APPROVED

APR 27 1990

RONALD E. BOCK

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

KEI-J89-1106.R7
April 12, 1990

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

Attention: Mr. Ron Bock

RE: Preliminary Ground Water Investigation at
Unocal Service Station #3072
2445 Castro Valley Blvd.
Castro Valley, California

Dear Mr. Bock:

This report presents the results of monitoring well installation performed in January, 1990 on the referenced site. The purpose of this work was to determine the ground water flow direction. The scope of the work performed by KEI consisted of the following:

Coordination with regulatory agencies.

Drilling and installation of three monitoring wells.

Soil sampling.

Ground water monitoring, purging and sampling.

Laboratory analyses.

Data analysis and report preparation.

SITE DESCRIPTION AND BACKGROUND

The subject site is presently used as a gasoline station. A Site Location Map and Site Plan are attached to this report.

KEI's work at the site began on November 14, 1989, when KEI collected soil samples following the removal of three fuel storage tanks and one waste oil tank at the referenced site. The soil samples under the fuel storage tanks were collected at a depth of 13.5 feet. The soil sample under the waste oil tank was collected at a depth of 10.5 feet. All soil samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California. The samples under the fuel storage tanks were analyzed for total petroleum hydrocarbons (TPH) as gasoline, and benzene, toluene,

xylenes and ethylbenzene (BTX&E). In addition, the two samples from under the diesel tank were analyzed for TPH as diesel. Analytical results showed TPH as gasoline ranging from non-detectable to 11 ppm, with non-detectable BTX&E concentrations in each case. TPH as diesel concentrations were non-detectable for the two diesel tank bottom samples. The soil sample from under the waste oil tank was analyzed for TPH as gasoline, BTX&E, TPH as diesel, total oil and grease (TOG), EPA method 8010, and EPA method 8270 compounds, and the metals cadmium, chromium, lead and zinc. Laboratory analyses showed TPH as gasoline at 5.9 ppm, metals ranging from non-detectable to 45 ppm, 55 ppb of 1,1-dichloroethene, and non-detectable levels of all other constituents analyzed.

On November 16, 1989, KEI collected six sidewall soil samples, designated as SW1 through SW6, and a water sample, designated as W1, from the fuel tank pit. The tank pit water level was measured to be 11.5 feet below the ground surface. The sidewall soil samples were collected approximately 6 to 12-inches above the tank pit water level. All samples were analyzed for TPH as gasoline and BTX&E. Three of the six sidewall soil samples (labeled SW2, SW3 and SW4) and the water sample were also analyzed for TPH as diesel. Laboratory analyses of the soil samples showed TPH as gasoline ranging from non-detectable to 29 ppm for four of the six samples, with samples SW1 and SW4 showing 140 and 160 ppm, respectively. TPH as diesel levels were non-detectable for two of the sidewall samples with sample SW4 showing 24 ppm. Analyses of the water sample showed 11,000 ppb TPH as diesel, 26,000 ppb TPH as gasoline, and 670 ppb benzene.

On November 28, 1989, KEI returned to the site to meet with the representative of the Alameda County Health Care Services (ACHCS) to clarify ACHCS guidelines as applied to the subject site for fuel tank pit excavation and sampling. In response to the meeting, KEI submitted a Phase I work plan (KEI-P89-1106.P1) dated November 30, 1989, to define the extent of contamination in the vicinity of the tank pit. The work plan was approved by the ACHCS in a letter dated December 8, 1989.

On December 22, 1989, KEI returned to the site after further excavation to collect additional sidewall soil samples from the fuel tank pit. Soil was excavated from the north, east and south sides of the pit. Sidewall soil samples were collected at depths of approximately 9 or 11 feet, and analyzed on-site by Mobile Chem Labs, Inc., of Lafayette, California, a state-certified mobile laboratory. After excavation, TPH as gasoline was detected at concentrations of 1,500 and 1,900 ppm on the northerly wall of the pit, at concentrations ranging from 3.0 to 1,700 ppm on the easterly wall, and at 410 ppm on the southerly wall.

Based on the analytical results, KEI recommended the installation of nine exploratory borings to further define the extent of contamination. Documentation of soil sample collection and sample analytical results are presented in KEI's work plan/proposal (KEI-P89-1106.P2) dated January 8, 1990.

FIELD ACTIVITIES

On January 18 and 19, 1990, three two-inch diameter monitoring wells (designated as MW1, MW2 and MW3 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 the County well standards.

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

The monitoring wells were drilled and completed to total depths ranging from 22 to 30 feet. Ground water was encountered at depths ranging from 9 to 20.5 feet beneath the surface during drilling. Soil samples were taken for laboratory analysis and lithologic logging purposes at a maximum of 5 foot intervals, changes in lithology, obvious areas of contamination, and at the soil/ground water interface beginning at a depth of approximately 5 feet below grade until ground water was encountered. Soil samples were obtained below the first encountered ground water for lithologic logging purposes only at the depths indicated on the attached Boring Logs. The undisturbed soil samples were taken 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 aluminum foil, plastic caps and tape and placed in plastic ziplock baggies, 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 wells were developed on January 22 and 23, 1990. Prior to development, the wells were checked for depth to the 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 developed with a surface pump until the evacuated water was clear and free of suspended sediment. On January 24, 1990, the wells were monitored for depth to water using an electric sounder for the purpose of ground water flow direction determination. Monitoring and well development data are summarized in Table 1.

