KAPREALIAN ENGINEERING
INCORPORATED

ALCO HAZMAT

93 NOV 10 AM 11:14

November 8, 1993

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

Attention: Mr. Scott Seery

RE: Unocal Service Station #6277
15803 E. 14th Street
San Leandro, California

Dear Mr. Seery:

Per the request of Mr. David J. Camille of Unocal Corporation, enclosed please find our report dated November 1, 1993, for the above referenced site.

If you should have any questions, please feel free to call our office at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Judy A. Dewey

jad\82

Enclosure

cc: David J. Camille, Unocal Corporation

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510.602.5100 Fax: 510.687 0602

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P89-0301.QR15
November 1, 1993

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

Attention: Mr. David J. Camille

RE: Quarterly Report
Unocal Service Station #6277
15803 E. 14th Street
San Leandro, California

Dear Mr. Camille:

This report presents the results of the most recent quarter of monitoring and sampling of the monitoring wells at the referenced site by Kaprealian Engineering, Inc. (KEI). The wells are currently monitored and sampled on a quarterly basis. This report covers the work performed by KEI in October of 1993.

BACKGROUND

The subject site currently contains a Unocal service station facility. Two underground gasoline storage tanks, one waste oil tank, and the product piping were removed from the site in March of 1989 during tank replacement activities. The fuel tank pit and the waste oil tank pit were subsequently overexcavated in order to remove contaminated soil. Six monitoring wells have been installed at and in the vicinity of the site. In addition, two exploratory borings have been drilled at the site. On February 1, 1990, well MW2 was destroyed in preparation for additional soil excavation in the vicinity of this well. Soil excavation in the vicinity of well MW2 was completed in April of 1990. Monitoring well MW2 was then replaced with a new well (MW2A) in March of 1991. A water well survey has also been performed within a 1/2-mile radius of the site.

A site description, detailed background information including a summary of all of the soil and ground water subsurface investigation/remediation work conducted to date, site hydrogeologic conditions, and tables that summarize all of the soil and ground water sample analytical results are presented in KEI's report (KEI-P89-0301.R9) dated May 10, 1993.

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel. 510.602.5100 Fax: 510 687.0602

RECENT FIELD ACTIVITIES

The six monitoring wells (MW1, MW2A, and MW3 through MW6) were monitored and sampled once during the quarter. Prior to sampling, the wells were checked for depth to water and the presence of free product or a sheen. No free product or sheen was noted in any of the wells during the quarter. The monitoring data collected this quarter are summarized in Table 1.

Water samples were collected from all of the wells on October 6, 1993. Prior to sampling, the wells were each purged of between 9 and 10 gallons of water by the use of a surface pump. The samples were collected by the use of a clean Teflon bailer. The samples were decanted into clean VOA vials that were then sealed with Teflon-lined screw caps, labeled and stored in a cooler, on ice, until delivery to a state-certified laboratory.

HYDROLOGY

The measured depth to ground water at the site on October 6, 1993, ranged between 6.64 and 11.34 feet. The water levels in all of the wells have shown net decreases ranging from 0.28 to 0.54 feet since July 1, 1993. Based on the water level data gathered on October 6, 1993, the ground water flow direction appeared to be to the northwest, as shown on the attached Potentiometric Surface Map, Figure 1. The flow direction reported this quarter is relatively similar to the northwesterly flow direction reported in the previous seven quarters. The average hydraulic gradient at the site on October 6, 1993, was approximately 0.001.

ANALYTICAL RESULTS

The ground water samples collected this quarter were analyzed at Sequoia Analytical Laboratory and were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020.

The analytical results of all of the ground water samples collected from the monitoring wells to date are summarized in Tables 2 and 3. The concentrations of TPH as gasoline and benzene detected in the ground water samples collected this quarter are shown on the attached Figure 2. Copies of the laboratory analytical results and the Chain of Custody documentation are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results of the ground water samples 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 ground water monitoring and sampling program. The wells are currently monitored and sampled on a quarterly basis. The ground water samples collected from all of the wells are analyzed for TPH as gasoline and BTEX. In addition, the ground water sample collected from well MW3 is also analyzed for EPA method 8010 constituents on an annual basis.

