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

PM 5:06

August 13, 1991

Alameda County Health Care Services
80 Swan Way, Room 200
Oakland, CA 94621

Attention: Mr. William Faulhaber

RE: **Unocal Service Station #3292**
15008 E. 14th Street
San Leandro, California

Dear Mr. Faulhaber:

Per the request of Mr. Ron Bock of Unocal Corporation, enclosed please find our work plan/proposal dated August 7, 1991, 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

jad\82

Enclosure

cc: Ron Bock, Unocal Corporation

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Consulting Engineers
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KEI-P91-0102.P3
August 6, 1991

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

Attention: Mr. Ron Bock

RE: Work Plan/Proposal
Unocal Service Station #3292
15008 E. 14th Street
San Leandro, California

INTRODUCTION

This work plan has been prepared at the request of Unocal Corporation to investigate the extent of ground water contamination at both the upgradient and downgradient directions from the subject site and to address the concerns of an off-site property owner (Shadrall Associates) at 15035 East 14th Street.

1. Site Description and Background:

The subject site is presently used as a gasoline station. The site is situated on gently sloping, northeast trending topography, and is located at the east corner of the intersection of East 14th and 150th Avenue in San Leandro, California. A Location Map and Site Plans are attached to this work plan/proposal.

Kaprealian Engineering, Inc.'s (KEI) initial field work was conducted on January 16, 1991, when two underground fuel storage tanks and one waste oil tank were removed from the site. The tanks consisted of one 10,000 gallon regular unleaded fuel tank, one 10,000 gallon super unleaded fuel storage tank and one 280 gallon waste oil tank. The tanks were made of steel and two holes about 1/2 inch in diameter were observed in the super unleaded fuel tank. Mr. William Faulhaber of the Alameda County Health Agency (ACHA) was present during tank removal and subsequent soil sampling. Mr. James Kneeland of the Eden Consolidated Fire Protection District was also present during tank removal.

One soil sample, labeled WO1, was collected from beneath the waste oil tank at a depth of approximately 8.25 feet below grade. Four soil samples, labeled A1, A2, B1 and B2, were collected from beneath the fuel tank at depths between 15 and 16 feet below grade. Due to obvious contamination, additional

soil was excavated beneath sample points A1, A2, B1 and B2 in order to further define the vertical extent of soil contamination. During excavation activities ground water was encountered in the fuel tank pit at a depth of approximately 16.5 feet, thus prohibiting the collection of any additional soil samples from beneath sample points A1, A2, B1 and B2. Sample locations are as shown on the attached Site Plan, Figure 2.

In an attempt to remove as much of the contaminated soil as possible, and in order to collect a tank pit water sample, the fuel tank pit was excavated to a depth of about 17.5 feet below grade. After soil excavation was completed, approximately 15,700 gallons of ground water were pumped from the fuel tank pit. On January 28, 1991, one water sample, labeled W1, was collected from the fuel tank pit.

KEI returned to the site on February 11, 1991, in order to collect soil samples from the product pipe trenches as requested by Mr. William Faulhaber of the ACHA. Seven samples, labeled P1 through P7, were collected at depths ranging from 3.5 to 5 feet below grade.

KEI again returned to the site on February 12, 1991, in order to complete the collection of pipe trench soil samples. Two samples, labeled P8 and P9, were collected at depths of 3.5 feet and 7.5 feet, respectively. After the soil sampling was completed, pipe trenches were excavated to the depth of the sample points. Pipe trench sample point locations are shown on the attached Site Plan, Figure 2.

All samples were analyzed by Sequoia Analytical Laboratory in Concord, California. All soil and water samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline, and benzene, toluene, xylenes and ethylbenzene (BTX&E). In addition, the soil sample WO1, collected from the waste oil tank pit, was analyzed for TPH as diesel, total oil and grease (TOG), the metals cadmium, chromium, lead, nickel and zinc, and for EPA method 8010 constituents.

Analytical results of the [redacted] samples, collected from the fuel tank pit, indicated levels of TPH as gasoline ranging from 150 ppm to 840 ppm, except for sample A1, which showed a level of TPH as gasoline at 2,600 ppm. Note that soil represented by these samples was removed during excavation of the fuel tank pit to a depth of about 17.5 feet or approximately 1 foot below ground water level.

Analytical results of soil samples collected from the product pipe trenches indicated non-detectable levels of TPH as gasoline for samples P1, P3 through P6, and P8. The levels of TPH as gasoline in samples P2, P7 and P9 were 1.2 ppm, 7.1 ppm and 130 ppm, respectively. Benzene was detected at concentrations ranging from non-detectable to 0.89 ppm.

Analytical results of the soil sample WO1, collected from beneath the waste oil tank pit, indicated non-detectable levels of all constituents analyzed, except for zinc, which showed 31 ppm. Results of the soil analyses are summarized in Table 4.

Analytical results of the water sample (W1), collected from the fuel tank pit, indicated 13,000 ppb of TPH as gasoline, and 64 ppb of benzene. The results of the water analyses are summarized in Table 5.

To comply with the requirements of the regulatory agencies and based on the analytical results, KEI proposed installation of five monitoring wells. Results of the soil samples from the tank excavation are summarized in KEI's report (KEI-J91-0102.R1) dated March 6, 1991.

On April 23 and 24, 1991, five two-inch diameter monitoring wells (designated as MW1, MW2, MW3, MW4 and MW5 on the attached Site Plan, Figure 1) were installed at the site. The monitoring wells were drilled and completed to total depths ranging from 19.5 to 22.5 feet. Ground water was encountered at depths ranging from 12-1/4 to 13-1/4 feet beneath the surface during drilling, except in MW5, where water was not initially encountered until a depth of 15 feet, but quickly rose to a depth of about 12 feet.

