Well MW-2A installation

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581

KEI-P89-0301.R8
April 16, 1991

Unocal Corporation
2000 Crow Canyon Place, Suite 400
San Ramon, CA 94583

Attention: Mr. Ron Bock

RE: Continuing Ground Water Investigation
and Quarterly Report at
Unocal Service Station #6277
15803 E. 14th Street
San Leandro, California

Dear Mr. Bock:

This report presents the results of Kaprealian Engineering, Inc's. (KEI) soil and ground water investigation for the referenced site in accordance with recommendations presented in KEI's third quarterly report (KEI-P89-0301.QR3) dated April 20, 1990. The purpose of the investigation was to install a new monitoring well to replace well MW2, which was destroyed on February 1, 1990. This report also presents the results of the seventh quarter of monitoring and sampling of the monitoring wells at the referenced site by KEI, per KEI's proposal (KEI-P89-0301.P2) dated June 19, 1989. The wells are currently monitored monthly and sampled on a quarterly basis. This report covers the work performed by KEI from January through March, 1991. The scope of the work performed by KEI consisted of the following:

Coordination with regulatory agencies.

Geologic logging of one boring for the installation of one monitoring well.

Soil sampling.

Ground water monitoring, purging and sampling.

Laboratory analyses.

Data analysis, interpretation and report preparation.

SITE DESCRIPTION AND BACKGROUND

The subject site is presently used as a gasoline station. The site is characterized by gently sloping, southwest trending topography, and is located approximately three miles northeast of the present

shoreline of San Francisco Bay. A Location Map and Site Plans are attached to this report.

KEI's work at the site began when KEI was asked to drill two exploratory borings (designated as EB1 and EB2) at the site. The borings were drilled on March 6, 1989 at the request of Alameda County to explore for the possible presence of soil contamination in the vicinity of the pit for a proposed new underground storage tank. The borings were drilled to depths of 10.5 and 13.5 feet below grade. Water was encountered in the borings at depths of 11 to 12 feet. Samples were analyzed at Sequoia Analytical Laboratory in Redwood City, California. Samples collected from borings EB1 and EB2 were analyzed for total petroleum hydrocarbons (TPH) as gasoline and benzene, toluene, xylenes and ethylbenzene (BTX&E). Analytical results of the soil samples collected from a depth of 5 feet below grade in the borings had TPH as gasoline levels ranging from non-detectable to 2.1 ppm, while the samples collected from 10 feet below grade had levels of TPH as gasoline ranging from 200 ppm to 620 ppm. Based on results of the preliminary investigation, KEI recommended that the contractor excavate the tank pit to a depth of approximately 13 feet. Results of the exploratory boring investigation are presented in KEI's report (KEI-P89-0301.R1) dated March 13, 1989. Soil sample results from that report are summarized in Table 5. Exploratory boring locations are as shown on the attached Site Plan, Figure 3.

KEI returned to the site on March 13, 1989, when three underground storage tanks were removed from the site. The tanks consisted of two 10,000 gallon fuel storage tanks and one 550 gallon waste oil tank. The tanks were made of steel with a tar and wrapping coating, and no apparent holes or cracks were observed in the tanks. Due to the tar coating and wrapping, very little of the actual tank walls could be observed. Water was encountered in the fuel tank pit at a depth of about 11 feet, thus prohibiting the collection of any soil samples from immediately beneath the tanks. Six soil samples, labeled SW1, SW2, SW3, SW4, SW5 and SW6, were collected from the sidewalls of the fuel tank pit at a depth approximately 1 foot above the water table, and one sample, labeled WO1, was collected from beneath the waste oil tank at a depth of about 10 feet below grade.

Based on the subjective evidence observed in the field, it was decided to excavate additional soil from three of four tank pit walls. (The fourth tank pit wall adjacent to the existing building was not recommended to be excavated at that time). On March 14, 1989 four trenches were dug to define the limits of additional soil excavation needed. Four soil samples were then collected at a depth below grade of about 10 feet, and are referred to as SW3(15),

SW4/5(6), SW6(12) and SW7(14). Sample SW7(14) was collected from the sidewall of the waste oil tank pit. After the soil sampling was completed, approximately 5,000 gallons of ground water was pumped from the fuel tank pit on March 15, 1989; however, due to ongoing soil excavation, contaminated soil was falling into the water and a representative ground water sample could not be collected.

On March 17, 1989 KEI again returned to the site. Additional soil, approximately 2 feet laterally, was excavated from the fourth tank pit wall adjacent to the building. One additional sidewall soil sample, labeled SW1(2), was collected at a depth below grade of about 10 feet at the location identified on the attached Site Plan, Figure 2. Following soil sampling, an additional 1,000 gallons of ground water were pumped from the excavation. One sample of water from the fuel tank pit, labeled W1, was collected in clean, glass VOA vials with Teflon screw caps.

On March 23, 1989, KEI returned to the site for pipe trench sampling. Six soil samples, labeled P1, P2, P3, P4, P5 and P6, were collected beneath the product lines at depths below grade of about 3 to 3.5 feet.

Soil samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California. Samples from the fuel tank pit were analyzed for TPH as gasoline, and BTX&E. The samples from the waste oil tank pit (WO1 and SW7{14}) were analyzed for TPH as gasoline, TPH as diesel, total oil and grease (TOG) and EPA method 8240 constituents.

The analytical results of the soil samples, collected from the fuel tank pit, indicated TPH as gasoline levels ranging from 24 ppm to 150 ppm for samples SW3(15), SW4/5(6) and SW6(12). Sample SW1, adjacent to the existing building, showed 3,500 ppm of TPH as gasoline; however, SW1(2), which was collected after excavating 2 feet of sidewall toward the building, showed 100 ppm of TPH as gasoline. Sample SW2 showed 390 ppm of TPH as gasoline. Samples SW3, SW4, SW5 and SW6 were not analyzed because their locations were excavated and new samples [SW3(15), SW4/5(6) and SW6(12)] were collected. Analytical results of the soil samples collected from the waste oil tank pit indicated 280 ppm of TOG for WO1 and 41 ppm of TOG for SW7(14). Analytical results of the soil samples (P1 through P6) collected from pipe trenches indicated levels of TPH as gasoline ranging from 1.1 ppm to 6.8 ppm.

Analytical results of the water sample (W1) collected from the old fuel tank pit indicated 19,000 ppb of TPH as gasoline and 230 ppb

of benzene. The analytical results for the water sample are summarized in Table 6, and soil samples in Table 5.

Based on the analytical results, KEI recommended the installation of four ground water monitoring wells. The details of the soil sampling activities are presented in KEI's report (KEI-P89-0301.R3) dated March 27, 1989.

On May 24, 1989, four two-inch diameter monitoring wells, designated as MW1 through MW4, were installed at the site (see attached Site Plan, Figure 1). The four wells were drilled and completed to total depths ranging from 24.5 to 25 feet. Ground water was encountered at depths ranging from 11 to 12 feet beneath the surface during drilling. The wells were developed on June 5, 1989, and initially sampled on June 6, 1989. Water and selected soil samples were analyzed at Sequoia Analytical Laboratory in Redwood City, California. Samples were analyzed for TPH as gasoline and BTX&E. In addition, the sample collected from monitoring well MW2 was analyzed for TPH as diesel, TOG, and EPA method 8010 constituents.

