KAPREALIAN ENGINEERING
INCORPORATED

KEI-P91-1004.R9
October 13, 1997

Tosco Marketing Company
Environmental Compliance Department
2000 Crow Canyon Place, Suite 400
San Ramon, CA 94583

Attention: Ms. Tina Berry

RE: Continuing Ground Water Investigation at
Unocal Service Station #5043
449 Hegenberger Road
Oakland, California

Dear Ms. Berry:

This report presents the results of Kaprealian Engineering, Inc's. (KEI) most recent soil and ground water investigation for the referenced site, in accordance with KEI's proposal (KEI-P91-1004.P8) dated November 15, 1996. The purpose of the investigation was to further define the degree and extent of hydrocarbon impacted soil and ground water in the vicinity of the site. The scope of the work performed by KEI consisted of the following:

Coordination with regulatory agencies

Geologic logging of 2 borings for the installation of 2 monitoring wells

Overdrilling and reconstruction of one existing monitoring well.

Developing three newly installed wells

Ground water monitoring, purging, and sampling

Delivery of soil and ground water samples (including properly executed Chain of Custody documentation) to a California-certified analytical laboratory for laboratory analyses

Data analysis, interpretation, and report preparation

SITE DESCRIPTION AND BACKGROUND

The subject site is currently an operating Unocal Service Station. The site is situated at the southwestern corner of the intersection of Hegenberger Road and Edgewater Drive in Oakland, California. The site is characterized by gently sloping, west to west-southwest trending topography, and is located approximately 1,250 feet northeast of the existing drainage channel of San Leandro Creek. A Location map is attached to this report.

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

RECENT FIELD ACTIVITIES

On April 21, 1997, two additional two-inch diameter monitoring wells, designated as MW7 and MW8, were installed in the vicinity of the site. Also, due to its being damaged during site renovation, existing monitoring well MW3 was fully drilled out and then reconstructed within the same boring. The locations of the additional and reconstructed wells are shown on the attached Figure 1. The wells were each drilled, constructed, and completed in accordance with the guidelines of the Regional Water Quality Control Board (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 and Well Construction Diagrams, respectively.

Wells MW7 and MW8 were drilled and completed to total depths ranging from 13 to 15 feet below grade. Ground water was encountered at depths ranging from 4.5 to 6.5 feet below grade during drilling. Soil samples were collected for laboratory analysis and for lithologic logging purposes at a maximum spacing of 5 foot intervals, at significant changes in lithology, at obvious areas of contamination, and at or within the soil/ground water interface, beginning at a depth of approximately 4.5 feet below grade and continuing until ground water was encountered. Ground water was encountered in MW7 within clean sand artificial fill while hand digging to verify the absence of underground utilities. Therefore, soil sampling for laboratory analysis could not be conducted for MW7. Other soil sampling conducted below the ground water table was for lithologic logging purposes only.

The undisturbed soil samples were collected by driving a California-modified split-spoon sampler (lined with brass liners) ahead of the drilling augers. The two-inch diameter brass liners holding the samples were sealed with Teflon-lined plastic caps, labeled, and placed in individually sealed plastic bags, which were then stored in a cooler, on ice, until delivered to a state-certified laboratory.

Well MW3 originally extended to 14 feet below grade. All casing, well seal, and filter pack sand materials were fully removed by overdrilling with hollow-stem augers. The well was then reconstructed within the existing borehole. Details of well construction are described in the attached Well Construction Diagram.

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 and top of each well casing were surveyed by Kier and Wright of Pleasanton, California, to Mean Sea Level (MSL) and to a vertical accuracy of 0.01 foot.

The new and reconstructed wells were developed on April 24, 1997. Prior to development, the wells were checked for the depth to the water table (by the use of an electronic sounder) and the presence of free product (by the use of an interface probe). No free product was noted in any of the wells. After recording the monitoring data, the wells were each purged (by the use of a centrifugal pump) of 20 to 30 gallons of water until the evacuated water was clear and free of visible suspended sediment. Monitoring and well development data are summarized in Table 1.

The new and reconstructed wells (MW3, MW7, and MW8) were monitored and sampled on May 27, 1997. The wells were also monitored and sampled on June 1, 1997 because the previous samples (collected May 27, 1997) were inadvertently not analyzed for TPH as diesel. Prior to sampling, the wells were checked for depth to water, and the presence of free product and sheen. No free product or sheen was noted in any of the three wells. After recording the monitoring data, the wells were each purged of between 4.5 and 6 gallons of water by the use of a centrifugal pump. During purging operations, the field parameters pH, temperature, and electrical conductivity were recorded and are presented in Table 2. Once the field parameters were observed to stabilize and a minimum of approximately three casing volumes had been removed from each well, water samples were then collected by the use of a clean Teflon bailer. The samples were decanted into clean VOA vials and/or one-liter amber bottles, as appropriate, which were then sealed with Teflon-lined screw caps, labeled, and stored in a cooler, on ice, until delivery to a state-certified laboratory.

ANALYTICAL RESULTS

Water samples collected from wells MW3A, MW7 and MW8 and the soil sample collected from the boring of MW8 were analyzed at Sequoia Analytical Laboratory. All samples analyzed were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for total petroleum hydrocarbons (TPH) as diesel by EPA method 3510/modified 8015 (water) and 3550/modified 8015 (soil), TPH as gasoline by EPA method 5030/modified 8015, and benzene, toluene, ethylbenzene, xylenes (BTEX), and methyl tert butyl ether (MTBE) by EPA method 8020.

The results of the soil analyses are summarized in Table 4, and the results of the water analyses are summarized in Table 3. Copies of the laboratory analyses and the Chain of Custody documentation are attached to this report.

HYDROLOGY AND GEOLOGY

On May 27, 1997, the measured depth to ground water in the monitoring wells ranged from 1.05 to 4.50 feet below grade. The ground water flow direction appeared to be to the southwest, as shown on the attached Figure 1. The hydraulic gradient at the site on May 27, 1997, was approximately 0.004, based on water level data collected from the monitoring wells prior to purging.

