



KAPREALIAN ENGINEERING
INCORPORATED

revised

November 3, 1992

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

Attention: Ms. Cynthia Chapman

RE: Unocal Service Station #3135
845 - 66th Avenue
Oakland, California

621

11/13/92

Dear Ms. Chapman:

Per the request of Mr. Keith Bullock of Unocal Corporation, enclosed please find our report September 2, 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: Keith Bullock, Unocal Corporation



KAPREALIAN ENGINEERING
INCORPORATED

REVISED

KEI-P88-1203.QR7
September 2, 1992

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

3693

Attention: Mr. Keith Bullock

RE: Quarterly Report
Unocal Service Station #3135
845 - 66th Avenue
Oakland, California

Dear Mr. Bullock:

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-P88-1203.P4) dated April 22, 1991. 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 1992.

BACKGROUND

The subject site contains a Unocal service station facility. Two underground fuel storage tanks, one waste oil tank, and the product piping were removed from the site in November and December of 1989, during tank replacement activities. During March and April of 1991, approximately 2,000 cubic yards of contaminated soil were excavated from the area in the vicinity of the former (pre-1967) fuel tank pit. The soil excavation was conducted to a depth of approximately 1 foot below ground water (11 feet below grade). Six monitoring wells, two exploratory borings, and a Hydropunch study (seven probe locations) have been installed/performed 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 quarterly report (KEI-P88-1203.QR6) dated June 15, 1992.

RECENT FIELD ACTIVITIES

The monitoring 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 monitoring well MW2, where a sheen was observed on the August 3, 1992 sampling event. The monitoring data collected this quarter are summarized in Table 1.

Water samples were collected from the wells on August 3, 1992. Prior to sampling, the wells were each purged of between 8.5 and 11 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 August 3, 1992, ranged between 8.19 and 10.95 feet below grade. The water levels in all of the wells have shown net decreases ranging from 1.83 to 2.53 feet since May 5, 1992. Based on the water level data gathered on August 3, 1992, the ground water flow direction appeared to be to the north-northeast, as shown on the attached Potentiometric Surface Map, Figure 1. The flow direction reported this quarter is slightly changed from the northeasterly flow direction reported in the previous quarter. The average hydraulic gradient across the site on August 3, 1992, was approximately 0.005.

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, TPH as diesel by EPA method 3510/modified 8015, and benzene, toluene, xylenes, and ethylbenzene (BTX&E) by EPA method 8020. In addition, the ground water sample collected from monitoring wells MW2 and MW6 were analyzed for TOG by Standard Methods 5520B&F.

The ground water sample analytical results 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 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 for the ground water samples collected and evaluated to date, and no evidence of free product in any of the wells, KEI recommends the continuation of the current monitoring and sampling program, per KEI's proposal (KEI-P88-2304.P4) dated April 22, 1991.

In addition, as previously recommended, (KEI work plan/proposal KEI-P88-1203.P4 dated April 22, 1991) KEI has obtained a City of Oakland encroachment permit and the other necessary permits for the installation of three off-site and one on-site monitoring wells. These wells are scheduled to be installed in late September 1992.

DISTRIBUTION

A copy of this report should be sent to Ms. Cynthia Chapman of the 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.

KEI-P88-1203.QR7
September 2, 1992
Page 4

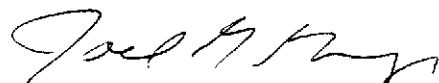
If you have any questions regarding this report, please do not hesitate to call me at (510) 602-5100.

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



Timothy R. Ross
Project Manager

/bp

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

KEI-P88-1203.QR7
September 2, 1992

TABLE 1

SUMMARY OF MONITORING DATA

<u>Well No.</u>	<u>Ground Water Elevation (feet)</u>	<u>Depth to Water (feet)</u>	<u>Product Thickness (feet)</u>	<u>Sheen</u>	<u>Water Purged (gallons)</u>
(Monitored and Sampled on August 3, 1992)					
MW1	-5.55	10.73	0	No	8.5
MW2	-5.49	9.32	0	Yes	9.5
MW3	-4.89	8.19	0	No	9.5
MW4	-5.68	10.95	0	No	10
MW5	-5.63	10.24	0	No	11
MW6	-5.59	9.90	0	No	11

(Monitored on July 2, 1992)

MW1	-5.16	10.34	0	--	0
MW2	-5.07	8.90	0	--	0
MW3	-3.88	7.18	0	--	0
MW4	-5.31	10.58	0	--	0
MW5	-5.23	9.84	0	--	0
MW6	-5.21	9.52	0	--	0

