

Consulting Engineers

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

> KEI-P88-1204.QR5 September 28, 1990

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

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 fifth quarter of monitoring and sampling of the monitoring wells at the referenced site by Kaprealian Engineering, Inc. (KEI), originally proposed on May 16, 1989 (KEI-P88-1204.P3). The wells are currently monitored monthly and sampled on a quarterly basis. This report covers the work performed by KEI from June through August, 1990.

BACKGROUND

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

KEI's work at the site began on December 30, 1988, when KEI was asked to install exploratory borings. On January 3, 1989, six exploratory borings, designated as EB1 through EB6 on the attached Site Plan, Figure 2, were drilled at the site. The six borings were drilled to depths ranging from 26.5 to 30 feet and ground water was encountered at depths of 25 to 26.5 feet beneath the surface. Soil samples were collected every 5 feet in each of the borings. Analytical results of soil samples collected from EB1 through EB5 indicated levels of total petroleum hydrocarbons (TPH) as gasoline ranging from non-detectable to 17 ppm. Benzene was detected only in samples EB5(20) and EB6(15) at concentrations of 0.12 ppm and 0.065 ppm, respectively. Analyses of soil samples collected from EB6 indicated levels of TPH as diesel ranging from 3 ppm to 160 ppm, and TOG levels of up to 7,800 ppm. Results of the soil samples analyses are summarized in Table 3. Documentation for exploratory boring activities were presented in KEI's report (KEI-P88-1204.R1) dated February 3, 1989.

On April 17, 1989, three two-inch diameter monitoring wells, designated as MW1, MW2 and MW3 on the attached Site Plan, Figure 1, were drilled, each to a total depth of 33 feet. Soil samples were collected at 5 foot intervals beginning at 5 feet below grade until ground water was encountered at depths of 17.5 to 18.5 feet.

Analytical results from the soil samples indicated levels of TPH as gasoline ranging from non-detectable to 6.2 ppm, and total oil and grease (TOG) levels ranging from non-detectable to 180 ppm. Water sample analyses showed levels of benzene ranging from non-detectable to 0.35 ppb in all samples, and levels of TPH as diesel ranging from non-detectable to 5,700 ppb. Results of the soil analyses are summarized in Table 3, and water analyses in Table 2. For more detailed information, refer to KEI's report (KEI-P88-1204.R2) dated May 16, 1990.

On May 11, 1989, at KEI's recommendation, the area (shown on the attached Site Plan, Figure 2) surrounding exploratory boring EB6, was excavated. Four soil samples labeled SWA, SWB, SWC and SWD were collected from the sidewalls of the excavation at a depth approximately 16.5 feet, six inches above the water table. Analyses of the excavation soil samples indicated levels of TPH as diesel ranging from 16 to 26 ppm, while TOG concentrations ranged from 170 to 850 ppm. The analytical results are summarized in Table 3, and were documented in KEI's report (KEI-J88-1204.R4) dated June 15, 1989.

On August 16, 1989, three additional two-inch diameter monitoring wells, designated as MW4, MW5, and MW6 on the attached Site Plan, Figure 1, were installed at the site to total depths of 33 feet. Soil samples were taken at 5 foot intervals beginning at 5 feet below grade until ground water was encountered at levels of 19.8 to 22 feet. The soil sample analyses showed non-detectable levels of TPH as gasoline and benzene in all samples, except in MW4(5), MW5(15) and MW5(22), which showed levels of TPH as gasoline at 3.3 ppm, 20 ppm and 2.1 ppm, respectively. Levels of TOG in all soil samples were less than 50 ppm. Analytical results of the water samples, collected from MW3, MW4 and MW5, indicated levels of TPH as diesel at 860 ppb, 120 ppb and 100 TPH as gasoline and benzene were detected ppb, respectively. only in MW3 at levels of 3,200 ppb and 73 ppb, respectively. Analytical results of the water samples are summarized in Table 2, and the soil samples in Table 3. Documentation for the installation of monitoring wells MW4 through MW6, as well as results of the first quarter of monitoring and sampling of wells MWl through MW6, were presented in KEI's report (KEI-P88-1204.QR1) dated September 27, 1989. All wells have been monitored monthly and sampled quarterly since June, 1989.

