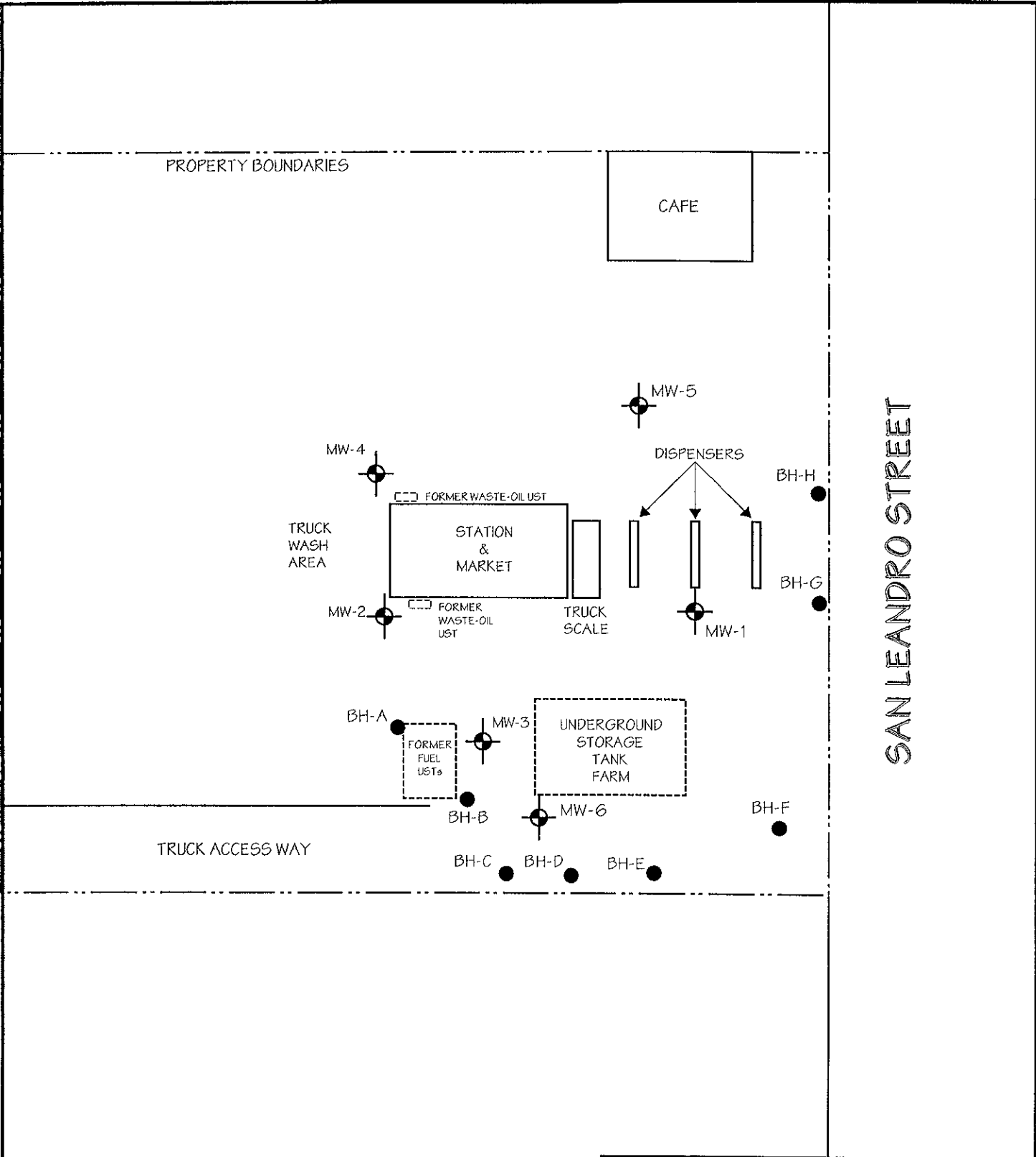
⊙ - Monitoring Well





Site Plan

8255 San Leandro St., Oakland CA