(Monitored on June 3, 1992)

MW1	-3.77	8.95	0	--	0
MW2	-3.72	7.55	0	--	0
MW3	-2.42	5.72	0	--	0
MW4	-3.98	9.25	0	--	0
MW5	-3.80	8.41	0	--	0
MW6	-3.77	8.08	0	--	0

<u>Well #</u>	<u>Surface Elevation* (feet)</u>
MW1	5.18
MW2	3.83
MW3	3.30
MW4	5.27
MW5	4.61
MW6	4.31

-- Sheen determination was not performed.

* The elevations of the tops of the well covers have been surveyed relative to Mean Sea Level (MSL), per the city of Oakland Benchmark No. 3881 at the elevation of 4.72 MSL.

KEI-P88-1203.QR7
September 2, 1992

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

<u>Sample Number</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl-benzene</u>	<u>TOG</u>
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(Collected on August 3, 1992)

MW1	220♦	980	22	0.69	82	77	--
MW2	3,300♦♦	37,000	4,500	480	9,700	3,300	ND
MW3	58	ND	ND	ND	ND	ND	--
MW4	2,400♦	24,000	61	ND	5,400	2,100	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	170♦	1,100	180	1.1	78	62	ND

(Collected on May 5, 1992)

MW1	120	310	5.7	ND	15	7.1	--
MW2	4,600	26,000	2,300	110	6,900	2,700	ND
MW3	56	ND	ND	ND	1.8	0.43	--
MW4	3,200	15,000	82	12	5,600	2,000	--
MW5	72	ND	ND	ND	1.4	0.42	--
MW6	47	ND	ND	ND	1.3	ND	ND

(Collected on February 7, 1992)

MW1	ND	220	2.1	ND	16	10	--
MW2	2,300	11,000	1,400	30	1,400	1,900	ND
MW3	ND	ND	ND	ND	ND	ND	--
MW4	2,300	8,100	24	4.9	3,200	1,800	--
MW5	ND	ND	ND	ND	0.94	0.36	--
MW6	ND	180	22	0.68	20	22	ND

(Collected on November 5, 1991)

MW1	260	4,900	80	ND	160	150	--
MW2	3,900	110,000	4,200	200	8,600	3,400	78
MW3	ND	31	ND	ND	0.65	ND	--
MW4	7,700	140,000	320	ND	13,000	4,800	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	300	7,100	200	ND	580	190	ND

KEI-P88-1203.QR7
September 2, 1992

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

<u>Sample Number</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl-benzene</u>	<u>TOG</u>
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(Collected on August 5, 1991)

MW1	200	1,200	95	6.2	80	230	--
MW2	4,200	33,000	2,900	190	7,900	3,400	ND
MW3	63	ND	ND	ND	ND	ND	--
MW4	6,200	37,000	310	70	9,700	3,600	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	130	860	130	11	150	92	ND

(Collected on February 21, 1991)

MW1	690	26,000	280	39	1,900	1,200	--
MW2	7,000	3,400	160	61	490	200	ND
MW3	--	ND	ND	ND	0.64	ND	--
MW4	4,100	33,000	210	21	12,000	3,800	--
MW5	--	56	ND	ND	4.7	ND	--
MW6	160	750	77	14	140	23	ND
MWD	--	740	74	12	140	33	--

(MW6 duplicate)

(Collected on November 26, 1990)

MW1	--	2,900	160	2.3	320	330	--
MW2	3,800	15,000	1,600	450	2,100	1,100	ND
MW3	--	ND	ND	ND	ND	ND	--
MW4	--	49,000	360	36	11,000	3,800	--
MW5	--	ND	ND	ND	ND	ND	--
MW6	320	4,800	1,000	200	650	340	ND
MW7	--	4,000	800	120	440	250	--

(MW6 duplicate)

(Collected on August 28, 1990)

MW1	--	1,700	140	1.4	150	180	--
MW2	3,100	27,000	2,600	1,300	3,000	1,900	ND
MW3	--	ND	ND	ND	0.70	ND	--
MW4	--	62,000	810	72	4,600	4,400	--
MW5	--	ND	ND	ND	1.2	ND	--
MW6	1,000	12,000	1,700	1,400	2,100	230	16
MW7	--	2,600	180	3.0	270	810	--

(MW1 duplicate)

