KAPREALIAN ENGINEERING, INC.
Consulting Engineers
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KEI-P89-1106.P2
January 8, 1990

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

Attention: Mr. Tim Ross

RE: Work Plan/Proposal
Unocal Service Station #3072
2445 Castro Valley Blvd.
Castro Valley, California

I. INTRODUCTION

This work plan for Phase II subsurface investigation is prepared in accordance with requirements and format of the San Francisco Bay "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks". A copy of the guidelines is attached with this work plan. All work will be performed under the direct supervision of Mr. Don Braun, Certified Engineering Geologist #1310, expiration date 6/30/90.

A. Statement of Scope of Work

The scope of work in this work plan/proposal entails defining the extent of subsurface contamination at the site.

B. Site Location

The service station site occupies the southwest corner at the intersection of Castro Valley Boulevard and Strobridge Avenue in Castro Valley, California. A Site Location Map and Site Plan are attached.

C. Background

On November 14, 1989, Kaprealian Engineering, Inc. (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 wer—

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, TOG, EPA method 8010, 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. Soil sample point locations are shown on the attached Site Plan, Figure 1. Laboratory results are summarized in Tables 1 and 2. Laboratory analyses and Chain of Custody documentation are also attached.

On November 28, 1989, KEI returned to the site to meet with the representative of the Alameda County Health Agency (ACHA) to clarify ACHA 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 ACHA in a letter dated December 8, 1989.

On December 22, 1989, KEI returned to the site to collect additional sidewall soil samples after further excavation. 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. Results of the laboratory analyses are summarized in Table 3. Laboratory analyses and Chain of Custody documentation are attached. The additional areas excavated and sample point locations are as shown on the attached Site Plan, Figure 2.

C. Site History

1. The site is used as a gasoline station. Three 10,000 gallon capacity fuel tanks and one 550 gallon waste oil tank were at the site prior to their removal on November 14, 1989.

2. No previous businesses at the site are known to KEI.

3. a. Three underground fuel tanks and one waste oil tank were removed from the site on November 14, 1989. All of the tanks were made of steel. The fuel tanks were each 10,000 gallons in capacity, and contained regular unleaded gasoline, super unleaded gasoline and diesel. The waste oil tank was 550 gallons in capacity and contained waste oil.

   b. The tanks were removed on November 14, 1989. Two small holes, one approximately 3/8 inch diameter, and the other approximately 1/32 inch by 1/4 inch in size, were observed in the regular unleaded gasoline tank. Extensive pitting, but no holes were observed in the super unleaded gasoline tank. The diesel tank had been treated and wrapped prior to installation, and it was therefore impossible to assess

the condition of the tank at the time of removal. No apparent cracks or holes were observed in the waste oil tank.

c. Tank removal was performed by Paradiso Construction, Inc. of Oakland, California. For tank removal documentation and associated manifests, the reader is referred to Paradiso Construction, Inc.

d. An Unauthorized Release form dated 11/21/89 was filed with the ACHA. A copy of the Unauthorized Release form is attached with this work plan.

e. No tank testing results or inventory reconciliation methods or results for this site are known to KEI at this time.

f. An unknown quantity of petroleum hydrocarbons was released into the subsurface environment.

4. No other leaks, spills or previously removed tanks at the site are known to KEI.

5. No previous subsurface work at the site or adjacent sites is known to KEI.

II. SITE DESCRIPTION

A. Vicinity Description and Hydrogeologic Setting

The subject site is developed and contains a Union 76 Service Station and auto care facility. The former underground tanks at the station have been recently removed resulting in a relatively large excavation.

The site is located adjacent to and south of Castro Valley Boulevard, and west of Strobridge Avenue in Castro Valley, California. In addition, the site is located approximately 400 feet north of Highway 580.

The immediate vicinity of the subject property is generally developed with commercial facilities.

The hydrogeologic setting of the site is anticipated to be complex due to the close proximity of the Hayward and East Chabot Faults, which typically can form ground

water barriers. The depth to ground water, based on standing water level in the tank pit, is approximately 13 feet below grade. Ground water gradient and direction of flow are presently unknown.

B. & C. Vicinity Map

A Site Location Map and four Site Plans showing various features of the site are attached with this work plan. Figure 4 shows the locations of subsurface utilities, the former tank locations and affiliated piping. No wells are known to KEI to be located on or near the site.

D. Existing Soil Contamination and Excavation Results

1. Soil sample collection associated with the removal of the fuel tanks and waste oil tank was performed in the following manner:

   The collection of the water sample and all soil samples taken November 16 and December 22, 1989, was witnessed by ACHA personnel. The undisturbed samples were collected from bulk material excavated by backhoe. The samples were placed in clean, two-inch diameter brass tubes, sealed with aluminum foil, and plastic caps, and either stored in a cooler on ice prior to delivery to a state-certified laboratory, or analyzed on-site by a mobile state-certified laboratory.

2. Ground water was encountered in the tank pit at a depth of approximately 11.5 feet. When water was pumped from the pit, the water level did not return to its original level.

3. As exposed in the underground tank pit excavation, the earth materials at 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). In addition, the site is situated east of the

active Hayward Fault, and west of and closely adjacent to the East Chabot Fault.

4. Soil sample collection locations associated with the tank pit are shown on the attached Site Plans, Figures 1 and 2.

   Soil samples were collected by Mr. Richard Bradish of KEI. Tabulated soil and water sample analytical results are provided in Tables 1, 2 and 3. Sample collection locations are shown on the attached Site Plans, Figures 1 and 2. Copies of the signed laboratory data sheets are attached with this work plan.

5. Any known subsurface conduits or utilities are identified on the attached Site Plan, Figure 3.

6. No unusual problems were encountered at the site.

7. All soil excavated, as described in KEI's Phase I work plan, is currently stockpiled on-site for further sampling to determine appropriate disposition.

   The soil is covered with visqueen to prevent any dust or potential run-off hazards. Part of the soil (approximately 700 cubic yards) excavated prior to work performed, as part of KEI's Phase I work plan, was disposed of at a Class III landfill.

8. All required permits for tank removal were acquired by Paradiso Construction, Inc. of Oakland. For copies of such permits, the reader is referred to Paradiso Construction, Inc.

III. PLAN FOR DETERMINING EXTENT OF SOIL CONTAMINATION ON-SITE

A. Method/Technique for Determining Extent of Contamination within the Excavation

The extent of contamination was determined within the excavation by collecting soil samples from the bottom and sidewalls of the pit as described in sections I. C. and II. D. 1. above.

B. 2. KEI proposes the installation of soil borings to determine the extent of soil contamination.

a. The locations of nine exploratory soil borings, designated as EB1 through EB9, are shown on the attached Site Plan, Figure 4.

b. The soil borings will be extended until ground water or auger refusal are encountered.

c. & d.

The soil borings will be drilled using a truck mounted hollow stem auger drill rig.

Soil samples will be collected at five foot intervals or changes in lithology beginning at a depth of five feet. Sampling will continue until the first water table is encountered. Classification of soil will be done using the Unified Soil 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. The samples will be removed from the sampler, retained in the brass liners, and sealed with aluminum foil, plastic caps and tape. They will be labeled and stored in a cooler on ice for delivery to a state certified laboratory.

California modified split-spoon samplers and brass tubes will be decontaminated prior to each use with a trisodium phosphate solution wash followed by a clean water rinse. Hollow stem augers will be steam cleaned prior to each use. Steam cleaning will be performed on visqueen. Water from the steam cleaning will be contained on the visqueen and placed in DOT-approved 55-gallon drums, pending appropriate disposal.

e. Soil borings will be filled to the surface using a neat cement grout.

C. Soil excavated during subsurface investigation will be stockpiled and covered with visqueen on-site. Composite samples will be collected to determine appropriate disposal.