The surface of each well cover was surveyed by Kier & Wright of Pleasanton, California, to Mean Sea Level (MSL) and to a vertical accuracy of 0.01 feet. The wells were developed on April 29 and 30, 1991, and initially sampled on May 4, 1991. No free product or sheen was noted in any of the wells, except for well MW5, where a trace of product was observed on April 30, 1991, and where only a sheen was detected on May 4, 1991.

Water and selected soil samples were analyzed at Sequoia Analytical Laboratory in Concord, California. Soil and water samples were analyzed for TPH as gasoline and BTX&E.

Analytical results of the soil samples, collected from the borings for monitoring wells MW1 through MW5, indicated levels

of TPH as gasoline ranging from non-detectable to 7.7 ppm, with benzene levels ranging from non-detectable to 0.029 ppm in all samples, except for MW1(10), MW1(12) and MW5(14.5), which showed levels of TPH as gasoline at 82 ppm, 420 ppm, and 620 ppm, respectively, and benzene levels at 0.20 ppm, 1.2 ppm, and 6.8 ppm, respectively.

Analytical results of the ground water samples collected on May 4, 1991 from monitoring wells MW1 through MW5 indicated levels of TPH as gasoline ranging from 6,300 ppb to 69,000 ppb, with benzene levels ranging from 2.0 ppb to 1,400 ppb, except in MW4, in which benzene was non-detectable. Concentrations of TPH as gasoline and BTX&E constituents for the ground water samples collected on May 4, 1991 from the five monitoring wells are shown on the attached Site Plan, Figure 1b. Results of the soil analyses are summarized in Table 3, and the water analyses in Table 2.

Based on the analytical results, KEI recommended implementation of a monthly monitoring and quarterly sampling program. In addition, KEI recommended monthly purging of wells MW1 and MW5 in an attempt to reduce the level of contamination in the vicinity of these wells.

KEI concluded that because upgradient wells MW3 and MW4 show levels of TPH as gasoline at 9,100 ppb and 6,300 ppb, respectively, a probable off-site upgradient source of contamination is indicated. Also, KEI concluded that the extent of ground water contamination has not been defined in the vicinity of the Unocal site. However, prior to recommending additional monitoring wells at that time, KEI proposed to evaluate the adjacent area for possible monitoring well locations and to review Regional Water Quality Control Board (RWQCB) files on adjacent properties. The results of the well installation and sampling activities are presented in KEI's report (KEI-P91-0102.R4) dated May 29, 1991.

Additionally, KEI has reviewed a letter from Law Environmental, Inc., dated October 29, 1990 and titled "Preliminary findings - Phase II Site Assessment". Apparently, three monitoring wells have recently been installed at the Shadrall property at 15035 East 14th Street (presently used as a Liquor Barn facility and related parking lot). Ground water is present at a depth of about 14 feet with a gradient toward the south-southwest at 0.0003. In addition, upgradient well MW3 apparently showed a level of TPH as gasoline at 11,000 ppb, with a benzene level of 540 ppb. KEI has not reviewed any technical reports or boring logs prepared for the installation

of these wells. Also, the letter by Law Environmental, Inc. (discussed above) indicates that an adjacent Chevron Service Station has eight monitoring wells, which as of April 11, 1990, showed a ground water flow direction toward the southeast at a gradient of 0.005.

A recent review of the RWQCB file for the adjacent Chevron Service Station indicates the ground water flow direction, as of April 5, 1991, was toward the southwest. Also, it appears that a former Mobil Station was located northwest of the Unocal site across 150th Avenue, and a former Phillips Station was located west of Unocal and northwest of the Shadrall property.

2. Hydrology and Regional Geology:

The water table stabilized in the monitoring wells at depths ranging from 11.69 to 12.62 feet below the surface on May 4, 1991. The ground water flow direction appeared to be toward the south-southwest and southwest on May 4, 1991, with a hydraulic gradient varying from approximately 0.0005 to 0.003 (see attached Site Plan, Figure 1). Recent monitoring data collected on July 23, 1991 indicates a ground water flow direction toward the south and southwest, at an average hydraulic gradient of 0.005 (see attached Site Plan, Figure 1b). Also, the depth to ground water at the site on July 23, 1991 varied from 13.13 to 14.09 feet. All monitoring data collected to date is presented on Table 1.

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 situated closely adjacent to a mapped geologic contact separating Coarse-grained alluvium (Qhac) from Late Pleistocene alluvium (Qpa). The Coarse-grained alluvium is described as typically consisting of unconsolidated, permeable sand and silt locally with coarse sand and gravel. The thickness of this unit ranges from less than 10 feet to as much as 50 feet. The Late Pleistocene alluvium is described as consisting of weakly consolidated, irregular interbedded clay, silt, sand and gravel. This unit has a reported maximum thickness of at least 150 feet. Also, the site is located approximately 2,000 feet southwest of a mapped splay of the active Hayward Fault Zone.

The results of our subsurface study indicate that the site is underlain by clay and/or silt materials to the maximum depth

explored (22.5 feet), except for a 3/4 to 1 foot thick clayey sand lens encountered in wells MW3 and MW4 at depths below grade of about 13 to 14 feet. It is unclear if this relatively thin sand lens is present across the site but was missed by the sampling interval used. Ground water was encountered within this clayey sand lens at MW3 and MW4.

