

**MPDS**  
SERVICES, INCORPORATED  
ALCO  
HAZMAT

93 DEC 20 PM 3:06

December 16, 1993

Alameda County Health Care Services  
80 Swan Way, Room 200  
Oakland, California 94621


RE: Unocal Service Station #1871  
96 MacArthur Boulevard  
Oakland, California

Per the request of the Project Manager, Mr. Robert A. Boust of Unocal Corporation, enclosed please find our report dated November 24, 1993, for the above referenced site.

Should you have any questions regarding the reporting of data, please feel free to call our office at (510) 602-5120. Any other questions may be directed to the Project Manager at (510) 277-2334.

Sincerely,

MPDS Services, Inc.

  
Deanna L. Harding  
Technical Assistant

/dlh

Enclosure

**MPDS**  
SERVICES, INCORPORATED

ALCO  
HAZMAT  
93 DEC 21 AM 11:58

MPDS-UNO1871-01  
November 24, 1993

Unocal Corporation  
2000 Crow Canyon Place, Suite 400  
P.O. Box 5155  
San Ramon, California 94583

Attention: Mr. Robert A. Boust

RE: Quarterly Data Report  
Unocal Service Station #1871  
96 MacArthur Boulevard  
Oakland, California

Dear Mr. Boust:

This report presents the results of the most recent quarter of monitoring and sampling of the monitoring wells at the referenced site by MPDS Services, Inc. The wells are currently monitored and sampled on a quarterly basis. This report covers the work performed by MPDS Services, Inc., in October of 1993.

RECENT FIELD ACTIVITIES

The three monitoring wells (MW-1, MW-2, and MW-3) were monitored and sampled once during the quarter. Prior to sampling, the wells were checked for depth to water and the presence of free product or sheen. The monitoring data collected this quarter are summarized in Table 1.

Ground water samples were collected from all of the wells on ~~October 19, 1993~~. Prior to sampling, the wells were each purged of between 20 and 36 gallons of water. During purging operations, the field parameters pH, temperature, and electrical conductivity were recorded and are presented in Table 2. Once the field parameters were observed to stabilize and a minimum of approximately four casing volumes had been removed from each well (wells MW-1 and MW-3 dewatered prior to purging four casing volumes), samples were then collected using a clean Teflon bailer. The samples were decanted into clean VOA vials that were then sealed with Teflon-lined screw caps, labeled, and stored in a cooler, on ice, until delivery to a state-certified laboratory.

### HYDROLOGY

The ground water elevation in each monitoring well at the Unocal site on October 19, 1993, is summarized in Table 1. The ground water flow direction at the Unocal site during the most recent quarter is shown on the attached Ground Water Flow Direction Map, Figure 1.

### ANALYTICAL RESULTS

The ground water samples collected this quarter were analyzed at Sequoia Analytical Laboratory and were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020.

The analytical results of all of the ground water samples collected from the monitoring wells to date are summarized in Table 3. The concentrations of TPH as gasoline and benzene detected in the ground water samples collected this quarter are shown on the attached Figure 2. Copies of the laboratory analytical results and the Chain of Custody documentation are attached to this report.

### DISTRIBUTION

A copy of this report should be sent to the Alameda County Health Care Services Agency, and to the Regional Water Quality Control Board, San Francisco Bay Region.

### LIMITATIONS

Environmental changes, either naturally-occurring or artificially-induced, may cause changes in ground water levels and flow paths, thereby changing the extent and concentration of any contaminants.

MPDS-UNO1871-01  
November 24, 1993  
Page 3

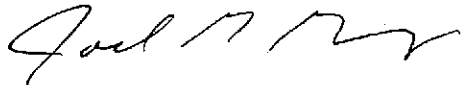
If you have any questions regarding this report, please do not hesitate to call at (510) 602-5120.

Sincerely,

MPDS Services, Inc.



Talin Kaloustian  
Staff Engineer



Joel G. Greger, C.E.G.  
Senior Engineering Geologist

License No. EG 1633  
Exp. Date 6/30/94

/dlh

Attachments: Tables 1, 2, & 3  
Location Map  
Ground Water Flow Direction Map - Figure 1  
Concentrations of Petroleum Hydrocarbons - Figure 2  
Laboratory Analyses w/Chain of Custody documentation

cc: Mr. Timothy R. Ross, Kaprealian Engineering, Inc.