LEGEND

- MW-4
 MONITORING WELL
- BH-A
 SOIL BORING



NORTH

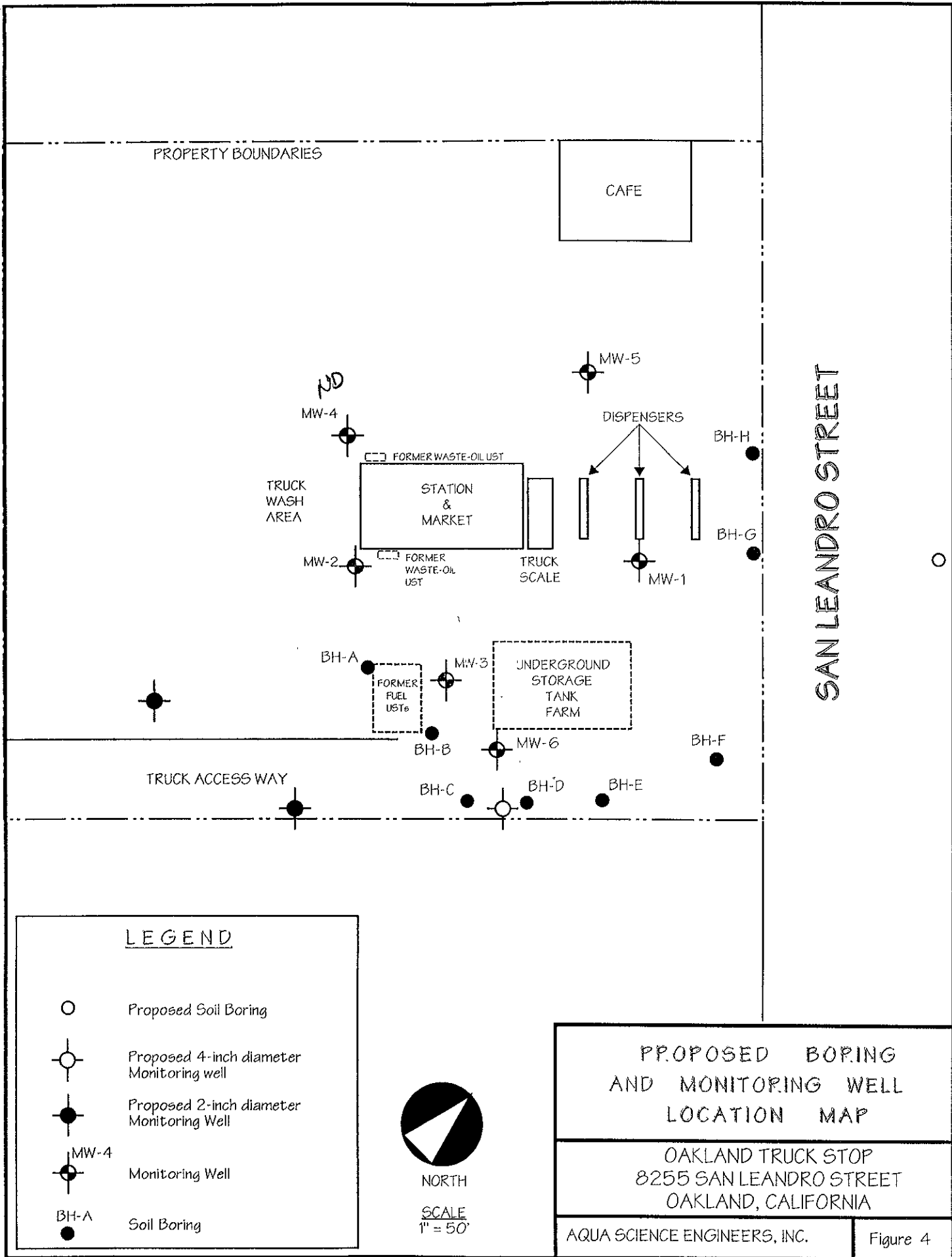
SCALE
1" = 50'