PROPOSED FIELD WORK

PHASE II - DEFINING THE EXTENT OF SUBSURFACE CONTAMINATION

1. KEI proposes to install six two-inch diameter monitoring wells, designated as MW6 through MW11 on the attached Site Vicinity Map, using hollow-stem auger equipment. Permits will be obtained from the Alameda County Flood Control District and the City of San Leandro as necessary prior to beginning work. Also, access permission will be secured by Unocal Corporation from all affected off-site property owners.

   The wells will be drilled about 10 feet into the saturated zone of the first encountered ground water unless a significant clay aquitard is encountered first, at which time drilling will be terminated. It is estimated that the proposed wells will be drilled and installed to depths of approximately 23 to 24 feet.

2. Soil samples will be collected at a maximum spacing of 5 foot intervals, significant changes in lithology, at obvious areas of contamination, and at/or within the soil/ground water interface beginning at a depth of about 4 to 5 feet below grade. Sampling for laboratory analyses and lithologic logging purposes will continue until the first water table is encountered. Sampling for lithologic logging purposes only will continue below the water table to the total depth drilled. However, the first two borings drilled will be sampled at near continuous intervals for detailed lithologic logging. The sampling intervals in the remaining boring may be modified based on the data obtained from the continuously sampled borings. Classification of soil will be done using the Unified Soils Classification System (USCS) by KEI's field engineer or geologist. Samples will be collected in a California modified split-spoon sampler with two-inch diameter brass liners. The sampler will be advanced ahead of the drilling augers at designated depths by dropping a 140 pound hammer 30 inches. Blow counts will be recorded. Samples will be removed from the sampler and retained in brass liners. The liners will be sealed with aluminum foil, plastic caps and

3. Finalized Boring Logs will be prepared from field logs and submitted to the Alameda County Health Care Services and to the RWQCB, San Francisco Bay Region.

4. Ground water is anticipated at approximately 13 to 14 feet below grade based on the ground water level found in the existing monitoring wells as of July 23, 1991.

5. Well Construction:

   Casing Type: Schedule 40 PVC, flush threaded joints, 0.010 inch factory slot, two-inch diameter. Screen to run from total depth of the well to approximately 5 feet above the depth of the first encountered ground water. Monterey sand (#2/12) will fill the annular space from total depth to 2 feet above the perforated casing interval. A two foot thick bentonite seal will be placed in the annular space on top of the sand pack. Neat cement grout will be placed on top of the bentonite seal to the surface.

   Well casings will be secured with a waterproof cap and a padlock. A round, watertight, flush-mounted well cover will be concreted in place over the top of each casing.

6. Water levels will be measured with an electronic sounder. The wells will be developed using a surface pump approximately one week after well completion. Wells will be pumped until expelled water is clear and free of turbidity. Effluent generated during well development will be contained in DOT-approved drums and hauled from the site by a licensed hazardous materials hauler.

   Casing elevations will be surveyed by a licensed land surveyor to MSL and to a vertical accuracy of 0.01 feet.

7. Ground Water Sampling:

   The wells will be purged with a surface bailer a minimum of four casing volumes prior to sampling and at least 72 hours after development. After recovery, samples will be collected using a clean Teflon bailer and promptly decanted into 40 ml VOA vials and/or one-liter amber bottles, as appropriate. Vials and/or bottles will be sealed with Teflon-lined screw caps, labeled and stored on ice for delivery to a state certified laboratory. The sampling bailer will be cleaned with soap and a clean water rinse between uses.

Wells will be checked for free product and sheen (using an interface probe and/or paste tape) prior to development and sampling.

Properly executed Chain of Custody documentation will accompany all samples.

8. Laboratory Analyses:

Water and selected soil samples will be analyzed by Sequoia Analytical Laboratory in either Concord or Redwood City, California, both state certified laboratories, for TPH as gasoline using EPA method 5030 in conjunction with modified 8015, and BTX&E using EPA method 8020, as recommended by the RWQCB, and as specified in the Tri-regional guidelines.

Analytical results will be presented in tabular form, showing sample depths, results and detection limits.

The analytical results will be used to delineate the vertical and lateral extent of the contaminants in soil and ground water.

9. Hydrology:

Ground water flow direction will be determined from the survey data and water table depths from both the new and existing wells. The flow direction will be shown on the Site Vicinity Map.

10. Ongoing Pumping, Monitoring and Sampling:

10.1 All on-site monitoring wells will be monitored on a monthly basis. The elevation of the water table and any abnormal conditions noted during inspection will be recorded, including presence of product and sheen.

10.2 Ground water from all monitoring wells will be purged, sampled, and analyzed for TPH as gasoline and BTX&E on a quarterly basis. Prior to sampling, water table elevation will be recorded as well as the presence of any free product.

10.3 Wells MW1 and MW5 will be purged on a monthly basis.

10.4 Quarterly technical reports will be prepared that summarize the field activities performed, including water sampling techniques and laboratory analyses, along with discussion and recommendations.

11. Conclusions:

Conclusions and results of Phase II will be described in a technical report.

The technical report will be submitted to the Alameda County Health Care Services Agency, and to the RWQCB.

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 work plan/proposal, please do not hesitate to call me at (707) 746-6915.

