KAPREALIAN ENGINEERING, INC.
*Consulting Engineers*
P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581

KEI-P89-0111.QR3
March 12, 1990

Unocal Corporation
2175 N. California Blvd., Suite #650
Walnut Creek, CA 94596

Attention: Mr. Ron Bock

RE: Quarterly Report
Unocal Service Station #5487
28250 Hesperian Blvd.
Hayward, California

Dear Mr. Bock:

This report presents the results of the third quarter of monitoring and sampling of the monitoring wells at the referenced site by Kaprealian Engineering, Inc. (KEI), per proposal KEI-P89-0111.P2 dated May 18, 1989. The wells are currently monitored monthly and sampled on a quarterly basis. This report covers the work performed by KEI from December, 1989 through February, 1990.

BACKGROUND

The subject site is presently used as a gasoline station. A Site Location Map and detailed Site Plan are attached to this report.

KEI's work at the site began on January 30, 1989 when KEI was asked to collect soil samples following the removal of two underground fuel storage tanks and one waste oil tank at the site. Water was encountered in the excavation at a depth of 10.5 feet. Soil and water samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California, for total petroleum hydrocarbon (TPH) as gasoline, and benzene, toluene, xylenes and ethylbenzene (BTX&E). The waste oil sample was also analyzed for TPH as diesel, total oil and grease (TOG), EPA method 8010 and EPA method 8270 constituents, and metals (cadmium, chromium, lead and zinc). After additional excavation, soil sample analyses from the fuel tank pit showed less than 2 ppm of TPH as gasoline for all samples representing the final pit excavation. After additional excavation in the waste oil pit, soil samples analyses showed low residual levels of contamination, indicating that the majority of contaminated soil has been excavated.

On February 14, 1989, in preparation for setting of the new fuel storage tanks, approximately 17,500 gallons of water was pumped from the fuel tank pit. On February 17, 1989, additional soil was excavated from the waste oil tank pit and 4,500 gallons of

water was pumped and disposed of by H&H Haulers. Based on the results of the laboratory analyses, and in order to comply with the requirements of the regulatory agencies, KEI proposed installation of five monitoring wells. Documentation of sample collection and results of the soil and ground water samples collected in January and February, 1989, are summarized in KEI's report (KEI-J89-0111.R2) dated March 1, 1989.

Five monitoring wells, designated as MW1 through MW5, were installed on April 20 and 21, 1989. Water samples from MW1 and MW4 had benzene levels of 2.1 ppb and 0.33 ppb, respectively. Analytical results of all samples indicated non-detectable levels of TPH as diesel and TOG. KEI proposed a monthly monitoring and quarterly sampling program of the existing wells. Documentation of the installation, development and sampling of the monitoring wells is presented in KEI's report (KEI-P89-0111.R5) dated May 18, 1989.

The monthly monitoring and quarterly sampling program was initiated in June, 1989. The results of the first quarter are presented in KEI's report (KEI-P89-0111.QR1) dated October 17, 1989. This report presents the results of the third quarter of monitoring and sampling.

## FIELD ACTIVITIES

The five wells were monitored three times and sampled once during the quarter. During monitoring, the wells were checked for depth to water and presence of free product and sheen. No free product or sheen was noted in any of the wells during the quarter. Monitoring data are summarized in Table 1.

Water samples were collected from the wells on February 16, 1990. Prior to sampling, the wells were each purged of 15 gallons, except for MW5, which was purged of 25 gallons. Samples were then collected using a clean Teflon bailer. Samples were decanted into clean VOA vials and/or one liter amber bottles as appropriate which were sealed with Teflon-lined screw caps and stored in a cooler on ice until delivery to the state certified laboratory.

## HYDROLOGY

Based on the water level data gathered during the quarter, ground water flow direction generally appeared to be to the north-northeast on February 16, 1990, relatively unchanged from the previous quarter. Water levels have fluctuated during the quarter, showing a net increase of between 0.20 and 0.55 feet in all of the wells since the previous quarter. The measured depth

to ground water at the site on February 16, 1990 ranged between 6.70 and 7.80 feet.

