



ALISTO ENGINEERING GROUP

June 23, 1994

Mr. Scott Seery
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

6/23/94 9:30 AM
HARRIS
10-94-048

Subject: Proposed Scope of Work for Additional Site Characterization
Former Mobil Oil Corporation Station 04-FGN
14994 East 14th Street
San Leandro, California

Dear Mr. Seery:

On behalf of Mobil Oil Corporation, Alisto Engineering Group is pleased to submit this proposed scope of work for additional site characterization at the former Mobil Oil Corporation Station 04-FGN, 14994 East 14th Street, San Leandro, California.

Please call Mr. Steve Pao if you have questions or need additional information.

Sincerely,

ALISTO ENGINEERING GROUP

William G. Shipp
Project Geologist

Enclosures

cc: Mr. Steve Pao, Mobil Oil Corporation (w/o enclosure)
Mr. Steven Ritchie, California Regional Water Quality Control Board (w/o enclosure)

**WORK PLAN
FOR
ADDITIONAL SITE CHARACTERIZATION**

**Former Mobil Oil Station 04-FGN
14994 East 14th Street
San Leandro, California**

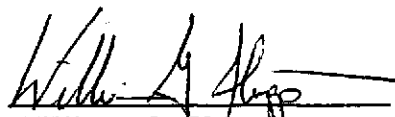
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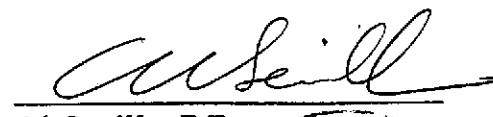
**Mobil Oil Corporation
3800 West Alameda Avenue, Suite 2000
Burbank, California**

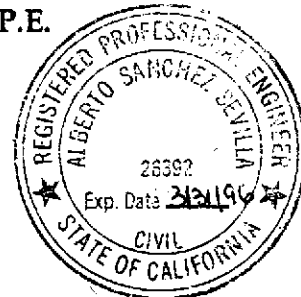
Prepared by:

**Alisto Engineering Group
1777 Oakland Boulevard, Suite 200
Walnut Creek, California**

June 23, 1994


**William G. Shipp
Project Geologist**


**Al Sevilla, P.E.
Principal**



PROPOSED SCOPE OF WORK
FOR
ADDITIONAL SITE CHARACTERIZATION

Former Mobil Oil Station 04-FGN
14994 East 14th Street
San Leandro, California

Proposal No. 10-94-48

June 23, 1994

INTRODUCTION

The proposed scope of work to perform additional site characterization at former Mobil Oil Station 04-FGN, 14994 East 14th Street, San Leandro, California, is based on available reports and information. The work will be conducted to assess the extent of petroleum hydrocarbons in the subsurface soil and groundwater in accordance with the guidelines and requirements of the Alameda County Health Care Services Agency (ACHCSA) and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). A site vicinity map is shown in Figure 1.

PROJECT BACKGROUND

A summary of the investigative efforts completed to date is presented below:

- September 1987. Alameda County Environmental Health Department collected and analyzed soil samples from a Pacific Gas and Electric Company (PG&E) excavation in the sidewalk to the southeast of the site. Laboratory analysis detected 45,000 parts per million (ppm) total oil and grease (TOG) (Subsurface 1987).
- September 1987. Six soil borings were drilled to depths ranging from 9.5 to 13.5 feet below grade (fbg) in the area near the PG&E excavation, as shown in Figure 2. A soil sample was also collected at 3 fbg from the PG&E excavation. Up to 320 ppm total petroleum hydrocarbons as gasoline (TPH-G) and 8,000 ppm TOG were detected in the samples. Tetrachloroethylene at 6.6 ppm, trichloroethylene at 15 ppm, and trans-1,2-dichloroethylene at 8 ppm were detected in the sample collected at 5 fbg in Boring 6 (Subsurface 1987).
- March 1988. A soil boring was drilled to 24 fbg and converted into groundwater Monitoring Well MW-1. Groundwater was encountered during drilling at 12 fbg. The soil samples collected from the boring were not analyzed for hydrocarbon constituents. Up to 29,000 parts per billion (ppb) dissolved-phase TPH-G, ethylbenzene, and total xylenes were detected in the water samples collected from the well. An analytical search of 70,000 compounds in the Wiley/NBS spectral data library detected up to 240 ppb propylbenzene, ethylcyclobutane, 2-methylpentane, 2-methylbutane, 2,3-dimethylpentene,

2-methylhexane, 3-methylhexane, and 2,5,6-trimethyloctane. The report indicated that the area around the PG&E excavation was subsequently overexcavated, as shown in Figure 2. However, the depth of the overexcavation and laboratory results of soil sampling were not provided in the report (Subsurface 1988).

