



KAPREALIAN ENGINEERING  
I N C O R P O R A T E D

93 AUG -3 PM 4:05

August 2, 1993

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

RE: Unocal Service Station #5366  
7375 Amador Valley Boulevard  
Dublin, California

Gentlemen:

Per the request of Mr. Ed Ralston of Unocal Corporation, enclosed please find our work plan/proposal dated July 7, 1993, for the above referenced site.

If you should have any questions, please feel free to call our office at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Judy A. Dewey

jad\82

Enclosure

cc: Ed Ralston, Unocal Corporation



KAPREALIAN ENGINEERING  
INCORPORATED

KEI-P88-0205.P1  
July 7, 1993

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

Attention: Mr. Edward C. Ralston

RE: Work Plan/Proposal  
Unocal Service Station #5366  
7375 Amador Valley Boulevard  
Dublin, California

Dear Mr. Ralston:

#### INTRODUCTION

In Kaprealian Engineering, Inc's. (KEI) most recent quarterly report (KEI-P88-0205.QR20) dated June 30, 1993, and per the request of the Alameda County Health Care Services (ACHCS) Agency, KEI recommended the installation of one additional monitoring well. The purpose of this well is to further define the extent of soil and ground water contamination at and in the vicinity of the subject site. This work plan/proposal for the installation of the well is presented for your review and consideration. The site background information, recent field activities, and a discussion of our recommendations are included in the referenced report.

#### PROPOSED FIELD WORK

##### PHASE II - DEFINING THE EXTENT OF SUBSURFACE CONTAMINATION

1. KEI proposes to install one additional two-inch diameter monitoring well, designated as MW5 on the attached Figure 1, by the use of hollow-stem auger equipment. Permits will be obtained from the ACHCS and the City of Dublin, as necessary, prior to beginning work.

The well will be drilled 10 feet into the saturated zone of the first encountered ground water, unless a clay aquitard of at least 5 feet in thickness is encountered first, at which time drilling will be terminated. Ground water is anticipated at approximately 9 feet below grade, based on the ground water level in the existing monitoring wells at the Unocal site in February of 1993.

2. Soil samples will be collected at a maximum spacing of 5 foot intervals, at significant changes in lithology, at obvious areas of contamination, and at/or within the soil/ground water

interface, beginning at a depth of about 4 to 5 feet below grade. Sample intervals will be chosen so that an accurate profile of the subsurface soil conditions can be determined. 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. Classification of soil will be done using the Unified Soils Classification System (USCS) by KEI's field geologist. Samples will be collected in a California-modified split-spoon sampler lined 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 the brass liners. A 5-foot long continuous coring device may be used for sampling purposes in addition to the California-modified split-spoon sampler. The liners will then be sealed with aluminum foil, plastic caps, and tape. They will be labeled and stored in a cooler, on crushed ice or "blue ice," for delivery to a state-certified laboratory. Properly executed Chain of Custody documentation will accompany all soil samples.

3. During drilling operations, all soil materials will be stored on-site in DOT-approved, 55-gallon drums, or else covered by visqueen. Each drum (if used) will be properly labeled and will include, at a minimum, the date, the interval that soil materials were obtained from, a contact individual, and the phone number at KEI.
4. Finalized Boring Logs will be prepared from the field logs and submitted to the ACHCS and the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region.
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 1 to 2 feet above the perforated casing interval. The choice of screen slot size and sand filter pack material is based on soils encountered in previous borings. A 1 to 2-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. A proposed Well Construction Diagram is attached to this proposal.

The well casing 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 the casing. The elevations of the well cover will be surveyed by a licensed land surveyor to Mean Sea Level and to a vertical accuracy of 0.01 foot.

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

7. Ground Water Sampling:

The well will be purged (by the use of a surface pump or bailer) of a minimum of four casing volumes. Purging will be conducted prior to sampling and at least 72 hours after development. The water samples will be collected by the use of a clean Teflon bailer and promptly decanted into 40 ml VOA vials. The vials will then 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 non-phosphate soap and clean water rinses between uses.

The well will be checked for free product (by the use of an interface probe and/or paste tape) prior to development and sampling. The well will also be checked for the presence of a sheen prior to sampling.

Properly executed Chain of Custody documentation will accompany all water samples.

