KAPREALIAN ENGINEERING
INCORPORATED

December 10, 1993

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

RE: Unocal Service Station #6034
4700 First Street
Livermore, California

Gentlemen:

Per the request of Ms. Tina Berry of Unocal Corporation, enclosed please find our report dated December 1, 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: Tina Berry, Unocal Corporation

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

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P89-0801.QR14
December 1, 1993

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

Attention: Ms. Tina Berry

RE: Quarterly Report
Unocal Service Station #6034
4700 First Street
Livermore, California

Dear Ms. Berry:

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 and sampled on a quarterly basis, except for well MW1, which is no longer sampled. This report covers the work performed by KEI in October of 1993.

BACKGROUND

The subject site 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 August of 1989 during tank replacement activities. The fuel tank pit was subsequently overexcavated to a depth of 17.5 feet below grade (the ground water depth at that time) in order to remove contaminated soil. Seven 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 quarterly report (KEI-P89-0801.QR8) dated May 4, 1992.

RECENT FIELD ACTIVITIES

The seven Unocal monitoring wells (MW1 through MW7) were monitored and sampled once during the quarter, except for well MW1, which is no longer sampled. Prior to sampling, the Unocal wells were checked for depth to water and the presence of free product or sheen. No free product or sheen was noted in any of the Unocal wells during the quarter. The monitoring data collected by KEI this quarter for the Unocal wells are summarized in Table 1.

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Concord, California 94520
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Ground water samples were collected by KEI from all of the Unocal wells (except MW1) on October 20, 1993. Prior to sampling, these wells were each purged of 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 that were then sealed with Teflon-lined screw caps, labeled, and stored in a cooler, on ice, until delivery to a state-certified laboratory.

A joint monitoring and sampling event was conducted with the nearby Chevron service station on October 20, 1993. The monitoring data collected by Groundwater Technology, Inc. (GTI) for the Chevron monitoring wells are summarized in Table 2, and the ground water sample analytical results for the Chevron wells are summarized in Table 4.

HYDROLOGY

The measured depth to ground water at the Unocal site on October 20, 1993, ranged between 14.16 and 15.69 feet. The water levels in the Unocal wells have shown net increases ranging from 1.51 to 2.23 feet since July 20, 1993. Based on the joint monitoring ground water level data gathered on October 20, 1993, the ground water flow direction was to the northwest at the Unocal site and to the west and west-northwest in the vicinity of the Chevron site, as shown on the attached Potentiometric Surface Map, Figure 1. The flow direction reported this quarter is similar to the predominantly northwesterly flow direction reported in the previous 15 quarters. The average hydraulic gradient at the Unocal site on October 20, 1993, was approximately 0.006.

ANALYTICAL RESULTS

The ground water samples collected this quarter from the Unocal wells were analyzed at Sequoia Analytical Laboratory and were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020.

The analytical results for all of the ground water samples collected from the Unocal monitoring wells to date are summarized in Table 3. The ground water sample analytical results for the Chevron wells are summarized in Table 4. The concentrations of TPH as gasoline and benzene detected in the ground water samples collected this quarter from the Unocal and Chevron wells are shown on the attached Figure 2. Copies of the laboratory analytical results and the Chain of Custody documentation for the Unocal samples are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results of the ground water samples collected and evaluated from the Unocal wells to date, and no evidence of free product or sheen in any of the Unocal wells, KEI recommends a modification to the current quarterly ground water monitoring and sampling program. As shown in Table 2, the ground water samples collected from Unocal monitoring well MW3 since April of 1991 (11 consecutive quarters of sampling) have shown non-detectable concentrations of TPH as gasoline and BTEX. Therefore, **KEI recommends that the sampling frequency for Unocal well MW3 will be reduced from quarterly to semi-annually.** All of the Unocal monitoring wells will continue to be monitored quarterly; wells MW2, MW4, MW5, MW6, and MW7 will be sampled quarterly; and well MW3 will be sampled semi-annually. Unocal monitoring well MW1 is no longer sampled. Further recommendations for modification to or termination of the ground water monitoring and sampling program will be made as warranted. **In addition, KEI recommends the continuation of the joint monitoring and sampling program with the nearby Chevron site.**

DISTRIBUTION

A copy of this report should be sent to 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.

