PACIFIC
ENVIRONMENTAL
GROUP INC.

July 6, 1993
Project 310-38.01

Mr. Dave Camille
Unocal Corporation
2000 Crow Canyon Place
San Ramon, California 94583

Re: Unocal Service Station 5430
1935 Washington Avenue at Castro Street
San Leandro, California

Dear Mr. Camille:

This letter presents a work plan prepared by Pacific Environmental Group, Inc. (PACIFIC) on behalf of Unocal Corporation (Unocal) to drill eight on-site soil borings at the site referenced above. The investigation is being conducted by Unocal to complete a property divestment program for the site (Figures 1 and 2). Three of these eight soil borings may be converted to groundwater monitoring wells, as described below. Included in this work plan are discussions of the site background (including previous investigations), proposed scope of work, and scheduling.

BACKGROUND

Site History

The site is located at the southwest corner of the intersection of Washington Avenue and Castro Street in San Leandro, California (Figure 1), and has been an active Unocal service station since 1965. Unleaded gasoline products are currently stored in two 10,000-gallon underground fiberglass gasoline storage tanks, located in a common excavation in the north-central portion of the property (Figure 2). These tanks were installed in 1981, to replace the tanks originally installed at the time of construction of the service station. The new tanks were installed in the same excavation which contained the original gasoline tanks. During station construction in 1965, a 280-gallon underground waste oil storage tank was installed

in a separate excavation in the southwest portion of the site. This waste oil storage tank is apparently still in use at the site. There are two product islands located in the east-central portion of the site, and two service bays located within the station building in the western portion of the site.

Previous Investigations

Unocal files suggest that a product line leak occurred in June 1976, and that one of the original underground gasoline storage tanks failed a precision test in 1981.

There are five sites listed as Regional Water Quality Control Board (RWQCB) active fuel leak cases located within a quarter-mile radius of the site. Two of these sites are located adjacent and to the northwest of the Unocal site (Figure 1).

PROPOSED SCOPE OF WORK

Exploratory Soil Borings

The proposed scope of work for this investigation includes the drilling of eight on-site exploratory soil borings to total depths of approximately 20 to 25 feet. Soil borings will extend 10 feet beyond evidence of hydrocarbons in the soil or to the groundwater surface, which is estimated at a depth between 15 and 25 feet below ground surface (bgs). If no evidence of hydrocarbons is encountered in the borings adjacent to the product islands, then the borings will be terminated at 20 feet bgs or at groundwater, whichever comes first. If there is no evidence of petroleum hydrocarbons in the borings located adjacent to the fuel tank complex and waste oil tank, then the soil boring will be terminated at 25 feet bgs or at groundwater, whichever comes first. Selected soil samples will be analyzed for total petroleum hydrocarbons calculated as gasoline (TPH-g) and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). One soil sample collected from the soil boring installed adjacent to the waste oil tank will also be analyzed for TPH calculated as diesel (TPH-d) and oil (TPH-o), chlorinated hydrocarbons, and heavy metals. The locations of the proposed soil borings are indicated on Figure 2. The field and laboratory procedures which will be employed by PACIFIC are included as Attachment A.

Groundwater Monitoring Wells

If field evidence of hydrocarbon-impact is present in soil samples collected within 10 feet of the static groundwater level at the time of drilling, three of the soil borings will be converted to groundwater monitoring wells by the installation of

2-inch diameter well casing. The wells will be installed to a maximum depth of 35 feet bgs. The soil borings which have been selected for possible conversion to groundwater monitoring wells are indicated on Figure 2. Monitoring well installation procedures are included as Attachment A. Pending well completion, the wells would be surveyed in northings and eastings and elevation to mean sea level datum with an accuracy of $\pm$0.01 foot. Surveying would be performed by a state-licensed surveyor.

Groundwater Sampling

If groundwater monitoring wells are installed, the wells will be developed and sampled by PACIFIC field personnel. Groundwater samples will be submitted to a state-certifed analytical laboratory and analyzed for TPH-g and BTEX compounds. One groundwater sample collected adjacent to the waste oil tank will be analyzed for TPH-d, TPH-o, purgeable halogenated hydrocarbons, and heavy metals. Well development and groundwater sampling will be conducted according to the procedures described in Attachment A.

Report

A report documenting the installation of the exploratory soil borings and groundwater monitoring wells and presenting the soil and groundwater analytical data will be submitted upon completion of field work.

