KAPREALIAN ENGINEERING
INCORPORATED

August 20, 1992

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

RE: Unocal Service Station #7004
15599 Hesperian Blvd.
San Leandro, California

Gentlemen:

Per the request of Mr. Bob Boust of Unocal Corporation, enclosed please find our report dated August 10, 1992, 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: Bob Boust, Unocal Corporation

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510.602.5100 Fax: 510.687.0602

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P90-1003.QR3
August 10, 1992

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

Attention: Mr. Bob Boust

RE: **Quarterly Report**
Unocal Service Station #7004
15599 Hesperian Boulevard
San Leandro, California

Dear Mr. Boust:

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), per KEI's proposal KEI-P90-1003.P2 dated May 31, 1991. **The wells are currently monitored monthly and sampled on a quarterly basis.** This report covers the work performed by KEI from May through July of 1992.

BACKGROUND

The subject site contains a service station facility. Three underground gasoline storage tanks and the product piping were removed from the site in October of 1990, during tank replacement activities. The fuel tank pit and the product pipe trenches were subsequently overexcavated in order to remove contaminated soil. Six monitoring wells and one recovery well have been installed at 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-P90-1003.R6) dated May 29, 1992.

RECENT FIELD ACTIVITIES

The six wells (MW1 through MW6) were monitored three times and were sampled once during the quarter. During monitoring, the wells were checked for depth to water and the presence of free product. Prior to sampling, the wells were also checked for the presence of a sheen. No free product or sheen was noted in any of the wells during the quarter, except for **well MW1, where free product was noted on May 12, 1992.** The monitoring data collected this quarter are summarized in Table 1.

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Concord, California 94520
Tel: 510.602.5100 Fax: 510.687.0602

Water samples were collected from the wells on July 9, 1992. Prior to sampling, the wells were each purged of between 6 and 8 gallons of water by the use of a surface pump. Samples were then 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 and stored in a cooler, on ice, until delivery to the state-certified laboratory.

HYDROLOGY

The measured depth to ground water at the site on July 9, 1992, ranged between 15.01 and 16.64 feet below grade. The water levels in all of the wells have shown net decreases ranging from 0.66 to 0.77 feet since April 14, 1992. Based on the water level data gathered during the quarter, the ground water flow direction appeared to be to the west-southwest on each of the three monitoring events, as shown on the attached Potentiometric Surface Maps, Figures 1, 2, and 3. The flow direction reported this quarter is similar to the flow direction reported in the previous quarters. The average hydraulic gradient across the site was approximately 0.0023 throughout the quarter.

ANALYTICAL RESULTS

The ground water samples 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, xylenes, and ethylbenzene (BTX&E) by EPA method 8020. In addition, the ground water samples collected from monitoring wells MW1, MW2, and MW5 were also analyzed for methyl tert butyl ether (MTBE) by EPA method 8020/modified.

The ground water sample analytical results are summarized in Table 2. The concentrations of TPH as gasoline and benzene detected in the ground water samples collected this quarter are shown on the attached Figure 4. Copies of the laboratory analytical results and 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, KEI recommends a modification to the current monitoring and sampling program. All of the existing monitoring wells will continue to be monitored on a monthly basis. Wells MW3 and MW5 will also continue to be sampled on a quarterly basis. However, KEI recommends that the sampling frequency of wells MW1, MW2, MW4, and MW6 be reduced from quarterly to semi-

annually. KEI also recommends to continue analyzing the ground water samples from wells MW1, MW2, and MW5 for MTBE.

A pump test was conducted on recovery well RW1 during the week of May 18, 1992. KEI is currently analyzing the data from this test. The results of this analysis will be used to determine the location and number of any additional recovery wells that may be necessary to achieve hydraulic control of the contaminant plume. The pump test data and recommendations for further work will be included in a separate technical report that will be submitted in the near future.