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

Sincerely,

Kaprealian Engineering, Inc.

Sarkis A. Soghomonian
Staff Engineer

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

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

Thomas J. Berkins
Project Manager

/bp

Attachments: Tables 1 through 4
Location Map
Potentiometric Surface Map - Figure 1
Concentrations of Petroleum Hydrocarbons - Figure 2
Laboratory Analyses
Chain of Custody documentation

KEI-P89-0801.QR14
December 1, 1993

TABLE 1

SUMMARY OF MONITORING DATA

UNOCAL MONITORING WELLS

Well #	Ground Water Elevation (feet)	Depth to Water (feet)♦	Product Thickness (feet)	Sheen	Water Purged (gallons)
(Monitored and Sampled on October 20, 1993)					
MW1*	504.95	15.69	0	--	0
MW2	504.74	15.08	0	No	8
MW3	505.24	14.42	0	No	8
MW4	505.45	14.16	0	No	8
MW5	504.71	15.56	0	No	8
MW6	504.55	14.20	0	No	8
MW7	504.54	14.29	0	No	8

Well #	Top of Casing Elevation in feet above Mean Sea Level (MSL)**
MW1	520.64
MW2	519.82
MW3	519.66
MW4	519.61
MW5	520.27
MW6	518.75
MW7	518.83

♦ The depth to water level measurement was taken from the top of the well casing. Prior to October 20, 1993, the water level measurement was taken from the top of the well cover.

* Monitored only.

** Based on City of Livermore Benchmark No. C-18-5 (elevation = 551.77 MSL).

-- Sheen determination was not performed.

KEI-P89-0801.QR14
December 1, 1993

TABLE 2

SUMMARY OF MONITORING DATA
CHEVRON MONITORING WELLS

Well	Ground Water Elevation (feet)	Depth to Water (feet)	Well Casing Elevation (feet above MSL)
(Monitored on October 20, 1993, by GTI)			
C1	506.89	13.50	520.39
C2	506.92	13.84	520.76
C3	507.08	14.23	521.31
C5	506.72	14.10	520.82
C6	506.71	12.91	519.62
C7	506.89	13.41	520.30
C8	506.23	13.51	519.74
C9	506.76	12.96	519.72
C10	505.77	14.64	520.41
C11	505.58	14.46	520.04
C12	505.63	14.19	519.82
C13	507.11	15.13	522.24
C14	505.77	14.31	520.08
C15	507.17	15.24	522.41
C16	505.68	14.00	519.68
C17	505.73	15.09	520.82
C18	NOT MONITORED - WELL PAVED OVER		
C19	505.76	15.23	520.99

KEI-P89-0801.QR14
December 1, 1993

TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

UNOCAL MONITORING WELLS

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
10/20/93	MW2	--	12,000	27	10	100	3,000	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	640	ND	2.5	2.3	1.9	--
	MW5	--	110	0.80	ND	ND	ND	--
	MW6	--	ND	ND	ND	ND	ND	--
	MW7	--	ND	ND	ND	ND	ND	--
7/20/93	MW2	--	25,000	68	94	1,000	6,200	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	NOT SAMPLED - SAMPLING ACCESS DENIED						
	MW5	--	89	1.1	0.51	ND	1.8	2.2
	MW6	WELL WAS OBSTRUCTED						
	MW7	--	ND	ND	ND	ND	ND	--
4/22/93	MW2	--	49,000	150	1,000	3,000	18,000	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	1,100	8.8	1.0	7.2	6.0	--
	MW5	--	94	1.2	ND	ND	1.3	0.82
	MW6	WELL WAS OBSTRUCTED						
	MW7	--	ND	ND	ND	ND	ND	--
1/14/93	MW2	--	19,000	75	430	900	8,400	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	920	ND	6.3	12	3.9	--
	MW5	--	91	ND	0.53	1.2	11	1.2
	MW6	WELL WAS OBSTRUCTED						
	MW7	--	ND	ND	ND	ND	ND	--
10/16/92	MW2	--	290	2.3	ND	5.1	15	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	300	2.1	ND	4.8	13	--
	MW5	--	180	7.8	1.1	17	6.4	2.0
	MW6	WELL WAS OBSTRUCTED						
	MW7	--	ND	ND	ND	ND	ND	--
7/07/92	MW2	--	44,000	160	1,100	1,000	17,000	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	340	ND	2.2	2.4	2.4	--
	MW5	--	76	0.48	1.1	0.32	1.3	1.5
	MW6	--	ND	ND	ND	ND	ND	--
	MW7	--	ND	ND	ND	ND	ND	--