- January 1989. Groundwater Monitoring Well M-1 was sampled for analysis. Dissolved-phase TPH-G, benzene, ethylbenzene, and total xylenes were detected in the samples collected from the well. Purgeable halocarbons were not detected above reported detection limits (Subsurface 1989).
- February 1994. Four soil borings were drilled to depths ranging from 11.5 to 25 fbg. Soil Borings B-2 and B-3 were converted into groundwater Monitoring Wells MW-2 and MW-3. Groundwater was encountered during drilling at approximately 15 fbg. Analysis of soil samples detected up to 4,100 ppm TPH-G, 650 ppm total petroleum hydrocarbons as diesel (TPH-D), and 160 ppm TOG. Analysis of the groundwater samples detected up to 19,000 ppb TPH-G, 10,000 ppb TPH-D, and 70 ppb benzene. TOG was not detected above reported detection limit in any of the groundwater samples. Halogenated volatile organic compounds and volatile organic compounds were not detected above reported detection limits in the groundwater sample collected from MW-1, except for ethylbenzene and total xylenes (Alisto 1994).

PROPOSED SCOPE OF WORK

The primary intent of the proposed scope of work is to: (1) verify the groundwater gradient and concentrations of constituents of concern in the groundwater; (2) obtain additional information for site characterization required by the regulatory agencies; and (3) assess the impact of hydrocarbons on the subsurface soil and groundwater.

As required by the regulatory agencies, groundwater monitoring and sampling will be performed on a quarterly basis as part of the ongoing site investigation.

The proposed scope of work has been divided into two parts as follows:

- Part 1 - Groundwater Monitoring and Sampling
- Part 2 - Additional Site Characterization

Part 1 - Groundwater Monitoring and Sampling

Before beginning the additional site characterization, groundwater monitoring and sampling will be performed to verify the groundwater gradient and nature of hydrocarbons in the groundwater. After completion of this first groundwater monitoring and sampling event, the scope of work for Part 2 - Additional Site Characterization may need to be re-evaluated. Tasks included under this part are as follows:

Task 1.1: Monitor and Sample Groundwater Monitoring Wells

Before sampling, the water level in each well will be measured to the nearest 0.01 foot, and the wells will be inspected for free product or sheen. They will then be purged to allow groundwater representative of the aquifer to enter. Purging will be accomplished using a bailer or pump so as not to agitate the groundwater or expose it to air. Purging will continue until a minimum of 3 and a maximum of 10 saturated well casing volumes have been evacuated and indicator parameters have stabilized. Indicator parameters will be pH, temperature, and specific conductivity.

Task 1.2: Analyze Groundwater Samples

Groundwater samples will be transported to a state-certified laboratory following proper chain of custody documentation and analyzed on a standard 2-week turnaround time for:

- TPH-G using Environmental Protection Agency (EPA) Methods 5030/8015
- TPH-D using EPA Methods 5030/8015
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Methods 5030/8020

Task 1.3: Prepare Report

A report will be prepared presenting the results and findings of each groundwater sampling event and submitted to the appropriate parties. The report will include a summary of the groundwater elevations and analytical results, laboratory reports, a site plan showing groundwater gradient direction, and a map showing the results of petroleum hydrocarbon concentrations in the groundwater.

Part 2 - Additional Site Characterization

The proposed scope of work for this investigation includes: acquisition of permits and offsite access; ~~drilling of eight exploratory soil borings; destruction of groundwater Monitoring Well MW-A and replace with a 4-inch-diameter well; installation of three monitoring wells;~~ collection and analysis of soil and groundwater samples; and preparation of a report presenting the findings and conclusions of the investigation. The locations of the proposed borings and monitoring wells are shown in Figure 2.