Approved by:

Don R. Braun
Certified Engineering Geologist

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

Timothy R. Ross
Project Manager

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Attachments: Tables 1 through 5
Location Map
Site Vicinity Map
Site Plans - Figures 1, 1a, 1b & 2
Typical Well Completion Diagram

KEI-P91-0102.P3
August 6, 1991

TABLE 1

SUMMARY OF GROUND WATER MONITORING AND PURGING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)	Product Thickness	Sheen	Gallons Pumped
(Monitored and Developed on April 29 & 30, 1991)					
MW1	24.88	11.84	0	No	40
MW2	24.93	11.96	0	No	70
MW3	25.00	11.84	0	No	90
MW4	25.02	12.38	0	No	85
MW5	24.90	11.50	[redacted]	N/A	70 w/trace product
(Monitored and Sampled on May 4, 1991)					
MW1	24.68	12.04	0	No	15
MW2	24.77	12.12	0	No	15
MW3	24.80	12.04	0	No	15
MW4	24.78	12.62	0	No	15
MW5	24.71	11.69	0	Yes	15
(Monitored on July 23, 1991)					
MW1	23.28	13.44	0	No	11
MW2	23.33	13.56	0	No	14
MW3	23.35	13.49	0	No	0
MW4	23.31	14.09	0	No	0
MW5	23.27	13.13	0	No	38

Well #	Surface Elevation* (feet)
MW1	36.72
MW2	36.89
MW3	36.84
MW4	37.40
MW5	36.40

N/A = Not applicable.

* Elevation of top of well covers surveyed to MSL.

KEI-P91-0102.P3
August 6, 1991

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
5/04/91	MW1	31,000	[redacted]	20	1,500	920
	MW2	19,000	6.6	1.4	630	460
	MW3	9,100	2.0	ND	180	55
	MW4	6,300	ND	ND	61	2.8
	MW5	69,000	[redacted]	2,500	[redacted],000	3,500
Detection Limits		30	0.3	0.3	0.3	0.3

ND = Non-detectable.

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

KEI-P91-0102.P3
August 6, 1991

TABLE 3

SUMMARY OF LABORATORY ANALYSES

Date	Sample Number	Depth (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
4/23/91	MW1(5)	5.0	ND	ND	ND	0.0070	ND
	MW1(10)	10.0	[redacted]	0.20	0.23	0.31	0.14
	MW1(12)	12.0	[redacted]	1.2	1.3	0.72	0.78
	MW2(5)	5.0	ND	ND	ND	0.022	0.0085
	MW2(10)	10.0	2.2	0.089	ND	0.0064	ND
	MW2(12)	12.0	12	ND	0.017	0.075	0.14
	MW3(5)	5.0	ND	ND	ND	ND	ND
	MW3(10)	10.0	1.4	0.015	0.0051	0.014	ND
	MW3(13)	13.0	3.5	0.026	0.026	0.030	0.0088
	MW4(5)	5.0	ND	ND	ND	ND	ND
	MW4(10)	10.0	ND	ND	ND	0.0060	ND
	MW4(13)	13.0	ND	ND	ND	0.012	0.0088
	MW5(5)	5.0	ND	ND	ND	ND	ND
	MW5(10)	10.0	7.7	0.029	0.14	0.090	0.13
	MW5(14.5)	14.5	[redacted]	6.8	4.4	75	18
	Detection Limits		1.0	0.0050	0.0050	0.0050	0.0050

ND = Non-detectable.

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

KEI-P91-0102.P3
August 6, 1991

TABLE 4

SUMMARY OF LABORATORY ANALYSES
SOIL

(Collected on January 16, and
February 11 & 12, 1991)

Sample	Depth (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
A1	15.5	2,600	7.1	55	170	55
A2	16.0	290	1.3	1.1	1.2	1.5
B1	15.5	840	1.5	2.7	9.9	1.3
B2	15.0	150	1.6	3.3	11	2.0
P1	3.5	ND	0.0072	0.019	0.026	ND
P2	4.75	1.2	0.014	0.041	0.11	0.019
P3	3.75	ND	ND	ND	ND	ND
P4	3.75	ND	ND	ND	ND	ND
P5	3.5	ND	ND	ND	ND	ND
P6	5.0	ND	ND	ND	ND	ND
P7	5.0	7.1	0.89	0.23	0.70	0.57
P8	3.5	ND	ND	ND	ND	ND
P9	7.5	130	0.068	0.37	0.076	0.66
WO1*	8.25	ND	ND	ND	ND	ND
Detection Limits		1.0	0.0050	0.0050	0.0050	0.0050

ND = Non-detectable.

* TOG, TPH as diesel, and all EPA method 8010 constituents were non-detectable. Metals were non-detectable, except for zinc, which showed 31 ppm.

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

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TABLE 5

SUMMARY OF LABORATORY ANALYSES [redacted]

Date	Sample #	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
1/28/91	W1	13,000	64	37	85	25
Detection Limits		30	0.30	0.30	0.30	0.30

