KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(707) 746-6915 (707) 746-6916
FAX: (707) 746-5581

KEI-P89-0111.QR2
December 14, 1989

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 second 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 September through November, 1989.

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.

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 November 14, 1989. Prior to sampling, the wells were purged of between 15 and 55 gallons using an acrylic surfaced 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 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 appeared to be to the north-northeast on November 14, 1989, unchanged from the previous quarter. Water levels have fluctuated during the quarter, but have shown a net increase of between 0.20 and 0.45 feet. The measured depth to ground water at the site on November 14, 1989 varied between 7.10 and 8.35 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, except MW5, which showed 73 ppb of TPH as gasoline and 4.7 ppb of benzene. 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.

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-P89-0111.QR2
December 14, 1989

TABLE 1

SUMMARY OF MONITORING DATA

Date	Well No.	Depth to Water (feet)	Product Thickness	Sheen	Water Bailed (gallons)
11/14/89	MW1	7.80	0	None	25
	MW2	8.35	0	None	25
	MW3	7.80	0	None	15
	MW4	7.55	0	None	15
	MW5	7.10	0	None	55
10/13/89	MW1	9.29	0	None	0
	MW2	8.53	0	None	0
	MW3	8.46	0	None	0
	MW4	8.23	0	None	0
	MW5	7.67	0	None	55
9/19/89	MW1	8.38	0	None	25
	MW2	8.80	0	None	20
	MW3	8.32	0	None	0
	MW4	8.03	0	None	0
	MW5	7.51	0	None	55

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TABLE 2

SUMMARY OF LABORATORY ANALYSES

(Collected on November 14, 1989)

Sample Well #	Depth to Water (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
			(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. 8010 was non-detectable for both samples.

ND = Non-detectable.

All results in ppb.

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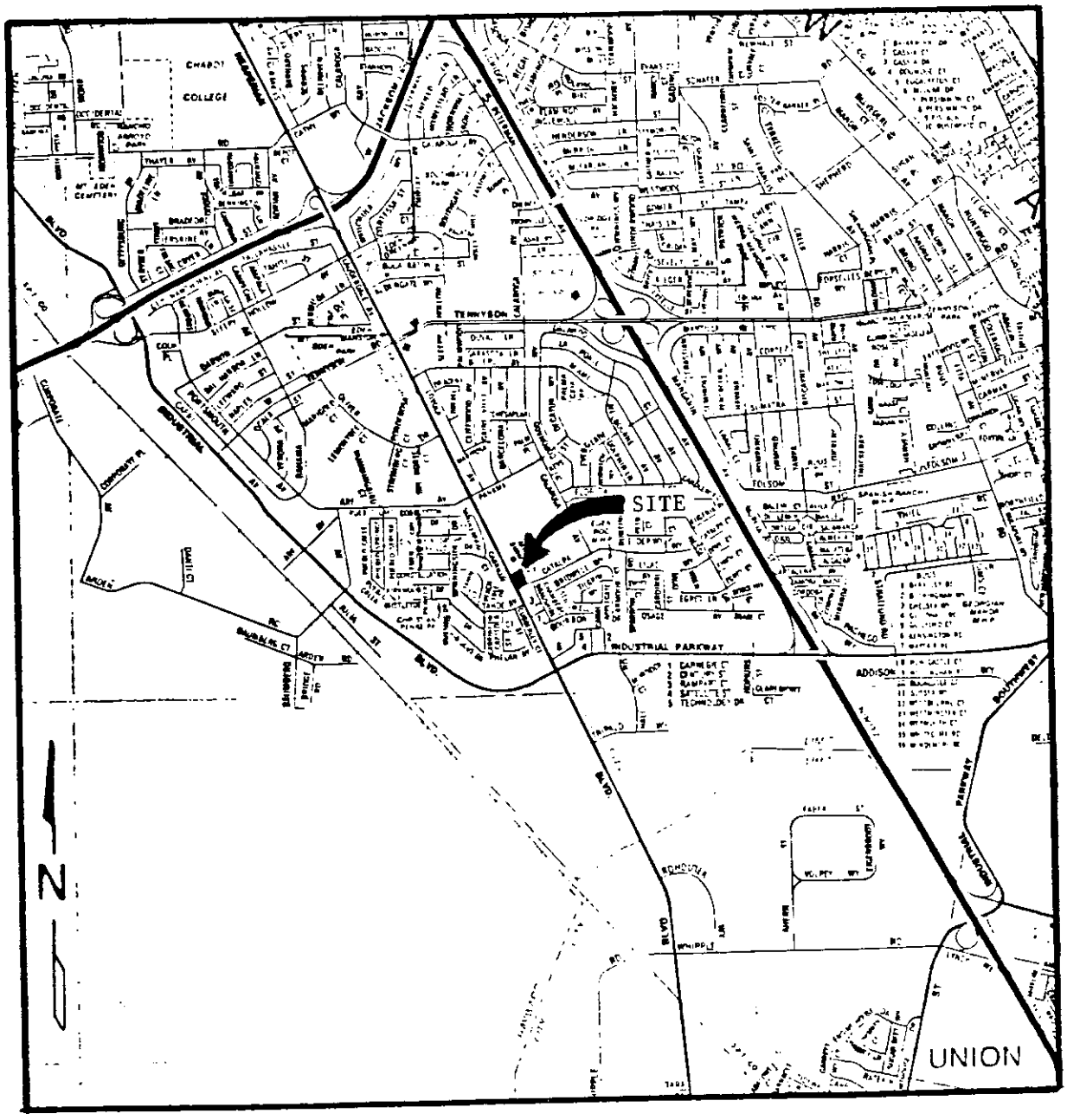

