KAPREALIAN ENGINEERING
INCORPORATED

KEI-P91-1101.R1
April 15, 1992

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

Attention: Ms. Penny Silzer

RE: Ground Water Investigation at
Former Unocal Service Station #5847
2701 East Avenue
Hayward, California

Dear Ms. Silzer:

This report presents the results of Kaprealian Engineering, Inc's. (KEI) soil and ground water investigation for the referenced site, in accordance with KEI's proposal KEI-P91-1101.P1 dated December 6, 1991. The purpose of the investigation was to determine the ground water flow direction and the degree and extent of soil and ground water contamination at the site. The scope of the work performed by KEI consisted of the following:

Coordination with regulatory agencies

Geologic logging of 11 borings for the installation of seven monitoring wells and four soil borings

Soil sampling

Ground water monitoring, purging, and sampling

Laboratory analyses

Data analysis, interpretation, and report preparation

SITE DESCRIPTION AND BACKGROUND

The former Unocal service station is located on the southeast corner of Windfeldt and East Avenue in Hayward, California, as shown on the attached Site Plan. The site is vacant and all improvements have been demolished. A Location Map and Site Plans are attached to this report.

According to Unocal documents, the service station was demolished in September of 1985, at which time two 10,000 gallon underground storage tanks (containing regular unleaded and super unleaded

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gasoline) and one 280 waste oil tank were removed from the site. There were no reported indications of any leaks or holes in the underground storage tanks.

On November 6, 1986, six exploratory borings (designated as B-1 through B-6 on the attached Site Plan, Figure 2) were drilled at the site by Applied GeoSystems, Inc. (AGS) of Fremont, California. Borings B-3 and B-5 were terminated at shallow depths due to auger refusal. Borings B-1 and B-4 were terminated at depths below grade of approximately 15 feet and 22 feet, respectively, due to auger refusal. In these four exploratory borings, AGS reported that refusal occurred after "encountering large fragments of concrete, metal objects, and other hard, discarded materials." Borings B-2 and B-6 were drilled to total depths of 37 and 41 feet below grade, respectively. Ground water was encountered in borings B-2 and B-6 at depths ranging from 21.5 to 33 feet beneath the surface during drilling. Ground water was not encountered in the other four borings prior to auger refusal. Borings B-2 and B-6 were subsequently converted into two-inch diameter monitoring wells (designated as wells MW1B and MW2B, respectively, on the attached Site Plan, Figure 2). The wells were developed and sampled on November 10, 1986.

Soil samples collected from borings B-2 (MW1B), B-4, and B-6 (MW2B), and water samples collected from wells MW1B and MW2B, were analyzed by AGS for total hydrocarbons (THC) as gasoline. In addition, soil samples collected from boring B-6 were analyzed for THC as diesel, and water samples collected from wells MW1B and MW2B were analyzed for benzene, toluene, xylenes, and ethylbenzene (BTX&E).

Analytical results of the soil samples collected from borings B-2, B-4, and B-6 indicated levels of THC as gasoline ranging from non-detectable to 3.11 ppm. THC as diesel was non-detectable in all soil samples collected from boring B-6. Analytical results of the ground water samples collected on November 11, 1986, from wells MW1B and MW2B showed levels of THC as gasoline at concentrations of 1,378 ppb and 84 ppb, respectively. Benzene was detected at 14 ppb in well MW1B, and was non-detectable in well MW2B. Results of the soil samples are summarized in Table 5, and results of the water samples are summarized in Table 4.

Based on the analytical results, AGS recommended the implementation of a monitoring and sampling program for both wells. Documentation of AGS's well installation procedures, sample collection techniques, and analytical results are presented in the AGS report (Job No. 86109-1) dated November 19, 1986.

The wells were monitored and sampled quarterly (April, July, and October) during 1987. No free product or sheen was noted in any of the wells during monitoring. Analytical results of the ground water samples collected on October 27, 1987, from wells MW1B and MW2B showed non-detectable levels of THC as gasoline and BTX&E. Analytical results of all the ground water samples collected by AGS are summarized in Table 4.

Unocal subsequently requested closure of the site in a letter dated December 7, 1987, to the Regional Water Quality Control Board (RWQCB). KEI understands that no response to this request was received.

RECENT FIELD ACTIVITIES

Between February 17, 1992, and February 28, 1992, seven additional two-inch diameter monitoring wells and four exploratory borings (designated as MW3, MW4, MW5, MW6, MW7, MW8, and MW9, and EB7, EB8, EB9, and EB10, respectively) were installed at the site at the approximate locations identified on the attached Site Plan, Figure 2. The wells were each drilled, constructed, and completed in accordance with the guidelines of the RWQCB and the 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 seven wells were each drilled and completed to total depths ranging from 35 to 40.5 feet below grade. The four exploratory borings were drilled to depths ranging from 17 to 27.5 feet below grade. Ground water was encountered at depths ranging from approximately 19.5 to 33.5 feet beneath the surface during drilling. However, ground water was not encountered in borings EB7 or EB8. Soil and bedrock samples were taken for laboratory analysis and for lithologic logging purposes at a maximum spacing of 5 foot intervals, beginning at a depth of approximately 4.5 feet below grade and continuing until ground water was encountered. In addition, samples were obtained from borings MW3 and MW4 in the tank excavation backfill, and were submitted to Harlan Tait Associates in San Francisco, California, for compaction testing. Compaction results are included as Appendix A.

Bedrock sampling below the ground water table was for lithologic logging purposes only, except for one soil/bedrock sample from MW4 (collected at a depth of 35 feet below grade), and one soil/bedrock sample from MW8 (collected at a depth of 29 feet below grade), which were submitted to Harlan Tait Associates in San Francisco, California, for particle size analysis. 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 state-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 each well cover (including previously installed wells MW1B and MW2B) were surveyed by Kier & Wright of Pleasanton, California, to Mean Sea Level (MSL) and to a vertical accuracy of 0.01 feet.

The wells (except MW1B and MW2B) were developed on March 2 through 5, 1992. Prior to development, all wells were checked for depth to water table (by the use of an electronic sounder) and the presence of free product (by the use of an interface probe or paste tape). No free product was noted in any of the wells. After recording the monitoring data, the wells (except for MW1B and MW2B) were each purged with a surface pump of 55 to 110 gallons until the evacuated water was clear and reasonably free of suspended sediment. Monitoring and well development data are summarized in Table 1.

All wells were sampled on March 14, 1992. Prior to sampling, monitoring data were collected, the wells were each purged of between 10 to 13 gallons, and water samples were then collected by the use of a clean Teflon bailer. Samples were decanted into clean VOA vials and/or one-liter amber bottles, as appropriate, then sealed with Teflon-lined screw caps and stored in a cooler, on ice, until delivery to a state-certified laboratory.

ANALYTICAL RESULTS

Water samples from all wells, and selected soil samples from borings of MW3 through MW9 and EB7 through EB10, 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 total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030 in conjunction with modified 8015, and BTX&E by EPA method 8020. In addition, the soil samples from MW8 and the water samples collected from MW2B and MW8 were also analyzed for TPH as diesel by EPA method 3510 (water) and 3550 (soil) in conjunction with modified 8015, total oil and grease (TOG) by Standard Method 5520B&F (water) and 5520E&F (soil), and for EPA method 8010 constituents.

Analytical results of the soil samples collected from all borings indicated non-detectable levels of TPH as gasoline and BTX&E in all analyzed samples, except for minor levels of toluene and/or xylenes (varying from 0.0075 ppm to 0.0098 ppb) in samples EB7(5),

EB7(14.5), EB7(20), and EB8(15). In addition, TPH as diesel, TOG, and all EPA method 8010 constituents were all non-detectable in all samples analyzed from MW8. Analytical results of the water samples collected from all nine wells indicated non-detectable levels of TPH as gasoline and BTX&E, except for 240 ppb of TPH as gasoline and minor amounts of ethylbenzene and xylenes in MW1B. In wells MW2B and MW8, TPH as diesel, TOG, and all EPA method 8010 constituents were non-detectable. The results of the soil analyses are summarized in Table 3, and the results of the water analyses are summarized 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 all monitoring wells at depths ranging from 16.76 to 25.11 feet below the surface. The ground water flow direction appeared to be toward the northeast on March 14, 1992, with a relatively steep hydraulic gradient varying from approximately 0.058 to 0.15 (based on water level data collected from the monitoring wells prior to purging). Contours of equal ground water elevation are shown on the attached Site Plan, Figure 1.

Based on a review of regional geologic maps (U.S. Geological Survey Open File Report 80-540 "Preliminary Geologic Map of the Hayward Quadrangle, Alameda and Contra Costa Counties, California" by Thomas W. Dibblee, Jr. 1980) the subject site is underlain by bedrock materials of the upper Cretaceous Panoche Formation (Kp). The Panoche Formation in the vicinity of the site is described as consisting of gray, micaceous, argillaceous to silty clay shale that strikes to the northwest and dips to the northeast at 65 to 80 degrees (where measured). The site is also located approximately 2,000 feet northeast of the East Chabot Fault, 3,600 feet northeast of the West Chabot Fault, and approximately 6,600 feet northeast of the mapped trace of the active Hayward fault.

The results of our subsurface investigation indicate that the site is underlain directly by shale (claystone to siltstone) bedrock materials, except at the vicinity of the former fuel tank pit where fill materials extend to depths of about 13.5 feet below grade. The particle size analysis (sieve only) conducted on the sample was classified as claystone/siltstone bedrock. Analysis on the sample collected from MW8 at a depth of 29 feet below grade indicates that the material is composed of 5% sand, with the remainder being silt and clay size materials. Analysis on the sample collected from MW4 at a depth of 35 feet below grade indicates 40% sand, approximately 35% silt and approximately 25% clay.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results of the soil and ground water samples collected during the installation of the seven additional monitoring wells and the four additional exploratory borings (non-detectable levels of TPH as gasoline and benzene in all of the soil samples collected from the borings; non-detectable levels of TPH as gasoline and benzene in ground water samples collected from all nine monitoring wells, except for well MW1B, which showed 240 ppb of TPH as gasoline), it does not appear that the site has been significantly impacted by hydrocarbon contamination. The low level of ground water contamination detected in well MW1B appears to be residual in nature and limited to the vicinity of well MW1B.

However, in order to verify the predominantly non-detectable level of ground water contamination, KEI recommends the implementation of a monthly monitoring and quarterly sampling program of the existing wells. This program should be conducted for a period of 12 months. The 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.

DISTRIBUTION

Copies of this report should be sent to the Alameda County Health Care Services Agency, 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 (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Thomas J. Berkins
Senior Environmental Engineer

Joel G. Greger
Certified Engineering Geologist

License No. 1633
Exp. Date 6/30/92

Timothy R. Ross
Project Manager

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Attachments: Tables 1, 2, 3, 4 & 5
Location Map
Site Plans - Figures 1 & 2
Boring Logs
Particle Size Analysis - Plates 1 & 2
Appendix A - Harlan Tait Associates Compaction Report
Laboratory Analyses
Chain of Custody documentation

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TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
3/14/92	MW1B	--	240	ND	ND	4.4	20
	MW2B*	ND	ND	ND	ND	ND	ND
	MW3	--	ND	ND	ND	ND	ND
	MW4	--	ND	ND	ND	ND	ND
	MW5	--	ND	ND	ND	ND	ND
	MW6	--	ND	ND	ND	ND	ND
	MW7	--	ND	ND	ND	ND	ND
	MW8*	ND	ND	ND	ND	ND	ND
	MW9	--	ND	ND	ND	ND	ND
Detection Limits		50	30	0.30	0.30	0.30	0.30

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

ND = Non-detectable.

-- Indicates analysis was not performed.