KEI-P88-1203.QR7
September 2, 1992

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

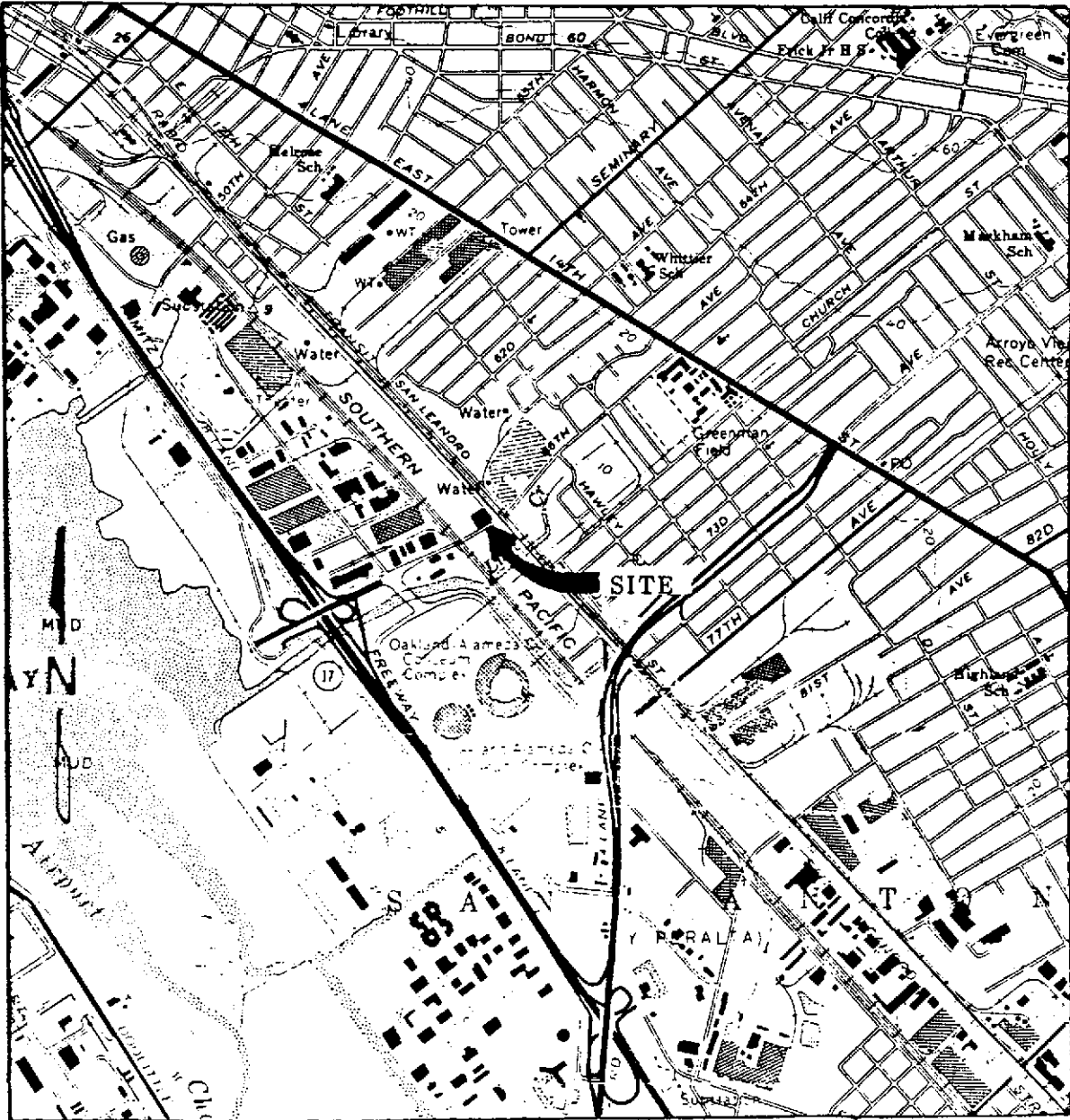
<u>Sample</u> <u>Number</u>	<u>TPH as</u> <u>Diesel</u>	<u>TPH as</u> <u>Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl-</u> <u>benzene</u>	<u>TOG</u>
(Collected on May 11, 1990)							
MW1	--	22,000	590	42	3,600	1,200	--
MW2	--	65,000	3,300	3,300	12,000	4,100	--
MW3	--	ND	ND	ND	ND	ND	--

- ◆ Sequoia Analytical Laboratory reported that the analysis chromatogram pattern for this sample indicated that the hydrocarbons detected appeared to be a non-diesel mixture (<C16).
- ◆◆ Sequoia Analytical Laboratory reported that the analysis chromatogram pattern for this sample indicated that the hydrocarbons detected appeared to be diesel and non-diesel mixture (<C16).

