REB16.92

Unocal Corporation
2000 Crow Canyon Place, Suite 400
P.O. Box 5155
San Ramon, California 94583
Telephone (510) 867-0760
Facsimile (510) 277-2309

UNOCAL 76

November 12, 1992

Northern Region
Corporate Environmental
Remediation & Technology

Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Rm 200
Oakland, CA 94621
Attn: Ms. Eva Chu

Unocal Service Station No. 6034
4700 First Street
Livermore, California

Unocal Service Station No. 5366
7375 Amador Valley Blvd.
Dublin, California

Dear Ms. Chu:

In response to your telephone discussion with Mr. Tim Ross of KEI, this letter confirms a meeting between Unocal, KEI, and ACHCSA to be held on Wednesday, November 18, 1992 at 10:00 AM in your offices. The purpose of the meeting will be to discuss the progress of the environmental assessment projects at the above referenced facilities, and to respond to your letters dated September 29, 1992 and October 3, 1992 regarding these sites.

In addition, I am transmitting the most recent Quarterly Report regarding Station No. 5366. We can further discuss the results documented in this report during our upcoming meeting.

If you have any questions, please feel free to call me at (510) 277-2303.

Sincerely,

Ronald E. Bock

Ronald E. Bock
Manager Remediation Projects

REB/bsb
attachment
cc: T. R. Ross, KEI, w/o
E. Ralston, w/o

KEI-P88-0205.QR17
September 24, 1992

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

Attention: Mr. Ron Bock

RE: Quarterly Report
Unocal Service Station #5366
7375 Amador Valley Boulevard
Dublin, California

Dear Mr. Bock:

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 report (KEI-P88-0205.QR3) dated February 15, 1989, and as modified in KEI's quarterly report (KEI-P88-0205.QR16) dated June 30, 1992. The wells are currently monitored quarterly. Well MW1 is sampled on a quarterly basis and upgradient well MW2 is sampled on an annual basis. This report covers the work performed by KEI from June through August of 1992.

BACKGROUND

The subject site contains a Unocal service station facility. Three underground fuel storage tanks were removed from the site in February of 1988 during tank replacement activities. Contaminated soil in the tank pit was overexcavated to 13 feet below grade (2 feet below the depth of ground water at the time). Four monitoring wells have been installed at the site. No free product or sheen has been detected in any well to date, based on 17 quarters of monitoring.

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-P88-0205.QR16) dated June 30, 1992.

RECENT FIELD ACTIVITIES

The four monitoring wells (MW1 through MW4) were monitored twice and well MW1 was sampled once during the quarter. In addition, well MW1 was purged of 55 gallons of ground water on two occasions

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510 602 5100 Fax: 510 687 0602

in an attempt to reduce the contamination levels present in the vicinity of this well. Well MW2 is currently sampled annually and wells MW3 and MW4 are no longer sampled. During monitoring, the wells were checked for depth to water and the presence of free product. Prior to sampling, monitoring well MW1 was also checked for the presence of a sheen. No free product or sheen was noted in any of the wells during the quarter. On August 12, 1992, a joint monitoring program was also conducted at the nearby BP and Shell service station sites. Monitoring data from the BP and Shell stations are summarized in Table 2. The monitoring data for the Unocal site collected this quarter are summarized in Table 1.

A water sample was collected from well MW1 on August 12, 1992. Prior to sampling, the well was purged of 9 gallons of water by the use of a surface pump. The sample was collected by the use of a clean Teflon bailer. The sample was 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

Based on the water level data gathered on August 12, 1992, during joint monitoring with the adjacent BP and former Shell service stations, the direction of ground water flow over the Unocal site and the majority of the site vicinity was to the east-northeast, as shown on the attached Potentiometric Surface Map, Figure 1. The direction of ground water flow on June 22, 1992, based on data collected from Unocal wells MW1 through MW4, was also to the east-northeast, as shown on the attached Potentiometric Surface Map, Figure 2. These conditions are relatively unchanged from the east to northeast flow directions reported in most previous quarters. However, the ground water level measured in MW12 at the former Shell service station was between 1.88 and 3.29 feet below the levels in the other eleven Shell wells, resulting in a southeasterly flow direction at a gradient of approximately 0.17 between well MW12 and adjacent Shell wells. The average hydraulic gradient over the rest of the site vicinity and the Unocal site on August 12, 1992, was approximately 0.003. Ground water flow conditions during joint monitoring on November 13, 1991, were also complex, with a southeasterly flow direction at the former Shell site, and an east-northeast flow direction at the Unocal and BP sites.

