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KAPREALIAN ENGINEERING
INCORPORATED

August 26, 1992

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

Attention: ~~Mr. Larry~~ Seto Rob

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

Dear Mr. Seto:

Per the request of Ms. Penny Silzer of Unocal Corporation, enclosed please find our report dated August 18, 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: Penny Silzer, Unocal Corporation

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

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P89-0301.QR11
August 18, 1992

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

Attention: Ms. Penny Silzer

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

Dear Ms. Silzer:

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-P89-0301.P4) dated July 23, 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 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. Four monitoring wells and two exploratory borings have been installed 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 one-half 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 quarterly report (KEI-P89-0301.QR10) dated June 2, 1992.

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Tel: 510.602.5100 Fax: 510.687.0602

RECENT FIELD ACTIVITIES

The four wells (MW1, MW2A, MW3, and MW4) 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. The monitoring data collected this quarter are summarized in Table 1.

Water samples were collected from the wells on July 20, 1992. Prior to sampling, the wells were each purged of between 8.5 and 9.5 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 then 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 the state-certified laboratory.

HYDROLOGY

The measured depth to ground water at the site on July 20, 1992, ranged between 10.02 and 11.66 feet below grade. The water levels in all of the wells have shown net increases ranging from 0.24 to 0.31 feet since April 23, 1992. Based on the water level data gathered on July 20, 1992, 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 similar to the northwesterly flow direction reported in the previous quarters. The average hydraulic gradient across the site on July 20, 1992 was approximately 0.002.

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, benzene, toluene, xylenes, and ethylbenzene (BTX&E) by EPA method 8020, TPH as diesel by EPA method 3510/modified 8015, and EPA method 8010 constituents. In addition, the ground water sample collected from monitoring well MW2A was analyzed for TOG by Standard Methods 5520B&F.

The ground water sample analytical results 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 Chain of Custody documentation are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results collected and evaluated to date, KEI recommends the continuation of the current sampling program of the existing wells, per KEI's proposal (KEI-P89-0301.P4) dated July 23, 1991. However, since no evidence of free product or sheen has been detected in any of the wells, and since a consistent northwesterly flow direction has been established at the site, KEI recommends that the frequency of monitoring of the wells be reduced from monthly to quarterly.

As shown on the attached laboratory analysis sheets, Sequoia Analytical Laboratory reported that the analysis chromatogram patterns for the most recent ground water samples indicated that the hydrocarbons detected did not appear to be due to gasoline in wells MW3 and MW4, nor due to diesel in well MW1. The hydrocarbons detected in wells MW3 and MW4 appear on the chromatogram as discrete peaks, and the hydrocarbons detected in well MW1 appear to be due to a non-diesel mixture (<C18). Also as shown in Table 3, ground water samples collected from all four wells on July 20, 1992, have shown moderate to elevated levels of tetrachloroethene and trichloroethene. Based on the above results, KEI recommends that the ground water samples from all four wells be analyzed for EPA method 8010 constituents and TPH as diesel for one additional quarter. Recommendations regarding the continuation of these analyses will be based on the analytical results of the next quarterly samples. In addition, based on consistent non-detectable concentrations of TOG in all ground water samples collected from MW2A since March 15, 1991, KEI recommends discontinuing the TOG analysis for this well.

KEI previously recommended the installation of one additional downgradient well (MW5), as shown on the attached Site Vicinity Map. The location of this proposed well has been changed twice, due to access problems and the presence of underground utilities. As of the date of this report, KEI understands that Unocal is in the process of obtaining off-site access permission for this well. KEI will proceed with the well installation as soon as off-site access permission and the necessary permits are obtained.