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

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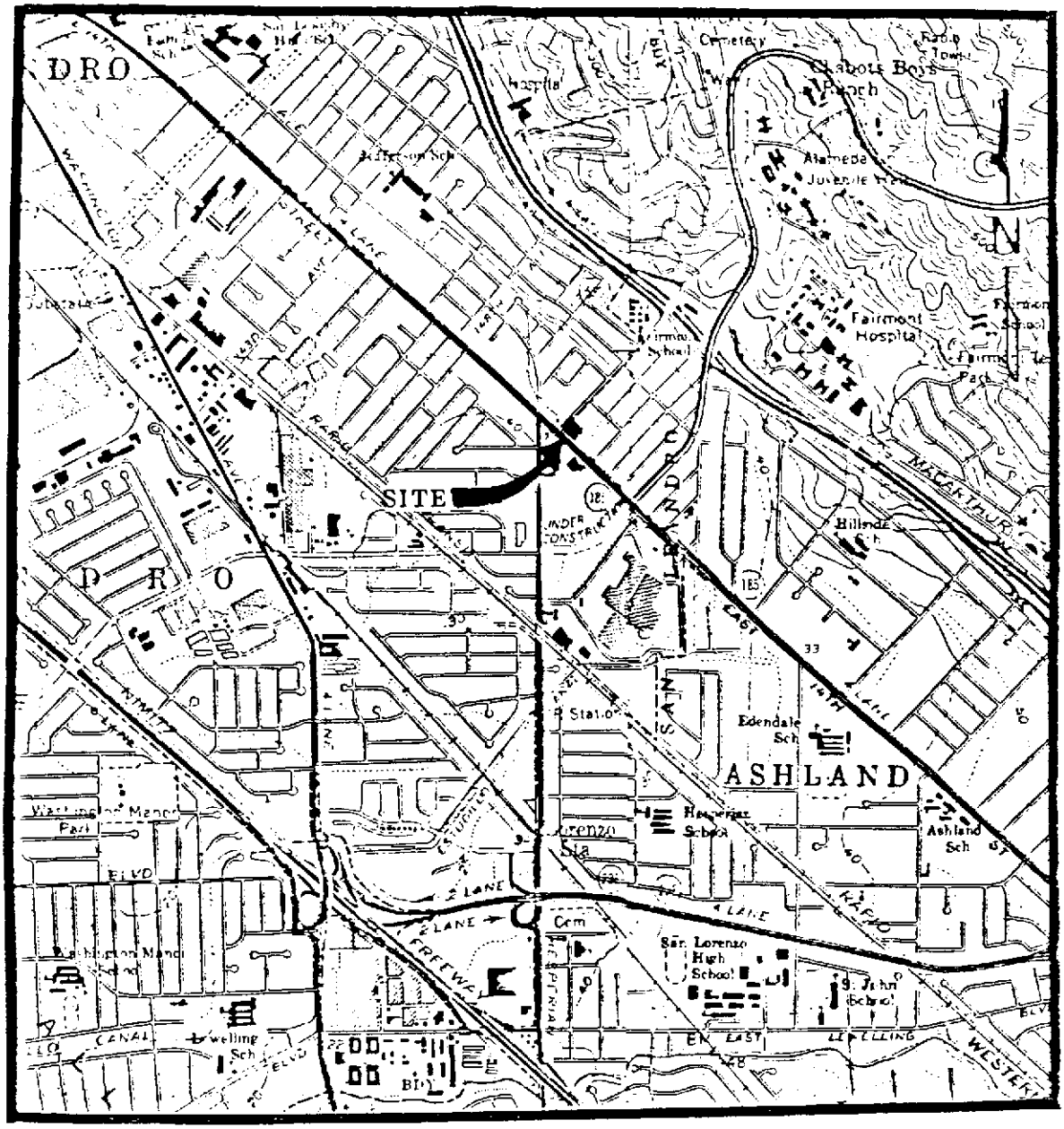

LOCATION MAP

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

Unocal S/S #3292
15008 E. 14th Street
San Leandro, CA

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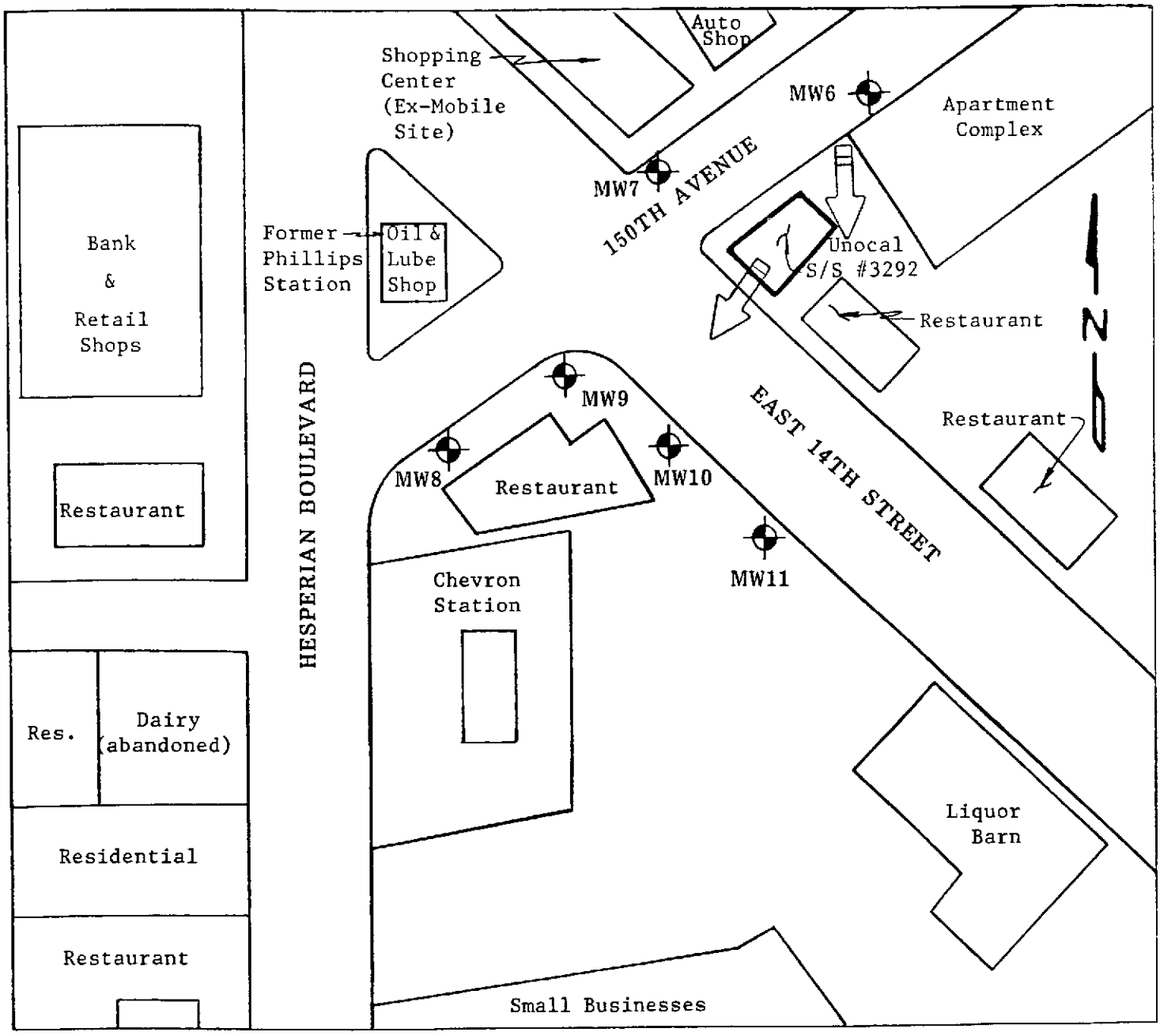

