KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(707) 746-6915

October 3, 1989

10/11/89

Alameda County Department of
Environmental Health
470 27th Street, Room 322
Oakland, CA 94612

Attention: Mr. Larry Seto

RE: Unocal Service Station #2512
1300 Davis Street
San Leandro, California

Dear Mr. Seto:

Per the request of Mr. Tim Ross of Unocal Corporation, enclosed please find our report dated September 27, 1989 for the above referenced site.

Should you have any questions, please feel free to call our office at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Judy A. Dewey

Enclosure

cc: Tim Ross, Unocal

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(707) 746-6915 (707) 746-6916
FAX: (707) 746-5581

KEI-P88-1204.QR1
September 27, 1989

Unocal Corporation
2175 N. California Blvd., Suite #650
Walnut Creek, CA 94596

Attention: Mr. Tim Ross

RE: Ground Water Investigation at
Unocal Service Station #2512
1300 Davis Street
San Leandro, California

Dear Mr. Ross:

This report presents the results of KEI's soil and ground water investigation for the referenced site in accordance with proposal KEI-P88-1204.P4 dated June 19, 1989. The purpose of the investigation was to further define the extent of ground water contamination at the site. The work performed consisted of the following:

Coordination with regulatory agencies.

Drilling, installation and development of three additional monitoring wells.

Soil sampling.

Ground water monitoring, purging and sampling.

Laboratory analyses.

Data analysis, interpretation and report preparation.

BACKGROUND

The subject site is presently used as a gasoline station. Site vicinity and site descriptions are shown on the attached sketch.

KEI's work at the site began on December 30, 1988 when KEI was asked to install six exploratory borings at the site. The borings were installed on January 3, 1989 to depths ranging from 26.5 to 30 feet. Water was initially encountered in the borings at depths ranging from 25 to 26.5 feet. Analytical results of selected soil samples collected from the borings showed total petroleum hydrocarbon (TPH) ranging from non-detectable to 73

ppm. Total oil and grease (TOG) in borings EB1 and EB6 ranged from non-detectable to 7,800 ppm, while benzene in water ranged from non-detectable to 8.2 ppb. Results of the exploratory boring investigation are presented in KEI's report (KEI-P88-1204.R1) dated February 3, 1989. Excavation of the area surrounding EB6 was recommended to remove as much contaminated soil as possible.

Based on the results of the preliminary investigation, three 2" diameter monitoring wells (designated as MW1, MW2 and MW3 on the attached Site Plan) were installed at the site on April 17, 1989. The wells were drilled, constructed and completed in accordance with the guidelines of the RWQCB and County well standards. The three wells were drilled and completed to a total depth of 33 feet. Ground water was initially encountered at depths ranging from 17.5 to 18.5 feet beneath the surface during drilling. For results of the well installation, see KEI's report (KEI-P88-1204.R2) dated May 16, 1989.

On May 11, 1989, in an attempt to remove as much contaminated soil as possible, the area adjacent to exploratory boring EB6 was excavated. KEI recommended the installation of additional monitoring wells in order to further define the extent of the contamination (see KEI's report KEI-J88-1204.R4 dated June 15, 1989).

FIELD ACTIVITIES

The three initial wells (MW1, MW2 and MW3) were monitored three times and sampled once during the quarter. During monitoring, the wells were checked for depth to water and presence of free product and sheen. No free product or sheen was noted in any of the wells during the quarter. Monitoring data are summarized in Table 1.

Water samples were collected from the existing wells on August 10, 1989. Prior to sampling, MW1 and MW2 were each purged 15 gallons, and MW3 was purged 25 gallons. Samples were then collected using a clean Teflon bailer. Samples were decanted into clean VOA vials and one liter amber bottles, which were sealed with Teflon-lined screw caps and stored on ice until delivery to the state certified laboratory.

On August 16, 1989, three additional 2" diameter monitoring wells (designated as MW4, MW5, and MW6 on the attached Site Plan) were installed at the site. The wells were drilled, constructed and completed in accordance with the guidelines of the Regional Water Quality Control Board (RWQCB) and County well standards.

The subsurface materials penetrated and details of the construction of the wells are described in the attached boring logs.

The three recent wells (MW4, MW5 and MW6) were each drilled and completed to a total depth of 33 feet. Ground water was initially encountered at depths ranging from 19.8 to 22 feet beneath the surface during drilling. Soil samples were taken at 5 foot intervals beginning at 5 feet below grade until ground water was encountered. The undisturbed soil samples were taken by driving a California-modified split-spoon sampler ahead of the drilling augers. The 2" diameter brass liners holding the samples were sealed with aluminum foil, plastic caps and tape, and stored in a cooled ice chest for delivery to a certified laboratory. Each well casing was installed with a watertight cap and padlock. A round, watertight, flush-mounted well cover was cemented in place over each well casing.

The new wells were developed on August 27, 1989. Prior to development, the wells were checked for depth to water table using an electronic sounder, presence of free product (using paste tape) and sheen. No free product or sheen was noted in any of the wells. After recording the monitoring data, the wells were purged with a surface pump until the evacuated water was clear and free of suspended sediment. Monitoring and well development data are summarized in Table 1.