Task 2.1: Conduct Predrilling Activities and Acquire Permits

Before beginning field work, Alisto will: procure the necessary permits for well destruction, drilling and groundwater well installation, and encroachment; locate underground utilities; and schedule field activities.

Task 2.2: Drill Exploratory Soil Borings

To investigate the lateral extent of petroleum hydrocarbons in the soil, five exploratory soil borings will be drilled onsite using a truck-mounted CME 75 drilling rig equipped with 6-inch-diameter, hollow-stem augers. Soil samples will be collected at 5-foot intervals to 15 (fbg). Samples will be collected from a split-spoon sampler lined with stainless steel tubes and logged in the field by a qualified geologist or engineer using the Unified Soils Classification System. Each sample will also be field screened using a photo-ionization detector to assist in selecting samples for laboratory analysis. Samples selected for analysis will be sealed airtight with Teflon or aluminum sheeting, plastic caps, and adhesive tape, and placed immediately into a cooler containing blue or dry ice. After sampling, the borings will be backfilled with neat cement.

Task 2.3: Destroy and Replace Monitoring Well MW-A

Groundwater Monitoring Well MW-A will be destroyed by overdrilling the borehole with a CME 75 drilling rig equipped with 10-inch-diameter, hollow-stem augers to 25 fbg and rotating sufficiently to bring to the surface as much of the well construction materials as possible. ~~After drilling, a groundwater monitoring well will be constructed in the borehole using 4-inch-diameter, flush-threaded, Schedule 40, PVC blank casing and 0.010-inch slotted casing, following the procedures discussed below.~~

Task 2.4: Install Groundwater Monitoring Wells

Three soil borings will be drilled offsite using a truck-mounted CME 75 drilling rig equipped with 10-inch-diameter, hollow-stem augers. ~~Soil~~ samples will be collected at 5-foot intervals and at significant stratigraphic changes beginning at 5 fbg and continuing to the total depth of the borings. Samples will be collected from a split-spoon sampler lined with stainless steel tubes and logged in the field by a qualified geologist or engineer using the Unified Soils Classification System. Each sample will also be field screened using a photo-ionization detector to assist in selecting samples for laboratory analysis. The samples selected for analysis will be sealed airtight with Teflon or aluminum sheeting, plastic caps, and adhesive tape, and placed immediately into a cooler containing blue or dry ice.

The three offsite borings will be converted into 4-inch-diameter groundwater monitoring wells. The proposed wells will be installed and constructed based on site-specific hydrogeologic conditions and the nature of contamination encountered. The proposed wells will be constructed using Schedule 40, PVC casing with 0.010-inch perforations and the associated filter pack. An approximately 1-foot-thick bentonite spacer will be installed above the sand pack, and the remainder of the annulus will be sealed with Portland Type /II neat cement. The top of each well will be secured with a watertight locking cap and utility box finished flush with the ground surface.

Task 2.5: Develop, Sample, and Survey Groundwater Monitoring Wells

Well development will be performed to: (1) consolidate and stabilize the filter pack; (2) optimize well production; and (3) reduce the turbidity of subsequent groundwater samples. The proposed wells will be **developed a minimum of 24 hours after installation** of the bentonite spacer and neat cement seal.

Development will continue to a maximum of 10 saturated well volumes or until the groundwater is relatively free of sediment. The proposed wells will be **sampled a minimum of 72 hours after development**.

Before sampling, the water level at each well will be measured and the wells will be observed for free product or sheen. The wells will then be purged to allow groundwater representative of the aquifer to enter. They will be purged using a bailer or pump so as not to agitate the groundwater or expose it to air. Purging will continue until a minimum of 3 and a maximum of 10 saturated well casing volumes have been evacuated and indicator parameters have stabilized. Indicator parameters will be pH, temperature, and specific conductivity. Stabilization of the parameters will be determined when they vary no more than the following values:

- pH - 0.2 units
- Temperature - 0.5 degrees Celsius
- Specific conductivity - 10 percent

The samples will be placed in an iced cooler and transported to a state-certified laboratory for analysis. Purged water from sampling and development, as well as decontamination rinsate, will be stored onsite in Department of Transportation approved 55-gallon drums for transport and disposal.

