



## KAPREALIAN ENGINEERING, INC.

Consulting Engineers  
P. O. BOX 913  
BENICIA, CA 94510  
(707) 746-6915 (707) 746-6916  
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9:51 am, Jun 09, 2009

Alameda County  
Environmental Health

KEI-P89-0111.QR1  
October 17, 1989

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

Attention: Mr. Tim Ross

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

Dear Mr. Ross:

This report presents the results of the first 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 June through August, 1989.

### BACKGROUND

The subject site is presently used as a gasoline station. The site vicinity and site details are shown on the attached sketches.

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. 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, TOG, EPA 8010 and EPA 8270 constituents, and metals (cadmium, chromium, lead and zinc).

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. The results of the soil and ground water samples are summarized in KEI's report (KEI-J89-0111.R2) dated March 1, 1989.

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Five monitoring wells 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 monitoring and sampling program of the existing wells.

#### 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 August 16, 1989. Prior to sampling, the wells were each purged 15 gallons with the exception of MW1, which was purged 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 on ice until delivery to the state certified laboratory. After reviewing the analytical results, KEI resampled MW5 on August 31, 1989 to confirm the levels of hydrocarbons detected in the ground water sample collected on August 16, 1989.

#### HYDROLOGY

Based on the water level data gathered during the quarter, ground water flow direction appeared to be toward the north-northeast on August 16, 1989. Water levels have decreased slightly in all wells from 0.40 feet in MW5 to a maximum of 0.87 feet in MW1 during the quarter. Ground water flow direction appears to have remained reasonably consistent since reported on April 26, 1989.

#### 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 methods 5030 and 8020. In addition, the sample from MW1 and MW2 was analyzed for TPH as diesel using EPA method 3550 in conjunction with modified 8015, total oil and grease (TOG) using EPA method 503A&E, and purgeable halocarbons using EPA method 8010.

Analytical results of the ground water samples indicated non-detectable levels of TPH and BTX&E in all wells, except in well MW5, which appears to be at the upgradient portion of the site. The water sample collected from MW5 on August 31, 1989 showed levels of TPH as gasoline at 910 ppb and benzene at 120 ppb. The water sample collected from MW5 on April 26, 1989 showed non-detectable levels of TPH and BTX&E. MW1 and MW2 also showed TOG levels of 23 ppm and 7.4 ppm, respectively. 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 work and laboratory analyses. 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, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

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October 17, 1989  
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If you have any questions regarding this report, please do not hesitate to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.



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

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October 17, 1989

TABLE 1  
SUMMARY OF MONITORING DATA

<u>Date</u>	<u>Well No.</u>	<u>Water Depth (feet)</u>	<u>Product Thickness</u>	<u>Sheen</u>	<u>Water Bailed (gallons)</u>
8/16/89	MW1	8.25	0	None	25
	MW2	8.58	0	None	15
	MW3	8.19	0	None	15
	MW4	7.75	0	None	15
	MW5	7.31	0	None	15
7/18/89	MW1	8.14	0	None	20
	MW2	8.60	0	None	0
	MW3	8.15	0	None	0
	MW4	7.90	0	None	15
	MW5	7.34	0	None	0
6/19/89	MW1	7.98	0	None	25
	MW2	8.43	0	None	0
	MW3	8.03	0	None	0
	MW4	7.75	0	None	0
	MW5	7.34	0	None	0

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TABLE 2

SUMMARY OF LABORATORY ANALYSES

(All results in ppb)

(Collected on August 16, 1989)

<u>Sample Well #</u>	<u>Depth (feet)</u>	<u>TPH as Gasoline</u>	<u>TPH as Diesel</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl- benzene</u>
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		30	50	0.3	0.3	0.3	0.3

\* TOG for these samples were 23 ppm and 7.4 ppm, respectively.  
8010 was non-detectable for both samples.

ND = Non-detectable.