FIELD ACTIVITIES

Wells MW1 through MW6 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 May 10, 1990. The wells were each purged of 11 to 50 gallons using a surface pump and samples were then collected using a clean Teflon bailer. The samples were decanted into clean VOA vials and one liter amber bottles, sealed with Teflon-lined screw caps and stored on ice in a cooler until delivery to a state certified laboratory.

HYDROLOGY

Based on the water level data gathered from the six monitoring wells during the quarter, the ground water flow direction appeared to be generally due west to west-southwest on August 9, 1990, relatively unchanged from the previous quarter. In addition, water levels have fluctuated during the quarter, but show a net decrease of 0.45 to 0.53 feet in all wells since the previous quarter (May 10, 1990). The measured depth to ground water at the site on August 9, 1990 ranged between 17.23 to 18.05 feet.

ANALYTICAL RESULTS

Ground 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 benzene, toluene, xylene 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 503A&E.

Analytical results of ground water samples indicate non-detectable levels of TPH as gasoline, BTX&E and TOG in all wells except MW3, which show levels of TPH as diesel at 500 ppb, TPH as gasoline at 1,900 ppb, and benzene at 56 ppb. Results of the water 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. Ground water contamination is apparently limited to the vicinity of well MW3 only, based on the analytical results of the ground water samples collected from all six monitoring wells on August 8, 1990. However, ground water contamination has also been intermittently detected in wells MW2, MW4 and MW5 since August 29, 1989.

A field reconnaissance of the subject site on August 24, 1990 revealed the presence of apparent soil borings within the existing asphalt parking area on adjacent property located southwest of the site. In addition, KEI recommends that a review of Alameda County, City of San Leandro, and Regional Water Quality Control Board (RWQCB) records be conducted to identify any potential off-site sources of contamination, and review records concerning any subsurface investigation conducted at the adjacent properties.

DISTRIBUTION

A copy of this report should be sent to the City of San Leandro, and to the RWQCB, 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.

Jeffrey F. Eppink Senior Geologist

Don R. Braun

Certified Engineering Geologist

License No. 1310 Exp. Date 6/30/92

Mardo Kaprealian

Milo Kprh

President

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Attachments: Table

Tables 1, 2 & 3

Location Map

Site Plans - Figures 1 & 2

Laboratory Analyses

Chain of Custody documentation

TABLE 1
SUMMARY OF MONITORING DATA

<u>Date</u>	Well No.	Depth to Water (feet)	Product Thickness	Sheen	Water Bailed (gallons)
8/09/90	MWl	17.45	0	None	13
•	MW2	18.05	0	None	12
	MW3	17.73	0	None	50
	MW4	17.23	0	None	12
	MW5	17.88	0	None	11
	MW6	17.90	0	None	12
7/10/90	MWl	17.00	O	None	0
	MW2	17.56	0	None	0
	MW3	17.23	0	None	15
	MW4	16.81	0	None	0
	MW5	17.42	0	None	0
	MW6	17.46	0	None	0
6/11/90	MW1	16.40	0	None	0
	MW2	16.90	0	None	0
	MW3	16.69	0	None	45
	MW4	16.17	0	None	0
	MW5	16.79	0	None	0
	MW6	16.87	0	None	0