SCHEDULE

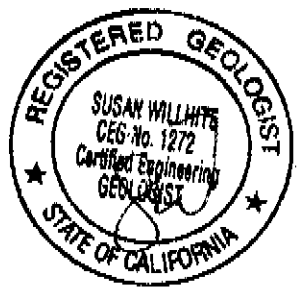
The proposed field work will be initiated upon approval of this work plan by Unocal and the Alameda County Environmental Health Care Agency. Due to the divestment schedule, Unocal would like to complete the field work by August 23, 1993. A report documenting findings of the investigation will be submitted approximately 6 to 8 weeks after the completion of field activities.

If you have any questions regarding this work plan, please don't hesitate to call.

Sincerely,

Pacific Environmental Group, Inc.

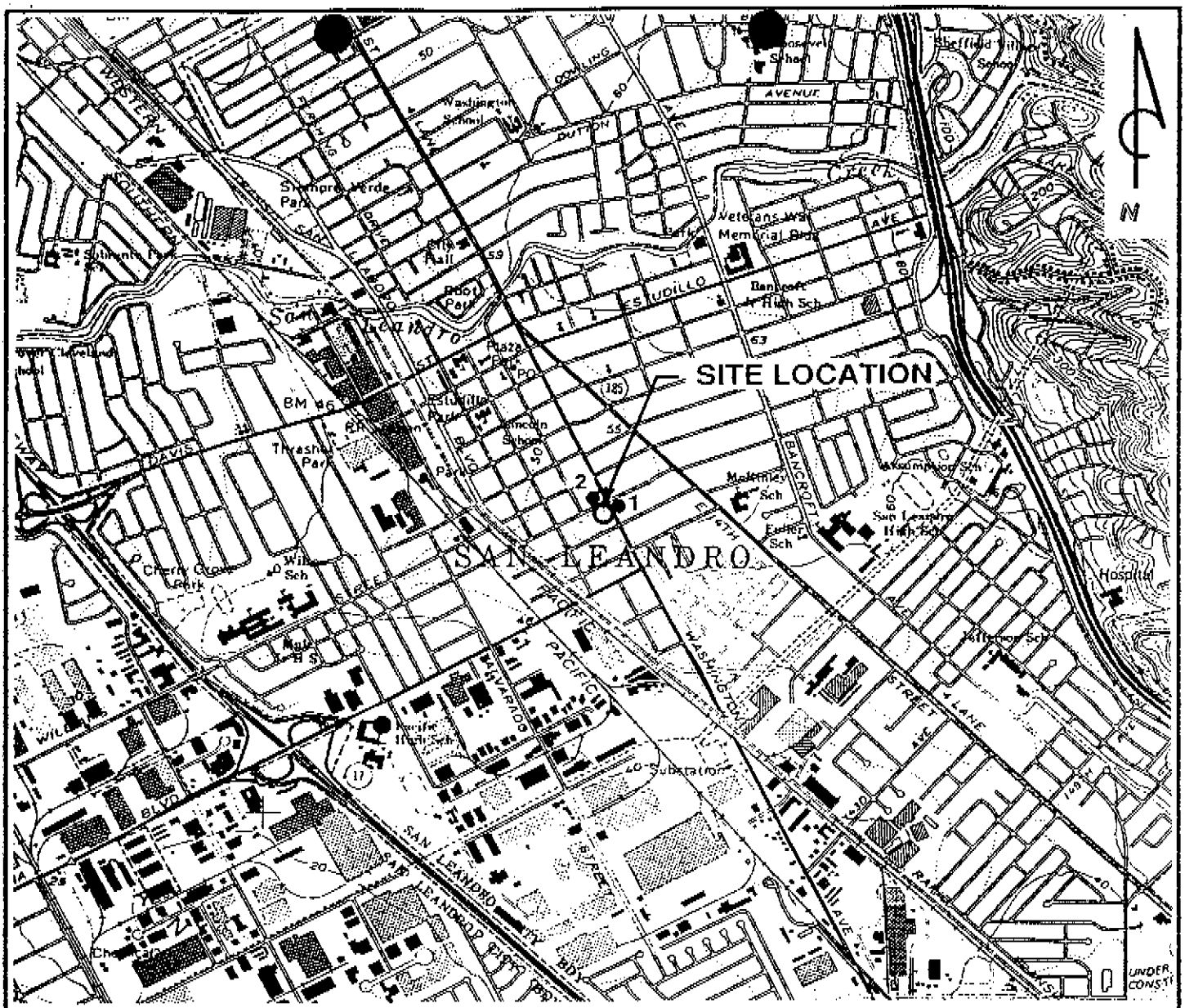
John Baldwin
Project Geologist



Susan Willhite
Senior Geologist
CEG 1272

Attachments: Figure 1 - Site Location Map
Figure 2 - Proposed Soil Boring and Groundwater Monitoring Well Location Map
Attachment A - Field and Laboratory Procedures

cc: Mr. Scott Seery, Alameda County Environmental Health Care Agency
Mr. John Jang, Regional Water Quality Control Board - S.F. Bay Region