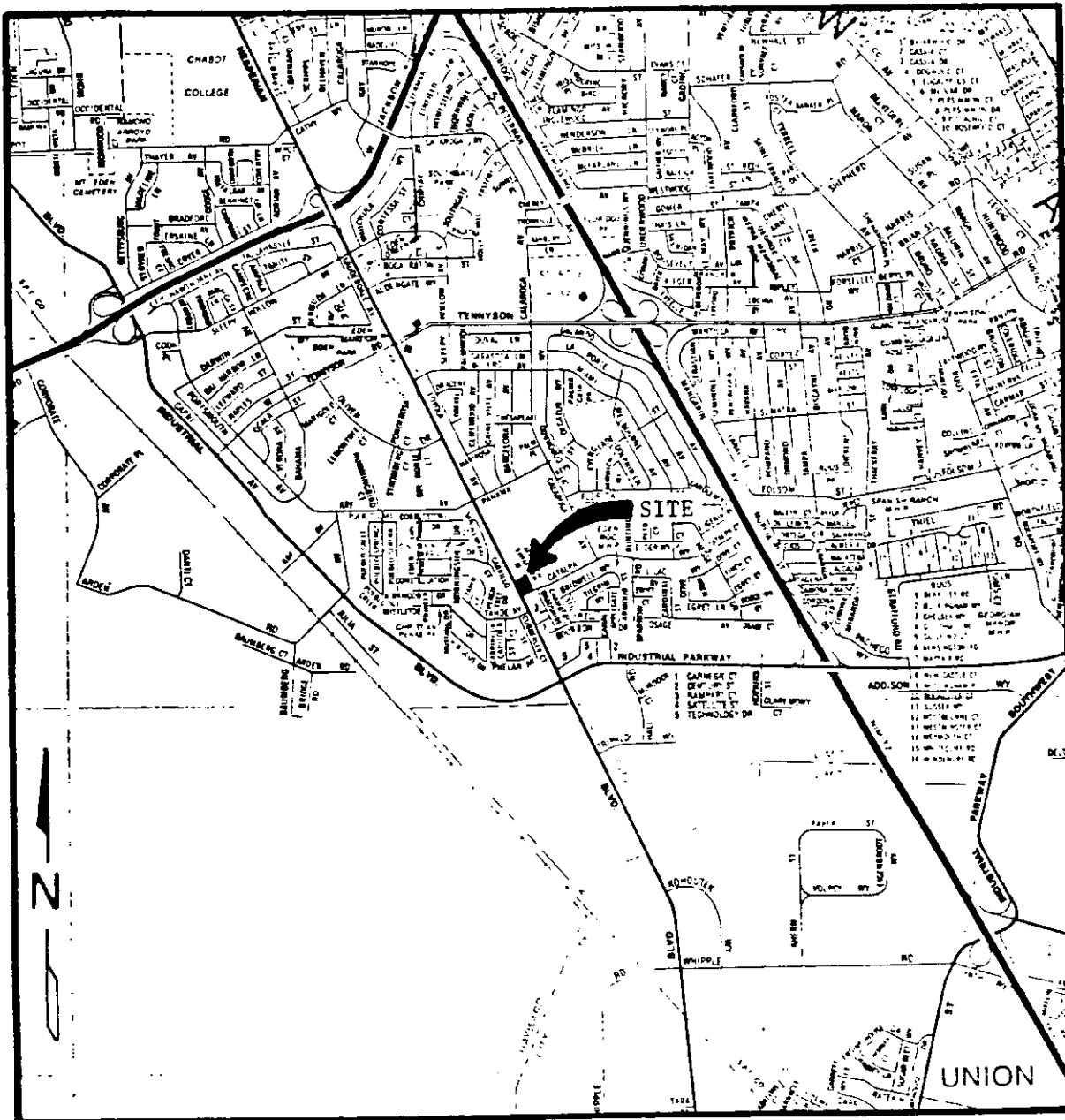
# KAPREALIAN ENGINEERING, INC.

