KAPREALIAN ENGINEERING
INCORPORATED

93 SEP -8 PM 4:25

September 7, 1993

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

Attention: Mr. Tom Peacock

521 ✓ Re

RE: Unocal Service Station #5043
449 Hegenberger Road
Oakland, California

Dear Mr. Peacock:

Per the request of Mr. David DeWitt of Unocal Corporation, enclosed please find our report and proposal, both dated August 27, 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 DeWitt, Unocal Corporation

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

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P91-1004.QR5
August 27, 1993

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

Attention: Mr. David DeWitt

RE: Quarterly Report
Unocal Service Station #5043
449 Hegenberger Road
Oakland, California

Dear Mr. DeWitt:

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 monthly and sampled on a quarterly basis. This report covers the work performed by KEI from June through August of 1993.

BACKGROUND

The subject site contains an operating Unocal service station facility. Six monitoring wells 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 reports (KEI-P91-1004.R4) dated October 12, 1992, and (KEI-P91-1004.R3) dated March 26, 1992.

RECENT FIELD ACTIVITIES

The six wells (MW1 through MW6) were monitored three times and were sampled once during the quarter, except for well MW1, which was not sampled due to the presence of free product. 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 0.03 to 0.04 feet of free product that was observed in well MW1 throughout the quarter. The monitoring data collected this quarter are summarized in Table 1.

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

Water samples were collected from all of the wells (except well MW1) on August 4, 1993. Prior to sampling, the wells were each purged of between 5 and 8 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 and/or one-liter amber bottles, as appropriate, which were then sealed with Teflon-lined screw caps 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 August 4, 1993, ranged between 2.92 and 5.81 feet below grade. The water levels in all of the wells have shown net decreases ranging from 0.62 to 1.44 feet since May 4, 1993. Based on the water level data gathered during the quarter, the predominant direction of ground water flow over the majority of the site varied from the northwest to the northeast, as shown on the attached Potentiometric Surface Maps, Figures 1, 2, and 3. The hydraulic gradient at the site on August 4, 1993, ranged from approximately 0.006 to 0.05.

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, TPH as diesel by EPA method 3510/modified 8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020. In addition, the ground water sample collected from monitoring well MW5 was analyzed for total oil and grease (TOG) by Standard Methods 5520B&F.

The analytical results of all of the ground water samples collected from the monitoring wells to date are summarized in Table 2. The concentrations of TPH as gasoline, benzene, and TPH as diesel detected in the ground water samples collected this quarter are shown on the attached Figures 4, 5, and 6, respectively. 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, KEI recommends a modification to the current ground water monitoring and sampling program. As shown in Table 2, the ground water samples collected from well MW5 during the past four quarters (one hydrogeologic cycle) of sampling have consistently shown non-detectable concentrations of TOG. There-

fore, KEI recommends discontinuing the TOG analyses for well MW5. The wells will continue to be monitored monthly and sampled for TPH as gasoline, BTEX, and TPH as diesel on a quarterly basis. The results of the monitoring and sampling program will be documented and evaluated after each monitoring and sampling event. Further modifications to the monitoring and sampling program will be made as warranted.

KEI previously proposed the installation of four additional monitoring wells in order to further define the extent of contamination at and in the vicinity of the site. The locations of the proposed additional monitoring wells are shown on the attached Figure 7.

Lastly, a continuous surface-skimming free product recovery device has been installed in well MW1. Any free product that accumulates in the skimming device is removed during the monthly monitoring events.

DISTRIBUTION

A copy of this report should be sent to Alameda County Health Care Services Agency, 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 us at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Talin Kaloustian
Staff Engineer

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

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

Timothy R. Ross
Project Manager

/bp

Attachments: Tables 1 & 2
Location Map
Figures 1 through 7
Laboratory Analyses
Chain of Custody documentation

KEI-P91-1004.QR5
August 27, 1993

TABLE 1

SUMMARY OF MONITORING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Sheen	Water Purged (gallons)	Product Purged (ounces)
(Monitored and Sampled on August 4, 1993)						
MW1♦	4.88*	2.92	0.03	N/A	0.25	<1.0
MW2	5.76	3.20	0	No	8	0
MW3	2.90	4.94	0	No	7	0
MW4	3.99	5.01	0	No	6	0
MW5	3.46	5.81	0	No	5	0
MW6	3.97	5.15	0	No	6	0
(Monitored on July 1, 1993)						
MW1	5.18*	2.63	0.04	N/A	0	1.0
MW2	6.03	2.93	0	--	0	0
MW3	2.71	5.13	0	--	0	0
MW4	4.36	4.64	0	--	0	0
MW5	3.89	5.38	0	--	0	0
MW6	4.58	4.54	0	--	0	0
(Monitored on June 2, 1993)						
MW1	5.41*	2.39	0.03	N/A	0	1.0
MW2	6.32	2.64	0	--	0	0
MW3	2.97	4.87	0	--	0	0
MW4	4.70	4.30	0	--	0	0
MW5	4.41	4.86	0	--	0	0
MW6	5.07	4.05	0	--	0	0

Well #	Surface Elevation** (feet)
MW1	7.78
MW2	8.96
MW3	7.84
MW4	9.00
MW5	9.27
MW6	9.12

TABLE 1 (Continued)

SUMMARY OF GROUND WATER MONITORING DATA

♦ Monitored only.

* The ground water elevation was corrected for the presence of free product by the use of a specific gravity of 0.77.

** The elevations of the tops of the well covers were surveyed relative to Mean Sea Level (MSL), per the City of Oakland Benchmark #3880 (elevation = 20.37 MSL).

N/A = Not applicable.

-- Sheen determination was not performed.