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

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TABLE 3

SUMMARY OF LABORATORY ANALYSES
SOIL

Date	Sample Number	Depth (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
2/28/92	EB7(5)	5.0	--	ND	ND	ND	0.0075	ND
	EB7(10)	10.0	--	ND	ND	ND	ND	ND
	EB7(14.5)	14.5	--	ND	ND	0.0079	0.0098	ND
	EB7(20)	20.0	--	ND	ND	ND	0.0090	ND
	EB7(24.5)	24.5	--	ND	ND	ND	ND	ND
2/28/92	EB8(4.5)	4.5	--	ND	ND	ND	ND	ND
	EB8(10)	10.0	--	ND	ND	ND	ND	ND
	EB8(15)	15.0	--	ND	ND	ND	0.0087	ND
2/28/92	EB9(5)	5.0	--	ND	ND	ND	ND	ND
	EB9(10)	10.0	--	ND	ND	ND	ND	ND
	EB9(15)	15.0	--	ND	ND	ND	ND	ND
	EB9(19.5)	19.5	--	ND	ND	ND	ND	ND
	EB9(25.5)	25.5	--	ND	ND	ND	ND	ND
2/28/92	EB10(5)	5.0	--	ND	ND	ND	ND	ND
	EB10(10)	10.0	--	ND	ND	ND	ND	ND
	EB10(15)	15.0	--	ND	ND	ND	ND	ND
	EB10(20)	20.0	--	ND	ND	ND	ND	ND
	EB10(25.5)	25.5	--	ND	ND	ND	ND	ND
	EB10(27)	27.0	--	ND	ND	ND	ND	ND
2/19/92	MW3(5.5)	5.0	--	ND	ND	ND	ND	ND
	MW3(15)	15.0	--	ND	ND	ND	ND	ND
	MW3(19.5)	19.5	--	ND	ND	ND	ND	ND
	MW3(24.5)	24.5	--	ND	ND	ND	ND	ND
2/19/92	MW4(5)	5.0	--	ND	ND	ND	ND	ND
	MW4(10)	10.0	--	ND	ND	ND	ND	ND
	MW4(15)	15.0	--	ND	ND	ND	ND	ND
	MW4(20)	20.0	--	ND	ND	ND	ND	ND
	MW4(24.5)	24.5	--	ND	ND	ND	ND	ND
2/24/92	MW5(5)	5.0	--	ND	ND	ND	ND	ND
	MW5(10)	10.0	--	ND	ND	ND	ND	ND
	MW5(15)	15.0	--	ND	ND	ND	ND	ND
	MW5(19)	19.0	--	ND	ND	ND	ND	ND
	MW5(24.5)	24.5	--	ND	ND	ND	ND	ND

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TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
SOIL

Date	Sample Number	Depth (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
2/18/92	MW6(10)	10.0	--	ND	ND	ND	ND	ND
	MW6(20)	20.0	--	ND	ND	ND	ND	ND
	MW6(30.5)	30.5	--	ND	ND	ND	ND	ND
2/24/92	MW7(5)	5.0	--	ND	ND	ND	ND	ND
	MW7(10)	10.0	--	ND	ND	ND	ND	ND
	MW7(15)	15.0	--	ND	ND	ND	ND	ND
	MW7(19)	19.0	--	ND	ND	ND	ND	ND
2/18/92	MW8(5)*	5.0	ND	ND	ND	ND	ND	ND
	MW8(10)**	10.0	ND	ND	ND	ND	ND	ND
	MW8(15)**	15.0	ND	ND	ND	ND	ND	ND
	MW8(19.5)**	19.5	ND	ND	ND	ND	ND	ND
	MW8(25)**	25.0	ND	ND	ND	ND	ND	ND
	MW8(30)**	30.0	ND	ND	ND	ND	ND	ND
2/17/92	MW9(5)	5.0	--	ND	ND	ND	ND	ND
	MW9(14.5)	14.5	--	ND	ND	ND	ND	ND
	MW9(25)	25.0	--	ND	ND	ND	ND	ND
Detection Limits			1.0	1.0	0.0050	0.0050	0.0050	0.0050

* TOG was detected at 120 ppm. EPA method 8010 constituents were non-detectable.

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

ND = Non-detectable.

-- Indicates analysis was not performed.

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

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TABLE 4

SUMMARY OF LABORATORY ANALYSES
WATER

(Collected by AGS)

Date	Well #	THC as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
10/27/87	MW1B	ND	ND	ND	ND	ND
	MW2B	ND	ND	ND	ND	ND
7/24/87	MW1B	367.7	5.1	1.4	26.7	24.3
	MW2B	5.7	ND	1.3	0.9	ND
4/28/87	MW1B	1,263	9.1	3.8	141.2	82.4
	MW2B	12.5	ND	2.7	3.4	0.8
11/11/86	MW1B	1,378	14	7	352	102
	MW2B	84	ND	3	13	2

ND = Non-detectable.

NOTE: Designation MW1B and MW2B adopted by KEI, formerly referred to as MW1 and MW2 by AGS.

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

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TABLE 5

SUMMARY OF LABORATORY ANALYSES
SOIL

(Collected by AGS on November 6 & 7, 1987)

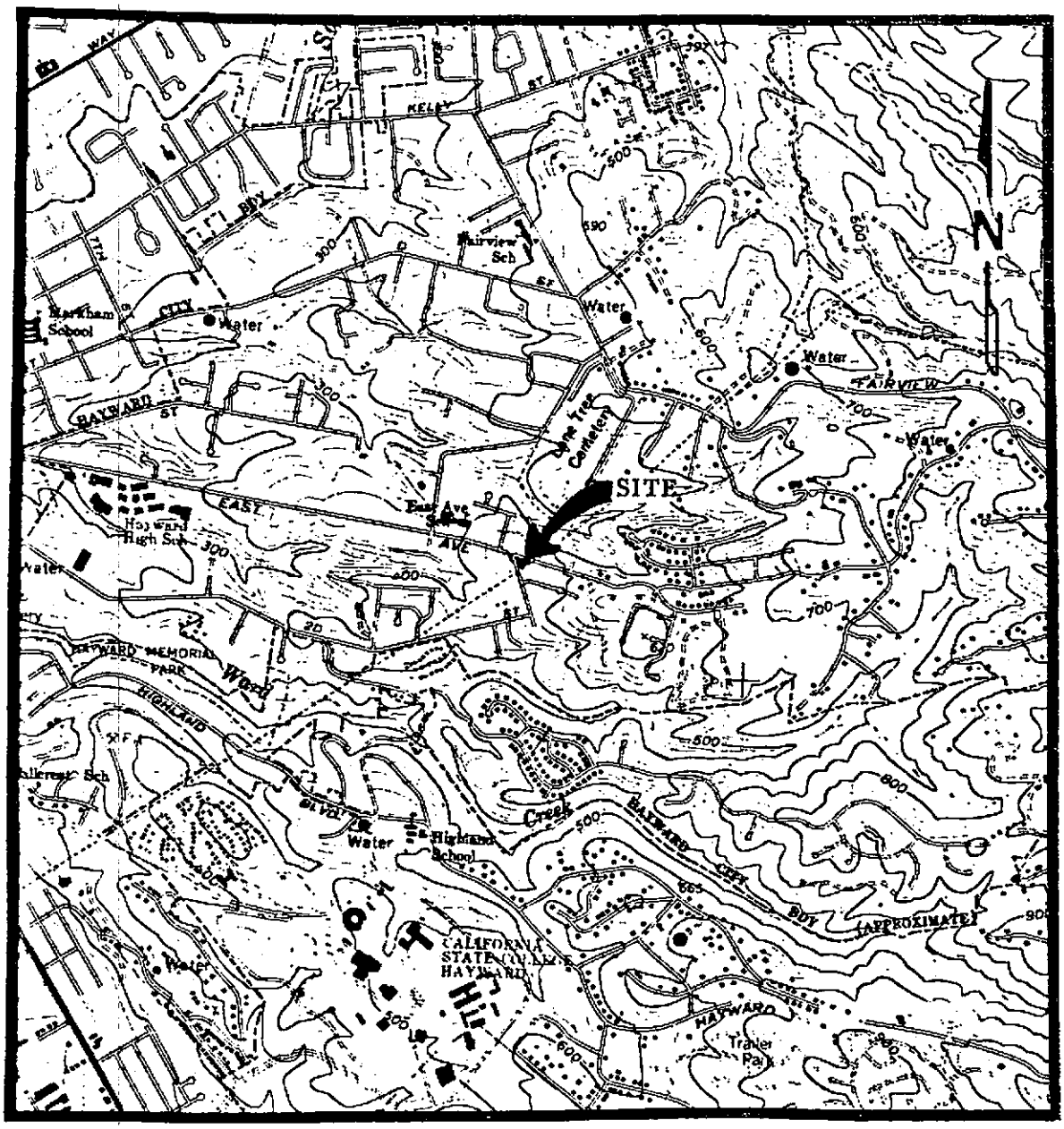
Sample Number	Well or Boring #	Depth (feet)	THC as Gasoline	THC as Diesel
S-15-B2	MW1B	15	0.4	--
S-20-B2	MW1B	20	ND	--
S-10-B4	B4	10	3.11	--
S-20-B4	B4	20	ND	--
S-15-B6	MW2B	15	0.2	ND
S-25-B6	MW2B	25	0.2	ND
S-30-B6	MW2B	30	ND	ND
Detection Limits			0.1	5.0

ND = Non-detectable.

-- Indicates analysis was not performed.

NOTE: Designation MW1B and MW2B adopted by KEI, formerly referred to as MW1 and MW2 by AGS.

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

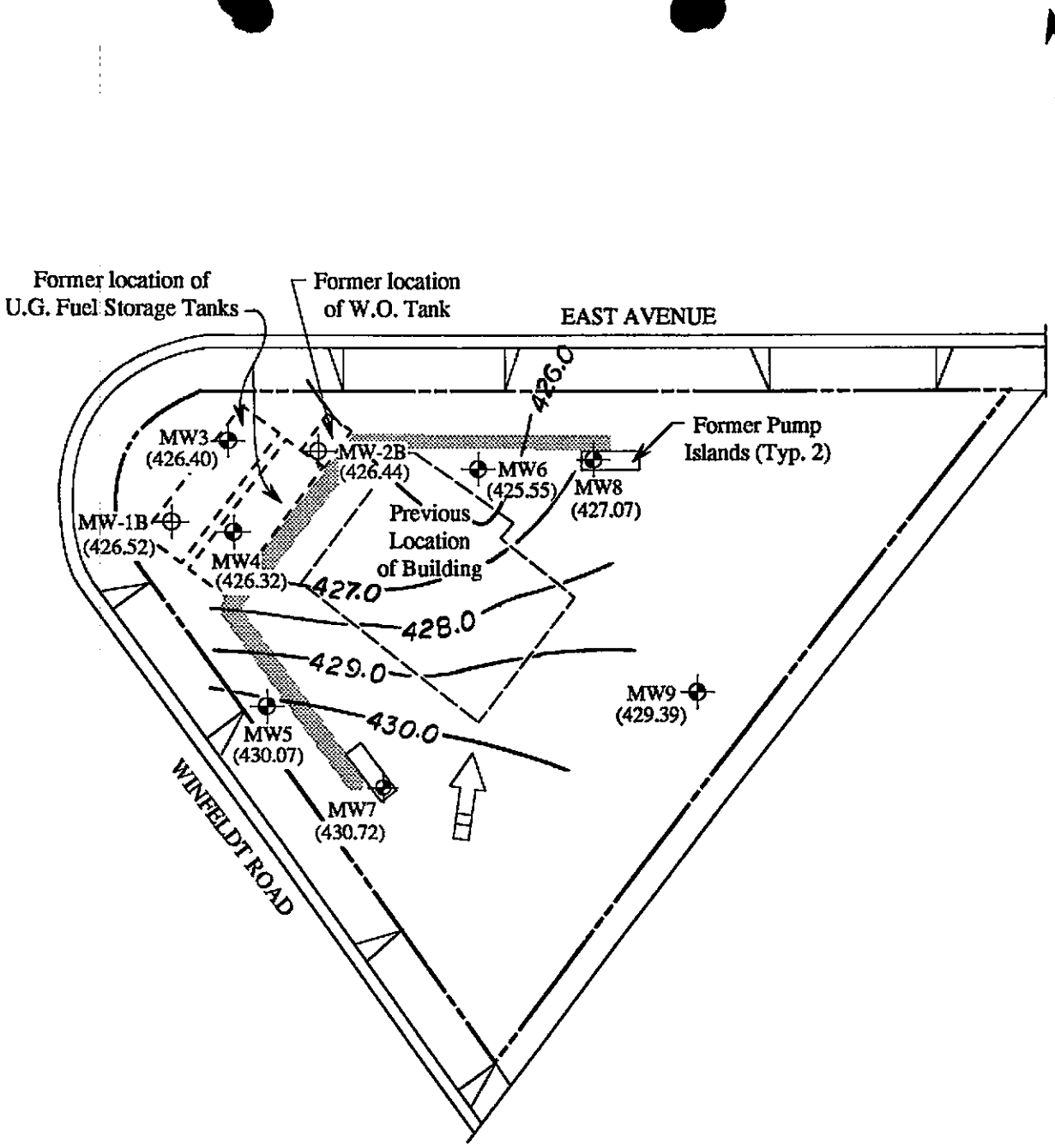


Base modified from 7.5 minute U.S.G.S. Hayward Quadrangle
(photorevised 1980)