ANALYTICAL RESULTS

Water samples were analyzed at Sequoia Analytical Laboratory in Redwood City, California, and were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for TPH as gasoline using EPA method 5030 in conjunction with modified 8015, and BTX&E using EPA method 8020. In addition, samples from MW1 and MW2 were analyzed for TPH as diesel using EPA method 3510 in conjunction with modified 8015, TOG using EPA method 418. with clean up, and halogenated volatile organics using EPA method 8010.

The analytical results show non-detectable levels for all analyses performed in all wells. Results of the analyses are summarized in Table 2. Copies of the analytical results and Chain of Custody documentation are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results collected and evaluated to date and no evidence of free product or sheen in any of the wells, KEI recommends the continuation of the current monitoring and sampling program of the existing wells per KEI's proposal (KEI-P89-0111.P2) dated May 18, 1989.

DISTRIBUTION

A copy of this report should be sent to the Alameda County Flood Control District, 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.

Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state certified laboratory. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in

the Northern California region. We make no warranty, either expressed or implied, regarding the above, including laboratory analyses, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

If you have any questions regarding this report, please do not hesitate to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Paul H. King
Hydrogeologist

Don R. Braun
Certified Engineering Geologist

License No. 1310
Exp. Date 6/30/90

Mardo Kaprealian
President

jad

Attachments: Tables 1 and 2
Location Map
Site Plan
Laboratory Analyses
Chain of Custody documentation

KEI-P89-0111.QR3
March 12, 1990

TABLE 1

SUMMARY OF MONITORING DATA

| Date | Well No. | Depth to Water (feet) | Product Thickness | Sheen | Water Bailed (gallons) |
|---|---|---|---|---|---|
| 2/16/90 | MW1 | 7.60 | 0 | None | 15 |
| | MW2 | 7.80 | 0 | None | 15 |
| | MW3 | 7.45 | 0 | None | 15 |
| | MW4 | 7.15 | 0 | None | 15 |
| | MW5 | 6.70 | 0 | None | 25 |
| 1/17/90 | MW1 | 7.55 | 0 | None | 0 |
| | MW2 | 8.00 | 0 | None | 0 |
| | MW3 | 7.75 | 0 | None | 0 |
| | MW4 | 7.30 | 0 | None | 0 |
| | MW5 | 6.65 | 0 | None | 35 |
| 12/15/89 | MW1 | 7.77 | 0 | None | 0 |
| | MW2 | 8.20 | 0 | None | 0 |
| | MW3 | 7.80 | 0 | None | 0 |
| | MW4 | 7.55 | 0 | None | 0 |
| | MW5 | 7.02 | 0 | None | 32 |

KEI-P89-0111.QR3
March 12, 1990

TABLE 2

SUMMARY OF LABORATORY ANALYSES

| Sample Well # | Depth to Water (feet) | TPH as Diesel | TPH as Gasoline | Benzene | Toluene | Xylenes | Ethyl-benzene |
|---|---|---|---|---|---|---|---|
| | | | **(Collected on February 16, 1990)** | | | | |
| MW1* | 7.60 | ND | ND | ND | ND | ND | ND |
| MW2 | 7.80 | -- | ND | ND | ND | ND | ND |
| MW3 | 7.45 | -- | ND | ND | ND | ND | ND |
| MW4 | 7.15 | -- | ND | ND | ND | ND | ND |
| MW5 | 6.70 | -- | ND | ND | ND | ND | ND |
| | | | **(Collected on November 14, 1989)** | | | | |
| MW1* | 28.60 | ND | ND | ND | ND | ND | ND |
| MW2* | 24.30 | ND | ND | ND | ND | ND | ND |
| MW3 | 24.20 | -- | ND | ND | ND | ND | ND |
| MW4 | 25.05 | -- | ND | ND | ND | ND | ND |
| MW5 | 24.35 | -- | 73 | 4.7 | 0.97 | 16 | 2.9 |
| | | | **(Collected on August 16, 1989)** | | | | |
| MW1** | 8.25 | ND | ND | ND | ND | ND | ND |
| MW2** | 8.58 | ND | ND | ND | ND | ND | ND |
| MW3 | 8.19 | -- | ND | ND | ND | ND | ND |
| MW4 | 7.75 | -- | ND | ND | ND | ND | ND |
| MW5 | 7.31 | -- | 4,400 | 1,400 | 84 | 950 | 200 |
| | | | **(Collected on August 31, 1989)** | | | | |
| MW5 | 7.58 | -- | 910 | 120 | 7.1 | 53 | 50 |
| Detection Limits | | 50 | 30 | 0.3 | 0.3 | 0.3 | 0.3 |