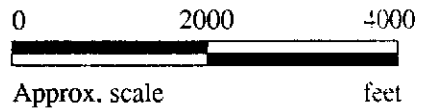
ND = Non-detectable.


-- Indicates analysis was not performed.

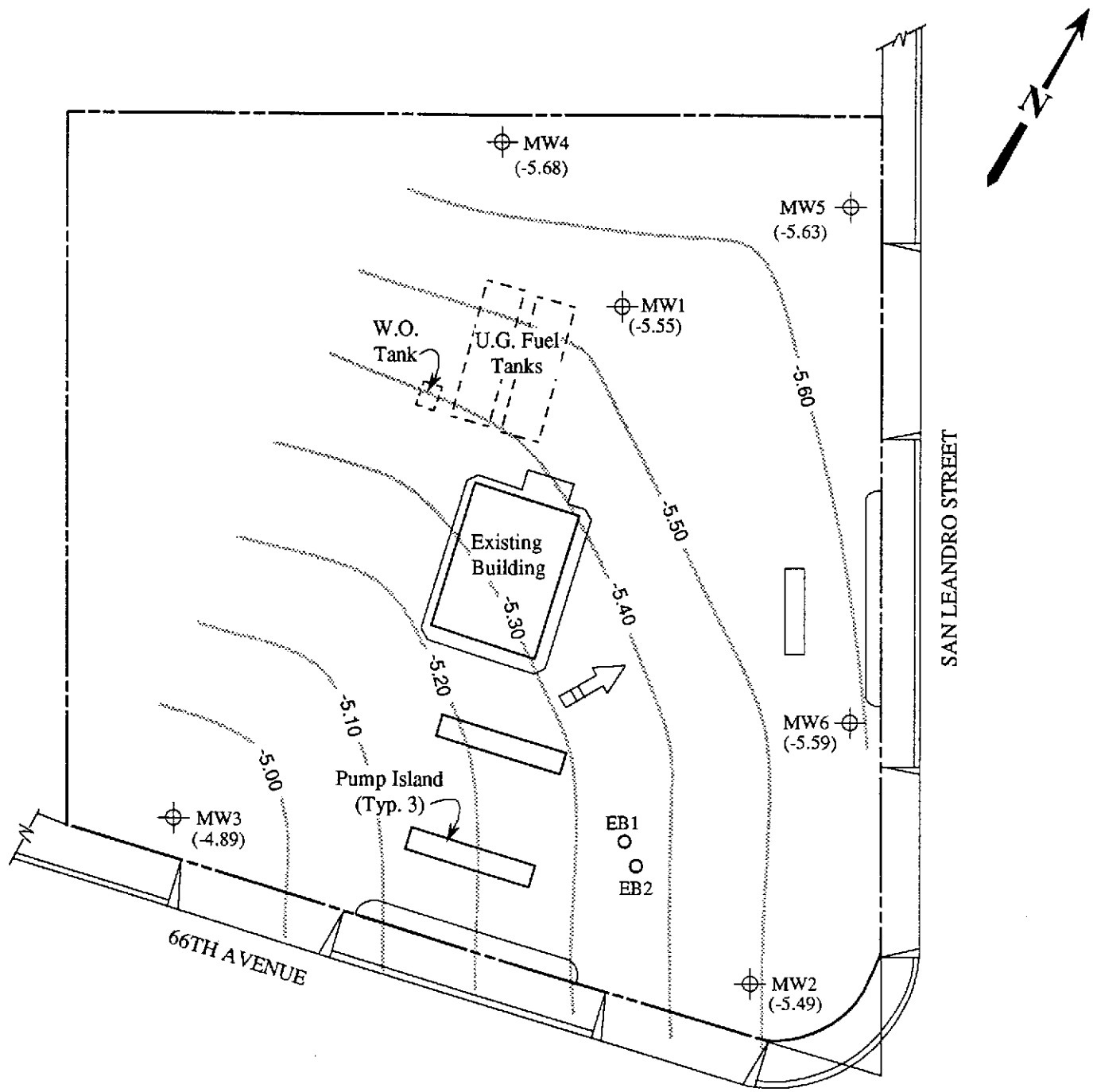
Results in parts per billion (ppb), unless otherwise indicated.