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

UNOCAL MONITORING WELLS

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
4/06/92	MW2	--	760	6.3	2.1	ND	130	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	660	1.3	3.8	2.9	4.1	--
	MW5	--	240♦	ND	ND	0.35	ND	--
	MW6	--	ND	ND	ND	ND	ND	--
	MW7	--	ND	ND	ND	ND	ND	--
1/14/92	MW2	--	5,600	36	120	450	2,600	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	1,500	4.2	7.1	18	9.2	--
	MW5	--	99	1.0	1.2	ND	0.32	--
	MW6	--	ND	ND	ND	ND	ND	--
	MW7	--	ND	ND	ND	ND	ND	--
10/14/91	MW2	--	11,000	79	130	660	4,700	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	880	3.8	2.2	8.6	5.8	--
	MW5	--	660	55	4.4	50	66	--
	MW6	--	ND	ND	ND	ND	ND	--
	MW7	--	ND	ND	ND	ND	ND	--
7/10/91	MW1*	ND	ND	ND	ND	ND	ND	--
	MW2	--	14,000	70	160	570	5,400	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	830	8.4	19	7.7	7.2	--
	MW5	--	220	5.1	8.7	9.1	9.7	--
	MW6	--	ND	ND	ND	ND	ND	--
	MW7	--	ND	ND	ND	ND	ND	--
4/10/91	MW1*	ND	ND	ND	ND	ND	ND	--
	MW2	--	22,000	170	190	490	6,200	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	950	0.84	4.3	9.6	5.0	--
	MW5	--	630	35	14	47	30	--
	MW6	--	ND	ND	ND	ND	ND	--
	MW7	--	ND	ND	ND	ND	ND	--
12/24/90	MW1*	ND	ND	ND	ND	ND	0.40	--
	MW2	--	32,000	440	340	460	13,000	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	1,400	ND	8.7	15	10	--

KEI-P89-0801.QR14
December 1, 1993

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

UNOCAL MONITORING WELLS

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
9/07/90	MW1*	ND	ND	ND	1.2	ND	ND	--
	MW2	--	ND	ND	1.5	ND	ND	--
	MW3	--	1,100	11	ND	6.6	16	--
	MW4	--	15,000	100	140	210	4,600	--
6/05/90	MW1*	ND	ND	ND	ND	ND	ND	--
	MW2	--	31,000	250	460	950	9,200	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	1,400	1.2	4.7	24	12	--
3/08/90	MW1**	ND	ND	ND	ND	ND	ND	--
	MW2	--	26,000	230	410	1,300	2,100	--
	MW3	--	ND	ND	ND	ND	ND	--
	MW4	--	1,200	18	8.4	37	28	--
11/18/89	MW1***	400	ND	ND	ND	ND	ND	--
	MW2	--	53,000	540	500	130	22,000	--
	MW3	--	ND	0.35	ND	ND	ND	--
	MW4	--	990	9.8	10	7.1	4.7	--

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

* TOG and all EPA method 8010 constituents were non-detectable.

** TOG was detected at 4.7 ppm. All EPA method 8010 compounds were non-detectable.

*** TOG was detected at 3.1 ppm. All EPA method 8010 compounds were non-detectable, except for trichloroethene at 0.55 ppb.

ND = Non-detectable.

-- Indicates analysis was not performed.