8. Laboratory Analyses:

Water and selected soil samples will be analyzed by Sequoia Analytical Laboratory, a state-certified laboratory, for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8020.

The analytical results will be presented in tabular form, showing the sample depths and results. The analytical results will be used to delineate the vertical and lateral extent of the contaminants in soil and ground water.

9. Hydrology:

The ground water flow direction and ground water gradient will be determined from the water level elevations measured in both the new and existing monitoring wells. The flow direction will be shown on the Site Plan.

10. Conclusions:

Conclusions and results of Phase II will be described in a technical report. The technical report will be submitted to the ACHCS and the RWQCB, San Francisco Bay Region.

LIMITATIONS

Soil deposits and rock formations may vary in thickness, lithology, saturation, strength and other properties across any site. In addition, environmental changes, either naturally-occurring or artificially-induced, may cause changes in the extent and concentration of any contaminants. Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study will be based on the data obtained from the field and laboratory analyses obtained from a state-certified laboratory. We will analyze 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 will be performed in accordance with generally accepted professional principles and practices existing for such work.

KEI-P88-0205.P1


July 7, 1993

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Should you have any questions regarding this work plan/proposal,  
please do not hesitate to call me at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.



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

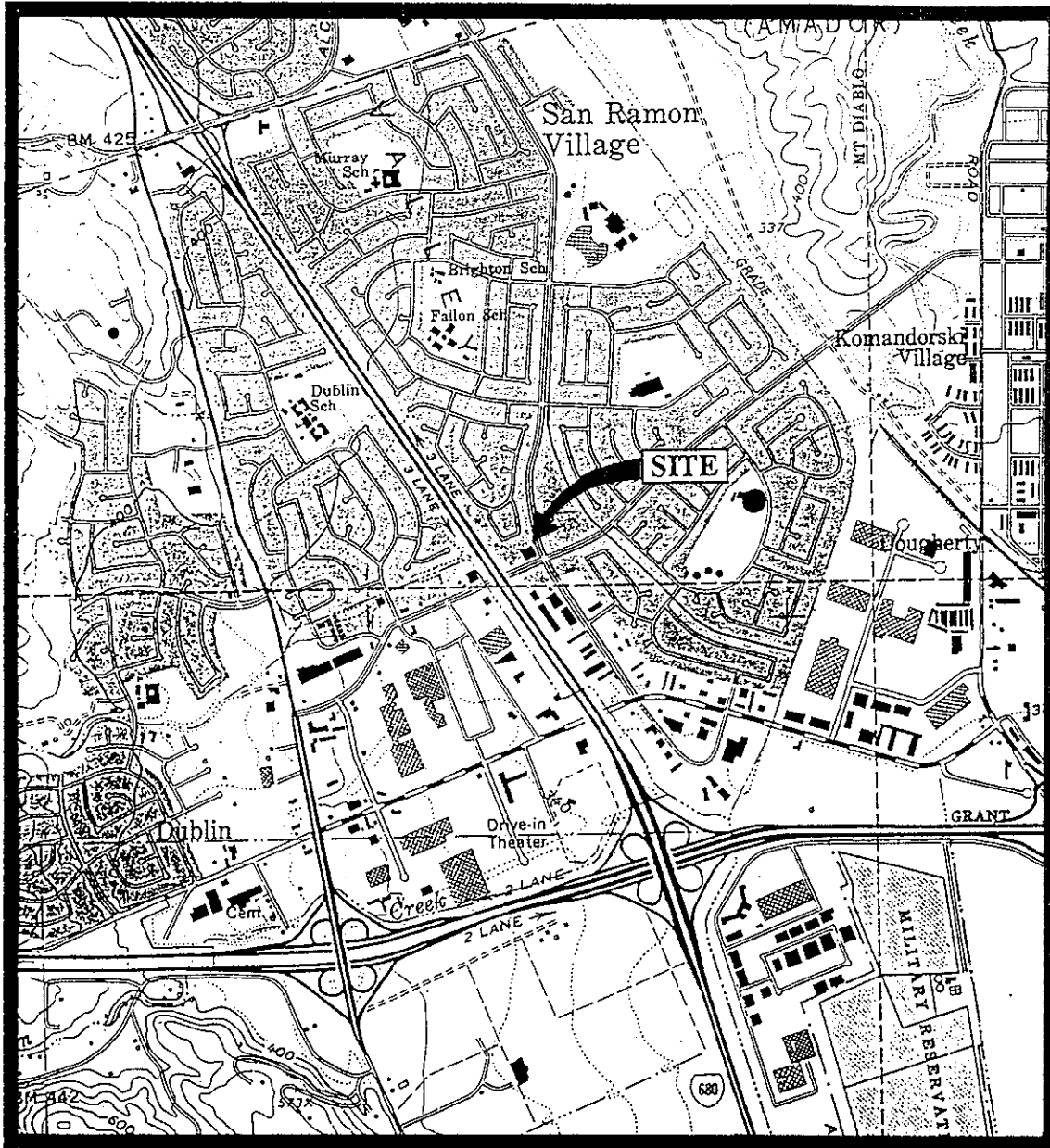
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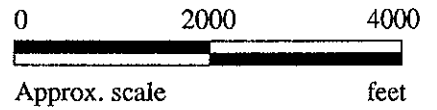
Timothy R. Ross  
Project Manager