The new wells were sampled on August 29, 1989. Prior to sampling, monitoring data were collected and water samples were then collected using a clean Teflon bailer. The samples were decanted into clean glass VOA vials and one liter amber bottles, sealed with Teflon-lined screw caps, and labeled and stored on ice until delivery to a certified laboratory.

HYDROLOGY AND GEOLOGY

The subject site is underlain by Quaternary alluvium materials consisting of clay and silty clay with minor amounts of silt to the maximum depth explored (33 feet below grade). The ground water table (potentiometric surface) was monitored periodically between June 15 and August 29, 1989. The elevation of the ground water table has steadily decreased during this time period.

Regionally, the ground water table generally slopes toward San Francisco Bay or to the southwest. The results of our water level measurements indicate that the water table slopes to the southwest or west (see Site Plan). Data from the June 15th measurement period is inconsistent, and therefore disregarded.

The most recent water level measurements conducted on August 27 and 29, 1989 indicate a flow direction to the west, with a relatively flat gradient (see Site Plan). The depth of the water table stabilized in the monitoring wells at depths below existing grade at 17.14 to 18.05 feet.

ANALYTICAL RESULTS

Water and selected soil samples were analyzed at Sequoia Analytical Laboratory in Redwood City, California, and were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for TPH as gasoline and TPH as diesel using EPA methods 5030, 3550 and 3510 in conjunction with modified 8015, BTX&E using EPA methods 5030 and 8020, and TOG using EPA method 418.1. The soil samples were not analyzed for TPH as diesel.

The soil sample analyses show non-detectable levels of TPH and BTX&E in all samples, except in MW4(5), MW5(15) and MW5(22), which had TPH levels of 3.3, 20 and 2.1 ppm, respectively. The levels of TOG in all soil samples indicated less than 50 ppm. Water sample analyses of the new wells (MW4, MW5 and MW6) showed non-detectable levels of TOG, TPH as gasoline, and BTX&E, except in MW5, which showed 0.94 ppb of toluene and 0.30 ppb of ethylbenzene. TPH as diesel showed 120 ppb in MW4 and 100 ppb in MW5. TPH as diesel was non-detectable for MW6. The analytical results of the existing wells (MW1, MW2 and MW3) showed non-detectable levels of TPH and benzene in wells MW1 and MW2. In well MW3, the level of TPH as gasoline was 3,200 ppb, and the level of benzene was 73 ppb. TPH as diesel and TOG were non-detectable for MW1 and MW2; however, MW3 showed 860 ppb of TPH as diesel. Results of the soil analyses are summarized in Table 2, and water analyses in Table 3. Copies of all analytical results and Chain of Custody documentation are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results collected and evaluated to date and no evidence of free product or sheen in any of the wells, KEI recommends the continuation of the current monitoring and sampling program of the existing wells per KEI's proposal (KEI-P88-1204.P3) dated May 16, 1989.

DISTRIBUTION

A copy of this report should be sent to the Alameda County Flood Control District, the Alameda County Health Agency, and to the Regional Water Quality Control Board, San Francisco Bay Region.

LIMITATIONS

Environmental changes, either naturally-occurring or artificially-induced, may cause changes in ground water levels and flow paths, thereby changing the extent and concentration of any contaminants.

Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study are based on the data obtained from the field work and laboratory analyses. 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, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

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

Sincerely,

Kaprealian Engineering, Inc.

Don R. Braun
Certified Engineering Geologist

License No. 1310
Exp. Date 6/30/90

Jae Yang, P.E.

License No. 25337
Exp. Date 12/31/89

Mardo Kaprealian
President

Attachments: Tables 1, 2 & 3
Location Map
Site Plan
Laboratory Analyses
Chain of Custody documentation

KEI-P88-1204.QR1
September 27, 1989

TABLE 1

SUMMARY OF GROUND WATER MONITORING
AND DEVELOPMENT DATA

Date	Well No.	Water Depth (feet)	Product Thickness	Sheen	Water Bailed (gallons)
8/29/89	MW4	17.14	0	None	9
	MW5	17.81	0	None	9
	MW6	17.82	0	None	9
8/27/89	MW1	17.50	0	None	0
	MW2	18.05	0	None	0
	MW3	17.60	0	None	0
	MW4*	15.80	0	None	45
	MW5*	17.75	0	None	45
	MW6*	17.50	0	None	45
8/10/89	MW1	17.23	0	None	15
	MW2	17.79	0	None	15
	MW3	17.46	0	None	25
7/13/89	MW1	16.42	0	None	15
	MW2	17.25	0	None	15
	MW3	16.86	0	None	30
6/15/89	MW1	16.50	0	None	15
	MW2	16.60	0	None	15
	MW3	16.35	0	None	15

* These wells were developed on this date.

