PACIFIC
ENVIRONMENTAL
GROUP, INC.

January 15, 1996
Project 310-038.1D

Mr. David Camille
Unocal Corporation
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

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

Dear Mr. Camille:

On behalf of Unocal Corporation (Unocal), Pacific Environmental Group, Inc. (PACIFIC) has prepared this *Work Plan* for the site referenced above. The purpose of this work plan is to describe a proposed investigation to further delineate the lateral extent of petroleum hydrocarbon impact to soils and groundwater in the vicinity of the site, as requested by the Alameda County Health Care Services Agency (ACHCSA), in a letter dated November 22, 1995 (Attachment). The ACHCSA letter requested the submittal of a work plan by January 21, 1996.

BACKGROUND

The site has been an active Unocal service station since 1965. The service station facilities currently include two 10,000-gallon underground fiberglass gasoline storage tanks, one 280-gallon underground waste oil storage tank, two product dispenser islands, and two service bays (Figure 1). According to Unocal files, repairs were made to the underground product piping in 1976. The current underground fuel storage tanks were installed in 1981, in the same excavation as the original fuel storage tanks.

Investigative activities at the site were initiated in August 1993, and have included the drilling of five exploratory soil borings, designated U-A through U-E, and the installation of seven groundwater monitoring wells, designated U-1 through U-7. Quarterly groundwater monitoring and sampling have been performed since August 1993.

Maximum concentrations of 200 parts per million (ppm) total purgeable petroleum hydrocarbons calculated as gasoline (TPPH-g), 20 ppm total extractable petroleum hydrocarbons calculated as diesel (TEPH-d), and 0.80 ppm benzene have been detected in soil samples collected at the site. These concentrations were detected in soil samples

collected form borings U-A and U-C, in the vicinity of the product dispenser islands, at a depth of approximately 30 feet bgs.

Groundwater has occurred at depths ranging from approximately 25 to 33 feet below ground surface (bgs) during monitoring. Groundwater flow has varied from north-northwesterly to south-southwesterly, typically at shallow hydraulic gradients.

Maximum concentrations of 23,000 parts per billion (ppb) TPPH-g, 1,000 ppb benzene have been detected in groundwater samples collected from well U-3, in the vicinity of the product dispenser islands. Lesser concentrations have also been detected in groundwater samples collected from well U-2, in the vicinity of the underground fuel storage tanks. The lateral extent of hydrocarbon impact to groundwater is generally delineated, with the exception of the area of wells U-1 and U-6 in the southern portion of the site.

As documented in a PHR Environmental Health Consultants, Inc. (PHR) *Phase I Environmental Site Assessment* dated May 28, 1993, there are five sites within one quarter mile of the Unocal site which appear on the leaking underground storage tank list of the Regional Water Quality Control Board - San Francisco Bay Region. Also included in the PHR report are historical photographs of the Unocal site and environs. One of these photographs indicates that an auto sales business was formerly located on the property to the immediate south of the Unocal site. This property, which presently contains a car wash, may have used on-site underground storage tanks in the past.

PROPOSED SCOPE OF WORK

File Review

PACIFIC proposes a review of the files at the City of San Leandro Fire Department and Building Department prior to the performance of off-site assessment activities on the car wash property to the south of the Unocal site. The purpose of the proposed file review is to determine whether the car wash site has ever included underground storage tanks. If records indicate that underground storage tanks have been located on that property, the proposed field activities will be reevaluated. The results of the file review as well as recommendations to proceed or not to proceed with the field investigation will be documented in a technical memorandum to Unocal.

Field Investigation

The objective of the proposed field investigation is to further delineate the lateral extent of soil and groundwater hydrocarbon impact south and southwest of the site. As recommended by the ACHCSA, the proposed investigation will be performed using hydraulically or pneumatically driven probes for the collection of soil and groundwater samples. If appropriate, the soil and groundwater analytical data generated during this investigation may be used to propose the installation of additional "permanent" groundwater monitoring wells. PACIFIC proposes the following scope of work.

- Preparation of a site specific Health and Safety Plan in accordance with OSHA standards for hazardous waste operations.
- Acquisition of appropriate off-site access agreements and probe installation permits.
- Installation and removal of four off-site probes south and southwest of the Unocal site.
- Preparation of lithologic logs and collection of soil and groundwater samples during probe installation.
- Laboratory analyses of soil and groundwater samples.
- Evaluation of data, and preparation and submittal of a technical report.