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

KEI-P89-0801.QR14
December 1, 1993

TABLE 4

SUMMARY OF LABORATORY ANALYSES
WATER

CHEVRON MONITORING WELLS

Well #	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes
		(Sampled on October 20, 1993, by GTI)			
C-1	880	19	26	260	190
C-2	1,600	140	18	22	27
C-3	ND	ND	1	ND	0.8
C-4	WELL DESTROYED				
C-5	2,200	7	5	3	15
C-6	77,000	290	790	2,500	7,600
C-7	5,500	72	26	250	160
C-8	ND	ND	ND	ND	ND
C-9	36,000	22	200	440	930
C-10	ND	ND	ND	ND	ND
C-11	ND	2	ND	ND	ND
C-12	ND	ND	ND	ND	ND
C-13	ND	ND	ND	ND	ND
C-14	INSUFFICIENT VOLUME OF WATER TO SAMPLE				
C-15	ND	ND	ND	ND	ND
C-16	290	18	2	16	17
C-17	4,500	5	12	43	64
C-18	WELL PAVED OVER				
C-19	ND	ND	ND	ND	ND
		(Sampled on July 20 & 21, 1993, by GTI)			
C-1	7,100	73	11	470	470
C-2	1,100	28	8	4	4
C-3	ND	ND	ND	ND	ND
C-4	WELL DESTROYED				
C-5	970	18	5	8	14
C-6	32,000	130	490	1,000	4,900
C-7	1,900	35	18	61	87
C-8	ND	ND	ND	ND	ND
C-9	30,000	160	130	450	1,100
C-10	100	ND	ND	ND	ND
C-11	1,200	3	1	ND	1
C-12	ND	ND	ND	ND	ND
C-13	99	4	13	2	7
C-14	NOT SAMPLED				
C-15	ND	ND	ND	ND	ND

KEI-P89-0801.QR14
December 1, 1993

TABLE 4 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

CHEVRON MONITORING WELLS

Well #	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes
(Sampled on July 20 & 21, 1993, by GTI - Continued)					
C-16	NOT SAMPLED				
C-17	4,200	5	35	33	62
C-18	92	ND	0.5	ND	ND
C-19	390	ND	ND	0.8	2
(Sampled on April 22, 1993, by GTI)					
C-1	18,000	26	44	330	580
C-2	2,000	12	12	29	28
C-3	ND	ND	ND	ND	ND
C-4	WELL DESTROYED				
C-5	2,300	220	18	65	120
C-6	20,000	29	170	2,400	640
C-7	3,800	130	18	36	43
C-8	68	ND	0.6	0.8	0.6
C-9	7,300	60	40	98	68
C-10	ND	ND	ND	ND	ND
C-11	ND	0.8	ND	ND	ND
C-12	ND	ND	ND	ND	ND
C-13	ND	ND	ND	ND	ND
C-14	17,000	840	2,300	3,500	130
C-15	ND	ND	ND	ND	ND
C-16	850	46	ND	6	24
C-17	8,900	16	68	97	44
C-18	ND	ND	ND	ND	ND
C-19	250	0.6	1	1	1
(Sampled on January 14, 1993, by GTI)					
C-1	2,000	24	ND	98	62
C-2	1,800	49	50	31	29
C-3	120	ND	ND	ND	1.3
C-4	WELL DESTROYED				
C-5	2,300	13	ND	110	10
C-6	19,000	ND	25	460	980
C-7	7,800	160	33	380	210

TABLE 4 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

CHEVRON WELLS

Well #	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes
(Sampled on January 14, 1993, by GTI - Continued)					
C-8	120	ND	1.6	1.0	3.5
C-9	2,200	ND	ND	27	77
C-10	88	4.7	ND	2.3	1.6
C-11	94	ND	1.3	0.7	6.0
C-12	65	ND	ND	ND	1.7
C-13	100	ND	ND	ND	1.3
C-14	27,000	220	790	220	2,700
C-15	61	ND	1.9	0.8	5.1
C-16	740	24	ND	36	21
C-17	3,500	9.3	9.1	23	34
C-18	56	ND	ND	ND	1.8
C-19	100	1.1	ND	0.9	0.9

ND = Non-detectable.

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

TABLE 4 (Continued)