D. Security measures for open excavations are administered by Paradiso Construction, Inc.

IV. PLAN FOR DETERMINING GROUND WATER CONTAMINATION

A. Placement and Rationale for Location of Monitoring Wells

To begin to define the extent of ground water contamination, KEI proposes the installation of four (4) monitoring wells. The locations of the wells will be determined once soil samples have been collected from the soil borings and soil sample results evaluated.

B. Drilling Method for Construction of Monitoring Wells, including Decontamination Procedures

KEI proposes to install four two-inch diameter monitoring wells using truck mounted eight-inch outside diameter hollow stem auger drilling equipment. Permits will be obtained from the ~~ACHA~~ ACPWCD-Zone 7 as necessary prior to beginning work.

The wells will be drilled 15 feet into the saturated zone of the first encountered ground water unless a five foot thick clay aquitard is encountered first, at which time drilling will be terminated.

The borings will be sampled in the manner as described in section III. B. 2. c. & d. above. The wells will be constructed in the following manner:

Casing Type: Schedule 40 PVC, flush threaded joints, 0.02 inch factory slot, two-inch diameter. Screen to run from total depth of the well to approximately 5 feet above first encountered ground water. Monterey sand (#3) will fill the annular space from total depth to 2 feet above the screened interval. A two foot thick bentonite seal will be placed in the annular space on top of the sand pack. Concrete will be poured from the 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 the casing. A typical well construction diagram is attached to this work plan.

Drilled cuttings will be stored on-site in DOT-approved, 55-gallon drums, or under visqueen, until appropriate disposal can be determined.

Casing elevations will be surveyed to an established benchmark and to an accuracy of 0.01 feet.

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 barrels and hauled from the site by a licensed hazardous waste hauler.

C. Ground Water Sampling Plans

Wells will be checked for depth to the water table, the presence of free product and sheen (using an interface probe and/or paste tape) prior to both development and sampling. Water levels will be measured with an electronic sounder or paste tape.

The wells will be purged with a surface bailer of a minimum of four casing volumes prior to sampling, at least 24 hours after development. Samples will be collected using a clean Teflon bailer and will be 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 in a cooler on ice for delivery to a state certified laboratory. Properly executed chain of custody documentation will accompany all samples. The sampling bailer will be cleaned with soap and a clean water rinse prior to each use.

Selected soil and all water samples will be analyzed by Sequoia Analytical Laboratory in Redwood City, California, a state certified laboratory, for TPH as gasoline and BTX&E using EPA analytical methods (EPA 5030/8015/-8020) as recommended by the RWQCB, and specified in the Tri-regional guidelines.

For quality assurance purposes, one duplicate water sample will be collected from one well during each sampling event.

Analytical results will be presented in tabular form, showing sample depths, results and detection limits. The results will be used to delineate the vertical and lateral extent of the subsurface contaminants. A cross sectional profile will be constructed as appropriate showing subsurface lithology to depth drilled and first water table depth.

If petroleum hydrocarbons in excess of action levels, as set by the regulatory agencies, are found in the soil during well installation, additional monitoring wells and/or borings will be proposed and installed until zero-lines for soil and ground water contamination are defined.

V. SITE SAFETY PLAN

A Site Safety Plan is attached with this work plan.

A report documenting field activities and sample results will be submitted within 45 days after the completion of the field work. The report will set out the collected information in an orderly fashion, and include any recommendations for additional needed work.

PHASE III

Phase III will discuss the alternatives for continuing the subsurface investigation if Phase II reveals contamination levels in the ground water significantly in excess of action levels.

Phase III will include a proposal for additional monitoring wells to define a zero line of ground water contamination. It will also propose a ground water monitoring and sampling program for the wells installed during Phase II.

The main purpose of Phase III will be to establish a zero line of ground water contamination. The proposal/work plan will be submitted to the regulatory agencies.

PHASE IV

Once the zero line is established through the completion of Phase III, a final remedial plan will be developed. This plan will also be submitted.

Interpretations of the subsurface stratigraphy will be used in consideration of various remedial options.

PHASE V

Implementation of the remediation plan.

Sincerely,

Kaprealian Engineering, Inc.

Don R. Braun
Certified Engineering Geologist

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

Attachments: Tables 1, 2 & 3
Guidelines for Work Plan Preparation
Site Location Map
Site Plans - Figures 1, 2, 3 & 4
Laboratory Analyses
Chain of Custody documentation
Unauthorized Release Form
Well Construction Diagram
Site Safety Plan

KEI-P89-1106.P2
January 8, 1990

TABLE 1

SUMMARY OF LABORATORY ANALYSES
SOIL

(Results in ppm)
(Samples collected on November 14 & 16, 1989)

Sample	Depth (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
A1	13.5	ND	2.4	ND	ND	ND	ND
A2	13.5	ND	ND	ND	ND	ND	ND
B1	13.5	--	1.9	ND	ND	ND	ND
B2	13.5	--	11	ND	ND	ND	ND
C1	13.5	--	1.5	ND	ND	ND	ND
C2	13.5	--	7.5	ND	ND	ND	ND
SW1	10.5	--	140	0.31	0.12	3.0	0.88
SW2	10.5	ND	ND	ND	ND	ND	ND
SW3	10.5	ND	ND	ND	ND	ND	ND
SW4	9.5	24	160	0.33	6.4	30	9.4
SW5	9.5	--	3.5	0.06	0.27	0.76	0.19
SW6	10	--	29	0.12	0.21	2.0	0.58
WO1(11)*	11	ND	5.9	ND	ND	ND	ND
Detection Limits		1.0	1.0	0.05	0.1	0.1	0.1

* TOG and all 8270 constituents were non-detectable. All 8010 constituents were non-detectable except 1,1-dichloroethene at 55 ppb. Metals concentrations were as follows: cadmium 2.5 ppm, chromium 39 ppm, lead 1.1 ppm, and zinc 45 ppm.

ND = Non-detectable.

KEI-P89-1106.P2
January 8, 1990

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

(Results in ppb)
(Sample collected on November 16, 1989)

Sample #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
W1	11,000	26,000	670	1,100	9,100	120
Detection Limits	50.0	30.0	0.3	0.3	0.3	0.3

ND = Non-detectable.

KEI-P89-1106.P2
January 8, 1990

TABLE 3

SUMMARY OF LABORATORY ANALYSES
SOIL

(Results in ppm)
(Samples collected on December 22, 1989)

Sample	Depth (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
SW1(17)	11	ND	1,900	14	24	120	28
SW2(17)	11	ND	1,500	17	29	92	23
SW7	9	ND	1,700	16	33	110	26
SW8	9	ND	200	2.6	0.9	7.7	5.0
SW3(13)	9	ND	690	11	11	28	11
SW9	9	ND	3.0	0.2	0.1	0.1	ND
SW10	9	ND	500	4.0	5.9	22	6.9
SW4(11)	9	ND	410	2.7	3.9	19	3.8
Detection Limits		1.0	1.0	0.1	0.1	0.1	0.1

ND = Non-detectable.

Appendix A

Workplan for Initial Subsurface Investigation

There are a large number of initial site investigations related to unauthorized releases of fuel products. The number of workplans and reports to be reviewed and approved require that these documents have uniform organization and content. The purpose of this appendix is to present an outline to be followed by professional engineering or geologic consultants in preparing workplans to be submitted for approval to the Regional Board and local agencies.

A statement of qualifications and registration number for the California registered engineer and/or registered geologist responsible for the project will need to be included with the submitted workplan and reports.

This appendix should be referred to in context with the "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks".

PROPOSAL FORMAT

I. Introduction

A. Statement of Scope of Work

B. Site location

C. Background

D. Site History

1. Brief description of the type of business and associated activities that take place at the site, including the number and capacity of operating tanks.

2. Description of previous businesses at the site.

3. Complete description of tank activities, tank contents, and tank removal.

a. Number of underground tanks, uses, etc. (include the volume of each tank, construction material, and tank condition)

b. Date of tank removal and condition of tank.

c. Description of all waste removal, including copies of all manifests.

d. Filing status and copy of unauthorized release form, if not previously submitted.

e. Previous tank testing results and date. Include discussion of inventory reconciliation methods and results for previous three years.

f. Estimate of the total quantity of product lost.