**TABLE 2**

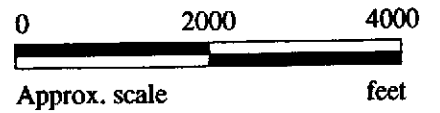
RECORD OF THE TEMPERATURE, CONDUCTIVITY, AND pH VALUES  
 IN THE MONITORING WELLS DURING PURGING AND PRIOR TO SAMPLING

(Measured on October 19, 1993)

| Well #         | Gallons<br>per Casing<br>Volume | Time  | Gallons<br>Purged | Casing<br>Volumes<br>Purged | Temper-<br>ature<br>(°F) | Conductivity<br>([μmhos/cm]<br>x100) | pH   |
|----------------|---------------------------------|-------|-------------------|-----------------------------|--------------------------|--------------------------------------|------|
| MW-1           | 5.79                            | 12:10 | 6                 | 1.04                        | 72.8                     | 8.64                                 | 7.20 |
|                |                                 |       | 12                | 2.07                        | 71.7                     | 8.28                                 | 6.90 |
|                |                                 | 12:21 | 17                | 2.94                        | 71.9                     | 8.33                                 | 6.62 |
|                |                                 |       | 12:35             | 20                          | 3.45                     | 72.1                                 | 8.48 |
| WELL DEWATERED |                                 |       |                   |                             |                          |                                      |      |
| MW-2           | 8.80                            | 11:00 | 9                 | 1.02                        | 70.3                     | 6.09                                 | 7.60 |
|                |                                 |       | 18                | 2.05                        | 70.6                     | 6.11                                 | 7.33 |
|                |                                 | 11:19 | 27                | 3.07                        | 70.9                     | 6.02                                 | 7.17 |
|                |                                 |       | 11:40             | 36                          | 4.09                     | 70.7                                 | 5.94 |
| MW-3           | 7.15                            | 13:10 | 7                 | 0.98                        | 73.2                     | 8.19                                 | 6.60 |
|                |                                 |       | 14                | 1.96                        | 72.8                     | 8.10                                 | 6.53 |
|                |                                 | 13:26 | 21                | 2.94                        | 72.6                     | 8.16                                 | 6.50 |
|                |                                 |       | 13:38             | 24                          | 3.36                     | 73.2                                 | 8.30 |
| WELL DEWATERED |                                 |       |                   |                             |                          |                                      |      |



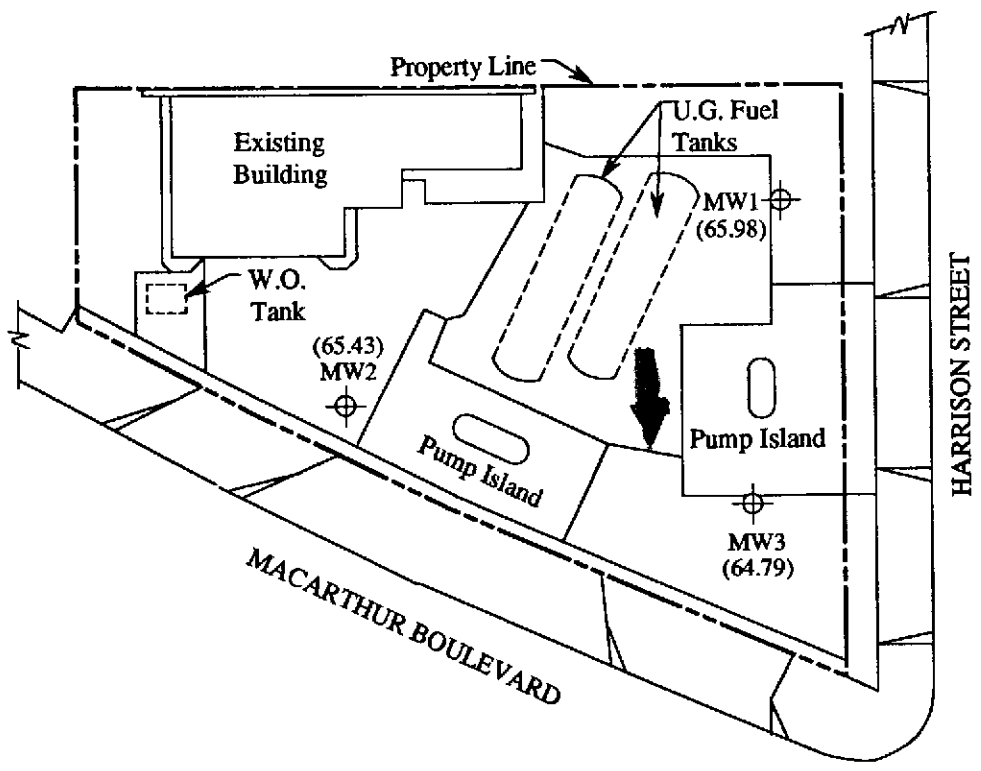
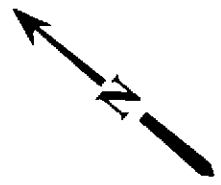
Base modified from 7.5 minute U.S.G.S.  
 Oakland East and West Quadrangles  
 (both photorevised 1980)