* TOG and EPA method 8010 constituents were non-detectable.

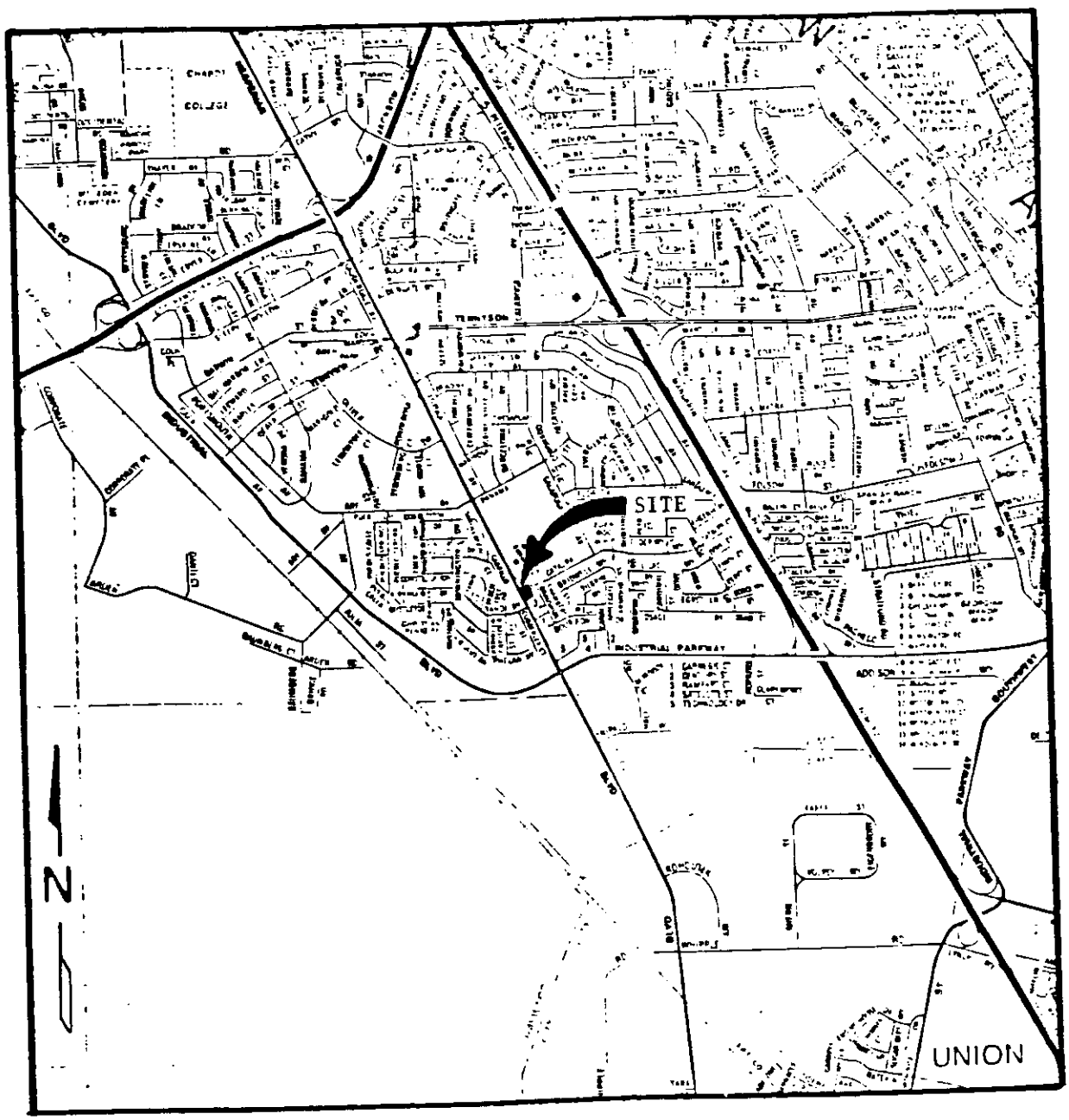
** TOG for these samples were 23 ppm and 7.4 ppm, respectively.
EPA method 8010 constituents were non-detectable for both samples.