DISTRIBUTION

A copy of this report should be sent to Mr. Scott Seery of the Alameda County Health Care Services Agency, to the City of San Leandro, 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 these 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 at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

for Thomas J. Berkins
Senior Environmental Engineer

Joel G. Greger, C.E.G.
Senior Engineering Geologist

License No. EG 1633
Exp. Date 6/30/94

Robert H. Kezerian
Project Engineer

/bp

Attachments: Tables 1, 2 & 3
Location Map
Potentiometric Surface Map - Figure 1
Concentrations of Petroleum Hydrocarbons - Figure 2
Laboratory Analyses
Chain of Custody documentation

KEI-P89-0301.QR15
November 1, 1993

TABLE 1

SUMMARY OF MONITORING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)♦	Product Thickness (feet)	Sheen	Water Purged (gallons)
(Monitored and Sampled on October 6, 1993)					
MW1	22.18	10.32	0	No	10
MW2A	22.19	11.34	0	No	10
MW3	22.37	9.85	0	No	9
MW4	22.25	9.51	0	No	9
MW5	22.14	7.15	0	No	9
MW6	22.20	6.64	0	No	9

Well #	Top of Casing Elevation in feet above Mean Sea Level (MSL)*
MW1	32.50
MW2A	33.53
MW3	32.22
MW4	31.76
MW5	29.29
MW6	28.84

♦ The depth to water level measurement was taken from the top of the well casing. Prior to October 6, 1993, the water level measurement was taken from the top of the well cover.

* Based on a Benchmark located on the west side of East 14th Street, approximately 75 feet north of 155th Avenue (elevation = 31.65 MSL).

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November 1, 1993

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
10/06/93	MW1	--	1,200♦	36	ND	ND	23
	MW2A	--	110♦	12	ND	7.4	1.4
	MW3	--	140♦	ND	ND	ND	ND
	MW4	--	130♦	ND	ND	ND	ND
	MW5	--	60♦	ND	ND	ND	ND
	MW6	--	ND	ND	ND	ND	ND
7/01/93	MW1	--	510	100	0.79	5.7	52
	MW2A	--	74♦	0.75	ND	ND	ND
	MW3	--	120♦	ND	ND	ND	ND
	MW4	--	91♦	ND	ND	ND	ND
	MW5	--	54♦	ND	ND	ND	ND
	MW6	--	ND	ND	ND	ND	ND
4/02/93	MW1	ND	690	94	0.73	5.3	39
	MW2A	ND	120	7.2	ND	5.8	1.2
	MW3	ND	130♦	ND	ND	ND	ND
	MW4	ND	110♦	ND	ND	ND	ND
	MW5	ND	65♦	ND	ND	ND	ND
	MW6	ND	ND	ND	ND	ND	ND
1/29/93	MW1	ND	740♦♦	69	ND	3.8	43
	MW2A	ND	66♦	1.4	ND	ND	ND
	MW3	ND	130♦	0.84	ND	ND	ND
	MW4	ND	130♦	0.95	ND	ND	ND
10/20/92	MW1	ND	720	110	1.4	18	110
	MW2A	ND	96	2.8	ND	1.8	1.6
	MW3	ND	180♦	ND	ND	ND	ND
	MW4	ND	110♦	ND	ND	ND	ND
7/20/92	MW1	62+	630	100	2.8	6.3	52
	MW2A	ND	99	8.6	ND	2.4	0.95
	MW3	ND	120♦	ND	ND	ND	ND
	MW4	ND	80♦	ND	ND	ND	ND
4/23/92	MW1	--	530	100	7.9	4.6	60
	MW2A	ND	190	15	ND	15	2.0
	MW3	--	150♦	1.6	ND	ND	ND
	MW4	--	120♦	ND	ND	ND	ND