**MPDS**  
 SERVICES, INC.

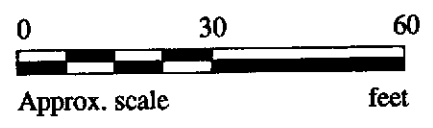
**UNOCAL SERVICE STATION # 1871**  
**96 MACARTHUR BOULEVARD**  
**OAKLAND, CALIFORNIA**

**LOCATION**  
**MAP**



**LEGEND**

-  Monitoring well
-  Ground water elevation in feet above Mean Sea Level
-  Direction of ground water flow

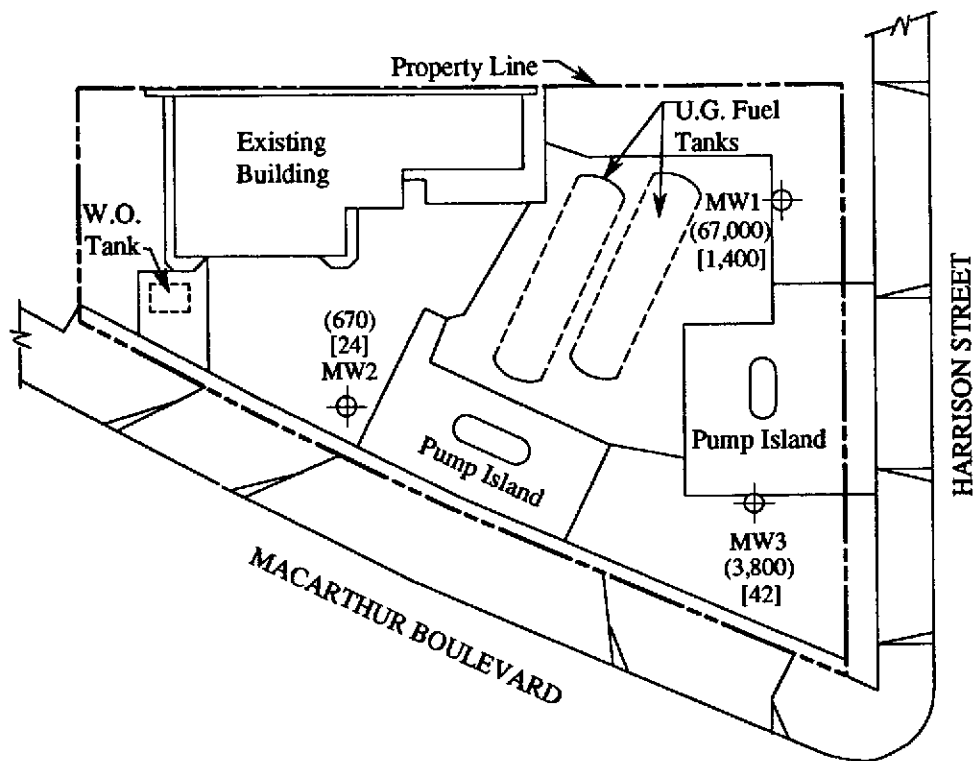
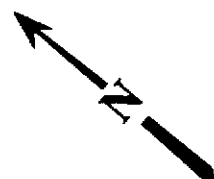