The analytical results of the soil samples collected from the borings for wells MW1, MW2, MW3 and MW4 showed levels of TPH as gasoline ranging from 2.3 ppm to 31 ppm, except in sample MW4(10), which showed a non-detectable level of TPH as gasoline, and in samples MW1(10) and MW2(5), which showed levels of 230 ppm and 290 ppm, respectively. The soil sample collected from MW2(5) also showed a TOG level of 7,700 ppm. The analytical results of water samples, collected from monitoring wells MW1 through MW4, showed non-detectable levels of BTX&E in all wells, and TPH as gasoline levels ranging from 32 ppb to 590 ppb. Documentation of the well installation, sampling and sample results are provided in KEI's report (KEI-P89-0301.R6) dated June 26, 1989. Sample results from that report are summarized in Tables 2 and 5. Based on the sample results, KEI recommended a monthly monitoring and quarterly sampling program for all of the wells and additional excavation of contaminated soil in the vicinity of MW2. The monitoring and sampling program was initiated in July, 1989, and the wells have been monitored on a monthly basis and sampled on a quarterly basis since that time. In KEI's second quarterly report (KEI-P89-0301.QR2) dated January 16, 1990, KEI recommended the installation of one additional off-site well (MW5) to further define the extent of ground water contamination at the site.

On February 1, 1990, well MW2 was destroyed in preparation for additional excavation in the vicinity of well MW2. Documentation of the well destruction is presented in a letter report dated March 7, 1990 addressed to Unocal Corporation.

In an attempt to remove as much of the contaminated soil as possible, KEI visited the site on March 30 and April 3, 1990 to observe soil excavation in the vicinity of previously abandoned monitoring well MW2, as indicated on the attached Site Plans, Figures 1 and 2. Soil was excavated to a grade corresponding to approximately 6 to 12 inches below the level of the ground water, which was encountered at a depth of about 11.5 feet below grade.

After excavation, four soil samples, labeled SW8A, SW9A, SW10A and SW11A, were collected from the sidewalls of the excavation approximately 6 to 12 inches above ground water. Sample locations and the area excavated are as shown on the attached Site Plan, Figure 2. Soil excavation activities were terminated due to the close proximity of the former and new underground storage tank pits and the property line of the site. After sampling, approximately 9,400 gallons of water were pumped from the excavation.

All samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California. All soil samples were analyzed for TPH as gasoline, BTX&E, TPH as diesel, TOG, and EPA method 8010 constituents.

Analytical results of soil sample SW9A indicated non-detectable levels of TPH as gasoline and TPH as diesel. Analytical results of soil samples SW8A, SW10A and SW11A indicated levels of TPH as gasoline ranging from 140 ppm to 1,100 ppm, while levels of TPH as diesel ranged from non-detectable to 280 ppm. Analytical results also indicated non-detectable levels of EPA method 8010 constituents and TOG for all four samples, except for sample SW11A, which showed 210 ppm of TOG. Results of the soil analyses are summarized in Table 4. Details of the soil sampling activities are presented in KEI's report (KEI-P89-0301.R7) dated May 2, 1990.

RECENT FIELD ACTIVITIES

On March 12, 1991, one two-inch diameter monitoring well (designated as MW2A on the attached Site Plan, Figure 1) was installed at the site. Well MW2A was installed in the vicinity of former well MW2 and is intended to be a replacement for well MW2, which was destroyed in preparation for adjacent soil excavation activities. The well was drilled, constructed and completed in accordance with the guidelines of the Regional Water Quality Control Board (RWQCB), and California Well Standards per Bulletin 74-90.

The subsurface materials penetrated and details of the construction of the wells are described in the attached Boring Logs.

The well was drilled and completed to a total depth of 25.5 feet. Ground water was encountered at a depth of about 14.8 feet beneath the surface during drilling. Soil samples were taken for laboratory analysis and for lithologic logging purposes at a maximum spacing of 5 foot intervals, at significant changes in lithology, at obvious areas of contamination, and at or within the soil/ground water interface beginning at a depth of approximately 4 feet below grade until ground water was encountered. Soil sampling conducted below the ground water table are for lithologic logging purposes only. The undisturbed soil samples were taken by driving a California-modified split-spoon sampler ahead of the drilling augers. The two-inch diameter brass liners holding the samples were sealed with aluminum foil, plastic caps and tape, and stored in a cooled ice chest for delivery to a certified laboratory. Each well casing was installed with a watertight cap and padlock. A round, watertight, flush-mounted well cover was cemented in place over each well casing.

The surface of the new well cover and all previously existing well covers were surveyed by Kier & Wright of Pleasanton, California to Mean Sea Level and to a vertical accuracy of 0.01 feet.

Well MW2A was developed on March 13, 1991. Prior to development, all wells were checked for depth to water table using an electronic sounder, presence of free product (using an interface probe or paste tape) and sheen. No free product or sheen was noted in any of the wells. After recording the monitoring data, well MW2A was purged with a surface pump of 110 gallons until the evacuated water was clear and free of suspended sediment. In addition, wells MW1, MW3 and MW4 were monitored on two separate occasions during the quarter. Monitoring and well development data are summarized in Table 1.

All wells were sampled on March 15, 1991. Prior to sampling, monitoring data were collected, the wells were purged of between 15 to 55 gallons, and water samples were then collected using a clean Teflon bailer. The samples were decanted into clean glass VOA vials, sealed with Teflon-lined screw caps, and labeled and stored on ice until delivery to a certified laboratory.

ANALYTICAL RESULTS

Water samples from all wells, and selected soil samples from the boring of MW2A were analyzed at Sequoia Analytical Laboratory in Concord, California. All samples analyzed were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for TPH as gasoline by EPA method 5030 in conjunction with modified 8015, and BTX&E by EPA method 8020. In addition, the soil

and water samples collected from MW2A were analyzed for TPH as diesel using EPA methods 3510 (water) and 3550 (soil) in conjunction with modified 8015, TOG by Standard Method 5520B&F (water) and 5520E&F (soil), and chlorinated solvents using EPA method 8010.

Analytical results of the soil samples collected from boring MW2A indicate non-detectable levels of TPH as gasoline and benzene in all analyzed samples, except in sample MW2A(10), which had a TPH as gasoline level of 10 ppm, with a benzene level of 0.12 ppm. Levels of TPH as diesel ranged from non-detectable to 4.8 ppm with TOG levels ranging from 57 ppm to 1,300 ppm and non-detectable levels of all EPA method 8010 constituents except for 110 ppb of 1,2-dichlorobenzene and 120 ppb of tetrachloroethene in MW2A(10). Analytical results of the water samples collected from monitoring wells MW1 through MW4 indicate levels of TPH as gasoline ranging from 53 ppb to 160 ppb with benzene levels at 21 ppb and 2.5 ppb in wells MW1 and MW2A. Benzene was non-detectable in wells MW3 and MW4. Also, TPH as diesel, TOG and EPA method 8010 constituents were non-detectable in well MW2A, except for cis-1,2-dichloroethene at 2.6 ppb, tetrachloroethene at 67 ppb and trichloroethene at 8.2 ppb. Concentrations of TPH as gasoline and benzene detected in ground water are shown on Figure 1a. Results of the soil analyses are summarized in Table 3, and water analyses in Table 2. Copies of the laboratory analyses and Chain of Custody documentation are attached to this report.