KEI-P91-1004.QR5
August 27, 1993

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
8/04/93	MW1	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT					
	MW2	1,800♦♦	45,000	2,100	6,600	1,400	12,000
	MW3	100	210**	ND	ND	ND	ND
	MW4	81	250**	ND	3.5	ND	4.1
	MW5+	970♦♦	1,500	130	1.0	460	11
	MW6	1,100♦♦	3,400	390	ND	440	190
5/04/93	MW1	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT					
	MW2	7,100♦	63,000	3,200	17,000	470	17,000
	MW3	250♦♦	1,800*	95	ND	ND	ND
	MW4	ND	110*	0.95	ND	ND	ND
	MW5+	4,600♦	7,400	41	ND	1,000	35
	MW6	1,800♦	4,900	360	18	450	430
2/04/93	MW1	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT					
	MW2	6,100♦	18,000	1,600	3,000	ND	6,900
	MW3	550♦♦	3,300	320	ND	96	6.1
	MW4	ND	ND	ND	ND	ND	ND
	MW5+	5,500♦♦	5,700	38	ND	620	170
	MW6	890♦♦	3,600	340	ND	290	550
11/30/92	MW1	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT					
	MW2	5,700♦	29,000	2,000	3,400	1,200	6,900
	MW3	94	790**	ND	ND	ND	ND
	MW4	61	420**	ND	ND	ND	ND
	MW5+	470♦♦	930	70	290	0.79	14
	MW6	1,400♦	9,200	550	ND	740	1,600
8/31/92	MW1	8,900♦	64,000	13,000	12,000	2,500	22,000
	MW2	1,600♦	9,000	1,800	640	140	2,000
	MW3	92♦♦	210**	1.0	ND	ND	ND
	MW4	90♦♦	240**	ND	ND	ND	0.54
	MW5	690♦	78	0.89	ND	ND	13
	MW6	750♦♦	ND	ND	ND	ND	ND
5/20/92	MW1	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT					
	MW2	4,300♦	24,000	2,200	7,600	630	11,000
	MW3	WELL WAS INACCESSIBLE FOR SAMPLING					

KEI-P91-1004.QR5
August 27, 1993

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
2/18/92	MW1	13,000	150,000	17,000	26,000	5,200	26,000
	MW2	4,300	29,000	1,000	5,300	260	7,900
	MW3	ND	230	4.8	22	1.8	33

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

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

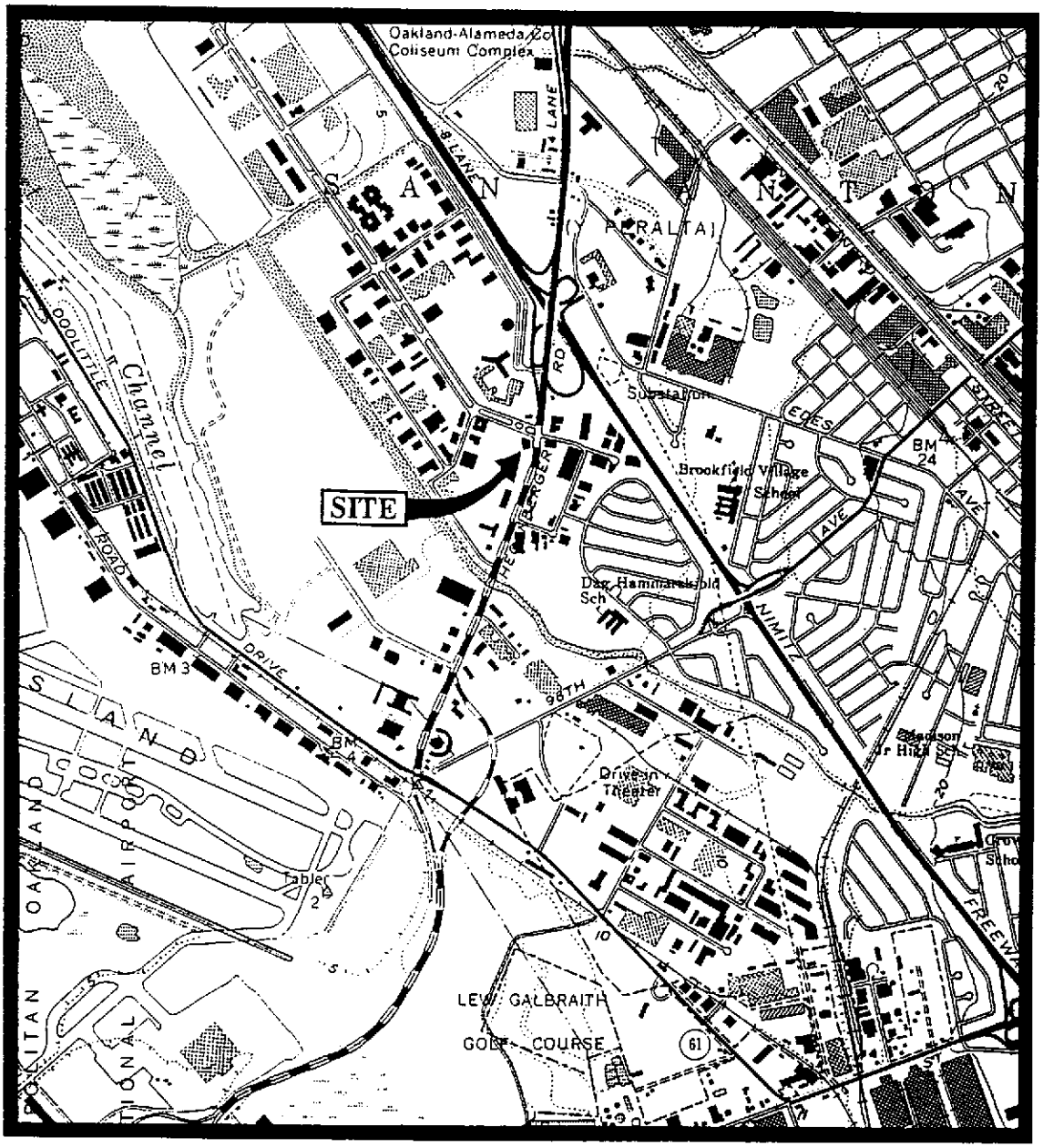
* Sequoia Analytical Laboratory reported that the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.

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

+ TOG was non-detectable.

ND = Non-detectable.

