



**Report on Removal of
Petroleum-Affected Soils
in the Vicinity of
The Rigging International Building
2051 Sherman Street
Alameda, California 94501**

April 25, 1988
1245

Prepared for:

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LEVINE·FRICKE



T A B L E O F C O N T E N T S

	<u>Page</u>
INTRODUCTION	1
EXCAVATION ACTIVITIES	1
SOIL AND WATER SAMPLING AND LABORATORY ANALYSES RESULTS	2
SOILS AERATION	4
SHALLOW GROUND-WATER MONITORING WELL INSTALLATION AND WATER SAMPLING AND ANALYSES	4
CONCLUSIONS	6
FIGURES	
APPENDICES:	
A: LABORATORY CERTIFICATES	
B: WELL INSTALLATION LOG	

LF-1245
4/25/88**REPORT ON REMOVAL OF PETROLEUM-AFFECTED SOILS
VINTAGE PROPERTIES/ALAMEDA COMMERCIAL
RIGGING INTERNATIONAL BUILDING**

Alameda, California

INTRODUCTION

This report describes the results of excavation activities conducted during March 3 through 9, 1988, at 2051 Sherman Road (Rigging International Building) in Alameda (Figure 1). The report also describes the installation and sampling of one monitoring well at the site.

Two underground storage tanks, one 1,000-gallon capacity and one 5,000-gallon capacity, were removed March 2, 1988, by Alameda Paving and Excavation. The tanks reportedly had most recently contained diesel, and may have contained gasoline many years ago. The ages of the tanks are reportedly unknown, but they are believed to be at least 15 years old.

During removal, significant residual fuel was observed in excavation sidewalls. Levine·Fricke was contacted at this time to observe excavation of petroleum-affected soils. Excavation activities were conducted by Alameda Paving and Excavation.

EXCAVATION ACTIVITIES

Tank locations and excavation boundaries are shown in Figure 2. The bottoms of the two tanks were at a depth of approximately 8 to 9 feet below ground surface. Sandy backfill surrounding the tanks extended laterally several feet from the tank edges. Beyond the tank backfill, sediments consisted of about a 1-foot thick layer of subgrade material underlain by sand to an approximate depth of 6 to 6.5 feet. The sand is underlain by a soft silty clay (Bay Mud). Ground-water elevation was approximately 5 feet below the ground surface.

Petroleum-affected sandy backfill adjacent to and underlying the two tanks was removed vertically to a depth of 8 to 10 feet, and laterally several feet from the tank edges until Bay Mud was encountered. Petroleum-affected soils beyond this area were contained in a layer of sand which was approximately 1-foot thick and located between the water table and the Bay Mud. These soils were removed until they appeared free of petroleum product, as determined by visual inspection and by volatile organic vapor meter (Photovac TIP) readings.

Petroleum product had additionally accumulated in gravels underlying an adjacent storm drain at a depth of approximately 5 feet (see Figure 2). The gravel layer was approximately one foot thick and was underlain by Bay Mud. The affected gravels, extending approximately 45 feet along the storm drain, were removed by hand-digging underneath the storm drain.

Ground water entering the excavation was pumped out periodically to facilitate soils removal. Approximately 2,000 gallons of ground water was pumped during the course of the work. Floating petroleum product which accumulated on the water surface was removed using absorbent pads prior to pumping. Ground water removed from the excavation was temporarily stored in a tank and then re-incorporated into aerating soils. Used absorbent pads were placed in a 55-gallon capacity barrel, sealed, and temporarily stored on-site. The barrel is schedule to be removed by April 29, 1988, by Hazardous Materials Services (HMS) of Coalinga to an appropriate waste receiving facility.

In the vicinity of the previous dispensers (see Figure 2), petroleum-affected soils were encountered and removed in the upper 4 feet of sediments. Directly beneath the dispensers, affected soils were excavated to a depth of approximately 6.5 feet (to the sand/bay mud interface). Excavation boundaries are illustrated in Figure 2.

The excavation was backfilled with a well graded sandy gravel and compacted using a vibratory plate mounted on the arm of a backhoe.