Consulting Engineers

P. O. BOX 913

BENICIA, CA 94510

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



LOCATION MAP

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



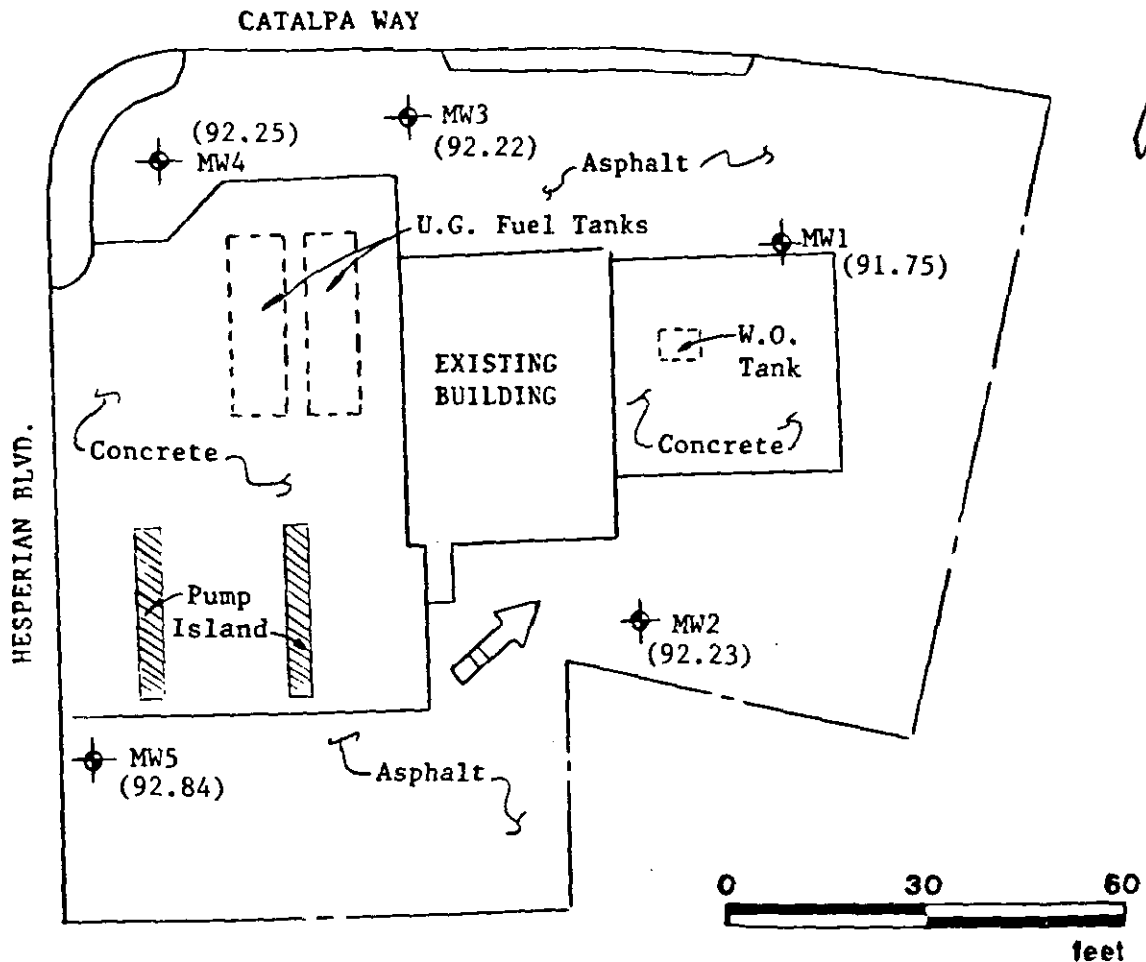
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SITE PLAN

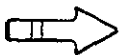


Monitoring Well



Ground Water Elevation in feet (8/16/89). Subsurface Elevation at top of MW1 assumed 100' as datum.