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
1/13/92	MW1	--	450	240	4.6	8.6	73
	MW2A	ND	160	11	2.0	10	5.9
	MW3	--	120♦	ND	ND	ND	ND
	MW4	--	58♦	ND	ND	ND	ND
9/10/91	MW1	--	280	38	3.1	4.1	22
	MW2A	65	180	8.7	0.93	15	13
	MW3	--	170	ND	ND	ND	ND
	MW4	--	56	ND	ND	ND	ND
6/10/91	MW1	--	310	1.5	ND	ND	0.31
	MW2A	100	54	1.2	ND	ND	0.69
	MW3	--	160	0.65	ND	ND	ND
	MW4	--	64	ND	ND	ND	ND
3/15/91	MW1	--	110	21	ND	ND	8.4
	MW2A	ND	160	2.5	ND	ND	51
	MW3	--	150	ND	ND	ND	0.45
	MW4	--	53	ND	ND	ND	ND
12/14/90	MW1	--	450	150	6.8	0.28	49
	MW3	--	150	ND	ND	ND	ND
	MW4	--	54	ND	ND	ND	ND
9/19/90	MW1	--	140	ND	ND	ND	3.5
	MW3	--	74	0.74	ND	ND	ND
	MW4	--	61	ND	ND	ND	ND
6/25/90	MW1	--	310	10	0.89	0.37	2.1
	MW3	--	190	1.5	0.68	ND	5.3
	MW4	--	66	ND	ND	ND	ND
3/29/90	MW1	--	320	12	1.6	0.31	3.5
	MW3	--	85	ND	ND	ND	ND
	MW4	--	120	0.39	ND	ND	ND
12/12/89	MW1	--	340	100	13	3.4	44
	MW2	1,700	660	220	6.6	13	36
	MW3	--	120	6.7	0.64	0.46	1.5
	MW4	--	97	4.6	ND	ND	ND

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November 1, 1993

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
9/13/89	MW1	--	550	32	17	3.4	52
	MW2	ND	170	2.0	0.38	ND	9.5
	MW3	--	76	ND	ND	ND	ND
	MW4	--	77	ND	ND	ND	ND
6/06/89	MW1	--	590	ND	ND	ND	ND
	MW2	ND	77	ND	ND	ND	ND
	MW3	--	32	ND	ND	ND	ND
	MW4	--	37	ND	ND	ND	ND

♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be gasoline.

♦♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.

\+ Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be diesel.

-- Indicates analysis was not performed.

ND = Non-detectable.

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

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TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Well #	Tetra-chloroethene	Trichloro-ethene	1,2-Dichloro-ethane	Cis-1,2-dichloro-ethene	TOG (ppm)
4/02/93	MW5	190	ND	ND	ND	--
	MW6	71	ND	ND	ND	--
1/29/93	MW1	300	ND	ND	ND	--
	MW2A	140	10	ND	ND	--
	MW3	980	ND	ND	ND	--
	MW4	950	ND	ND	ND	--
10/20/92	MW1	230	22	ND	16	--
	MW2A	64	11	ND	ND	--
	MW3	1,100	20	ND	ND	--
	MW4	360	17	ND	ND	--
7/20/92	MW1	200	7.4	ND	ND	--
	MW2A	35	7.2	ND	4.8	ND
	MW3	1,400	25	ND	ND	--
	MW4	440	11	ND	ND	--
4/23/92	MW2A	17	5.6	ND	1.9	ND
1/13/92	MW2A*	33	ND	ND	2.1	ND
6/10/91	MW2A	150	10	ND	ND	ND
3/15/91	MW2A	67	8.2	ND	2.6	ND
12/12/89	MW2	30	9.0	ND	ND	1.2
9/13/89	MW2	18	6.1	4.2	1.2	<50
6/06/89	MW2	110	4.4	2.8	ND	ND