SOIL AND WATER SAMPLING AND LABORATORY ANALYSES RESULTS

Excavation

A total of 14 soil and 3 ground-water samples were selected for laboratory analysis to document the removal of petroleum-affected soils. The samples were taken during the course of removal activities and are located at the sites shown in Figure 2. As required by the Alameda County Department of Environmental Health, samples were analyzed for total petroleum hydrocarbons (TPH) as diesel and gasoline, and for benzene, toluene and xylene (BTX). Results of analyses are listed in a table on Figure 2. Copies of laboratory certificates are included in Appendix A.

These data indicate that no detectable concentrations of petroleum hydrocarbons remain in soils surrounding the tank and dispenser excavations, except in two samples, where low concentrations of "motor oil" were detected (samples RCS-3 and RCS-5, 120 and 69 ppm, parts per million, respectively) and one

sample where 0.024 ppm toluene was detected (sample RCS-3). The residual heavier hydrocarbons appear to be localized, and unrelated to leakage of diesel and gasoline from the tanks.

Analyses results of ground-water samples collected during the course of the excavation are listed below. Results from samples RC1-W, RC2-W and RC3-W are representative of ground-water which was removed from the excavation. Samples RC1-W and RC2-W were collected directly from the excavation before all of the affected soils were removed. RC3-W is a composite sample collected from the water tank storing the removed ground-water.

Sample RCPIT2-W was taken from ground-water encountered in Test Pit 2, located approximately 10 to 15 feet north and northeast of the excavation area adjacent to the storm drain (see Figure 2). This sample was taken to document in-place ground-water in the presumed down-gradient ground-water flow direction (toward the Alameda Inner Harbor).

TABLE 1
RESULTS OF EXCAVATION GROUND-WATER ANALYSES
(results in ppm)

Sample	TPH (gasoline)	TPH (diesel)	Benzene	Toluene	Xylene
RC1-W	13	75	0.13	0.33	0.72
RC2-W	<0.05	8.5	<0.0005	<0.0005	<0.0006
RC3-W	0.6	0.92	<0.0005	0.073	<0.0006
RCPIT2-W	0.073	<0.05	<0.0005	<0.0005	<0.0006

Although ground-water samples collected from an open excavation can only be considered qualitative, the data indicates that water which had contained elevated TPH and BTX concentrations has been largely removed, and residual concentrations in the ground-water in and near the excavations are relatively low.

Removed Soils

Samples of the excavated soils were collected and analyzed for TPH and BTX. Sample analyses data is listed in Table 2. Samples AS-1 through AS-6 were randomly collected from 6 areas in the stockpiled soils at depths of at least 6 inches below the surface. RCS-2 was collected from gravel underlying the storm drain pipe before the gravel was removed. TPH (diesel) concentrations in the removed soils ranged from <10 ppm to 3,900 ppm. TPH (gasoline) concentrations ranged from 31 to 220 ppm. Total BTX concentrations ranged from 5 to 43 ppm.

TABLE 2
RESULTS OF AERATION SOILS ANALYSES
(results in ppm)

Sample	TPH (gasoline)	TPH (diesel)	Benzene	Toluene	Xylene
AS-1	220	3,900	3.2	15	25
AS-2	31	580	1.3	1.4	3.1
AS-3	150	3,100	<0.005	<0.005	12
AS-4	<10	<10	<0.005	<0.061	<0.015
AS-5,6*	44	490	<0.005	<0.005	5
RCS-2	96	<10	<0.005	<0.005	6.7

*Composite of 2 samples

Soil samples from the excavation and stockpiled soils were collected by hammering brass tubes directly into the soil. Tube ends were covered with plastic caps over clean aluminum foil and then wrapped with electrical tape. Water samples were collected in 1-liter amber glass bottles and in 40 ml VOA containers. Samples were placed into a chilled cooler for transport to Anatec Laboratories in Santa Rosa. Anatec Laboratories performed all chemical analyses.

SOILS AERATION

Approximately 300 yards of diesel- and gasoline-affected soil are currently being aerated on adjacent property also owned by Vintage Properties/Alameda Commercial. Aeration of these soils is being conducted in accordance with the guidelines set by the Bay Area Air Quality Management District (BAAQMD). Soils are spread in a layer approximately 1-foot thick underlain by a paved surface. Polyethylene liner material is available on-site to cover the soil in the event of rain to prevent runoff of water from the piles.