0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED	FORMER UNOCAL S/S #5847 2701 EAST AVENUE HAYWARD, CA	LOCATION MAP



SITE PLAN

LEGEND

- Monitoring well (by KEI)
- Monitoring well (by AGS, 1986)
- ( ) Ground water elevation in feet above Mean Sea Level on 3/14/92
- Direction of ground water flow
- Contours of ground water elevation

0 30 60

Approx. scale feet

KAPREALIAN ENGINEERING
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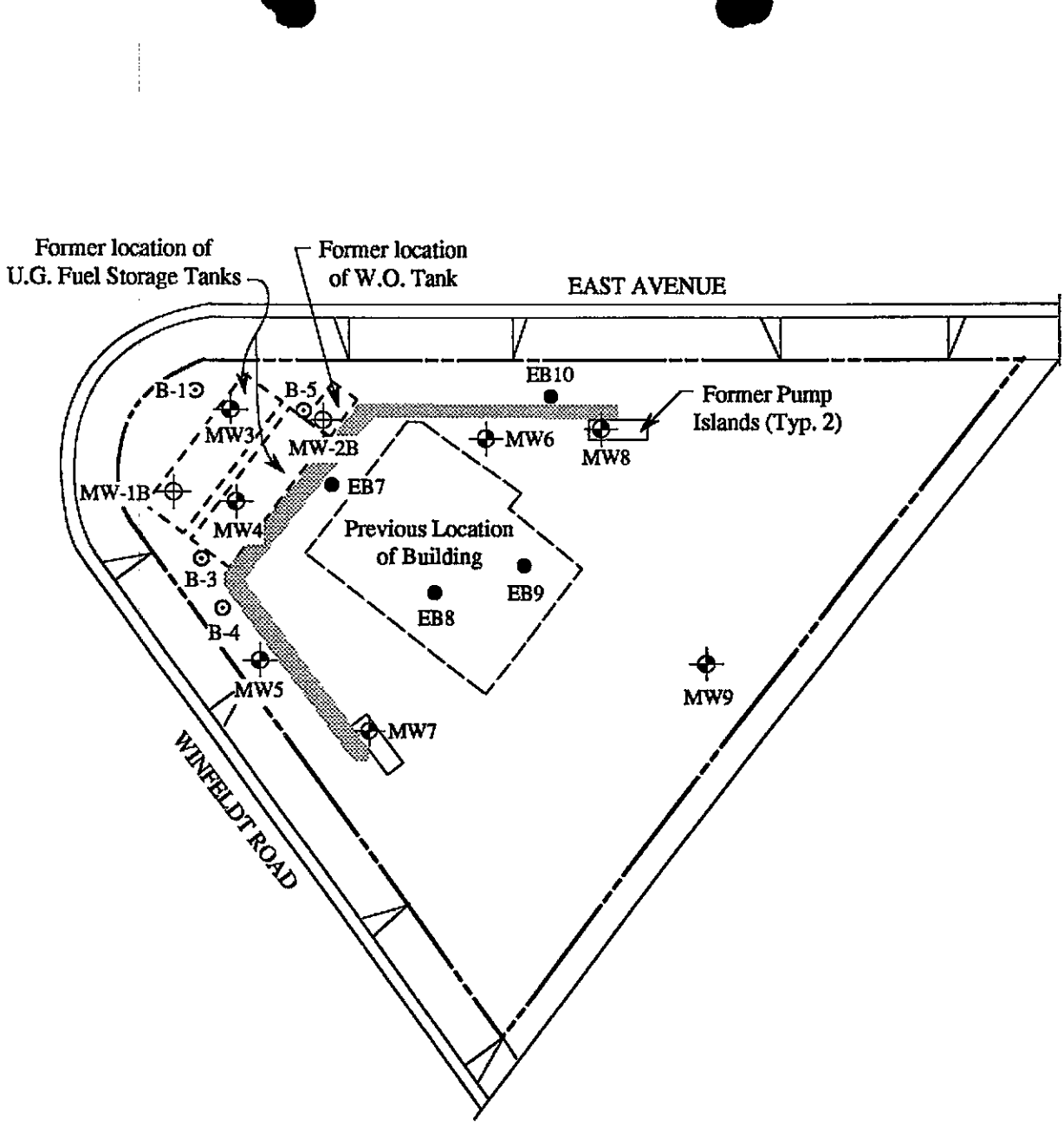
UNOCAL SERVICE STATION # 5847
2701 EAST AVENUE
HAYWARD, CA

FIGURE
1



SITE PLAN

LEGEND

- Monitoring well (by KEI)
- Monitoring well (by AGS, 1986)
- Exploratory boring (by KEI)
- Exploratory boring (by AGS, 1986)

0 30 60

Approx. scale feet

KAPREALIAN ENGINEERING
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UNOCAL SERVICE STATION # 5847
2701 EAST AVENUE
HAYWARD, CA

FIGURE
2

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MAJOR DIVISIONS		SYMBOLS	TYPICAL SOIL DESCRIPTIONS
GRAVELS (More than 1/2 of coarse fraction > No. 4 sieve size)		GW	Well graded gravels or gravel - sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel - sand mixtures, little or no fines
		GM	Silty gravels, gravel - sand - silt mixtures
		GC	Clayey gravels, gravel - sand - clay mixtures
SANDS (More than 1/2 of coarse fraction < No. 4 sieve size)		SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand - silt mixtures
		SC	Clayey sands, sand - clay mixtures
SILTS & CLAYS LL < 50		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS & CLAYS LL > 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils
DUAL (TRANSITION) SOILS		Soil characterisitics are transitional between the soil classifications listed above	

CLASSIFICATION CHART (Unified Soil Classification System)

BORING LOG

Project No. KEI-P91-1101	**Boring Diameter** 8-1/4"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation** N/A	**Date Drilled** 2/28/92
Boring No. EB7	**Drilling Method** Hollow-stem Auger	**Drilling Company** West Hazmat Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0	CL/CH to ML/MH	Fill material - claystone and siltstone, fragments, traces of gravel and asphalt, traces of rootlets, moist, gray, brown and yellowish brown.
				Base of Fill
15/36/50 - 5"		5		Bedrock Weathered claystone and siltstone, slightly moist, brown.
35/55		10		Moderately weathered claystone and siltstone bedrock, highly fractured, slightly moist, gray with iron oxide staining on fracture surfaces.
			N/A	
75 - 5"		15		Siltstone bedrock, slightly fractured, slightly moist, gray with iron oxide staining on fracture surfaces.
27/50 - 4"		20		Claystone and siltstone, highly weathered and fractured, highly consolidated, slightly moist, grayish brown and yellowish brown.

BORING LOG

Project No. KEI-P91-1101	**Boring Diameter** 8-1/4"	**Logged By** W.W.
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation** N/A	**Date Drilled** 2/28/92
Boring No. EB7	**Drilling Method** Hollow-stem Auger	**Drilling Company** West Hazmat Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
100 - 5"		25	N/A	Siltstone bedrock, slightly weathered and fractured, very moist in fractures, gray.
				TOTAL DEPTH:: 25.3'
				auger refusal at 25.3'
		30		
		35		
		40		

BORING LOG

Project No. KEI-P91-1101	**Boring Diameter** 8-1/4"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation** N/A	**Date Drilled** 2/28/92
Boring No. EB8	**Drilling Method** Hollow-stem Auger	**Drilling Company** West Hazmat Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		
100 - 5"		5	N/A	Claystone and siltstone bedrock interbedded, siltstone is highly fractured, consolidated, claystone is moderately weathered, slightly moist, yellowish brown to grayish brown.
49/50 - 5"		10		Siltstone bedrock, slightly fractured, highly consolidated, slightly moist, gray.
100/100 - 4"		15		Siltstone bedrock, slightly fractured, highly consolidated, slightly moist, light yellowish brown.
				Refusal at 17'
		20		TOTAL DEPTH: 17'

BORING LOG

Project No. KEI-P91-1101	**Boring Diameter** 8-1/4"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation** N/A	**Date Drilled** 2/28/92
Boring No. EB9	**Drilling Method** Hollow-stem Auger	**Drilling Company** West Hazmat Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		
36/60 - 5"		5		Bedrock, interbedded claystone and siltstone, fractured, moderately to highly consolidated, friable, slightly moist, pale brown with iron oxide staining in fractures.
30/60 - 5"		10	N/A	Interbedded claystone and siltstone, moderately weathered and fractured, siltstone highly consolidated with iron oxide staining in fractures, claystone is friable with caliche in fractures, slightly moist, light yellowish to grayish brown.
60/50 poor sample recovery		15		Claystone and siltstone, as above.
50/50 - 2"		20		Slightly weathered claystone bedrock, with siltstone, slightly moist, light yellowish brown.

BORING LOG

Project No. KEI-P91-1101	**Boring Diameter** 8-1/4	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation** N/A	**Date Drilled** 2/28/92
Boring No. EB9	**Drilling Method** Hollow-stem Auger	**Drilling Company** West Hazmat Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS		Description
35/50 - 5"	▽ ?	25	N/A		Siltstone and claystone bedrock, siltstone fragments highly consolidated, claystone is moderately weathered, moist to saturated in fractures, grayish and yellowish brown.
					TOTAL DEPTH:: 25.9'
		30			
		35			
		40			

BORING LOG

Project No. KEI-P91-1101	**Boring Diameter** 8-1/4"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation** N/A	**Date Drilled** 2/28/92
Boring No. EB10	**Drilling Method** Hollow-stem Auger	**Drilling Company** West Hazmat Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		Bedrock.
27/50 - 5"		5		Moderately weathered and fractured claystone bedrock, slightly moist, strong brown and grayish brown mottled.
17/50 - 5"		10	N/A	Siltstone bedrock, slightly weathered, highly fractured, highly consolidated, slightly moist, yellowish to grayish brown. per driller
21/26/30		15		Moderately weathered claystone bedrock, fractured, friable, pale brown to grayish brown, traces of iron oxide staining in fractures.
30/60 - 5"		20		Slightly weathered claystone, trace fractures, slightly moist, gray.

