



**KAPREALIAN ENGINEERING, INC.**  
**Consulting Engineers**

P.O. BOX 996 • BENICIA, CA 94510  
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581

June 5, 1990

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

RE: Unocal Service Station #2512  
1300 Davis Street  
San Leandro, California

Gentlemen:

Per the request of Mr. Rick Sisk of Unocal Corporation, enclosed please find our report dated March 13, 1990, for the above referenced site.

Should you have any questions, please feel free to call our office at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Judy A. Dewey

jad\82

Enclosure

cc: Rick Sisk, Unocal Corporation



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KEI-P88-1204.QR3  
March 13, 1989 90

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

Attention: Mr. Rick Sisk

RE: Quarterly Report  
Unocal Service Station #2512  
1300 Davis Street  
San Leandro, California

Dear Mr. Sisk:

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-P88-1204.P3 dated May 16, 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 Site Plan are attached to this report.

KEI's work at the site began on December 30, 1988 when KEI was asked to install six exploratory borings at the site. The borings, designated as EB1 through EB6, were installed on January 3, 1989 to depths ranging from 26.5 to 30 feet. Water was initially encountered in the borings at depths ranging from 25 to 26.5 feet. Analytical results of selected soil samples collected from the borings showed total petroleum hydrocarbons (TPH) as gasoline ranging from non-detectable to 73 ppm. Total oil and grease (TOG) in borings EB1 and EB6 ranged from non-detectable to 7,800 ppm, while benzene in water ranged from non-detectable to 8.2 ppb. Results of the exploratory boring investigation are presented in KEI's report (KEI-P88-1204.R1) dated February 3, 1989. Excavation of the area surrounding EB6 was recommended to remove as much contaminated soil as possible.

Based on the results of the preliminary investigation, three two-inch diameter monitoring wells, designated as MW1, MW2 and MW3, were installed at the site on April 17, 1989. The wells were drilled, constructed and completed in accordance with the guidelines of the RWQCB and County well standards. The three wells were drilled and completed to a total depth of 33 feet.

Ground water was initially encountered at depths ranging from 17.5 to 18.5 feet beneath the surface during drilling. Based on the results of water samples from the wells, KEI recommended a monthly monitoring and quarterly sampling program for the wells. Documentation of monitoring well installation, development, sampling and sample results are presented in KEI's report (KEI-P88-1204.R2) dated May 16, 1989.

On May 11, 1989, in an attempt to remove as much contaminated soil as possible, the area adjacent to exploratory boring EB6 was excavated. KEI recommended the installation of three additional monitoring wells in order to further define the extent of the contamination. Documentation of excavation in the vicinity of EB6 and associated soil sample results are presented in KEI's report (KEI-J88-1204.R4) dated June 15, 1989.

The monitoring and sampling program was initiated in June, 1989. In addition, three additional monitoring wells, designated as MW4, MW5 and MW6, were installed on August 16, 1989. Results of the first quarter of monitoring and sampling, and documentation of the new monitoring well installation, sampling and sample results are presented in KEI's report (KEI-P88-1204.QR1) dated September 27, 1989. This report presents the results of the third quarter of monitoring and sampling.

#### FIELD ACTIVITIES

The six 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 23, 1990. Prior to sampling, each well was purged of 15 gallons using a Teflon bailer. 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 on ice until delivery to the state certified laboratory.

#### HYDROLOGY

Based on the water level data gathered during the quarter, ground water flow direction appeared to be toward the west on February 23, 1990. Water levels have increased in all of the wells during the quarter, showing a net increase ranging from 1.18 to 2.27 feet since the previous quarter. The measured depth to water at the site on February 23, 1990 ranged from 15.65 to 16.38 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, benzene, toluene, xylenes and ethylbenzene (BTX&E) using EPA method 8020, TPH as diesel using EPA method 3510 in conjunction with modified 8015 and TOG using EPA method 418.1 with clean up.