KEI-P88-1204.QR1
September 27, 1989

TABLE 2

SUMMARY OF LABORATORY ANALYSES
SOIL

(Results in ppm)
(Collected on August 16, 1989)

Sample Number	Depth (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene	TOG
MW4	5	3.3	ND	ND	0.11	ND	<50
MW4	10	ND	ND	ND	ND	ND	<50
MW4	15	ND	ND	ND	ND	ND	<50
MW4	19	ND	ND	ND	ND	ND	<50
MW5	5	ND	ND	ND	ND	ND	<50
MW5	10	ND	ND	ND	ND	ND	<50
MW5	15	ND	ND	ND	ND	ND	<50
MW5	20	20	ND	ND	ND	ND	<50
MW5	22	ND	ND	ND	ND	ND	<50
MW6	5	ND	ND	ND	ND	ND	<50
MW6	10	ND	ND	ND	ND	ND	<50
MW6	15	ND	ND	ND	ND	ND	<50
MW6	20	ND	ND	ND	ND	ND	<50
Detection Limits		1.0	0.05	0.1	0.1	0.1	1.0

ND = Non-detectable.

KEI-P88-1204.QR1
September 27, 1989

TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

(All results in ppb)
(Collected on August 11 and 29, 1989)

Sample Well #	Depth (feet)	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Xylenes	Ethyl-benzene
MW1*	17.24	ND	ND	ND	ND	ND	ND
MW2*	17.83	ND	ND	ND	0.39	ND	ND
MW3*	17.48	3,200	860	73	140	240	35
MW4*	17.14	ND	120	ND	ND	ND	ND
MW5*	17.81	ND	100	ND	0.94	ND	0.30
MW6*	17.82	ND	ND	ND	ND	ND	ND
Detection Limits		30	50	0.3	0.3	0.3	0.3

* TOG was non-detectable for all samples.

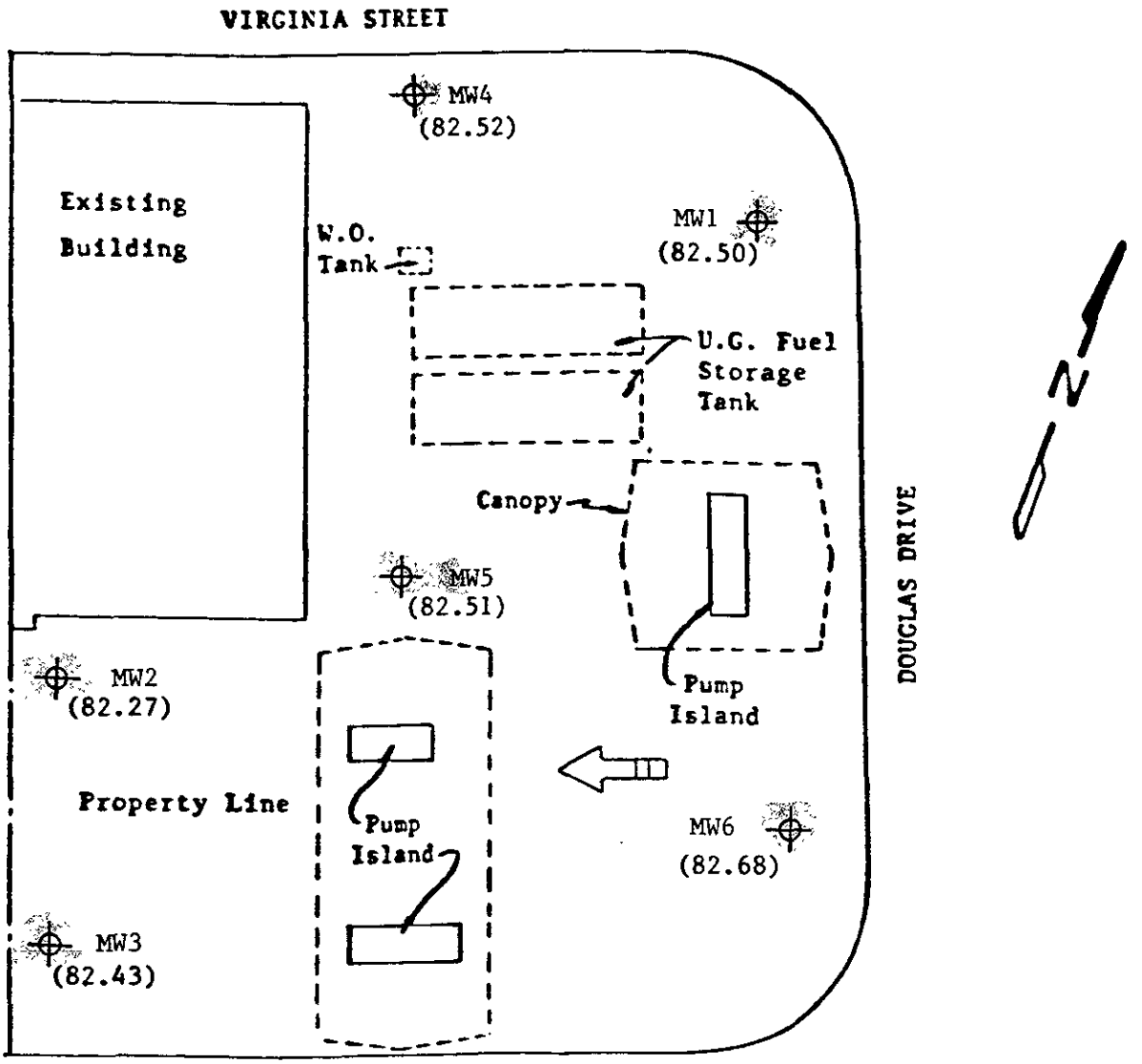
ND = Non-detectable.