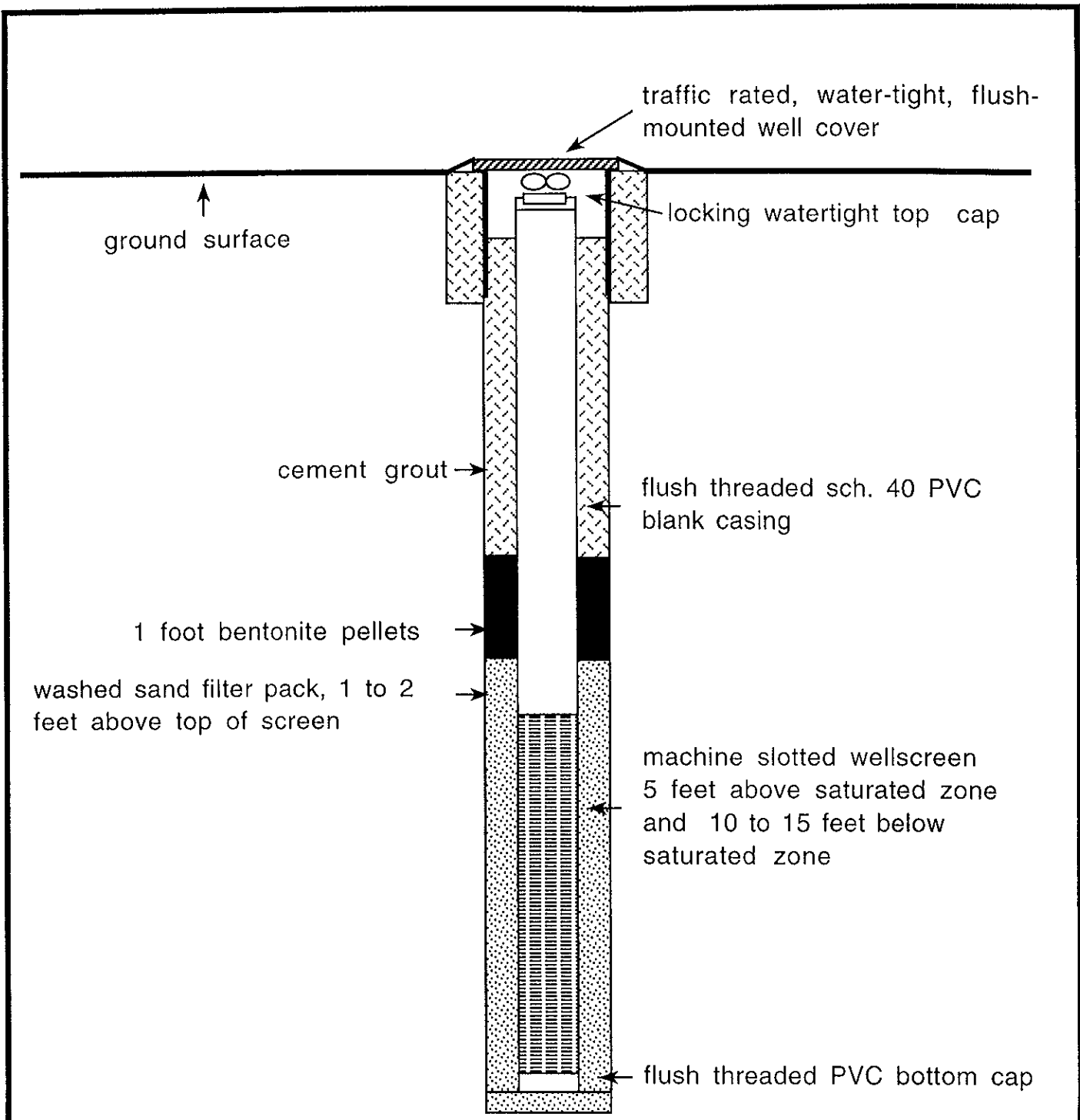
BORING LOCATION MAP

OAKLAND TRUCK STOP
8255 SAN LEANDRO STREET
OAKLAND, CALIFORNIA

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Figure 3





TYPICAL
MONITORING WELL CONSTRUCTION
IN CROSS SECTION

TABLES

TABLE ONE
Groundwater Elevation Data

Well I.D.	Top of Casing Elevation (msl)	Depth to Water Measurement (feet)	Free-Floating Hydrocarbon Thickness (feet)	Groundwater Elevation (msl)
<u>MW-1</u>				
8-16-99	97.12	Unknown	> 1.0	Unknown
8-27-99		6.90	0.36	90.51*
9-10-99		6.85	0.18	90.41*
9-24-99		6.65	0.08	90.53*
10-08-99		6.87	0.28	90.47*
10-22-99		6.81	0.23	90.49*
11-02-99		6.94	0.31	90.43*
11-19-99		6.91	0.12	90.31*
12-06-99		6.93	0.12	90.29*
3-08-00		5.93	0.21	91.36*
6-14-00		6.57	0.72	90.41*
12-11-00		6.70	0.60	90.90*
<u>MW-2</u>				
8-16-99	96.82	6.30	--	90.52
12-06-99		8.46	--	88.36
3-08-00		9.12	--	87.70
6-14-00		8.34	--	88.48
12-11-00		5.94	--	90.88
<u>MW-3</u>				
8-16-99	96.43	5.85	--	90.58
12-06-99		5.70	--	90.73
3-08-00		5.32	--	91.11
6-14-00		6.95	--	89.48
12-11-00		6.22	--	90.21
<u>MW-4</u>				
8-16-99	96.60	6.12	--	90.48
12-06-99		5.98	--	90.62
3-08-00		4.32	--	92.28
6-14-00		5.58	--	91.02
12-11-00		5.70	--	90.90

TABLE ONE
Groundwater Elevation Data

Well I.D.	Top of Casing Elevation (msl)	Depth to Water Measurement (feet)	Free-Floating Hydrocarbon Thickness (feet)	Groundwater Elevation (msl)
<u>MW-5</u>				
12-06-99	96.30	5.94	--	90.36
3-08-00		4.06	--	92.24
6-14-00		5.25	--	91.05
12-11-00		5.45	--	90.85
<u>MW-6</u>				
12-06-99	96.79	5.80	--	90.99
3-08-00		4.10	--	92.69
6-14-00		5.64	--	91.15
12-11-00		5.72	--	91.07

Notes:

* = Groundwater elevation adjusted for the presence of free-floating hydrocarbons by the equation: Adjusted groundwater elevation = Top of casing elevation - depth to groundwater + (0.8 x free-floating hydrocarbon thickness)

TABLE TWO
Summary of Chemical Analysis of GROUNDWATER Samples
Petroleum Hydrocarbons
All results are in parts per billion

Boring	TPH Gasoline	TPH Diesel	TPH Motor Oil	Benzene	Toluene	Ethyl Benzene	Total Xylenes	MTBE	DPE	ETBE	TAME	TBA