SHALLOW GROUND-WATER MONITORING WELL INSTALLATION AND WATER SAMPLING AND ANALYSES

Well Installation

One shallow monitoring well was installed in the backfill of the excavation on March 23, 1988, as required by the Alameda County Department of Environmental Health. The location of the monitoring well is illustrated on Figure 2.

PUMP WATER ?
WHERE IS IT ?

revised

Drilling of the well was performed by All-Terrain Drilling of Santa Rosa, California, under the supervision of a registered Levine-Fricke geologist. Hollow-stem auger equipment, with 8-inch outside diameter augers, was used to complete the boring. The boring log is included as Appendix B.

The monitoring well was constructed of flush-threaded, 2-inch diameter, poly-vinyl chloride (PVC) casing with factory-slotted well screen. The well screen extends from 5 to 15 feet below ground surface.

After placing the PVC casing in the completed borehole, clean Number 3 Monterey sand was backfilled to a height of approximately 1 foot above the slotted interval. Bentonite was placed approximately 1 foot above the sand pack to isolate the perforated interval and surrounding sand from overlying soil and cement. Fresh water was then added to the dry bentonite to activate the seal. A cement-bentonite grout was placed above the bentonite to seal the remainder of the borehole from surface water infiltration. The well was completed by placing a pre-cast concrete Christy box approximately 1/2-inch above grade to avoid ponding and entrance of surface water.

All drilling and sampling equipment and well casing was steam-cleaned prior to use.

Ground-Water Sampling and Analysis Results

Water samples were collected from the monitoring well on March 28, 1988. Prior to sampling, approximately 10 well volumes were purged from the well by pumping with a centrifugal pump. All purging equipment was steam-cleaned prior to use. Samples were collected with a clean, Teflon bailer and placed into laboratory-supplied glass containers (a 1-liter amber bottle and 40-ml VOA containers). The samples were placed in a chilled cooler for transport to Anatec Laboratory, Santa Rosa, California.

The ground-water samples were analyzed for TPH (diesel and gasoline) and BTX, as required by the Alameda County Department of Environmental Health. Analysis results indicate concentrations less than detection limits for gasoline and BTX. A concentration of 1.5 ppm TPH as diesel was detected in the water sample.