DISTRIBUTION

A copy of this report should be sent to Mr. Larry Seto 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 me at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Teresa Trinh
Staff 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, 2 & 3
Location Map
Potentiometric Surface Map - Figure 1
Concentrations of Petroleum Hydrocarbons - Figure 2
Site Vicinity Map
Laboratory Analyses
Chain of Custody documentation

KEI-P89-0301.QR11
August 18, 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 July 20, 1992)					
MW1	22.04	10.71	0	No	9.5
MW2A	22.12	11.66	0	No	9.5
MW3	22.30	10.26	0	No	9
MW4	22.30	10.02	0	No	8.5
(Monitored on June 18, 1992)					
MW1	22.13	10.62	0	--	0
MW2A	22.30	11.48	0	--	0
MW3	22.51	10.05	0	--	0
MW4	22.42	9.90	0	--	0
(Monitored on May 22, 1992)					
MW1	22.24	10.51	0	--	0
MW2A	22.28	11.50	0	--	0
MW3	22.49	10.07	0	--	0
MW4	22.44	9.88	0	--	0

Well #	Surface Elevation* (feet)
MW1	32.75
MW2A	33.78
MW3	32.56
MW4	32.32

-- Sheen determination was not performed.

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

KEI-P89-0301.QR11
August 18, 1992

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
7/20/92	MW1	62+	630	100	2.8	52	6.3
	MW2A	ND	99	8.6	ND	0.95	2.4
	MW3	ND	120*	ND	ND	ND	ND
	MW4	ND	80*	ND	ND	ND	ND
4/23/92	MW1	--	530	100	7.9	60	4.6
	MW2A	ND	190	15	ND	2.0	15
	MW3	--	150**	1.6	ND	ND	ND
	MW4	--	120**	ND	ND	ND	ND
1/13/92	MW1	--	450	240	4.6	73	8.6
	MW2A	ND	160	11	2.0	5.9	10
	MW3	--	120**	ND	ND	ND	ND
	MW4	--	58**	ND	ND	ND	ND
9/10/91	MW1	--	280	38	3.1	22	4.1
	MW2A	65	180	8.7	0.93	13	15
	MW3	--	170	ND	ND	ND	ND
	MW4	--	56	ND	ND	ND	ND
6/10/91	MW1	--	310	1.5	ND	0.31	ND
	MW2A	100	54	1.2	ND	0.69	ND
	MW3	--	160	0.65	ND	ND	ND
	MW4	--	64	ND	ND	ND	ND
3/15/91	MW1	--	110	21	ND	8.4	ND
	MW2A	ND	160	2.5	ND	51	ND
	MW3	--	150	ND	ND	0.45	ND
	MW4	--	53	ND	ND	ND	ND
12/14/90	MW1	--	450	150	6.8	49	0.28
	MW3	--	150	ND	ND	ND	ND
	MW4	--	54	ND	ND	ND	ND
9/19/90	MW1	--	140	ND	ND	3.5	ND
	MW3	--	74	0.74	ND	ND	ND
	MW4	--	61	ND	ND	ND	ND
6/25/90	MW1	--	310	10	0.89	2.1	0.37
	MW3	--	190	1.5	0.68	5.3	ND
	MW4	--	66	ND	ND	ND	ND

KEI-P89-0301.QR11
August 18, 1992

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
3/29/90	MW1	--	320	12	1.6	3.5	0.31
	MW3	--	85	ND	ND	ND	ND
	MW4	--	120	0.39	ND	ND	ND
12/12/89	MW1	--	340	100	13	44	3.4
	MW2	1,700	660	220	6.6	36	13
	MW3	--	120	6.7	0.64	1.5	0.46
	MW4	--	97	4.6	ND	ND	ND
9/13/89	MW1	--	550	32	17	52	3.4
	MW2	ND	170	2.0	0.38	9.5	ND
	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 analysis chromatogram pattern for this sample indicated that the hydrocarbons detected did not appear to be diesel. The hydrocarbons detected appear to be due to a non-diesel mixture (<C18).

* Sequoia Analytical Laboratory reported that the analysis chromatogram pattern for these samples indicated that the hydrocarbons detected did not appear to be gasoline. The hydrocarbons detected appeared on the chromatogram as discrete peaks.

** The laboratory reported that the samples "do not appear to contain gasoline. LMBP is due to several unidentified peaks."

-- Indicates analysis was not performed.

ND = Non-detectable.

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

KEI-P89-0301.QR11
August 18, 1992

TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Well #	Tetra-chloro-ethene	Tri-chloro-ethene	1,2-Di-chloro-ethane	Total 1,2-dichloro-ethene	TOG (ppm)
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

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

** Reported as cis-1,2-dichloroethene. Trans-1,2-dichloroethene was non-detectable.

ND = Non-detectable.