Upon receipt of the appropriate access agreements and probe installation permits, up to four probes will be installed in the locations indicated on Figure 1, to further delineate the extent of soil and groundwater impact. The probes will be installed to a depth of approximately 35 feet bgs. Field and laboratory procedures are presented as Attachment A.

Soil samples for lithologic logging and possible chemical analyses will be collected at five-foot intervals during probe installation. Selected soil samples will be submitted to a state-certified analytical laboratory, and analyzed for TPPH-g, and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds).

One groundwater sample will be collected from each probe. The four groundwater samples will also be submitted to a state-certified analytical laboratory, and analyzed for TPPH-g, and BTEX compounds.

Technical Report Preparation

Following the completion of field work, and receipt of analytical results, PACIFIC will prepare a report documenting the findings of the proposed investigation. Analytical data generated from the field investigation will be evaluated to determine the lateral extent of contaminants detected in soil and/or groundwater. This report will include recommendations for further actions, which may include the installation of additional groundwater monitoring wells.

SCHEDULE

Upon approval of this work plan by the ACHCSA, PACIFIC is immediately prepared to proceed with the proposed file review for the property located adjacent and south of the Unocal facility. The technical memorandum, which will present recommendations for the next phase of work, will be submitted within one week following completion of the file review.

Upon notification to proceed by Unocal, PACIFIC will obtain all appropriate permits and schedule drilling equipment. As requested by the ACHCSA, field activities will be performed within 30 days of the receipt of the access agreements and permits. Field sample collection and laboratory analysis can be performed during a period of 4 weeks. A draft report can be prepared in the following 4 weeks.

Should you have any questions regarding the contents of this work plan, please call.

Sincerely,

Pacific Environmental Group, Inc.

Timothy L. Ripp
Senior Staff Geologist

Joseph Muzzio
Project Geologist
CEG 1672

REGISTERED GEOLOGIST
JOSEPH J. MUZZIO
No. 1672
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIF.

Attachments: Figure 1 - Extended Site Map
Attachment A - Alameda County Health Care Services Letter, November 22, 1995
Attachment B - Field and Laboratory Procedures

cc: Mr. Dale Klettke, Alameda County Environmental Health Care Services Agency
Mr. John Jang, Regional Water Quality Control Board - San Francisco Bay Region
Mr. Michael Bakaldin, San Leandro Fire Department, Hazardous Materials Program
Mr. Gil Jensen, Alameda County District Attorney's Office

CASTRO STREET

N

SIDEWALK

291 | 277 | 265

RESIDENTIAL

CYPRESS MANOR CONDOMINIUMS

CARPORT

CARPORT

CAR WASH

PARKING LOT

APPROACH

U-5

UNDERGROUND FUEL STORAGE TANKS

U-E

U-4

U-2

U-D

DRIVEWAY

PLANTER

U-B

CANOPY

STATION BUILDING

U-C

WASTE OIL TANK

U-A

U-3

U-7

U-1

PRODUCT ISLANDS

APPROACH

U-6

PLANTER

WASHINGTON AVENUE

SIDEWALK

1904 THE MUTT HUTT

1926 RESIDENCE

1940 AUTO SERVICE

AUTO SERVICE

AUTO SERVICE PARKING LOT

LEGEND

U-2 ◉ GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

U-C ● SOIL BORING LOCATION AND DESIGNATION

⊕ PROPOSED SOIL AND GROUNDWATER SAMPLING PROBE

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE

0 30 60 FEET

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

EXTENDED SITE MAP

FIGURE: 1

PROJECT: 310-038.1D

ATTACHMENT A

ALAMEDA COUNTY HEALTH CARE SERVICES LETTER

NOVEMBER 22, 1995

310-038.1C

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6777

STID 1747

November 22, 1995

Mr. David Camille
Unocal Corporation
2000 Crow Canyon Place, Suite 400
San Ramon, CA 94583

RE: UNOCAL STATION #5430, 1935 WASHINGTON BLVD., SAN LEANDRO

Dear Mr. Camille:

This office is in receipt of and has completed review of the case file for this site, up to and including the October 18, 1995 MPDS "Quarterly Data Report".

Ground water samples collected from monitoring wells U-3 and U-6 have consistently shown elevated dissolved concentrations of fuel hydrocarbons. The extent of the soil and groundwater contamination has not yet been substantially defined.

Pursuant to provisions of Article 11, Title 23, California Code of Regulations you are required to perform a Phase II-Soil and Water Investigation (SWI) to define the extent of both soil and groundwater contamination. In order to pursue the Phase II-SWI in a more cost-effective fashion, this office has suggested that you first employ rapid site assessment tools (e.g. CPT, Geo Probe, Hydropunch, etc.) to qualitatively assess impacts and to define the extent of the contaminant plume **before** proposing final well locations.