TABLE 2
SUMMARY OF LABORATORY ANALYSES
WATER

<u>Date</u>	Sample Well #	TPH as <u>Diesel</u>	TPH as <u>Gasoline</u>	Benzene	<u>Toluene</u>	Xylenes	Ethyl- benzene
8/09/90	MW1* MW2* MW3* MW4* MW5*	ND ND 500 ND ND	ND ND 1,900 ND ND	ND ND 56 ND ND	ND ND 140 ND ND	ND ND 140 ND ND	ND ND 31 ND ND
	MW6*	ND	ND	ND	ND	ND	ND
5/10/90	MW1 * MW2 * MW3 * * MW4 * MW5 * MW6 *	ND ND 850 88 83 ND	ND 43 6,200 54 ND ND	ND ND 94 ND ND ND	ND 1.0 460 2.0 ND 1.2	ND ND 540 0.37 0.31 ND	ND ND 160 ND ND ND
2/23/90	MW1* MW2* MW3*** MW4* MW5* MW6*	ND ND 350 ND ND ND	ND 44 ND ND ND ND	ND ND 0.32 ND ND ND	ND ND ND ND ND	ND ND ND ND ND	ND ND ND ND ND
11/21/89	MW1+ MW2+ MW3+ MW4* MW5* MW6*	ND ND 110 ND 70 ND	ND 48 1,900 ND ND ND	ND ND ND ND ND	ND 0.51 ND ND ND ND	ND ND ND ND ND	ND ND ND ND ND
8/11/89 & 8/29/89	MW1* MW2* MW3* MW4* MW5* MW6*	ND ND 860 120 100 ND	ND ND 3,200 ND ND ND	ND ND 73 ND ND ND	ND 0.39 140 ND 0.94 ND	ND ND 240 ND ND ND	ND ND 35 ND 0.30 ND
4/25/89	MW1++ MW2++ MW3++	100 ND 5,700	ND 32 56	0.31 0.35 ND	ND ND ND	ND ND 0.49	ND ND 0.31
Detection Limits	n	50	30	0.3	0.3	0.3	0.3

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES WATER

- * TOG was non-detectable.
- ** TOG was detected at 2.8 ppm.
- *** 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.
- ++ MWl showed PCE at 3.3 ppb and TCE at 0.55 ppb for 8010. MW2 showed PCE at 0.68 ppb for 8010. MW3 showed PCE at 1.0 ppb for 8010.

ND = Non-detectable.

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

TABLE 3
SUMMARY OF LABORATORY ANALYSES
SOIL

Sample <u>Number</u>	Depth (feet)	TPH as <u>Diesel</u>	TPH as <u>Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	Xylenes	Ethyl- benzene	TOG
		(Collected	on August	16, 1989)		
MW4 MW4	5 10		3.3 ND	ND ND	ND ND	0.11 ND	ND	<50 <50
MW4	15		ND	ND	ND	ND	ND ND	<50 <50
MW4	19		ND	ND	ND	ND	ND	<50
			112		*		112	100
MW5	5		ND	ND	ND	ND	ND	<50
MW5	10		ND	ND	ND	ND	ND	<50
MW5	15		ND	ND	ND	ND	ND	<50
MW5	20		20	ND	ИD	ND	ИD	<50
MW5	22		ND	ND	ND	ND	ND	<50
MW6	5		MD	M	MD	ND.	•••	-50
MW6	10		ND ND	ND	ND ND	ND	ND	<50
MW6	15		ИD	ND ND	ND	ND ND	ND	<50
MW6	20		ND	ND	ND	ND	ND ND	<50 <50
11110	20		ND	ND	ND	ND	ND	<50
			(Collected	l on May 1	1, 1989)			
SWA	16.5	21						850
SWB	16.5	18						580
SWC	16.5	26	_~					680
SWD	16.5	16						170
(Collected on April 17, 1989)								
MW1	5	ND	4.0	ND	ND	ND	ND	ND
MW1	10	ND	ND	ND	ND	ND	ND	ND
MW1	15	ND	ND	ND	ND	ND	ND	ND
MWl	17	ND	ND	ND	ND	ND	ND	31
MW2*	5	ND	ND	ND	ND	ND	ND	31
MW2*	10	ND	1.1	ИД	ИД	ИD	ИD	60
MW2*	15	ND	ND	ND	ND	ND	ND	71
MW3	5	ND	ND	ND	ND	ND	ND	ND
MW3	10	ND	1.1	ND	ND	ND	ND	ND
MW3	15	ND	1.2	ND	ND	ND	ND	32
MW3	17	ND	6.2	ND	0.21	0.42	ND	180
				··-				