DISTRIBUTION

A copy of this report should be sent to the Alameda County Health Care Services Agency, Mr. Michael Bakaldin of the City of San Leandro Fire Department, 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 me at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Thomas J. Berkins
Senior Environmental Engineer

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

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

Timothy R. Ross
Project Manager

/bp

Attachments: Tables 1 & 2
Location Map
Potentiometric Surface Maps - Figures 1, 2 & 3
Concentrations of Petroleum Hydrocarbons - Figure 4
Laboratory Analyses
Chain of Custody documentation

KEI-P90-1003.QR3
August 10, 1992

TABLE 1

SUMMARY OF GROUND WATER MONITORING AND PURGING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)	Product Thickness	Sheen	Water Purged (gallons)	Product Purged (ounces)
(Monitored and Sampled on July 9, 1992)						
MW1	21.02	15.87	0	No	6	0
MW2	21.07	16.28	0	No	6	0
MW3	20.89	16.33	0	No	6	0
MW4	20.80	15.01	0	No	8	0
MW5	20.74	16.27	0	No	7	0
MW6	20.91	16.64	0	No	7	0
(Monitored on June 11, 1992)						
MW1	21.29	15.60	0	--	0	0
MW2	21.35	16.00	0	--	0	0
MW3	21.17	16.05	0	--	55	0
MW4	21.08	14.73	0	--	0	0
MW5	21.03	15.98	0	--	0	0
MW6	21.18	16.37	0	--	0	0
(Monitored on May 12, 1992)						
MW1	21.55	15.34	0	--	0	0
MW2	21.58	15.77	0	--	0	0
MW3*	21.45	15.78	0.01	N/A	55	< 1
MW4	21.34	14.47	0	--	0	0
MW5	21.28	15.73	0	--	0	0
MW6	21.43	16.12	0	--	0	0

TABLE 1 (Continued)

SUMMARY OF GROUND WATER MONITORING AND PURGING DATA

Well #	Surface Elevation** (feet)
MW1	36.89
MW2	37.35
MW3	37.22
MW4	35.81
MW5	37.01
MW6	37.55

-- Sheen determination was not performed.

N/A = Not applicable.

* Ground water elevation has been corrected for the presence of free product using a specific gravity of 0.75.

** The elevations of the tops of the well covers have been surveyed relative to Mean Sea Level.

KEI-P90-1003.QR3
August 10, 1992

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene	MTBE
7/09/92	MW1*	70*	ND	ND	ND	ND	130
	MW2	ND	ND	ND	ND	ND	49
	MW3	13,000	3,200	12	1,100	1,900	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	ND	ND	ND	ND	ND	71
	MW6	ND	ND	ND	ND	ND	--
4/14/92	MW1	76**	ND	ND	ND	ND	--
	MW2	45**	ND	ND	ND	ND	--
	MW3	16,000	3,400	19	1,300	1,400	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	86**	ND	ND	ND	ND	--
	MW6	ND	ND	ND	ND	ND	--
1/14/92	MW1	ND	ND	ND	ND	ND	--
	MW2	ND	ND	ND	ND	ND	--
	MW3	13,000	6,600	19	1,800	2,600	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	60**	ND	ND	ND	ND	--
	MW6	ND	ND	ND	ND	ND	--
10/14/91	MW1	ND	ND	ND	ND	ND	--
	MW2	ND	ND	ND	ND	ND	--
	MW3	25,000	6,300	78	1,400	2,000	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	140	0.72	ND	0.89	1.3	--
	MW6	ND	ND	ND	ND	ND	--
7/23/91	MW1	ND	ND	ND	ND	ND	--
	MW2	ND	ND	ND	ND	ND	--
	MW3	17,000	5,500	26	2,800	1,800	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	260	1.2	0.39	0.71	10	--
	MW6	ND	ND	ND	ND	ND	--
5/04/91	MW1	ND	ND	ND	ND	ND	--
	MW2	ND	ND	ND	ND	ND	--
	MW3	34,000	6,100	32	6,100	1,200	--

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

* Sequoia Analytical Laboratory reported that "the above sample does not appear to contain gasoline. LMBP is due to MTBE."

** Sequoia Analytical Laboratory reported that "the above samples does not appear to contain gasoline. LMBP is due to one unidentified peak."