Based on review of regional geologic maps (U.S. Geological Survey Professional Paper 943 "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning" by E.J. Helley and K.R. Lajoie, 1979), the subject site is underlain by Holocene-age Bay Mud (Qhbm). The bay Mud typically consists of unconsolidated, saturated clay and silty clay that is rich in organic material. The Bay Mud locally contains lenses and stringers of well-sorted silt, sand, and beds of peat.

The subsurface soils exposed during the excavation activities that were conducted at the site during March and April 1995, consisted primarily of sandy clayey silt and clayey sandy silt. On March 7, 1995, ground water was initially encountered in the fuel tank pit excavation at a depth of 8.5 feet below grade. On March 15, 1995, following excavation activities in the fuel tank pit, ground water was observed at a depth of approximately 15 feet below grade, On April 19, 1995 ground water was observed to stabilize in the conductor casing located at the northwest corner of the fuel tank pit at a depth of about 10 feet below grade (after purging approximately 95,000 gallons).

Based on the results of our subsurface studies, the site is underlain by artificial fill materials that extend to approximately 2 to 5.75 feet below grade. The fill materials are underlain by Bay Mud, which consists predominantly of organic-rich silty clay and clayey silt, with minor interbeds of sand, peat, sandy silt, and silty clay. As of May 1997, the unsaturated zone underneath the site is approximately 1 to 4.5 feet thick.

The results of the particle size analysis (sieve and hydrometer) previously conducted on a soil sample collected from the saturated zone in the boring for monitoring well MW5 at a depth of 9 feet below grade indicate that the sample is composed of approximately 70% clay, 27% silt, and 3% fine-grained sand. The sample is classified as an organic clay with silt (OH).

DISTRIBUTION

Copies of this report should be sent to Mr. Barney Chan of 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.

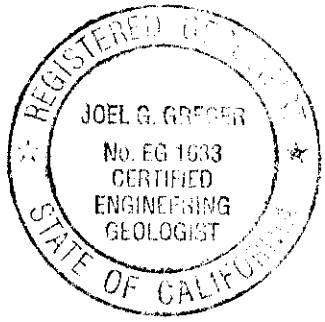
The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state-certified laboratory. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, 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.

Doug Lee
Senior Geologist



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

License No. EG 1633
Exp. Date 8/31/98

Sarkis A. Soghomonian
Project Engineer

Attachments: Tables 1 through 4
Location Map
Figure 1
Boring Logs
Well Construction Diagrams
Laboratory Analyses
Chain of Custody documentation

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TABLE 1

SUMMARY OF GROUND WATER MONITORING AND PURGING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)♦	Total Well Depth (feet)♦	Product Thickness (feet)	Sheen	Water Purged (gallons)
(Monitored and Sampled on June 1, 1997)						
MW3	4.54	3.50	14.20	0	No	6
MW7	4.29	4.54	13.20	0	No	4.5
MW8	5.06	3.46	13.90	0	No	6
(Monitored and Sampled on May 27, 1997)						
MW3	4.59	3.45	14.20	0	No	6
MW6*	4.56•	4.50	12.90	0.25	--	0
MW7	4.33	4.50	13.20	0	No	4.5
MW8	5.10	3.42	13.90	0	No	6
MW9*	7.24	1.05	13.00	0	No	0
MW10*	4.22	4.40	12.90	0	No	0
(Monitored and Developed on April 24, 1997)						
MW3	5.39	2.65	14.15	0	--	20
MW7	5.18	3.65	13.20	0	--	30
MW8	5.22	3.30	14.95	0	--	20

Well #	Top of Well Casing Elevation* (feet)
MW3	8.04
MW6	8.87
MW7	8.83
MW8	8.52
MW9	8.29
MW10	8.62

♦ Depth to water and total well depth measurements are taken from the top of the well casings.

* Monitored only.

• Ground water elevation corrected due to presence of free product. (correction factor = 0.75)

-- Sheen determination was not performed.

** The elevation of the tops of the well casings have been surveyed relative to Mean Sea Level, per City of Oakland Benchmark #3880. Brass pin in southwest corner of Hegenberger overpass to Nimitz Freeway, pin is in curb 10 feet south of the south end of the overpass (Elevation = 20.37 M.S.L.).

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TABLE 2

RECORD OF THE TEMPERATURE, CONDUCTIVITY, AND pH VALUES
IN THE MONITORING WELLS DURING PURGING AND PRIOR TO SAMPLING

Well #	Gallons per Casing Volume	Time	Gallons Purged	Casing Volumes Purged	Temperature (°F)	Conductivity ([µmhos/cm]x100)	pH
			(Measured on June 1, 1997)				
MW3	1.82	13:15	2	1.1	67.7	4.52	6.89
		13:16	4	2.2	68.0	4.50	6.91
		13:17	6	3.3	68.2	4.51	6.92
MW7	1.47	13:50	2	1.4	68.7	7.72	6.47
		13:51	3	2.0	69.1	7.48	6.50
		13:53	5	3.4	68.0	7.50	6.55
MW8	1.77	13:30	2	1.1	69.1	4.62	7.27
		13:31	4	2.3	69.7	4.50	7.30
		13:32	6	3.4	69.7	4.91	7.31
			(Measured on May 27, 1997)				
MW3	1.83	12:35	2	1.1	63.7	1.45	7.28
			4	2.2	63.8	1.50	7.30
		12:39	6	3.3	64.0	1.49	7.50
MW7	1.48	13:00	1.5	1	63.8	1.98	6.69
			3	2	63.7	2.00	6.72
		13:04	4.5	3	63.9	2.10	6.75
MW8	1.78	13:20	2	1.1	64.0	1.27	6.71
			4	2.2	63.7	1.34	6.90
		13:24	6	3.4	64.1	1.40	6.91

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TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
5/27/97 & 6/1/97	MW3	610	670	6.5	ND	ND	ND	250
	MW7	69	68	ND	ND	ND	ND	ND
	MW8	320	310	0.88	0.67	15	70	ND

ND = Non-detectable

Results are in micrograms per liter (µg/L), unless otherwise indicated.