MW-1												
8/16/99			Not Sampled Due to Free-Floating Hydrocarbons									
12/6/99			Not Sampled Due to Free-Floating Hydrocarbons									
3/8/00			Not Sampled Due to Free-Floating Hydrocarbons									
6/14/00			Not Sampled Due to Free-Floating Hydrocarbons									
12/11/00			Not Sampled Due to Free-Floating Hydrocarbons									
MW-2												
8/16/99	2,200	970*	< 500	3.8	< 2.0	3	< 4.0	< 20	NA	NA	NA	NA
12/6/99	1,900	400*	< 500	16	< 0.5	15	< 0.5	5.2	NA	NA	NA	NA
3/8/00	1,600*	530*	< 500	9.7	< 0.5	2.7	< 0.5	27	NA	NA	NA	NA
6/14/00	2,000	75	< 100	2.8	< 0.5	3.4	< 0.5	16	3.4	< 0.5	< 0.5	64
12/11/00	1,000	120	< 100	2.6	< 0.5	< 0.5	< 0.5	15	2.9	< 0.5	< 0.5	62
MW-3												
8/16/99	56,000	10,000**	< 500	17,000	2,600	2,600	1,200	6,100	NA	NA	NA	NA
12/6/99	40,000	9,100*	< 500	16,000	140	1,800	100	2,200/4,000#	NA	NA	NA	NA
3/8/00	22,000	4,500*	< 500	11,000	72	1,100	130	3,400	NA	NA	NA	NA
6/14/00	34,000	16,000	< 100	13,000	94	1,300	160	4,800	31	< 10	21	2,700
12/11/00	24,000	14,000	< 100	13,000	88	780	120	4,300	< 50	< 50	< 50	2,300
MW-4												
8/16/99	61***	1,100*	< 500	< 0.5	< 0.5	< 0.5	< 1.0	86	NA	NA	NA	NA
12/6/99	130***	220*	< 500	< 1.0	< 1.0	< 1.0	< 1.0	130	NA	NA	NA	NA
3/8/00	< 50	220*	< 500	< 0.5	< 0.5	< 0.5	< 0.5	130	NA	NA	NA	NA
6/14/00	< 50	< 50	< 100	< 0.5	< 0.5	< 0.5	< 0.5	100	< 0.5	< 0.5	< 0.5	20
12/11/00	< 50	< 50	< 100	< 0.5	< 0.5	< 0.5	< 0.5	110	< 0.5	< 0.5	< 0.5	16
MW-5												
12/6/99	450***	2,000*	< 500	< 1.0	< 1.0	< 1.0	< 1.0	21	NA	NA	NA	NA
3/8/00	51***	530*	< 500	< 0.5	< 0.5	< 0.5	< 0.5	84	NA	NA	NA	NA
6/14/00	380	1,400	< 100	< 0.5	< 0.5	< 0.5	< 0.5	160	12	< 0.5	< 0.5	22
12/11/00	540	590	< 100	< 0.5	< 0.5	< 0.5	< 0.5	240	9.5	< 0.5	< 0.5	32
MW-6												
12/6/99	13,000	< 50	< 500	180	21	11	24	< 100	NA	NA	NA	NA
3/8/00	< 10,000	4,600*	< 500	230	26	18	39	12,000	NA	NA	NA	NA
6/14/00	8,400	12,000	< 100	190	12	9.5	22	15,000	< 5.0	< 5.0	70	3,300
12/11/00	< 5,000	10,000	< 100	190	< 50	< 50	< 50	14,000	< 50	< 50	74	2,900
DHS MCL	NE	NE	NE	1	150	700	1,750	15	NE	NE	NE	NE