-- Indicates analysis not performed.

ND = Non-detectable.

Results in parts per billion (ppb), unless otherwise indicated.

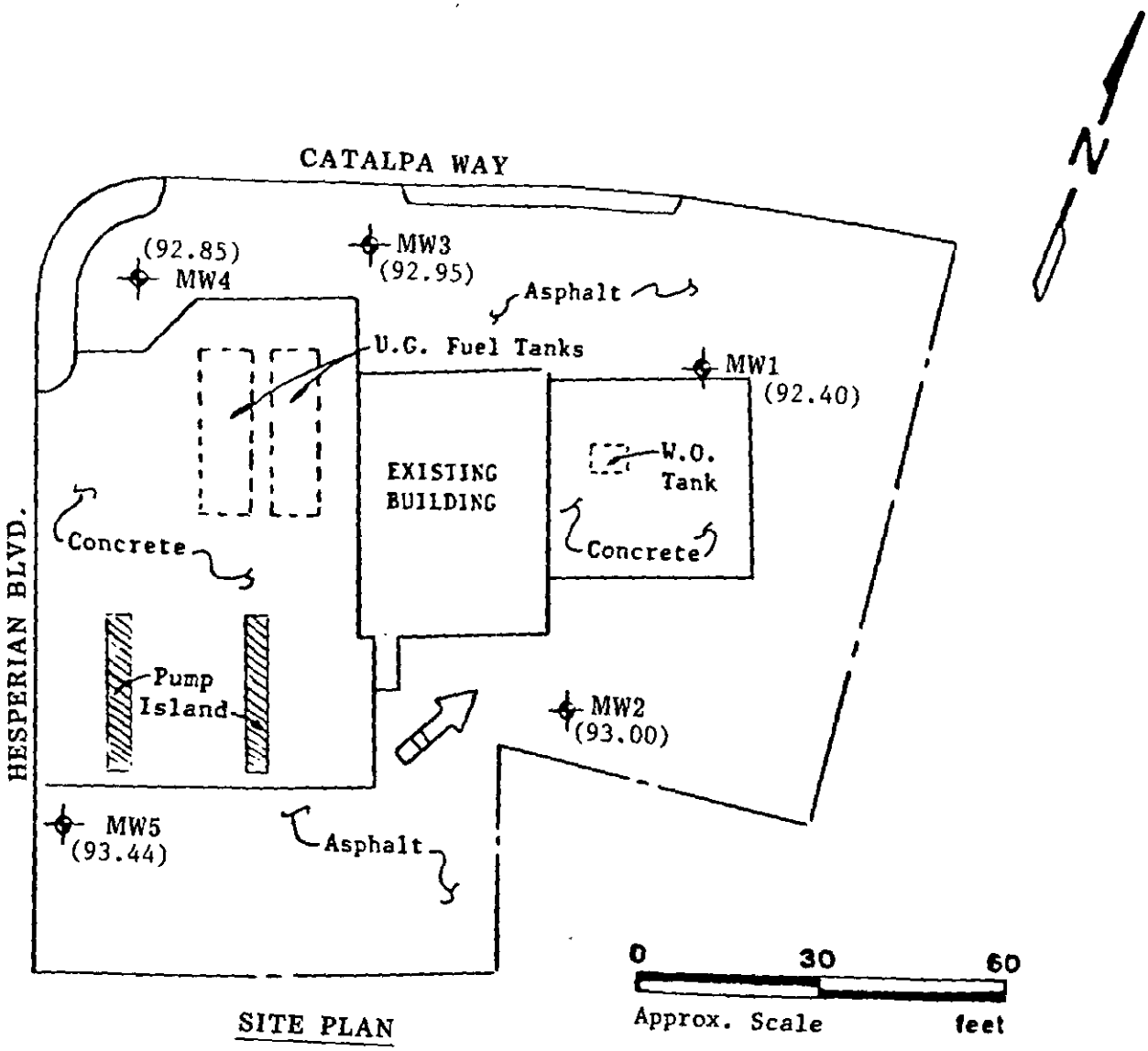
**KAPREALIAN ENGINEERING, INC.**
*Consulting Engineers*
P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581