HYDROLOGY AND GEOLOGY

The water table stabilized in the monitoring wells at depths ranging from 9.21 to 10.63 feet below the surface. Ground water flow direction appeared to be toward the north-northeast on March 15, 1991, (similar to the flow direction reported for the previous quarter) with a hydraulic gradient of approximately .0024 (based on water level data collected from the monitoring wells prior to purging and sampling).

Based on review of regional geologic maps (U.S. Geological Survey Professional Paper 943 "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning" by E.J. Helley and K.R. Lajoie, 1979), the subject site is underlain by Late Pleistocene alluvium (Qpa). The Late Pleistocene alluvium is described as typically consisting of weakly consolidated, poorly sorted, irregular interbedded clay, silt, sand, and gravel with a reported unknown maximum thickness, but is at least 150 feet thick. This alluvium is assumed to overly bedrock and deformed older sedimentary deposits on the alluvial plain marginal to San Francisco Bay.

In addition, the site is situated approximately 1,700 to 3,600 feet southwest of various mapped splays of the active Hayward Fault.

The results of our previous subsurface study indicates that the site is underlain by fill materials to a depth of about 2 to 5 feet below grade which are inturn underlain by silty clay materials to the maximum depth explored (25 feet). The results of our recent subsurface study indicate that at the vicinity of MW2A, the site is underlain by fill materials extending to a depth of about 5 feet below grade which are inturn underlain by highly expansive clay materials to a depth of about 11.5 feet and further underlain by clay and silty clay materials to the maximum depth explored (25.5 feet).

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results, KEI recommends continuation of the monitoring and sampling program. Results of the monitoring program will be documented and evaluated after each monitoring and sampling event. Recommendations for altering or terminating the program will be made as needed. KEI's proposal for this work is attached for your review and consideration.

As shown in Figure 1a, the extent of ground water contamination has not been completely defined in the approximate downgradient direction from MW1 and MW2. KEI previously proposed that an additional monitoring well, MW5, be installed on the private property located northwest of the site in order to complete the delineation of the contamination. However, it is KEI's understanding that Unocal Corporation was unable to secure access to this private property. Therefore, once KEI completes a reevaluation of the vicinity of the site for potential monitoring well locations in the area of MW1 and MW2A, KEI will prepare and submit a work plan/proposal for the additional well installation.

DISTRIBUTION

Copies of this report should be sent to the Alameda County Health Care Services, and to the RWQCB, San Francisco Bay Region.

LIMITATIONS

Soil deposits and rock formations may vary in thickness, lithology, saturation, strength and other properties across any site. In addition, environmental changes, either naturally-occurring or artificially-induced, may cause changes in 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 this 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.

Should you have any questions regarding this report, please do not hesitate to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Thomas J. Berkins
Senior Environmental Engineer

Don R. Braun
Certified Engineering Geologist

License No. 1310
Exp. Date 6/30/92

Timothy R. Ross
Project Manager

\bam

Attachments: Tables 1 through 6
Location Map
Site Plans - Figures 1, 1a 2 & 3
Boring Logs
Laboratory Results
Chain of Custody documentation
Proposal

KEI-P89-0301.R8
April 16, 1991

TABLE 1

SUMMARY OF GROUND WATER MONITORING AND PURGING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)	Product Thickness	Sheen	Gallons Pumped
(Monitored and Sampled on March 15, 1991)					
MW1	22.93	9.82	0	None	55
MW2A	23.15	10.63	0	None	15
MW3	23.28	9.28	0	None	20
MW4	23.11	9.21	0	None	20
(Monitored and Developed on March 13, 1991)					
MW1*	23.61	9.14	0	None	0
MW2A	23.62	10.16	0	None	110
MW3*	23.88	8.68	0	None	0
MW4*	23.77	8.55	0	None	0
(Monitored on February 12, 1991)					
MW1	22.27	10.48	0	None	55
MW3	22.54	10.02	0	None	0
MW4	22.55	9.77	0	None	0
(Monitored on January 15, 1991)					
MW1	22.13	10.62	0	None	0
MW3	22.35	10.21	0	None	0
MW4	22.39	9.93	0	None	0

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

* Monitored only.

** Elevation of top of well covers surveyed to Mean Sea Level (MSL) by Kier & Wright of Pleasanton, California.

KEI-P89-0301.R8
April 16, 1991

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
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
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
Detection Limits		50	30	0.3	0.3	0.3	0.3

NOTE: Well MW2 was destroyed on February 1, 1990.

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

* TOG and all EPA method 8010 constituents were non-detectable except for cis-1,2-dichloroethene at 2.6 ppb, tetrachloroethene at 67 ppb and trichloroethene at 8.2 ppb.

** TOG showed 1.2 ppm and EPA method 8010 showed 30 ppb of tetrachloroethane and 9.0 ppb of trichloroethene.

*** Analysis was also performed for TOG, TPH as diesel and EPA method 8010. TOG was <50 ppm. EPA method 8010 showed 4.2 ppb of 1,2-dichloroethane; 1.2 ppb of total 1,2-dichloroethene; 18 ppb of tetrachloroethene, and 6.1 ppb of trichloroethene.

**** TOG were non-detectable. EPA method 8010 showed 2.8 ppb of 1,2-dichloroethane, 110 ppb of tetrachloroethane, and 4.4 ppb of trichloroethene.

ND = Non-detectable.

-- Indicates analyses not performed.

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

KEI-P89-0301.R8
April 16, 1991

TABLE 3

SUMMARY OF LABORATORY ANALYSES
SOIL

(Collected on March 12, 1991)

Sample Number	Depth (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene	TOG
MW2A(5)*	5	4.8	ND	ND	ND	ND	ND	1,300
MW2A(10)*	10	2.4	10	0.12	0.17	1.6	0.14	260
MW2A(14.5)*	14.5	ND	ND	ND	0.0080	0.036	ND	57
Detection Limits		1.0	1.0	0.0050	0.0050	0.0050	0.0050	30

* All EPA method 8010 constituents were non-detectable, except for 0.110 ppm of 1,2-dichlorobenzene, and 0.120 ppm of tetrachloroethene detected in sample MW2A(10).

ND = Non-detectable.

Results in parts per million (ppm), unless otherwise indicated.