4. Other spill, leak and accident history at the site, including any previously removed tanks.

5. Describe any previous subsurface work at the site or adjacent sites.

II. Site Description

A. Vicinity description and hydrogeologic setting.

B. Vicinity map (including wells located on-site or on adjoining lots, as well as any nearby streams).

C. Site map to include:

1. Adjacent streets.

2. Site building locations.

3. Tank locations.

4. Island locations and piping to pumps from tanks.

5. Any known subsurface conduits, underground utilities, etc.

D. Existing soil contamination and excavation results.

1. Provide sampling procedures used.

2. Indicate depth to groundwater, if encountered.

3. Describe soil strata encountered in excavation.

4. Provide results in tabular form and location of all soil sampling (and water sampling, if appropriate). The date sampled, the identity of the sampler, and signed laboratory data sheets need to be included.

5. Identify underground utilities

6. Describe any unusual problems encountered.

7. Completely describe methods for storing and disposal of all contaminated soil.

8. Reference all required permits, including those issued by the Air Quality Management District and local underground tank permitting agency.

III. Plan for determining extent of soil contamination on site.

A. Describe method/technique for determining extent of contamination within the excavation.

B. Describe sampling methods and procedures to be used.

1. If a soil gas survey is planned, then:

a. Identify number of boreholes, location, sampling depth, etc.

b. Identify subcontractors, if any

c. Identify methods or techniques used for analysis

d. Provide quality assurance plan for field testing

2. If soil borings are to be used to determine the extent of soil contamination, then:

a. Identify number and location (mapped) of proposed borings.

b. Describe depth of borings

c. Describe soil classification system, soil sampling method and rationale

d. Describe boring drilling method, including decontamination procedures.

e. Describe boring abandonment method

C. Describe method and criteria for screening clean versus contaminated soil, including a complete description of procedures to be used for storing and disposal of any excavated soil. If on-site soil aeration is to be utilized, then a complete description of the treatment method is required:

1. Volume and rate of aeration/turning.

2. Method of containment and cover

3. Wet weather contingency plans.

Other on-site treatments (such as bioremediation) requires permits issued by the Regional Board. Off-site storage or treatment also requires permits issued bY the Regional Board.

D. Security measures planned for excavated hole and contaminated soil (i.e., six foot fence around hole, ripped up piping,m spoil piles, etc.)

IV. Plan for determining groundwater contamination.

Construction and placement of wells should adhere to the requirements of the "Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks". If the verified down gradient location has been established, then a complete description of the rationale must be provided. — 1858

A. Placement and rationale for location of monitoring wells, including a map to scale.

B. Drilling method for construction of monitoring wells, including decontamination procedures.

1. Expected depth and diameter of monitoring wells

2. Date of expected drilling.

3. Method and location of soil sampling of borings.

4. Casing type, diameter, screen interval, and pack and slot sizing technique.

5. Depth and type of seal.

6. Construction diagram for wells.

7. Development method and criteria for determination of adequacy of development.

8. Plans for disposal of cuttings and development water.

9. Surveying plans for wells (requirements include surveying to established benchmark to Ø.Ø1 foot)

C. Groundwater sampling plans (include plans for sampling and on-site domestic wells)

1. Water level measurement procedure

2. Methods for free product measurement, observation of sheen and odor.

3. Well purging procedures.

4. Well purge water disposal plans.

5. Sample collection procedures.

6. Sample analyses to be used

7. Quality assurance plan

8. Chain of custody procedures

V. Include a site safety plan

A report will need to be submitted following collection of the information proposed and approved in the workplan. The report should set out the collected information in an orderly fashion and include any recommendations for additional needed work.

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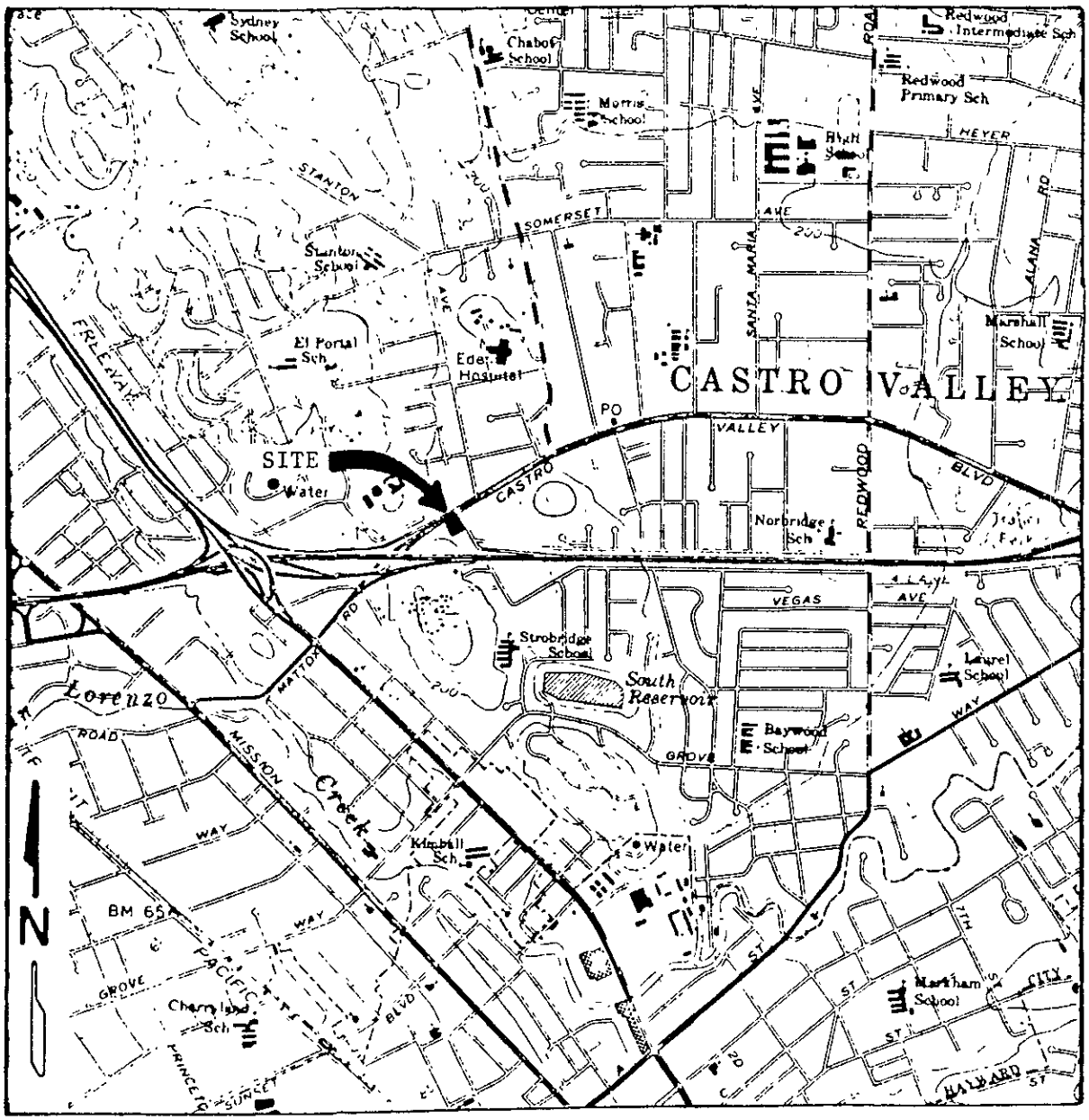