The wells were sampled on March 22, 1990. Prior to sampling, monitoring data was collected and the wells each purged of 15 gallons using a surface pump. Water samples were then collected using a clean Teflon bailer, which was washed and rinsed with distilled water prior to sampling each well. One duplicate sample, labeled MW4, was collected from well MW2. The samples were decanted into clean glass VOA vials, sealed with Teflon-lined screw caps, and labeled and stored in a cooler on ice until delivery to a certified laboratory.

ANALYTICAL RESULTS

Soil and ground water samples were analyzed at Sequoia Analytical Laboratory in Redwood City, California. All samples were accompanied by properly executed Chain of Custody documentation. Samples were analyzed for TPH as gasoline by EPA method 5030 in conjunction with modified 8015, and BTX&E by EPA method 8020.

Analytical results of the soil samples, collected from the borings for monitoring wells (MW1, MW2 and MW3), indicate non-detectable levels of TPH as gasoline and BTX&E in all soil samples, except for sample MW1(5), which showed 2.8 ppm of TPH as gasoline, 0.051 ppm of benzene, and 0.11 ppm of ethylbenzene.

Analytical results of the ground water samples collected from monitoring wells MW2 and MW3 indicate non-detectable levels of TPH as gasoline and BTX&E. In well MW1, TPH as gasoline and benzene were detected at 32 and 4.2 ppb, respectively. The duplicate sample, MW4, collected from well MW2, showed non-detectable levels of TPH as gasoline and BTX&E, identical to the results obtained for the sample from well MW2. Results of the soil analyses are summarized in Table 2, and the water analyses in Table 3. Copies of the laboratory analyses and Chain of Custody documentation are attached to this report.

HYDROLOGY AND GEOLOGY

The water table stabilized in the monitoring wells at depths ranging from 7.47 to 9.03 feet below the surface. The ground water flow direction appeared to be to the south-southeast on both January 24, 1990 and March 22, 1990, (based on water level data collected from the three monitoring wells). Ground water elevations in wells MW1, MW2 and MW3, and ground water flow direction on January 24, 1990 and March 22, 1990, are presented in Figure 1 and Figure 2, respectively.

Based on 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

T.W. Dibblee, Jr., 1980), the subject site is underlain by Quaternary-age alluvium. Bedrock outcrops adjacent to the site include the marine Panoche Formation (Kpc), which is described as a conglomerate generally composed of granite, dioritie, quartzite and black chert cobbles in a sandstone matrix and the Knoxville Formation (JKk), which is described as consisting of dark micaceous shale with minor thin sandstone.

Also, the site is situated approximately 3,000 feet northeast of the mapped trace of the active Hayward Fault; 1,900 feet southwest of the concealed mapped trace of the East Chabot Fault; and 1,800 feet northeast of the mapped trace (northern terminous?) of the West Chabot Fault.

As exposed in the underground tank pit excavation, the earth materials at the subject site consist of artificial fill materials at the surface which are typically 1 to 2 feet thick, and locally vary up to a maximum of about 9 feet at the east wall of the pit excavation. These fill materials are in turn underlain by dark gray silty clay soil materials, which are about 2.5 feet thick. The soil materials are underlain by greenish-brown to yellowish brown highly weathered to slightly weathered shale, which varies from soft to moderately hard with abundant fractures (both clay healed and relatively open).

The results of the drilling activities at the site indicate that bedrock materials underlying the site are composed of brown and gray shale. The depth to the bedrock materials appears to vary considerably from about 6 feet below grade in the vicinity of well MW1, to about 21-1/2 feet in the vicinity of well MW2, to greater than 22 feet in the vicinity of well MW3 (maximum depth explored).

DISCUSSION AND RECOMMENDATIONS

The recommended additional work outlined in KEI's work plan (KEI-P89-1106.P2) dated January 8, 1990, remains unchanged. KEI has recently obtained an encroachment permit from Caltrans for the installation of exploratory borings within Castro Valley Boulevard and Strobridge Avenue, and this work is presently scheduled for the week of April 23, 1990.

DISTRIBUTION

A copy of this report should be sent to Mr. Scott Seery of the ACHCS, 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 ground water levels and flow paths, thereby changing the extent and concentration of any contaminants. Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state certified laboratory. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, either expressed or implied, regarding the above, including laboratory analyses, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

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

Sincerely,

Kaprealian Engineering, Inc.

Paul H. King
Hydrogeologist

Don R. Braun
Certified Engineering Geologist

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

Mardo Kaprealian
President

jad

Attachments: Tables 1, 2 & 3
Location Map
Site Plans - Figure 1 & 2
Boring Logs
Laboratory Results
Chain of Custody documentation

KEI-J89-1106.R7
April 12, 1990

TABLE 1

SUMMARY OF GROUND WATER MONITORING AND DEVELOPMENT DATA

Well #	Depth to Water (feet)	Product Thickness	Sheen	Gallons Pumped
(Monitored and Sampled on March 22, 1990)				
MW1	8.85	0	None	15
MW2	9.00	0	None	15
MW3	7.35	0	None	15
(Monitored on January 24, 1990)				
MW1	9.03	--	--	0
MW2	9.44	--	--	0
MW3	7.47	--	--	0
(Developed and Monitored on January 22 & 23, 1990)				
MW1	10.07	0	None	120
MW2	10.29	0	None	45
MW3	8.12	0	None	130

KEI-J89-1106.R7
April 12, 1990

TABLE 2

SUMMARY OF LABORATORY ANALYSES
SOIL

(Collected on January 18, 1990)