KEI-P89-0301.R8
April 16, 1991

TABLE 4

SUMMARY OF LABORATORY ANALYSES
SOIL

(Samples collected on April 3, 1990)

Sample	Depth (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
SW8A*	10.5	62	260	1.4	8.0	40	7.0
SW9A*	10.5	ND	ND	0.017	0.041	0.033	0.0092
SW10A*	10.5	ND	140	0.085	0.12	5.0	1.4
SW11A**	10.5	280	1,100	8.0	43	230	37
Detection Limits		1.0	1.0	0.0050	0.0050	0.0050	0.0050

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

** TOG showed 210 ppm, while all EPA method 8010 constituents were non-detectable.

ND = Non-detectable.

Results in parts per million (ppm), unless otherwise indicated.

KEI-P89-0301.R8
April 16, 1991

TABLE 5

SUMMARY OF LABORATORY ANALYSES
SOIL

Sample Number	Depth (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
(Collected on March 6, 1989)						
EB1(5)	5	2.1	ND	0.11	ND	0.14
EB1(10)	10	200	2.3	7.7	5.7	33
EB2(5)	5	ND	ND	ND	ND	ND
EB2(10)	10	620	2.2	20	13	78
(Collected on March 13, 14 & 17, 1989)						
SW1	10	3,500	22	280	600	100
SW1(2)	10	100	1.3	6.6	16	2.9
SW2	10	390	40	4.3	71	10
SW3(15)	10	60	1.6	2.9	7.8	1.5
SW4/5(6)	10	24	2.6	1.7	2.7	0.56
SW6(12)	10	150	3.1	6.2	5.6	3.6
SW7(14)*	10	ND	0.3	ND	ND	ND
P1	3	2.3	ND	0.15	ND	ND
P2	3	1.5	ND	0.31	ND	ND
P3	3	1.1	ND	0.1	ND	ND
P4	3	5.6	ND	0.15	0.39	ND
P5	3	6.8	0.15	0.58	0.55	0.12
P6	3.5	5.5	0.06	0.18	0.15	ND
WO1**	10	15	ND	ND	0.21	0.88
(Collected on May 24, 1989)						
MW1(5)	5	2.3	0.08	ND	0.62	ND
MW1(10)	10	290	1.0	11	48	8.8
MW2(5)***	5	230	13	1.7	3.2	1.5
MW2(10)+	10	31	1.2	1.0	5.5	1.1
MW3(5)	5	3.2	0.29	0.1	0.7	ND
MW3(10)	10	4.6	ND	ND	0.44	0.3
MW4(5)	5	3.1	ND	0.11	ND	ND
MW4(10)	10	ND	ND	ND	ND	ND

TABLE 5 (Continued)

SUMMARY OF LABORATORY ANALYSES
SOIL

* TPH as diesel was 6.2 ppm; TOG was at 41 ppm; all 8240 constituents are non-detectable, except as noted above.

** TPH as diesel was non-detectable; TOG was at 280 ppm; all 8240 constituents are non-detectable, except as noted above.

*** TPH as diesel was non-detectable, TOG was 7,700 ppm, and trichloroethene at 0.063 ppm.

\+ TPH as diesel was non-detectable, TOG was 38 ppm, and trichloroethene at 0.065 ppm.

ND = Non-detectable.

Results in parts per million (ppm), unless otherwise indicated.

KEI-P89-0301.R8
April 16, 1991

TABLE 6

SUMMARY OF LABORATORY ANALYSES
WATER

Sample Well #	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
		(Collected on March 17, 1989)			
W1	19,000	230	79	1,300	ND

ND = Non-detectable.

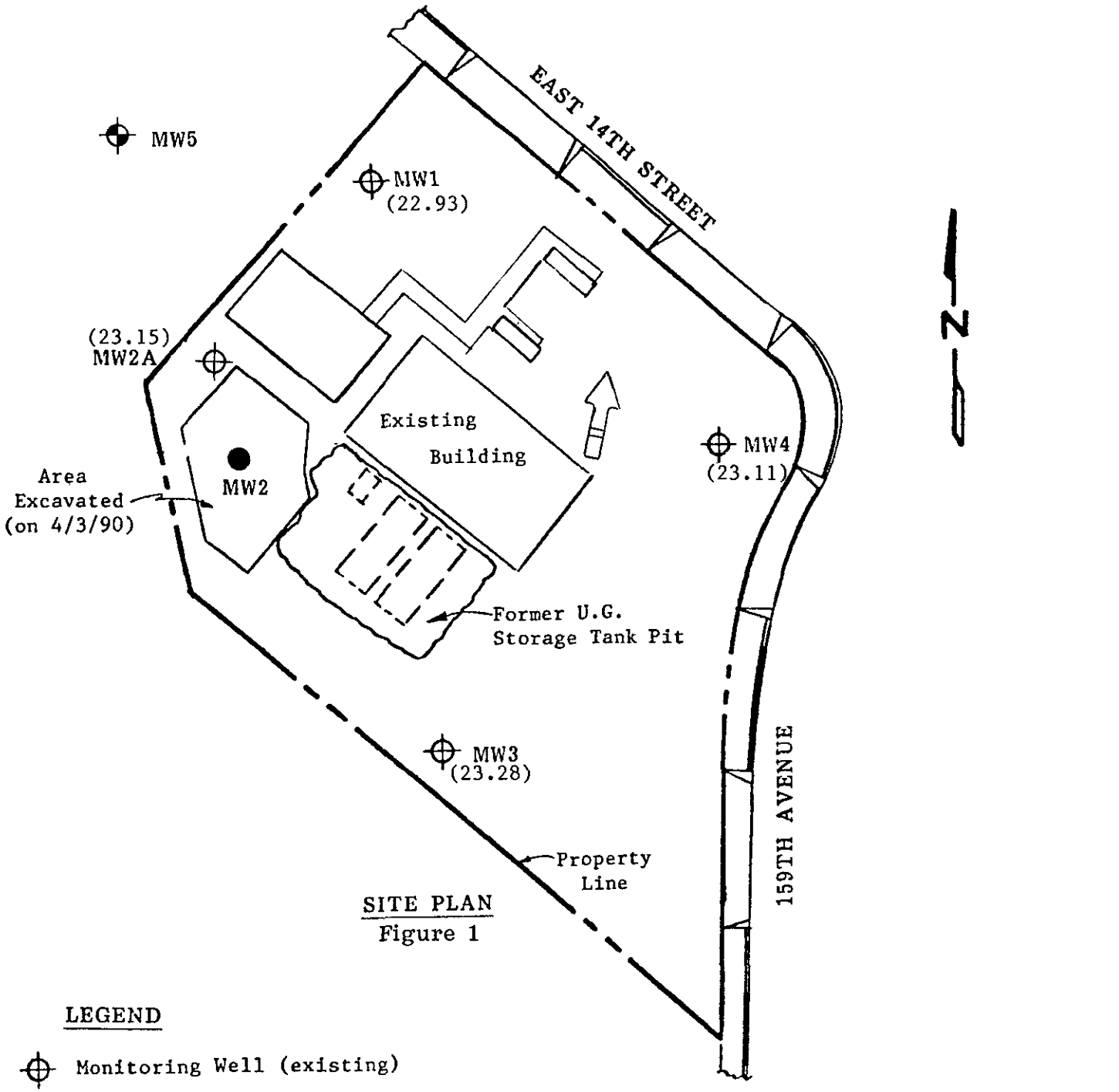
Results in parts per billion (ppb), unless otherwise indicated.