SITE VICINITY MAP
not to scale

LEGEND

Monitoring well (proposed)

Direction of ground water flow at Unocal Site on 7/23/91

Base modified from map by Weiss Associates for Chevron Service Station #92013

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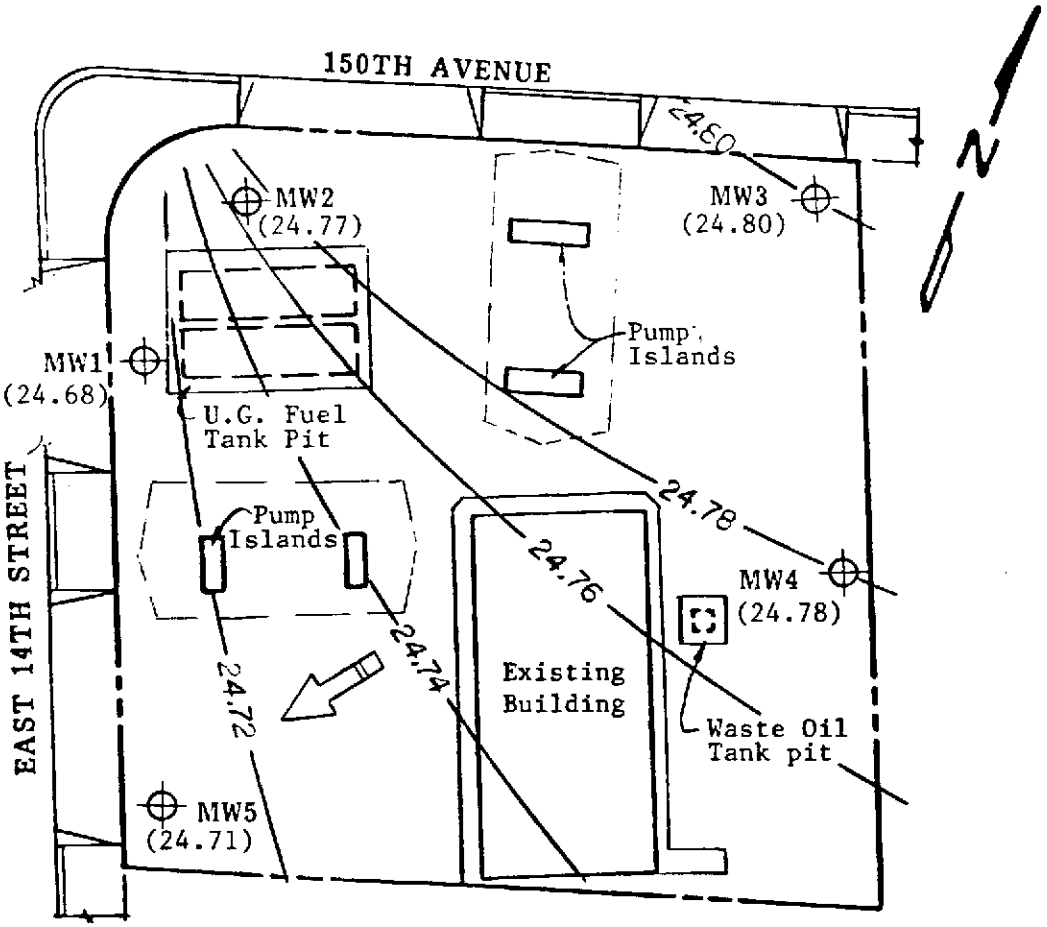

SITE PLAN
Figure 1

0 30 60
Approx. scale feet

LEGEND

- ⊕ Monitoring well
- ( ) Ground water table elevation in feet above Mean Sea Level on 5/4/91
- ⇨ Direction of ground water flow
- ——— Contours of ground water table elevation in feet above Mean Sea Level