Sample Number	Depth (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
MW1(5)	5.0	2.8	0.051	ND	ND	0.11
MW1(6.5)	6.5	ND	ND	ND	ND	ND
MW1(10.0)	10.0	ND	ND	ND	ND	ND
MW2(5)	5.0	ND	ND	ND	ND	ND
MW2(6.5)	6.5	ND	ND	ND	ND	ND
MW2(9.0)	9.0	ND	ND	ND	ND	ND
MW2(10)	10.0	ND	ND	ND	ND	ND
MW2(15)	15.0	ND	ND	ND	ND	ND
MW2(16.5)	16.5	ND	ND	ND	ND	ND
MW2(20)	20.0	ND	ND	ND	ND	ND
MW3(5)	5.0	ND	ND	ND	ND	ND
MW3(6.5)	6.5	ND	ND	ND	ND	ND
MW3(9)	9.0	ND	ND	ND	ND	ND
Detection Limits		1.0	0.05	0.1	0.1	0.1

ND = Non-detectable.

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

KEI-J89-1106.R7
April 12, 1990

TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

(Samples collected on March 22, 1990)

Sample #	Depth to Water (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
MW1	8.85	32	4.2	ND	1.1	0.36
MW2	9.00	ND	ND	ND	ND	ND
MW3	7.35	ND	ND	ND	ND	ND
MW4	NA	ND	ND	ND	ND	ND
Detection Limits		30	0.3	0.3	0.3	0.3

ND = Non-detectable.

NA = Not applicable.

NOTE: Sample MW4 is a duplicate of sample MW2.

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

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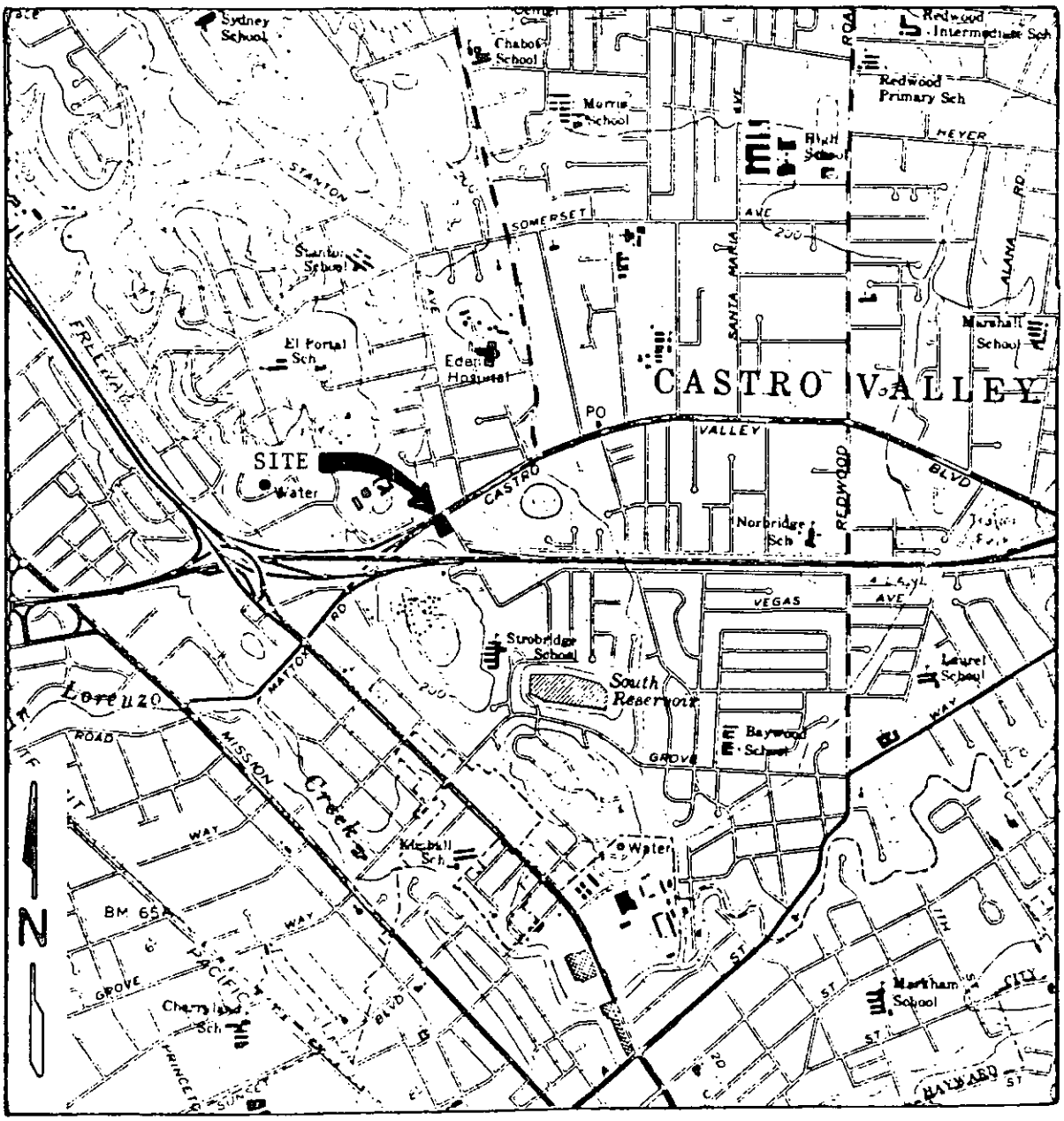