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. Hayward and San Leandro Quadrangles (photorevised 1980)

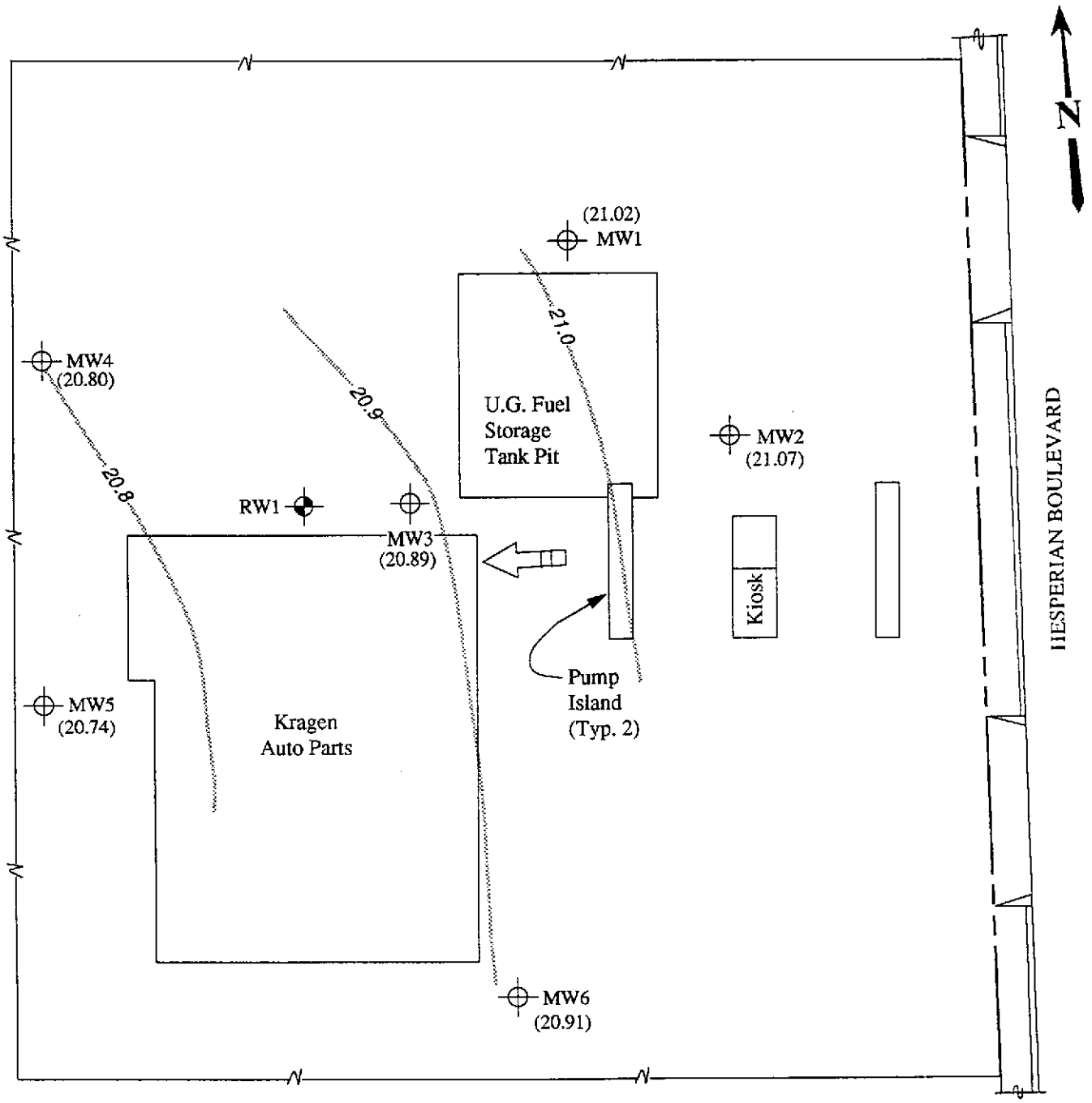
0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

LOCATION MAP



LEGEND

- Monitoring well
- Recovery well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

0 30 60

Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE JULY 9, 1992 MONITORING EVENT