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

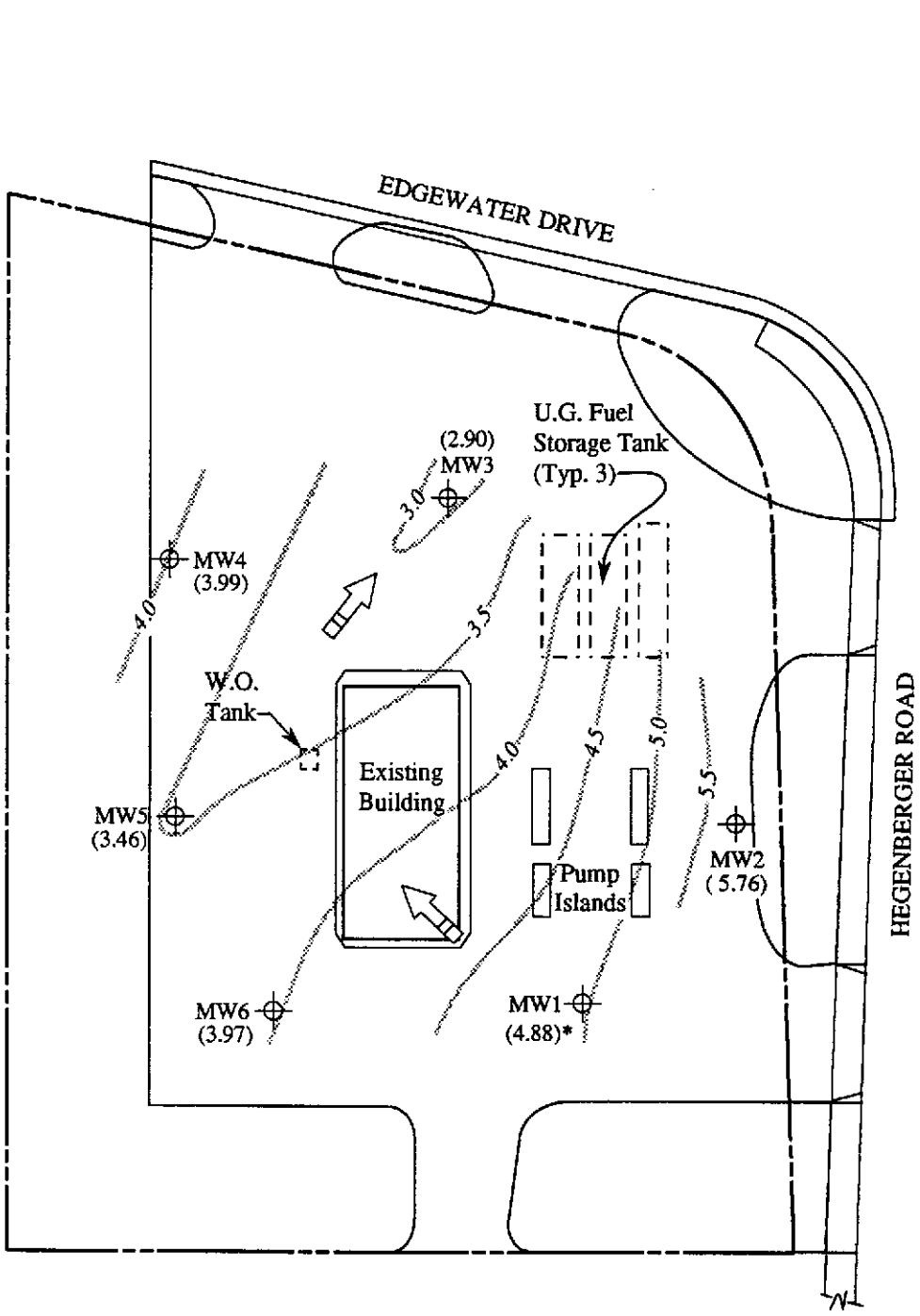


Base modified from 7.5 minute U.S.G.S. San Leandor Quadrangle
(photorevised 1980)

0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED	**UNOCAL SERVICE STATION #5043** **449 HEGENBERGER ROAD** **OAKLAND, CALIFORNIA**	**LOCATION MAP**



LEGEND

- Monitoring 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 40 80

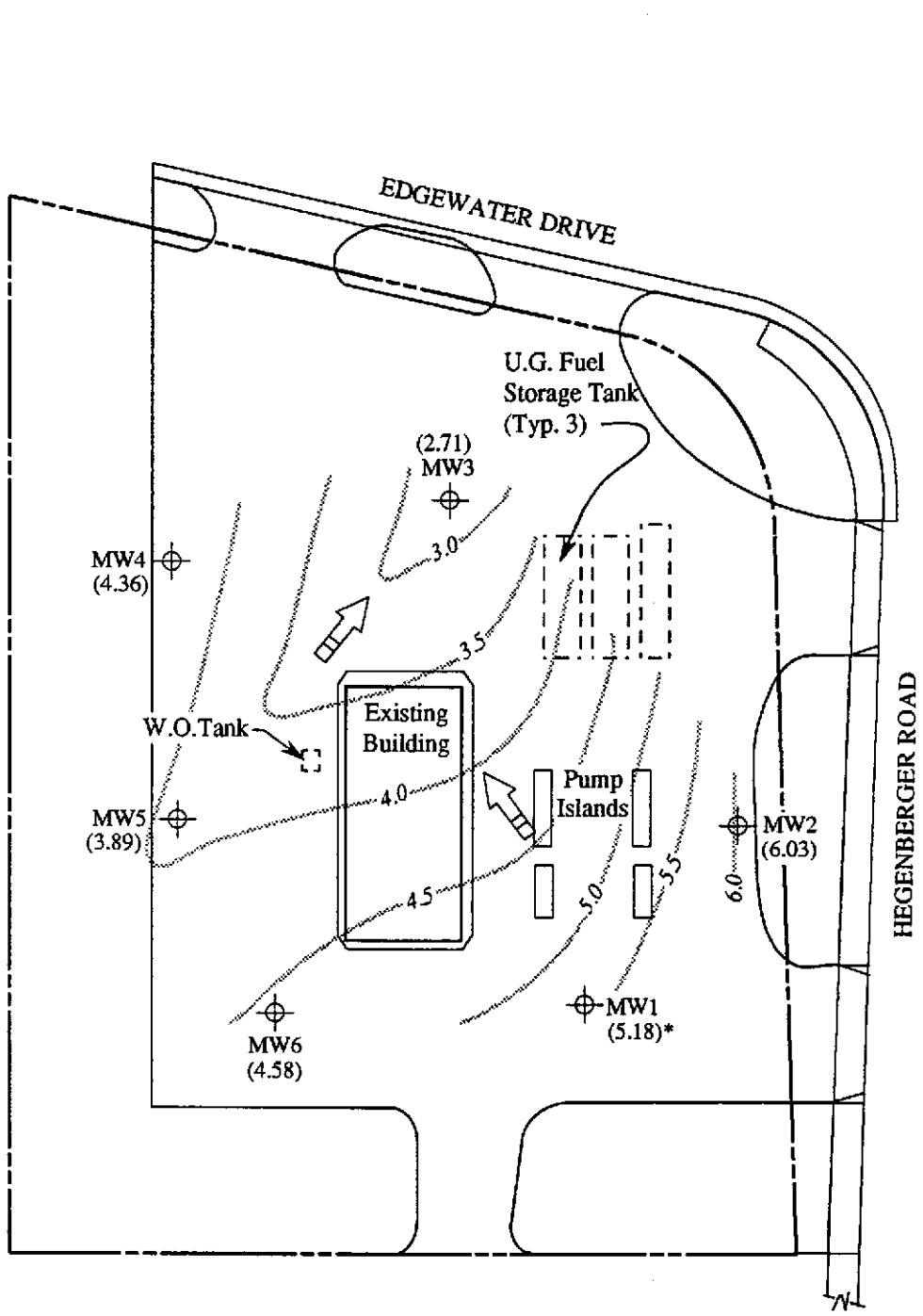
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE AUGUST 4, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA

FIGURE
1



LEGEND

- Monitoring 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 40 80

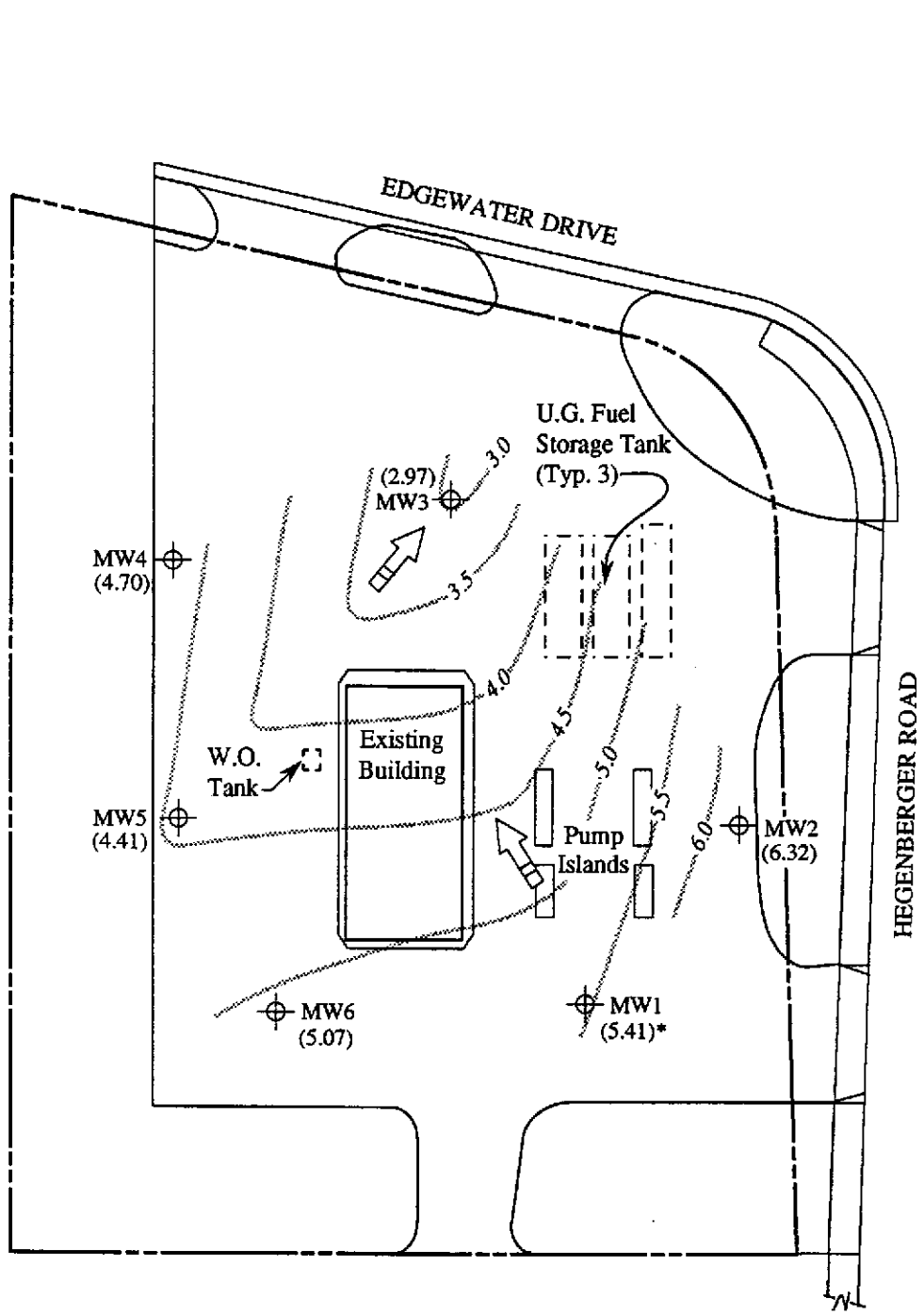
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE JULY 1, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA