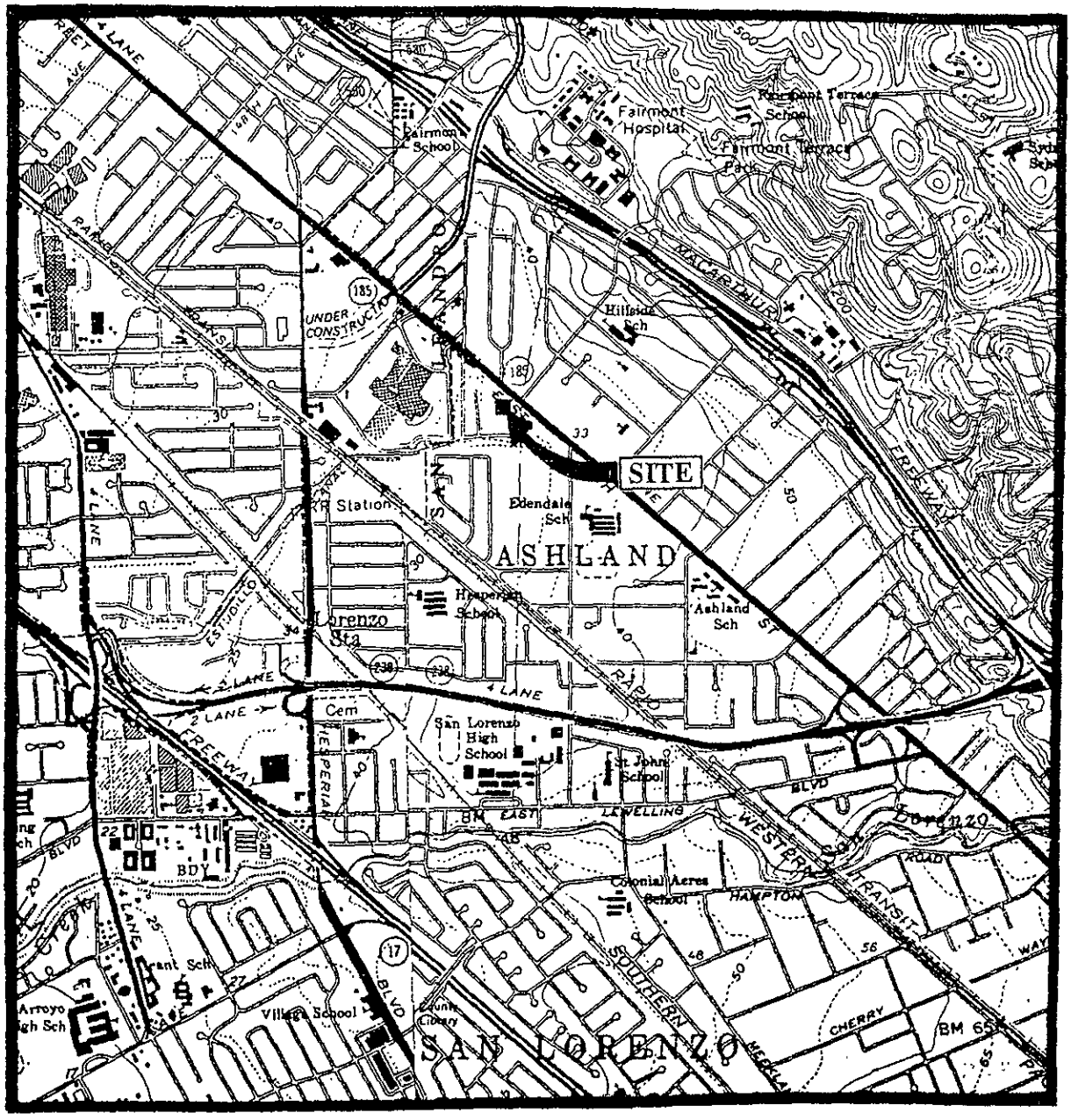
NOTE: All EPA method 8010 constituents were non-detectable in all of the ground water samples, except as indicated.

* 1,1,2-Trichloroethane was also detected at a level of 9.9 ppb.

ND = Non-detectable.

-- Indicates analysis was not performed.