To calculate the hydraulic gradient and groundwater flow direction of the shallow aquifer, each well will be surveyed by a state-licensed surveyor from the top of the casing to within 0.01 foot accuracy in reference to an established benchmark or a common datum.

Task 2.6: Analyze Soil and Groundwater Samples

The soil and groundwater samples will be transported to a state-certified laboratory for analysis. Soil and groundwater samples will be analyzed for TPH-G, BTEX, and TPH-D using the standard methods described in Task 1.2.

Task 2.7: Evaluate Data and Laboratory Results

On completion of sample analysis, a detailed evaluation of results and available information will be conducted to assess the nature and extent of petroleum hydrocarbons in the soil and groundwater. This will include the following:

- Interpretation of geologic and hydrogeologic characteristics of the water-bearing formation and vadose zone.
- Preparation of a groundwater potentiometric surface map, hydrocarbon concentration map, and hydrogeologic cross sections.
- Assessment of the extent of hydrocarbons in the soil.

Task 2.8: Prepare Report

A report presenting the results and findings of the characterization will be prepared for submittal to the appropriate parties. The report will include analytical results, sampling documentation, boring logs, field notes, and sampling protocol.

SITE SAFETY PLAN

All field procedures and activities related to the additional site characterization will be conducted in accordance with a site-specific safety plan. The additional site safety plan will be developed in accordance with applicable requirements of the California EPA and the federal and state Occupational Safety and Health Administration.

IMPLEMENTATION SCHEDULE

The proposed additional site characterization will be completed and a report submitted within 75 days after receipt of approval of this work plan from the appropriate regulatory agencies. The estimated schedule for completion of the tasks is as follows:

<u>Task/Activity</u>	<u>Days After Work Plan Approval</u>
- Acquire permits	15
- Install wells	25
- Develop and sample wells	30
- Analyze samples	45
- Analyze data	60
- Prepare report	75

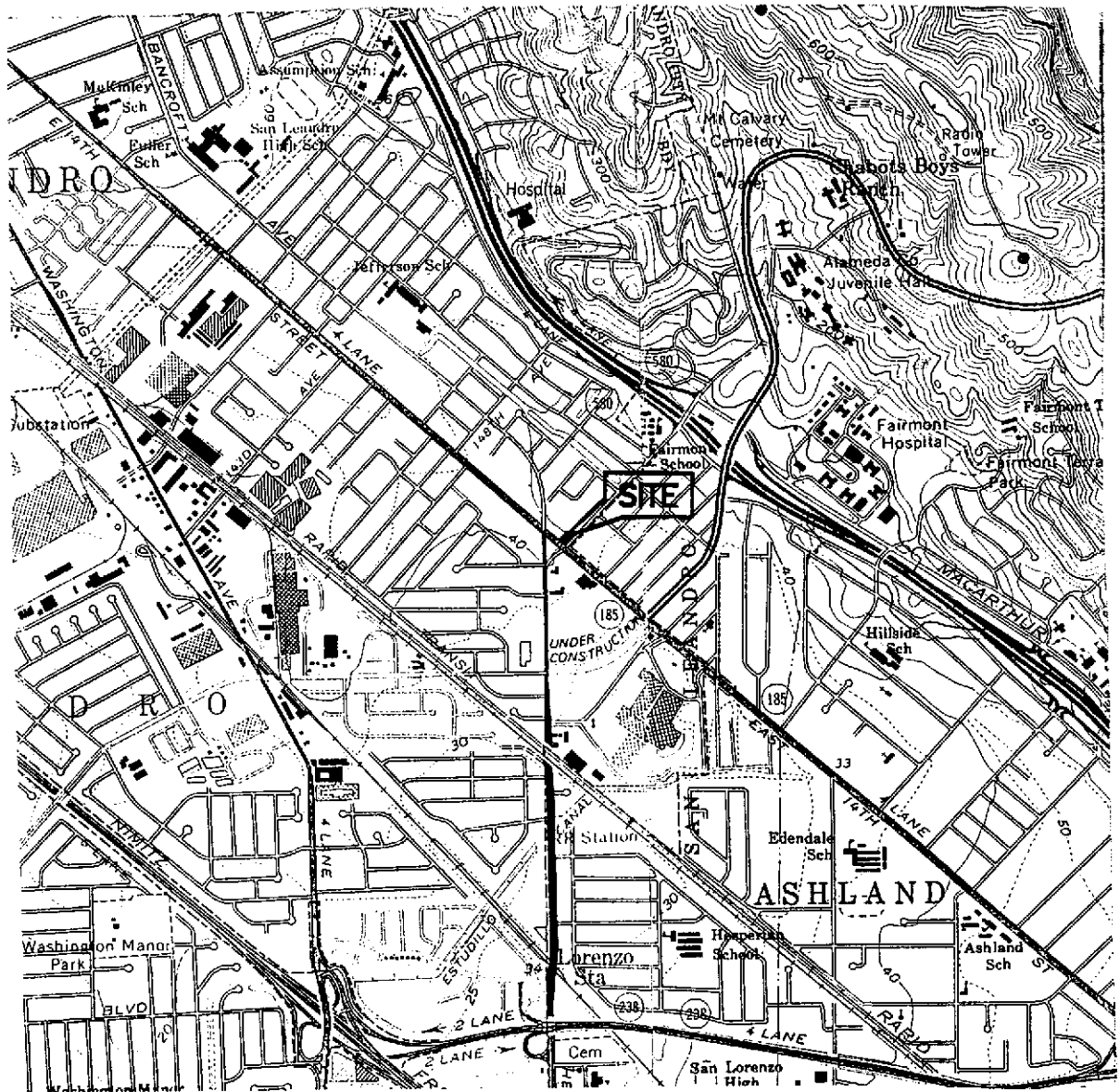
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Subsurface 1987. Preliminary Geotechnical Services Re. Soil Contamination, 150th Avenue and East 14th Street, San Leandro, California. Subsurface Consultants, Inc. October 26.