LOCATION MAP

Unocal Service Station #3072
2445 Castro Valley Blvd.
Castro Valley, California

KAPREALIAN ENGINEERING, INC.
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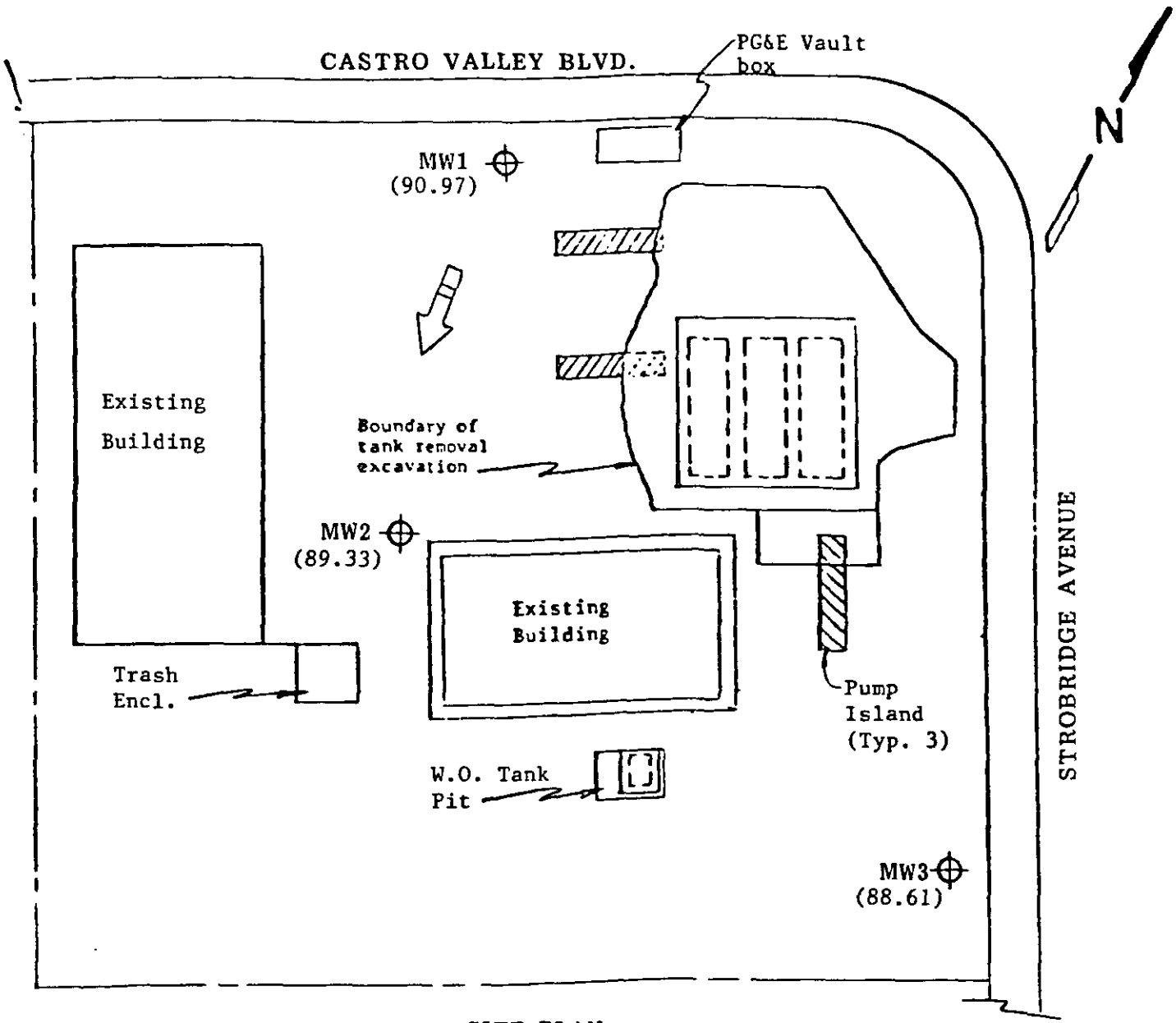

SITE PLAN
Figure 1

LEGEND

⊕ Monitoring Well

( ) Ground water elevation in feet on 1/24/90. Top of MW1 well cover assumed 100.00 feet as datum.