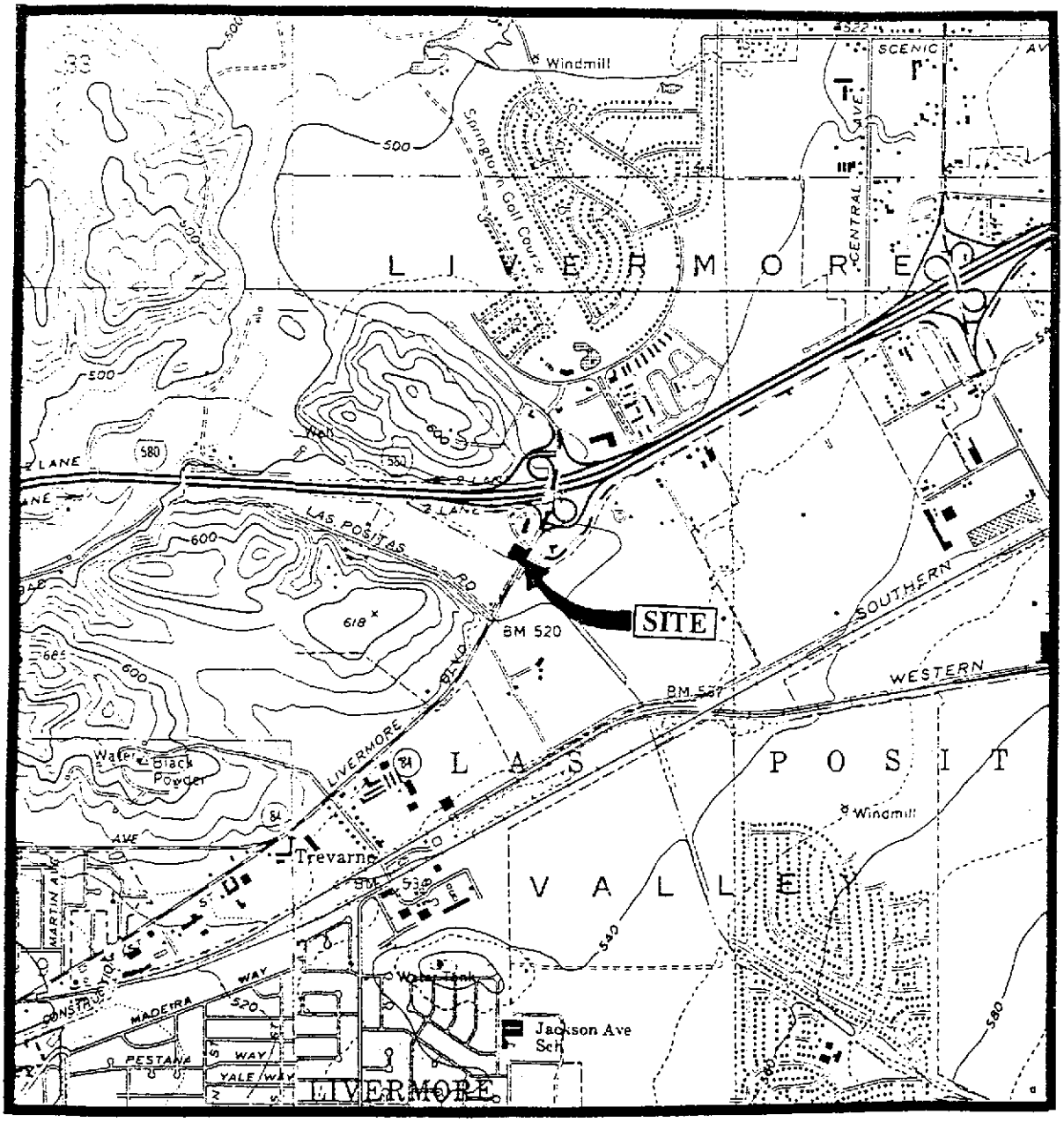
SUMMARY OF LABORATORY ANALYSES
WATER

CHEVRON MONITORING WELLS

Well #	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes
(Sampled on January 14, 1993, by GTI - Continued)					
C-8	120	ND	1.6	1.0	3.5
C-9	2,200	ND	ND	27	77
C-10	88	4.7	ND	2.3	1.6
C-11	94	ND	1.3	0.7	6.0
C-12	65	ND	ND	ND	1.7
C-13	100	ND	ND	ND	1.3
C-14	27,000	220	790	220	2,700
C-15	61	ND	1.9	0.8	5.1
C-16	740	24	ND	36	21
C-17	3,500	9.3	9.1	23	34
C-18	56	ND	ND	ND	1.8
C-19	100	1.1	ND	0.9	0.9