Subsurface 1988. Groundwater Monitoring Well Installation and Sample Analysis. 150th Avenue and East 14th Street Project, San Leandro, California. Subsurface Consultants, Inc. April 27.

Subsurface 1989. Groundwater Monitoring Well Sampling and Analysis, Sampling No. 2. 150th Avenue and East 14th Street Project, San Leandro, California. Subsurface Consultants, Inc. February 13.



SOURCE:
 USGS MAP, HAYWARD AND SAN LEANDRO QUADRANGLE,
 7.5 MINUTE SERIES, 1959.
 PHOTOREVISED 1980.

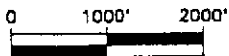


FIGURE 1

SITE VICINITY MAP

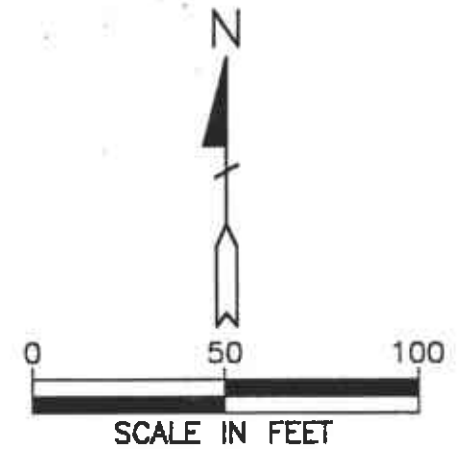