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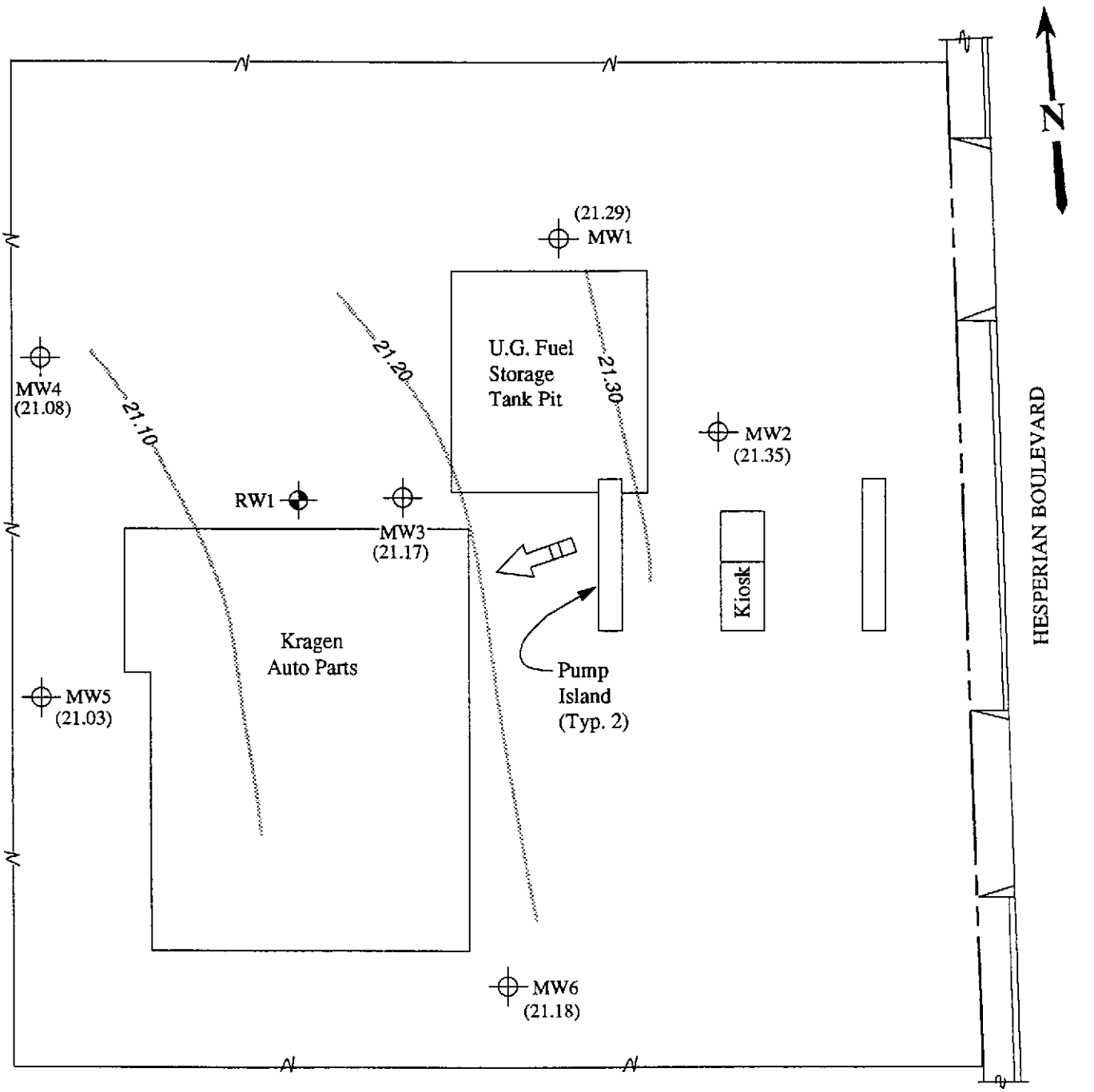
UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

FIGURE
1



LEGEND

- Monitoring well
- Recovery well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

0 30 60

Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE JUNE 11, 1992 MONITORING EVENT