LOCATION MAP

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

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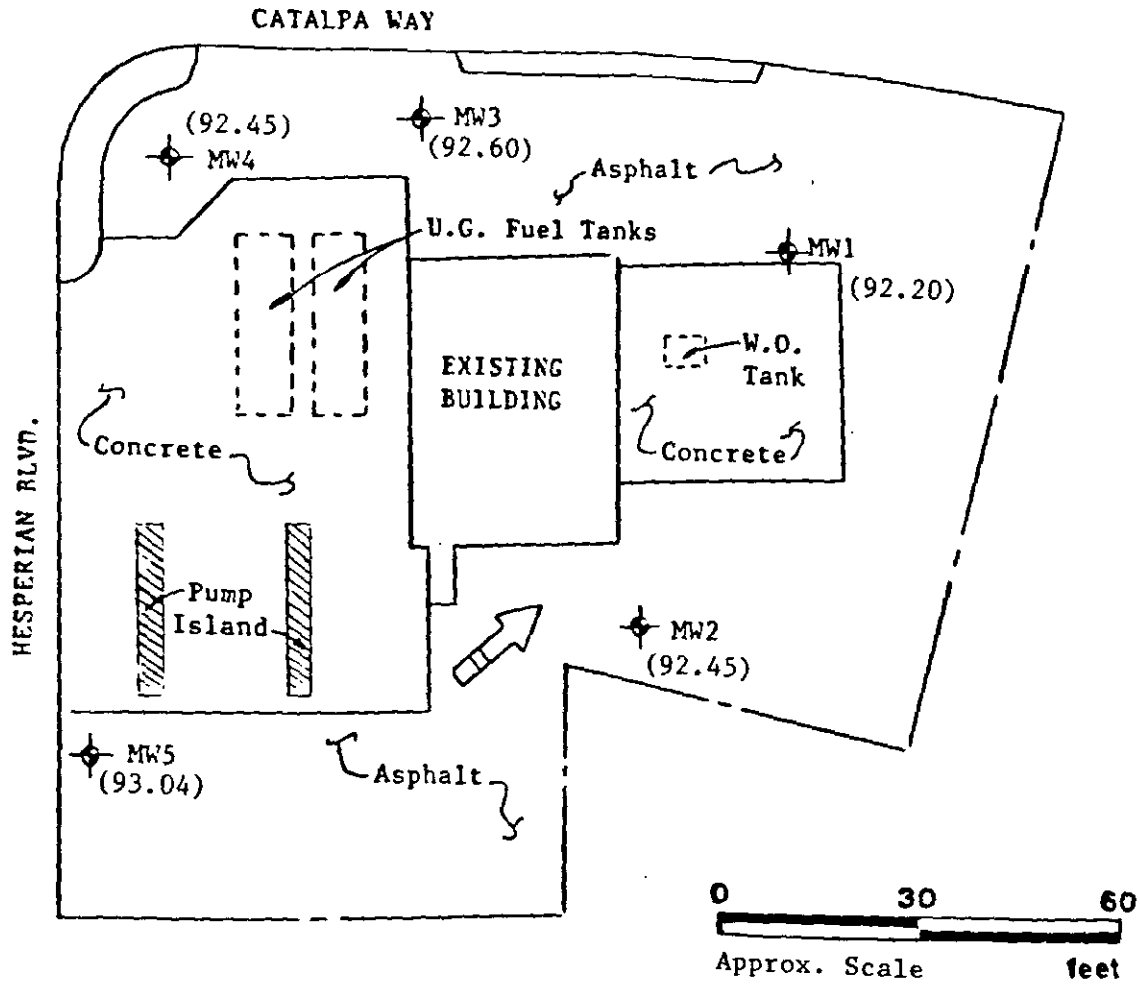