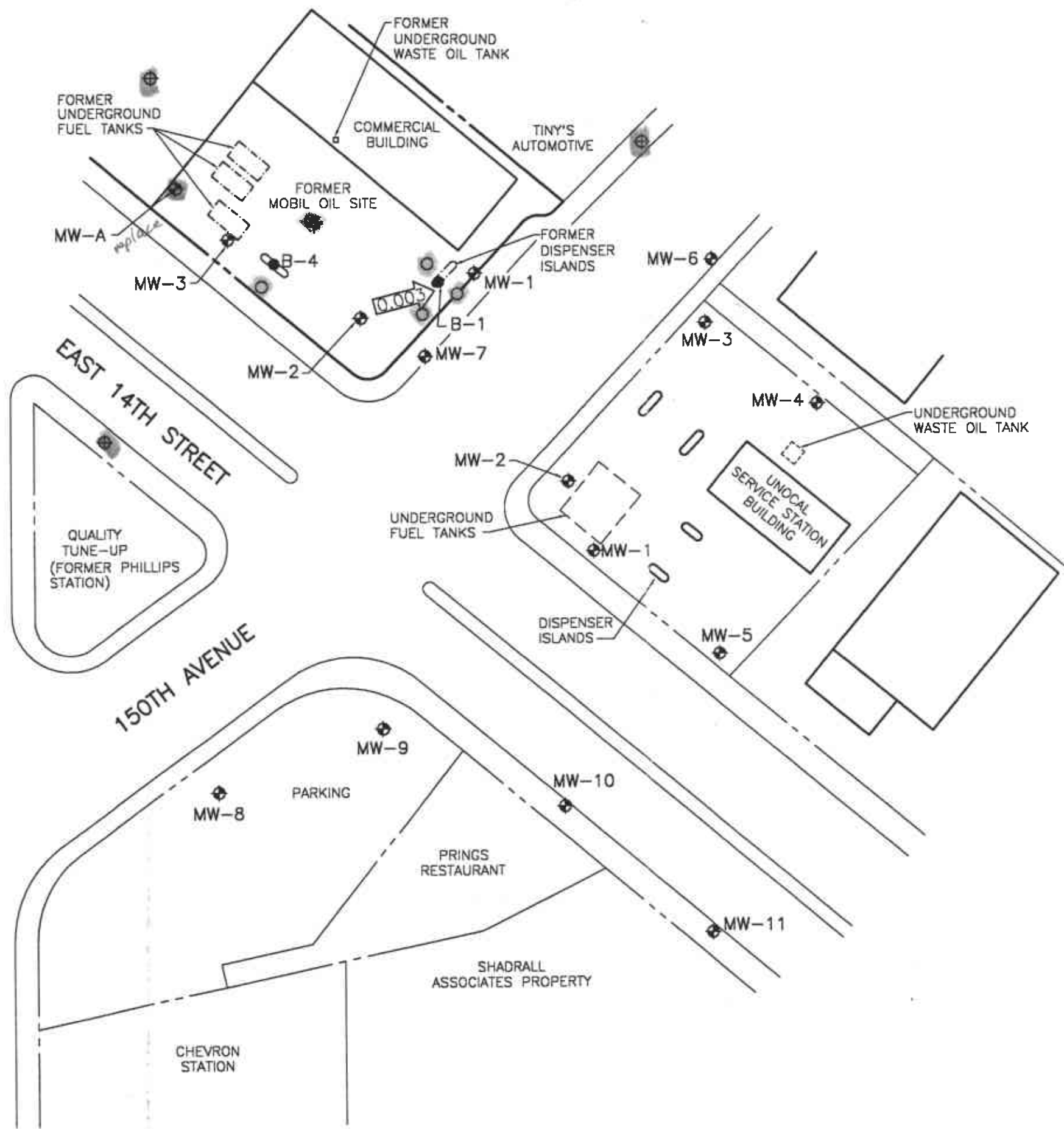
FORMER MOBIL OIL CORPORATION
 STATION 04-FGN
 14994 EAST 14TH STREET
 SAN LEANDRO, CALIFORNIA

PROPOSAL NO. 10-94-048



ALISTO ENGINEERING GROUP
 WALNUT CREEK, CALIFORNIA

HESPERIAN BOULEVARD



LEGEND

- ◊ EXISTING GROUNDWATER MONITORING WELL
- PROPOSED GROUNDWATER MONITORING WELL
- EXISTING SOIL BORING
- ◊ PROPOSED SOIL BORING
- ← 0.003 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT AS MEASURED ON FEBRUARY 24, 1994

FIGURE 2
ADJACENT PROPERTIES MAP
 FORMER MOBIL OIL CORPORATION
 STATION 04-FGN
 14994 EAST 14TH STREET
 SAN LEANDRO, CALIFORNIA
 PROPOSAL NO. 10-94-048