ANALYTICAL RESULTS

The ground water sample from monitoring well MW1 was analyzed at Sequoia Analytical Laboratory and was accompanied by properly executed Chain of Custody documentation. The sample was 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.

The ground water sample analytical results are summarized in Table 3. Copies of the laboratory analytical results and Chain of Custody documentation are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results for 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 monitoring and sampling program, per KEI's report (KEI-P88-0205.QR3) dated February 15, 1989, and as modified in KEI's quarterly report (KEI-P88-0205.QR16) dated June 30, 1992. All four monitoring wells are monitored quarterly, well MW1 is sampled quarterly, and well MW2 is sampled annually. Wells MW3 and MW4 are no longer sampled. In addition, KEI will continue the joint monitoring program with the respective consultants for the BP and former Shell service stations.

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 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

Robert H. Kezerian, P.E.
Project Engineer

/bp

Attachments: Tables 1 through 3
Location Map
Potentiometric Surface Maps - Figures 1 & 2
Laboratory Analyses
Chain of Custody documentation

KEI-P88-0205.QR17
September 24, 1992

TABLE 1

SUMMARY OF MONITORING DATA

Well No.	Ground Water Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Sheen	Water Purged (gallons)
(Monitored and Sampled on August 12, 1992)					
MW1	325.40	11.32	0	No	9
MW2*	325.88	11.48	0	--	0
MW3*	325.89	11.64	0	--	0
MW4*	325.38	11.62	0	--	0
(Monitored on July 29, 1992)					
MW1	325.41	11.31	0	--	55
(Monitored on June 22, 1992)					
MW1	325.79	10.93	0	--	55
MW2	326.29	11.07	0	--	0
MW3	326.28	11.25	0	--	0
MW4	325.73	11.27	0	--	0

Well #	Surface Elevation** (feet)
MW1	336.72
MW2	337.36
MW3	337.53
MW4	337.00

-- Sheen determination was not performed.

* Monitored only.

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

KEI-P88-0205.QR17
September 24, 1992

TABLE 2

SUMMARY OF MONITORING DATA

(BP Service Station)

Well No.	Ground Water Elevation (feet)	Depth to Water (feet)	Top of Casing Elevation (feet)
(BP Service Station Wells Monitored by Alisto Engineering Group on August 12, 1992)			
MW1	325.12	10.05	335.17
MW2	324.96	9.62	334.58
MW3	324.95	10.18	335.13
AW4	324.97	8.45	333.42
AW5	325.06	9.73	334.79
AW6	325.30	9.61	334.91
(Former Shell Service Station Wells Monitored by Emcon on August 12, 1992)			
MW1	325.68	9.15	334.83
MW2	325.38	11.58	336.96
MW3	325.99	10.94	336.93
MW4	325.78	11.36	337.14
MW5	325.56	9.40	334.96
MW6	325.70	9.72	335.42
MW7	324.58	8.65	333.23
MW8	325.98	9.82	335.80
MW9	325.60	8.97	334.57
MW11	325.45	8.75	334.20
MW12	322.70	9.83	332.53
MW13	324.73	10.91	335.64