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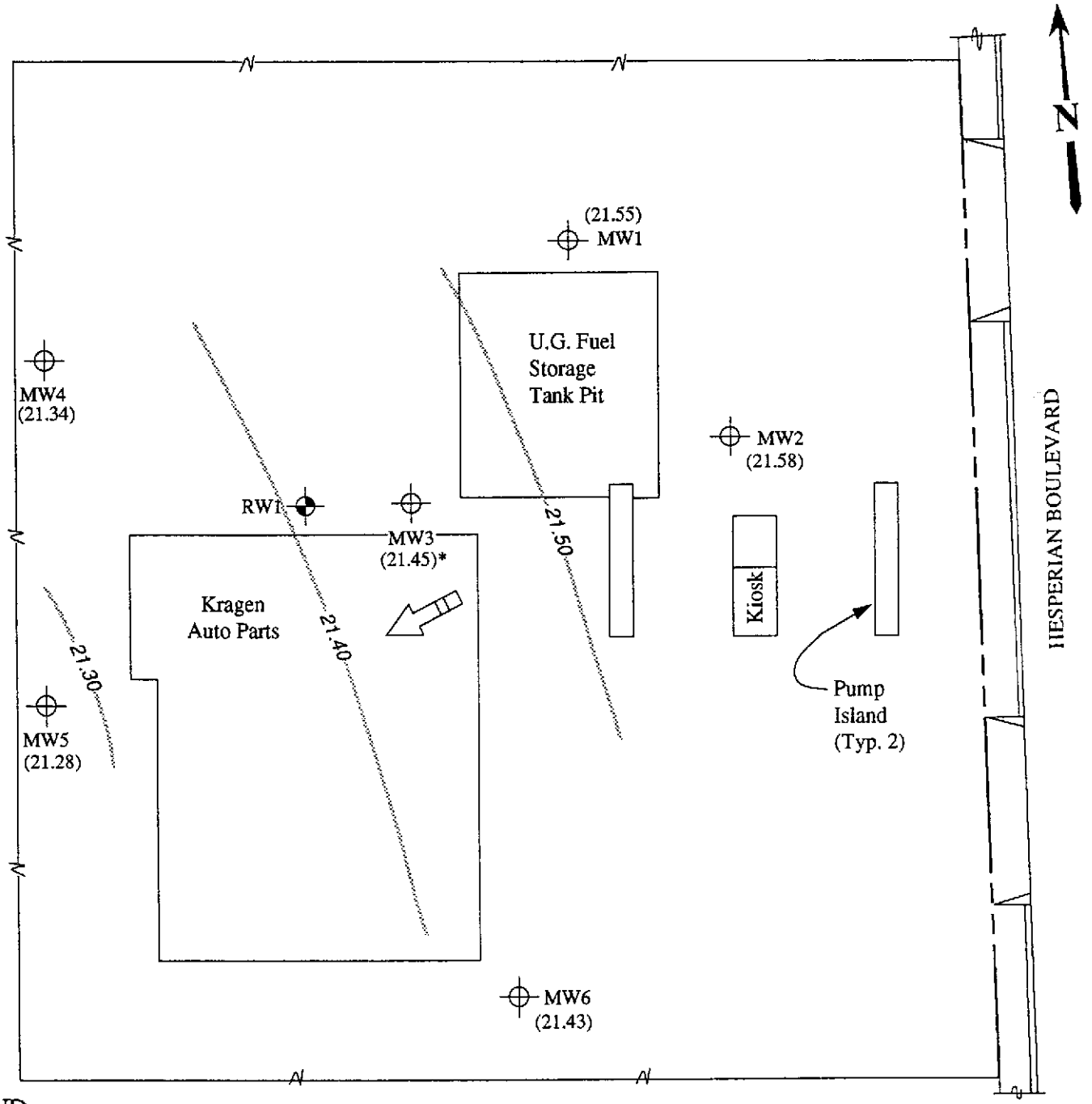
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

FIGURE
2



LEGEND

- Monitoring well
- Recovery well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation
- * Ground water elevation corrected due to the presence of free product.