SITE PLAN

LEGEND

Monitoring Well

( ) Water table elevation in feet on 11/14/89. MW1 well cover assumed 100.00' as datum.

Direction of ground water flow on 11/14/89.

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	Sampled:	Nov 14, 1989
P.O. Box 913	*Matrix Descript:*	*Water*	Received:	Nov 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 3510/8015	Extracted:	Nov 20, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	911-1665 B	Analyzed:	Nov 20, 1989
			Reported:	Nov 22, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons µg/L (ppb)
9111665 B	MW1	N.D.
9111666 B	MW2	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

Belinda C. Vega
Project Manager

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Hayward, Hesperian	Sampled:	Nov 14, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Nov 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 418.1 (I.R. with clean-up)	Extracted:	Nov 16, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	911-1665 A	Analyzed:	Nov 16, 1989
			Reported:	Nov 22, 1989

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Petroleum Oil mg/L (ppm)
9111665 A	MW1	N.D.
9111666 A	MW2	N.D.

Detection Limits:	1.0

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

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Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Hayward, Hesperian	Sampled:	Nov 14, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Nov 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Nov 20, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	911-1665 C-D	Reported:	Nov 22, 1989

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)
9111665 C-D	MW1	N.D.	N.D.	N.D.	N.D.	N.D.
9111666 C-D	MW2	N.D.	N.D.	N.D.	N.D.	N.D.
9111667 A-B	MW3	N.D.	N.D.	N.D.	N.D.	N.D.
9111668 A-B	MW4	N.D.	N.D.	N.D.	N.D.	N.D.
9111669 A-B	MW5	73	4.7	0.97	2.9	16
Detection Limits:		**30.0**	**0.3**	**0.3**	**0.3**	**0.3**

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.

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Hayward, Hesperian	Sampled:	Nov 14, 1989
P.O. Box 913	Sample Descript:	Water, MW1	Received:	Nov 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Nov 20, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	911-1665 E-F	Reported:	Nov 22, 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

Belinda C. Vega
Project Manager

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Hayward, Hesperian	Sampled:	Nov 14, 1989
P.O. Box 913	Sample Descript:	Water, MW2	Received:	Nov 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Nov 20, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	911-1666 E-F	Reported:	Nov 22, 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

Belinda C. Vega
Project Manager

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER	SITE NAME & ADDRESS	ANALYSES REQUESTED	TURN AROUND TIME:
Ray (KEI)	UNOCAL HAYWARD HESPERIAN		1 WEEK
WITNESSING AGENCY			

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG	BTXE	TPHD diesel	TOG (418.1)	EPA 601			REMARKS
MW1	11/14			+	+	4 V 2 1L			X	X	X	X	X			
MW2	"			+	+	4 V 2 1L			X	X	X	X	X			
MW3	"			+	+	2 V			X	X						
MW4	"			+	+	"			X	X						
MW5	"			+	+	"			X	X						

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Ray (KEI)	11-14-85 15:05	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	11/14 3:05 p.m.	Brenda Olson

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

1. Have all samples received for analysis been stored in ice? y
2. Will samples remain refrigerated until analyzed? y
3. Did any samples received for analysis have head space? n
4. Were samples in appropriate containers and properly packaged? y

Signature	Title	Date
BO	sample control	11/14 3:05 p.m.