KEI-P88-0205.QR17
September 24, 1992

TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER ppb

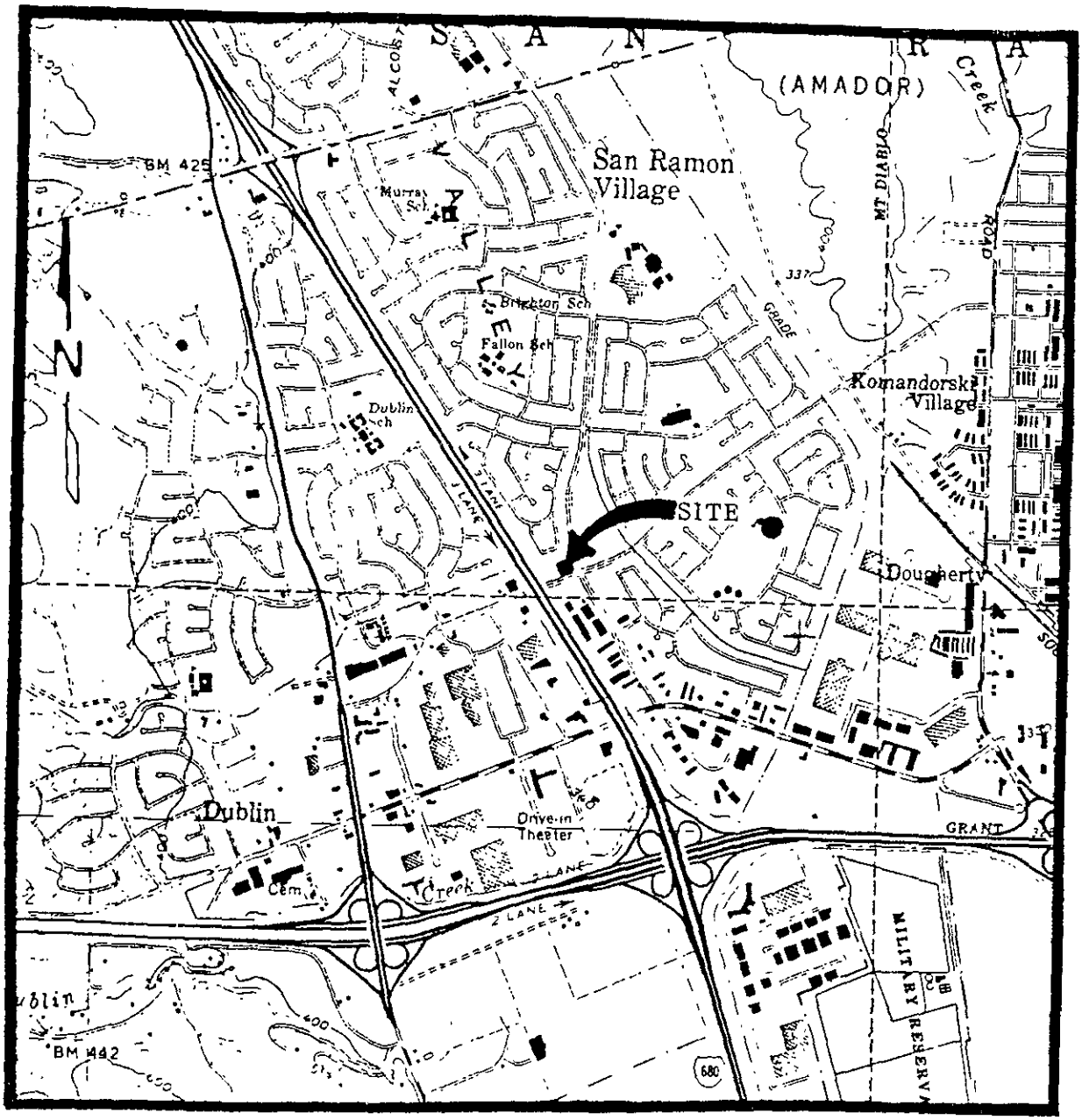
Date	Sample Well #	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
8/12/92	MW1	1,700	51	ND	21	93
5/22/92	MW1	2,500	120	ND	37	230
	MW2	ND	ND	ND	ND	ND
2/25/92	MW1	3,900	500	ND	400	450
11/13/91	MW1	860	40	ND	2.5	11
8/12/91	MW1	1,100	68	2.6	9.3	210
5/15/91	MW1	2,100	220	ND	27	360
2/14/91	MW1	1,900	150	2.9	43	340
11/14/90	MW1	2,000	110	0.52	16	410
8/15/90	MW1	2,200	160	ND	45	570
5/18/90	MW1	2,000	140	1.8	19	460
	MW2	ND	ND	ND	ND	ND
	MW3+	ND	ND	ND	ND	ND
	MW4	ND	ND	ND	ND	ND
2/06/90	MW1	2,700	170	ND	29	350
	MW2	ND	ND	ND	ND	ND
	MW3+	ND	ND	ND	ND	ND
	MW4	ND	ND	ND	ND	ND
10/20/89	MW1	ND	ND	ND	ND	ND
	MW2	ND	ND	ND	ND	ND
	MW3*	ND	ND	ND	ND	0.38
	MW4	ND	ND	ND	ND	ND
7/27/89	MW1	1,900	130	6.3	68	ND
	MW2	ND	ND	ND	ND	ND
	MW3**	ND	ND	ND	ND	ND
	MW4	ND	0.34	ND	ND	ND
5/22/89	MW3	ND	ND	ND	ND	ND