LOCATION MAP

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

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
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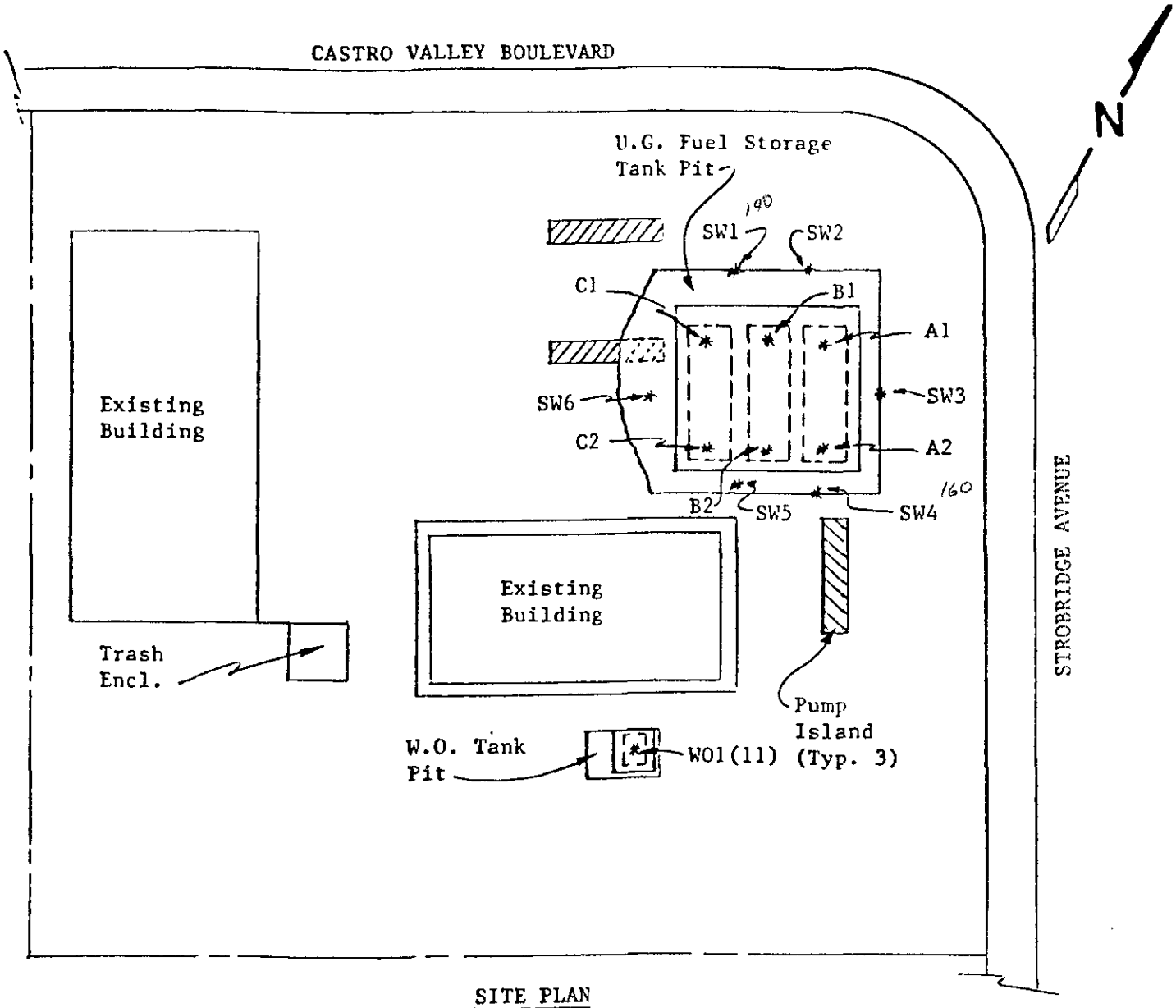

SITE PLAN
(Figure 1)

LEGEND

* Sample Point Location

Unocal S/S #3072
2445 Castro Valley Blvd.
Castro Valley, CA

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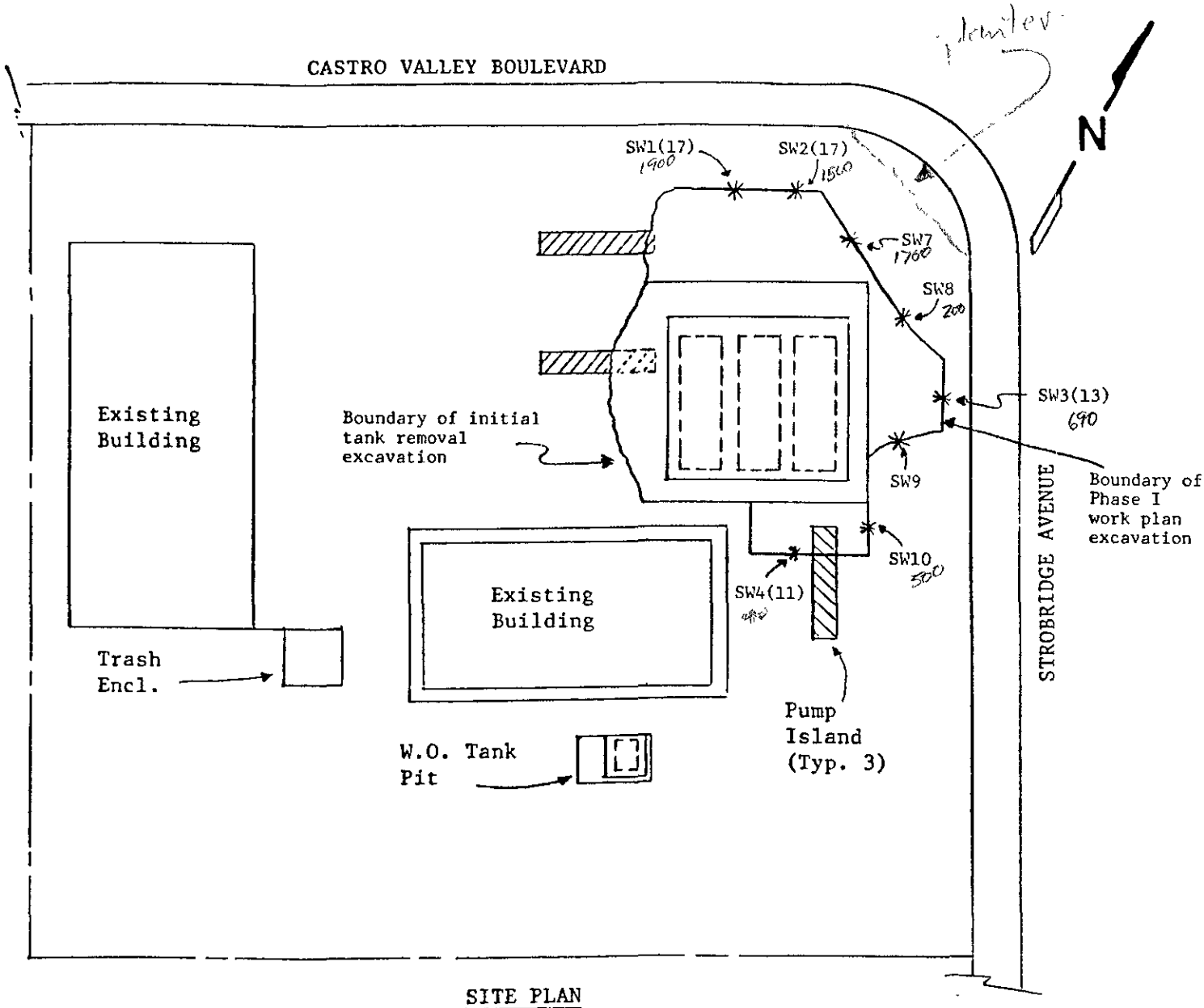