BORING LOG

Project No. KEI-P91-1101	**Boring Diameter** 8-1/4"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation** N/A	**Date Drilled** 2/28/92
Boring No. EB10	**Drilling Method** Hollow-stem Auger	**Drilling Company** West Hazmat Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
				Claystone, as above.
100 - 5"		25	N/A	Siltstone bedrock, slightly weathered and fractured, highly consolidated, slightly moist, gray, yellowish brown, fractures are very moist to saturated.
36/50 - 1"				
100 - 5"	▽			TOTAL DEPTH:: 27.5'
		30		
		35		
		40		

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/19/92
Boring No. MW3	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
16/50/50 - 3"	▽	25	N/A	Highly fractured and consolidated siltstone/claystone bedrock, moist to saturated below 25', gray with strong brown staining in fractures.
60		30		Highly consolidated and fractured siltstone/claystone bedrock, saturated, grayish brown.
64		35		Claystone and siltstone bedrock, highly consolidated, fractured, weathered, saturated, grayish brown.
		40		TOTAL DEPTH: 36'

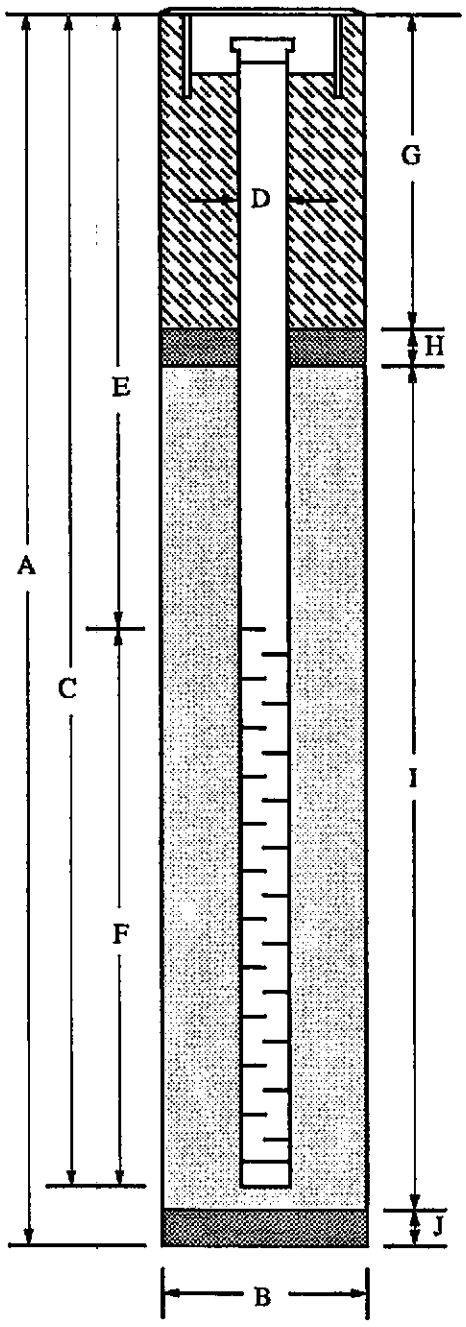
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Hayward, East Avenue WELL NO. MW3

PROJECT NUMBER: KEI-P91-1101

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth : 36'

B. Boring Diameter: 8-1/4"

Drilling Method: Hollow Stem Auger

C. Casing Length: 36'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 16'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 12'

Seal Material: Neat Cement

H. Seal: 2'

Seal Material: Bentonite

I. Filter Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: none

Seal Material: N/A

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/19/92
Boring No. MW4	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		
			CL/ CH to ML/ MH	Fill material consisting of siltstone and claystone fragments, moist, friable, pale brown.
39/27/45		5		
8/6/4		10		Fill consisting of claystone and siltstone fragments, slightly moist, grayish brown.
				Base of fill - per driller
				Bedrock
19/23/29		15		Claystone bedrock, moderately weathered and fractured, fractures contain clay with traces of caliche, some areas hightly consolidated, moist, light yellowish brown to yellowish brown.
			N/A	
12/29/50 - 5"		20		Claystone bedrock as above, gray with yellowish brown staining in fractures.

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/19/92
Boring No. MW4	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
				Bedrock, locally highly consolidated.
18/32/50 - 5 1/2"	▽	25		Highly fractured and consolidated siltstone bedrock, fractures filled with clay, trace caliche, moist, saturated at 25', grayish brown with yellowish brown staining in fractures.
			N/A	
9/14/25		30		Highly weathered and fractured siltstone and claystone bedrock, trace caliche in fractures, saturated, grayish brown to yellowish brown.
38/54		35		Claystone/siltstone bedrock, as above, highly fractured, saturated, light yellowish brown.
				TOTAL DEPTH: 36'
		40		

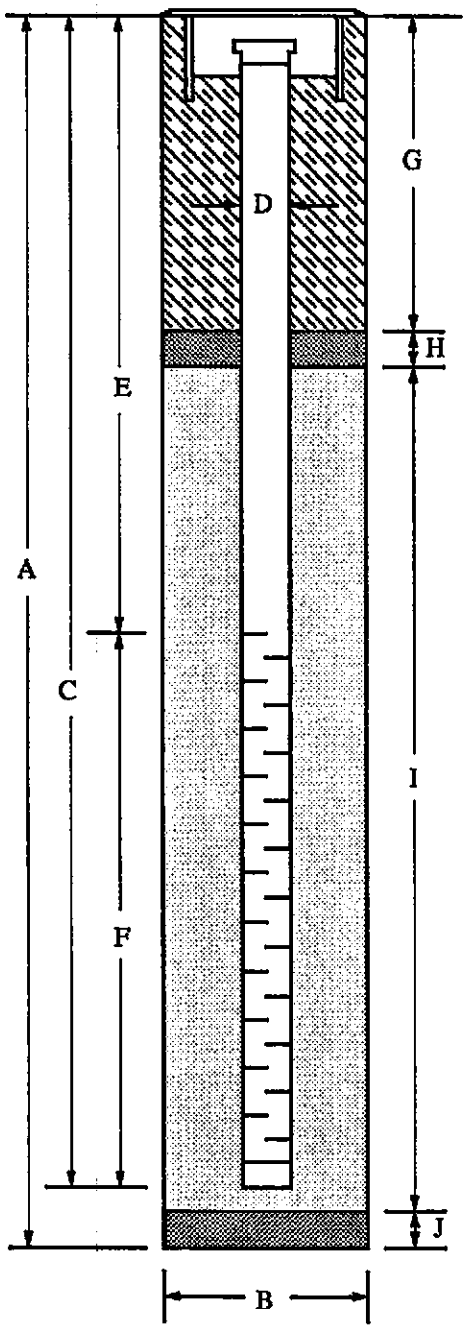
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Hayward, East Avenue WELL NO. MW4

PROJECT NUMBER: KEI-P91-1101

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth : 36'

B. Boring Diameter: 8-1/4"

Drilling Method: Hollow Stem Auger

C. Casing Length: 36'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 16'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 12'

Seal Material: Neat Cement

H. Seal: 2'

Seal Material: Bentonite

I. Filter Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: none

Seal Material: N/A

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/13/92
Boring No. MW5	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		Claystone bedrock, highly weathered and fractured, friable, some areas moderately consolidated, moist, pale brown to grayish brown.
37/50 - 4"		5		
38/50		10	N/A	Clayey siltstone bedrock, highly weathered and fractured, friable, some siltstone areas moderately consolidated, shows slight plasticity when crushed and moistened, pale brown with traces of white caliche in fractures.
31/50		15		Highly fractured siltstone, highly consolidated, slightly moist, pale brown to yellowish brown.
34/50 - 5"		20		Siltstone bedrock, slightly weathered, moderately fractured, highly consolidated, very moist to saturated, gray to grayish brown.

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/13/92
Boring No. MW5	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

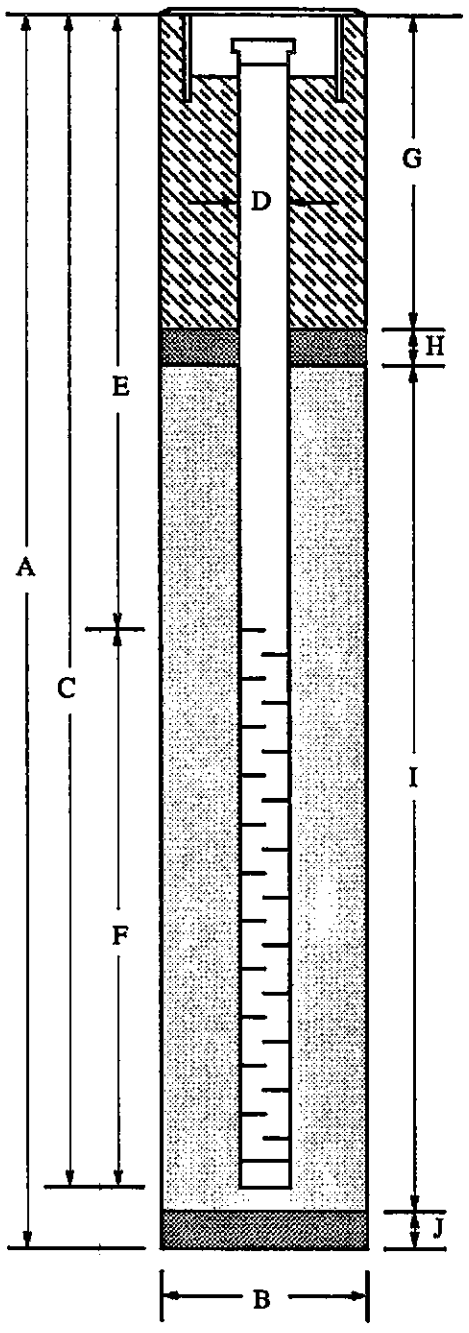
Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
50		25	N/A	Siltstone bedrock, slightly weathered and fractured, highly consolidated, moist, gray to grayish brown.
	at 1:30 pm			
38/50		30		Claystone and siltstone bedrock, interbedded, siltstone is highly fractured, highly consolidated, claystone is friable and moderately weathered, very moist in fractures, gray to grayish brown.
	at 1:10 pm initially			
54 - 5" poor sample recovery		35		TOTAL DEPTH: 35'
		40		

WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Hayward, East Avenue WELL NO. MW5

PROJECT NUMBER: KEI-P91-1101

WELL PERMIT NO.:



A. Total Depth : 35'

B. Boring Diameter: 8-1/4"

Drilling Method: Hollow Stem Auger

C. Casing Length: 35'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 15'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 11'

Seal Material: Neat Cement

H. Seal: 2'

Seal Material: Bentonite

I. Filter Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: none

Seal Material: N/A

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/18/92
Boring No. MW6	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		Fill.
				Bedrock
50 - 1" sampler refusal		5		Highly consolidated siltstone bedrock, slightly fractured, slightly moist, yellowish brown to grayish brown.
			N/A	
45/60 - 4"		10		Highly consolidated siltstone and claystone bedrock, moist, fractured with carbon or decomposed organic matter (?) in fractures, light brownish gray to light yellowish brown.
50 - 3" sampler refusal		15		Highly consolidated siltstone bedrock, slightly fractured, slightly moist.
23/60 - 4"		20		Claystone, slightly weathered and fractured, light brownish gray, pale yellow and light yellowish brown banded.

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/18/92
Boring No. MW6	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
				Claystone, as above.
				per driller.
100 - 2" No sample recovery		25		Siltstone bedrock, slightly weathered, fractured, highly consolidated, gray.
	▽ 2/28/92			
19/26/50 - 4"		30		Claystone and siltstone bedrock, interbedded, highly consolidated, saturated, yellowish brown to olive brown.
	▽ 2/18/92			
45 poor sample recovery		35		Claystone and siltstone, as above.
29/50 - 5"		40		Siltstone and claystone, highly consolidated, saturated, yellowish brown to olive brown.
				TOTAL DEPTH: 40.5'

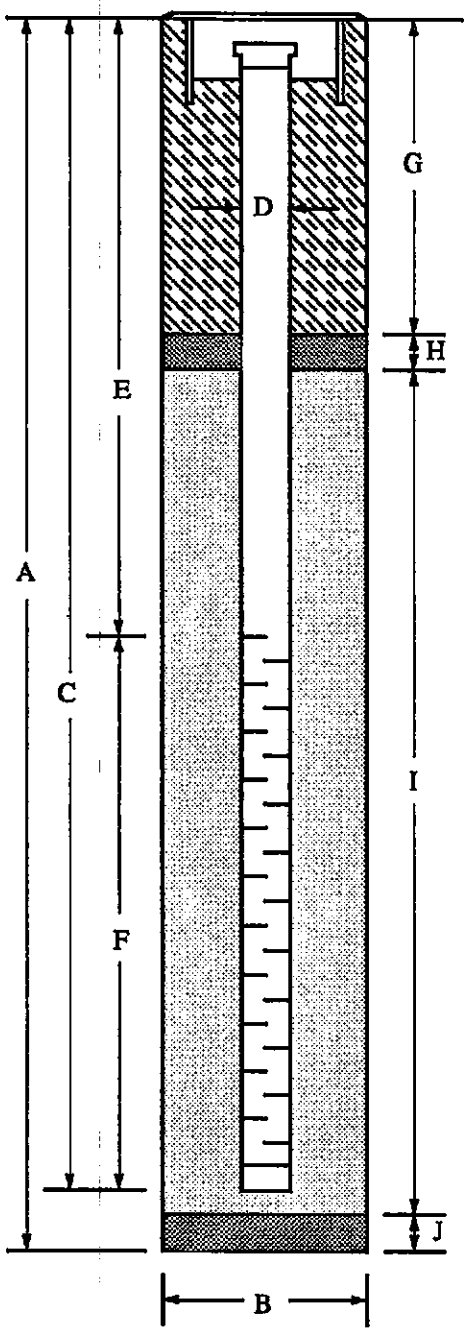
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Hayward, East Avenue WELL NO. MW6