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(415) 676 - 9100 (707) 746 - 6915

LOCATION MAP

Unocal Service Station #2512
1300 Davis Street
San Leandro, California

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O BOX 913
BENICIA CA 94510
(707) 746-6915 (707) 746-6916
FAX: (707) 746-5581



SITE PLAN

⊕ Monitoring Well

( ) Ground water elevations in feet on 8/27/89 and 8/29/89. Surface elevation at top of MW1 assumed 100' as datum.

⇨ Ground water flow direction

Unocal Service Station #2512
1300 Davis Street
San Leandro, California

BORING LOG

Project No. KEI-P88-1204	**Boring & Casing Diameter** 9" 2"	**Logged By** D.L.
Project Name Unocal, San Leandro - Davis	**Well Head Elevation** N/A	**Date Drilled** 8/16/89
Boring No. MW4	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
		0		A.C. Pavement Sand and Gravel: Fill
				Clay, high plasticity, firm, moist, very dark grayish brown.
7/10/19		5		
				Clay, high plasticity, with silt, firm, moist, olive brown. At 10 feet, stiff, trace silt, very dark grayish brown.
6/10/15		10	CH	
				Clay, high plasticity, with silt, firm, moist, dark greenish gray.
9/17/22		15		Clay, high plasticity, stiff, moist, olive brown and gray, mottled.
12/15/17				Color change at 18 feet to very dark grayish brown.
7/11/17	▼	20		

BORING LOG

Project No. KEI-P88-1204	**Boring & Casing Diameter** 9" 2"	**Logged By** D.L.
Project Name Unocal, San Leandro - Davis	**Well Head Elevation** N/A	**Date Drilled** 8/16/89
Boring No. MW4	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
		25	CH	Clay, high plasticity, stiff, moist, olive brown.
		30		
		35		
		40		TOTAL DEPTH 33'

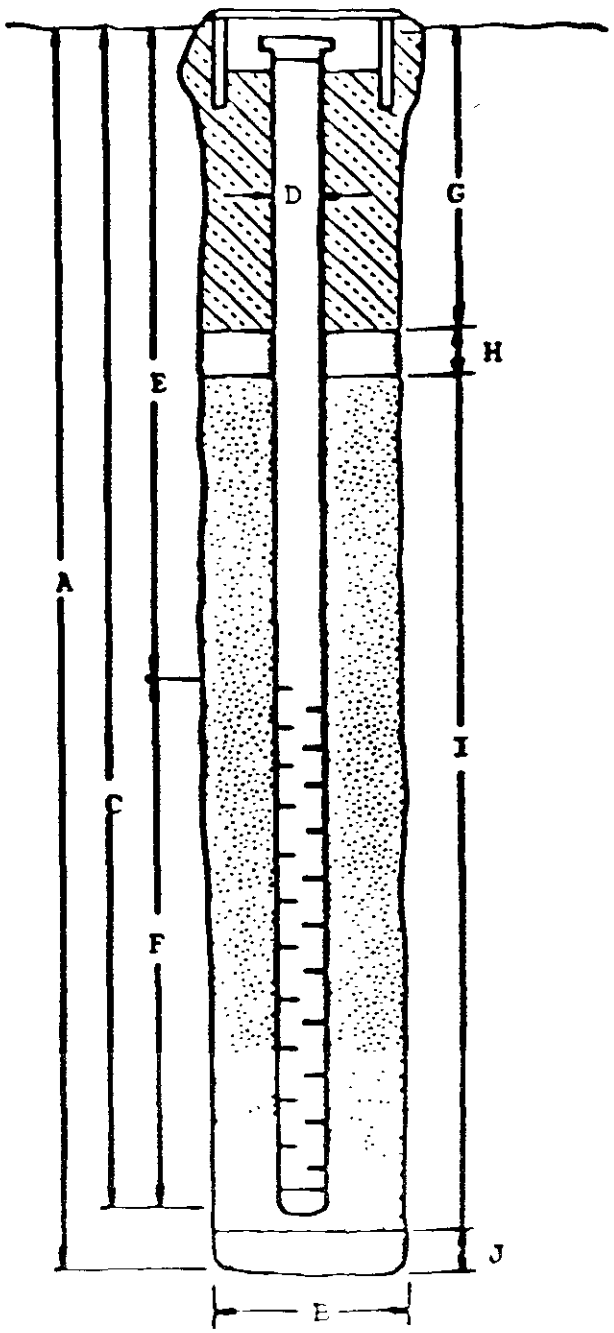
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - San Leandro - Davis BORING/WELL NO. MW4

PROJECT NUMBER: KEI-P88-1204

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 33'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 33'

Material: Schedule 40 PVC

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

E. Depth to Perforations: 13'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 9'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