SITE PLAN
Figure 2

30 0 30
Approx. Scale feet

LEGEND

* Sample Point Location

Unocal S/S #3072
2445 Castro Valley Blvd.
Castro Valley, CA

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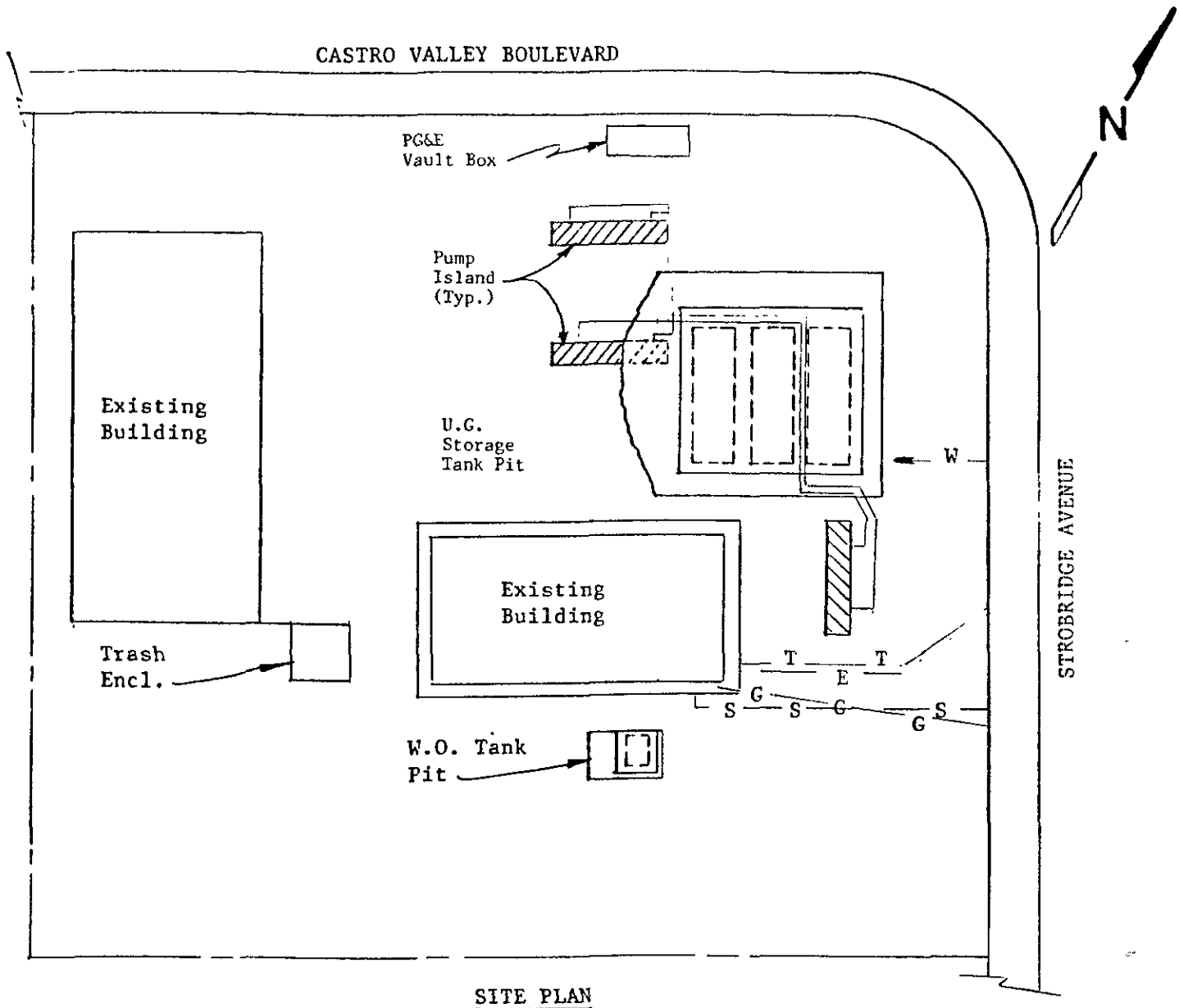

SITE PLAN
(Figure 3)

30 0 30
Approx. Scale feet

LEGEND

W Water Utility
T Telephone Utility
G Gas Utility
S Sewer Utility

Unocal S/S #3072
2445 Castro Valley Blvd.
Castro Valley, CA

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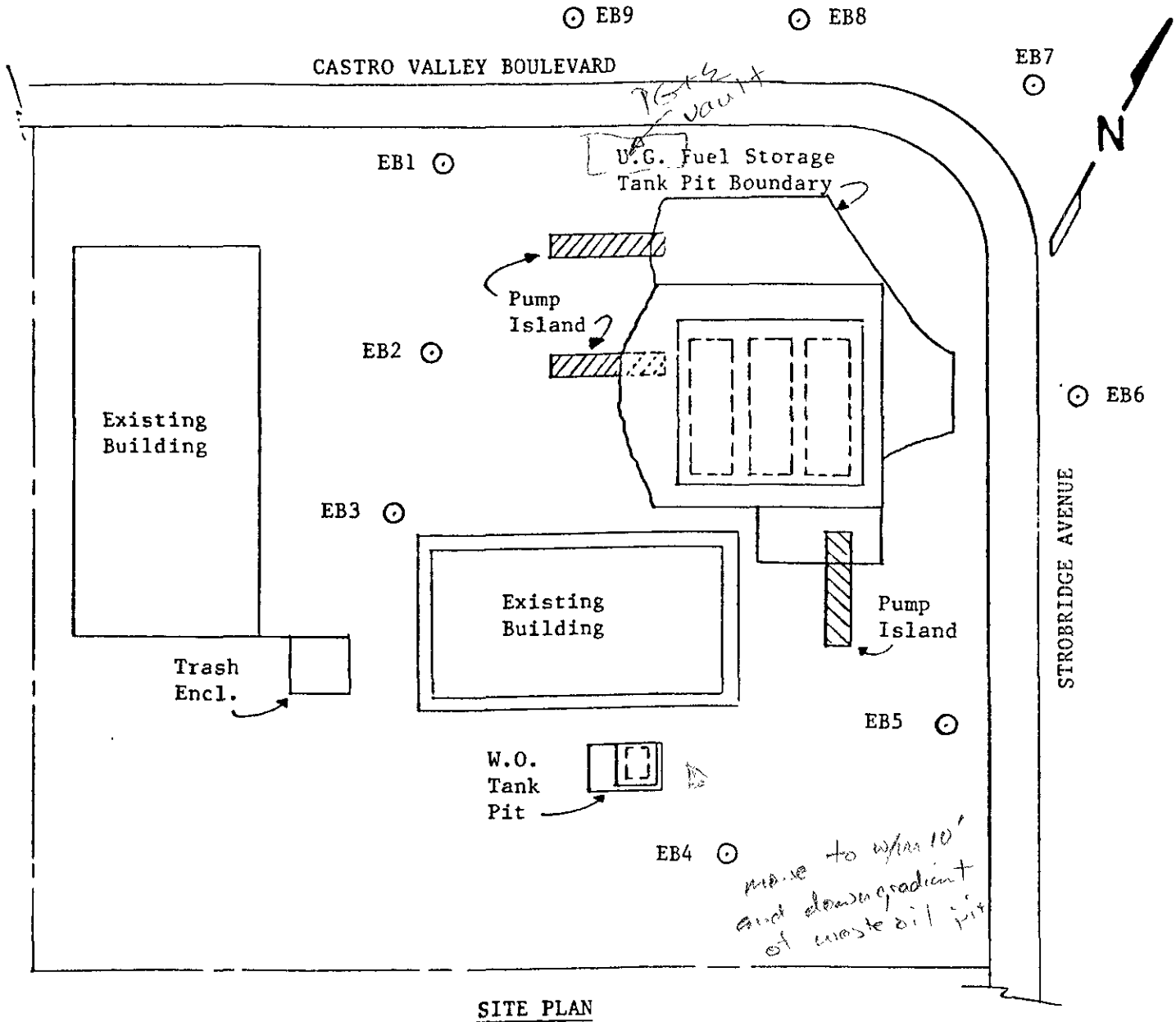

SITE PLAN
(Figure 4)

30 0 30
scale feet

LEGEND

⊙ Proposed Soil Boring

Unocal S/S #3072
2445 Castro Valley Blvd.
Castro Valley, CA

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	Sampled:	Nov 14, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Nov 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Nov 15, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	911-1771	Reported:	Nov 20, 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)
911-1771	A1	2.4	N.D.	N.D.	N.D.	N.D.
911-1772	A2	N.D.	N.D.	N.D.	N.D.	N.D.
911-1773	B1	1.9	N.D.	N.D.	N.D.	N.D.
911-1774	B2	11	N.D.	N.D.	N.D.	N.D.
911-1775	C1	1.5	N.D.	N.D.	N.D.	N.D.
911-1776	C2	7.5	N.D.	N.D.	N.D.	0.10
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.
P.O. Box 913
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, Castro Valley
Matrix Descript: Soil
Analysis Method: EPA 3550/8015
First Sample #: 911-1771

Sampled: Nov 14, 1989
Received: Nov 15, 1989
Extracted: Nov 15, 1989
Analyzed: Nov 15, 1989
Reported: Nov 20, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
911-1771	A1	N.D.
911-1772	A2	N.D.