PROJECT NUMBER: KEI-P91-1101

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth : 40.5'

B. Boring Diameter: 8-1/4"

Drilling Method: Hollow Stem Auger

C. Casing Length: 39.5'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 19.5'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 15.5'

Seal Material: Neat Cement

H. Seal: 2'

Seal Material: Bentonite

I. Filter Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: none

Seal Material: N/A

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/24/92
Boring No. MW7	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		Fill material consisting of weathered claystone and siltstone moist, yellowish brown.
27/55 - 5"		5		Highly weathered siltstone and claystone bedrock, fractured, moist, yellowish brown.
17/60		10	N/A	Highly weathered and fractured claystone, with siltstone, moist, grayish to yellowish brown.
16/23/50 - 5 1/2"		15		Claystone bedrock, moderately weathered and fractured trace caliche in fractures, moist, olive brown and yellowish brown mottled.
42/50 - 4"	▽	20		Slightly weathered, moderately fractured, highly consolidated siltstone, saturated with clay in fractures, yellowisn brown to grayish brown, slight iron oxide staining on fractures.

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/24/92
Boring No. MW7	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
26/50 - 5 1/2"		25		Slightly weathered, highly fractured siltstone bedrock, clay observed in fractures, saturated, yellowish to grayish brown.
50 - 5 1/2"		30		Moderately weathered, slightly fractured claystone bedrock, friable, saturated, grayish brown.
46		35		Highly weathered claystone bedrock, fractured, friable, locally consolidated, saturated, grayish brown with yellowish brown in fractures.
		40		TOTAL DEPTH: 35'

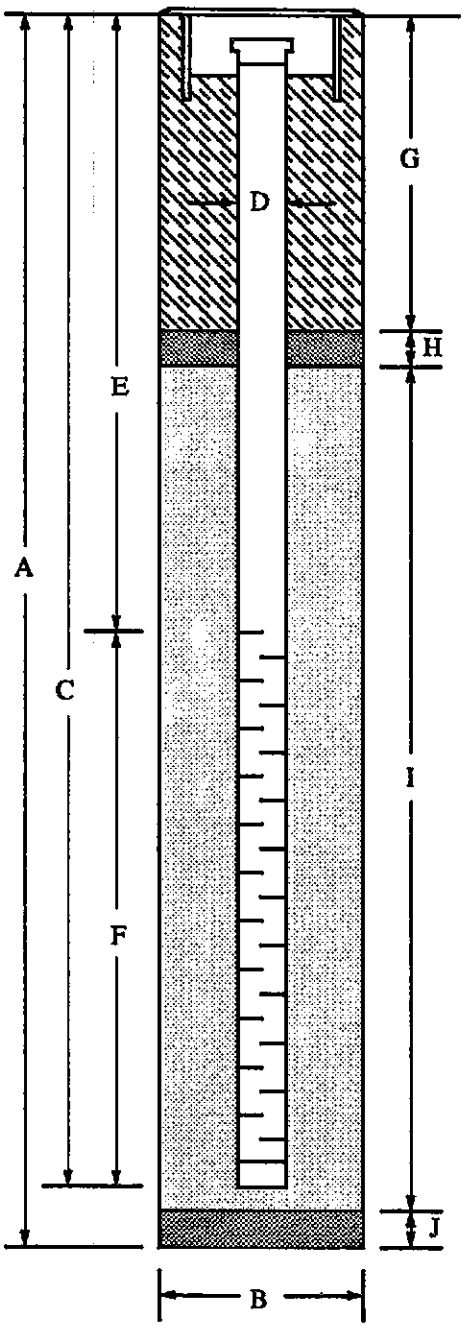
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Hayward, East Avenue WELL NO. MW7

PROJECT NUMBER: KEI-P91-1101

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth : 35'

B. Boring Diameter: 8-1/4"

Drilling Method: Hollow Stem Auger

C. Casing Length: 35'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 15'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 11'

Seal Material: Neat Cement

H. Seal: 2'

Seal Material: Bentonite

I. Filter Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: none

Seal Material: N/A

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4"" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/18/92
Boring No. MW8	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		
17/36/34		5	N/A	Claystone bedrock, fractured, moderately weathered, trace caliche in fractures, moist, yellowish brown, grayish brown mottled with slight brownish yellow.
22/50 - 5 1/2"		10		Highly weathered silty claystone, slightly moist, light yellowish brown with slight yellow mottling.
35/50 - 4"		15		Siltstone bedrock, fractured, moderately weathered, slightly moist, yellowish brown.
50		20		Siltstone bedrock, moderately weathered, slightly fractured, moist, pale brown with yellowish brown staining in fractures.

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/18/92
Boring No. MW8	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
19/31/39		25		Fractured siltstone bedrock with clay in fractures, moist.
37/40/50 - 4"				Claystone, slightly fractured, moist, grayish brown to light olive brown, fractures are stained yellowish brown.
32/118	▽	30		Claystone and siltstone, highly consolidated fractured, saturated at 30.5'.
50		35		Claystone bedrock, moist, fractured, light olive brown.
85		40		Claystone and siltstone bedrock, fractured, highly consolidated, very moist to saturated.
				TOTAL DEPTH: 40'

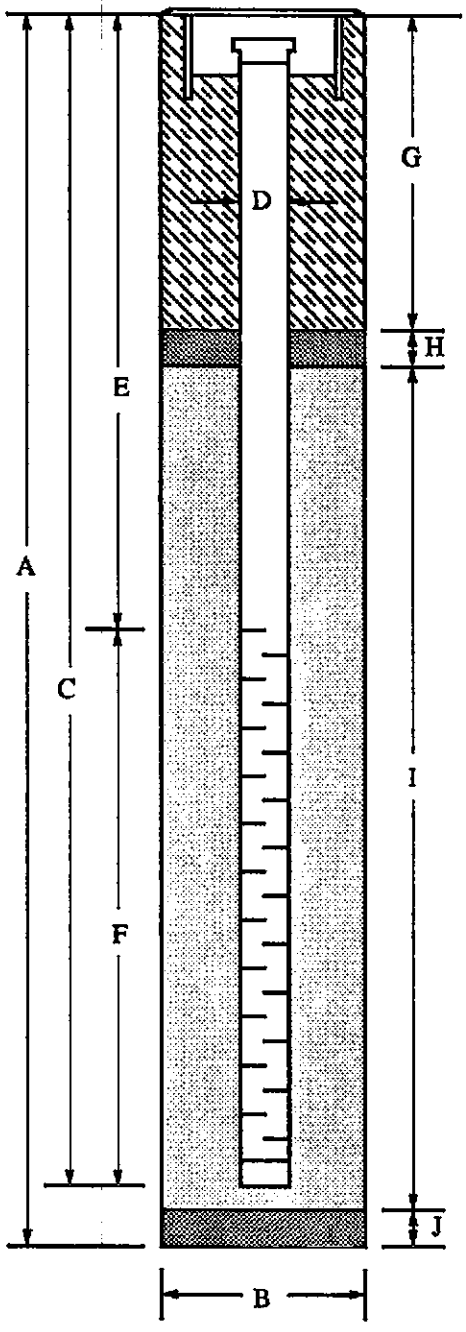
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Hayward, East Avenue WELL NO. MW8

PROJECT NUMBER: KEI-P91-1101

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth : 40'

B. Boring Diameter: 8-1/4"

Drilling Method: Hollow Stem Auger

C. Casing Length: 39.5'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 19.5'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 15.5'

Seal Material: Neat Cement

H. Seal: 2'

Seal Material: Bentonite

I. Filter Pack: 22.5'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: none

Seal Material: N/A

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4"" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/17/92
Boring No. MW9	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Strati-graphy USCS	Description
		0		Silty clay with gravel to 1/2" diameter, fill.
				BEDROCK.
31/50		5		Claystone bedrock, slightly moist, fractures common with gray staining, trace silt, light yellowish brown, moderately weathered.
				per driller
			N/A	
50 - 2" sample refusal		10		Siltstone bedrock, trace sand, dry, grayish brown, slightly weathered.
				Claystone bedrock, slightly moist, light brownish gray.
50		15		
				per driller
50 - 5.5" poor sample recovery		20		Siltstone, highly consolidated, laminated, slightly fractured, light brownish gray to grayish brown.

BORING LOG

Project No. KEI-P91-1101	**Boring & Casing Diameter** 8-1/4" 2"	**Logged By** W.W. JG
Project Name Unocal Hayward, East Avenue	**Well Cover Elevation**	**Date Drilled** 2/17/92
Boring No. MW9	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Penetration blows/6"	G. W. level	Depth (feet) Samples	Stratigraphy USCS	Description
11:00 AM, 2/18/92	▽			Silty claystone bedrock, estimated at 15% fine silt, laminated, moderately weathered, thin lenses or layers of carbon?
19/31/50 - 5"		25		
3:12 PM, 2/17/92	▽			Siltstone, fractured, highly consolidated, saturated, yellowish brown, trace caliche in fractures.
26/33/50 - 5"		30	N/A	
				Siltstone bedrock, fractured, slightly weathered, highly consolidated, saturated, grayish brown, clay in fractures.
27/34		35		
				Highly fractured claystone bedrock, moderately weathered, saturated, dark grayish brown.
32/48		40		
				TOTAL DEPTH: 40'

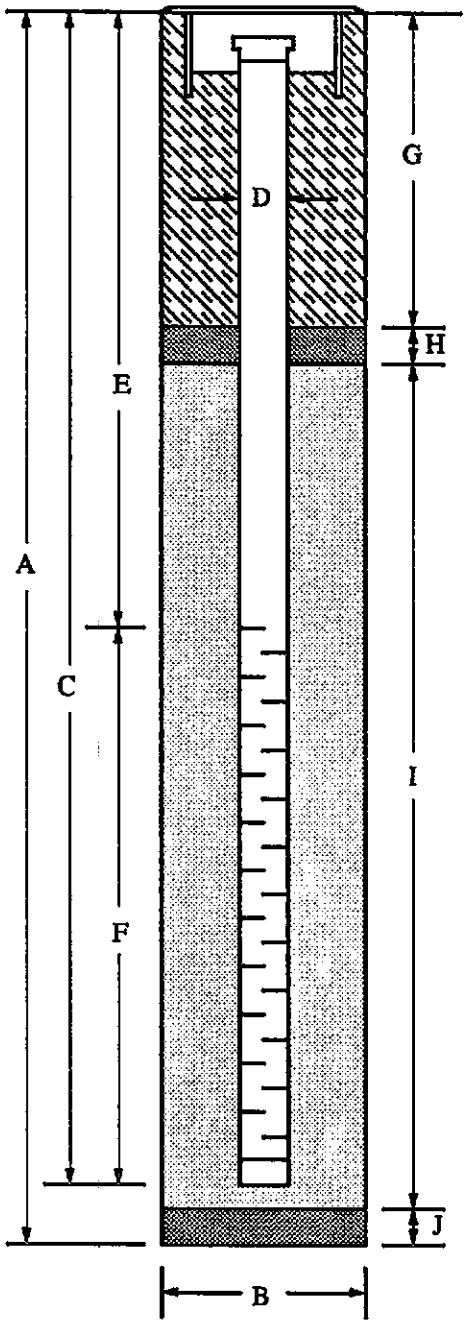
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Hayward, East Avenue WELL NO. MW9