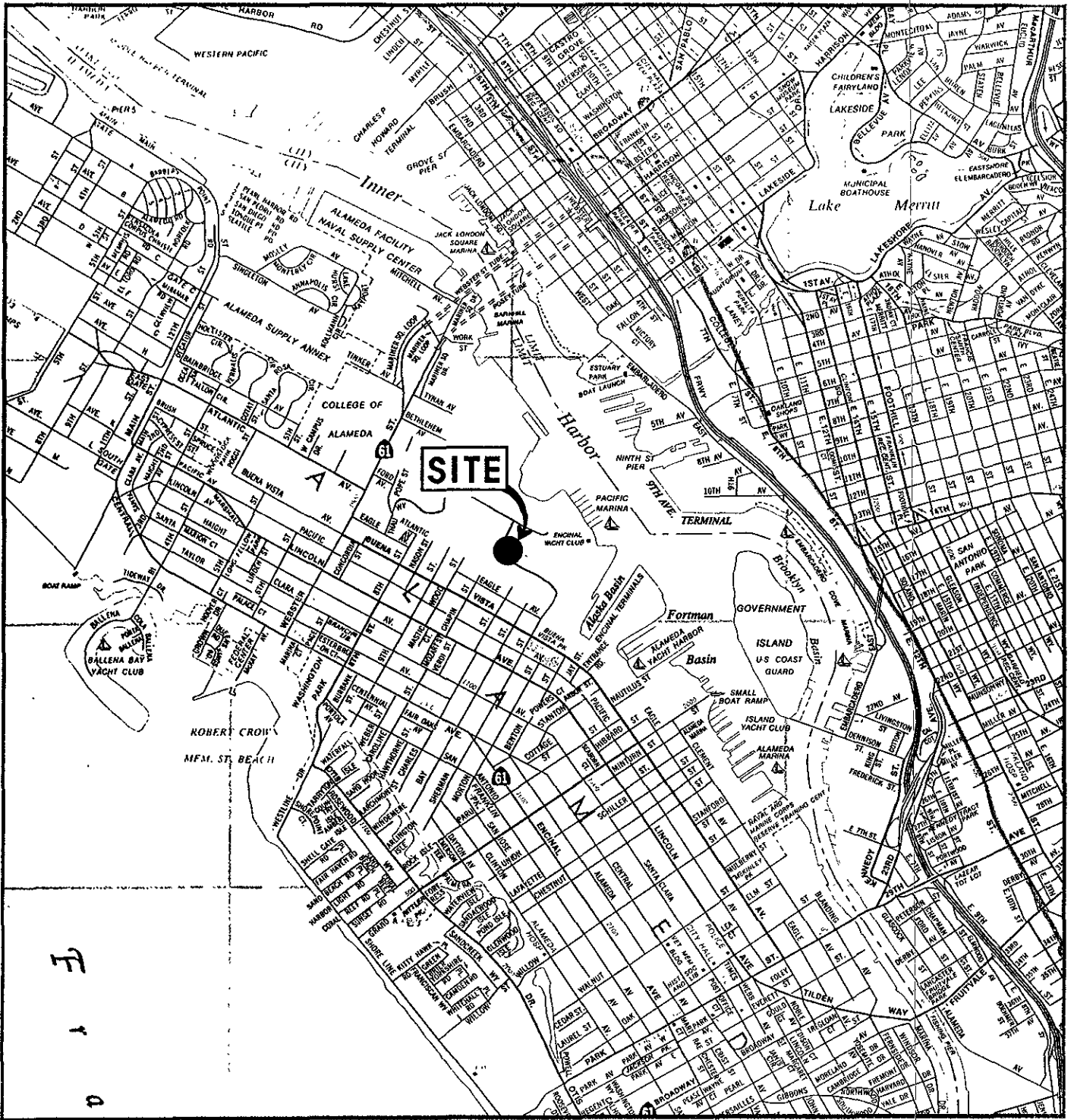
Copies of the laboratory certificates are ~~included in Appendix A.~~

pump H₂O?

CONCLUSIONS

The excavation successfully removed approximately 300 cubic yards of soils containing diesel and gasoline. Observations during soil removal activities and laboratory analysis results of samples collected from the perimeter of the excavation indicate that there are no detectable residual hydrocarbons originating from the tanks remaining in the soils. Analysis results from the monitoring well indicate that only a low concentration of diesel (1.5 ppm) remain in the ground water in the vicinity of the tanks. Based on these results, it is our opinion that further work will not be required for closure of the site. Two additional ground-water samples will be required during the year following initial sampling to provide documentation that ground water has not been significantly impacted.