Detection Limits:	1.0

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

Belinda C. Vega
Project Manager

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: K. M. Bradish

WITNESSING AGENCY: —

SITE NAME & ADDRESS: Unocal, Castro Valley & Strobridge, Castro Valley, CA

TURN AROUND TIME: 24 HR

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH-G & BTXE	TPH-D	REMARKS
A1	11/14/89		✓		✓		1	FUEL TK PIT – BTM	✓	✓	
A2	"		✓		✓		1	" " " "	✓	✓	
B1	"		✓		✓		1	" " " "	✓		
B2	"		✓		✓		1	" " " "	✓		
C1	"		✓		✓		1	" " " "	✓		
C2	"		✓		✓		1	" " " "	✓		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
K. M. Bradish	11/15/89 925	Tim McLain
Tim McLain		
	11/15 11:10 a.m.	B.L. O'Connor

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

1. Have all samples received for analysis been stored in ice? Y
2. Will samples remain refrigerated until analyzed? Y
3. Did any samples received for analysis have head space? N
4. Were samples in appropriate containers and properly packaged? Y

BW (Signature) Sample (Title) 11-15 (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	Sampled:	Nov 16, 1989
P.O. Box 913	Matrix Descript:	Soil, SW1 thru SW6	Received:	Nov 17, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Nov 17, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	911-2338	Reported:	Nov 20, 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)
911-2338	SW1	140	0.31	0.12	0.88	3.0
911-2339	SW2	N.D.	N.D.	N.D.	N.D.	N.D.
911-2340	SW3	N.D.	N.D.	N.D.	N.D.	N.D.
911-2341	SW4	160	0.33	6.4	9.4	30
911-2342	SW5	3.5	0.06	0.27	0.19	0.76
911-2343	SW6	29	0.12	0.21	0.58	2.0
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

Kapreallan Engineering, Inc.	Client Project ID:	Unocal, Castro Valley	Sampled:	Nov 16, 1989
P.O. Box 913	Matrix Descript:	Soil, SW2 thru SW4	Received:	Nov 17, 1989
Benicia, CA 94510	Analysis Method:	EPA 3550/8015	Extracted:	Nov 18, 1989
Attention: Mardo Kapreallan, P.E.	First Sample #:	911-2339	Analyzed:	Nov 18, 1989
			Reported:	Nov 20, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
911-2339	SW2	N.D.
911-2340	SW3	N.D.
911-2341	SW4	24

Detection Limits:	**1.0**

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

Belinda C. Vega
Project Manager

9112339.KEI <1>

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: K.M. Bradsel

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal, Castro Valley & Strobridge, Castro Valley, CA

ANALYSES REQUESTED: TPH-Gas BTXE; TPH-D

TURN AROUND TIME: 24 HR

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH-Gas BTXE	TPH-D	REMARKS
SW1	11/16/89		✓		✓		1	FUEL TK PIT SIDEWALLS	✓		9112338→43
SW2	"		✓		✓		1		✓	✓	
SW3	"		✓		✓		1		✓	✓	
SW4	"		✓		✓		1		✓	✓	
SW5	"		✓		✓		1		✓		
SW6	"		✓		✓		1		✓		

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
K.M. Bradsel	11/17/89 810	Tim McLain
Tim McLain	11/17/89 957	
	11-17-89 10:00 AM	David Norwood

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

D.N. (Signature) — S.R. (Title) — 11-17-89 (Date)

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

Kapreallan Engineering, Inc.	Client Project ID:	Unocal, Castro Valley	Sampled:	Nov 14, 1989
P.O. Box 913	Sample Descript.:	Soil, WO1 (11)	Received:	Nov 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Nov 21, 1989
Attention: Mardo Kapreallan, P.E.	Lab Number:	911-1788	Reported:	Nov 22, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION (EPA 8015/8020)

Analyte	Detection Limit mg/kg (ppm)	Sample Results mg/kg (ppm)
Low to Medium Boiling Point Hydrocarbons	1.0	5.9
Benzene	0.05	N.D.
Toluene	0.1	N.D.
Ethyl Benzene	0.1	N.D.
Xylenes	0.1	N.D.

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

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Castro Valley	Sampled:	Nov 14, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Nov 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 3550/8015	Extracted:	Nov 22, 1989
Attention: Mardo Kapreallan, P.E.	First Sample #:	911-1788	Analyzed:	Nov 22, 1989
			Reported:	Nov 22, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
911-1788	WO1 (11)	N.D.

Detection Limits:	1.0

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.

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Belinda C. Vega
Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Castro Valley	Sampled:	Nov 14, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Nov 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 418.1 (I.R. with clean-up)	Extracted:	Nov 16, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	911-1788	Analyzed:	Nov 16, 1989
			Reported:	Nov 22, 1989

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Petroleum Oil mg/kg (ppm)
911-1788	WO1 (11)	N.D.

Detection Limits:	1.0

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

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Belinda C. Vega
Project Manager

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(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Castro Valley	Sampled:	Nov 14, 1989
P.O. Box 913	Sample Descript:	Soil, WO1 (11)	Received:	Nov 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Nov 21, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	911-1788	Reported:	Nov 22, 1989

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Bromodichloromethane	5.0	N.D.
Bromoform	5.0	N.D.
Bromomethane	5.0	N.D.
Carbon tetrachloride	5.0	N.D.
Chlorobenzene	5.0	N.D.
Chloroethane	25.0	N.D.
2-Chloroethylvinyl ether	5.0	N.D.
Chloroform	5.0	N.D.
Chloromethane	5.0	N.D.
Dibromochloromethane	5.0	N.D.
1,2-Dichlorobenzene	10.0	N.D.
1,3-Dichlorobenzene	10.0	N.D.
1,4-Dichlorobenzene	10.0	N.D.
1,1-Dichloroethane	5.0	N.D.
1,2-Dichloroethane	5.0	N.D.
1,1-Dichloroethene	**5.0**	**55**
Total 1,2-Dichloroethene	5.0	N.D.
1,2-Dichloropropane	5.0	N.D.
cis-1,3-Dichloropropene	5.0	N.D.
trans-1,3-Dichloropropene	5.0	N.D.
Methylene chloride	10.0	N.D.
1,1,2,2-Tetrachloroethane	5.0	N.D.
Tetrachloroethene	5.0	N.D.
1,1,1-Trichloroethane	5.0	N.D.
1,1,2-Trichloroethane	5.0	N.D.
Trichloroethene	5.0	N.D.
Trichlorofluoromethane	5.0	N.D.
Vinyl chloride	10.0	N.D.