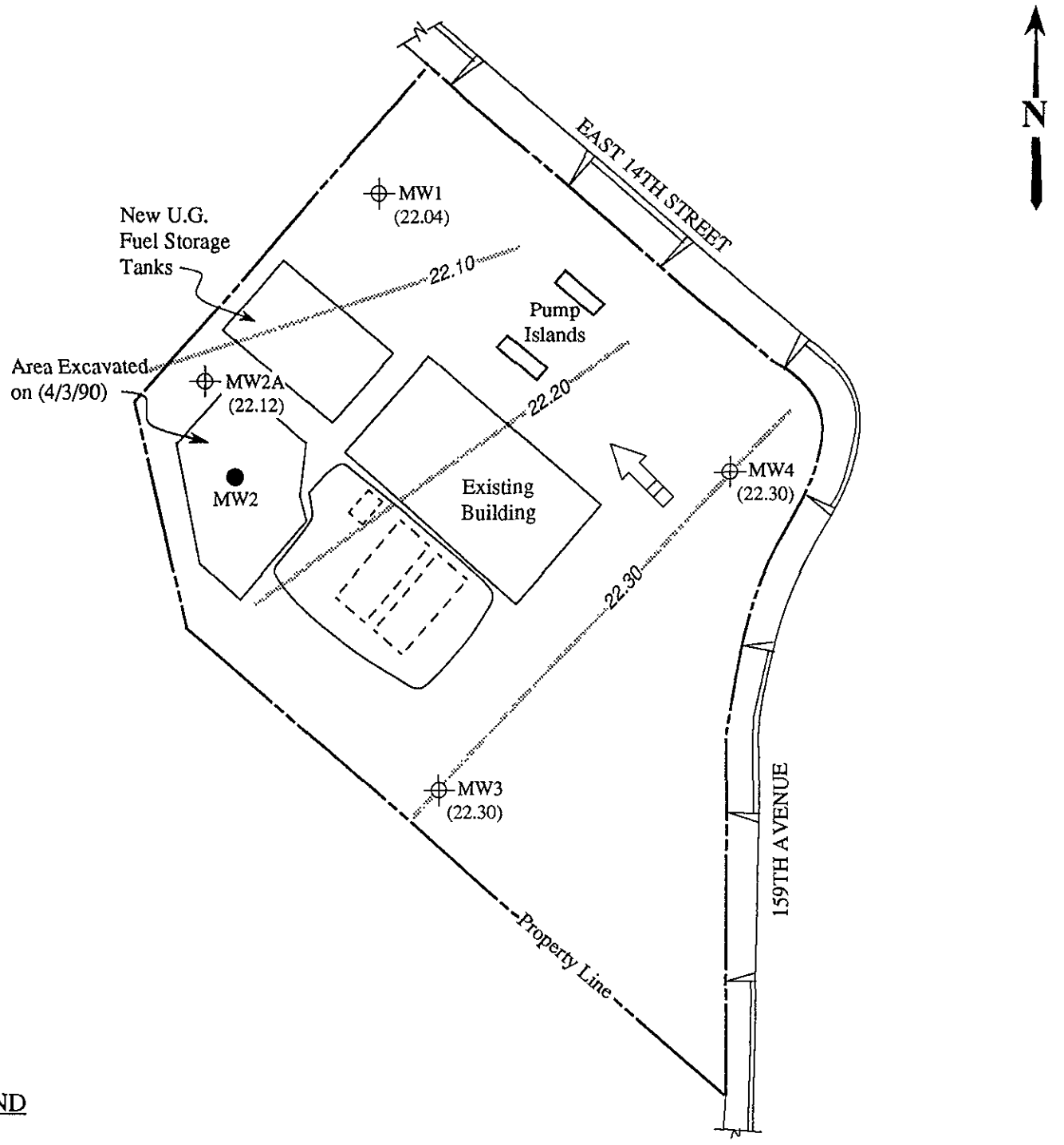
Results in parts per billion (ppb), unless otherwise indicated.