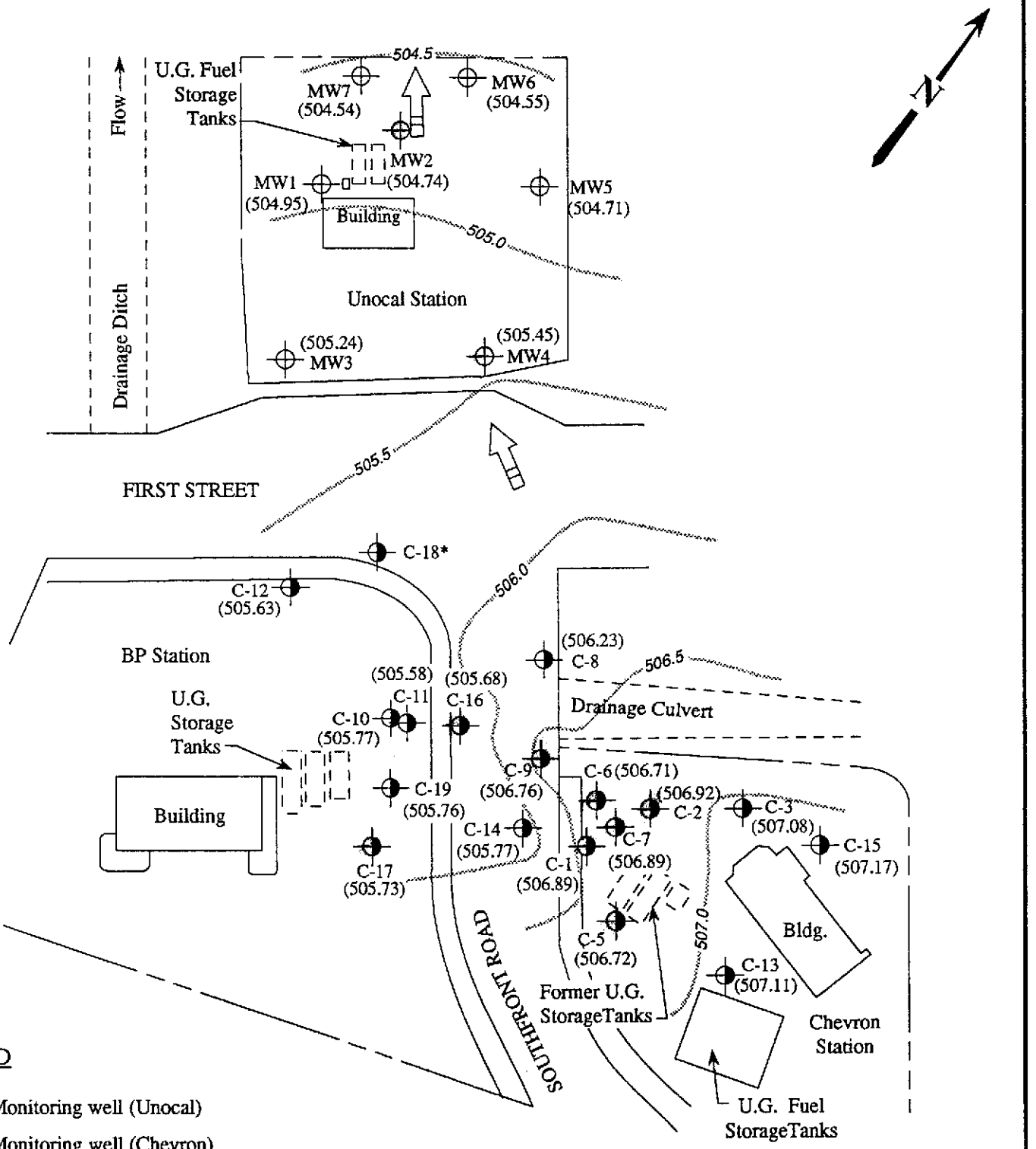
ND = Non-detectable.