QUADRANGLE LOCATION

LEGEND

1 ● LOCATION OF ADJACENT ACTIVE FUEL LEAK SITE, WEBBER MOTERS

2 ● LOCATION OF ADJACENT ACTIVE FUEL LEAK SITE, MARTIN PROPERTY

REFERENCES:
USGS 7.5 MIN. TOPOGRAPHIC MAP
TITLED: SAN LEANDRO CALIFORNIA
DATED: 1959 REVISED: 1980

SCALE IN FEET

2000 0 2000

PACIFIC ENVIRONMENTAL GROUP, INC.

UNOCAL SERVICE STATION 5430
1935 Washington Avenue at Castro Street
San Leandro, California

SITE LOCATION MAP

FIGURE: 1

PROJECT: 310-38.01

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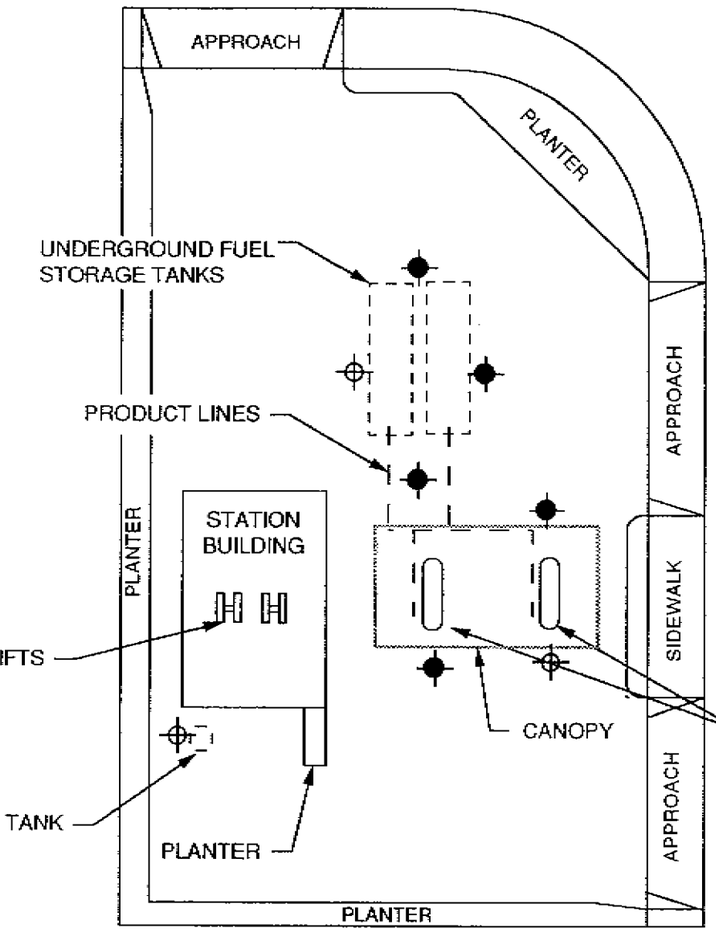
CASTRO STREET



WASHINGTON AVENUE

LEGEND

- PROPOSED POSSIBLE GROUNDWATER MONITORING WELL LOCATION
- PROPOSED EXPLORATORY SOIL BORING LOCATION AND DESIGNATION

INFERRED DIRECTION OF REGIONAL GROUNDWATER FLOW

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

UNOCAL SERVICE STATION 5430
1935 Washington Avenue at Castro Street
San Leandro, California

PROPOSED SOIL BORING and GROUNDWATER MONITORING WELL LOCATION MAP

FIGURE: 2
PROJECT: 310-38.01

6/29/93

ATTACHMENT A
FIELD AND LABORATORY PROCEDURES

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FIELD AND LABORATORY PROCEDURES

Exploratory Drilling and Monitoring Well Installation

The exploratory soil borings will be drilled using 8-inch diameter hollow-stem auger drilling equipment. The borings will be logged by a Pacific Environmental Group, Inc. (PACIFIC) geologist using the Unified Soil Classification System and standard geologic techniques.