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

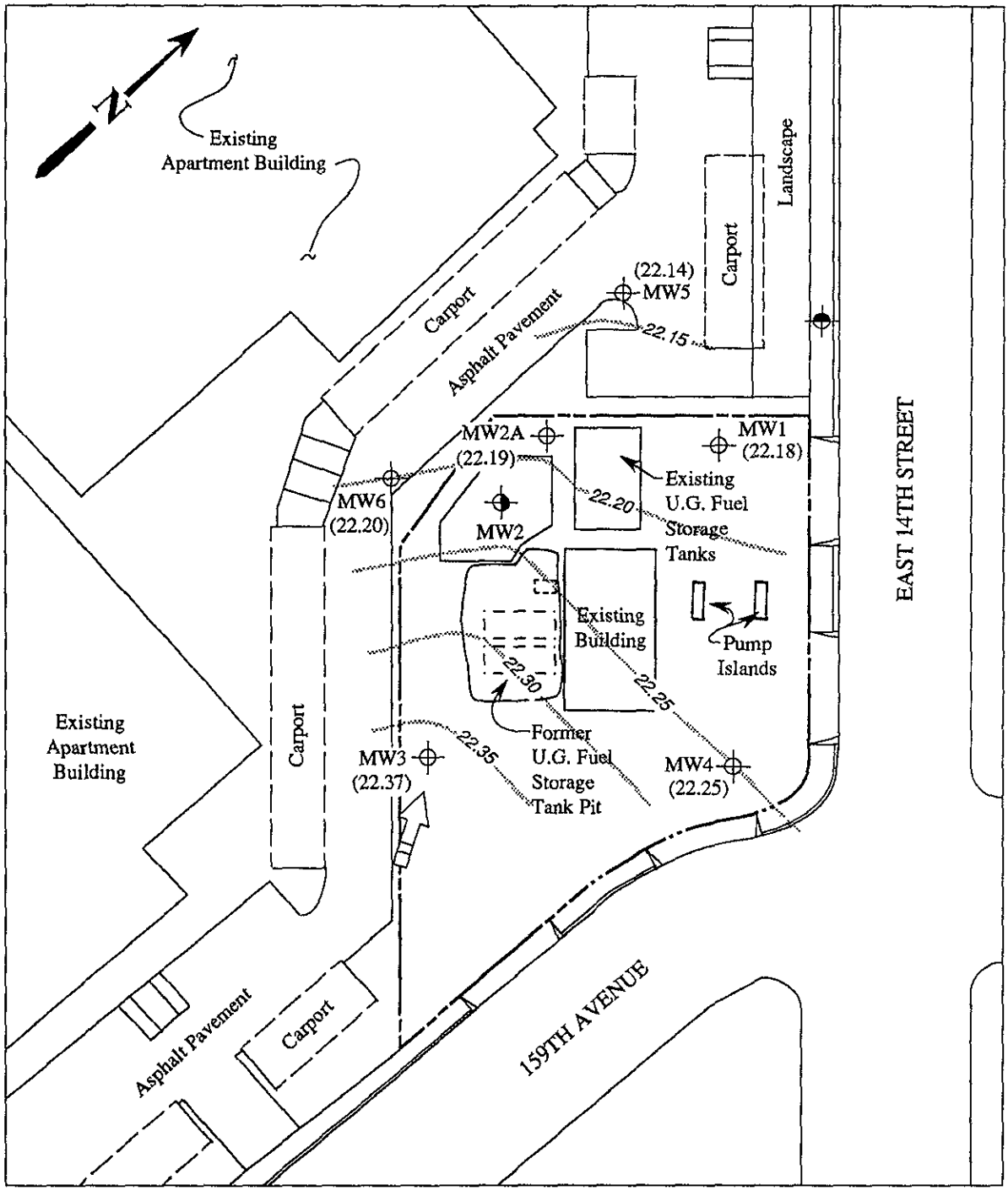


Base modified from 7.5 minute U.S.G.S. San Leandro and Hayward Quadrangles
(Both photorevised 1980)

0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED	UNOCAL SERVICE STATION #6277 15803 E. 14TH STREET SAN LEANDRO, CA	LOCATION MAP



LEGEND

- Monitoring well (existing)
- Monitoring well (previously attempted)
- Monitoring well (destroyed February 1, 1990)
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