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581

LOCATION MAP

Unocal S/S #6277
15803 E. 14th Street
San Leandro, CA

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
PO BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581



SITE PLAN
Figure 1

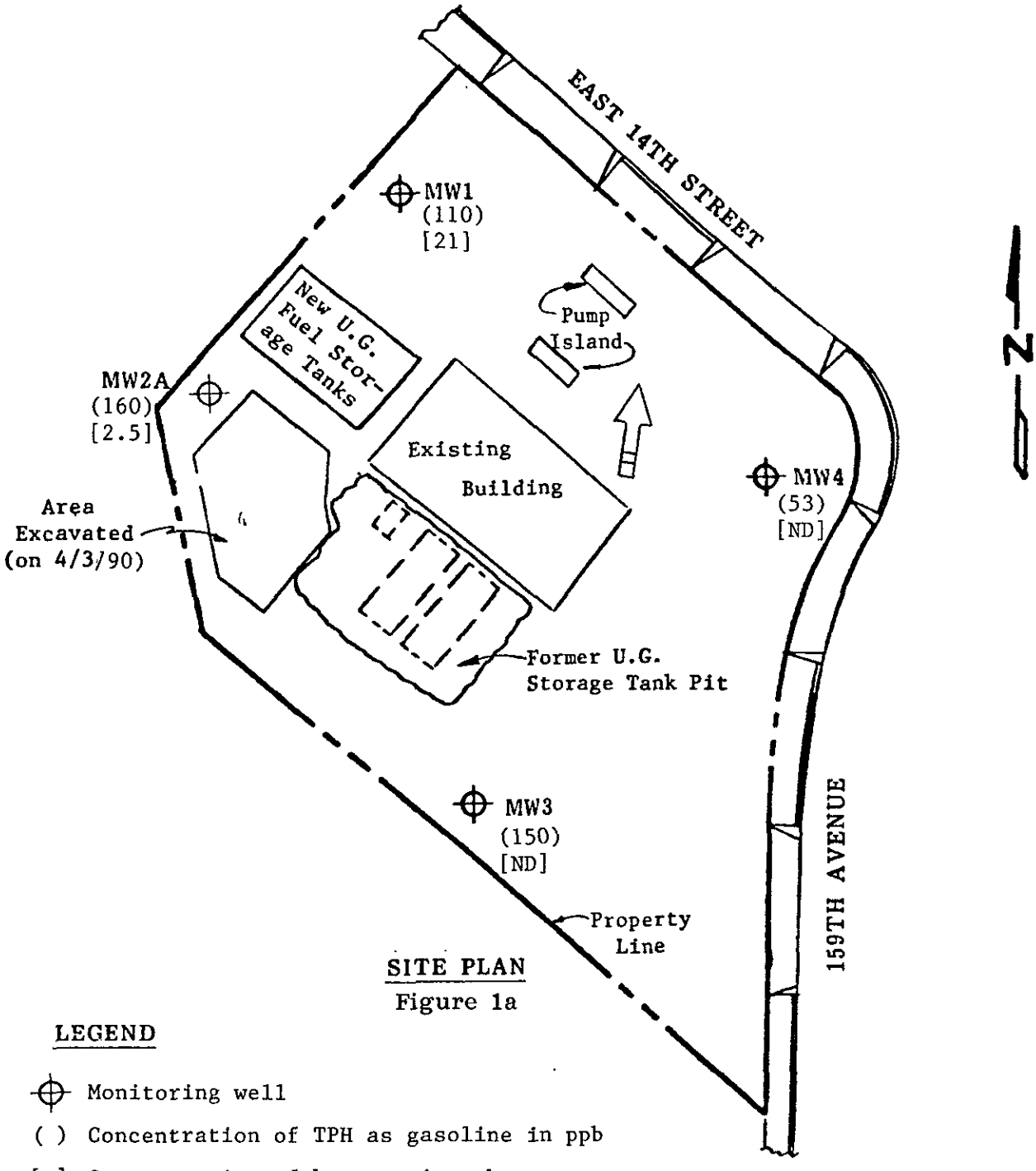
LEGEND

- Monitoring Well (existing)
- ( ) Water table elevation in feet above Mean Sea Level on 3/15/91
- Ground water flow direction.
- Monitoring Well (destroyed 2/1/90)
- Monitoring Well proposed but not installed due to unavailable access

0 40 80
Approx. Scale feet

Unocal Service Station #6277
15803 East 14th Street
San Leandro, California

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
PO BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581