PROJECT NUMBER: KEI-P91-1101

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth : 40'

B. Boring Diameter: 8-1/4"

Drilling Method: Hollow Stem Auger

C. Casing Length: 40'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 23'

F. Perforated Length: 17'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 19'

Seal Material: Neat Cement

H. Seal: 2'

Seal Material: Bentonite

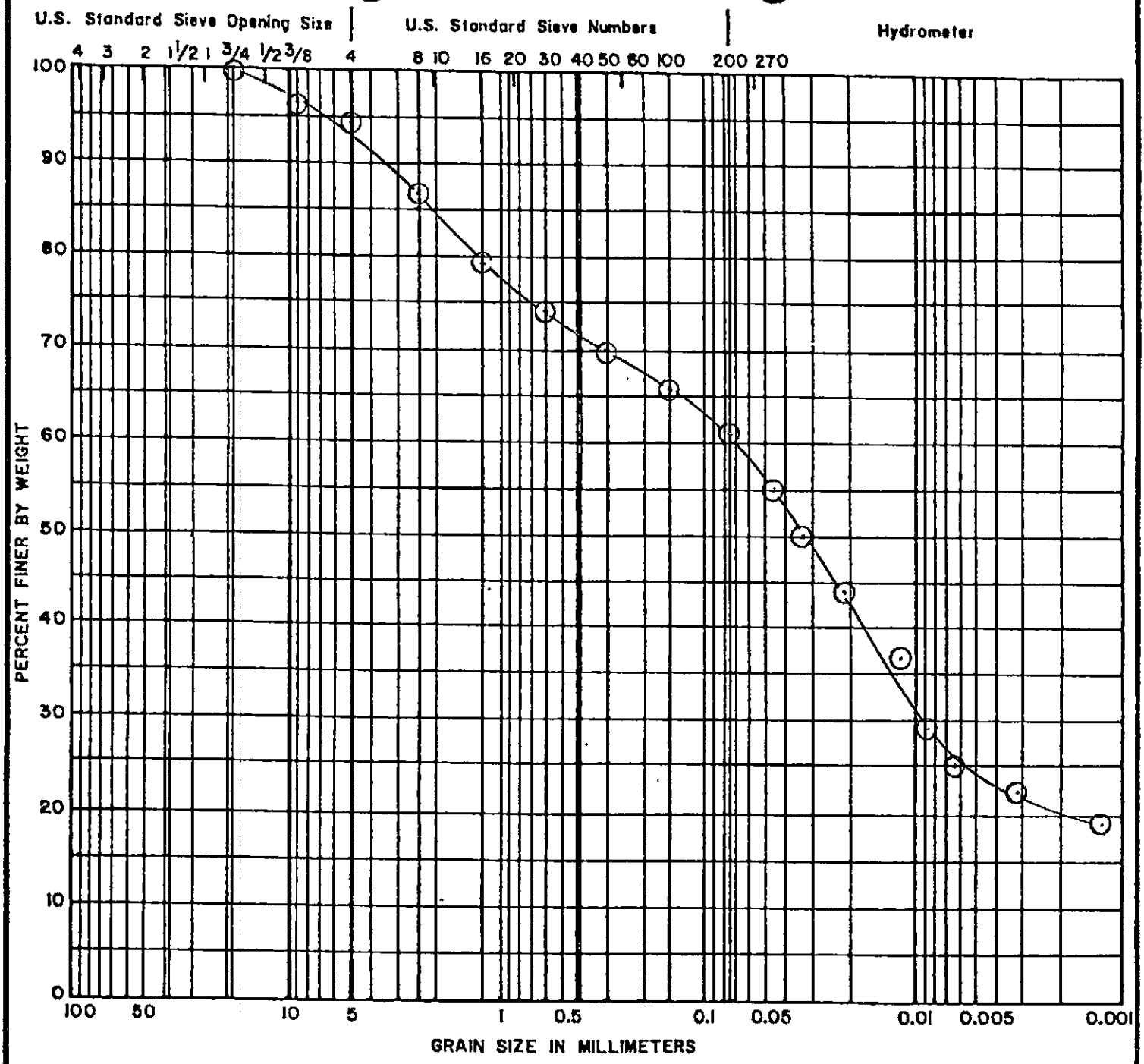
I. Filter Pack: 19'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: none

Seal Material: N/A



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Sample Source	Classification
⊙	MW4 (35')	Claystone/siltstone (bedrock)

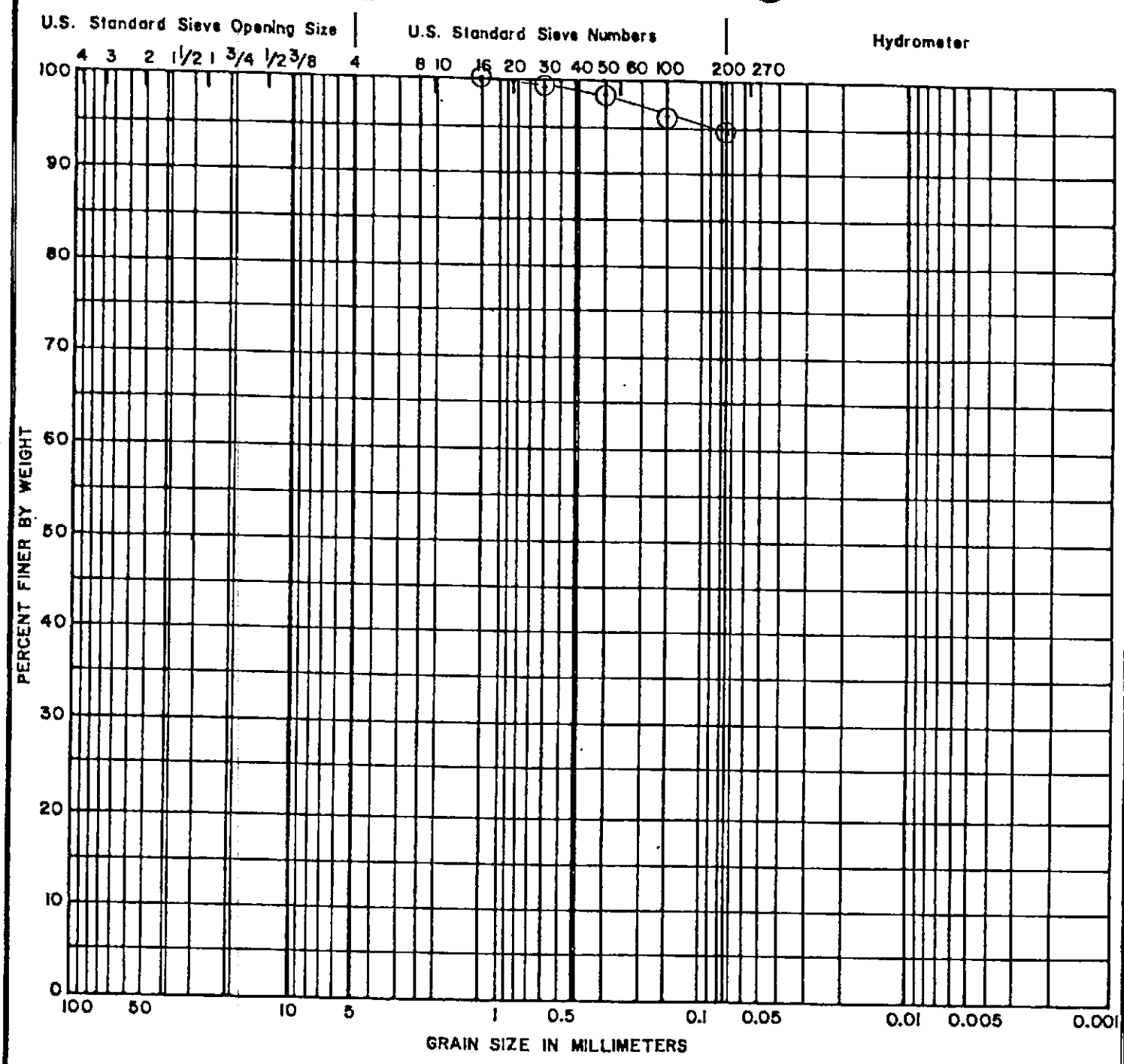
Job No:

Appr: JG

Date: 2/25/92

PARTICLE SIZE ANALYSIS

PLATE 1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Symbol	Sample Source	Classification
⊙	MW8(29')	Claystone(bedrock)

Job No:

Appr: JG

Date: 2/25/92

PARTICLE SIZE ANALYSIS

PLATE 2

APPENDIX A

HTA **Harlan Tait Associates**

Consulting Engineers and Geologists

March 6, 1992
Project No. 1097.01

Mr. Joel Greger
Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510

SUBJECT: CONDITION OF FILL AT FORMER UNOCAL S/S #5847
2701 East Ave, Hayward, California

Gentlemen:

We have performed laboratory tests on soil samples of the fill materials from the above-referenced site. The samples were collected by your staff as part of your subsurface exploration at the site. We performed moisture content and density determinations (ASTM Method D 2216) on three of the relatively undisturbed drive samples, and performed a compaction curve on two combined bulk samples of the fill material.

The samples and the test results are summarized below:

Sample Location	Description	Moisture Content (%)	Dry Density (pcf)
MW-3 - 5 feet	Clayey Gravelly Sand (SC)	8.9	105
MW-4 - 4.5 feet	Clayey Gravelly Sand (SC)	9.6	103
MW-4 - 9.5 feet	Clayey Sand (SC)	10.7	99

We performed a compaction curve (ASTM Method D 1557) on a mixture of bulk samples collected from MW-3 at 10 feet and MW-4 at 12 feet. This material had a maximum dry density of 130 pcf at an optimum moisture content of 9.5%.

Based on the compaction curve for the material, the in-place materials are at a density corresponding to 76 to 80 percent relative compaction. This is approximately equivalent to dumped fill. The blowcounts from the logs of these two borings (see Boring Logs) correlate well with these low densities. The fill is logged as extending to a depth of about 13.5 feet.

The material appears to be acceptable for use as fill material, but has not been adequately compacted. In this loose condition, the soil should not be used for support of pavements or structures, as excessive settlements are likely to occur.

LIMITATIONS

The professional who signed this document has developed the conclusions based on the data described in this letter in accordance with current generally accepted geotechnical practice. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this letter.

Very truly yours,

HARLAN TAIT ASSOCIATES

Eric A. Strassburger
Civil Engineer 38813
Exp. 3/31/93

EAS:GB\DHC

T\P\1050\1097-A.01

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Mar 14, 1992
2401 Stanwell Drive, Suite 400	Matrix Descript:	Water	Received:	Mar 16, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Analyzed:	3/20-3/23/92
Attention: Mardo Kaprealian, P.E.	First Sample #:	203-0697	Reported:	Mar 30, 1992

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)
203-0697	MW-1B	240	N.D.	N.D.	20	4.4
203-0698	MW-2B	N.D.	N.D.	N.D.	N.D.	N.D.
203-0699	MW-3	N.D.	N.D.	N.D.	N.D.	N.D.
203-0700	MW-4	N.D.	N.D.	N.D.	N.D.	N.D.
203-0701	MW-5	N.D.	N.D.	N.D.	N.D.	N.D.
203-0702	MW-6	N.D.	N.D.	N.D.	N.D.	N.D.
203-0703	MW-7	N.D.	N.D.	N.D.	N.D.	N.D.
203-0704	MW-8	N.D.	N.D.	N.D.	N.D.	N.D.
203-0705	MW-9	N.D.	N.D.	N.D.	N.D.	N.D.
Method Detection Limits:		**30**	**0.30**	**0.30**	**0.30**	**0.30**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Mar 14, 1992
2401 Stanwell Drive, Suite 400	Matrix Descript:	Water	Received:	Mar 16, 1992
Concord, CA 94520	Analysis Method:	EPA 3510/8015	Extracted:	Mar 20, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	203-0698	Analyzed:	Mar 27, 1992
			Reported:	Mar 30, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons µg/L (ppb)
203-0698	MW-2B	N.D.
203-0704	MW-8	N.D.