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Well #	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
4/28/89	MW1	1,000	97	0.8	24	170
	MW2	ND	ND	ND	ND	ND
	MW3***	880	9.6	9.7	12.7	19
	MW4	ND	0.3	ND	ND	ND
1/26/89	MW1	1,900	240	1.8	30	81
	MW2	ND	ND	ND	ND	ND
	MW3****	ND	ND	ND	ND	ND
	MW4	ND	0.67	ND	ND	ND
10/28/88	MW1	5,200	150	ND	12	250
	MW2	ND	ND	ND	ND	ND
	MW3****	--	ND	ND	ND	ND
	MW4	ND	ND	ND	ND	ND
7/25/88	MW1	6,100	170	2.1	94	94
	MW2	ND	ND	ND	ND	ND
	MW3****	--	ND	ND	ND	ND
	MW4	ND	ND	ND	ND	ND
4/29/88	MW1	10,000	960	17	1,500	870
	MW2	170	2.7	0.6	13	ND
	MW3	ND	ND	ND	ND	ND
	MW4	ND	ND	ND	ND	ND

\+ TPH as diesel, all EPA method 8010 constituents, and TOG were non-detectable.
* TPH as diesel and all EPA method 8010 constituents were non-detectable. TOG showed 2.5 ppm.
** TPH as diesel and all EPA method 8010 constituents were non-detectable. TOG showed 1.6 ppm.
*** TPH as diesel was 72 ppb, TOG, and all EPA method 8010 constituents were non-detectable.
**** TPH as diesel and all EPA method 8010 constituents were non-detectable.
ND = Non-detectable.
-- Indicates analysis was not performed.
Results in parts per billion (ppb), unless otherwise indicated.