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



Base modified from 7.5 minute U.S.G.S. Livermore and Altamont Quadrangles (photorevised 1980 and 1981, respectively)

KAPREALIAN ENGINEERING INCORPORATED	**UNOCAL SERVICE STATION # 6034** **4700 FIRST STREET** **LIVERMORE, CA**	**LOCATION MAP**



LEGEND

- Monitoring well (Unocal)
- Monitoring well (Chevron)
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation
- * Well paved over

0 80 160

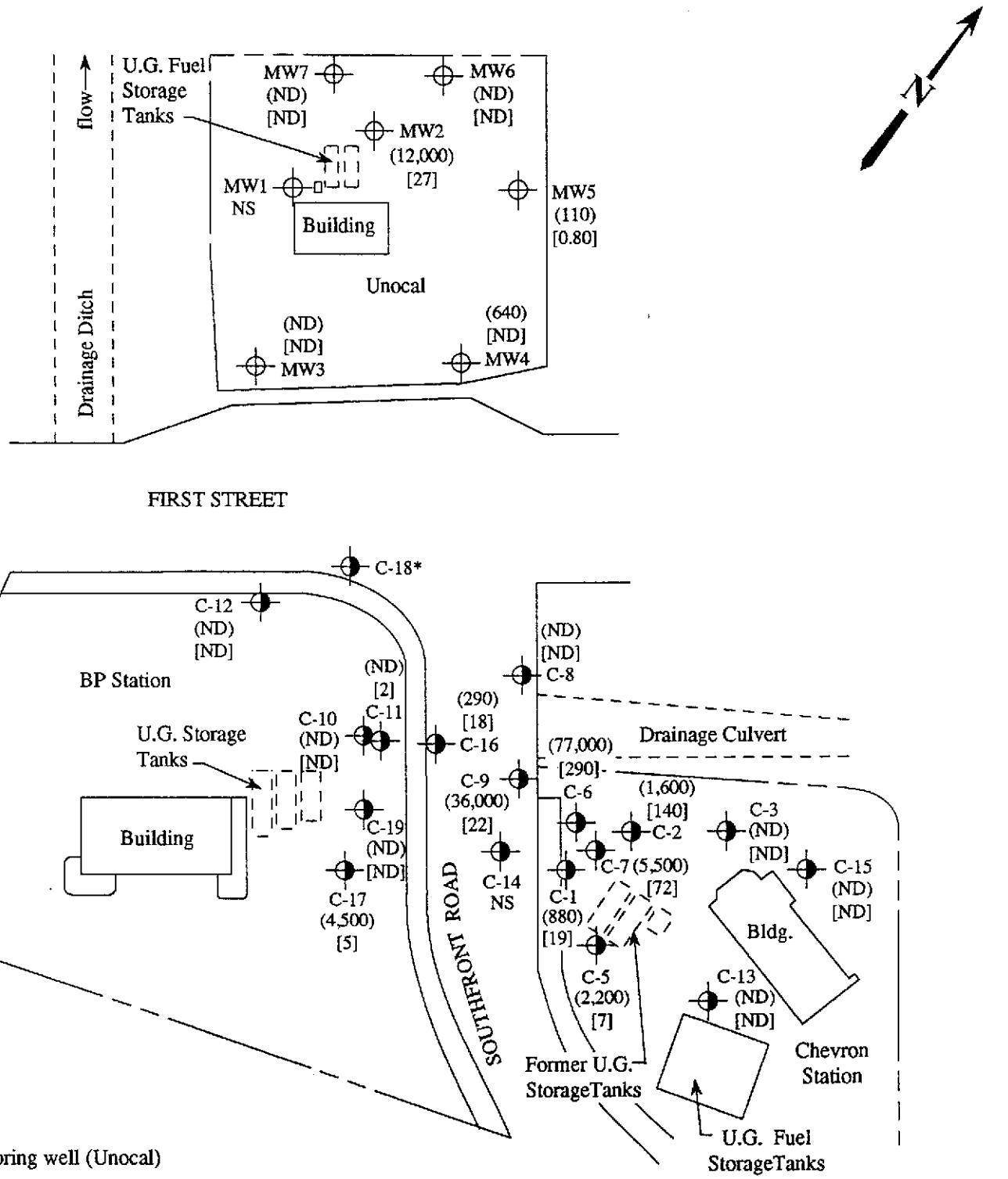
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE OCTOBER 20, 1993 JOINT MONITORING EVENT

KAPREALIAN ENGINEERING INCORPORATED

UNOCAL SERVICE STATION # 6034
4700 FIRST STREET
LIVERMORE, CALIFORNIA

FIGURE **1**



LEGEND

- Monitoring well (Unocal)
- Monitoring well (Chevron)
- ( ) Concentration of TPH as gasoline in ppb
- [ ] Concentration of benzene in ppb