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES SOIL

Sample <u>Number</u>	Depth (feet)	TPH as <u>Diesel</u>	TPH as <u>Gasoline</u>	<u>Benzene</u>	Toluene	Xylenes	Ethyl- <u>benzene</u>	TOG
(Collected on January 3, 1989)								
EB1(5)*	5	5.0		<0.005	0.05	<0.005	<0.005	
EB1(10)	* 10	1.0		<0.005	<0.005	<0.005	<0.005	
EB1(15)	* 15	1.0		<0.005	<0.005	<0.005	<0.005	
EB1 (25)	* 25	2.0						
EB2(10)	10		<1.0	<0.05	<0.1	<0.1	<0.1	
EB2 (15)	15		<1.0	<0.05	<0.1	<0.1	<0.1	
EB2 (20)	20		<1.0	<0.05	<0.1	<0.1	<0.1	
EB2(25)	25		1.9	<0.05	<0.1	<0.1	<0.1	
EB3(5)	5		<1.0	<0.05	<0.1	<0.1	<0.1	
EB3(10)	10		<1.0	<0.05	<0.1	<0.1	<0.1	
EB3(15)	15		2.7	<0.05	<0.1	<0.1	<0.1	
EB3 (20)	20		2.2	<0.05	<0.1	<0.1	<0.1	
EB3 (25)	25		<1.0	<0.05	<0.1	<0.1	<0.1	
EB4(5)	5		<1.0	<0.05	<0.1	<0.1	<0.1	
EB4(10)	10		<1.0	<0.05	<0.1	<0.1	<0.1	
EB4 (15)	15		<1.0	<0.05	<0.1	<0.1	<0.1	
EB4 (20)	20		<1.0	<0.05	<0.1	<0.1	<0.1	
EB4 (25)	25		<1.0	<0.05	<0.1	<0.1	<0.1	
EB5(5)	5		<1.0	<0.05	<0.1	<0.1	<0.1	
EB5(10)	10		<1.0	<0.05	<0.1	<0.1	<0.1	
EB5(15)	15		2.0	<0.05	<0.1	<0.1	<0.1	
EB5(20)	20		17	0.12	0.15	1.4	0.25	
EB5(25)	25		3.9	<0.05	<0.1	0.17	<0.1	
EB6(5)	5	10	1.8	<0.05	<0.1	<0.1	<0.1 7	,800
EB6(10)	10	160	73	<0.05	<0.1	<0.1	<0.1 1	,200
EB6(15)	15	40	17	0.065	<0.1	0.21	<0.1	900
EB6 (25)	25	3.0	<1.0	<0.05	<0.1	<0.1	<0.1	130

⁻⁻ Indicates analysis not performed.

Results in parts per million (ppm), unless otherwise indicated.

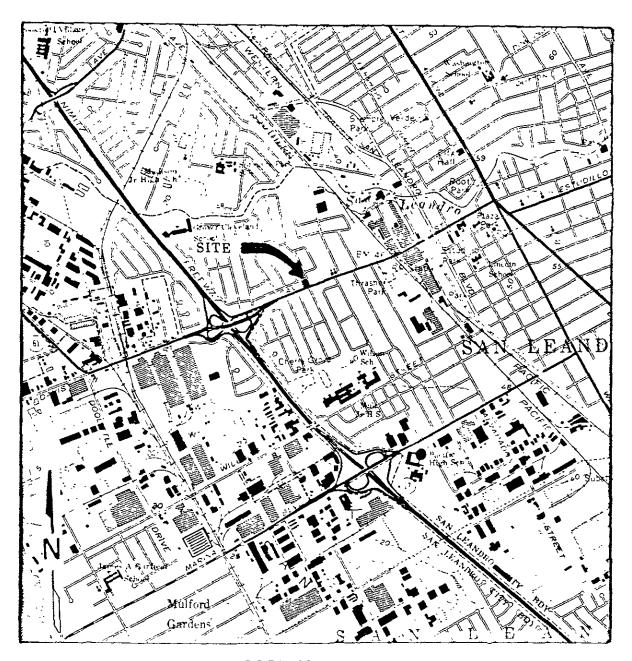
ND = Non-detectable.