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

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Belinda C. Vega
Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Castro Valley	Sampled:	Nov 14, 1989
P.O. Box 913	Sample Descript:	Soil, WO1 (11)	Received:	Nov 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 8270		
Attention: Mardo Kaprealian, P.E.	Lab Number:	911-1788	Analyzed:	Nov 20, 1989
			Reported:	Nov 22, 1989

SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acenaphthene	100.0	N.D.
Acenaphthylene	100.0	N.D.
Aniline	100.0	N.D.
Anthracene	100.0	N.D.
Benzidine	2,500.0	N.D.
Benzoic Acid	500.0	N.D.
Benzo(a)anthracene	100.0	N.D.
Benzo(b)fluoranthene	100.0	N.D.
Benzo(k)fluoranthene	100.0	N.D.
Benzo(g,h,i)perylene	100.0	N.D.
Benzo(a)pyrene	100.0	N.D.
Benzyl alcohol	100.0	N.D.
Bis(2-chloroethoxy)methane	100.0	N.D.
Bis(2-chloroethyl)ether	100.0	N.D.
Bis(2-chloroisopropyl)ether	100.0	N.D.
Bis(2-ethylhexyl)phthalate	500.0	N.D.
4-Bromophenyl phenyl ether	100.0	N.D.
Butyl benzyl phthalate	100.0	N.D.
4-Chloroaniline	100.0	N.D.
2-Chloronaphthalene	100.0	N.D.
4-Chloro-3-methylphenol	100.0	N.D.
2-Chlorophenol	100.0	N.D.
4-Chlorophenyl phenyl ether	100.0	N.D.
Chrysene	100.0	N.D.
Dibenz(a,h)anthracene	100.0	N.D.
Dibenzofuran	100.0	N.D.
Di-N-butyl phthalate	500.0	N.D.
1,3-Dichlorobenzene	100.0	N.D.
1,4-Dichlorobenzene	100.0	N.D.
1,2-Dichlorobenzene	100.0	N.D.
3,3-Dichlorobenzidine	500.0	N.D.
2,4-Dichlorophenol	100.0	N.D.
Diethyl phthalate	100.0	N.D.
2,4-Dimethylphenol	100.0	N.D.
Dimethyl phthalate	100.0	N.D.
4,6-Dinitro-2-methylphenol	500.0	N.D.
2,4-Dinitrophenol	500.0	N.D.

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Castro Valley	Sampled:	Nov 14, 1989
P.O. Box 913	Sample Descript:	Soil, WO1 (11)	Received:	Nov 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 8270		
Attention: Mardo Kapreallan, P.E.	Lab Number:	911-1788	Analyzed:	Nov 20, 1989
			Reported:	Nov 22, 1989

SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
2,4-Dinitrotoluene	100.0	N.D.
2,6-Dinitrotoluene	100.0	N.D.
Di-N-octyl phthalate	100.0	N.D.
Fluoranthene	100.0	N.D.
Fluorene	100.0	N.D.
Hexachlorobenzene	100.0	N.D.
Hexachlorobutadiene	100.0	N.D.
Hexachlorocyclopentadiene	100.0	N.D.
Hexachloroethane	100.0	N.D.
Indeno(1,2,3-cd)pyrene	100.0	N.D.
Isophorone	100.0	N.D.
2-Methylnaphthalene	100.0	N.D.
2-Methylphenol	100.0	N.D.
4-Methylphenol	100.0	N.D.
Naphthalene	100.0	N.D.
2-Nitroaniline	500.0	N.D.
3-Nitroaniline	500.0	N.D.
4-Nitroaniline	500.0	N.D.
Nitrobenzene	100.0	N.D.
2-Nitrophenol	100.0	N.D.
4-Nitrophenol	500.0	N.D.
N-Nitrosodiphenylamine	100.0	N.D.
N-Nitroso-di-N-propylamine	100.0	N.D.
Pentachlorophenol	500.0	N.D.
Phenathrene	100.0	N.D.
Phenol	100.0	N.D.
Pyrene	100.0	N.D.
1,2,4-Trichlorobenzene	100.0	N.D.
2,4,5-Trichlorophenol	500.0	N.D.
2,4,6-Trichlorophenol	100.0	N.D.

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

SEQUOIA ANALYTICAL

Belinda C. Vega
Project Manager

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Castro Valley	Sampled:	Nov 14, 1989
P.O. Box 913	Sample Descript:	Soil, WO1 (11)	Received:	Nov 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 8270 & "Open Scan"		
Attention: Mardo Kaprealian, P.E.	Lab Number:	911-1788	Analyzed:	Nov 20, 1989
			Reported:	Nov 22, 1989

SEMI-VOLATILE ORGANICS by GC/MS, TENTATIVELY IDENTIFIED COMPOUNDS

Analyte	Detection Limit µg/kg	Sample Results µg/kg

No additional peaks > 250 µg/kg were identified by the Mass Spectral Library.

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Belinda C. Vega
Project Manager

Please Note:
All identifications are tentative and concentrations are estimates based upon spectral comparison to the EPA/NIH library. Positive identification or specification between isomers cannot be made without retention time standards.

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(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Castro Valley	Sampled:	Nov 14, 1989
P.O. Box 913	Sample Descript:	Soil, WO1 (11)	Received:	Nov 15, 1989
Benicia, CA 94510			Extracted:	Nov 21, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	911-1788	Analyzed:	Nov 21, 1989
			Reported:	Nov 22, 1989

LABORATORY ANALYSIS

Analyte	Detection Limit mg/kg	Sample Results mg/kg
Cadmium	0.5	2.5
Chromium	0.5	39
Lead	0.05	1.1
Zinc	0.5	45

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: L. M. Bradish
WITNESSING AGENCY:
SITE NAME & ADDRESS: Unocal - Castro Valley & Strobridge, Castro Valley

TURN AROUND TIME: 5 Day

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH-G & BTXE	TPH-D	TOG (418.1)	8010	8270 FOR PCP, PNA & CREOSOTE	METALS - Cd, Cr, Pb, Zn	REMARKS
W01(1)	4/14/89		✓		✓		1	W.O.T.E. Pit	✓	✓	✓	✓	✓	✓	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
L. M. Bradish	4/15/89 925	Tim McLaren
Tim McLaren	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time 11-15	Received by: (Signature) D. I Hl

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

1. Have all samples received for analysis been stored in ice? Y
2. Will samples remain refrigerated until analyzed? Y
3. Did any samples received for analysis have head space? Y N
4. Were samples in appropriate containers and properly packaged? Y

RAD Sample 11-15

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	Sampled:	Nov 16, 1989
P.O. Box 913	Sample Descript.:	Water, W1	Received:	Nov 17, 1989
Benlcla, CA 94510	Analysis Method:	EPA 5030/ 8015/8020	Analyzed:	Nov 20, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	911-2337 A-B	Reported:	Nov 20, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION (EPA 8015/8020)

Analyte	Detection Limit µg/L (ppb)	Sample Results µg/L (ppb)
Low to Medium Boiling Point Hydrocarbons	30.0	26,000
Benzene	0.3	670
Toluene	0.3	1,100
Ethyl Benzene	0.3	120
Xylenes	0.3	9,100

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	Sampled:	Nov 16, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Nov 17, 1989
Benicia, CA 94510	Analysis Method:	EPA 3510/8015	Extracted:	Nov 18, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	911-2337 C	Analyzed:	Nov 20, 1989
			Reported:	

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons µg/L (ppb)
9112337 C	W1	11,000

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

Belinda C. Vega
Project Manager

KAPREALIAN ENGINEERING, INC.

KEI

CHAIN OF CUSTODY

SAMPLER: R.M. Bradshaw

WITNESSING AGENCY:

SITE NAME & ADDRESS: Unocal, Castro Valley & Stanbridge, Castro Valley

TURN AROUND TIME: 24HR

[redacted]

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	ANALYSES REQUESTED: TPH-G & BTXE	TPH-D						REMARKS
W1	11/16/89			✓	✓		3: 1-Liter, 2 VOAs	Fuel TK Pit								

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
R.M. Bradshaw	11/17/89 810	Tim McLain
Tim McLain	11/17/89 / 957	
…shed by: (Signature)	Date/Time 10:00 AM …89	Received by: (Signature) David …

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	Title	Date
DN	SR	11-17-89

MOBILE CHEM LABS INC.