FIGURE
2



LEGEND

- Monitoring 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 40 80

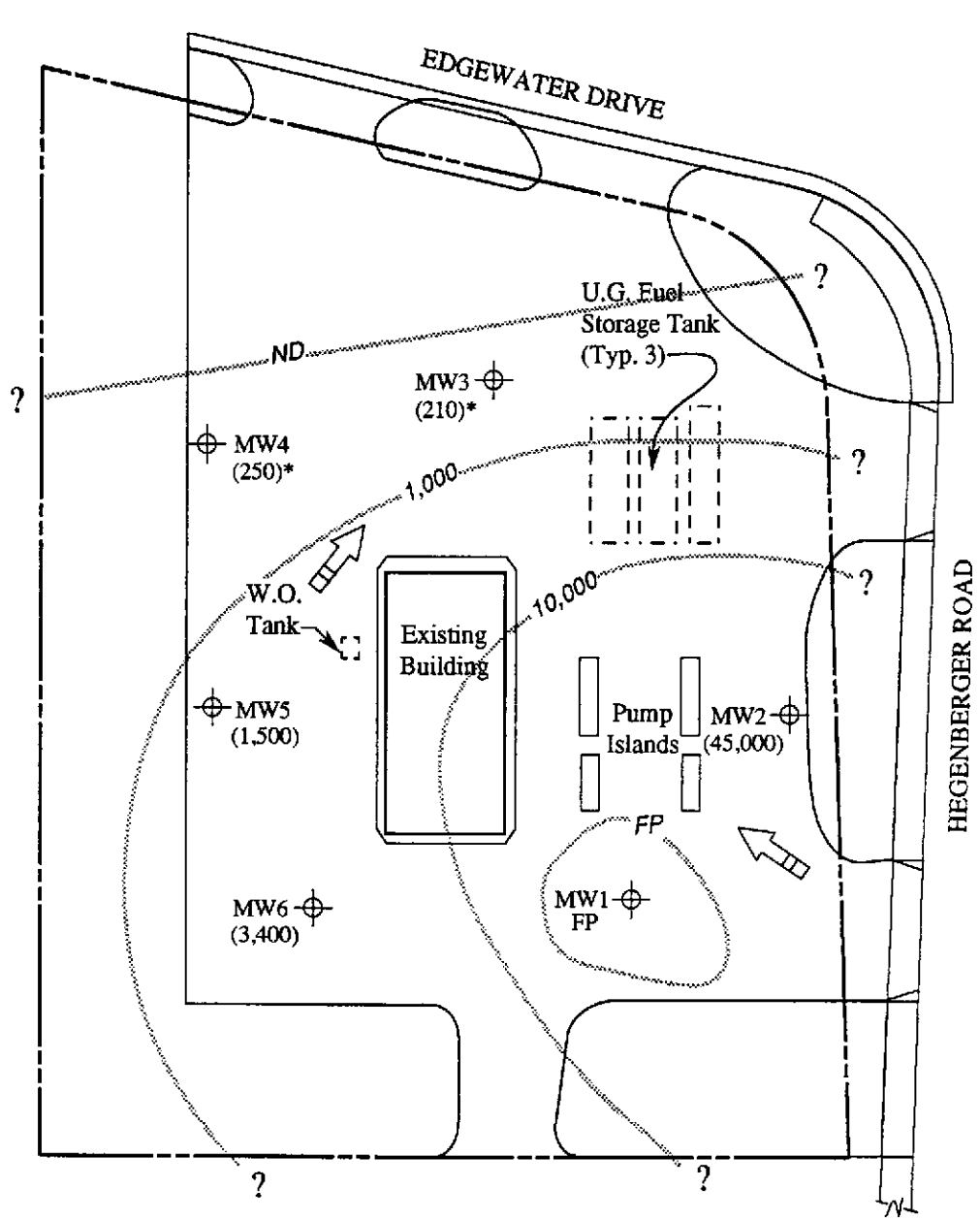
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE JUNE 2, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA

FIGURE
3



LEGEND

- Monitoring well
- ( ) Concentrations of TPH as gasoline in ppb
- Direction of ground water flow
- Iso-concentration contours in ppb

FP = Free product

ND =Non-detectable

* The lab reported that the hydrocarbons detected did not appear to be gasoline.