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

BORING LOG

Project No.	Boring & Casing Diameter	Logged By
KEI-P88-1204	9" 2"	D.L.
Project Name Unocal, San Leandro - Davis	**Well Head Elevation** N/A	**Date Drilled** 8/16/89
Boring No. MW5	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
		0		A.C. Pavement Clay, sand and gravel: Fill and disturbed native soil.
				Silty clay, high plasticity, 5-10% sand, stiff, moist, very dark gray.
9/13/15		5		Clay, high plasticity, stiff, moist, very dark gray, with root holes.
5/8/12		10	CH	Silty clay, moderate to high plasticity, 15-45% silt, firm to stiff, moist, dark greenish gray.
10/15/20		15		Clay, high plasticity, stiff, moist, dark grayish brown and gray, mottled.
10/14/16				Color change at 18 feet to dark olive gray.
9/15/22		20		

BORING LOG

Project No. KEI-P88-1204	**Boring & Casing Diameter** 9" 2"	**Logged By** D.L.
Project Name Unocal, San Leandro - Davis	**Well Head Elevation** N/A	**Date Drilled** 8/16/89
Boring No. MW5	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
13/23/30	▼	25	CH	Color change at 21 feet to olive brown.
				Clay, high plasticity, stiff, moist, olive brown.
		30		
		35		
		40		TOTAL DEPTH 33'

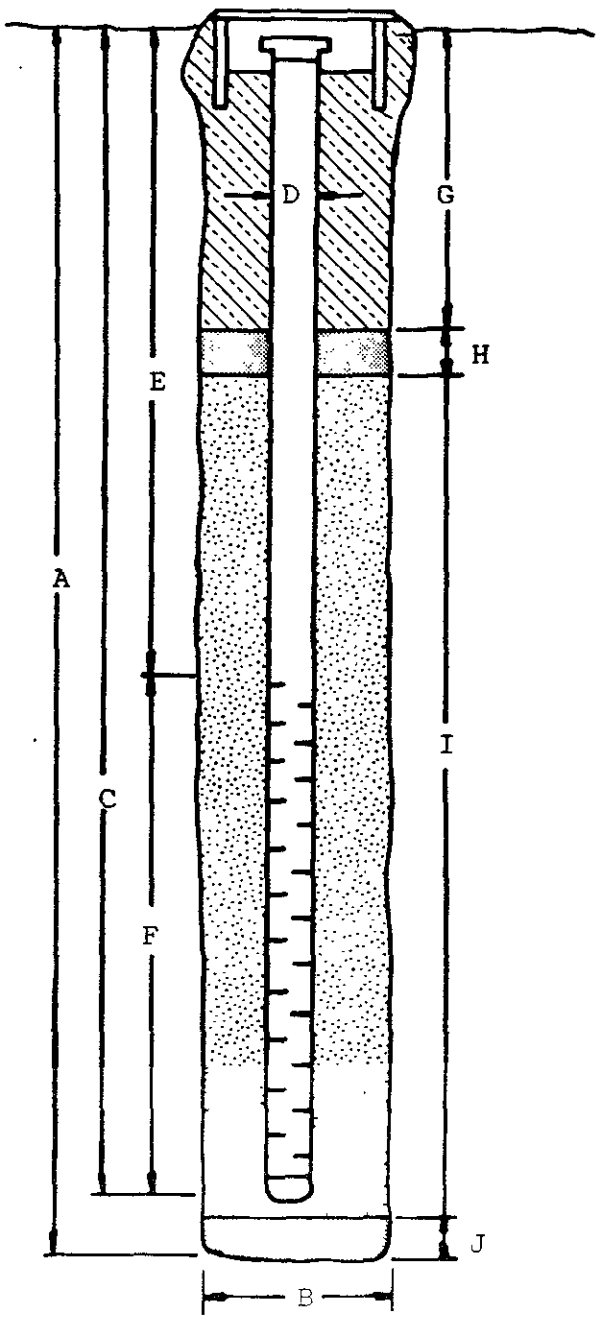
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - San Leandro - Davis BORING/WELL NO. MW5

PROJECT NUMBER: KEI-P88-1204

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 33'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 33'

Material: Schedule 40 PVC

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

E. Depth to Perforations: 13'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 9'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

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

BORING LOG

Project No.	Boring & Casing Diameter	Logged By
KEI-P88-1204	9" 2"	D.L.
Project Name Unocal, San Leandro - Davis	**Well Head Elevation** N/A	**Date Drilled** 8/16/89
Boring No. MW6	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
		0		A.C. Pavement Sand and gravel: Fill.
				Sandy clay, high plasticity, stiff, moist, very dark gray.
9/14/24		5		Clay, high plasticity, very stiff, slightly moist, very dark gray.
				Silty clay, moderate to high plasticity, firm, moist, dark grayish brown.
6/10/14		10	CH	Clay, high plasticity, 5-10% sand and gravel to 1/4", stiff, moist, very dark gray.
7/14/19		15		Clay, high plasticity, stiff, moist, olive brown, with root holes, with silt from 13 to 14.5 feet.
9/16/22				Color change at 18.5 feet to very dark grayish brown.
8/15/23	▼	20		