SITE PLAN
Figure 1a

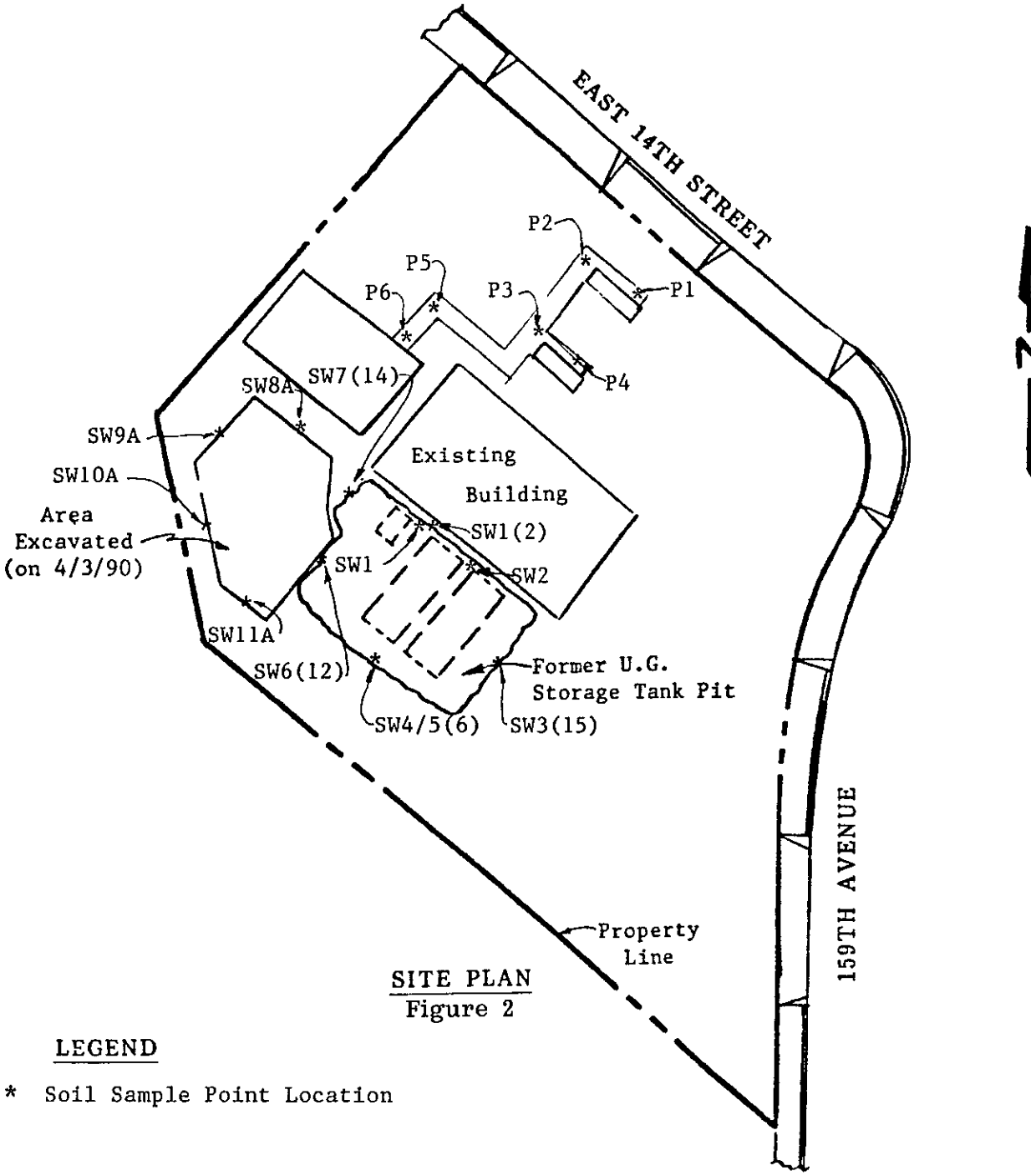
LEGEND

- Monitoring well
- ( ) Concentration of TPH as gasoline in ppb
- [ ] Concentration of benzene in ppb
- Direction of ground water flow

0 40 80
Approx. Scale feet

Unocal Service Station #6277
15803 East 14th Street
San Leandro, California

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
PO BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX. (707) 746-5581



SITE PLAN
Figure 2

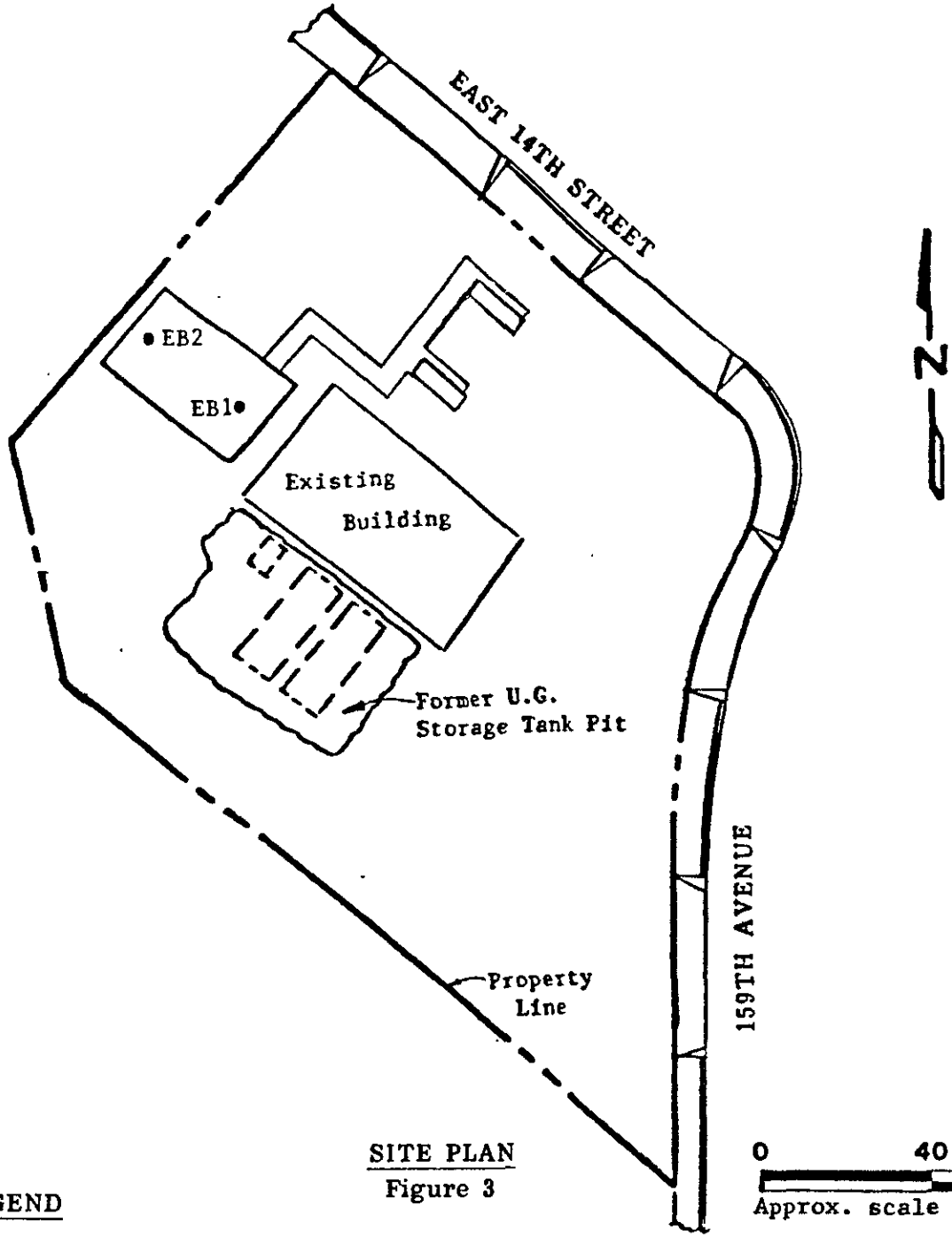
LEGEND

* Soil Sample Point Location

0 40 80
Approx. Scale feet

Unocal Service Station #6277
15803 East 14th Street
San Leandro, California

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581



SITE PLAN
Figure 3

LEGEND

- Exploratory boring

Unocal S/S #6277
15803 East 14th Street
San Leandro, CA

BORING LOG

Project No.	Boring & Casing Diameter	Logged By
KEI-P89-0301	9" 2"	W.W.
Project Name Unocal 15803 E. 14th San L	**Well Cover Elevation**	**Date Drilled** 3/12/91
Boring No. MW2A	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		Asphalt pavement over sand and gravel.
			GC	Clayey gravel with sand and cobbles to 5" in diameter, moist, dense, strong brown, traces of dark grayish brown.
				Clayey gravel fill with sand, as above, yellowish brown below 4'.
11/9/8		5		Base of Fill
			CH	Clay, trace silt and sand, trace angular gravel to 1/2" diameter, moist, very stiff, very dark gray, trace rootlets.
7/9/13		10		Clay, high plasticity, porous, moist, very stiff, very dark gray.
5/8/15			CL/CH	Clay, moist, very stiff, light brownish gray.
5/7/8	▼	15		Clay, very moist, saturated, stiff, light brownish gray.
				Clay with silt, very moist to saturated, stiff, trace caliche, trace coarse black sand, light brownish gray.
5/7/		20		