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

0 2000 4000

Approx. scale feet

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



LEGEND

- Monitoring well
- Monitoring well (destroyed 2/1/90)
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

0 40 80

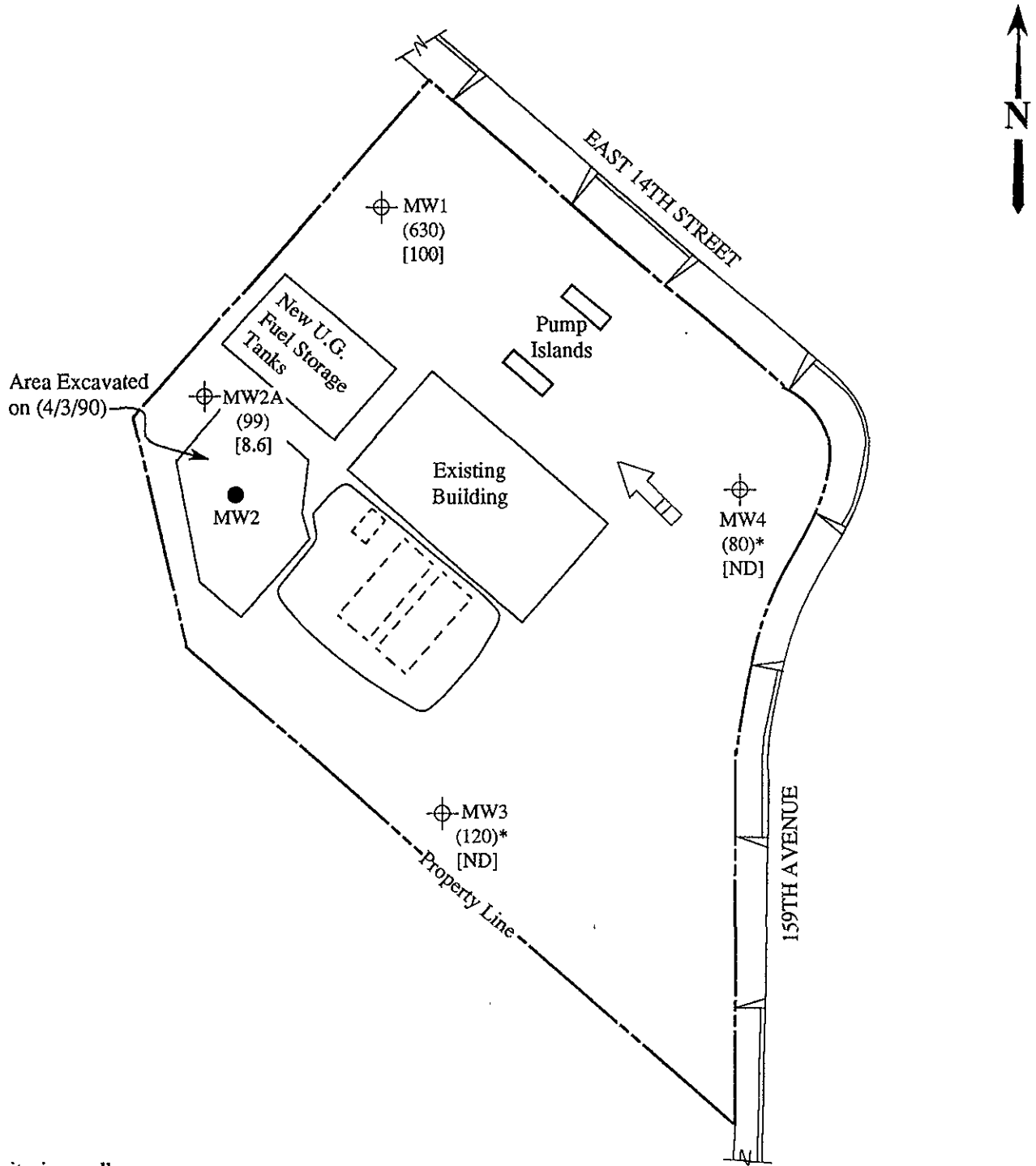
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE JULY 20, 1992 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #6277
15803 EAST 14TH STREET
SAN LEANDRO, CA