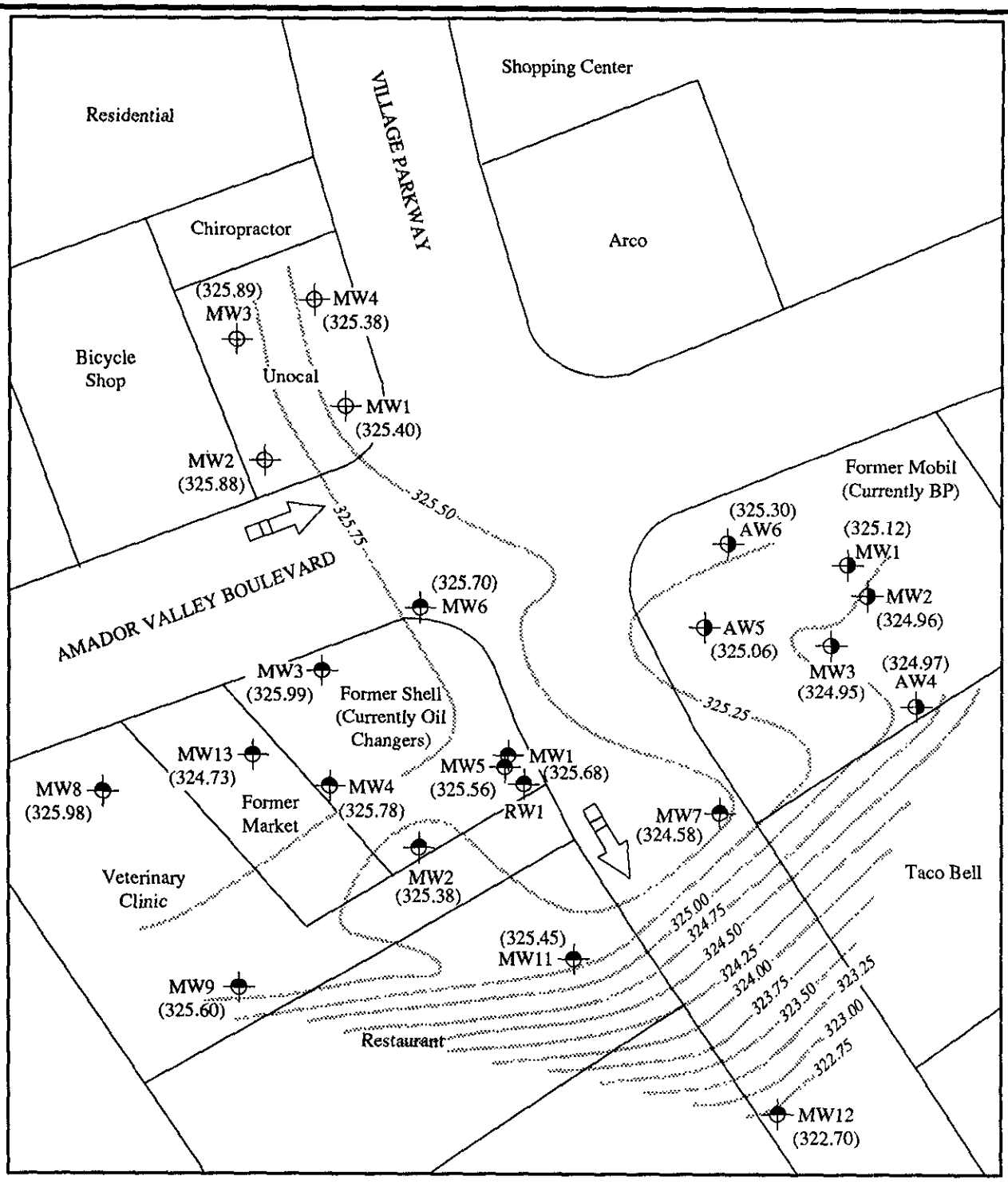


Base modified from 7.5 minute U.S.G.S. Dublin Quadrangle
(photorevised 1980)

0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED	UNOCAL SERVICE STATION #5366 7375 AMADOR VALLEY BLVD DUBLIN, CA	LOCATION MAP



LEGEND

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

0 100 200

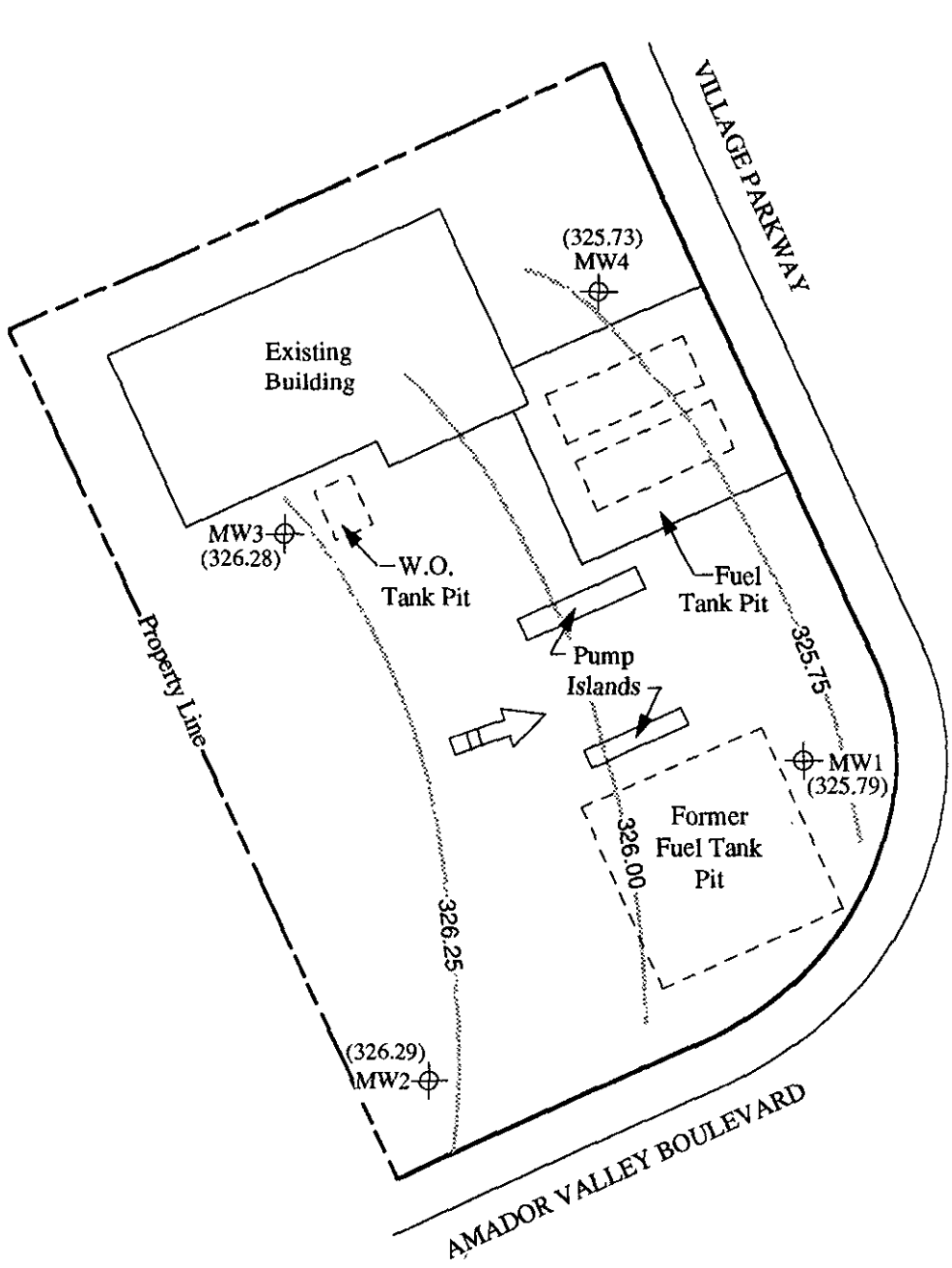
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE AUGUST 12, 1992 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #5366
7375 AMADOR VALLEY BLVD.
DUBLIN, 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