Soil samples for logging and chemical analysis will be collected at 5-foot depth intervals and at the soil/water interface by advancing a California-modified split-spoon sampler with 4-inch brass liners into undisturbed soil beyond the tip of the auger. The sampler will be driven a maximum of 18 inches, using a 140-pound hammer with a 30-inch drop. The brass liner containing the deepest 4 inches of soil from each sample interval will be retained for chemical analysis, and will be capped with Teflon sheets and plastic end caps, which are adhered to the brass ring using a non-volatile, rubber-based tape, and then placed in a sealable plastic bag. These samples will be placed on ice for transport to the laboratory, accompanied by chain-of-custody documentation. All downhole drilling equipment will be steam-cleaned prior to drilling of each boring.

Soil samples collected at 5-foot intervals during drilling will be analyzed in the field for ionizable organic compounds using the HNU Model PI-101 (or equivalent) photo-ionization detector (PID) with a 10.2 eV lamp. The test procedure will involve measuring approximately 30 grams from an undisturbed soil sample, placing this sub-sample in a clean glass jar, and sealing the jar with aluminum foil secured under a ring-type threaded lid. The jar will be warmed for approximately 20 minutes, then the foil will be pierced and the head-space within the jar will be tested for total organic vapor, measured in parts per million (ppm; volume/volume). The instrument will be calibrated prior to drilling using a 100-ppm isobutylene standard (in air) and a sensitivity factor of 0.55, which relates the photo-ionization potential of benzene to that of isobutylene at 100 ppm. PID readings are useful for indicating relative levels of contamination, but cannot be used to evaluate hydrocarbon levels with the confidence of laboratory analyses.

If groundwater monitoring wells are installed, the borings for the monitoring wells will be advanced below static groundwater, taking care not to interconnect water-bearing zones separated by laterally continuous low-permeability soil. The borings will be converted to groundwater monitoring wells by installing 2-inch diameter flush-threaded Schedule 40 PVC casing and 0.020-inch factory-slotted screen. The screen will be placed through the entire saturated section, extending above the static water level. A graded 2/12 sand pack will be placed in the annular space across the screened interval, and will extend approximately 1 to 2 feet above the top of the screens. A bentonite and cement seal will be placed from the sand pack to the ground surface.

To secure the well, a locking cap and protective vault box will be installed. Following well completion, the elevation and location of the vault boxes of the newly installed wells will be surveyed to the nearest 0.01 foot (elevation), relative to mean sea level, by a licensed surveyor.

Drill cuttings generated during drilling activities will be temporarily stockpiled on site and covered by plastic sheeting. Composite samples will be collected from the stockpiled soils and analyzed for total petroleum hydrocarbons calculated as gasoline (TPH-g), benzene, toluene, ethylbenzene, and xylenes (BTEX compounds), and soluble toxicity limit concentration (STLC) lead. The soils will be hauled by a licensed hauler to a disposal facility appropriate for the levels of hydrocarbons present.

Well Development and Groundwater Sampling

If groundwater monitoring wells are installed, the new monitoring wells will be developed by surging the screened interval with a surge block and purging 10 casing volumes of water from each well. PACIFIC will collect groundwater samples from each of the newly installed monitoring wells. The sampling procedure consists of first measuring the water level in each well, and checking the wells for the presence of separate-phase hydrocarbons (SPH) using an oil/water interface probe or an electronic indicator. Monitoring wells not containing SPH are then purged of a minimum of four casing volumes of water. During purging, temperature, pH, and electrical conductivity are monitored to document that a representative sample is collected. After the water level partially recovers, a sample is collected from each well using a clean Teflon bailer and is placed into appropriate EPA-approved containers. The sample is labeled, logged onto chain-of-custody documents, and transported on ice to a California state-certified laboratory for chemical analysis.

Purge water from the wells, well development water, and steam-cleaning rinsate water will be temporarily stored on site in appropriately labeled drums, and later disposed of by a licensed hauler.

Laboratory Procedures

Soil and groundwater samples will be analyzed in the laboratory for the presence of TPH-g and BTEX compounds according to the DHS LUFT method, by modified EPA Methods 8020/8015 and 5030. Final detection will be by gas chromatography using a flame-ionization detector and a PID. One soil and groundwater sample will be analyzed for semi-volatile and non-volatile petroleum hydrocarbons calculated as diesel and oil by EPA Methods 3350 and 3510. In addition, soil and groundwater samples collected adjacent to the waste oil tank will be analyzed for purgeable halogenated hydrocarbons by EPA Method 601 or 624, and for metals cadmium, chromium, lead, nickel, and zinc by EPA Method 6010. All chemical analyses will be performed by a California State-certified laboratory.