0 60 120

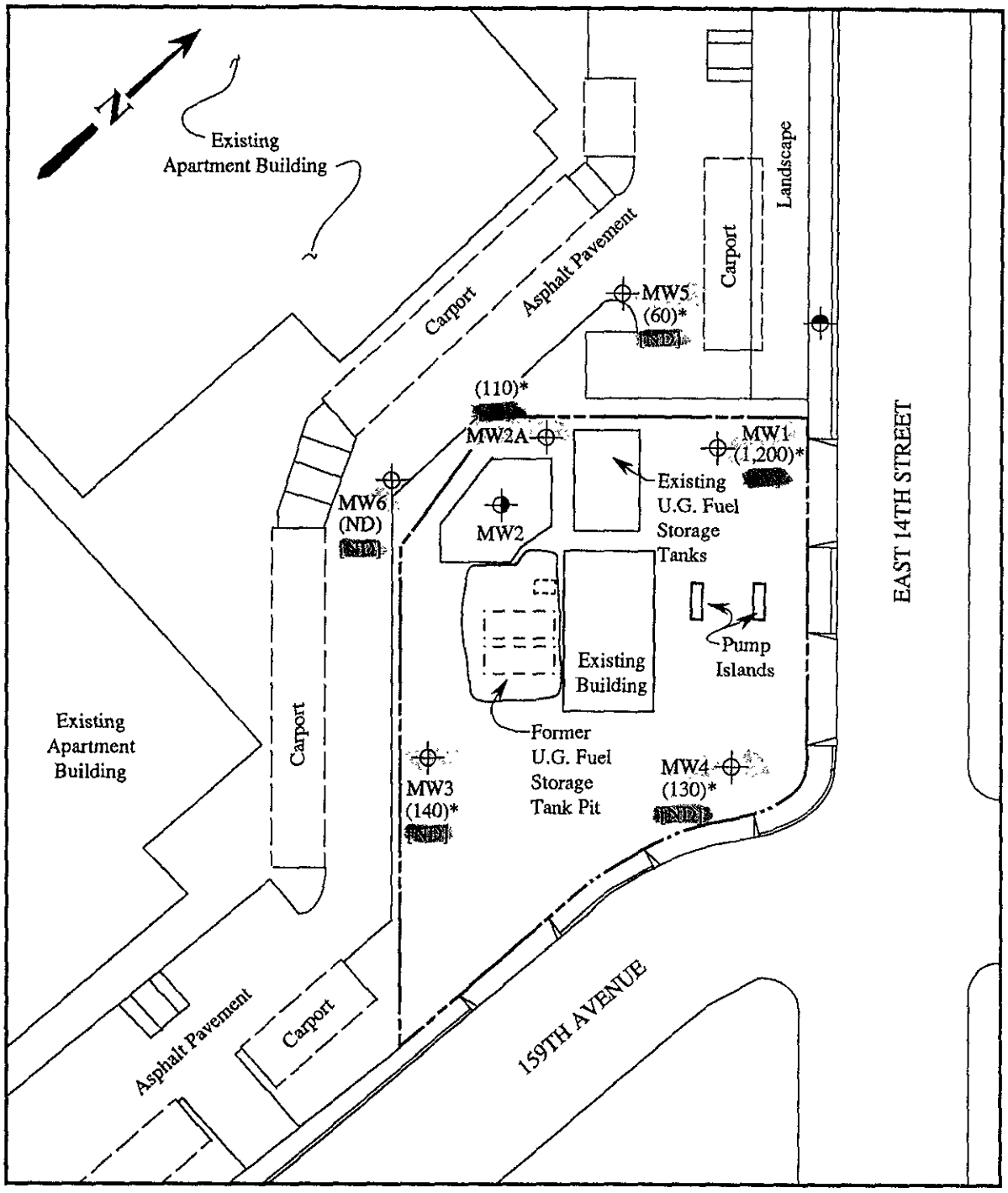
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE OCTOBER 6, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #6277
15803 E. 14TH STREET
SAN LEANDRO, CALIFORNIA

FIGURE
1



LEGEND

- Monitoring well (existing)
- Monitoring well (previously attempted)
- Monitoring well (destroyed February1, 1990)
- ( ) Concentration of TPH as gasoline in ppb
- Concentration of benzene in ppb
- ND = Non-detectable
- * The lab reported that the hydrocarbons detected did not appear to be gasoline.