ND = Non-detectable, NS = Not sampled

* Well paved over

0 80 160

Approx. scale feet

PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON OCTOBER 20, 1993

KAPREALIAN ENGINEERING INCORPORATED

UNOCAL SERVICE STATION # 6034
4700 FIRST STREET
LIVERMORE, CALIFORNIA

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 #6034, 4700 First St, Livermore	Sampled:	Oct 20, 1993
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Water	Received:	Oct 22, 1993
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Nov 5, 1993
Attention: Avo Avedessian	First Sample #:	310-1172		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 310-1172 MW2	Sample I.D. 310-1173 MW3	Sample I.D. 310-1174 MW4	Sample I.D. 310-1175 MW5	Sample I.D. 310-1176 MW6	Sample I.D. 310-1177 MW7
Purgeable Hydrocarbons	50	12,000	N.D.	640	110	N.D.	N.D.
Benzene	0.5	27	N.D.	N.D.	0.80	N.D.	N.D.
Toluene	0.5	10	N.D.	2.5	N.D.	N.D.	N.D.
Ethyl Benzene	0.5	100	N.D.	2.3	N.D.	N.D.	N.D.
Total Xylenes	0.5	3,000	N.D.	1.9	N.D.	N.D.	N.D.
Chromatogram Pattern:		Gasoline	--	Gasoline	Gasoline	--	--

Quality Control Data

Report Limit Multiplication Factor:	20	1.0	1.0	1.0	1.0	1.0
Date Analyzed:	10/26/93	10/26/93	10/26/93	10/26/93	10/26/93	10/26/93
Instrument Identification:	HP-4	HP-4	HP-4	HP-4	HP-4	HP-5
Surrogate Recovery, %: (QC Limits = 70-130%)	89	98	90	105	101	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

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 #6034, 4700 First St, Livermore	Sampled:	- -
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Water	Received:	- -
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Nov 5, 1993
Attention: Avo Avedessian	First Sample #:	Blank		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/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:	10/26/93
Instrument Identification:	HP-5
Surrogate Recovery, %: (QC Limits = 70-130%)	93

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

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Project Manager

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

Client Project ID: Unocal #6034, 4700 First St, Livermore
Matrix: Water
QC Sample Group: 3101172-1177

Reported: Nov 5, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J.F.	J.F.	J.F.	J.F.
Conc. Spiked:	20	20	20	60
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	2LCS102693	2LCS102693	2LCS102693	2LCS102693
Date Prepared:	10/26/93	10/26/93	10/26/93	10/26/93
Date Analyzed:	10/26/93	10/26/93	10/26/93	10/26/93
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
LCS % Recovery:	100	100	100	100
Control Limits:	70-130	70-130	70-130	70-130
MS/MSD Batch #:	3101169	3101169	3101169	3101169
Date Prepared:	10/26/93	10/26/93	10/26/93	10/26/93
Date Analyzed:	10/26/93	10/26/93	10/26/93	10/26/93
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Matrix Spike % Recovery:	100	100	100	102
Matrix Spike Duplicate % Recovery:	100	100	100	102
Relative % Difference:	0.0	0.0	0.0	0.0

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.

KAPREALIAN ENGINEERING
INCORPORATED

CHAIN OF CUSTODY

SAMPLER: J. Goddard
WITNESSING AGENCY:
SITE NAME & ADDRESS: Unocal # 6034 / Livermore
4700 First St.

ANALYSES REQUESTED: TPH-G; BTEX

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION
MW2	10/20	13:30		✓			4	
MW3	"	14:45		✓			"	
MW4	"	13:45		✓			"	
MW5	"	14:00		✓			"	
MW6	"	14:15		✓			"	
MW7	"	14:30		✓			"	

REMARKS:
3101172 A-B
1173
1174
1175
1176
1177

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
John Goddard	10/22 8:30	Erin Vomund
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)

The following MUST BE completed by the laboratory accepting samples for analysis:

1. Have all samples received for analysis been stored in ice? Y
2. Will samples remain refrigerated until analyzed? Y
3. Did any samples received for analysis have head space? N
4. Were samples in appropriate containers and properly packaged? Y

Signature | Title: T-3 | Date: 10/22/93

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