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TABLE 4

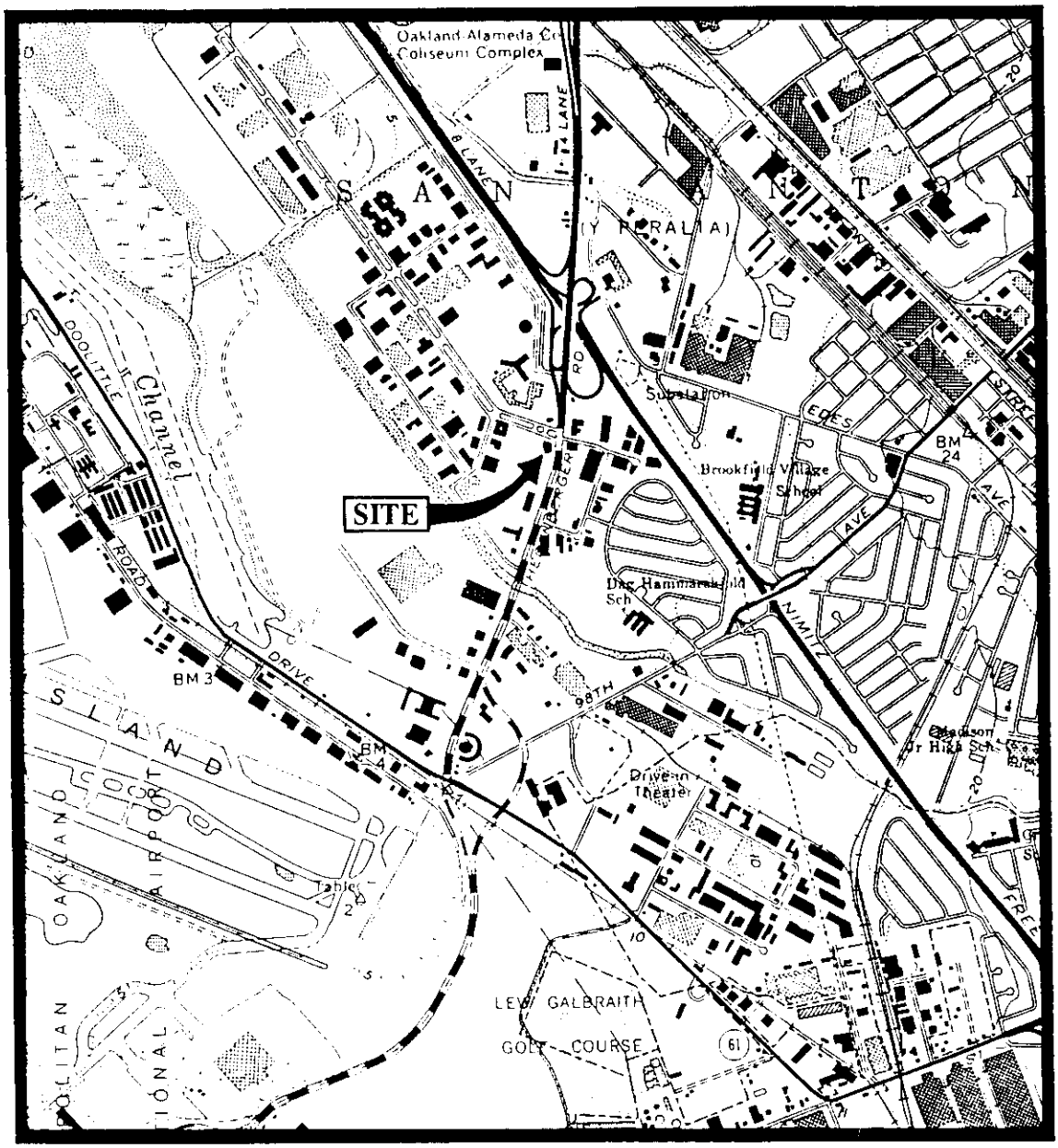
SUMMARY OF LABORATORY ANALYSES
SOIL

Date	Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
4/21/97	MW8(6)	ND	1.3	0.0051	ND	0.015	0.041	ND

NOTE: The soil sample was collected at the depths below grade indicated in the ( ) of the respective sample number.

ND = Non-detectable.

Results are in milligrams per kilogram (mg/kg), unless otherwise indicated.