B O R I N G L O G

Project No.	Boring & Casing Diameter	Logged By
KEI-P89-0301	9" 2"	W.W.
Project Name Unocal 15803 E. 14th San L	**Well Cover Elevation**	**Date Drilled** 3/12/91
Boring No. MW2A	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
/8			CL/ CH	Clay, with silt, as above.
3/5/6		25		Silty clay, trace fine-grained sand, saturated, stiff, light yellowish brown to light olive brown.
		30		
		35		
		40		TOTAL DEPTH: 25.5'

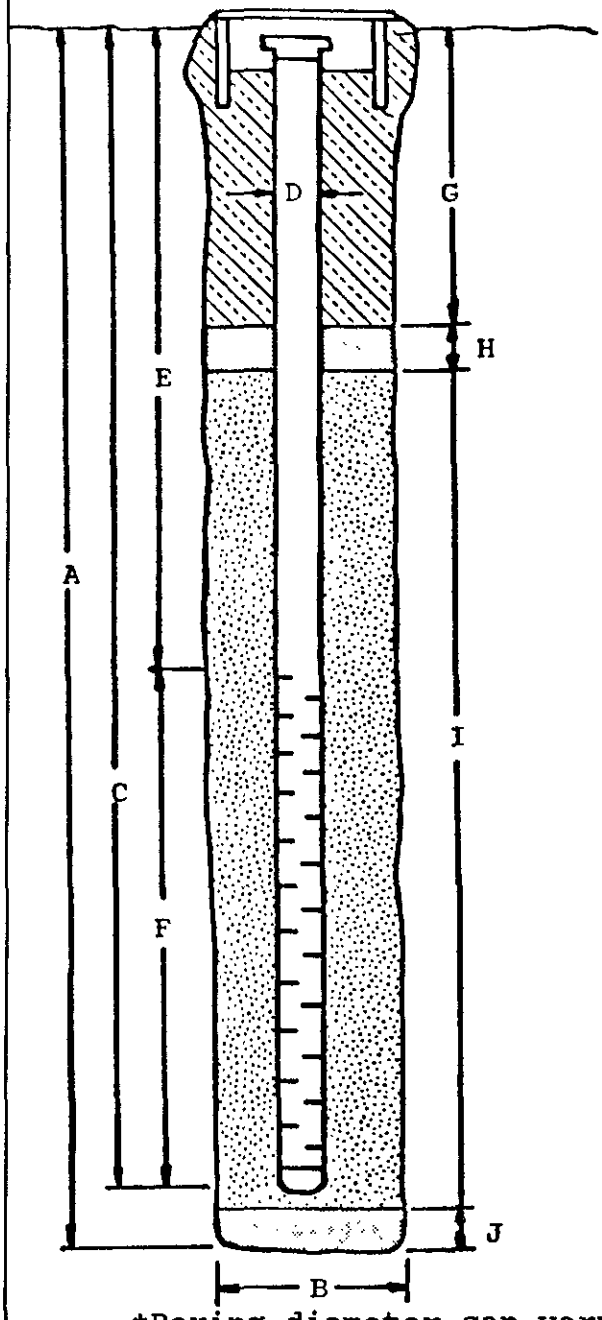
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal 15803 E. 14th St. San Leand BORING/WELL NO. MW2A

PROJECT NUMBER: KEI-P89-0301

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 25'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 25'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"
ID = 2.067"

E. Depth to Perforations: 5'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 3'

Seal Material: Concrete

H. Seal: 1'

Seal Material: Bentonite

I. Gravel Pack: 21.5'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 15, 1991
P.O. Box 996	Matrix Descript:	Water	Received:	Mar 15, 1991
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Mar 28, 1991
Attention: Mardo Kaprealian, P.E.	First Sample #:	103-0510 AB	Reported:	Mar 29, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)
103-0510 AB	MW-1	110	21	N.D.	N.D.	8.4
103-0511 AB	MW-2A	160	2.5	N.D.	N.D.	51
103-0512 AB	MW-3	150	N.D.	N.D.	N.D.	0.45
103-0513 AB	MW-4	53	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**30**	**0.30**	**0.30**	**0.30**	**0.30**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

for Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 15, 1991
P.O. Box 996	Matrix Descript:	Water	Received:	Mar 15, 1991
Benicia, CA 94510	Analysis Method:	EPA 3510/8015	Extracted:	Mar 21, 1991
Attention: Mardo Kaprealian, P.E.	First Sample #:	103-0511 C	Analyzed:	Mar 23, 1991
			Reported:	Mar 29, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons µg/L (ppb)
103-0511 C	MW-2A	N.D.

Detection Limits:	50

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

for Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 15, 1991
P.O. Box 996	Matrix Descript:	Water	Received:	Mar 15, 1991
Benicia, CA 94510	Analysis Method:	SM 5520 B&F (Gravimetric)	Extracted:	Mar 22, 1991
Attention: Mardo Kaprealian, P.E.	First Sample #:	103-0511 D	Analyzed:	Mar 26, 1991
			Reported:	Mar 29, 1991

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
103-0511 D	MW-2A	N.D.

Detection Limits:	5.0

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

SEQUOIA ANALYTICAL

for Belinda C. Vega
Laboratory Director

1030510.KEI <3>

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 15, 1991
P.O. Box 996	Sample Descript:	Water, MW-2A	Received:	Mar 15, 1991
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Mar 18, 1991
Attention: Mardo Kaprealian, P.E.	Lab Number:	103-0511 E-F	Reported:	Mar 29, 1991

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	1.0	N.D.
Bromoform	1.0	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	1.0	N.D.
Chlorobenzene	1.0	N.D.
Chloroethane	5.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	N.D.
Chloromethane	0.50	N.D.
Dibromochloromethane	0.50	N.D.
1,2-Dichlorobenzene	2.0	N.D.
1,3-Dichlorobenzene	2.0	N.D.
1,4-Dichlorobenzene	2.0	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	1.0	N.D.
cis-1,2-Dichloroethene	**1.0**	**2.6**
trans-1,2-Dichloroethene	1.0	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	5.0	N.D.
trans-1,3-Dichloropropene	5.0	N.D.
Methylene chloride	2.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	**0.50**	**67**
1,1,1-Trichloroethane	0.50	N.D.
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	**0.50**	**8.2**
Trichlorofluoromethane	1.0	N.D.
Vinyl chloride	2.0	N.D.