Base modified from 7.5 minute U.S.G.S. Oakland East and San Leandro Quadrangles
 (both photorevised 1980)

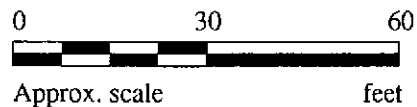


 <p>KAPREALIAN ENGINEERING INCORPORATED</p>	<p>UNOCAL SERVICE STATION #3135 845 - 66TH AVENUE OAKLAND, CA</p>	<p>LOCATION MAP</p>
--	--	---------------------------------------



LEGEND

- ⊕ Monitoring well
- Exploratory boring
- ➡ Direction of ground water flow
- () Ground water elevation in feet relative to Mean Sea Level
- Contours of ground water elevation

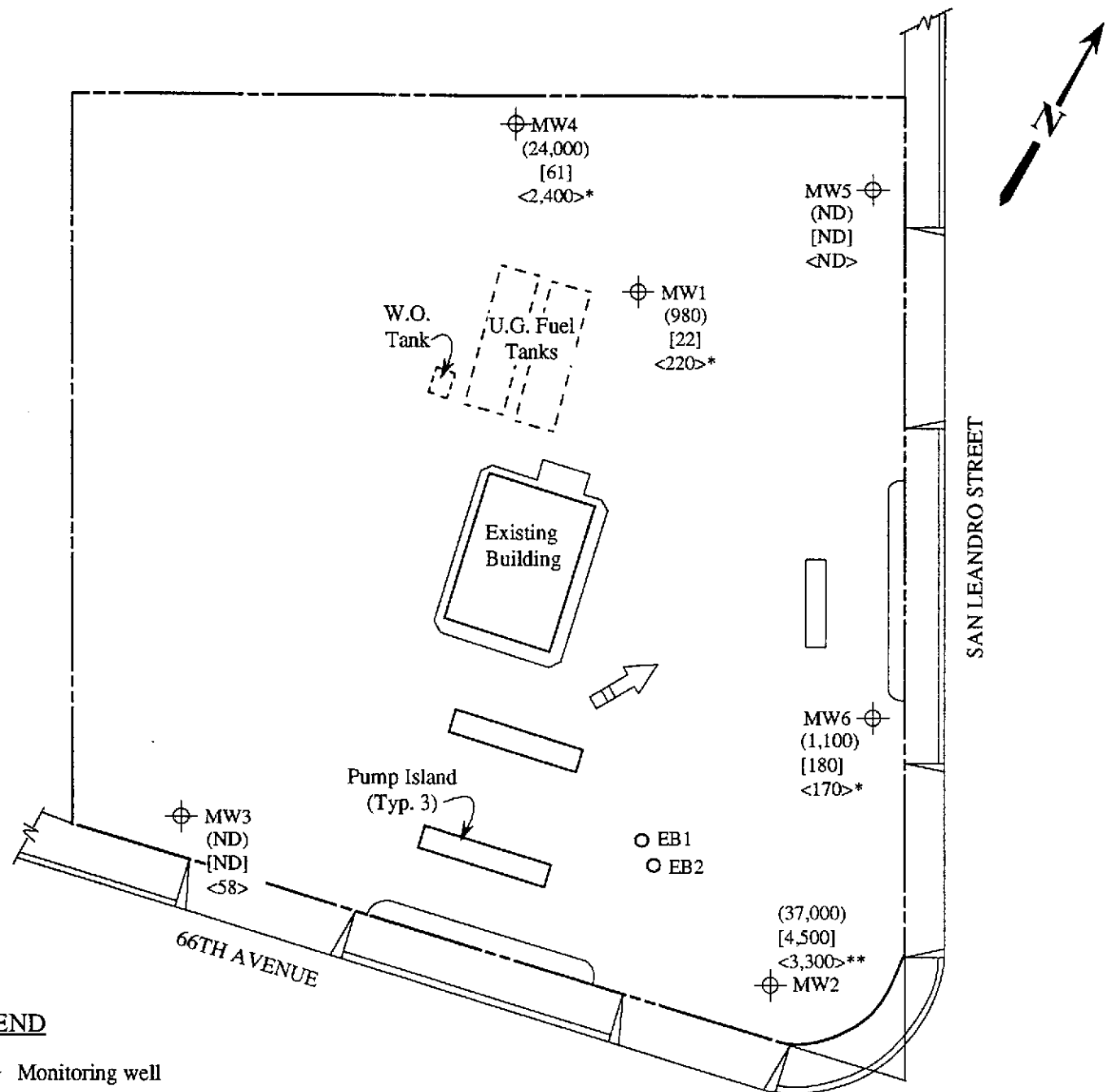


POTENTIOMETRIC SURFACE MAP FOR THE AUGUST 3, 1992 MONITORING EVENT