FIGURE
1



LEGEND

- Monitoring well
- Monitoring well (destroyed 2/1/90)
- ( ) Concentration of TPH as gasoline in ppb
- [ ] Concentration of benzene in ppb
- Direction of ground water flow

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

0 40 80

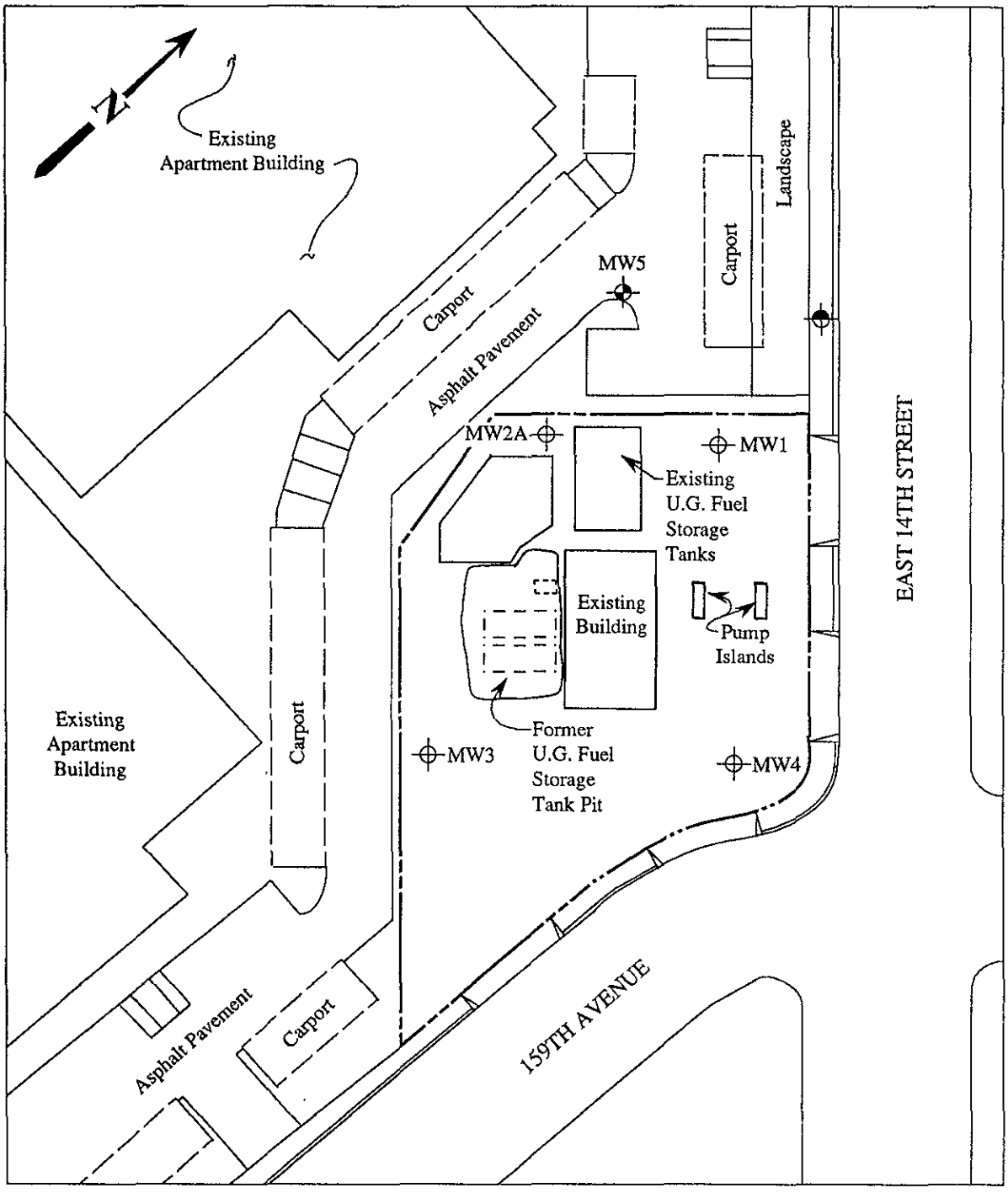
Approx. scale feet

PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON JULY 20, 1992

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #6277
15803 EAST 14TH STREET
SAN LEANDRO, CA