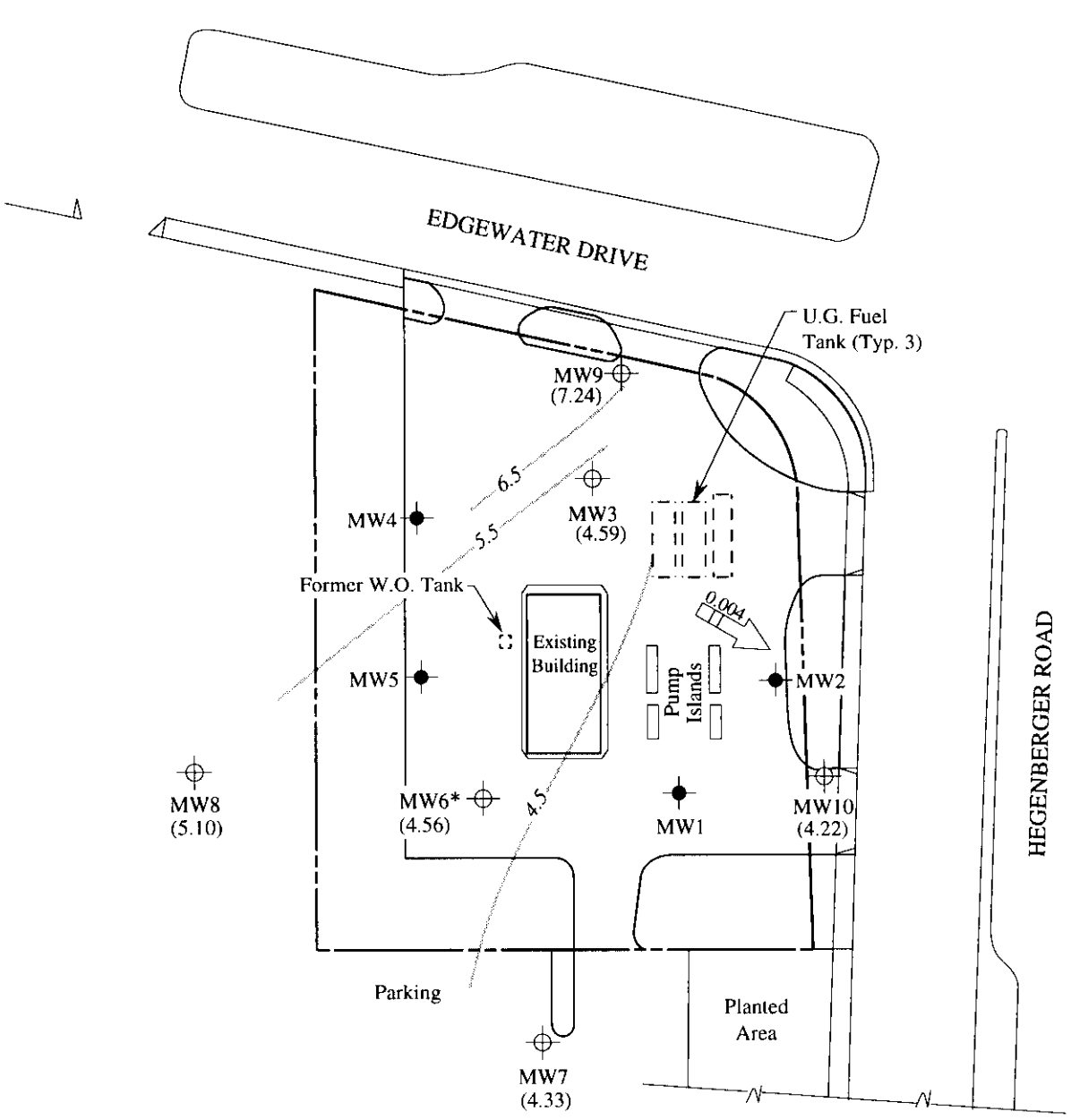


Base modified from 7.5 minute U.S.G.S. San Leandro Quadrangle
(photorevised 1980)

0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED	**UNOCAL SERVICE STATION #5043** **449 HEGENBERGER ROAD** **OAKLAND, CALIFORNIA**	**LOCATION MAP**



LEGEND

- Monitoring well (existing)
- Monitoring well (destroyed)
- ( ) Ground water elevation in feet above Mean Sea Level
- #.## Direction of ground water flow with approximate hydraulic gradient
- Contours of ground water elevation
- * Ground water elevation was corrected due to the presence of free product.

0 60 120

Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE MAY 27, 1997 MONITORING EVENT

KAPREALIAN ENGINEERING INCORPORATED

UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CALIFORNIA

FIGURE **1**

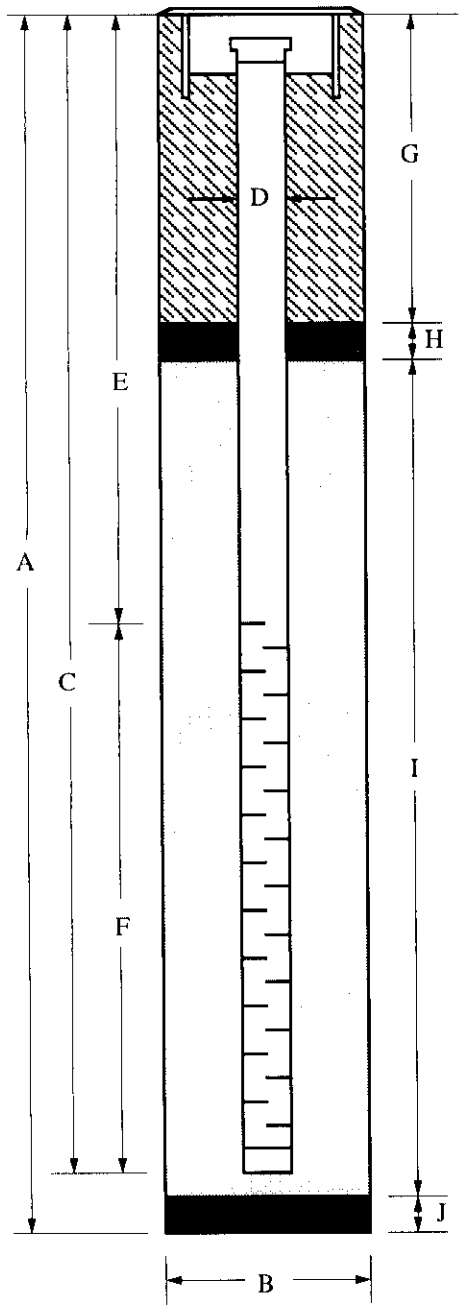
WELL CONSTRUCTION DIAGRAM

PROJECT NAME: Unocal S/S #5043, 499 Hegenberger Road, Oakland **WELL NO.:** MW3

PROJECT NUMBER: KEI-P91-1004.P8

WELL PERMIT NO.: ACFC & WCD #97187

Flush-mounted Well Cover



A. Total Depth : 14'

B. Boring Diameter: 8.5"

Drilling Method: Hollow Stem Auger

C. Casing Length: 14'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 2.5'

F. Perforated Length: 11.5'

Perforation Type: Machine Slotted

Perforation Size: 0.010"