**GROUND WATER FLOW DIRECTION MAP FOR THE OCTOBER 19, 1993 MONITORING EVENT**

**MPDS**  
SERVICES, INC.

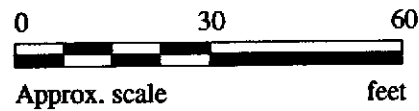
UNOCAL SERVICE STATION # 1871  
96 MACARTHUR BOULEVARD  
OAKLAND, CALIFORNIA

FIGURE  
**1**



**LEGEND**

- ⊕ Monitoring well
- ( ) Concentration of TPH as gasoline in ppb
- [ ] Concentration of benzene in ppb



**PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON OCTOBER 19, 1993**

**MPDS**  
SERVICES, INC.

**UNOCAL SERVICE STATION # 1871  
96 MACARTHUR BOULEVARD  
OAKLAND, CALIFORNIA**

**FIGURE  
2**





# SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520  
(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.  
2401 Stanwell Dr., Ste. 400  
Concord, CA 94520  
Attention: Avo Avedessian

Client Project ID: Unocal #1871, 96 MacArthur Blvd., Oakland  
Sample Matrix: Water  
Analysis Method: EPA 5030/8015/8020  
First Sample #: 310-1069

Sampled: Oct 19, 1993  
Received: Oct 19, 1993  
Reported: Nov 3, 1993

## TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

| Analyte                | Reporting Limit<br>µg/L | Sample I.D.<br>310-1069<br>MW-1 | Sample I.D.<br>310-1070<br>MW-2 | Sample I.D.<br>310-1071<br>MW-3 | Sample I.D.<br>Matrix<br>Blank |
|------------------------|-------------------------|---------------------------------|---------------------------------|---------------------------------|--------------------------------|
| Purgeable Hydrocarbons | 50                      | 67,000 ✓                        | 670 ✓                           | 3,800 ✓                         |                                |
| Benzene                | 0.5                     | 1,400 ✓                         | 24 ✓                            | 42 ✓                            |                                |
| Toluene                | 0.5                     | 2,600                           | 1.1                             | N.D.                            |                                |
| Ethyl Benzene          | 0.5                     | 2,900                           | 7.7                             | 50                              |                                |
| Total Xylenes          | 0.5                     | 5,000                           | 23                              | 56                              |                                |
| Chromatogram Pattern:  |                         | Gasoline                        | Gasoline                        | Gasoline                        |                                |

### Quality Control Data

|   |          |          |          |          |
|---|----------|----------|----------|----------|
| Report Limit Multiplication Factor:             | 400      | 5.0      | 20       | 1.0      |
| Date Analyzed:                                  | 10/26/93 | 10/26/93 | 10/26/93 | 10/26/93 |
| Instrument Identification:                      | HP-4     | HP-4     | HP-4     | HP-4     |
| Surrogate Recovery, %:<br>(QC Limits = 70-130%) | 90       | 93       | 90       | 99       |

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

### SEQUOIA ANALYTICAL

  
Alan B. Kemp  
Project Manager



# SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520  
(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.  
2401 Stanwell Dr., Ste. 400  
Concord, CA 94520  
Attention: Avo Avedessian

Client Project ID: Unocal #1871, 96 MacArthur Blvd., Oakland  
Matrix: Water

QC Sample Group: 3101069-71

Reported: Nov 3, 1993

## QUALITY CONTROL DATA REPORT

| ANALYTE                  | Benzene    | Toluene    | Ethyl-Benzene | Xylenes    |
|--------------------------|------------|------------|---------------|------------|
| <b>Method:</b>           | EPA 8020   | EPA 8020   | EPA 8020      | EPA 8020   |
| <b>Analyst:</b>          | J.F.       | J.F.       | J.F.          | J.F.       |
| <b>Conc. Spiked:</b>     | 20         | 20         | 20            | 60         |
| <b>Units:</b>            | µg/L       | µg/L       | µg/L          | µg/L       |
| <b>LCS Batch#:</b>       | 2LCS102693 | 2LCS102693 | 2LCS102693    | 2LCS102693 |
| <b>Date Prepared:</b>    | 10/26/93   | 10/26/93   | 10/26/93      | 10/26/93   |
| <b>Date Analyzed:</b>    | 10/26/93   | 10/26/93   | 10/26/93      | 10/26/93   |
| <b>Instrument I.D.#:</b> | HP-4       | HP-4       | HP-4          | HP-4       |
| <b>LCS % Recovery:</b>   | 100        | 100        | 100           | 100        |
| <b>Control Limits:</b>   | 70-130     | 70-130     | 70-130        | 70-130     |