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

SEQUOIA ANALYTICAL

for Belinda C. Vega
Laboratory Director

1030510.KEI <4>

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER	SITE NAME & ADDRESS	ANALYSES REQUESTED	TURN AROUND TIME:
RAY NEI	UNOCAL SAN LEANDRO 15803 E. 14TH Street	TPHG, BTXE, TPH Diesel, TOG (5520 E&F), 8010	REGULAR
WITNESSING AGENCY			

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG	BTXE	TPH Diesel	TOG (5520 E&F)	8010			REMARKS
MW1	3-15			X	X		2 VOA		X	X						
MW2A	"			X	X		4 VOA 2 AMB		X	X	X	X	X			
MW3	"			X	X		2 VOA		X	X						
MW4	"			X	X		"		X	X						

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Ray (KEI)	3-15-91	12:58
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time 3/15/91 1255	Received by: (Signature) [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?
   yes

Signature	Title	Date
BS	login	3/15/91

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 12, 1991
P.O. Box 996	Matrix Descript:	Soil	Received:	Mar 13, 1991
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Mar 19, 1991
Attention: Mardo Kaprealian, P.E.	First Sample #:	103-0406	Reported:	Mar 22, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
103-0406	MW2A-(5)	N.D.	N.D.	N.D.	N.D.	N.D.
103-0407	MW2A-(10)	10	0.12	0.17	0.14	1.6
103-0408	MW2A-(14.5)	N.D.	N.D.	0.0080	N.D.	0.036
Detection Limits:		**1.0**	**0.0050**	**0.0050**	**0.0050**	**0.0050**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 12, 1991
P.O. Box 996	Matrix Descript:	Soil	Received:	Mar 13, 1991
Benicia, CA 94510	Analysis Method:	EPA 3550/8015	Extracted:	Mar 14, 1991
Attention: Mardo Kaprealian, P.E.	First Sample #:	103-0406	Analyzed:	Mar 16, 1991
			Reported:	Mar 22, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
103-0406	MW2A-(5)	4.8
103-0407	MW2A-(10)	2.4
103-0408	MW2A-(14.5)	N.D.

Detection Limits:	**1.0**

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

1030406.KEI <2>

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 12, 1991
P.O. Box 996	Matrix Descript:	Soil	Received:	Mar 13, 1991
Benicia, CA 94510	Analysis Method:	SM 5520 E&F (Gravimetric)	Extracted:	Mar 15, 1991
Attention: Mardo Kaprealian, P.E.	First Sample #:	103-0406	Analyzed:	Mar 17, 1991
			Reported:	Mar 22, 1991

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
103-0406	MW2A-(5)	1,300
103-0407	MW2A-(10)	260
103-0408	MW2A-(14.5)	57

Detection Limits:	**30**

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

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

1030406.KEI <3>

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 12, 1991
P.O. Box 996	Sample Descript:	Soil, MW2A-(5)	Received:	Mar 13, 1991
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Mar 19, 1991
Attention: Mardo Kaprealian, P.E.	Lab Number:	103-0406	Reported:	Mar 22, 1991

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Bromodichloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Carbon tetrachloride	50	N.D.
Chlorobenzene	50	N.D.
Chloroethane	250	N.D.
2-Chloroethylvinyl ether	50	N.D.
Chloroform	50	N.D.
Chloromethane	50	N.D.
Dibromochloromethane	50	N.D.
1,2-Dichlorobenzene	100	N.D.
1,3-Dichlorobenzene	100	N.D.
1,4-Dichlorobenzene	100	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
cis-1,2-Dichloroethene	50	N.D.
trans-1,2-Dichloroethene	50	N.D.
1,2-Dichloropropane	50	N.D.
cis-1,3-Dichloropropene	50	N.D.
trans-1,3-Dichloropropene	50	N.D.
Methylene chloride	100	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
1,1,2-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
Trichlorofluoromethane	50	N.D.
Vinyl chloride	100	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

Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 12, 1991
P.O. Box 996	Sample Descript:	Soil, MW2A-(10)	Received:	Mar 13, 1991
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Mar 19, 1991
Attention: Mardo Kaprealian, P.E.	Lab Number:	103-0407	Reported:	Mar 22, 1991

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Bromodichloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Carbon tetrachloride	50	N.D.
Chlorobenzene	50	N.D.
Chloroethane	250	N.D.
2-Chloroethylvinyl ether	50	N.D.
Chloroform	50	N.D.
Chloromethane	50	N.D.
Dibromochloromethane	50	N.D.
1,2-Dichlorobenzene	**100**	**110**
1,3-Dichlorobenzene	100	N.D.
1,4-Dichlorobenzene	100	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
cis-1,2-Dichloroethene	50	N.D.
trans-1,2-Dichloroethene	50	N.D.
1,2-Dichloropropane	50	N.D.
cis-1,3-Dichloropropene	50	N.D.
trans-1,3-Dichloropropene	50	N.D.
Methylene chloride	100	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
Tetrachloroethene	**50**	**120**
1,1,1-Trichloroethane	50	N.D.
1,1,2-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
Trichlorofluoromethane	50	N.D.
Vinyl chloride	100	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

Belinda C. Vega
Laboratory Director

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kapreallan Engineering, Inc.	Client Project ID:	Unocal, 15803 E. 14th St., San Leandro	Sampled:	Mar 12, 1991
P.O. Box 996	Sample Descript:	Soil, MW2A-(14.5)	Received:	Mar 13, 1991
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Mar 19, 1991
Attention: Mardo Kapreallan, P.E.	Lab Number:	103-0408	Reported:	Mar 22, 1991

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Bromodichloromethane	50	N.D.
Bromoform	50	N.D.
Bromomethane	50	N.D.
Carbon tetrachloride	50	N.D.
Chlorobenzene	50	N.D.
Chloroethane	250	N.D.
2-Chloroethylvinyl ether	50	N.D.
Chloroform	50	N.D.
Chloromethane	50	N.D.
Dibromochloromethane	50	N.D.
1,2-Dichlorobenzene	100	N.D.
1,3-Dichlorobenzene	100	N.D.
1,4-Dichlorobenzene	100	N.D.
1,1-Dichloroethane	50	N.D.
1,2-Dichloroethane	50	N.D.
1,1-Dichloroethene	50	N.D.
cis-1,2-Dichloroethene	50	N.D.
trans-1,2-Dichloroethene	50	N.D.
1,2-Dichloropropane	50	N.D.
cis-1,3-Dichloropropene	50	N.D.
trans-1,3-Dichloropropene	50	N.D.
Methylene chloride	100	N.D.
1,1,2,2-Tetrachloroethane	50	N.D.
Tetrachloroethene	50	N.D.
1,1,1-Trichloroethane	50	N.D.
1,1,2-Trichloroethane	50	N.D.
Trichloroethene	50	N.D.
Trichlorofluoromethane	50	N.D.
Vinyl chloride	100	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

Belinda C. Vega
Laboratory Director

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Wade Weston

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal San Leandro, 15803 E. 14th ST.

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH-G/BTXE	TPH-D	TOG (5520 E&F)	8010	REMARKS
MW2A-(5)	3/12/91		✓		✓		1	See Sample ID #	✓	✓	✓	✓	1030406
MW2A-(10)	"		✓		✓		1		✓	✓	✓	✓	407
MW2A-(13)	"		✓		✓		1		✓	✓	✓	✓	Hold
MW2A-(14.5)	"		✓		✓		1		✓	✓	✓	✓	408

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Wade Weston	3/13 11:25	
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? ✓
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	Title	Date
✓	SR	3/13