G. Surface Seal: 1.5'

Seal Material: Neat Cement

H. Seal: 0.5'

Seal Material: Bentonite

I. Filter Pack: 12'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: None

Seal Material: N/A

BORING LOG

Project No. KEI-P 91-1004.P8	**Boring Diameter** 8.5" **Casing Diameter** 2"	**Logged By** TGG CEG 1633 D.L.
Project Name Unocal S/S #5043 499 Hegenberger Road Oakland, California	**Well Cover Elevation** N/A	**Date Drilled** 4/21/97
Boring No. MW8	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Pene-tration blows/6"	G.W level	O.V.M. (P.P.M.)	Depth (feet) Samples	Stratigraphy USCS	Description
			0		A.C. pavement over sand and gravel base.
					Pocketed clay, silt and sand, firm to stiff, moist, dark olive gray and dark greenish gray (fill and or disturbed native soil).
					Silty gravel, medium dense, moist to very moist, (fill).
2/2/4			5		Silty very fine to fine-grained sand, estimated at 20-30% silt, firm to stiff, very moist, dark gray.
2/2/2	▽			ML	Clayey silt, firm, very moist to wet, black and dark greenish gray, with abundant plant remains lensed with black sandy silt, wet.
2/5/6			10	CL	Silty clay, stiff, moist, black, with minor plant remains, root holes common.
6/12/24				MH	Clayey silt, estimated at 30-40% silt, trace fine-grained sand, stiff to very stiff, moist, dark greenish gray and olive, mottled, with occasional root holes and plant fibers, clay content increases with depth.
			15		TOTAL DEPTH: 15'
			20		

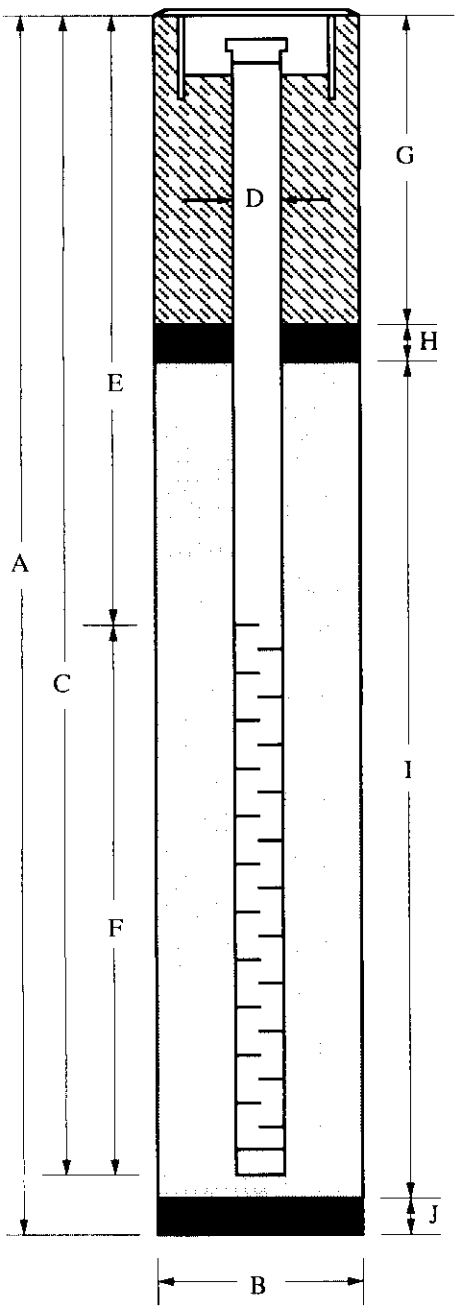
WELL CONSTRUCTION DIAGRAM

PROJECT NAME: Unocal S/S #5043, 499 Hegenberger Road, Oakland **WELL NO.:** MW8

PROJECT NUMBER: KEI-P91-1004.P8

WELL PERMIT NO.: ACFC & WCD #97187

Flush-mounted Well Cover



A. Total Depth : 15'

B. Boring Diameter: 8.5"

Drilling Method: Hollow Stem Auger

C. Casing Length: 15'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 3'

F. Perforated Length: 12'

Perforation Type: Machine Slotted

Perforation Size: 0.010"

G. Surface Seal: 2'

Seal Material: Neat Cement

H. Seal: 0.5'

Seal Material: Bentonite

I. Filter Pack: 12.5'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: None

Seal Material: N/A

BORING LOG

Project No. KEI-P 91-1004.P8	**Boring Diameter** 8.5" **Casing Diameter** 2"	**Logged By** JGG D.L. CEG 1633
Project Name Unocal S/S #5043 499 Hegenberger Road Oakland, California	**Well Cover Elevation** N/A	**Date Drilled** 4/21/97
Boring No. MW7	**Drilling Method** Hollow-stem Auger	**Drilling Company** Woodward Drilling

Pene-tration blows/6"	G.W level	O.V.M. (P.P.M.)	Depth (feet) Samples	Stratigraphy USCS	Description
			0		A.C. pavement over sand and gravel base.
	▽			SP	Poorly graded sand, predominantly medium-grained, loose, moist grading to saturated, brown (fill).
			5	SW	Well graded sand with gravel, loose, saturated, very dark grayish brown (fill).
				ML	Clayey silt, soft, wet, black and dark greenish gray, mottled.
				ML	Sandy silt, soft, wet, dark greenish gray.
1/1/1				Pt	Peat, variable silt and clay content, soft, fibrous, wet, brown and black.
				ML	Clayey silt, soft, wet, black, with abundant plant remains.
			10		
6/7/9				CH	Silty clay, stiff, moist, dark gray, with plant remains and root holes.
					TOTAL DEPTH: 13'
			15		
			20		