The analytical results show non-detectable levels for all analyses in all of the wells except for monitoring wells MW2, which showed 44 ppb TPH as gasoline, and MW3 which showed 350 ppb TPH as diesel, 0.32 ppb benzene, and 4.3 ppm TOG. 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-P88-1204.P3) dated May 16, 1989.

### DISTRIBUTION

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

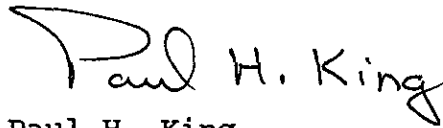
KEI-P88-1204.QR3  
March 13, 1990  
Page 4

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

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

KEI-P88-1204.QR3  
March 13, 1990

TABLE 1

SUMMARY OF MONITORING DATA

<u>Date</u>	<u>Well No.</u>	<u>Depth to Water (feet)</u>	<u>Product Thickness</u>	<u>Sheen</u>	<u>Water Bailed (gallons)</u>
2/23/90	MW1	15.95	0	None	15
	MW2	16.38	0	None	15
	MW3	16.00	0	None	15
	MW4	15.65	0	None	15
	MW5	16.30	0	None	15
	MW6	16.37	0	None	15
1/18/90	MW1	16.15	0	None	0
	MW2	16.60	0	None	0
	MW3	16.75	0	None	15
	MW4	15.85	0	None	0
	MW5	16.50	0	None	0
	MW6	16.60	0	None	0
12/20/89	MW1	16.92	0	None	0
	MW2	17.49	0	None	0
	MW3	17.15	0	None	25
	MW4	16.69	0	None	0
	MW5	17.32	0	None	0
	MW6	17.37	0	None	0

KEI-P88-1204.QR3  
 March 13, 1990

TABLE 2  
 SUMMARY OF LABORATORY ANALYSES

<u>Sample Well #</u>	<u>Depth to Water (feet)</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethylbenzene</u>
(Collected on February 23, 1990)							
MW1*	15.95	ND	ND	ND	ND	ND	ND
MW2*	16.38	ND	44	ND	ND	ND	ND
MW3**	16.00	350	ND	0.32	ND	ND	ND
MW4*	15.65	ND	ND	ND	ND	ND	ND
MW5*	16.30	ND	ND	ND	ND	ND	ND
MW6*	16.37	ND	ND	ND	ND	ND	ND
(Collected on November 21, 1989)							
MW1***	17.15	ND	ND	ND	ND	ND	ND
MW2***	17.60	ND	48	ND	0.51	ND	ND
MW3***	17.33	110	1,900	ND	ND	ND	ND
MW4*	16.88	ND	ND	ND	ND	ND	ND
MW5*	17.50	70	ND	ND	ND	ND	ND
MW6*	17.52	ND	ND	ND	ND	ND	ND
(Collected on August 11 & 29, 1989)							
MW1*	17.24	ND	ND	ND	ND	ND	ND
MW2*	17.83	ND	ND	ND	0.39	ND	ND
MW3*	17.48	860	3,200	73	140	240	35
MW4*	17.14	120	ND	ND	ND	ND	ND
MW5*	17.81	100	ND	ND	0.94	ND	0.30
MW6*	17.82	ND	ND	ND	ND	ND	ND
Detection Limits		50	30	0.3	0.3	0.3	0.3

\* TOG was non-detectable.

\*\* TOG was detected at 1.3 ppm.

\*\*\* TOG was detected at concentrations of 8.9, 1.6 and 3.8 ppm in MW1, MW2 and MW3, respectively.

ND = Non-detectable.