LOCATION MAP

Unocal Service Station #5487
28250 Hesperian Blvd.
Hayward, California

**KAPREALIAN ENGINEERING, INC.**
*Consulting Engineers*
P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581




SITE PLAN

LEGEND

- Monitoring Well
- ( ) Water table elevation in feet on 2/16/90. MW1 well cover assumed 100.00 feet as datum.
- Direction of ground water flow.

Unocal Service Station #5487
28250 Hesperian Blvd.
Hayward, California

# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233


| | | | | |
|---|---|---|---|---|
| Kaprealian Engineering, Inc. | Client Project ID: | Unocal, Hayward, 28250 Hesperian Blvd | Sampled: | Feb 16, 1990 |
| P.O. Box 996 | Matrix Descript: | Water | Received: | Feb 16, 1990 |
| Benicia, CA 94510 | Analysis Method: | EPA 418.1 (I.R. with clean-up) | Extracted: | Feb 26, 1990 |
| Attention: Mardo Kaprealian, P.E. | First Sample #: | 002-2316 A | Analyzed: | Feb 26, 1990 |
| | | | Reported: | Feb 27, 1990 |

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

| Sample Number | Sample Description | Petroleum Oil mg/L (ppm) |
|---|---|---|
| 0022316 A | MW1 | N.D. |
| 0022317 A | MW2 | N.D. |

| | |
|---|---|
| **Detection Limits:** | **1.0** |

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL**

Belinda C. Vega
*Project Manager*

22316.KEI <1>

# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233


| | | | | |
|---|---|---|---|---|
| Kaprealian Engineering, Inc. | Client Project ID: | Unocal, Hayward, 28250 Hesperian Blvd | Sampled: | Feb 16, 1990 |
| P.O. Box 996 | Matrix Descript: | Water | Received: | Feb 16, 1990 |
| Benicia, CA 94510 | Analysis Method: | EPA 3510/8015 | Extracted: | Feb 23, 1990 |
| Attention: Mardo Kaprealian, P.E. | First Sample #: | 002-2316 B | Analyzed: | Feb 26, 1990 |
| | | | Reported: | Feb 27, 1990 |

## TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

| Sample Number | Sample Description | High B.P. Hydrocarbons µg/L (ppb) |
|---|---|---|
| 0022316 B | MW1 | N.D. |
| 0022317 B | MW2 | N.D. |

| Detection Limits: | 50 |
|---|---|

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.
Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL**

Belinda C. Vega
Project Manager

# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233


| | | | | |
|---|---|---|---|---|
| Kaprealian Engineering, Inc. | Client Project ID: | Unocal, Hayward, 28250 Hesperian Blvd | Sampled: | Feb 16, 1990 |
| P.O. Box 996 | Matrix Descript: | Water | Received: | Feb 16, 1990 |
| Benicia, CA 94510 | Analysis Method: | EPA 5030/8015/8020 | Analyzed: | Feb 21, 1990 |
| Attention: Mardo Kaprealian, P.E. | First Sample #: | 002-2316 C-D | Reported: | Feb 27, 1990 |

## TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

| Sample Number | Sample Description | Low/Medium B.P. Hydrocarbons µg/L (ppb) | Benzene µg/L (ppb) | Toluene µg/L (ppb) | Ethyl Benzene µg/L (ppb) | Xylenes µg/L (ppb) |
|---|---|---|---|---|---|---|
| 0022316 C-D | MW1 | N.D. | N.D. | N.D. | N.D. | N.D. |
| 0022317 C-D | MW2 | N.D. | N.D. | N.D. | N.D. | N.D. |
| 0022318 A-B | MW3 | N.D. | N.D. | N.D. | N.D. | N.D. |
| 0022319 A-B | MW4 | N.D. | N.D. | N.D. | N.D. | N.D. |
| 0022320 A-B | MW5 | N.D. | N.D. | N.D. | N.D. | N.D. |
| **Detection Limits:** | | **30** | **0.30** | **0.30** | **0.30** | **0.30** |

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL**

Belinda C. Vega
Project Manager

# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233


| | | | | |
|---|---|---|---|---|
| Kaprealian Engineering, Inc. | Client Project ID: | Unocal, Hayward, 28250 Hesperian Blvd | Sampled: | Feb 16, 1990 |
| P.O. Box 996 | Sample Descript: | Water, MW1 | Received: | Feb 16, 1990 |
| Benicia, CA 94510 | Analysis Method: | EPA 5030/8010 | Analyzed: | Feb 26, 1990 |
| Attention: Mardo Kaprealian, P.E. | Lab Number: | 002-2316 E-G | Reported: | Feb 27, 1990 |

## HALOGENATED VOLATILE ORGANICS (EPA 8010)

| Analyte | Detection Limit µg/L | Sample Results µg/L |
|---|---|---|
| Bromodichloromethane | 1.0 | N.D. |
| Bromoform | 1.0 | N.D. |
| Bromomethane | 1.0 | N.D. |
| Carbon tetrachloride | 1.0 | N.D. |
| Chlorobenzene | 1.0 | N.D. |
| Chloroethane | 5.0 | N.D. |
| 2-Chloroethylvinyl ether | 1.0 | N.D. |
| Chloroform | 0.50 | N.D. |
| Chloromethane | 0.50 | N.D. |
| Dibromochloromethane | 0.50 | N.D. |
| 1,2-Dichlorobenzene | 2.0 | N.D. |
| 1,3-Dichlorobenzene | 2.0 | N.D. |
| 1,4-Dichlorobenzene | 2.0 | N.D. |
| 1,1-Dichloroethane | 0.50 | N.D. |
| 1,2-Dichloroethane | 0.50 | N.D. |
| 1,1-Dichloroethene | 1.0 | N.D. |
| Total 1,2-Dichloroethene | 1.0 | N.D. |
| 1,2-Dichloropropane | 0.50 | N.D. |
| cis-1,3-Dichloropropene | 5.0 | N.D. |
| trans-1,3-Dichloropropene | 5.0 | N.D. |
| Methylene chloride | 2.0 | N.D. |
| 1,1,2,2-Tetrachloroethane | 0.50 | N.D. |
| Tetrachloroethene | 0.50 | N.D. |
| 1,1,1-Trichloroethane | 0.50 | N.D. |
| 1,1,2-Trichloroethane | 0.50 | N.D. |
| Trichloroethene | 0.50 | N.D. |
| Trichlorofluoromethane | 1.0 | N.D. |
| Vinyl chloride | 2.0 | N.D. |