Method Detection Limits:	**50**

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.

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Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Mar 14, 1992
2401 Stanwell Drive, Suite 400	Matrix Descript:	Water	Received:	Mar 16, 1992
Concord, CA 94520	Analysis Method:	SM 5520 B&F (Gravimetric)	Extracted:	Mar 22, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	203-0698	Analyzed:	Mar 25, 1992
			Reported:	Mar 30, 1992

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
203-0698	MW-2B	N.D.
203-0704	MW-8	N.D.

Detection Limits:	**5.0**

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

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Belinda C. Vega
Laboratory Director

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1900 Bates Avenue • Suite LM • Concord, California 94520
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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Mar 14, 1992
2401 Stanwell Drive, Suite 400	Sample Descript:	Water, MW-2B	Received:	Mar 16, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8010	Analyzed:	Mar 27, 1992
Attention: Mardo Kapreallan, P.E.	Lab Number:	203-0698	Reported:	Mar 30, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

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

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

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Belinda C. Vega
Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Mar 14, 1992
2401 Stanwell Drive, Suite 400	Sample Descript:	Water, MW-8	Received:	Mar 16, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8010	Analyzed:	Mar 27, 1992
Attention: Mardo Kaprealian, P.E.	Lab Number:	203-0704	Reported:	Mar 30, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

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

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

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Belinda C. Vega
Laboratory Director

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

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2030697-705
Reported: Mar 30, 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:	K.N.	K.N.	K.N.	K.N.	A. Tuzon	D. Newcomb
Reporting Units:	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L
Date Analyzed:	Mar 20, 1992	Mar 20, 1992	Mar 20, 1992	Mar 20, 1992	Mar 26, 1992	Mar 22, 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:	21	21	24	67	260	95
Matrix Spike % Recovery:	105	105	120	112	86	95
Conc. Matrix Spike Dup.:	21	20	24	67	274	93
Matrix Spike Duplicate % Recovery:	105	100	120	112	91	93
Relative % Difference:	0.0	4.9	0.0	0.0	6.0	2.0

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2030697-705
Reported: Mar 30, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloro-ethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	M. Nguyen	M. Nguyen	M. Nguyen
Reporting Units:	ug/L	ug/L	ug/L
Date Analyzed:	Mar 27, 1992	Mar 27, 1992	Mar 27, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10
Conc. Matrix Spike:	11	11	12
Matrix Spike % Recovery:	110	110	120
Conc. Matrix Spike Dup.:	8.3	11	11
Matrix Spike Duplicate % Recovery:	83	110	110
Relative % Difference:	28	0.0	8.7

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

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Laboratory Director

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

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P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2030697-705
Reported: Mar 30, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	K.N.	K.N.	K.N.	K.N.	K.N.	K.N.	K.N.
Reporting Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Date Analyzed:	3/20-3/23/92	3/20-3/23/92	3/20-3/23/92	3/20-3/23/92	3/20-3/23/92	3/20-3/23/92	3/20-3/23/92
Sample #:	203-0697	203-0698	203-0699	203-0700	203-0701	203-0702	203-0703
Surrogate % Recovery:	86	84	88	85	84	83	100

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Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Kaprealian Engineering, Inc.
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Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2030697-705
Reported: Mar 30, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA8015	EPA8015	EPA8015
Analyst:	K.N.	K.N.	K.N.	A. Tuzon	A. Tuzon	A. Tuzon
Reporting Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Date Analyzed:	3/20-3/23/92	3/20-3/23/92	3/20-3/23/92	Mar 27, 1992	Mar 27, 1992	Mar 26, 1992
Sample #:	203-0704	203-0705	Blank	203-0698	203-0704	Blank
Surrogate % Recovery:	87	87	83	106	108	112

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Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2030697-705
Reported: Mar 30, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	M. Nguyen	M. Nguyen	M. Nguyen
Reporting Units:	ug/L	ug/L	ug/L
Date Analyzed:	Mar 27, 1992	Mar 27, 1992	Mar 27, 1992
Sample #:	203-0698	203-0704	Blank
Surrogate #1 % Recovery:	98	90	83
Surrogate #2 % Recovery:	88	88	93

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Belinda C. Vega
Laboratory Director

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

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Vartkes

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal / Hayward
2701 East Ave.

ANALYSES REQUESTED

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG & BTXE	TPHD	TOG (5520 B&F)	8010				REMARKS
MW-1B	3/14/92			✓	✓		2	Monitoring Well	✓				2030697	AB		VOA's Preserved in HCl.
MW-2B	"			✓	✓		6	" "	✓	✓	✓	✓	698	AF		
MW-3	"			✓	✓		2	" "	✓				699	AB		
MW-4	"			✓	✓		2	" "	✓				700	AB		
MW-5	"			✓	✓		2	" "	✓				701	AB		
MW-6	"			✓	✓		2	" "	✓				702	AB		
MW-7	"			✓	✓		2	" "	✓				703	AB		
MW-8	"			✓	✓		6	" "	✓	✓	✓	✓	704	AF		
MW-9	"			✓	✓		2	" "	✓				705	AB		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
W. Tekoff	3/16/92 4:00 PM	MW 3/16 4pm
K. Ward	3/17/92	3-17-92 2:50 PM

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? ✓

MW — analyst — 3/16
Signature — Title — Date

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 28, 1992
P.O. Box 996	Matrix Descript:	Soil	Received:	Feb 28, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Mar 4, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	202-1130	Reported:	Mar 11, 1992

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)
202-1130	EB7-(5)	N.D.	N.D.	N.D.	N.D.	0.0075
202-1131	EB7-(10)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1132	EB7-(14.5)	N.D.	N.D.	0.0079	N.D.	0.0098
202-1133	EB7-(20)	N.D.	N.D.	N.D.	N.D.	0.0090
202-1134	EB7-(24.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1135	EB8-(4.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1136	EB8-(10)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1137	EB8-(15)	N.D.	N.D.	N.D.	N.D.	0.0087
202-1138	EB9-(5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1139	EB9-(10)	N.D.	N.D.	N.D.	N.D.	N.D.
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

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(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 28, 1992
P.O. Box 996	Matrix Descript:	Soil	Received:	Feb 28, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	3/5-3/6/92
Attention: Mardo Kaprealian, P.E.	First Sample #:	202-1140	Reported:	Mar 11, 1992

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)
202-1140	EB9-(15)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1141	EB9-(19.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1142	EB9-(25.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1143	EB10-(5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1144	EB10-(10)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1145	EB10-(15)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1146	EB10-(20)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1147	EB10-(25.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-1148	EB10-(27)	N.D.	N.D.	N.D.	N.D.	N.D.
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

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2021130-48
Reported: Mar 11, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	J.F.	J.F.	J.F.	J.F.
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	0.40	0.40	0.40	1.2
Conc. Matrix Spike:	0.34	0.34	0.37	1.1
Matrix Spike % Recovery:	85	85	92	92
Conc. Matrix Spike Dup.:	0.35	0.35	0.37	1.1
Matrix Spike Duplicate % Recovery:	88	88	92	92
Relative % Difference:	2.9	2.9	0.0	0.0

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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

Kaprealian Engineering, Inc. Client Project ID: Unocal, 2701 East Ave., Hayward
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E. QC Sample Group: 2021130-48 Reported: Mar 11, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	J.F.	J.F.	J.F.	J.F.	J.F.	J.F.	J.F.
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992
Sample #:	202-1130	202-1131	202-1132	202-1133	202-1134	202-1135	202-1136
Surrogate % Recovery:	86	89	90	88	90	90	87

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2021130-48
Reported: Mar 11, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	J.F.	J.F.	J.F.	J.F.	J.F.	J.F.	J.F.
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992	3/5-3/6/92	3/5-3/6/92	3/5-3/6/92	3/5-3/6/92
Sample #:	202-1137	202-1138	202-1139	202-1140	202-1141	202-1142	202-1143
Surrogate % Recovery:	86	88	110	99	82	100	100

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2021130-48
Reported: Mar 11, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	J.F.	J.F.	J.F.	J.F.	J.F.	J.F.
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	3/5-3/6/92	3/5-3/6/92	3/5-3/6/92	3/5-3/6/92	3/5-3/6/92	Mar 4, 1992
Sample #:	202-1144	202-1145	202-1146	202-1147	202-1148	Blank
Surrogate % Recovery:	82	96	97	98	98	96

SEQUOIA ANALYTICAL

Belinda C. Vega
Laboratory Director

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Wade Weston

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal - Hayward, 2701 East Ave

ANALYSES REQUESTED: TPH-G/BTEX

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	REMARKS
EB7-(5)	2/28/92		✓		✓		1	See Sample ID *	2021130
EB7-(10)	"		✓		✓		1		1131
EB7-(14.5)	"		✓		✓		1		1132
EB7-(20)	"		✓		✓		1		1133
EB7-(24.5)	"		✓		✓		1		1134
EB8-(4.5)	"		✓		✓		1		1135
EB8-(10)	"		✓		✓		1		1136
EB8-(15)	"		✓		✓		1		1137
EB9-(5)	"		✓		✓		1		1138

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Wade Weston	2/28 5:00 PM	Kim Van Stanbrook

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? N/A
4. Were samples in appropriate containers and properly packaged? ✓

KVS — Signature; SAL — Title; 2/28 — Date

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Wade Weston
WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal - Hayward, 2701 East Ave

ANALYSES REQUESTED: TPH-G/BTEX

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH-G/BTEX	REMARKS
EB9-(10)	2/28/92		✓		✓		1	See Sample ID #	✓	2021139
EB9-(15)	"		✓		✓		1		✓	1140
EB9-(19.5)	"		✓		✓		1		✓	1141
EB9-(25.5)	"		✓		✓		1		✓	1142
EB10-(5)	"		✓		✓		1		✓	1143
EB10-(10)	"		✓		✓		1		✓	1144
EB10-(15)	"		✓		✓		1		✓	1145
EB10-(20)	"		✓		✓		1		✓	1146
EB10-(25.5)	"		✓		✓		1		✓	1147

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Wade Weston	2/28 5:00 pm	Kevin Van Stambrock

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? N/A
4. Were samples in appropriate containers and properly packaged? ✓

Signature	Title	Date
KVS	SM	2/28

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Wade Weston

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal - Hayward, 2701 East Ave

ANALYSES REQUESTED: TPH-G/BTXE

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	REMARKS
EB10-(27)	3/28/92		✓		✓		1	See Sample ID *	2021148

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Wade Weston	3/28 5:00 pm	Kim VanLambert
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? N/A
4. Were samples in appropriate containers and properly packaged? ✓

Signature	Title	Date
KVS	SAL	3/28

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	2/18-2/19/92
P.O. Box 996	Matrix Descript:	Soil	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Feb 24, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	202-0696	Reported:	Mar 6, 1992

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)
202-0696	MW3-(5.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0697	MW3-(15)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0698	MW3-(19.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0699	MW3-(24.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0700	MW4-(5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0701	MW4-(10)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0702	MW4-(15)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0703	MW4-(20)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0704	MW4-(24.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0705	MW6-(10)	N.D.	N.D.	N.D.	N.D.	N.D.
Method Detection Limits:		**1.0**	**0.0050**	**0.0050**	**0.0050**	**0.0050**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	2/17-2/18/92
P.O. Box 996	Matrix Descript:	Soil	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Feb 24, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	202-0706	Reported:	Mar 6, 1992

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)
202-0706	MW6-(20)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0707	MW6-(30.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0708	MW8-(5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0709	MW8-(10)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0710	MW8-(15)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0711	MW8-(19.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0712	MW8-(25)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0713	MW8-(30)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0714	MW9-(5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0715	MW9-(14.5)	N.D.	N.D.	N.D.	N.D.	N.D.
Method Detection Limits:		**1.0**	**0.0050**	**0.0050**	**0.0050**	**0.0050**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 17, 1992
P.O. Box 996	Matrix Descript:	Soil	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Feb 24, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	202-0716	Reported:	Mar 6, 1992

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)
202-0716	MW9-(25)	N.D.	N.D.	N.D.	N.D.	N.D.
Method Detection Limits:		**1.0**	**0.0050**	**0.0050**	**0.0050**	**0.0050**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 18, 1992
P.O. Box 996	Matrix Descript:	Soil	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 3550/8015	Extracted:	Mar 3, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	202-0708	Analyzed:	Mar 4, 1992
			Reported:	Mar 6, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
202-0708	MW8-(5)	N.D.
202-0709	MW8-(10)	N.D.
202-0710	MW8-(15)	N.D.
202-0711	MW8-(19.5)	N.D.
202-0712	MW8-(25)	N.D.
202-0713	MW8-(30)	N.D.