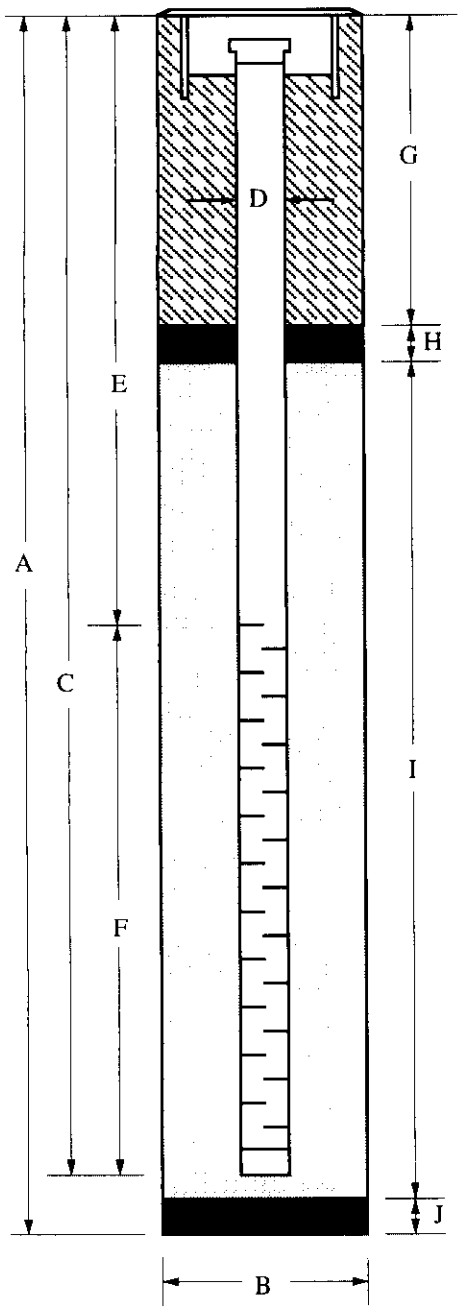
WELL CONSTRUCTION DIAGRAM

PROJECT NAME: Unocal S/S #5043, 499 Hegenberger Road, Oakland **WELL NO.:** MW7

PROJECT NUMBER: KEI-P91-1004.P8

WELL PERMIT NO.: ACFC & WCD #97187

Flush-mounted Well Cover



A. Total Depth : 13'

B. Boring Diameter: 8.5"

Drilling Method: Hollow Stem Auger

C. Casing Length: 13'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"

ID = 2.067"

E. Depth to Perforations: 3'

F. Perforated Length: 10'

Perforation Type: Machine Slotted

Perforation Size: 0.010"

G. Surface Seal: 2'

Seal Material: Neat Cement

H. Seal: 0.5'

Seal Material: Bentonite

I. Filter Pack: 10.5'

Pack Material: RMC Lonestar Sand

Size: #2/12

J. Bottom Seal: None

Seal Material: N/A

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 940.., (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

MPDS Services	Client Project ID:	Unocal, #5043, 499 Hegenberger Rd.	Sampled:	May 27, 1997
2401 Stanwell Dr., Ste. 300	Matrix Descript:	Water Oakland	Received:	May 29, 1997
Concord, CA 94520	Analysis Method:	EPA 5030/8015 Mod./8020	Reported:	Jun 5, 1997
Attention: Jarrel Crider	First Sample #:	705-1808		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Sample Number	Sample Description	Purgeable Hydrocarbons µg/L	Benzene µg/L	Toluene µg/L	Ethyl Benzene µg/L	Total Xylenes µg/L
705-1808	MW 3	670	6.5	ND	ND	ND
705-1809	MW 7	68	ND	ND	ND	ND
705-1810	MW 8	310	0.88	0.67	15	70
Detection Limits:		**50**	**0.50**	**0.50**	**0.50**	**0.50**

Total Purgeable Petroleum Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as ND were not present above the stated limit of detection.

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

7051808.MPD <1>

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 940[illegible], (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

MPDS Services	Client Project ID:	Unocal, #5043, 499 Hegenberger Rd.	Sampled: May 27, 1997
2401 Stanwell Dr., Ste. 300	Sample Descript:	Water Oakland	Received: May 29, 1997
Concord, CA 94520	Analysis for:	MTBE (Modified EPA 8020)	
Attention: Jarrel Crider	First Sample #:	705-1808	Analyzed: Jun 3, 1997
			Reported: Jun 5, 1997

LABORATORY ANALYSIS FOR: MTBE (Modified EPA 8020)

Sample Number	Sample Description	Detection Limit µg/L	Sample Result µg/L
705-1808	MW 3	25	250
705-1809	MW 7	5.0	N.D.
705-1810	MW 8	5.0	N.D.

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

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

Sequoia Analytical

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MPDS Services	Client Project ID:	Unocal, #5043, 499 Hegenberger Rd. Oakland	Sampled: May 27, 1997
2401 Stanwell Dr., Ste. 300	Matrix Descript:	Water	Received: May 29, 1997
Concord, CA 94520	Analysis Method:	EPA 5030/8015 Mod./8020	Reported: Jun 5, 1997
Attention: Jarrel Crider	First Sample #:	705-1808	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Sample Number	Sample Description	Chromatogram Pattern	DL Mult. Factor	Date Analyzed	Instrument ID	Surrogate Recovery, % QC Limits: 70-130
705-1808	MW 3	Gasoline	10	6-4-97	HP-4	93
705-1809	MW 7	Gasoline	1.0	6-3-97	HP-4	100
705-1810	MW 8	Gasoline	1.0	6-3-97	HP-4	89

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 940c, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

MPDS Services
2401 Stanwell Dr., Ste. 300
Concord, CA 94520
Attention: Jarrel Crider

Client Project ID: Unocal, #5043, 499 Hegenberger Rd., Oakland
Matrix: Liquid

QC Sample Group: 7051808-810

Reported: Jun 5, 1997

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes
QC Batch#:	GC060397 802004A	GC060397 802004A	GC060397 802004A	GC060397 802004A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030
Analyst:	K. Nill	K. Nill	K. Nill	K. Nill
MS/MSD #:	7051571	7051571	7051571	7051571
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Prepared Date:	6/3/97	6/3/97	6/3/97	6/3/97
Analyzed Date:	6/3/97	6/3/97	6/3/97	6/3/97
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Result:	16	17	16	50
MS % Recovery:	80	85	80	83
Dup. Result:	17	18	17	54
MSD % Recov.:	85	90	85	90
RPD:	6.1	5.7	6.1	7.7
RPD Limit:	0-25	0-25	0-25	0-25

LCS #:	4LCS060397	4LCS060397	4LCS060397	4LCS060397
Prepared Date:	6/3/97	6/3/97	6/3/97	6/3/97
Analyzed Date:	6/3/97	6/3/97	6/3/97	6/3/97
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
LCS Result:	18	19	18	56
LCS % Recov.:	90	95	90	93

MS/MSD LCS Control Limits	70-130	70-130	70-130	70-130

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

MPDS Services, Inc.