BORING LOG

Project No. KEI-P88-1204	**Boring & Casing Diameter** 9" 2"	**Logged By** D.L.
Project Name Unocal, San Leandro - Davis	**Well Head Elevation** N/A	**Date Drilled** 8/16/89
Boring No. MW6	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
		25	CH	Clay, high plasticity, stiff, moist, olive brown.
		30		
		35		
		40		TOTAL DEPTH 33'

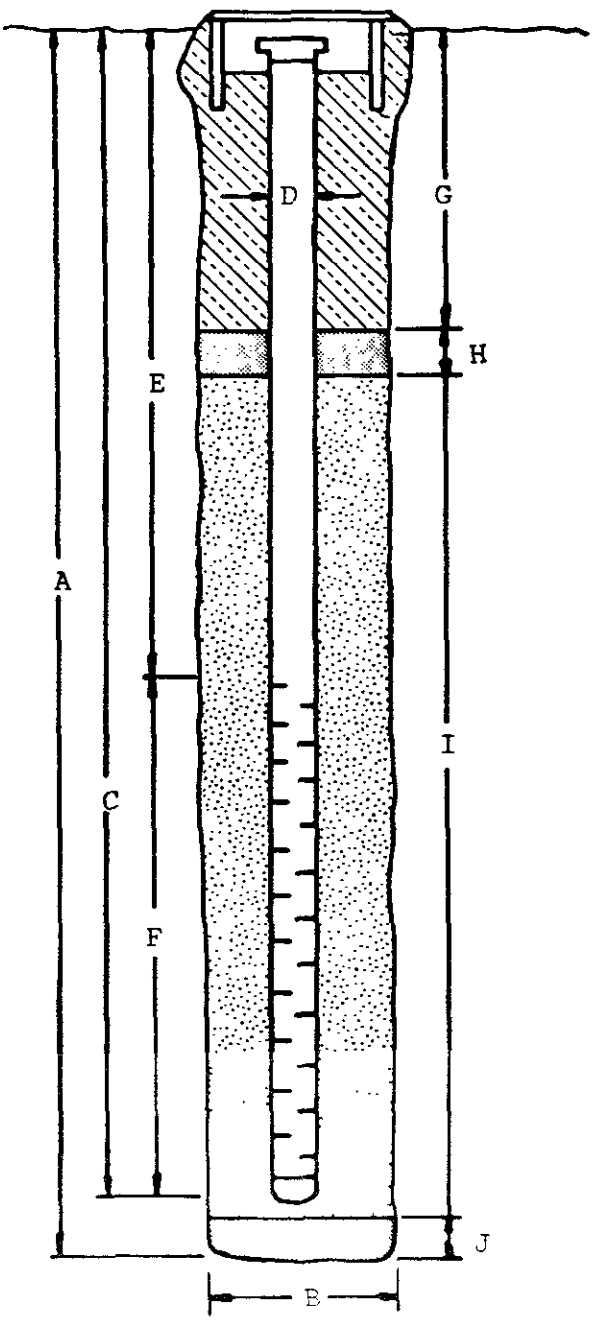
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - San Leandro - Davis BORING/WELL NO. MW6

PROJECT NUMBER: KEI-P88-1204

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 33'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 33'

Material: Schedule 40 PVC

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

E. Depth to Perforations: 13'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 9'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

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

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis St.	Sampled:	Aug 10, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Aug 10, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Aug 15, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	908-1093 A-B	Reported:	Aug 21, 1989

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)
9081093 A-B	MW1	N.D.	N.D.	N.D.	N.D.	N.D.
9081094 A-B	MW2	N.D.	N.D.	0.39	N.D.	N.D.
9081095 A-B	MW3	3,200	73	140	35	240
Detection Limits:		**30.0**	**0.3**	**0.3**	**0.3**	**0.3**

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

Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis St.	Sampled:	Aug 10, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Aug 10, 1989
Benicia, CA 94510	Analysis Method:	EPA 3510/8015	Extracted:	Aug 17, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	9081-093 C	Analyzed:	Aug 18, 1989
			Reported:	Aug 21, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons µg/L (ppb)
9081093 C	MW1	N.D.
9081094 C	MW2	N.D.
9081095 C	MW3	860

Detection Limits:	50.0

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

SEQUOIA ANALYTICAL

Arthur G Burton
Laboratory Director

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis St.	Sampled:	Aug 10, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Aug 10, 1989
Benicia, CA 94510	Analysis Method:	SM 503 A&E (Gravimetric)	Extracted:	Aug 19, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	908-1093 D	Analyzed:	Aug 20, 1989
			Reported:	Aug 21, 1989

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
9081093 D	MW1	N.D.
9081094 D	MW2	N.D.
9081095 D	MW3	N.D.