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



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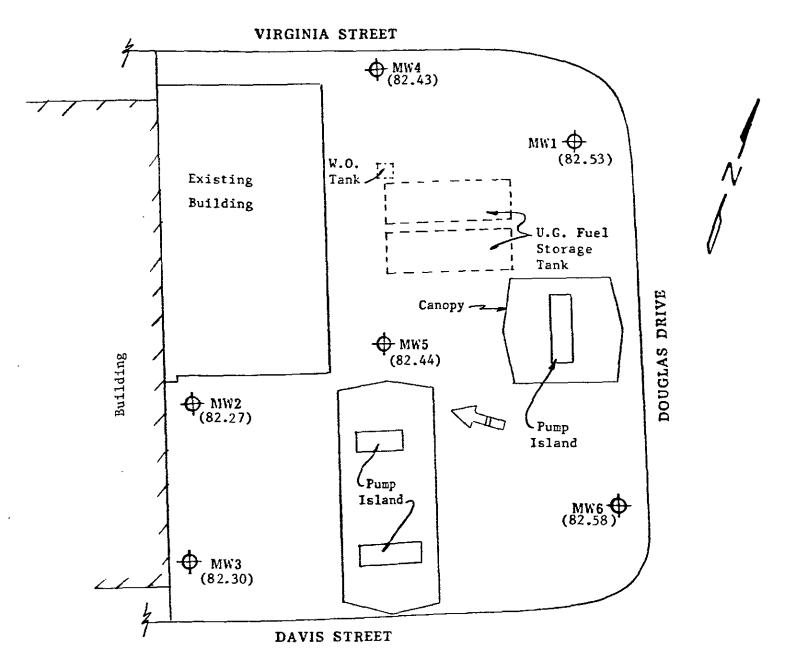


LOCATION MAP

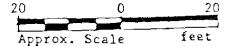


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SITE PLAN Figure 1



LEGEND



Monitoring Well

() Ground water elevation in feet on 8/9/90 Top of MW1 well cover assumed 100.00 feet as datum.

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

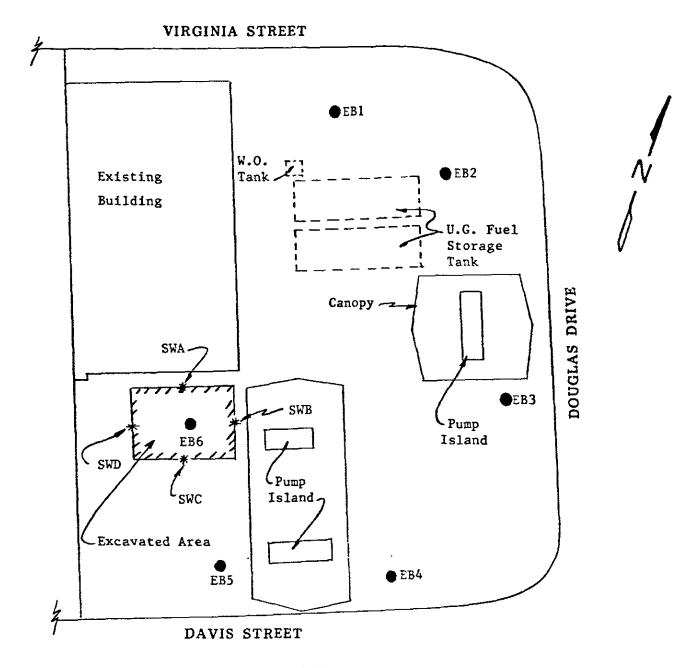


Direction of ground water flow.