FIGURE
2



LEGEND

- Monitoring well
- Monitoring well (proposed)
- Monitoring well (previously attempted)

0 60 120

Approx. scale feet

KAPREALIAN ENGINEERING
INCORPORATED

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

SITE
VICINITY
MAP

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Jul 20, 1992
2401 Stanwell Drive, Suite 400	Sample Matrix:	Water	Received:	Jul 20, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Aug 3, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	207-0665		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 207-0665 MW-1	Sample I.D. 207-0666 MW-2A	Sample I.D. 207-0667 MW-3	Sample I.D. 207-0668 MW-4	Sample I.D. Matrix Blank
Purgeable Hydrocarbons	50	630	99	120	80	
Benzene	0.5	100	8.6	N.D.	N.D.	
Toluene	0.5	2.8	N.D.	N.D.	N.D.	
Ethyl Benzene	0.5	6.3	2.4	N.D.	N.D.	
Total Xylenes	0.5	52	0.95	N.D.	N.D.	
Chromatogram Pattern:		Gasoline	Gasoline	Discrete Peaks	Discrete Peaks	

Quality Control Data

Report Limit Multiplication Factor:	2.0	1.0	1.0	1.0	1.0
Date Analyzed:	7/23/92	7/23/92	7/23/92	7/23/92	7/23/92
Instrument Identification:	HP-4	HP-4	HP-4	HP-4	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	92	109	105	100	107

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

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Kapreallan Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Jul 20, 1992
2401 Stanwell Drive, Suite 400	Sample Matrix:	Water	Received:	Jul 20, 1992
Concord, CA 94520	Analysis Method:	EPA 3510/3520/8015	Reported:	Aug 3, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	207-0665		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 207-0665 MW-1	Sample I.D. 207-0666 MW-2A	Sample I.D. 207-0667 MW-3	Sample I.D. 207-0668 MW-4	Sample I.D. Matrix Blank
Extractable Hydrocarbons	50	62	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		Non-Diesel Mixture (<C18)	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0
Date Extracted:	7/26/92	7/26/92	7/26/92	7/26/92	7/26/92
Date Analyzed:	7/27/92	7/27/92	7/27/92	7/27/92	7/27/92
Instrument Identification:	HP-3	HP-3	HP-3	HP-3	HP-3

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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Kapreallan Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Jul 20, 1992
2401 Stanwell Drive, Suite 400	Matrix Descript:	Water	Received:	Jul 20, 1992
Concord, CA 94520	Analysis Method:	SM 5520 B&F (Gravimetric)	Extracted:	Jul 24, 1992
Attention: Mardo Kapreallan, P.E.	First Sample #:	207-0666	Analyzed:	Jul 28, 1992
			Reported:	Aug 3, 1992

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
207-0666	MW-2A	N.D.

Detection Limits:	5.0

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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Kapreallan Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Jul 20, 1992
2401 Stanwell Drive, Suite 400	Sample Descript:	Water, MW-1	Received:	Jul 20, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8010	Analyzed:	Jul 29, 1992
Attention: Mardo Kapreallan, P.E.	Lab Number:	207-0665	Reported:	Aug 3, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	5.0	N.D.
Bromoform	5.0	N.D.
Bromomethane	5.0	N.D.
Carbon tetrachloride	5.0	N.D.
Chlorobenzene	5.0	N.D.
Chloroethane	5.0	N.D.
2-Chloroethylvinyl ether	5.0	N.D.
Chloroform	5.0	N.D.
Chloromethane	5.0	N.D.
Dibromochloromethane	5.0	N.D.
1,3-Dichlorobenzene	5.0	N.D.
1,4-Dichlorobenzene	5.0	N.D.
1,2-Dichlorobenzene	5.0	N.D.
1,1-Dichloroethane	5.0	N.D.
1,2-Dichloroethane	5.0	N.D.
1,1-Dichloroethene	5.0	N.D.
cis-1,2-Dichloroethene	5.0	N.D.
trans-1,2-Dichloroethene	5.0	N.D.
1,2-Dichloropropane	5.0	N.D.
cis-1,3-Dichloropropene	5.0	N.D.
trans-1,3-Dichloropropene	5.0	N.D.
Methylene chloride	50	N.D.
1,1,2,2-Tetrachloroethane	5.0	N.D.
Tetrachloroethene	**5.0**	**200**
1,1,1-Trichloroethane	5.0	N.D.
1,1,2-Trichloroethane	5.0	N.D.
Trichloroethene	**5.0**	**7.4**
Trichlorofluoromethane	5.0	N.D.
Vinyl chloride	5.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