⇨ Direction of ground water flow

30 0 30
Approx. Scale feet

Unocal Service Station #3072
2445 Castro Valley Blvd.
Castro Valley, California

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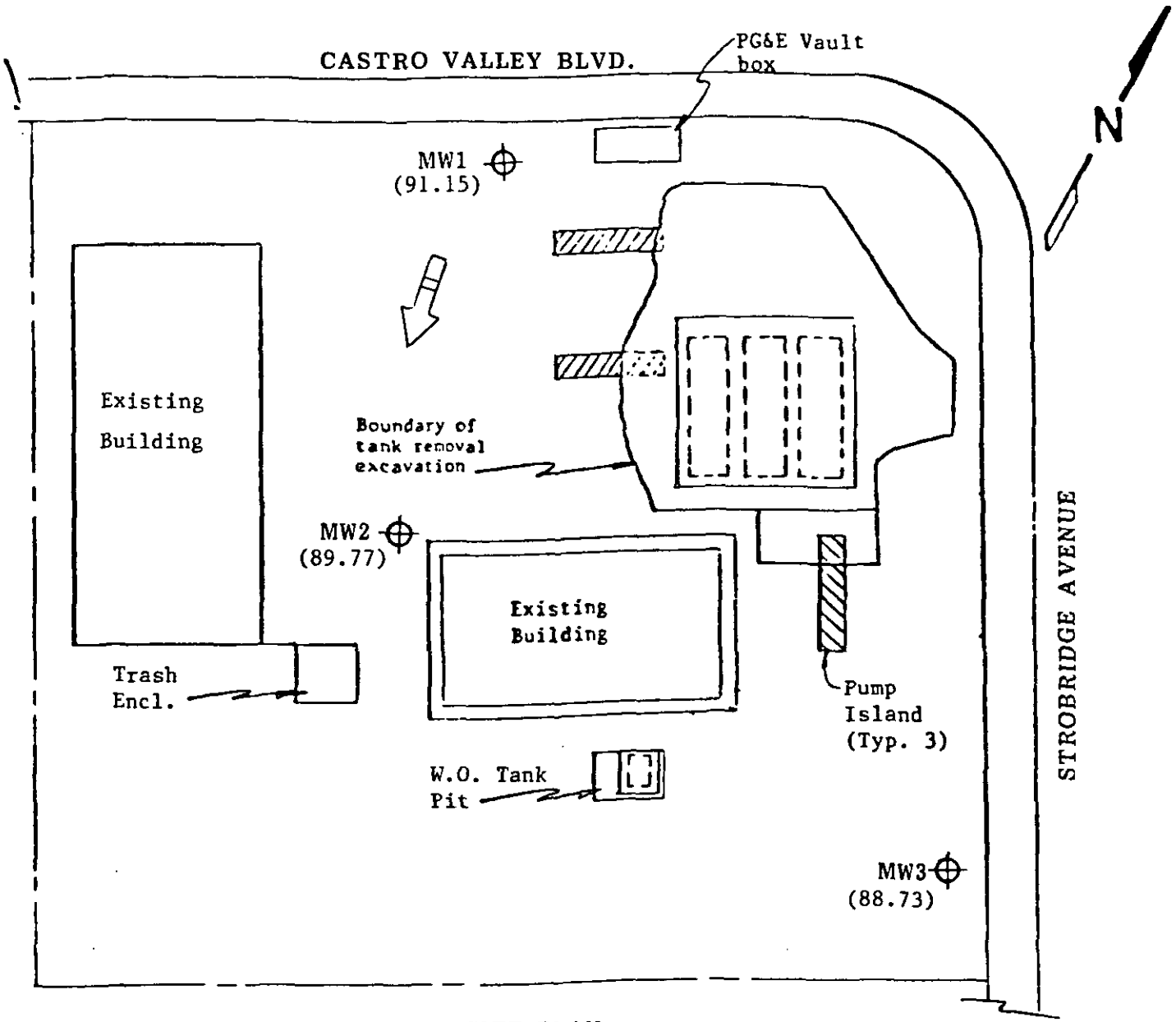


SITE PLAN
Figure 2

LEGEND

⊕ Monitoring Well

( ) *Ground water elevation in feet on* 3/22/90. Top of MW1 well cover assumed 100.00 feet as datum.

Direction of ground water flow

30 0 30
Approx. Scale feet

Unocal Service Station #3072
2445 Castro Valley Blvd.
Castro Valley, California

BORING LOG

Project No. KEI-P89-1106	**Boring & Casing Diameter** 9" 2"	**Logged By** D.L.
Project Name Unocal Castro Valley	**Well Head Elevation** N/A	**Date Drilled** 1/18/90
Boring No. MW1	**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
			CH	Clay, high plasticity, stiff, moist, black.
5/7/14		5		Color change at 5 feet to dark gray 10-15% sand.
16/33/43			N/A	Shale bedrock, weathered, locally hard, fractured, slightly moist, olive brown, clayey inside fractures.
22/46/ 50-5"		10		
	▼			Shale bedrock at 13 feet, as above, wet.
		15		
		20		Color change at 20 feet to very dark gray.

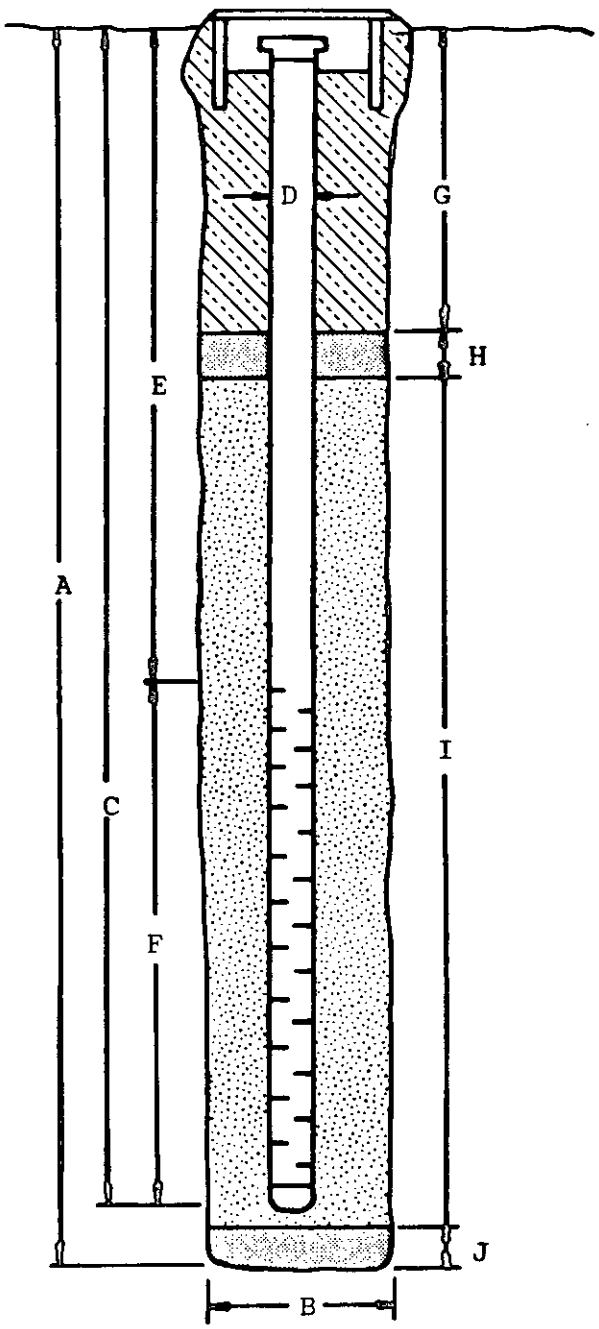
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Castro Valley BORING/WELL NO. MW1