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, Hesperian Blvd.	Sampled: Aug 16, 1989
P.O. Box 913	Matrix Descript: Water	Received: Aug 17, 1989
Benicia, CA 94510	Analysis Method: EPA 5030/8015/8020	Analyzed: Aug 24, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #: 908-2009 A-B	Reported: Aug 25, 1989

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

Sample Number	Sample Description	Low/Medium B.P.	Benzene	Toluene	Ethyl Benzene	Xylenes
		Hydrocarbons				
		$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)
9082009 A-B	MW-1	N.D.	N.D.	N.D.	N.D.	N.D.
9082010 A-B	MW-2	N.D.	N.D.	N.D.	N.D.	N.D.
9082011 A-B	MW-3	N.D.	N.D.	N.D.	N.D.	N.D.
9082012 A-B	MW-4	N.D.	N.D.	N.D.	N.D.	N.D.
9082013 A-B	MW-5	4,400	1,400	84	200	950

<b>Detection Limits:</b>	<b>30.0</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</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

  
Arthur G. Burton  
Laboratory Director



# SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc. P.O. Box 913 Benicia, CA 94510 Attention: Mardo Kaprealian, P.E.	Client Project ID: Unocal, Hayward, Hesperian Blvd. Matrix Descript: Water Analysis Method: EPA 3510/8015 First Sample #: 908-2009 C	Sampled: Aug 16, 1989 Received: Aug 17, 1989 Extracted: Aug 24, 1989 Analyzed: Aug 24, 1989 Reported: Aug 25, 1989
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## TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons $\mu\text{g/L}$ (ppb)
9082009 C	MW-1	N.D.
9082010 C	MW-2	N.D.

Detection Limits: 50.0

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

  
Arthur G. Burton  
Laboratory Director

9082009.KEI <2>



# SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc. P.O. Box 913 Benicia, CA 94510 Attention: Mardo Kaprealian, P.E.	Client Project ID: Unocal, Hayward, Hesperian Blvd. Matrix Descript: Water Analysis Method: SM 503 A&E (Gravimetric) First Sample #: 908-2009 D	Sampled: Aug 16, 1989 Received: Aug 17, 1989 Extracted: Aug 25, 1989 Analyzed: Aug 25, 1989 Reported: Aug 25, 1989
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## TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
9082009 D	MW-1	23
9082010 D	MW-2	7.4

Detection Limits:

5.0

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

SEQUOIA ANALYTICAL

Arthur G. Burton  
Laboratory Director

9082009.KEI <3>



# SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID: Unocal, Hayward, Hesperian Blvd.	Sampled: Aug 16, 1989
P.O. Box 913	Sample Descript: Water, MW-1	Received: Aug 17, 1989
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: Aug 24, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number: 908-2009 E-F	Reported: Aug 25, 1989

## 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.....	0.5	N.D.
Chloromethane.....	0.5	N.D.
Dibromochloromethane.....	0.5	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.....	0.5	N.D.
1,2-Dichloroethane.....	0.5	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.5	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.....	0.5	N.D.
Tetrachloroethene.....	0.5	N.D.
1,1,1-Trichloroethane.....	0.5	N.D.
1,1,2-Trichloroethane.....	0.5	N.D.
Trichloroethene.....	0.5	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

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Laboratory Director



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Kaprealian Engineering, Inc.	Client Project ID: Unocal, Hayward, Hesperian Blvd.	Sampled: Aug 16, 1989
P.O. Box 913	Sample Descript: Water, MW-2	Received: Aug 17, 1989
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: Aug 24, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number: 908-2010 E-F	Reported: Aug 25, 1989

## 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.....	0.5	N.D.
Chloromethane.....	0.5	N.D.
Dibromochloromethane.....	0.5	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.....	0.5	N.D.
1,2-Dichloroethane.....	0.5	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.5	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.....	0.5	N.D.
Tetrachloroethene.....	0.5	N.D.
1,1,1-Trichloroethane.....	0.5	N.D.
1,1,2-Trichloroethane.....	0.5	N.D.
Trichloroethene.....	0.5	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

Arthur G. Burton  
Laboratory Director



# KAPREALIAN ENGINEERING, INC.

Consulting Engineers

P. O. BOX 913

BENICIA CA 94510

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

## CHAIN OF CUSTODY

SAMPLER: Douglas Scott DATE/TIME OF COLLECTION: 8/16/89 TURN AROUND TIME: 5 DAYS.  
 (Signature)

SAMPLE DESCRIPTION AND PROJECT NUMBER:

Unocel - Hayward - Hesperian  
Blvd.