0 40 80

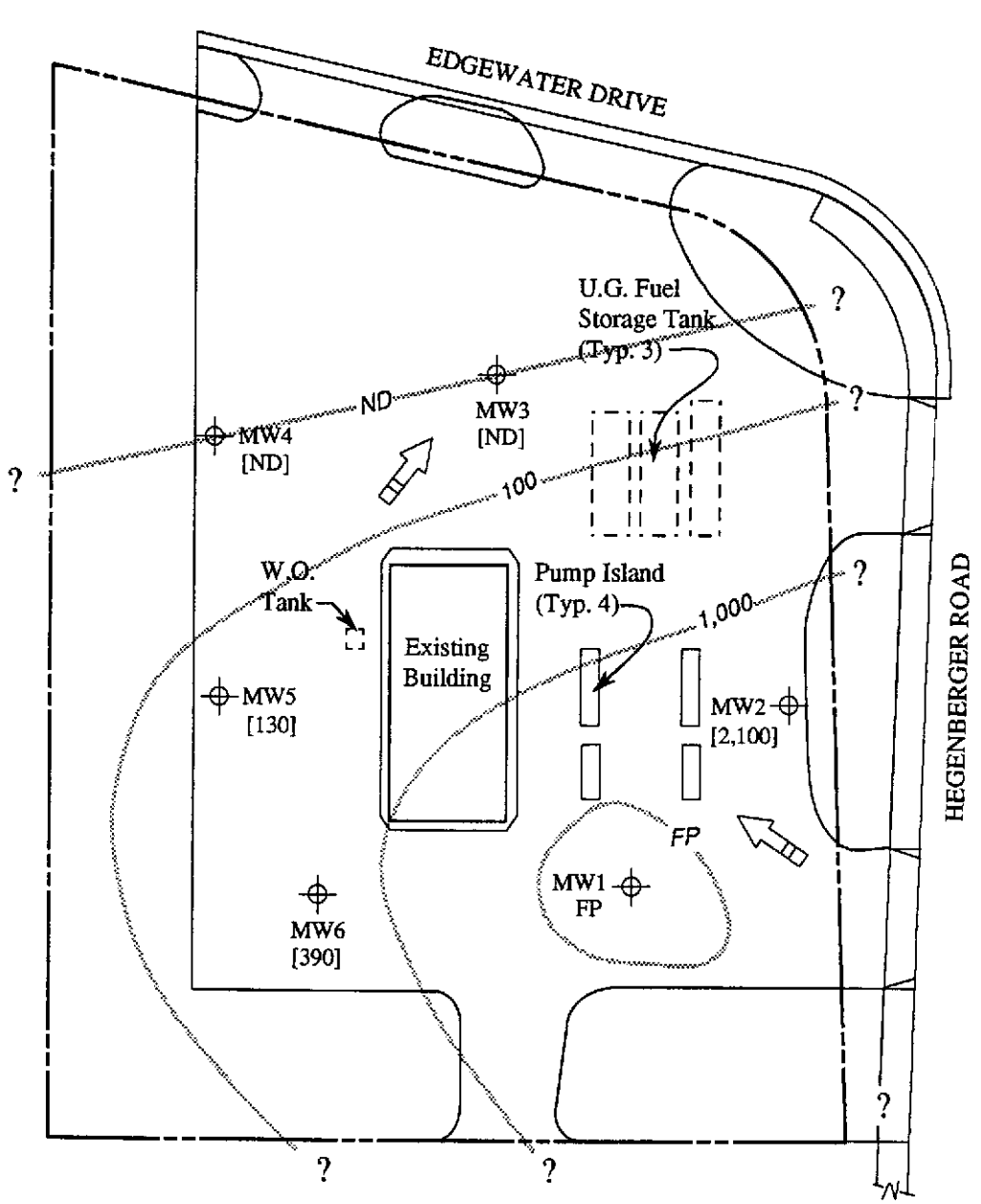
Approx. scale feet

TPH AS GASOLINE CONCENTRATIONS IN GROUND WATER ON AUGUST 4, 1993

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA

FIGURE
4



LEGEND

- Monitoring well
- [ ] Concentrations of benzene in ppb
- Direction of ground water flow
- Iso-concentration contours in ppb
- FP = Free product
- ND = Non-detectable

0 40 80

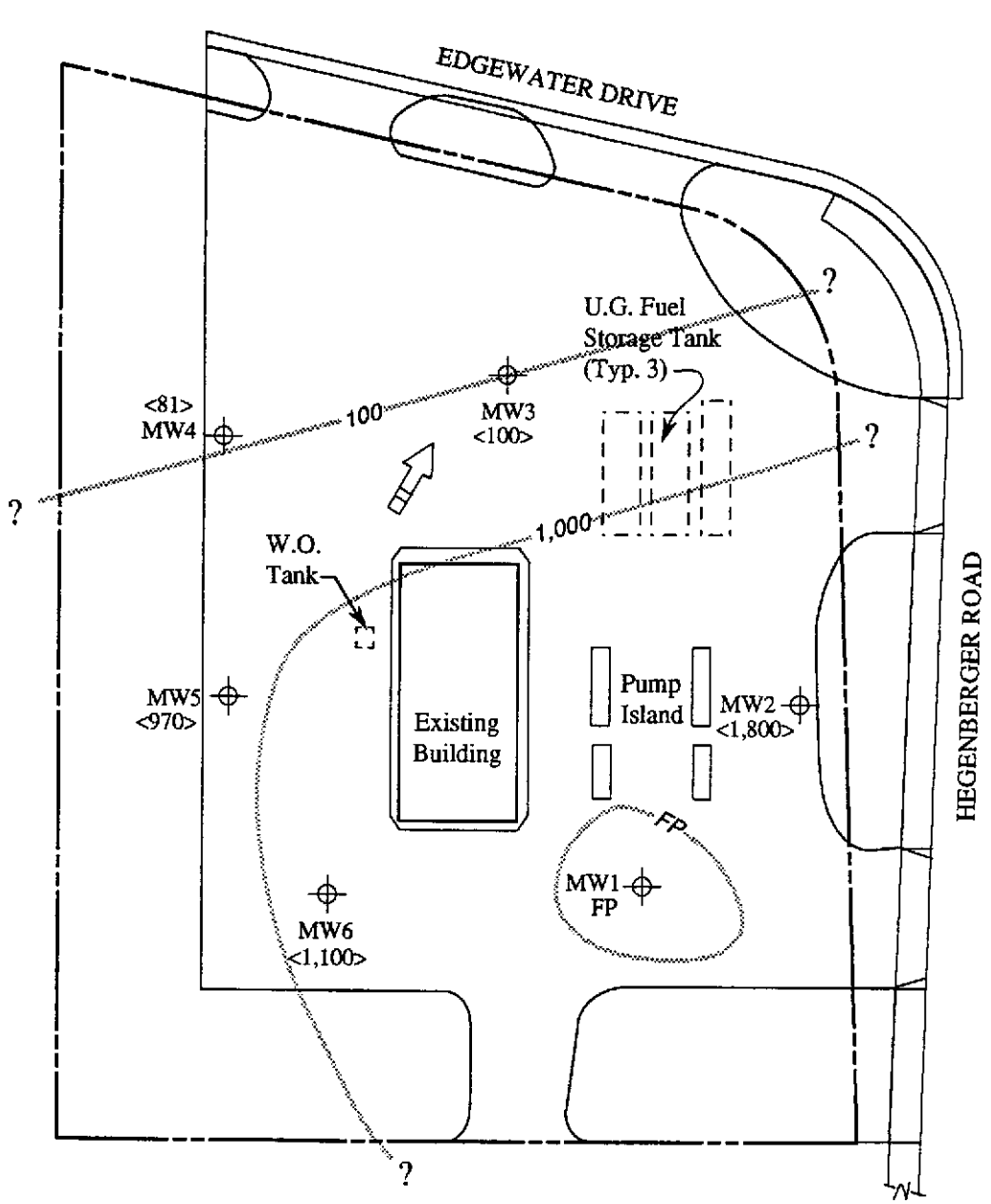
Approx. scale feet

BENZENE CONCENTRATIONS IN GROUND WATER ON AUGUST 4, 1993

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA

FIGURE
5



LEGEND

- Monitoring well
- < > Concentrations of TPH as diesel in ppb
- Iso-concentration contours in ppb
- Direction of ground water flow
- FP = Free product