PROJECT NUMBER: KEI-P89-1106

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 25.5'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 25.5'

Material: Schedule 40 PVC

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

E. Depth to Perforations: 8'

F. Perforated Length: 17.5'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 4'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 19.5'

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. KEI-P89-1106	**Boring & Casing Diameter** 9" 2"	**Logged By** D.L.
Project Name Unocal Castro Valley	**Well Head Elevation** N/A	**Date Drilled** 1/18/90
Boring No. MW2	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
		0		A.C. Pavement
				Silty clay, high plasticity, stiff, moist, very dark gray, locally gravelly, gravel to 1/2".
6/8/10		5	CH	Clay, high plasticity , with silt, 10-15% sand, stiff, moist, dark greenish gray, locally cemented, with gravel below 6 feet.
16/25/26			GC	Clayey gravel with sand, dense, moist, dark greenish gray, mottled with olive brown below 7.5 feet.
4/7/13		10	CH	Sandy clay, moderate to high plasticity, 10-15% gravel, stiff, firable, moist, yellowish brown.
				Very stiff at 12 feet, ocasional gravel, gravel is olive brown shale.
8/11/15				
7/13/22				
13/20/28		15		
10/19/21			GC	Clayey gravel with sand, dense, moist, yellowish brown, gravel is shale, dark brown within clay.
13/19/23				
50-2"	▼	20		At 20 feet, varied gravel, some serpentine. No recovery at 20.5 feet

BORING LOG

Project No. KEI-P89-1106	Boring & Casing Diameter 9" 2"	Logged By D.L.
Project Name Unocal Castro Valley	Well Head Elevation N/A	Date Drilled 1/18/90
Boring No. MW2	Drilling Method Hollow-stem Auger	Drilling Company EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
36/48/ 50-5"			SW-SC	Clayey sand with gravel, 15% clay, gravel as above, hard, wet, olive brown.
			N/A	Shale bedrock, very hard, fractured, dark yellowish brown to dark brown.
22/50-5"		25		Shale bedrock, well weathered to clay, locally hard, very dark gray.
50-3"		30		No recovery, shale bedrock, as above, near refusal.
		35		
		40		TOTAL DEPTH: 30'

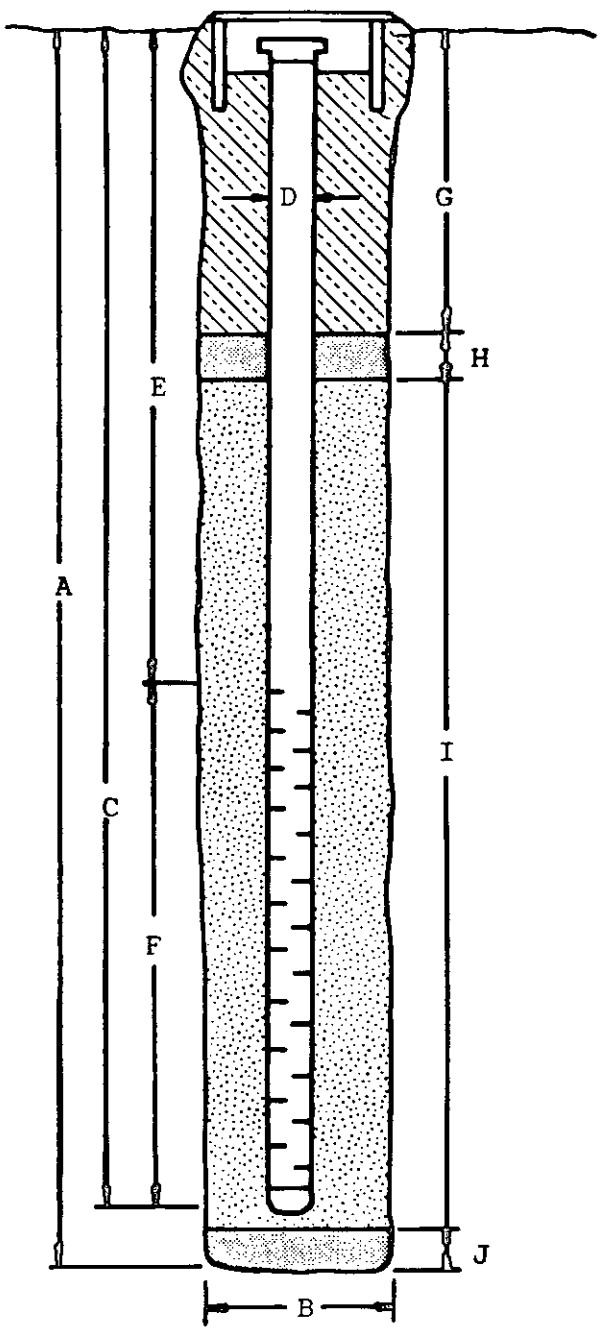
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Castro Valley BORING/WELL NO. MW2