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/WATER
MW-1	TPHG, TPHD, TOG, BTXE : 60'	G	2, One liter bottles 4 VOA's	W.
MW-2	TPHG, TPHD, TOG, BTXE : 60'	G	2, One liter bottles 4 VOA's	W
MW-3	TPHG : BTXE	G	2 VOA's	W
MW-4	TPHG : BTXE	G	2 VOA's	W
MW-5	TPHG : BTXE	G	2 VOA's	W

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. <u>Douglas Scott</u>	8/16/89 6:30 pm	<u>[Signature]</u>	8/16/89 6:30 pm
2. <u>[Signature]</u>	8/17/89 10:10	<u>Ben Bonard</u>	10:10 8/17/89
3. <u>Ben Bonard</u>	11:40 8/17/89	<u>[Signature]</u>	11:40 8/17/89

\* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

**NOTE:** IF REGULAR TURNAROUND, SOIL ANALYSES MUST BE COMPLETED WITHIN 14 CALENDAR DAYS OF SAMPLE COLLECTION. WATER ANALYSES MUST BE COMPLETED WITHIN 7 CALENDAR DAYS FOR BTX&E (UNLESS SAMPLE HAS BEEN PRESERVED), AND 14 CALENDAR DAYS FOR TPH AS GASOLINE; EXTRACT TPH AS DIESEL WITHIN 14 CALENDAR DAYS.



# SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc. P.O. Box 913 Benicia, CA 94510 Attention: Mardo Kaprealian, P.E.	Client Project ID: Unocal, Hayward, Hesperian Blvd. Sample Descript.: Water, MW5 Analysis Method: EPA 5030/ 8015/8020 Lab Number: 908-4103 A-B	Sampled: Aug 31, 1989 Received: Aug 31, 1989 Analyzed: Sep 1, 1989 Reported: Sep 1, 1989
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## TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION (EPA 8015/8020)

Analyte	Detection Limit $\mu\text{g/L}$ (ppb)	Sample Results $\mu\text{g/L}$ (ppb)
Low to Medium Boiling Point Hydrocarbons.....	30.0	910
Benzene.....	0.3	120
Toluene.....	0.3	7.1
Ethyl Benzene.....	0.3	50
Xylenes.....	0.3	53

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

Arthur G. Burton  
Laboratory Director



# KAPREALIAN ENGINEERING, INC.

Consulting Engineers

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BENICIA, CA 94510

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

## CHAIN OF CUSTODY

SAMPLER: [Signature] DATE/TIME OF COLLECTION: 8/31/89 TURN AROUND TIME: 24hrs.  
 (Signature)

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - Hayward - Heptamer Blvd

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/WATER
<u>MW5</u>	<u>TPH; BTXE</u>	<u>Grab</u>	<u>2 VOA's</u>	<u>W</u>

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
<u>[Signature]</u>	<u>1:52 8/31/89</u>	<u>Rich Engelmann</u> 031	<u>1355</u> <u>8-31-89</u>
2.		<u>[Signature]</u>	<u>4:00p</u> <u>8/31/8</u>
3.			

\* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: \_\_\_\_\_

NOTE: IF REGULAR TURNAROUND, SOIL ANALYSES MUST BE COMPLETED WITHIN 14 CALENDAR DAYS OF SAMPLE COLLECTION. WATER ANALYSES MUST BE COMPLETED WITHIN 7 CALENDAR DAYS FOR BTX&E (UNLESS SAMPLE HAS BEEN PRESERVED), AND 14 CALENDAR DAYS FOR TPH AS GASOLINE; EXTRACT TPH AS DIESEL WITHIN 14 CALENDAR DAYS.