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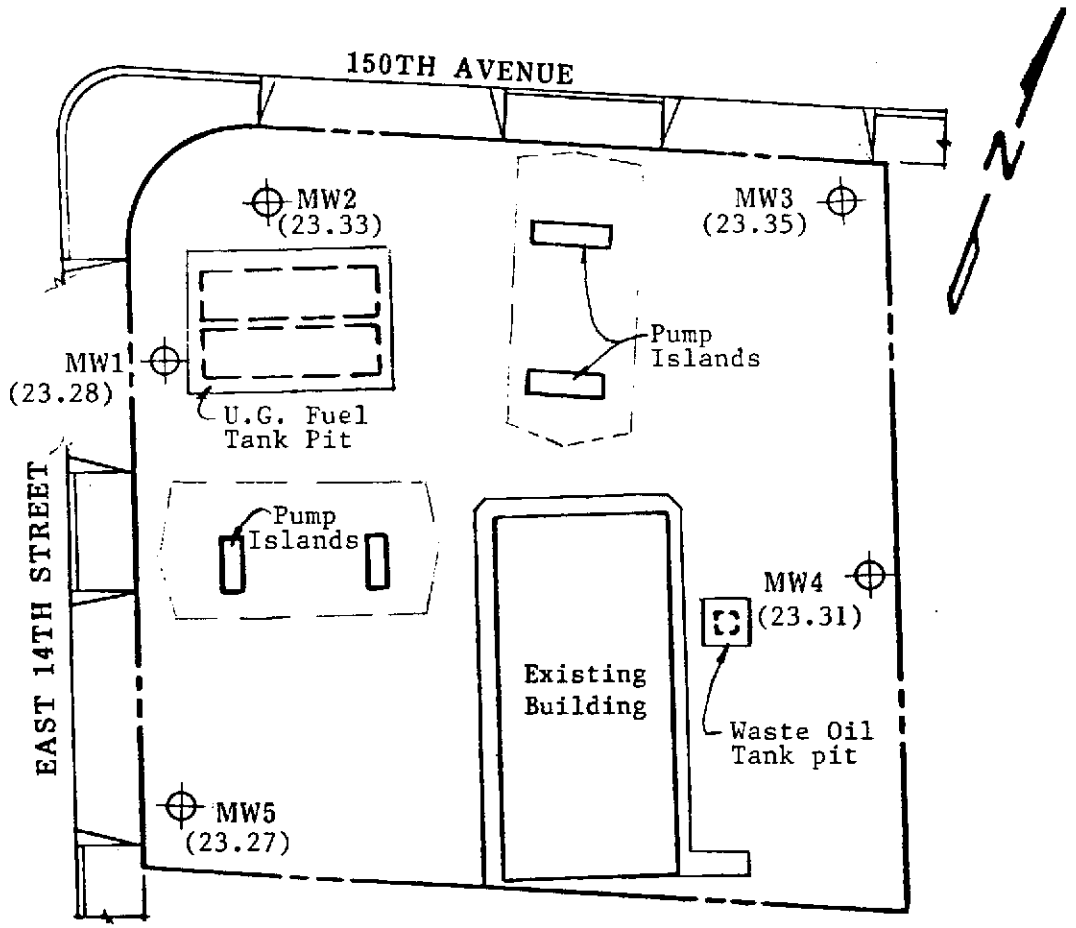

SITE PLAN
Figure 1a

0 30 60
Approx. scale feet

LEGEND

- Monitoring well
- ( ) Ground water table elevation in feet above Mean Sea level on 7/23/91
- Direction of ground water flow
- Contours of ground water table elevation in feet above Mean Sea Levle

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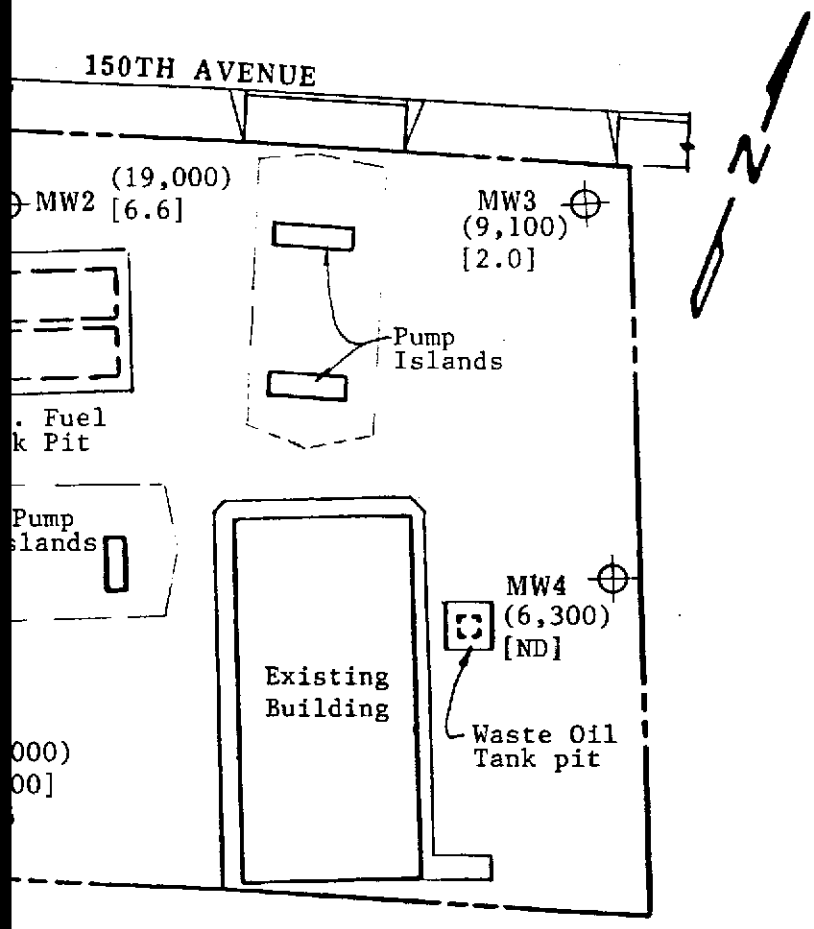
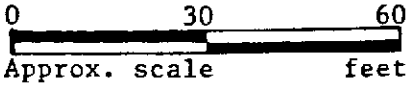