0 40 80

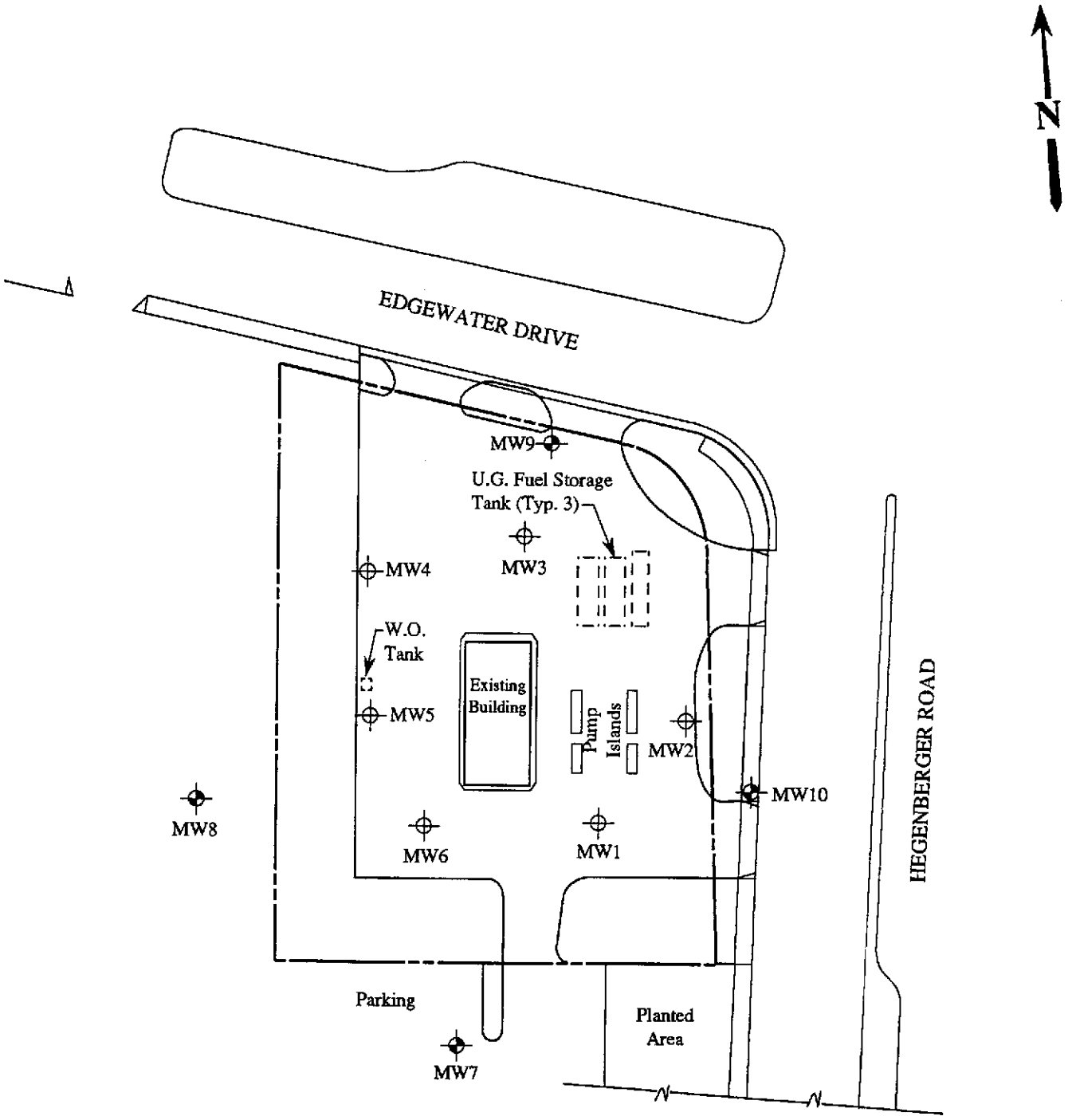
Approx. scale feet

TPH AS DIESEL CONCENTRATIONS IN GROUND WATER ON AUGUST 4, 1993

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA

FIGURE
6



LEGEND

- Monitoring well (existing)
- Monitoring well (proposed)

0 60 120

Approx. scale feet

EXISTING AND PROPOSED MONITORING WELL LOCATION MAP

KAPREALIAN ENGINEERING INCORPORATED

UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA

FIGURE
7

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #5043, 449 Hegenberger Rd, Oakland	Sampled:	Aug 4, 1993
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Water	Received:	Aug 4, 1993
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Aug 17, 1993
Attention: Avo Avedessian	First Sample #:	308-0247		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 308-0247 MW 2	Sample I.D. 308-0248 MW 3*	Sample I.D. 308-0249 MW 4^	Sample I.D. 308-0250 MW 5	Sample I.D. 308-0251 MW 6	Sample I.D. Matrix Blank
Purgeable Hydrocarbons	50	45,000	210	250	1,500	3,400	
Benzene	0.5	2,100	N.D.	N.D.	130	390	
Toluene	0.5	6,600	N.D.	3.5	1.0	N.D.	
Ethyl Benzene	0.5	1,400	N.D.	N.D.	460	440	
Total Xylenes	0.5	12,000	N.D.	4.1	11	190	
Chromatogram Pattern:		Gasoline	Discrete Peak	Discrete Peaks	Gasoline	Gasoline	

Quality Control Data

Report Limit Multiplication Factor:	200	2.0	5.0	2.0	5.0	1.0
Date Analyzed:	8/13/93	8/16/93	8/13/93	8/12/93	8/12/93	8/12/93
Instrument Identification:	HP-4	HP-2	HP-4	HP-2	HP-2	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	96	92	106	95	104	104

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 Peak refers to unidentified peak in MTBE Range.
^Discrete Peaks includes unidentified peak in MTBE Range, and EPA 8010 constituents Range
Revised Report 9/2/93