Detection Limits:	5.0

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

SEQUOIA ANALYTICAL

Arthur G Burton
Laboratory Director

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(415) 676 - 9100 (707) 746 - 6915

CHAIN OF CUSTODY

SAMPLER: Roy KE (Signature) DATE/TIME OF COLLECTION: 8/10/85 TURN AROUND TIME: 1 WEEK

SAMPLE DESCRIPTION AND PROJECT NUMBER: UNOCAL SAN LEANDRO DAVIS ST

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
MW1	TPHG. BTXE	Grab	6 V	W
MW2	TOG (503 A+E)	"	3 L	"
MW3	TPHDas Diesel	"	3 L	"
	"All 3 The same analyses"			

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Roy (KE)	2:57 8/10/85	(SAL)	2:57 PM 8/10/85
2.			
3.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

NOTE: IF REGULAR TURNAROUND, SOIL ANALYSES MUST BE COMPLETED WITHIN 14 CALENDAR DAYS OF SAMPLE COLLECTION. WATER ANALYSES MUST BE COMPLETED WITHIN 7 CALENDAR DAYS FOR BTX&E (UNLESS SAMPLE HAS BEEN PRESERVED), AND 14 CALENDAR DAYS FOR TPH AS GASOLINE; EXTRACT TPH AS DIESEL WITHIN 14 CALENDAR DAYS.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Aug 29, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Aug 30, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Sep 7, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	908-3878 A-B	Reported:	Sep 11, 1989

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)
9083878 A-B	MW-4	N.D.	N.D.	N.D.	N.D.	N.D.
9083879 A-B	MW-5	N.D.	N.D.	0.94	0.30	N.D.
9083880 A-B	MW-6	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**30.0**	**0.3**	**0.3**	**0.3**	**0.3**

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

Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Aug 29, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Aug 30, 1989
Benicia, CA 94510	Analysis Method:	EPA 3510/8015	Extracted:	Sep 6, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	908-3878 C	Analyzed:	Sep 6, 1989
			Reported:	Sep 11, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons µg/L (ppb)
9083878 C	MW-4	120
9083879 C	MW-5	100
9083880 C	MW-6	N.D.

Detection Limits:	50.0

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

SEQUOIA ANALYTICAL

Arthur G Burton
Laboratory Director

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Aug 29, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Aug 30, 1989
Benicia, CA 94510	Analysis Method:	SM 503 A&E (Gravimetric)	Extracted:	Sep 11, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	908-3878 D	Analyzed:	Sep 11, 1989
			Reported:	Sep 11, 1989

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
9083878 D	MW-4	N.D.
9083879 D	MW-5	N.D.
9083880 D	MW-6	N.D.

Detection Limits:	5.0

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

SEQUOIA ANALYTICAL

Arthur G Burton
Laboratory Director

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P O BOX 913
BENICIA, CA 94510
(415) 676 - 9100 (707) 746 - 6915

CHAIN OF CUSTODY

SAMPLER: [signature] (Signature) [signature]
DATE/TIME OF COLLECTION: 8-29-89
TURN AROUND TIME: 5 Day

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - San Leandro
Davis St

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
MW4	TPH-G & BTXE; TPH-D; TOG	G	4 (2 liters, 2 VOA's)	W
MW5	" " " "	G	4 (2 liters, 2 VOA's)	W
MW6	" " " "	G	4 (2 liters, 2 VOA's)	W

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. [signature]	8/30/89 10:00	Priority Ben Ponanuk	10:00 AM 8/30/89
2. Priority Ben Ponanuk	8/30/89 11:30	[signature]	11:30A 8/30/89
3.		[signature]	

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

NOTE: IF REGULAR TURNAROUND, SOIL ANALYSES MUST BE COMPLETED WITHIN 14 CALENDAR DAYS OF SAMPLE COLLECTION. WATER ANALYSES MUST BE COMPLETED WITHIN 7 CALENDAR DAYS FOR BTX&E (UNLESS SAMPLE HAS BEEN PRESERVED), AND 14 CALENDAR DAYS FOR TPH AS GASOLINE; EXTRACT TPH AS DIESEL WITHIN 14 CALENDAR DAYS.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis, KEI-P88-1204	Sampled: Aug 16, 1989
P.O. Box 913	Matrix Descript:	Soil	Received: Aug 17, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed: Aug 30, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	908-2080	Reported: Sep 11, 1989

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)
908-2080	MW-4 (5)	3.3	N.D.	N.D.	N.D.	0.11
908-2081	MW-4 (10)	N.D.	N.D.	N.D.	N.D.	N.D.
908-2082	MW-4 (15)	N.D.	N.D.	N.D.	N.D.	N.D.
908-2083	MW-4 (19)	N.D.	N.D.	N.D.	N.D.	N.D.
908-2084	MW-5 (5)	N.D.	N.D.	N.D.	N.D.	N.D.
908-2085	MW-5 (10)	N.D.	N.D.	N.D.	N.D.	N.D.
908-2086	MW-5 (15)	20	N.D.	N.D.	N.D.	N.D.
908-2087	MW-5 (20)	N.D.	N.D.	N.D.	N.D.	N.D.
908-2088	MW-5 (22)	2.1	N.D.	N.D.	N.D.	N.D.
908-2089	MW-6 (5)	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		1.0	0.05	0.1	0.1	0.1

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

Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis, KEI-P88-1204	Sampled:	Aug 16, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Aug 17, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Aug 30, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	908-2090	Reported:	Sep 11, 1989

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)
908-2090	MW-6 (10)	N.D.	N.D.	N.D.	N.D.	N.D.
908-2091	MW-6 (15)	N.D.	N.D.	N.D.	N.D.	N.D.
908-2092	MW-6 (20)	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		1.0	0.05	0.1	0.1	0.1