0 30 60

Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE MAY 12, 1992 MONITORING EVENT

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INCORPORATED

UNOCAL SERVICE STATION #7004
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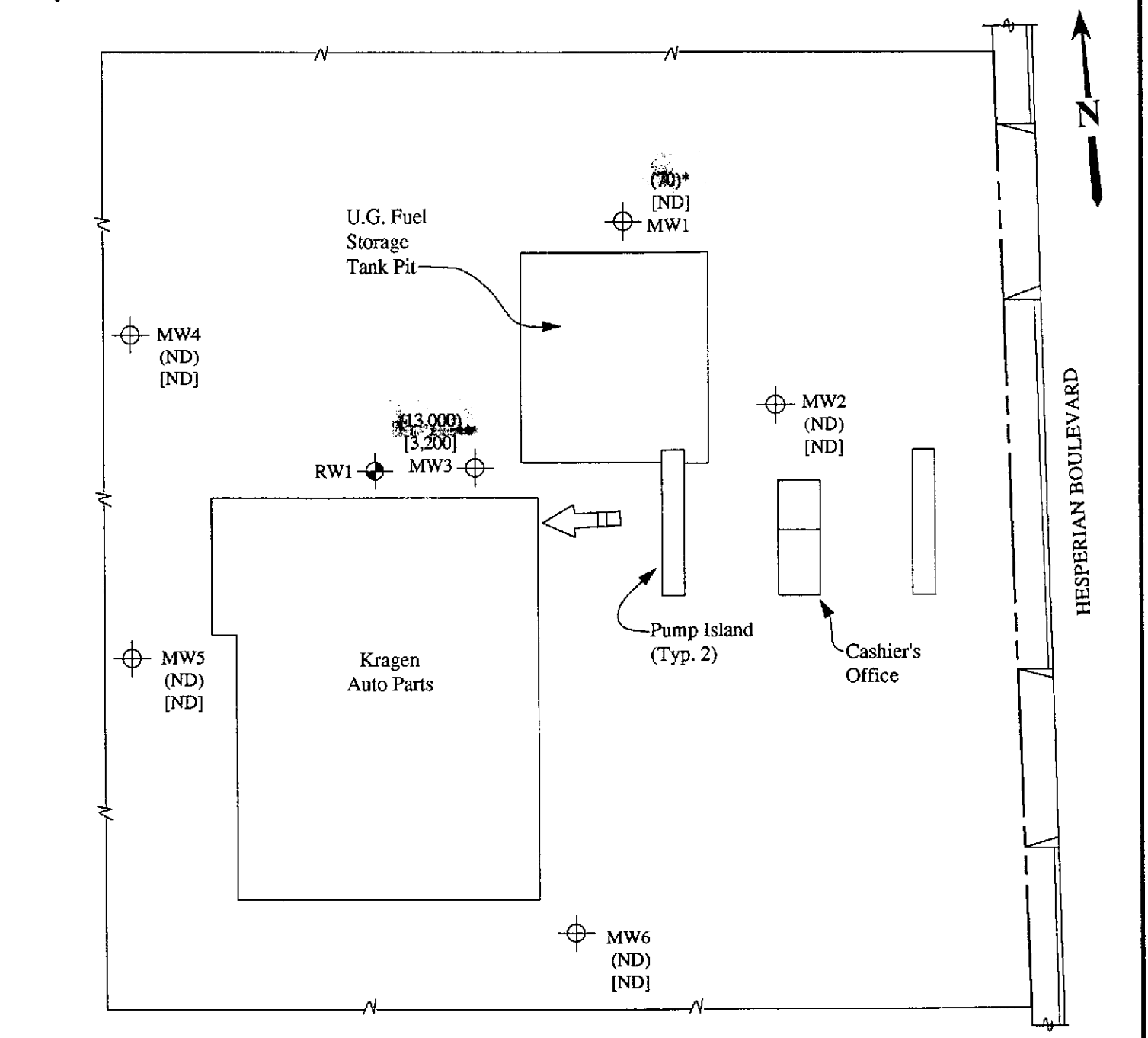
SAN LEANDRO, CA

FIGURE
3



LEGEND

- Monitoring well
- Recovery well
- ( ) Concentrations of TPH as gasoline in ppb
- [ ] Concentrations of benzene in ppb
- Direction of ground water flow

* The lab reported that "the sample does not appear to contain gasoline."