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #5043, 449 Hegenberger Rd, Oakland	Sampled:	Aug 4, 1993
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Water	Received:	Aug 4, 1993
Concord, CA 94520	Analysis Method:	EPA 3510/3520/8015	Reported:	Aug 17, 1993
Attention: Avo Avedessian	First Sample #:	308-0247		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 308-0247 MW 2*	Sample I.D. 308-0248 MW 3	Sample I.D. 308-0249 MW 4	Sample I.D. 308-0250 MW 5*	Sample I.D. 308-0251 MW 6*	Sample I.D. Matrix Blank
Extractable Hydrocarbons	50	1,800	100	81	970	1,100	
Chromatogram Pattern:		Diesel & Non-Diesel Mixture (<C14)	Diesel	Diesel	Diesel & Non-Diesel Mixture (<C14)	Diesel & Non-Diesel Mixture (<C14)	

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Extracted:	8/10/93	8/10/93	8/10/93	8/10/93	8/10/93	8/10/93
Date Analyzed:	8/12/93	8/12/93	8/12/93	8/12/93	8/12/93	8/13/93
Instrument Identification:	HP-3A	HP-3A	HP-3A	HP-3A	HP-3A	HP-3B

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

SEQUOIA ANALYTICAL

Alan B. Kemp
Project Manager

Please Note:
Non-Diesel Mixture <C14 is probably Gasoline.

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #5043, 449 Hegenberger Rd, Oakland	Sampled:	Aug 4, 1993
2401 Stanwell Dr., Ste. 400	Matrix Descript:	Water	Received:	Aug 4, 1993
Concord, CA 94520	Analysis Method:	SM 5520 B&F (Gravimetric)	Extracted:	Aug 12, 1993
Attention: Avo Avedessian	First Sample #:	308-0250	Analyzed:	Aug 12, 1993
			Reported:	Aug 17, 1993

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
308-0250	MW 5	N.D.

Detection Limits:	5.0

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

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 #5043, 449 Hegenberger Rd, Oakland
2401 Stanwell Dr., Ste. 400	Matrix:	Water
Concord, CA 94520		
Attention: Avo Avedessian	QC Sample Group: 3080247-51	Reported: Aug 17, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel	Oil & Grease
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015	SM 5520
Analyst:	J.F.	J.F.	J.F.	J.F.	K.Wimer	D.Newcomb
Conc. Spiked:	20	20	20	60	300	100
Units:	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
LCS Batch#:	1LCS081293	1LCS081293	1LCS081293	1LCS081293	BLK081093	BLK081293
Date Prepared:	8/12/93	8/12/93	8/12/93	8/12/93	8/10/93	8/12/93
Date Analyzed:	8/12/93	8/12/93	8/12/93	8/12/93	8/13/93	8/12/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2	HP-3B	N/A
LCS % Recovery:	96	107	111	122	85	94
Control Limits:	70-130	70-130	70-130	70-130	80-120	80-120
MS/MSD Batch #:	3080326	3080326	3080326	3080326	BLK081093	BLK081293
Date Prepared:	8/12/93	8/12/93	8/12/93	8/12/93	8/10/93	8/12/93
Date Analyzed:	8/12/93	8/12/93	8/12/93	8/12/93	8/13/93	8/12/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2	HP-3B	N/A
Matrix Spike % Recovery:	95	90	80	87	85	94
Matrix Spike Duplicate % Recovery:	100	95	85	95	86	93
Relative % Difference:	5.1	5.4	6.1	2.2	1.2	1.0

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.

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedessian

Client Project ID: Unocal #5043, 449 Hegenberger Rd, Oakland

QC Sample Group: 3080247-51

Reported: Aug 17, 1993

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015	EPA 8015	EPA 8015	EPA 8015	EPA 8015	EPA 8015
Analyst:	K.W.	K.W.	K.W.	K.W.	K.W.	K.W.
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Aug 12, 1993	Aug 12, 1993	Aug 12, 1993	Aug 12, 1993	Aug 12, 1993	Aug 13, 1993
Sample #:	308-0247	308-0248	308-0249	308-0250	308-0251	Blank
Surrogate % Recovery:	92	94	98	97	98	107

SEQUOIA ANALYTICAL

Alan B. Kemp
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

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Varthes

WITNESSING AGENCY:

S/S # 5043 SITE NAME & ADDRESS: Unocal / Oakland, 449 Hegenberger Rd.

ANALYSES REQUESTED: TPHG + BTXE; TPHD; TOG (5520 B&F)

TURN AROUND TIME: Regular.

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG + BTXE	TPHD	TOG (5520 B&F)	REMARKS
MW 2	8/4/93	11:00 am		X	X		3	Monitoring Well	X	X		3080247 AC
MW 3	"			X	X		3	" "	X	X		248 AC
MW 4	"			X	X		3	" "	X	X		249 AC
MW 5	"			X	X		4	" "	X	X	X	250 AC
MW 6	"	1:50 pm.		X	X		3	" "	X	X		251 AC

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
W. Abelgien	8/4/93 3:25	John Mills 8/4/93 15:25
John Mills	8/5/93 1430	
	8.5.93 1610	Melissa Cleveland

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

Signature | Title | Date

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P91-1004.P4
August 27, 1993

PROPOSAL TO
UNOCAL CORPORATION
for the
Unocal Service Station #5043
449 Hegenberger Road
Oakland, California

GROUND WATER MONITORING, SAMPLING, AND ANALYSIS

INTRODUCTION

Per the recommendations described in Kaprealian Engineering, Inc's. (KEI) report (KEI-P91-1004.QR5) dated August 27, 1993, KEI proposes the following work plan.

PROPOSED TASK

1. Monitor all of the existing wells on-site on a monthly basis. Record the elevation of the water table and any abnormal conditions noted during inspection, including the presence of free product.

2. Purge and sample ground water from all of the monitoring wells on a quarterly basis, and analyze for total petroleum hydrocarbons (TPH) as gasoline, benzene, toluene, ethylbenzene, and xylenes, and TPH as diesel. Prior to sampling, the water table elevation will be recorded as well as the presence of any free product or sheen.

3. Prepare quarterly technical reports that summarize the field activities (i.e., water sampling and analyses), and that include discussion and recommendations.

The purging and sampling of ground water should continue for six months. This proposed monitoring and sampling program should be re-evaluated after six months.

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