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



# KAPREALIAN ENGINEERING, INC.

Consulting Engineers

P. O. BOX 913

BENICIA, CA 94510

(415) 676-9100 (707) 746-6915



LOCATION MAP

Unocal Service Station #2512  
1300 Davis Street  
San Leandro, California

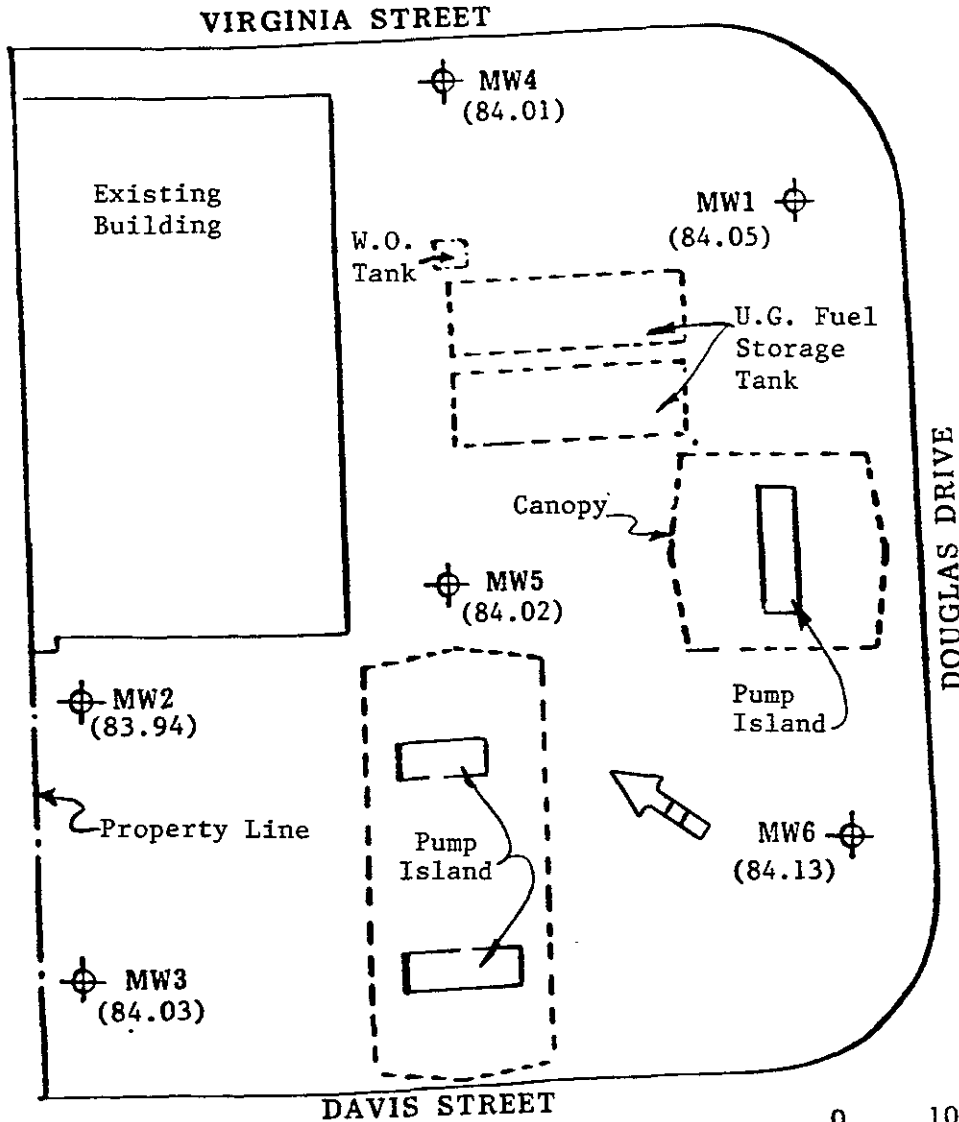




# KAPREALIAN ENGINEERING, INC.


Consulting Engineers

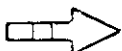
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SITE PLAN

LEGEND

-  Monitoring Well
- ( ) Water table elevation in feet on 2/23/90. Top of MW1 well cover assumed 100.00 feet as datum.