PROJECT NUMBER: KEI-P89-1106

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 30'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 25'

Material: Schedule 40 PVC

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

E. Depth to Perforations: 5'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 2'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 26'

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. KEI-P89-1106	**Boring & Casing Diameter** 9" 2"	**Logged By** D.L.
Project Name Unocal Castro Valley	**Well Head Elevation** N/A	**Date Drilled** 1/19/90
Boring No. MW3	**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
				Silty clay, high plasticity, stiff, moist, very dark grayish brown, 5-10% sand.
10/17/22		5	CH	Gravelly clay, high plasticity, 5-10% silt, very stiff, moist, light olive brown.
20/21/24			GC	Clayey gravel with sand, very dense, moist to wet, olive brown, gravel is almost entirely shale.
23/28/33	▼	10		
18/30/23		15		Clayey gravel with sand, as above, ocasionally grading to gravelly clay, very stiff, moist, olive brown.
		20		

BORING LOG

Project No. KEI-P89-1106	Boring & Casing Diameter 9" 2"	Logged By D.L.
Project Name Unocal Castro Valley	Well Head Elevation N/A	Date Drilled 1/19/90
Boring No. MW3	Drilling Method Hollow-stem Auger	Drilling Company EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
				Clayey gravel with sand, as above, ocasionally grading to gravelly clay, as above.
		25		
		30		
		35		
		40		TOTAL DEPTH: 22'

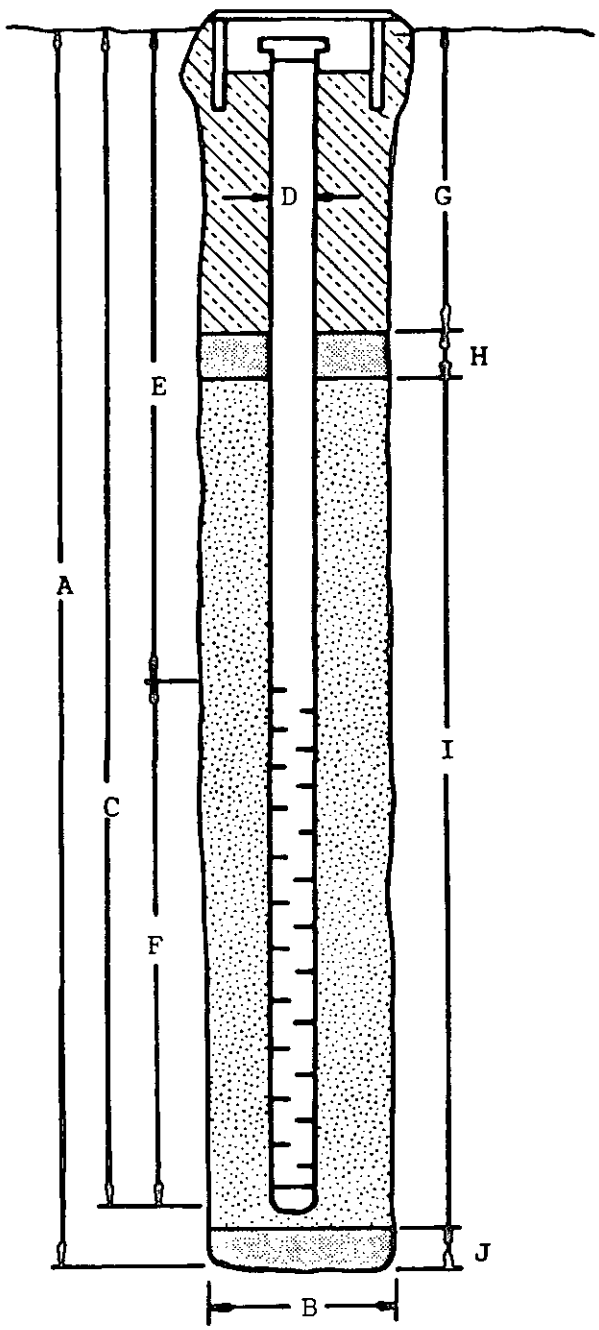
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Castro Valley BORING/WELL NO. MW3

PROJECT NUMBER: KEI-P89-1106

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 22'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 22'

Material: Schedule 40 PVC

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

E. Depth to Perforations: 5'

F. Perforated Length: 17'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 2'

Seal Material: Concrete

H. Seal: 18'

Seal Material: Bentonite

I. Gravel Pack:

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

Kapreallan Engineering, Inc.	Client Project ID:	Unocal, Castro Valley, CV Blvd/Strobridge	Sampled: Jan 18-19, 1990
P.O. Box 996	Matrix Descript:	Soil	Received: Jan 22, 1990
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed: Jan 29, 1990
Attention: Mardo Kapreallan, P.E.	First Sample #:	001-2584	Reported: Jan 30, 1990