2401 Stanwell Drive, Suite 400, Concord, CA 94520
Tel: (510) 602-5120 Fax: (510) 689-1918

UNOCAL

CHAIN OF CUSTODY

SAMPLER: John Goddard

WITNESSING AGENCY

UNOCAL ~~Tosco~~ S/S # 5543 CITY: Oakland

ADDRESS: 499 Hegenberger Rd

ANALYSES REQUESTED

TURN AROUND TIME: 5 day

SAMPLE ID NO.	DATE	TIME	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH-D	BTEX	TPH-G/BTEX						REMARKS
MW3A	5-27-97		✓			2		✓	✓	✓		7051808		A-B		
MW7	"		✓			2		✓	✓	✓		7051809		↓		
MW8	"		✓			2		✓	✓	✓		7051810		✓		

RELINQUISHED BY: (SIGNATURE) — DATE/TIME: 5/29/97 1135 — RECEIVED BY: (SIGNATURE)

(SIGNATURE) — (SIGNATURE)

(SIGNATURE) — (SIGNATURE)

(SIGNATURE) — (SIGNATURE)

THE FOLLOWING MUST BE COMPLETED BY THE LABORATORY ACCEPTING SAMPLES FOR ANALYSES:

1. HAVE ALL SAMPLES RECEIVED FOR ANALYSIS BEEN STORED ON ICE? Y
2. WILL SAMPLES REMAIN REFRIGERATED UNTIL ANALYZED? Y
3. DID ANY SAMPLES RECEIVED FOR ANALYSIS HAVE HEAD SPACE? N
4. WERE SAMPLES IN APPROPRIATE CONTAINERS AND PROPERLY PACKAGED? Y

SIGNATURE: — TITLE: Analyst — DATE: 5/29/97

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 9406. (415) 364-9600 FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598 (510) 988-9600 FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

MPDS Services	Client Project ID:	Unocal #5043, 499 Hegenberger Rd., Oaklan	Sampled: Jun 1, 1997
2401 Stanwell Dr., Ste. 300	Sample Matrix:	Water	Received: Jun 2, 1997
Concord, CA 94520	Analysis Method:	EPA 3510/8015 Mod.	Reported: Jun 11, 1997
Attention: Jarrel Crider	First Sample #:	706-0076	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 706-0076 MW 3 ^	Sample I.D. 706-0077 MW 7 ^	Sample I.D. 706-0078 MW 8 ^
Extractable Hydrocarbons	50	610	69	320
Chromatogram Pattern:		Diesel & Unidentified Hydrocarbons > C20	Diesel & Unidentified Hydrocarbons > C20	Diesel & Unidentified Hydrocarbons < C15, > C20

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0
Date Extracted:	6/5/97	6/5/97	6/5/97
Date Analyzed:	6/10/97	6/10/97	6/10/97
Instrument Identification:	HP-3A	HP-3A	HP-3A

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

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

Please Note:
^ This sample appears to contain diesel and non-diesel mixtures. "Unidentified Hydrocarbons <C 15" are probably gasoline; "> C 20" refers to unidentifed peaks in the total oil and grease range.

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834 (916) 921-9600 FAX (916) 921-0100

MPDS Services
2401 Stanwell Dr., Ste. 300
Concord, CA 94520
Attention: Jarrel Crider

Client Project ID: Unocal #5043, 499 Hegenberger Rd., Oakland
Matrix: Liquid
QC Sample Group: 7060076-078
Reported: Jun 11, 1997

QUALITY CONTROL DATA REPORT

ANALYTE	Diesel
Method:	EPA 8015
Analyst:	EPA 3510
MS/MSD Batch#:	BLK060597
Date Prepared:	6/5/97
Date Analyzed:	6/9/97
Instrument I.D.#:	HP-3A
Conc. Spiked:	300 µg/L
Matrix Spike % Recovery:	83
Matrix Spike Duplicate % Recovery:	90
Relative % Difference:	7.7
LCS Batch#:	LCS060597
Date Prepared:	6/5/97
Date Analyzed:	6/9/97
Instrument I.D.#:	HP-3A
LCS % Recovery:	90
% Recovery Control Limits:	60-140

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

CHAIN OF CUSTODY

UNOCAL

SAMPLER: John Giddings

WITNESSING AGENCY:

TOSCO S/S # 5013 CITY: Oakland

ADDRESS: 4499 Hayward Berger

ANALYSES REQUESTED: TPH-D

TURN AROUND TIME: 5 Day Rush

SAMPLE ID NO.	DATE	TIME	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	REMARKS
MW3W	6-1-97		✓					7060076
MW7	"		✓					7060077
MW8	"		✓					7060078

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	DATE/TIME
John Gidding	6/1 17:40	(SIGNATURE)	
(SIGNATURE)		(SIGNATURE)	
(SIGNATURE)		(SIGNATURE)	
(SIGNATURE)		(SIGNATURE)	6/2/97 10:40

THE FOLLOWING MUST BE COMPLETED BY THE LABORATORY ACCEPTING SAMPLES FOR ANALYSES:

1. HAVE ALL SAMPLES RECEIVED FOR ANALYSIS BEEN STORED ON ICE? Y
2. WILL SAMPLES REMAIN REFRIGERATED UNTIL ANALYZED? Y
3. DID ANY SAMPLES RECEIVED FOR ANALYSIS HAVE HEAD SPACE? N
4. WERE SAMPLES IN APPROPRIATE CONTAINERS AND PROPERLY PACKAGED? Y

SIGNATURE: [signature] TITLE: Analyst DATE: 6/2/97

All water containers to be sampled for TPHG/BTEX, 8010 & 8240 are preserved with HCL. All water containers to be sampled for Lead or Metals are preserved with HN03. All other containers are unpreserved.