UNOCAL SERVICE STATION #3135
845 - 66TH AVENUE
OAKLAND, CA

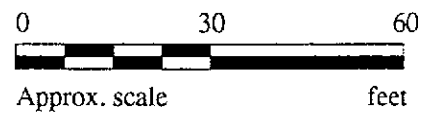
FIGURE
1



LEGEND

- ⊕ Monitoring well
- Exploratory boring
- () Concentration of TPH as gasoline in ppb
- [] Concentration of benzene in ppb
- < > Concentration of TPH as diesel in ppb
- ND= Non-detectable

➡ Direction of ground water flow



* The lab reported that the hydrocarbons detected appeared to be a non-diesel mixture.

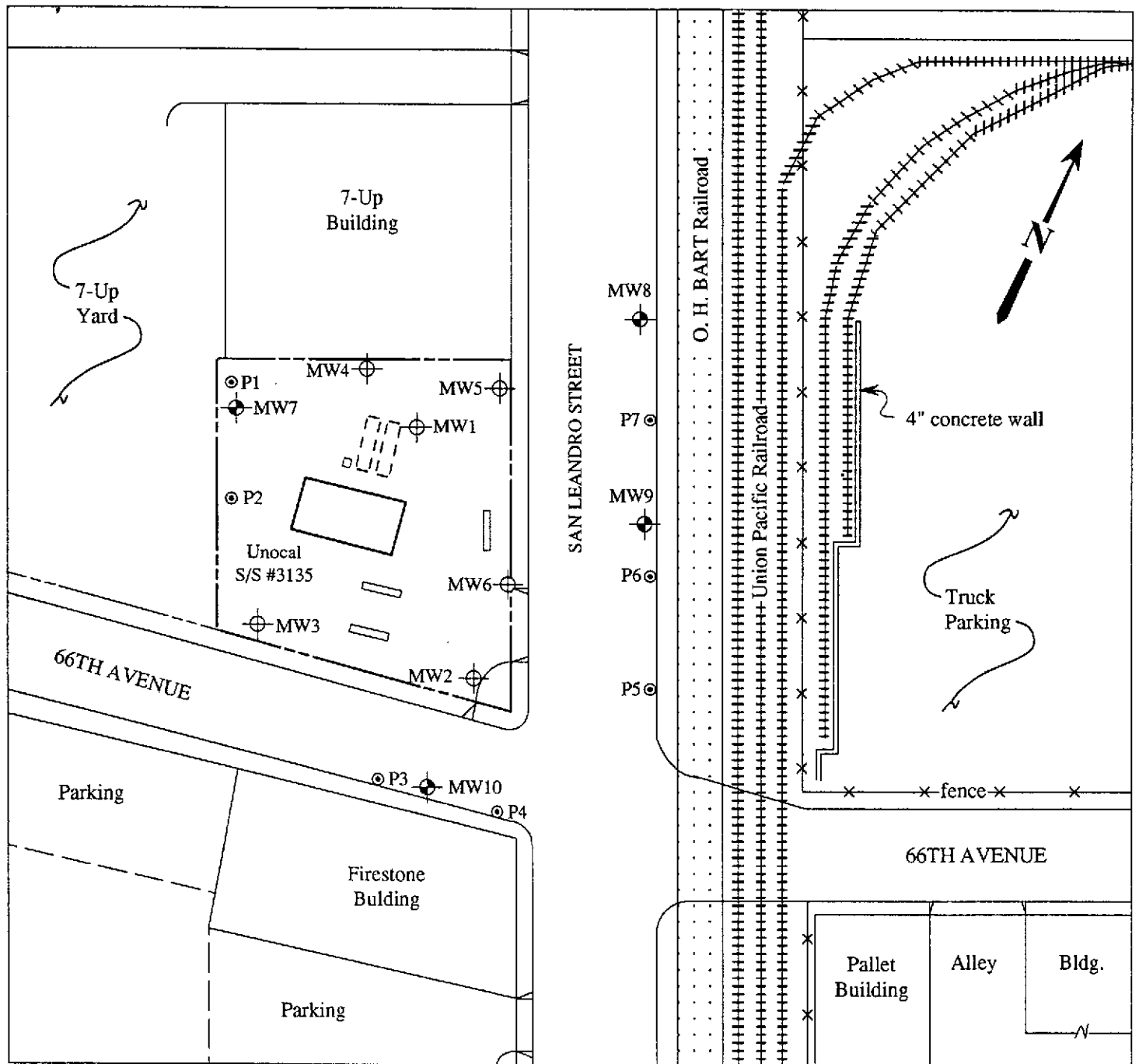
** The lab reported that the hydrocarbons detected appeared to be a diesel and non-diesel mixture.

PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON AUGUST 3, 1992



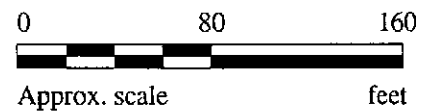
**UNOCAL SERVICE STATION #3135
845 - 66TH AVENUE
OAKLAND, CA**

**FIGURE
2**



LEGEND

- ⊕ Monitoring well (existing)
- ⊙ Monitoring well (proposed)
- ⊙ Ground water sample point location



PROPOSED MONITORING WELLS LOCATION MAP



**UNOCAL SERVICE STATION #3135
 845 - 66TH AVENUE
 OAKLAND, CA**

**FIGURE
 3**



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, 845 66th Ave., Oakland Sample Matrix: Water Analysis Method: EPA 5030/8015/8020 First Sample #: 208-0060	Sampled: Aug 3, 1992 Received: Aug 3, 1992 Reported: Aug 14, 1992
--	--	---

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

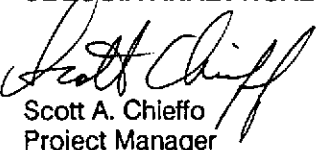
Analyte	Reporting Limit µg/L	Sample I.D. 208-0060 MW1	Sample I.D. 208-0061 MW2	Sample I.D. 208-0062 MW3	Sample I.D. 208-0063 MW4	Sample I.D. 208-0064 MW5	Sample I.D. 208-0065 MW6
Purgeable Hydrocarbons	50	980	37,000	N.D.	24,000	N.D.	1,100
Benzene	0.5	22	4,500	N.D.	61	N.D.	180
Toluene	0.5	0.69	480	N.D.	N.D.	N.D.	1.1
Ethyl Benzene	0.5	77	3,300	N.D.	2,100	N.D.	62
Total Xylenes	0.5	82	9,700	N.D.	5,400	N.D.	78
Chromatogram Pattern:		Gasoline	Gasoline	--	Gasoline	--	Gasoline

Quality Control Data

Report Limit Multiplication Factor:	1.0	50	1.0	40	1.0	1.0
Date Analyzed:	8/5/92	8/6/92	8/6/92	8/6/92	8/10/92	8/5/92
Instrument Identification:	HP-2	HP-2	HP-2	HP-2	HP-5	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	107	119	100	112	109	99

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, 845 66th Ave., Oakland Sample Matrix: Water Analysis Method: EPA 5030/8015/8020 First Sample #: Matrix Blank	Sampled: Aug 3, 1992 Received: Aug 3, 1992 Reported: Aug 14, 1992
--	--	---

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit $\mu\text{g/L}$	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:	8/5/92
Instrument Identification:	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	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

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, 845 66th Ave., Oakland Sample Matrix: Water Analysis Method: EPA 3510/3520/8015 First Sample #: 208-0060	Sampled: Aug 3, 1992 Received: Aug 3, 1992 Reported: Aug 14, 1992
--	--	---

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 208-0060 MW1	Sample I.D. 208-0061 MW2	Sample I.D. 208-0062 MW3	Sample I.D. 208-0063 MW4	Sample I.D. 208-0064 MW5	Sample I.D. 208-0065 MW6
Extractable Hydrocarbons	50	220	3300	58	2400	N.D.	170
Chromatogram Pattern:		Non-Diesel Mixture (<C16)	Diesel and Non-Diesel Mixture (<C16)	Diesel	Non-Diesel Mixture (<C16)	--	Non-Diesel Mixture (<C16)

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	1.0
Date Extracted:	8/8/92	8/8/92	8/8/92	8/8/92	8/8/92	8/8/92
Date Analyzed:	8/13/92	8/13/92	8/13/92	8/13/92	8/13/92	8/13/92
Instrument Identification:	HP-3A	HP-3A	HP-3A	HP-3A	HP-3A	HP-3A