 Ground water flow direction

0 10 20 30 40  
Approx. Scale feet

Unocal Service Station #2512  
1300 Davis Street  
San Leandro, California



# SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID: Unocal, San Leandro, Davis	Sampled: Feb 23, 1990
P.O. Box 996	Matrix Descript: Water	Received: Feb 23, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8015/8020	Analyzed: Feb 26, 1990
Attention: Mardo Kaprealian, P.E.	First Sample #: 002-3360 C-D	Reported: Mar 2, 1990

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

Sample Number	Sample Description	Low/Medium B.P.	Benzene	Toluene	Ethyl Benzene	Xylenes
		Hydrocarbons µg/L (ppb)	µg/L (ppb)	µg/L (ppb)	µg/L (ppb)	µg/L (ppb)
0023360 C-D	MW1	N.D.	N.D.	N.D.	N.D.	N.D.
0023361 C-D	MW2	44	N.D.	N.D.	N.D.	N.D.
0023362 C-D	MW3	N.D.	0.32	N.D.	N.D.	N.D.
0023363 C-D	MW4	N.D.	N.D.	N.D.	N.D.	N.D.
0023364 C-D	MW5	N.D.	N.D.	N.D.	N.D.	N.D.
0023365 C-D	MW6	N.D.	N.D.	N.D.	N.D.	N.D.

<b>Detection Limits:</b>	<b>30</b>	<b>0.30</b>	<b>0.30</b>	<b>0.30</b>	<b>0.30</b>
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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. P.O. Box 996 Benicia, CA 94510 Attention: Mardo Kaprealian, P.E.	Client Project ID: Unocal, San Leandro, Davis Matrix Descript: Water Analysis Method: EPA 3510/8015 First Sample #: 002-3360 B	Sampled: Feb 23, 1990 Received: Feb 23, 1990 Extracted: Mar 1, 1990 Analyzed: Mar 2, 1990 Reported: Mar 2, 1990
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## TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons $\mu\text{g/L}$ (ppb)
0023360 B	MW1	N.D.
0023361 B	MW2	N.D.
0023362 B	MW3	350
0023363 B	MW4	N.D.
0023364 B	MW5	N.D.
0023365 B	MW6	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, San Leandro, Davis	Sampled: Feb 23, 1990
P.O. Box 996	Matrix Descript: Water	Received: Feb 23, 1990
Benicia, CA 94510	Analysis Method: EPA 418.1 (I.R. with clean-up)	Extracted: Mar 1, 1990
Attention: Mardo Kaprealian, P.E.	First Sample #: 002-3360 A	Analyzed: Mar 1, 1990
		Reported: Mar 2, 1990

## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Petroleum Oil mg/L (ppm)
0023360 A	MW1	N.D.
0023361 A	MW2	N.D.
0023362 A	MW3	4.3
0023363 A	MW4	N.D.
0023364 A	MW5	N.D.
0023365 A	MW6	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



# KAPREALIAN ENGINEERING, INC.

## CHAIN OF CUSTODY

SAMPLER			SITE NAME & ADDRESS						ANALYSES REQUESTED				TURN AROUND TIME:			
RAY (KEI)			UNOCAL SAN LEANDRO DAVIS ST						TPHG TPHD as directed TOG (418.1) BTXE				1 Week			
WITNESSING AGENCY													REMARKS			
SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION								
MW1	2-23-90	15:30		X	X		20 2(14)					X	X	X	X	
MW2	4	11		X	X		4					X	X	X	X	
MW3	4	4		X	X		4					X	X	X	X	
MW4	4	4		X	X		4					X	X	X	X	
MW5	4	4		X	X		4					X	X	X	X	
MW6	4	4		X	X		4					X	X	X	X	

Relinquished by: (Signature) Ray (KEI)	Date/Time 2-23-90	Received by: (Signature)	The following MUST BE completed by the laboratory accepting samples for analysis: 1. Have all samples received for analysis been stored in ice? <u>yes</u> 2. Will samples remain refrigerated until analyzed? <u>yes</u> 3. Did any samples received for analysis have head space? <u>no</u> 4. Were samples in appropriate containers and properly packaged? <u>yes</u>
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	
Relinquished by: (Signature)	Date/Time 2/23/90 16:30	Received by: (Signature) Bob Steeper	
			Signature: <u>Bob Steeper</u> Title: <u>Loggin</u> Date: <u>2/23/90</u>