SITE PLAN
Figure 1b



gasoline in ppb on 5/4/91
in ppb on 5/4/91
nd water flow on 5/4/91

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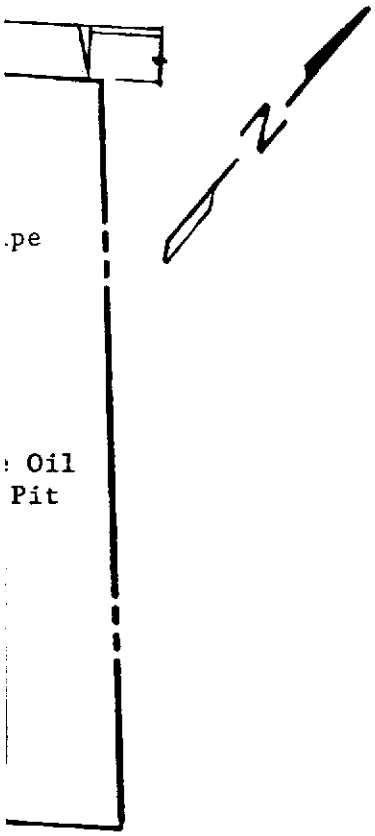
C.

B1



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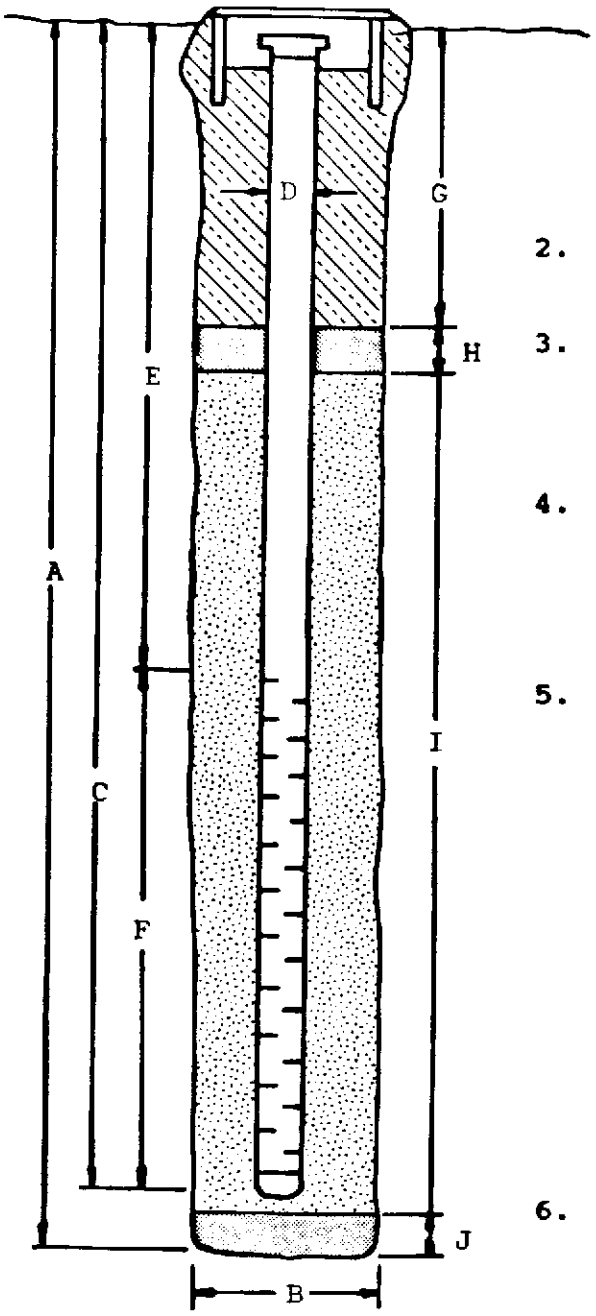
WELL COMPLETION DIAGRAM
(SCHEMATIC)

Flush-mounted Well Cover



WELL DETAILS*

1. Well will be terminated 10 to 15 feet into first ground water unless a five foot thick aquitard is encountered below the water table, in which case the aquitard will be backfilled with bentonite pellets and the well terminated at the top of this aquitard [A].
2. Boring diameter [B] is 9 inches for 2 inch wells and 12 inches for 4 inch wells.
3. Perforated interval [F] will extend from bottom of casing to five feet above first ground water table (unless water <5 feet deep).
4. Schedule 40, PVC casing, 2 inch in diameter [D], will be used [C]. Screen is 0.020 or 0.010 inch factory machined slots, depending on filter pack grain size.
5. Filter pack will be placed from bottom of casing to two feet above perforated interval [I]. (Bottom seal [J] is not installed unless required.) One foot of bentonite [H] will be placed above the filter pack. Concrete grout [G] will be placed from top of bentonite seal to the surface (unless modified due to shallow water). Blank casing [E] will extend from the top of the perforated casing to the top of the hole.
6. The well will be installed with a waterproof cap, padlock and a flush-mounted well cover.

* See text for additional information.