SAR PLZ
QUANT (only)
WATER LEVEL
PLATFORM on
GROUNDWATER



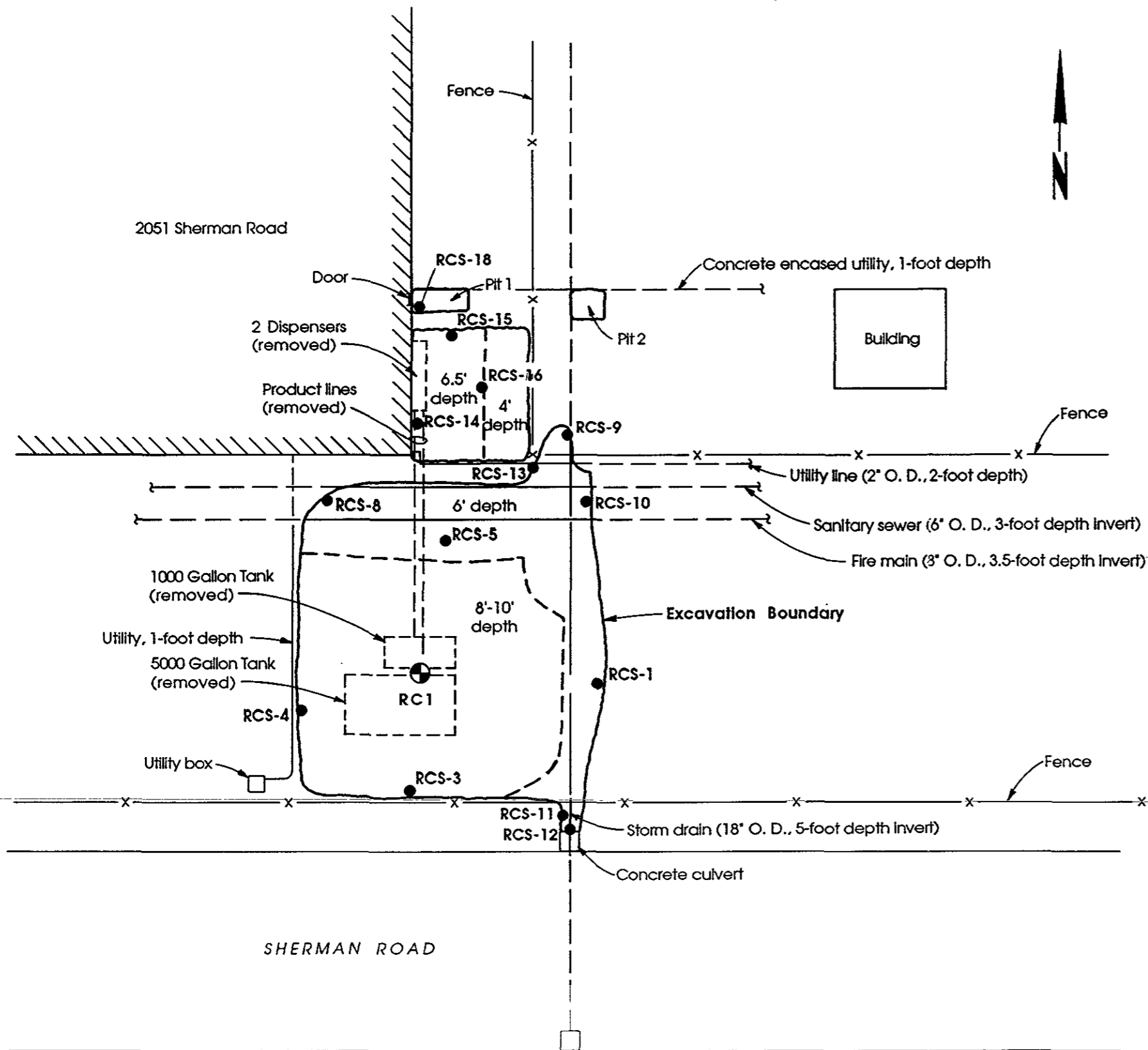
MAP SOURCE:
 California State Automobile Association
 Oakland/Berkeley/Alameda
 June 1982

Figure 1 : SITE VICINITY

Project No.1245

LEVINE•FRICKE
 CONSULTING ENGINEERS AND HYDROGEOLOGISTS

MAR88EAN/JT



SAMPLE NO.	DEPTH (feet)	TPH Gasoline	TPH Diesel	B	T	X	Comments
RCS-1	5.5	ND	ND	ND	ND	ND	
RCS-3	5	ND	ND	ND	0.024	ND	120 ppm motor oil
RCS-4	5	ND	ND	ND	ND	ND	
RCS-5	6	ND	ND	ND	ND	ND	69 ppm motor oil
RCS-8	5	ND	ND	ND	ND	ND	
RCS-9	5	ND	ND	ND	ND	ND	
RCS-10	5	ND	ND	ND	ND	ND	
RCS-11	5.5	ND	ND	ND	ND	ND	
RCS-12	5.5	ND	ND	ND	ND	ND	
RCS-13	5	ND	ND	ND	ND	ND	
RCS-14	5.5	ND	ND	ND	ND	ND	
RCS-15	4	ND	ND	ND	ND	ND	
RCS-16	5.5	ND	ND	ND	ND	ND	
RCS-18	5.5	ND	ND	ND	ND	ND	

All concentrations in parts per million (ppm)

EXPLANATION

- RCS-8 ● Soil sampling location
- RC1 ⊕ Monitoring well location

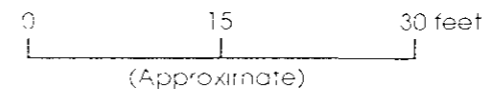


Figure 2:
SITE PLAN, SOIL SAMPLING LOCATIONS,
AND MONITORING WELL LOCATION