0 60 120

Approx. scale feet

PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON OCTOBER 6, 1993

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #6277
15803 E. 14TH STREET
SAN LEANDRO, CALIFORNIA

FIGURE
2

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #6277, 15803 E. 14th St, San Leandro	Sampled:	Oct 6, 1993
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Water	Received:	Oct 6, 1993
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Oct 19, 1993
Attention: Avo Avedessian	First Sample #:	310-0363		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 310-0363 MW 1*	Sample I.D. 310-0364 MW 2*	Sample I.D. 310-0365 MW 3*	Sample I.D. 310-0366 MW 4*	Sample I.D. 310-0367 MW 5^	Sample I.D. 310-0368 MW 6
Purgeable Hydrocarbons	50	1,200	110	140	130	60	N.D.
Benzene	0.5	36	12	N.D.	N.D.	N.D.	N.D.
Toluene	0.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.5	N.D.	7.4	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.5	23	1.4	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		Discrete Peaks	Discrete Peaks	Discrete Peaks	Discrete Peaks	Discrete Peaks	--

Quality Control Data

Report Limit Multiplication Factor:	10	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	10/13/93	10/12/93	10/12/93	10/12/93	10/12/93	10/12/93
Instrument Identification:	HP-4	HP-2	HP-2	HP-2	HP-2	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	96	100	97	97	102	103

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Alan B. Kemp
Project Manager

Please Note:
*Discrete Peaks refers to unidentified peaks in MTBE and EPA 8010 Range.
^Discrete Peaks refers to unidentified peaks in EPA 8010 Range.

SEQUOIA ANALYTICAL
1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #6277, 15803 E. 14th St, San Leandro	Sampled:	- -
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Water	Received:	- -
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Oct 19, 1993
Attention: Avo Avedessian	First Sample #:	Matrix Blank		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. Matrix Blank
Purgeable Hydrocarbons	50	
Benzene	0.5	
Toluene	0.5	
Ethyl Benzene	0.5	
Total Xylenes	0.5	

Chromatogram Pattern:

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	10/12/93
Instrument Identification:	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	106

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Alan B. Kemp
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #6277, 15803 E. 14th St, San Leandro
2401 Stanwell Dr., Ste. 400	Matrix:	Water
Concord, CA 94520		
Attention: Avo Avedessian	QC Sample Group: 3100363-368	Reported: Oct 19, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J.F.	J.F.	J.F.	J.F.
Conc. Spiked:	20	20	20	60
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	1LCS101293	1LCS101293	1LCS101293	1LCS101293
Date Prepared:	10/12/93	10/12/93	10/12/93	10/12/93
Date Analyzed:	10/12/93	10/12/93	10/12/93	10/12/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
LCS % Recovery:	109	104	104	106
Control Limits:	70-130	70-130	70-130	70-130
MS/MSD Batch #:	3100365	3100365	3100365	3100365
Date Prepared:	10/12/93	10/12/93	10/12/93	10/12/93
Date Analyzed:	10/12/93	10/12/93	10/12/93	10/12/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
Matrix Spike % Recovery:	110	105	105	107
Matrix Spike Duplicate % Recovery:	115	110	110	113
Relative % Difference:	4.4	4.6	4.6	5.6

SEQUOIA ANALYTICAL

Alan B. Kemp
Project Manager

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER	S/S# 6277 SITE NAME & ADDRESS	ANALYSES REQUESTED	TURN AROUND TIME:
Vartkes	Unocal / San Leandro 15803 E. 14th St.	TPHG + BTXE	Regular.
WITNESSING AGENCY			

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG + BTXE						REMARKS
MW1	10/6/93	1:15 pm.		X	X		2	Monitoring wells	X						3100363 A-B
MW2	"			X	X		2	" "	X						364
MW3	"			X	X		2	" "	X						365
MW4	"			X	X		2	" "	X						366
MW5	"			X	X		2	" "	X						367
MW6	"	4:00 pm.		X	X		2	" "	X						368

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
W. Baldgian	10/6/93 5:00	J. Stenstrom
Relinquished by: (Signature) John Mills	Date/Time 10-7-93 1035	Received by: (Signature) [signature]
Relinquished by: (Signature) [signature]	Date/Time 10-7-93 1135	Received by: (Signature) Melissa Cremore
Relinquished by: (Signature)	Date/Time	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? 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

LMS (Signature) — (Title) — 10/6 (Date)