Notes:

Non-detectable concentrations are noted by the less than symbol (<) followed by the detection limit.

Most recent concentrations are in bold

DHS MCL is the California Department of Health Services maximum contaminant level for drinking water.

NE = DHS MCLs are not established.

*NA = Sample not analyzed for this compound

* = Non-typical diesel pattern, hydrocarbons in early diesel range.

** = Estimated concentration due to overlapping fuel patterns in the sample.

*** = Non-typical gasoline pattern.

= MTBE concentration by EPA Method 8260

TABLE THREE
 Summary of Chemical Analysis of **GROUNDWATER** Samples
 HVOCs, SVOCs, PCBs and LUFT 5 Metals
 All results are in **parts per billion**

Boring	Isopropyl- benzene	Other VOCs	SVOCs	PCBs	Cd	Cr	Pb	Ni	Zn
<u>MW-2</u>									
8-16-99	1.1	ND	ND	ND	< 2.0	9.0	< 5.0	1.9	< 10
<u>MW-4</u>									
8-16-99	< 0.5	ND	ND	ND	2.7	4.5	260	5.5	320
12-06-99	---	---	---	---	---	---	< 5	---	---
MCL	NE	Various	Various	0.5	5	50	15	100	5,000

Notes:

Non-detectable concentrations are noted by the less than symbol (<) followed by the detection limit or are indicated by ND if various detection limits are used for multiple compounds. Please see the original reports for detection limits for these compounds.

Detectable concentrations are in **bold**.

MCL is the California Department of Health Services maximum contaminant level for drinking water.

NE = Not established

TABLE FOUR
 Summary of Analysis of **SOIL** Samples in Borings
 TPH-G, TPH-D, BTEX

All results are in **parts per million**

Boring	Depth (Feet)	TPH Gasoline	TPH Diesel	TPH Motor Oil	Benzene	Toluene	Ethyl Benzene	Total Xylenes
BH-A	7.5'	370	670	< 200	2.3	0.16	4.7	1.1
	11.5'	210	130	< 10	1.3	0.52	3.7	1.5
BH-B	7.5'	4.4	2.5	24	0.040	< 0.0050	< 0.0050	< 0.0050
	11.5'	190	120	< 10	0.048	0.030	0.37	0.020
BH-C	11.5'	< 1.0	< 1.0	< 10	< 0.0050	< 0.0050	< 0.0050	< 0.0050
BH-D	11.5'	< 1.0	< 1.0	< 10	< 0.0050	< 0.0050	< 0.0050	< 0.0050
BH-E	11.5'	< 1.0	< 1.0	14	< 0.0050	< 0.0050	< 0.0050	< 0.0050
BH-F	11.5'	< 1.0	< 1.0	< 10	< 0.0050	< 0.0050	< 0.0050	< 0.0050
BH-G	12'	270	1,500	< 10	< 0.020	0.028	< 0.020	< 0.020
BH-H	8'	150	1,100	< 10	0.029	0.024	< 0.020	< 0.020
	12'	3.0	320	< 10	< 0.0050	< 0.0050	< 0.0050	< 0.0050
PRG		NE	NE	NE	0.62	520	230	210