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL**

Belinda C. Vega
Project Manager

# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233


| | | | | |
|---|---|---|---|---|
| Kaprealian Engineering, Inc. | Client Project ID: | Unocal, Hayward, 28250 Hesperian Blvd | Sampled: | Feb 16, 1990 |
| P.O. Box 996 | Sample Descript: | Water, MW2 | Received: | Feb 16, 1990 |
| Benicia, CA 94510 | Analysis Method: | EPA 5030/8010 | Analyzed: | Feb 26, 1990 |
| Attention: Mardo Kaprealian, P.E. | Lab Number: | 002-2317 E-G | Reported: | Feb 27, 1990 |

## HALOGENATED VOLATILE ORGANICS (EPA 8010)

| Analyte | Detection Limit µg/L | Sample Results µg/L |
|---|---|---|
| Bromodichloromethane | 1.0 | N.D. |
| Bromoform | 1.0 | N.D. |
| Bromomethane | 1.0 | N.D. |
| Carbon tetrachloride | 1.0 | N.D. |
| Chlorobenzene | 1.0 | N.D. |
| Chloroethane | 5.0 | N.D. |
| 2-Chloroethylvinyl ether | 1.0 | N.D. |
| Chloroform | 0.50 | N.D. |
| Chloromethane | 0.50 | N.D. |
| Dibromochloromethane | 0.50 | N.D. |
| 1,2-Dichlorobenzene | 2.0 | N.D. |
| 1,3-Dichlorobenzene | 2.0 | N.D. |
| 1,4-Dichlorobenzene | 2.0 | N.D. |
| 1,1-Dichloroethane | 0.50 | N.D. |
| 1,2-Dichloroethane | 0.50 | N.D. |
| 1,1-Dichloroethene | 1.0 | N.D. |
| Total 1,2-Dichloroethene | 1.0 | N.D. |
| 1,2-Dichloropropane | 0.50 | N.D. |
| cis-1,3-Dichloropropene | 5.0 | N.D. |
| trans-1,3-Dichloropropene | 5.0 | N.D. |
| Methylene chloride | 2.0 | N.D. |
| 1,1,2,2-Tetrachloroethane | 0.50 | N.D. |
| Tetrachloroethene | 0.50 | N.D. |
| 1,1,1-Trichloroethane | 0.50 | N.D. |
| 1,1,2-Trichloroethane | 0.50 | N.D. |
| Trichloroethene | 0.50 | N.D. |
| Trichlorofluoromethane | 1.0 | N.D. |
| Vinyl chloride | 2.0 | N.D. |

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Belinda C. Vega
Project Manager

# KAPREALIAN ENGINEERING, INC.

## CHAIN OF CUSTODY

SAMPLER: JOE/KEI

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal / Hayward 28250 Hesperian Blvd

TURN AROUND TIME: 5 days

| SAMPLE ID NO. | DATE | TIME | SOIL | WATER | GRAB | COMP | NO. OF CONT. | SAMPLING LOCATION | TPHG, BTXE | Gol | TOG | TPHD | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW1 | 2/16/90 | | | ✓ | ✓ | | 7 | MW | ✓ | ✓ | ✓ | ✓ | 0022316 A-G |
| " 2 | " | 5 | | ✓ | ✓ | | 7 | " | ✓ | ✓ | ✓ | ✓ | 0022317 ↓ |
| " 3 | " | Afternoon | | ✓ | ✓ | | 2 | " | ✓ | | | | 0022318 A-B |
| " 4 | " | | | ✓ | ✓ | | 2 | " | ✓ | | | | 0022319 |
| " 5 | " | | | ✓ | ✓ | | 2 | " | ✓ | | | | 0022320 ↓ |

| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
|---|---|---|
| [signature] | 2/16/90 | |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
| Relinquished by: (Signature) | Date/Time | Received by: (Signature) |
| | 2/16/90 4PM | [signature] |

The following MUST BE completed by the laboratory accepting samples for analysis:

1. Have all samples received for analysis been stored in ice? yes
2. Will samples remain refrigerated until analyzed? yes
3. Did any samples received for analysis have head space? no
4. Were samples in appropriate containers and properly packaged? yes

[signature] Signature — Comm Title — 2/16/90 Date