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
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, 845 66th Ave., Oakland Sample Matrix: Water Analysis Method: EPA 3510/3520/8015 First Sample #: Matrix Blank	Sampled: Aug 3, 1992 Received: Aug 3, 1992 Reported: Aug 14, 1992
--	--	---

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. Matrix Blank
Extractable Hydrocarbons	50	

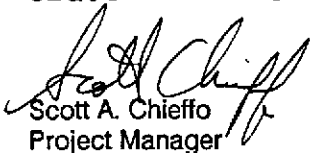
Chromatogram Pattern:

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Extracted:	8/8/92
Date Analyzed:	8/12/92
Instrument Identification:	HP-3A

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



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, 845 66th Ave., Oakland Matrix Descript: Water Analysis Method: SM 5520 B&F (Gravimetric) First Sample #: 208-0061	Sampled: Aug 3, 1992 Received: Aug 3, 1992 Extracted: Aug 6, 1992 Analyzed: Aug 11, 1992 Reported: Aug 14, 1992
--	---	---

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
208-0061	MW-2	N.D.
208-0065	MW-6	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

2080060.KEI <5>



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

Client Project ID: Unocal, 845 66th Ave., Oakland

Attention: Mardo Kaprealian, P.E. QC Sample Group: 2080060-65

Reported: Aug 14, 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:	Aug 5, 1992	Aug 5, 1992	Aug 5, 1992	Aug 5, 1992	Aug 12, 1992	Aug 11, 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	21	22	67	304	94
Matrix Spike % Recovery:	100	105	110	112	101	94
Conc. Matrix Spike Dup.:	20	20	20	64	260	94
Matrix Spike Duplicate % Recovery:	100	100	100	107	87	94
Relative % Difference:	0.0	4.9	9.5	4.6	16	0.0

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL

Scott A. Chieffo
Scott A. Chieffo
Project Manager

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



SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.
2401 Stanwell Drive, Suite 400
Concord, CA 94520

Client Project ID: Unocal, 845 66th Ave., Oakland

Attention: Mardo Kaprealian, P.E. QC Sample Group: 2080060-65

Reported: Aug 14, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA8015	EPA8015	EPA8015	EPA8015	EPA8015	EPA8015	EPA8015
Analyst:	K.Wimer	K.Wimer	K.Wimer	K.Wimer	K.Wimer	K.Wimer	K.Wimer
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Aug 13, 1992	Aug 13, 1992	Aug 13, 1992	Aug 13, 1992	Aug 13, 1992	Aug 13, 1992	Aug 12, 1992
Sample #:	208-0060	208-0061	208-0062	208-0063	208-0064	208-0065	Matrix Blank

Surrogate							
% Recovery:	96	97	94	95	96	98	88

SEQUOIA ANALYTICAL

Scott A. Chieffo
Scott A. Chieffo
Project Manager

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



KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER <i>Vartkes</i>		SITE NAME & ADDRESS <i>Unocal / Oakland 845 66th Ave.</i>					ANALYSES REQUESTED <i>TPHG: BTXE TPHD TOG (SSZOBAD)</i>			TURN AROUND TIME: <i>Regular</i>		
WITNESSING AGENCY												
SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG	TPHD	TOG	REMARKS
MW 1	8/3/92	10:10 A.M.	✓	✓			3	Monitoring Well	✓	✓		2080060 AC
MW 2	"	/	✓	✓			4	"	✓	✓	✓	0061 AD
MW 3	"	/	✓	✓			3	"	✓	✓		0062 AC
MW 4	"	/	✓	✓			3	"	✓	✓		0063 AC
MW 5	"	/	✓	✓			3	"	✓	✓		0064 AC
MW 6	"	1:35 P.M.	✓	✓			4	"	✓	✓	✓	0065 AD
Relinquished by: (Signature) <i>W. Paul</i>		Date/Time <i>8/3/92 6:20</i>		Received by: (Signature) <i>[Signature]</i>		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? 4. Were samples in appropriate containers and properly packaged? Signature: <i>[Signature]</i> Title: <i>Analyst</i> Date: <i>8/3/92</i>						
Relinquished by: (Signature) <i>[Signature]</i>		Date/Time <i>8-4-92 15:40</i>		Received by: (Signature) <i>[Signature]</i>								
Relinquished by: (Signature)		Date/Time		Received by: (Signature)								
Relinquished by: (Signature)		Date/Time		Received by: (Signature)								