| MS/MSD                                    | Batch #: | 3101169  | 3101169  | 3101169  | 3101169  |
|---|----------|----------|----------|----------|----------|
| <b>Date Prepared:</b>                     |          | 10/26/93 | 10/26/93 | 10/26/93 | 10/26/93 |
| <b>Date Analyzed:</b>                     |          | 10/26/93 | 10/26/93 | 10/26/93 | 10/26/93 |
| <b>Instrument I.D.#:</b>                  |          | HP-4     | HP-4     | HP-4     | HP-4     |
| <b>Matrix Spike % Recovery:</b>           |          | 100      | 100      | 100      | 102      |
| <b>Matrix Spike Duplicate % Recovery:</b> |          | 100      | 100      | 100      | 102      |
| <b>Relative % Difference:</b>             |          | 0.0      | 0.0      | 0.0      | 0.0      |

SEQUOIA ANALYTICAL

  
Alan B. Kemp  
Project Manager

**Please Note:**

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.



# KAPREALIAN ENGINEERING, INC.

## CHAIN OF CUSTODY

| SAMPLER<br><i>Vactres</i>                          |          | S/S# 1871 SITE NAME & ADDRESS<br><i>Under Oakland<br/>96 MacArthur Blvd.</i> |      |   |     | ANALYSES REQUESTED |       |  | TURN AROUND TIME:<br><i>Regular.</i> |                 |   |                                  |
|--|----------|--|------|---|-----|--------------------|-------|--|--------------------------------------|-----------------|---|----------------------------------|
| WITNESSING AGENCY                                  |          |  |      |   |     | TPHG-BTXE          |       |  | REMARKS                              |                 |   |                                  |
| SAMPLE ID NO.                                      | DATE     | TIME   | SOIL | WATER   | GAS | COMP               | CONT. | NO. OF   | SAMPLING                             | LOCATION        |   |                                  |
| MW 1   | 10/19/93 | 12:50 PM.  | X    | X   |     |                    | 2     |  |                                      | Monitoring well | X | 3101069 AB<br>↓ 1070<br>↓ 1071 ↓ |
| MW 2   | "        | 11:55 AM.  | X    | X   |     |                    | 2     |  | "                                    | "               | X |                                  |
| MW 3   | "        | 1:50 PM.   | X    | X   |     |                    | 2     |  | "                                    | "               | X |                                  |
| Relinquished by: (Signature)<br><i>W. G. ...</i>   |          | Date/Time<br>10/19/93 7:05   |      | Received by: (Signature)<br><i>Stenstrom</i>        |     | 10/19/93 1905      |       | The following MUST BE completed by the laboratory accepting samples for analysis:<br>1. Have all samples received for analysis been stored in ice? <u>yes</u><br>2. Will samples remain refrigerated until analyzed? <u>yes</u><br>3. Did any samples received for analysis have head space? <u>NO</u><br>4. Were samples in appropriate containers and properly packaged? <u>yes</u><br>Signature: <u>LMS</u> Title: _____ Date: <u>10/19</u> |                                      |                 |   |                                  |
| Relinquished by: (Signature)<br><i>M. G.</i>       |          | Date/Time<br>10/20/93 1002   |      | Received by: (Signature)<br><i>[Signature]</i>      |     |                    |       |  |                                      |                 |   |                                  |
| Relinquished by: (Signature)<br><i>[Signature]</i> |          | Date/Time<br>10-20-93 11:30 AM   |      | Received by: (Signature)<br><i>Melissa Crenshaw</i> |     |                    |       |  |                                      |                 |   |                                  |
| Relinquished by: (Signature)                       |          | Date/Time  |      | Received by: (Signature)                            |     |                    |       |  |                                      |                 |   |                                  |