0 30 60

Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE JUNE 22, 1992 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #5366
7375 AMADOR VALLEY BLVD.
DUBLIN, CA

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, 7375 Amador Valley Blvd., Dublin	Sampled:	Aug 12, 1992
2401 Stanwell Drive, Suite 400	Sample Matrix:	Water	Received:	Aug 13, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Aug 19, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	208-0399		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 208-0399 MW-1	Sample I.D. Matrix Blank
Purgeable Hydrocarbons	50	1,700	
Benzene	0.5	51	
Toluene	0.5	N.D.	
Ethyl Benzene	0.5	93	
Total Xylenes	0.5	21	
Chromatogram Pattern:		Gasoline	

Quality Control Data

Report Limit Multiplication Factor:	10	1.0
Date Analyzed:	8/17/92	8/17/92
Instrument Identification:	HP-4	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	90	108

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(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. 7375 Amador Valley Blvd., Dublin
QC Sample Group: 208-0399
Reported: Aug 19, 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:	Aug 17, 1992	Aug 17, 1992	Aug 17, 1992	Aug 17, 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:	21	21	21	67
Matrix Spike % Recovery:	105	105	105	112
Conc. Matrix Spike Dup.:	21	21	21	67
Matrix Spike Duplicate % Recovery:	105	105	105	112
Relative % Difference:	0.0	0.0	0.0	0.0

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S. - Conc. of Sample}}{\text{Spike Conc. Added}}$	x 100
Relative % Difference:	$\frac{\text{Conc. of M.S. - Conc. of M.S.D.}}{\text{(Conc. of M.S. + Conc. of M.S.D.) / 2}}$	x 100

KAPREALIAN ENGINEERING
INCORPORATED

CHAIN OF CUSTODY

SAMPLER: Joe

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal / Dublin
7375 Amador Valley Blvd.

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	ANALYSES REQUESTED: TPHG, BTXE	REMARKS
mw-1	8/12/92	10:30 A.M.		✓	✓		2	mw	✓	2080399 AB

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Joe Aleman	8/12/92 1100	Dennis Newton
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
ed 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? ✓
2. Will samples remain refrigerated until analyzed? ✓
3. Did any samples received for analysis have head space? NO
4. Were samples in appropriate containers and properly packaged? ✓

Signature: Dennis Newton Title: Chem Date: 5/13/92

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel. 510 602.5100 Fax 510 687.0602