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(510) 686-9600 • FAX (510) 686-9689

Kapreallan Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Jul 20, 1992
2401 Stanwell Drive, Suite 400	Sample Descript:	Water, MW-2A	Received:	Jul 20, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8010	Analyzed:	Jul 24, 1992
Attention: Mardo Kapreallan, P.E.	Lab Number:	207-0666	Reported:	Aug 3, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	0.50	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	0.50	N.D.
2-Chloroethylvinyl ether	0.50	N.D.
Chloroform	0.50	N.D.
Chloromethane	0.50	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	4.8
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	35
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	7.2
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	0.50	N.D.

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

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.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Jul 20, 1992
2401 Stanwell Drive, Suite 400	Sample Descript:	Water, MW-3	Received:	Jul 20, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8010	Analyzed:	Jul 29, 1992
Attention: Mardo Kaprealian, P.E.	Lab Number:	207-0667	Reported:	Aug 3, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	10	N.D.
Bromoform	10	N.D.
Bromomethane	10	N.D.
Carbon tetrachloride	10	N.D.
Chlorobenzene	10	N.D.
Chloroethane	10	N.D.
2-Chloroethylvinyl ether	10	N.D.
Chloroform	10	N.D.
Chloromethane	10	N.D.
Dibromochloromethane	10	N.D.
1,3-Dichlorobenzene	10	N.D.
1,4-Dichlorobenzene	10	N.D.
1,2-Dichlorobenzene	10	N.D.
1,1-Dichloroethane	10	N.D.
1,2-Dichloroethane	10	N.D.
1,1-Dichloroethene	10	N.D.
cis-1,2-Dichloroethene	10	N.D.
trans-1,2-Dichloroethene	10	N.D.
1,2-Dichloropropane	10	N.D.
cis-1,3-Dichloropropene	10	N.D.
trans-1,3-Dichloropropene	10	N.D.
Methylene chloride	100	N.D.
1,1,2,2-Tetrachloroethane	10	N.D.
Tetrachloroethene	10	1,400
1,1,1-Trichloroethane	10	N.D.
1,1,2-Trichloroethane	10	N.D.
Trichloroethene	10	25
Trichlorofluoromethane	10	N.D.
Vinyl chloride	10	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

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Kapreallan Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Jul 20, 1992
2401 Stanwell Drive, Suite 400	Sample Descript:	Water, MW-4	Received:	Jul 20, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8010	Analyzed:	Jul 29, 1992
Attention: Mardo Kapreallan, P.E.	Lab Number:	207-0668	Reported:	Aug 3, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	10	N.D.
Bromoform	10	N.D.
Bromomethane	10	N.D.
Carbon tetrachloride	10	N.D.
Chlorobenzene	10	N.D.
Chloroethane	10	N.D.
2-Chloroethylvinyl ether	10	N.D.
Chloroform	10	N.D.
Chloromethane	10	N.D.
Dibromochloromethane	10	N.D.
1,3-Dichlorobenzene	10	N.D.
1,4-Dichlorobenzene	10	N.D.
1,2-Dichlorobenzene	10	N.D.
1,1-Dichloroethane	10	N.D.
1,2-Dichloroethane	10	N.D.
1,1-Dichloroethene	10	N.D.
cis-1,2-Dichloroethene	10	N.D.
trans-1,2-Dichloroethene	10	N.D.
1,2-Dichloropropane	10	N.D.
cis-1,3-Dichloropropene	10	N.D.
trans-1,3-Dichloropropene	10	N.D.
Methylene chloride	100	N.D.
1,1,2,2-Tetrachloroethane	10	N.D.
Tetrachloroethene	**10**	**440**
1,1,1-Trichloroethane	10	N.D.
1,1,2-Trichloroethane	10	N.D.
Trichloroethene	**10**	**11**
Trichlorofluoromethane	10	N.D.
Vinyl chloride	10	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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