Consulting Engineers

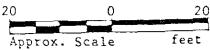
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SITE PLAN Figure 2

LEGEND

- Exploratory Boring
- ★ Sample Point Location



Unocal Service Station #2512 1300 Davis Street San Leandro, California Kaprealian Engineering, Inc.

P.O. Box 996

Benicia, CA 94510

Attention: Mardo Kaprealian, P.E.

Client Project ID: Matrix Descript:

Unocal, San Leandro, 1300 Davis

Water

Analysis Method: First Sample #:

EPA 5030/8015/8020 008-1970

Sampled:

Aug 9, 1990 Aug 9, 1990

Received: Analyzed: Aug 14, 1990

Reported: Aug 17, 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)
0081970 A-B	MW1	N.D.	N.D.	N.D.	N.D.	N.D.
0081971 A-B	MW2	N.D.	N.D.	N.D.	N.D.	N.D.
0081972 A-B	MW3	1,900	56	140	31	140
0081973 A-B	MW4	N.D.	N.D.	N.D.	N.D.	N.D.
0081974 A-B	MW5	N.D.	N.D.	N.D.	N.D.	N.D.
0081975 A-B	MW6	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	30	0.20	0.20	0.20	0.00	<u></u>
Detection Limits.	30	0.30	0.30	0.30	0.30	
<u> </u>						

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

Ehzabeth W. Hackl Project Manager



Kaprealian Engineering, Inc. P.O. Box 996

Client Project ID: Matrix Descript: Benicia, CA 94510

Unocal, San Leandro, 1300 Davis Water

Aug 9, 1990 Sampled: Received: Aug 9, 1990 Extracted: Aug 13, 1990

Attention: Mardo Kaprealian, P.E.

Analysis Method: EPA 3510/8015 First Sample #:

008-1970 C

Analyzed: Aug 16, 1990 Reported: Aug 17, 1990

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons μg/L (ppb)
0081970 C	MW1	N.D.
0081971 C	MW2	N.D.
0081972 C	MW3	500
0081973 C	MW4	N.D.
0081974 C	MW5	N.D.
0081975 C	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

Efizabeth W Hackl ₱roject Manager

Kaprealian Engineering, Inc. P.O. Box 996 Benicia, CA 94510

Attention: Mardo Kaprealian, P.E.

Client Project ID:

Matrix Descript:

Analysis Method: First Sample #:

Unocal, San Leandro, 1300 Davis

Water

SM 503 A&E (Gravimetric)

008-1970 D

Sampled: Received:

Aug 9, 1990 Aug 9, 1990

Extracted: Aug 13, 1990 Analyzed: Aug 14, 1990 Reported: Aug 17, 1990

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
0081970 D	MW1	N.D.
0081971 D	MW2	N.D.
0081972 D	MW3	N.D.
0081973 D	MW4	N.D.
0081974 D	MW5	N.D.
0081975 D	MW6	N.D.

Detection Limits:	5.0

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

zabeth W. Hackl Project Manager



CHAIN OF CUSTODY ISAMPLER) MIALIPSES REQUESTED SITE NAME & ADDRESS TURN AROUND TIME: UNOCAL SAN LEANDRO 1300 JAVIS St. 1 Week WITHESSING AGENCY NO. REBARKS SAMPLING SAPLE Of SOIL MATER GRAD COMP CONT. LOCATION DATE TIME AMB MWU! 4 × U MW5 4 4 4 Date/Time Received by: (Signature) Relinquished by: (Signature) The following MUST &E completed by the laboratory accepting samples Lay (A/E)/ 8-9-901 17:30 Have all samples received for analysis been stored in Ice? |Relinquished by: (Šignature) Date/fine Received by: (Signature) 2. Will samples remain refrigerated until analyzed? Relinquished by: (Signeture) Date/Time Received by: (Signature) 3. Did any samples received for analysis have head space? Were samples in appropriate containers and properly packaged? |Relinquished by: (Signature) | Date/Time 18/0/190 315 90

Signature

Date

1732