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Attachments: Location Map  
Figure 1  
Proposed Well Construction Diagram



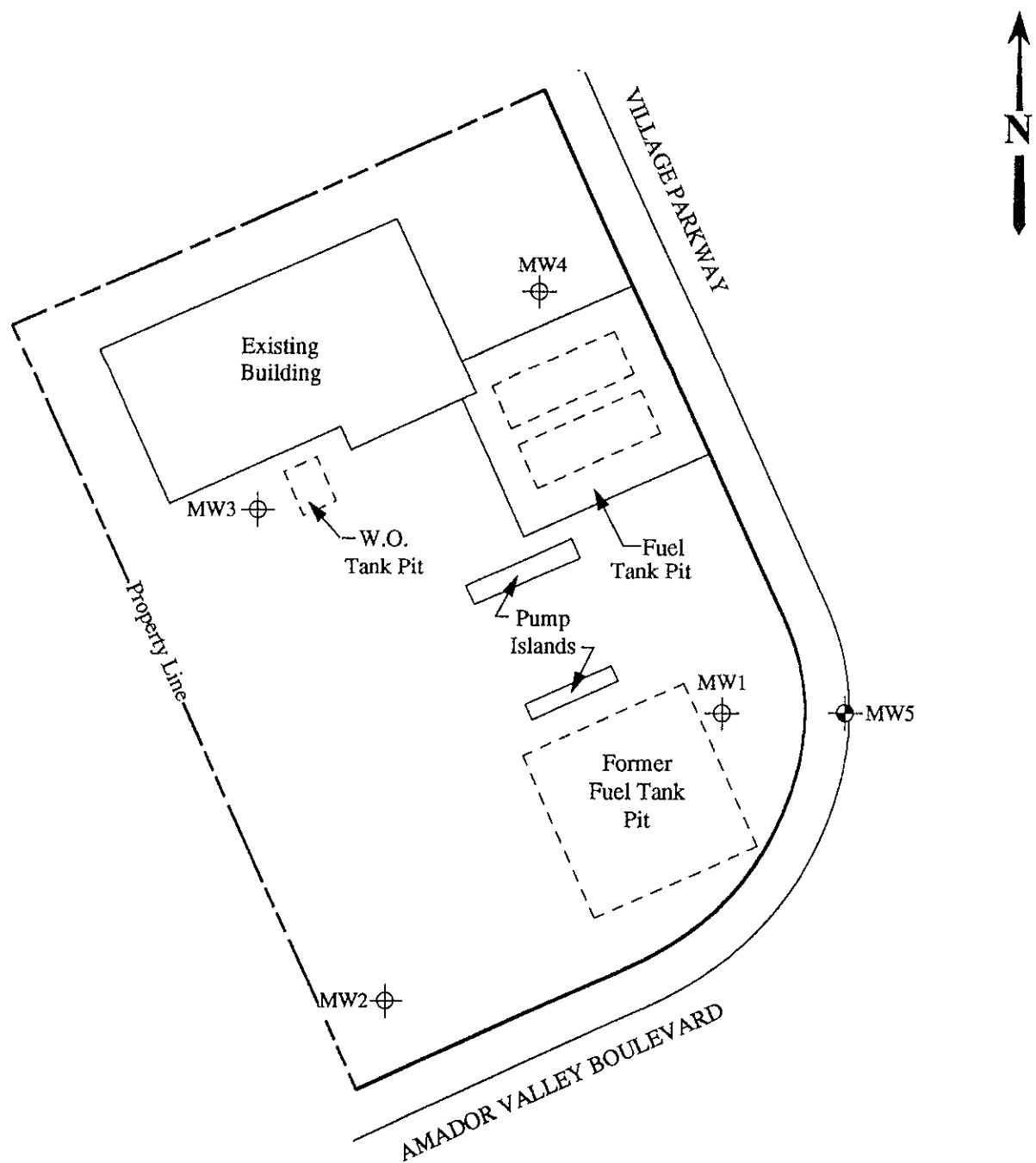
Base modified from 7.5 minute U.S.G.S. Dublin Quadrangle  
(photorevised 1980)