Client Project ID: Unocal, 15803 E. 14th St., San Leandro
QC Sample Group: 2070665-668
Reported: Aug 3, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel	Oil and Grease
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA8015	SM5520
Analyst:	A.P.	A.P.	A.P.	A.P.	K.Wimer	D. Newcomb
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
Date Analyzed:	Jul 23, 1992	Jul 23, 1992	Jul 23, 1992	Jul 23, 1992	Jul 27, 1992	Jul 24, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	20	20	20	60	300	100
Conc. Matrix Spike:	20	20	20	64	248	93
Matrix Spike % Recovery:	100	100	100	107	83	93
Conc. Matrix Spike Dup.:	20	20	20	65	253	91
Matrix Spike Duplicate % Recovery:	100	100	100	108	84	91
Relative % Difference:	0.0	0.0	0.0	1.6	2.0	2.0

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL

Scott A. Chiello
Project Manager

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

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

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Concord, CA 94520
Attention: Mardo Kapreallan, P.E.

Client Project ID: Unocal, 15803 E. 14th St., San Leandro
QC Sample Group: 2070665-668
Reported: Aug 3, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloro-ethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	K. Nill	K. Nill	K. Nill
Reporting Units:	µg/L	µg/L	µg/L
Date Analyzed:	Jul 24, 1992	Jul 24, 1992	Jul 24, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10
Conc. Matrix Spike:	8.0	10	11
Matrix Spike % Recovery:	80	100	110
Conc. Matrix Spike Dup.:	7.1	8.8	9.9
Matrix Spike Duplicate % Recovery:	71	88	99
Relative % Difference:	12	13	11

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.
Laboratory Blank contained the following analytes: None detected.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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

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

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Client Project ID: Unocal, 15803 E. 14th St., San Leandro
QC Sample Group: 2070665-668
Reported: Aug 3, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA8015	EPA8015	EPA8015	EPA8015	EPA8015
Analyst:	K.Wimer	K.Wimer	K.Wimer	K.Wimer	K.Wimer
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Jul 27, 1992	Jul 27, 1992	Jul 27, 1992	Jul 27, 1992	Jul 27, 1992
Sample #:	207-0665	207-0666	207-0667	207-0668	Matrix Blank
Surrogate % Recovery:	94	100	93	97	98

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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

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

2070665.KEI <10>

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Kaprealian Engineering, Inc.
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Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 15803 E. 14th St., San Leandro
QC Sample Group: 2070665-668
Reported: Aug 3, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8010	EPA 8010	EPA 8010	EPA 8010	EPA 8010
Analyst:	K. Nill	K. Nill	K. Nill	K. Nill	K. Nill
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Jul 24, 1992	Jul 24, 1992	Jul 24, 1992	Jul 24, 1992	Jul 24, 1992
Sample #:	207-0665	207-0666	207-0667	207-0668	Matrix Blank
Surrogate #1 % Recovery:	91	114	102	112	109
Surrogate #2 % Recovery:	61	99	52	131	123

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

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER	SITE NAME & ADDRESS	ANALYSES REQUESTED	TURN AROUND TIME:
Vartkes	Unocal / San Leandro 15803 E. 14th str.		Regular
WITNESSING AGENCY			

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG & BTXE	TPHD	TOG (5520 B+F)	8010				REMARKS
MW-1	7/20/92	1:15 p.m.		✓	✓		5	Monitoring Well	✓	✓		✓				2070665AE
MW-2A	"			✓	✓		6	" "	✓	✓	✓	✓				666AF
MW-3	"			✓	✓		5	" "	✓	✓		✓				667AE
MW-4	"	3:20 p.m.		✓	✓		6	" "	✓	✓	(scribbled out)	✓				668AF

O & G on MW-4 cancelled - as per Nubar (7-24-92)

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
V. Tachdjian	7/20/92 4:15	[signature]
Jim [signature]	7/21/92 1:35 pm	[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? NO

Signature	Title	Date
[signature]	OM	7-20