Notes:

Non-detectable concentrations are noted by the less than symbol (<) followed by the detection limit.

Detectable concentrations are in **bold**.

PRG is the United States Environmental Protection Agency preliminary remediation goal for residential soil.

NE = No PRG is established

TABLE FIVE
 Summary of Analysis of **SOIL** Samples in Borings
 Oxygenates
 All results are in **parts per million**

Boring -----	Depth (Feet) -----	MTBE -----	DIPE -----	ETBE -----	TAME -----	TBA -----
BH-A	7.5'	< 0.050	< 0.050	< 0.050	< 0.050	< 0.50
	11.5'	< 0.020	< 0.020	< 0.020	< 0.020	< 0.20
BH-B	7.5'	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.012
	11.5'	0.41	< 0.020	< 0.020	< 0.020	< 0.20
BH-C	11.5'	1.0	< 0.0050	< 0.0050	0.025	0.49
BH-D	11.5'	1.7	< 0.0050	< 0.0050	0.024	0.57
BH-E	11.5	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
BH-F	11.5'	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
BH-G	12'	0.050	< 0.020	< 0.020	< 0.020	< 0.20
BH-H	8'	0.060	< 0.020	< 0.020	< 0.020	< 0.20
	12'	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.020

Notes:

Non-detectable concentrations are noted by the less than symbol (<) followed by the detection limit.

Detectable concentrations are in **bold**.

TABLE SIX
 Summary of Analysis of **WATER** Samples in Borings
 TPH-G, TPH-D, BTEX

All results are in **parts per billion**

Boring	TPH Gasoline	TPH Diesel	TPH Motor Oil	Benzene	Toluene	Ethyl Benzene	Total Xylenes
BH-A	43,000	8,700	< 100	4,000	400	2,200	3,100
BH-B	51,000	120,000	< 2,000	430	< 10	700	19
BH-C	< 200	200	890	< 2.0	< 2.0	< 2.0	< 2.0
BH-D	< 500	< 50	2,400	< 5.0	< 5.0	< 5.0	< 5.0
BH-E	< 50	< 50	11,000	< 0.50	< 0.50	< 0.50	< 0.50
BH-F	< 50	< 50	780	< 0.50	< 0.50	< 0.50	< 0.50
BH-G	120,000	2,200,000	< 1,000	< 50	< 50	< 50	< 50
BH-H	< 50	1,400	1,400	< 0.50	< 0.50	< 0.50	< 0.50
MCL.		NE	NE	1.0	150	700	1,750

Notes:

Non-detectable concentrations are noted by the less than symbol (<) followed by the detection limit.

Detectable concentrations are in **bold**.

MCL. is the California Department of Health Services maximum contaminant level for drinking water.

NE = No MCL. is established.

TABLE SEVEN
 Summary of Analysis of **WATER** Samples in Borings
 Oxygenates
 All results are in **parts per billion**

Boring	MTBE	DIPE	ETBE	TAME	TBA
BH-A	4 6	< 20	< 20	< 20	< 200
BH-B	6,200	< 10	< 10	3 7	1,000
BH-C	13,000	< 2.0	< 2.0	100	2,600
BH-D	42,000	< 5.0	< 5.0	250	6,800
BH-E	6.0	< 0.50	< 0.50	< 0.50	< 5.0
BH-F	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
BH-G	170	< 50	< 50	< 50	< 500
BH-H	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
PRG	13	NE	NE	NE	NE

Notes:

Non-detectable concentrations are noted by the less than symbol (<) followed by the detection limit.

Detectable concentrations are in **bold**.

MCL is the California Department of Health Services maximum contaminant level for drinking water.

NE = No MCL is established.