0 30 60

Approx. scale feet

PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON JULY 9, 1992

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

FIGURE
4

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15599 Hesperian Blvd.,San Leandro	Sampled:	Jul 9, 1992
2401 Stanwell Drive, Suite 400	Matrix Descript:	Water	Received:	Jul 10, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Jul 15, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	207-0328	Reported:	Jul 20, 1992

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)
207-0328	MW-1*	70	N.D.	N.D.	N.D.	N.D.
207-0329	MW-2	N.D.	N.D.	N.D.	N.D.	N.D.
207-0330	MW-3	13,000	3,200	12	1,900	1,100
207-0331	MW-4	N.D.	N.D.	N.D.	N.D.	N.D.
207-0332	MW-5	N.D.	N.D.	N.D.	N.D.	N.D.
207-0333	MW-6	N.D.	N.D.	N.D.	N.D.	N.D.
Method Detection Limits:		**30**	**0.30**	**0.30**	**0.30**	**0.30**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

Please Note: * The above sample does not appear to contain gasoline. LMBP is due to MTBE.

2070328.KEI <1>

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15599 Hesperian Blvd.,San Leandro	Sampled:	Jul 9, 1992
2401 Stanwell Drive, Suite 400	Sample Descript:	Water	Received:	Jul 10, 1992
Concord, CA 94520	Analysis for:	MTBE (EPA 8020 - Modified)		
Attention: Mardo Kapreallan, P.E.	First Sample #:	207-0328	Analyzed:	Jul 15, 1992
			Reported:	Jul 20, 1992

LABORATORY ANALYSIS FOR: MTBE (EPA 8020 - Modified)

Sample Number	Sample Description	Detection Limit µg/L	Sample Result µg/L
207-0328	MW-1	0.60	130
207-0329	MW-2	0.60	49
207-0332	MW-5	0.60	71

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

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(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.
2401 Stanwell Drive, Suite 400
Concord, CA 94520
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 15599 Hesperian Blvd.,San Leandro
QC Sample Group: 2070328-333
Reported: Jul 20, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	A.P.	A.P.	A.P.	A.P.
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Jul 15, 1992	Jul 15, 1992	Jul 15, 1992	Jul 15, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	20	20	20	60
Conc. Matrix Spike:	20	20	20	65
Matrix Spike % Recovery:	100	100	100	108
Conc. Matrix Spike Dup.:	19	20	20	63
Matrix Spike Duplicate % Recovery:	95	100	100	105
Relative % Difference:	5.1	0.0	0.0	3.1

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery: $\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$

Relative % Difference: $\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}} \times 100$

SEQUOIA ANALYTICAL

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(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.
2401 Stanwell Drive, Suite 400
Concord, CA 94520
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 15599 Hesperian Blvd.,San Leandro
QC Sample Group: 2070328-333
Reported: Jul 20, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	A.P.	A.P.	A.P.	A.P.	A.P.	A.P.	A.P.
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Jul 15, 1992	Jul 15, 1992	Jul 15, 1992	Jul 15, 1992	Jul 15, 1992	Jul 15, 1992	Jul 15, 1992
Sample #:	207-0328	207-0329	207-0330	207-0331	207-0332	207-0333	Blank
Surrogate % Recovery:	110	105	94	104	103	93	106

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

2070328.KEI <4>

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Vartkes

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal / San Leandro
15599 Hesperian Blvd.

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG & BTXE	MTBE	REMARKS
MW-1	7/9/92	9:40 A.M.		✓	✓		4	Monitoring Well	✓	✓	2070328AD
MW-2	"			✓	✓		4	" "	✓	✓	329AD
MW-3	"			✓	✓		2	" "	✓		330AB
MW-4	"			✓	✓		2	" "	✓		331AB
MW-5	"			✓	✓		4	" "	✓	✓	332AD
MW-6	"	12:45 P.M.		✓	✓		2	" "	✓		333AB

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
W. Vartkes	7/9/92	[redacted] 7/10/92 9:55AM
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
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? Y
2. Will samples remain refrigerated until analyzed? Y
3. Did any samples received for analysis have head space? NO
4. Were samples in appropriate containers and properly packaged? Y

[redacted] (Signature) F.S. (Title) 7/10/92 (Date)