The results of such qualitative work will allow a more informed approach to the siting of an appropriate array of permanent monitoring wells. In order to substantially define the limits of the pollutant plume, it is anticipated that during this next phase of the investigation many, if not all, of the assessment points and resulting wells will need to encroach upon adjoining properties, both public and private.

A Phase II-SWI work plan is due within 60 days of the date of this letter or January 21, 1996. Work should commence no later than 30 days following receipt of encroachment approval.

A report must be submitted within 45 days of the completion of field activities associated with this phase of work at the site. Subsequent reports are to be submitted quarterly until this site qualifies for final RWQCB "sign off".

Please be advised that this is a formal request for technical reports pursuant to California Water Code Section 13267(b). Failure to respond may result in the referral of this case to the RWQCB for enforcement action.

Please also bear in mind that, in order to maintain SB2004 UST clean-up fund eligibility, specific bidding requirements and contracting criteria must be met. You are encouraged to contact the SWRCB fund representative (916/227-4529) for more case-specific information, or if you have not, as of yet, applied for financial assistance.

I have taken over management of this project from Scott Seery of this office. Please feel free to call me directly at 510/567-6880, should you have any questions.

Sincerely,

Dale Klettke, CHMM
Hazardous Materials Specialist

c: Tom Peacock, Supervising Hazardous Materials Specialist
Mike Bakaldin, San Leandro Hazardous Materials Program
Gil Jensen, Alameda County District Attorney's Office
Joseph Muzzio, Pacific Environmental Group, 2025 Gateway Place, Suite 440, San Jose, CA 95110

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ATTACHMENT B

FIELD AND LABORATORY PROCEDURES

ATTACHMENT B
FIELD AND LABORATORY PROCEDURES

Soil Probe Drilling Procedures

The soil probes will be advanced using 2-inch diameter hollow-stem rods fitted with acetate liners for continuous soil core sample recovery when needed. The probes 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 laboratory analysis will be collected at depth intervals of five feet or less, by advancing the hollow-stem rods into undisturbed soil. The sampler will be driven using a pneumatic hammer or hydraulic pressure. Soil samples will be analyzed in the field for volatile organic compounds (VOCs) using a photo-ionization detector (PID) by a PACIFIC Geologist. Results of the PID tests will be used to assist in selection of samples for laboratory analysis. Soil samples for chemical analysis will be retained in the acetate liners, capped with Teflon sheets and plastic end caps, and placed in sealable plastic bags. These samples will be placed in a cooler with ice for transport to the laboratory accompanied by chain-of-custody documentation.

Groundwater sampling will be performed using a 6-foot long section of decontaminated 3/4-inch I.D. perforated or slotted galvanized steel probe pipe. The perforated or slotted probe pipe will be connected to 5-foot sections of unslotted probe, as required. Decontaminated stainless steel insert rods may be used to support the probe pipe depending upon subsurface conditions. The probe pipe and insert rods will be pneumatically driven into the aquifer. Several development techniques may be used to encourage flow into the probe, if necessary. Groundwater samples will be collected using decontaminated stainless steel bailers and placed into VOA vial containers. The containers will be labeled with the project information and submitted to a state-certified laboratory for analyses . The probe pipe will be removed from the ground after sampling and the hole will be sealed using neat cement.

All down-hole drilling equipment will be steam-cleaned prior to drilling and between boring locations.

Organic Vapor Procedures

Soil samples collected during field work will be analyzed in the field for ionizable organic compounds using the HNU Model PI 101 PID, or equivalent, with a 10.2 eV lamp. The test procedure involves placing approximately 30 grams of soil from an undisturbed soil sample in a clean glass jar, and sealing the jar with aluminum foil secured under a ring-type threaded lid. The jar is then warmed for approximately 20 minutes in the sun. The foil is then pierced and the head-space within the jar is tested for total organic vapor measured in parts per million as benzene (ppm; volume/volume). The instrument is previously calibrated 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.

Laboratory Procedures

Selected soil and groundwater samples from the soil probes will be analyzed in the laboratory for the presence of TPPH-g and BTEX compounds by EPA Methods 8015 and 8020. Sample extraction is performed by the purge and trap technique, EPA Method 5030. Analysis for TPPH-g is performed by the DHS-LUFT method. These analytical methods utilize gas chromatography, flame-ionization detection, and photo-ionization detection. All analyses will be performed by a California State-certified analytical laboratory.