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)
001-2584	MW1 (5) 1/18	2.8	0.051	N.D.	0.11	N.D.
001-2585	MW1 (8.5) 1/18	N.D.	N.D.	N.D.	N.D.	N.D.
001-2586	MW1 (10.0) 1/18	N.D.	N.D.	N.D.	N.D.	N.D.
001-2587	MW2 (5) 1/18	N.D.	N.D.	N.D.	N.D.	N.D.
001-2588	MW2 (8.5) 1/18	N.D.	N.D.	N.D.	N.D.	N.D.
001-2589	MW2 (9.0) 1/18	N.D.	N.D.	N.D.	N.D.	N.D.
001-2590	MW2 (10) 1/18	N.D.	N.D.	N.D.	N.D.	N.D.
001-2591	MW2 (15) 1/18	N.D.	N.D.	N.D.	N.D.	N.D.
001-2592	MW2 (18.5) 1/18	N.D.	N.D.	N.D.	N.D.	N.D.
001-2593	MW2 (20) 1/18	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

Belinda C. Vega
Project Manager

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Castro Valley, CV Blvd/Strobridge	Sampled:	Jan 18-19, 1990
P.O. Box 996	Matrix Descript:	Soil	Received:	Jan 22, 1990
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Jan 29, 1990
Attention: Mardo Kaprealian, P.E.	First Sample #:	001-2594	Reported:	Jan 30, 1990

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)
001-2594	MW3 (5) 1/19	N.D.	N.D.	N.D.	N.D.	N.D.
001-2595	MW3 (6.5) 1/19	N.D.	N.D.	N.D.	N.D.	N.D.
001-2596	MW3 (9) 1/19	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

Belinda C. Vega
Project Manager

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: [signature]

WITNESSING AGENCY

SITE NAME & ADDRESS: UNOCAL / CASTRO VALLEY, CASTRO VALLEY BLVD. AND STROBRIDGE

TURN AROUND TIME: REGULAR

ANALYSES REQUESTED

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG	BTXE	REMARKS
MW1-(5)	1-18-90		X		X		1	SEE SAMPLE ID NO.	X	X	
MW1-(6.5)	1-18-90		X		X		1	↓	X	X	
MW1-(10)	1-18-90		X		X		1	↓	X	X	
MW2-(5)	1-18-90		X		X		1	↓	X	X	
MW2-(6.5)	1-18-90		X		X		1	↓	X	X	
MW2-(9)	1-18-90		X		X		1	↓	X	X	
MW2-(10)	1-18-90		X		X		1	↓	X	X	
MW2-(15)	1-18-90		X		X		1	↓	X	X	
MW2-(16.5)	1-18-90		X		X		1	↓	X	X	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature] (KEI)	1/22/90 8:35A	T. Bolton
T. Bolton	1/22/90 8:37 AM	[signature]

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

1. Have all samples received for analysis been stored in ice? Yes
2. Will samples remain refrigerated until analyzed? Yes
3. Did any samples received for analysis have head space? NO
4. Were samples in appropriate containers and properly packaged? Yes

Signature: [signature] Title: Sample Receiving Date: 1/22/90

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: [signature]

WITNESSING AGENCY:

SITE NAME & ADDRESS: UNOCAL/CASTRO VALLEY
CASTRO VALLEY BLVD. AND STROBRIDGE

ANALYSES REQUESTED: 8240, 8270

TURN AROUND TIME: REGULAR

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	8240	8270	REMARKS
MW2-(20)	1-19-90		X		X		1		X	X	
MW3-(5)	1-19-90		X		X		1		X	X	
MW3-(15)	1-19-90		X		X		1		X	X	
MW3-(9)	1-19-90		X		X		1		X	X	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	1/22/90 8:35	T. Bakun
T. Bakun	1/22/90 10:30	[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? Yes
2. Will samples remain refrigerated until analyzed? Yes
3. Did any samples received for analysis have head space? No
4. Were samples in appropriate containers and properly packaged? Yes

[signature] — Sample Rec — 1/22/90

Signature — Title — Date

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Castro Valley,2445 Castro Valley	Sampled:	Mar 22, 1990
P.O. Box 996	Matrix Descript:	Water	Received:	Mar 22, 1990
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Mar 22, 1990
Attention: Mardo Kaprealian, P.E.	First Sample #:	003-3236 A-B	Reported:	Mar 23, 1990

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)
0033236 A-B	MW1	32	4.2	N.D.	0.36	1.1
0033237 A-B	MW2	N.D.	N.D.	N.D.	N.D.	N.D.
0033238 A-B	MW3	N.D.	N.D.	N.D.	N.D.	N.D.
0033239 A-B	MW4	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	**30**	**0.30**	**0.30**	**0.30**	**0.30**

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

SEQUOIA ANALYTICAL

Belinda C. Vega
Project Manager

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: JOE

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal / Castro Valley
2445 Castro Valley Blvd

ANALYSES REQUESTED: TPHG, BTXE

TURN AROUND TIME: 5 days

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG, BTXE	REMARKS
MW1	3/22/90	1:30 PM		✓	✓		2	MW	✓	VOA preserved in the field with HCl
MW2	"	2:00 PM		✓	✓		2	"	✓	
MW3	"	1:45 PM		✓	✓		2	"	✓	
MW4	"	11:00 AM		✓	✓		2	"	✓	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Joe Kenison	3/22/90 15:15	
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? ND
4. Were samples in appropriate containers and properly packaged? ✓

Signature | SR | Title | 3/22 | Date