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #5043, 449 Hegenberger Rd.		Sampled:	Apr 21, 1997
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Soil	Oakland	Received:	Apr 22, 1997
Concord, CA 94520	Analysis Method:	EPA 5030/8015 Mod./8020		Reported:	May 5, 1997
Attention: Dennis Royce	First Sample #:	704-1230			

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 704-1230 MW-8 (6)
Purgeable Hydrocarbons	1.0	1.3
Benzene	0.0050	0.0051
Toluene	0.0050	N.D.
Ethyl Benzene	0.0050	0.015
Total Xylenes	0.0050	0.041
MTBE:	0.050	N.D.
Chromatogram Pattern:		Gasoline

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	4/28/97
Instrument Identification:	HP-5
Surrogate Recovery, %: (QC Limits = 70-130%)	82

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

SEQUOIA ANALYTICAL, #1271

Alan B. Kemp
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #5043, 449 Hegenberger Rd.	Sampled:	Apr 21, 1997
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Soil, Oakland	Received:	Apr 22, 1997
Concord, CA 94520	Analysis Method:	EPA 3550/8015 Mod.	Reported:	May 5, 1997
Attention: Dennis Royce	First Sample #:	704-1230		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 704-1230 MW-8 (6)
Extractable Hydrocarbons	1.0	N.D.
Chromatogram Pattern:		--

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Extracted:	4/28/97
Date Analyzed:	4/29/97
Instrument Identification:	HP-3A

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

SEQUOIA ANALYTICAL, #1271

Alan B. Kemp
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 940c, (415) 364-9600, FAX (415) 364-9233
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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Kaprealian Engineering, Inc.
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Dennis Royce

Client Project ID: Unocal #5043, 449 Hegenberger Rd. Oakland
Matrix: Solid
QC Sample Group: 704-1230

Reported: May 5, 1997

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	K. Nill	K. Nill	K. Nill	K. Nill	D. Sharma
MS/MSD Batch#:	7041134	7041134	7041134	7041134	7041441
Date Prepared:	4/28/97	4/28/97	4/28/97	4/28/97	4/28/97
Date Analyzed:	4/28/97	4/28/97	4/28/97	4/28/97	4/29/97
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3A
Conc. Spiked:	0.40 mg/kg	0.40 mg/kg	0.40 mg/kg	1.2 mg/kg	10 mg/kg
Matrix Spike % Recovery:	153	145	158	150	79
Matrix Spike Duplicate % Recovery:	153	145	158	150	75
Relative % Difference:	0.0	0.0	0.0	0.0	5.2
LCS Batch#:	5LCS042897	5LCS042897	5LCS042897	5LCS042897	LCS042897
Date Prepared:	4/28/97	4/28/97	4/28/97	4/28/97	4/28/97
Date Analyzed:	4/28/97	4/28/97	4/28/97	4/28/97	4/29/97
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3A
LCS % Recovery:	100	90	100	95	68
% Recovery Control Limits:	60-140	60-140	60-140	60-140	60-140

SEQUOIA ANALYTICAL, #1271

Alan B. Kemp
Project Manager

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UNOCAL 76

❑ 680 Chesapeake Drive • Redwood City, CA 94063 • (415) 364-9600
❑ 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600
☒ 404 N. Wiget Lane • Walnut Creek, CA 94598 • (510) 988-9600
❑ 18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 481-9200
❑ East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200
❑ 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Consultant Company: K.E.I.
Address: 2401 STANWELL DR., #400
City: CONCORD State: CA Zip Code: 94520
Telephone: (510) 602-5100 FAX #: (837-0602
Report To: ROBIN Sampler:

Project Name: 449 HEGENBERGER ROAD
UNOCAL Project Manager: DAVE DE WITT
AFE #:
Site #, City, State: #5043, OAKLAND, CA
QC Data: ☒ Level D (Standard) ❑ Level C ❑ Level B ❑ Level A

Pink - Client

Turnaround Time: ☒ 10 Work Days ❑ 5 Work Days ❑ 3 Work Days ❑ 2 Work Days ❑ 1 Work Day ❑ 2-8 Hours

❑ Drinking Water
❑ Waste Water
☒ Other

CODE: ❑ Misc. ☒ Detect. ❑ Eval. ❑ Remed. ❑ Demol. ❑ Closure

Analyses Requested

	Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laboratory Sample #	TPH-G	BTEX	MTBE	TPH-D						Comments
1.	MW8(6)	4-21-97	SOIL	1	TUBE	7041230	X	X	X	X						
2.																
3.																
4.																
5.																
6.																
7.																
8.																
9.																
10.																

Yellow - Laboratory

White - Laboratory

Relinquished By:		Date: 4-22-97	Time: 9:55	Received By:	Date:	Time:
Relinquished By:		Date:	Time:	Received By:	Date:	Time:
Relinquished By:		Date:	Time:	Received By Lab:	Date: 4/23/97	Time: 0955

Were Samples Received in Good Condition? ☒ Yes ❑ No Samples on Ice? ☒ Yes ❑ No Method of Shipment KEI Page 1 of 1

To be completed upon receipt of report:
1) Were the analyses requested on the Chain of Custody reported? ❑ Yes ❑ No If no, what analyses are still needed? _____
2) Was the report issued within the requested turnaround time? ❑ Yes ❑ No If no, what was the turnaround time? _____

Approved by: _____ Signature: _____ Company: _____ Date: _____