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

Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis, KEI-P88-1204	Sampled:	Aug 16, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Aug 17, 1989
Benicia, CA 94510	Analysis Method:	EPA 418.1 (I.R. with clean-up)	Extracted:	Sep 11, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	908-2080	Analyzed:	Sep 11, 1989
			Reported:	Sep 11, 1989

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Petroleum Oil mg/kg (ppm)
908-2080	MW-4 (5)	<50
908-2081	MW-4 (10)	<50
908-2082	MW-4 (15)	<50
908-2083	MW-4 (19)	<50
908-2084	MW-5 (5)	<50
908-2085	MW-5 (10)	<50
908-2086	MW-5 (15)	<50
908-2087	MW-5 (20)	<50
908-2088	MW-5 (22)	<50
908-2089	MW-6 (5)	<50

Detection Limits:	1.0

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

SEQUOIA ANALYTICAL

Arthur G Burton
Laboratory Director

Please Note
Amended Report dated 9/21/89

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis, KEI-P88-1204	Sampled:	Aug 16, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Aug 17, 1989
Benicia, CA 94510	Analysis Method:	EPA 418.1 (I.R. with clean-up)	Extracted:	Sep 11, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	908-2090	Analyzed:	Sep 11, 1989
			Reported:	Sep 11, 1989

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Petroleum Oil mg/kg (ppm)
908-2090	MW-6 (10)	<50
908-2091	MW-6 (15)	<50
908-2092	MW-6 (20)	<50

Detection Limits:	1.0

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

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

Please Note
Amended Report dated 9/21/89

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(415) 676-9100 (707) 746-6915

CHAIN OF CUSTODY

SAMPLER: [signature] (Signature)

DATE/TIME OF COLLECTION: 8-16-89

TURN AROUND TIME: REGULAR

SAMPLE DESCRIPTION AND PROJECT NUMBER: UNOCAL/SAN LEANDRO/DAVIS KEI-P88-1204

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
MW-4-(5)	TPH-G/BTX+E/TOG(5503A+E)	G	1	S
MW-4-(10)	TPH-G/BTX+E/TOG(5503A+E)	G	1	S
MW-4-(15)	TPH-G/BTX+E/TOG(5503A+E)	G	1	S
MW-4-(19)	TPH-G/BTX+E/TOG(5503A+E)	G	1	S
MW-5-(5)	TPH-G/BTX+E/TOG(5503A+E)	G	1	S
MW-5-(10)	TPH-G/BTX+E/TOG(5503A+E)	G	1	S
MW-5-(15)	TPH-G/BTX+E/TOG(5503A+E)	G	1	S
MW-5-(20)	TPH-G/BTX+E/TOG(5503A+E)	G	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. [signature] (KEI)	8/17/89 10:10	Priority Ben Poravarak	10:10 8/17/89
2. Ben Poravarak	11:40 8/17/89	K. Wu	11:40 8/17/89
3.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

NOTE: IF REGULAR TURNAROUND, SOIL ANALYSES MUST BE COMPLETED WITHIN 14 CALENDAR DAYS OF SAMPLE COLLECTION. WATER ANALYSES MUST BE COMPLETED WITHIN 7 CALENDAR DAYS FOR BTX&E (UNLESS SAMPLE HAS BEEN PRESERVED), AND 14 CALENDAR DAYS FOR TPH AS GASOLINE; EXTRACT TPH AS DIESEL WITHIN 14 CALENDAR DAYS.

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(415) 676-9100 (707) 746-6915

CHAIN OF CUSTODY

SAMPLER: (Signature) Dan Lee

DATE/TIME OF COLLECTION: 8-16-89

TURN AROUND TIME: REGULAR

SAMPLE DESCRIPTION AND PROJECT NUMBER: UNOCAL/SAN LEANDRO/DAVIS
KEI-P88-1204

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
MW-5-(22)	TPH-G/BTX&E/TOG(5031ATE)	G	1	S
MW-6-(5)	TPH-G/BTX&E/TOG(5031ATE)	G	1	S
MW-6-(10)	TPH-G/BTX&E/TOG(5031ATE)	G	1	S
MW-6-(15)	TPH-G/BTX&E/TOG(5031ATE)	G	1	S
MW-6-(20)	TPH-G/BTX&E/TOG(5031ATE)	G	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Dan Lee (KEI)	8/17/89 10:10	Ben Porcuna Priority	10:10 8/17/89
2. Ben Porcuna	11:40 8/17/89	KNW	11:40 8/17/89
3.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: ______

NOTE: IF REGULAR TURNAROUND, SOIL ANALYSES MUST BE COMPLETED WITHIN 14 CALENDAR DAYS OF SAMPLE COLLECTION. WATER ANALYSES MUST BE COMPLETED WITHIN 7 CALENDAR DAYS FOR BTX&E (UNLESS SAMPLE HAS BEEN PRESERVED), AND 14 CALENDAR DAYS FOR TPH AS GASOLINE; EXTRACT TPH AS DIESEL WITHIN 14 CALENDAR DAYS.