Method Detection Limits:	**1.0**

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 18, 1992
P.O. Box 996	Matrix Descript:	Soil	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	SM 5520 E&F (Gravimetric)	Extracted:	Feb 26, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	202-0708	Analyzed:	Feb 27, 1992
			Reported:	Mar 6, 1992

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
202-0708	MW8-(5)	120
202-0709	MW8-(10)	N.D.
202-0710	MW8-(15)	N.D.
202-0711	MW8-(19.5)	N.D.
202-0712	MW8-(25)	N.D.
202-0713	MW8-(30)	N.D.

Detection Limits:	**30**

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 18, 1992
P.O. Box 996	Sample Descript:	Soil, MW8-(5)	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Feb 26, 1992
Attention: Mardo Kaprealian, P.E.	Lab Number:	202-0708	Reported:	Mar 6, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

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

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 18, 1992
P.O. Box 996	Sample Descript:	Soil, MW8-(10)	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Feb 26, 1992
Attention: Mardo Kaprealian, P.E.	Lab Number:	202-0709	Reported:	Mar 6, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

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

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 18, 1992
P.O. Box 996	Sample Descript:	Soil, MW8-(15)	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Feb 26, 1992
Attention: Mardo Kaprealian, P.E.	Lab Number:	202-0710	Reported:	Mar 6, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

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

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 18, 1992
P.O. Box 996	Sample Descript:	Soil, MW8-(19.5)	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Feb 26, 1992
Attention: Mardo Kaprealian, P.E.	Lab Number:	202-0711	Reported:	Mar 6, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

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

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 18, 1992
P.O. Box 996	Sample Descript:	Soil, MW8-(25)	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Feb 26, 1992
Attention: Mardo Kaprealian, P.E.	Lab Number:	202-0712	Reported:	Mar 6, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

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

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

SEQUOIA ANALYTICAL

Scott A. Chiello
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 18, 1992
P.O. Box 996	Sample Descript:	Soil, MW8-(30)	Received:	Feb 20, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Feb 26, 1992
Attention: Mardo Kaprealian, P.E.	Lab Number:	202-0713	Reported:	Mar 6, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

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

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020696-716
Reported: Mar 6, 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:	K.E.	K.E.	K.E.	K.E.	A. Tuzon	D. Newcomb
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Mar 4, 1992	Feb 27, 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:	0.40	0.40	0.40	1.2	10	5000
Conc. Matrix Spike:	0.35	0.35	0.37	1.1	8.4	4600
Matrix Spike % Recovery:	88	88	92	92	84	92
Conc. Matrix Spike Dup.:	0.32	0.33	0.37	1.1	8.2	4700
Matrix Spike Duplicate % Recovery:	80	82	92	92	82	94
Relative % Difference:	8.9	5.8	0.0	0.0	2.4	2.0

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Kapreallian Engineering, Inc. Client Project ID: Unocal, 2701 East Ave., Hayward
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E. QC Sample Group: 2020708-713 Reported: Mar 6, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloro-ethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	M. Nguyen	M. Nguyen	M. Nguyen
Reporting Units:	ug/kg	ug/kg	ug/kg
Date Analyzed:	Feb 26, 1992	Feb 26, 1992	Feb 26, 1992
QC Sample #:	Matri x Blank	Matri x Blank	Matri x Blank
Sample Conc.:	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10
Conc. Matrix Spike:	11	10	9.8
Matrix Spike % Recovery:	110	100	98
Conc. Matrix Spike Dup.:	11	11	9.5
Matrix Spike Duplicate % Recovery:	110	110	95
Relative % Difference:	0.0	9.5	3.0

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020696-716
Reported: Mar 6, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	K.E.	K.E.	K.E.	K.E.	K.E.	K.E.	K.E.
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992
Sample #:	202-0696	202-0697	202-0698	202-0699	202-0700	202-0701	202-0702
Surrogate % Recovery:	92	85	88	87	87	83	95

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020696-716
Reported: Mar 6, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	K.E.	K.E.	K.E.	K.E.	K.E.	K.E.	K.E.
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992
Sample #:	202-0703	202-0704	202-0705	202-0706	202-0707	202-0708	202-0709
Surrogate % Recovery:	88	93	93	79	88	80	88

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020696-716
Reported: Mar 6, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	K.E.	K.E.	K.E.	K.E.	K.E.	K.E.	K.E.
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992	Feb 24, 1992
Sample #:	202-0710	202-0711	202-0712	202-0713	202-0714	202-0715	202-0716
Surrogate % Recovery:	88	94	94	88	94	95	92

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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

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

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P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020696-716
Reported: Mar 6, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015/8020	EPA8015	EPA8015	EPA8015	EPA8015	EPA8015	EPA8015
Analyst:	K.E.	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Feb 24, 1992	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992	Mar 4, 1992
Sample #:	Blank	202-0708	202-0709	202-0710	202-0711	202-0712	202-0713
Surrogate % Recovery:	84	100	110	96	94	96	100

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020696-716
Reported: Mar 6, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA8015
Analyst:	A. Tuzon
Reporting Units:	mg/kg
Date Analyzed:	Mar 4, 1992
Sample #:	Blank

Surrogate % Recovery:	100

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020696-716
Reported: Mar 6, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8010	EPA 8010	EPA 8010	EPA 8010	EPA 8010	EPA 8010	EPA 8010
Analyst:	M.N.	M.N.	M.N.	M.N.	M.N.	M.N.	M.N.
Reporting Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Date Analyzed:	Feb 26, 1992	Feb 26, 1992	Feb 26, 1992	Feb 26, 1992	Feb 26, 1992	Feb 26, 1992	Feb 26, 1992
Sample #:	202-0708	202-0709	202-0710	202-0711	202-0712	202-0713	Blank
Surrogate #1 % Recovery:	106	105	107	103	130	141	99
Surrogate #2 % Recovery:	90	87	88	88	81	83	85

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

KET

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER	SITE NAME & ADDRESS	ANALYSES REQUESTED	TURN AROUND TIME:
Wade Weston	Unocal- Hayward 2701 East Ave.		Regular
WITNESSING AGENCY			

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH-G/BTXE						REMARKS
MW3-(3.5)	2/19/92		✓		✓		1	See Sample ID #	✓						2020696
MW3-(15)	"		✓		✓		1		✓						697
MW3-(19.5)	"		✓		✓		1		✓						698
MW3-(24.5)	"		✓		✓		1		✓						699
MW4-(5)	"		✓		✓		1		✓						700
MW4-(10)	"		✓		✓		1		✓						701
MW4-(15)	"		✓		✓		1		✓						702
MW4-(20)	"		✓		✓		1		✓						703
MW4-(24.5)	"		✓		✓		1		✓						704

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Wade Weston	2/20 9:45 am	Van Slambrook
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? ✓

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Wade Weston
WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal - Hayward
2701 East Ave.

ANALYSES REQUESTED: TPH-G/BTXE; TPH-D; TOG (5520 E&F); 8010

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	REMARKS
MW6-(10)	2/18/92		✓		✓		1	See Sample ID *	2020 705
MW6-(20)	"		✓		✓		1		706
MW6-(30.5)	"		✓		✓		1		707
MW8-(5)	"		✓		✓		1		708
MW8-(10)	"		✓		✓		1		709
MW8-(15)	"		✓		✓		1		710
MW8-(19.5)	"		✓		✓		1		711
MW8-(25)	"		✓		✓		1		712
MW8-(30)	"		✓		✓		1		713

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Wade Weston	2/20 9:41 am	Vivian Van Stanbrook
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? N/A
4. Were samples in appropriate containers and properly packaged? ✓

Signature	Title	Date
	SAL	2/20

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Wade Weston

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal - Hayward, 2701 East Ave

ANALYSES REQUESTED: TPH-G/BTXE

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH-G/BTXE
MW9-(5)	7/17/92		✓		✓		1	See Sample ID #	✓
MW9-(14.5)	"		✓		✓		1		✓
MW9-(25)	"		✓		✓		1		✓

REMARKS

20020714
715
716

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Wade Weston	2/20 9:45 am	Vicki Van Landorsch

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? N/A
4. Were samples in appropriate containers and properly packaged? ✓

VVS — Signature; SML — Title; 2/20 — Date

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 2701 East Ave., Hayward	Sampled:	Feb 24, 1992
P.O. Box 996	Matrix Descript:	Soil	Received:	Feb 24, 1992
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	2/27-2/28/92
Attention: Mardo Kaprealian, P.E.	First Sample #:	202-0918	Reported:	Mar 3, 1992

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)
202-0918	MW5-(5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0919	MW5-(10)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0920	MW5-(15)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0921	MW5-(19)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0922	MW5-(24.5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0923	MW7-(5)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0924	MW7-(10)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0925	MW7-(15)	N.D.	N.D.	N.D.	N.D.	N.D.
202-0926	MW7-(19)	N.D.	N.D.	N.D.	N.D.	N.D.
Method Detection Limits:		**1.0**	**0.0050**	**0.0050**	**0.0050**	**0.0050**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.

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.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020918-926
Reported: Mar 2, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020
Analyst:	K.N.	K.N.	K.N.	K.N.
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Feb 27, 1992	Feb 27, 1992	Feb 27, 1992	Feb 27, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	0.40	0.40	0.40	1.2
Conc. Matrix Spike:	0.32	0.34	0.38	1.2
Matrix Spike % Recovery:	80	85	95	100
Conc. Matrix Spike Dup.:	0.30	0.33	0.37	1.1
Matrix Spike Duplicate % Recovery:	75	82	92	92
Relative % Difference:	6.4	3.0	2.6	8.7

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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

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

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Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020918-926
Reported: Mar 3, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

	EPA	EPA	EPA	EPA	EPA	EPA	EPA
Method:	8015/8020	8015/8020	8015/8020	8015/8020	8015/8020	8015/8020	8015/8020
Analyst:	K.N.	K.N.	K.N.	K.N.	K.N.	K.N.	K.N.
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	2/27-2/28/92	2/27-2/28/92	2/27-2/28/92	2/27-2/28/92	2/27-2/28/92	2/27-2/28/92	2/27-2/28/92
Sample #:	202-0918	202-0919	202-0920	202-0921	202-0922	202-0923	202-0924
Surrogate % Recovery:	89	93	91	92	100	100	97

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

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Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 2701 East Ave., Hayward
QC Sample Group: 2020918-926

Reported: Mar 3, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

	EPA	EPA	EPA
Method:	8015/8020	8015/8020	8015/8020
Analyst:	K.N.	K.N.	K.N.
Reporting Units:	mg/kg	mg/kg	mg/kg
Date Analyzed:	2/27-2/28/92	2/27-2/28/92	2/27-2/28/92
Sample #:	202-0925	202-0926	Blank
Surrogate % Recovery:	92	83	98

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Wade Weston

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal - Hayward, 2701 East Ave.

ANALYSES REQUESTED: TPH-G/BTXE

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	REMARKS
MW5-(5)	2/24/92		✓		✓		1	See Sample ID #	20920918
MW5-(10)	"		✓		✓		1		919
MW5-(15)	"		✓		✓		1		920
MW5-(19)	"		✓		✓		1		921
MW5-(24.5)	"		✓		✓		1		922
MW7-(5)	"		✓		✓		1		923
MW7-(10)	"		✓		✓		1		924
MW7-(15)	"		✓		✓		1		925
MW7-(19)	"		✓		✓		1		926

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Wade Weston	2/24 4:30pm	Ken VanSlambrook

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? N/A
4. Were samples in appropriate containers and properly packaged? ✓

KVS — Signature; SPL — Title; 2/24 — Date