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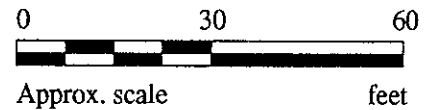
**UNOCAL SERVICE STATION #5366  
7375 AMADOR VALLEY BLVD.  
DUBLIN, CA**

**LOCATION  
MAP**



**LEGEND**

- ⊕ Monitoring well (existing)
- ⊙ Monitoring well (proposed)



**LOCATION OF EXISTING AND PROPOSED MONITORING WELLS**



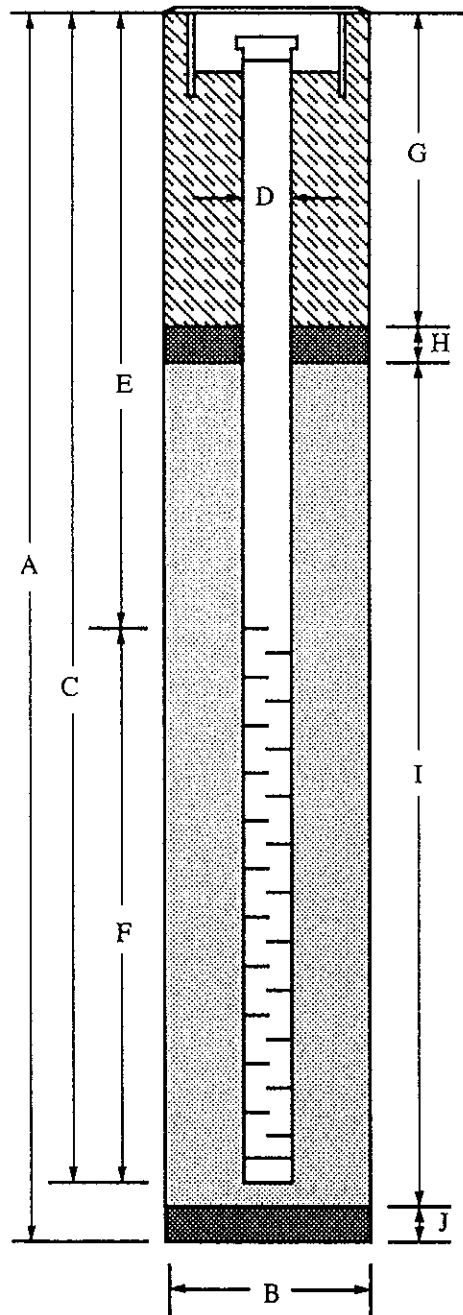
**UNOCAL SERVICE STATION #5366  
7375 AMADOR VALLEY BLVD.  
DUBLIN, CA**

**FIGURE  
1**



## PROPOSED WELL CONSTRUCTION DIAGRAM

Flush-mounted Well Cover



### WELL DETAILS\*

1. Well will be terminated 10 feet into the first encountered ground water, unless an aquitard five feet or greater in thickness is encountered below the water table, in which case the bottom of the boring will be backfilled with bentonite pellets and the well terminated at the top of this aquitard [A].
2. Boring diameter [B] is 8 inches for 2 inch wells, 10 inches for 4 inch wells, and 12 inches for 6 inch wells.
3. Perforated interval [F] will extend from bottom of casing to five feet above the first encountered ground water table (unless water <5 feet deep).
4. Schedule 40 PVC casing, 2 inch in diameter [D], will be used. 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 to two feet 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.