1678 Reliez Valley Road
Lafayette, CA 94549 • (415) 945-1266

Kaprealian Engineering, Inc.
P.O. BOX 913
Benicia, CA 94510
Attn: Mardo Kaprealian, P.E.
President

Date Sampled:12-22-89
Date Received:12-22-89
Date Reported:12-22-89

Sample Number	Sample Description	Detection Limit	Total Petroleum Hydrocarbons as Diesel
		ppm	ppm
	Unocal-S/S # 3072 2445 Castro Valley Blvd. Castro Valley		
V129044	SW2 (17)	<5	<5
V129045	SW7	<5	<5
V129046	SW8	<5	<5
V129047	SW3 (13)	<5	<5
V129048	SW9	<5	<5
V129049	SW10	<5	<5
V129050	SW4 (11)	<5	<5

Note: Analysis was performed using EPA methods 3550 and TPH LUFT

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

MOBILE CHEM LABS INC.

1678 Reliez Valley Road
Lafayette, CA 94549 • (415) 945-1266

Kaprealian Engineering, Inc.
P.O. BOX 913
Benicia, CA 94510
Attn: Mardo Kaprealian, P.E.
President

Date Sampled: 12-22-89
Date Received: 12-22-89
Date Reported: 12-22-89

Sample Number	Sample Description
V129043	Unocal - S/S # 3072 2445 Castro Valley Blvd. Castro Valley SW1 (17) SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	1,900
Benzene	0.1	14
Toluene	0.1	24
Xylenes	0.1	120
Ethylbenzene	0.1	28

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.

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Date Sampled: 12-22-89
Date Received: 12-22-89
Date Reported: 12-22-89

Sample Number	Sample Description
V129044	Unocal - S/S # 3072 2445 Castro Valley Blvd. Castro Valley
	SW2 (17) SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	1,500
Benzene	0.1	17
Toluene	0.1	29
Xylenes	0.1	92
Ethylbenzene	0.1	23

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.

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Attn: Mardo Kaprealian, P.E.
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Date Sampled: 12-22-89
Date Received: 12-22-89
Date Reported: 12-22-89

Sample Number	Sample Description
V129045	Unocal - S/S # 3072 2445 Castro Valley Blvd. Castro Valley

SW7 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	1,700
Benzene	0.1	16
Toluene	0.1	33
Xylenes	0.1	110
Ethylbenzene	0.1	26

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.

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Date Sampled:12-22-89
Date Received:12-22-89
Date Reported:12-22-89

Sample Number	Sample Description
V129046	Unocal - S/S # 3072 2445 Castro Valley Blvd. Castro Valley

SW8 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	200
Benzene	0.1	2.6
Toluene	0.1	0.9
Xylenes	0.1	7.7
Ethylbenzene	0.1	5.0

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for ETX distinction.

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Date Sampled: 12-22-89
Date Received: 12-22-89
Date Reported: 12-22-89

Sample Number	Sample Description
V129047	Unocal - S/S # 3072 2445 Castro Valley Blvd. Castro Valley
	SW3 (13) SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	690
Benzene	0.1	11
Toluene	0.1	11
Xylenes	0.1	28
Ethylbenzene	0.1	11

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.

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President

Date Sampled: 12-22-89
Date Received: 12-22-89
Date Reported: 12-22-89

Sample Number	Sample Description
V129048	Unocal - S/S # 3072 2445 Castro Valley Blvd. Castro Valley

SW9 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	3.0
Benzene	0.1	0.2
Toluene	0.1	0.1
Xylenes	0.1	0.1
Ethylbenzene	0.1	<0.1

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.

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President

Date Sampled:12-22-89
Date Received:12-22-89
Date Reported:12-22-89

Sample Number	Sample Description
V129049	Unocal - S/S # 3072 2445 Castro Valley Blvd. Castro Valley

SW10 SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	500
Benzene	0.1	4.0
Toluene	0.1	5.9
Xylenes	0.1	22
Ethylbenzene	0.1	6.9

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.

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Attn: Mardo Kaprealian, P.E.
President

Date Sampled: 12-22-89
Date Received: 12-22-89
Date Reported: 12-22-89

Sample Number	Sample Description
V129050	Unocal - S/S # 3072 2445 Castro Valley Blvd. Castro Valley

SW4 (11) SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1.0	410
Benzene	0.1	2.7
Toluene	0.1	3.9
Xylenes	0.1	19
Ethylbenzene	0.1	3.8

Note: Analysis was performed using EPA methods 5030 and TPH LUFT with method 8020 used for BTX distinction.

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

KEI

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: R. M. Bradish

WITNESSING AGENCY: SCOTT SEERY ACHA

SITE NAME & ADDRESS: Unocal S/S # 3072, 2445 Castro Valley Blvd, Castro Valley, CA

ANALYSES REQUESTED: TPH-G & BTXE (5030/8015/8020); TPH-D

TURN AROUND TIME: ON SITE

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH-G & BTXE (5030/8015/8020)	TPH-D						REMARKS
SW1(17)	12/22/89	10⁵⁰	✓		✓		1	FUEL TK PIT - SIDEWALL	✓							
SW2(17)	"	11⁰⁰	✓		✓		1	" " " "	✓	✓						
SW7	"	11¹⁵	✓		✓		1	" " " "	✓	✓						
SW8	"	11²⁵	✓		✓		1	" " " "	✓	✓						
SW3(13)	"	11⁴⁵	✓		✓		1	" " " "	✓	✓						
SW9	"	11⁵⁵	✓		✓		1	" " " "	✓	✓						
SW10	"	12⁰⁵	✓		✓		1	" " " "	✓	✓						
SW4(11)	"	12¹⁵	✓		✓		1	" " " "	✓	✓						

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
R. M. Bradish	12/22/89	A Evans MCL

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	Title	Date
A Evans	LAB DIR	12-22-89

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE ...

EMERGENCY: ☐ YES ☒ NO — HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☐ NO

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFTY CODE.
SIGNED _____ DATE _____

REPORT DATE: 11/21/89 — CASE #:

REPORTED BY
- NAME OF INDIVIDUAL FILING REPORT: Christina Lecce
- PHONE: (707) 746-6915
- SIGNATURE: Christina Lecce
- REPRESENTING: ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER
- COMPANY OR AGENCY NAME: Kaprealian Engineering, Inc.
- ADDRESS: 638½ First Street (STREET) Benicia (CITY) CA (STATE) 94510 (ZIP)

RESPONSIBLE PARTY
- NAME: Unocal Corporation ☐ UNKNOWN
- CONTACT PERSON: Tim Ross
- PHONE: (415) 945-7676
- ADDRESS: 2175 N. California Blvd., #650 (STREET) Walnut Creek (CITY) CA (STATE) 94596 (ZIP)

SITE LOCATION
- FACILITY NAME (IF APPLICABLE): Unocal Service Station #3072
- OPERATOR: Jagdish Moorjani
- PHONE: (415) 581-6700
- ADDRESS: 2445 Castro Valley Blvd. (STREET) Castro Valley (CITY) Alameda (COUNTY) 94546 (ZIP)
- CROSS STREET: Strobridge
- TYPE OF AREA: ☒ COMMERCIAL ☐ INDUSTRIAL ☐ RURAL ☐ RESIDENTIAL ☐ OTHER
- TYPE OF BUSINESS: ☒ RETAIL FUEL STATION ☐ FARM ☐ OTHER

IMPLEMENTING AGENCIES
- LOCAL AGENCY / AGENCY NAME: Alameda County Health Agency
- CONTACT PERSON: Thomas F. Peacock
- PHONE: (415) 271-4320
- REGIONAL BOARD: San Francisco Bay Region
- PHONE: (415) 464-1255

SUBSTANCES INVOLVED
- (1) NAME: gasoline, diesel — QUANTITY LOST (GALLONS): _____ ☒ UNKNOWN
- (2) waste oil — _____ ☒ UNKNOWN

DISCOVERY/ABATEMENT
- DATE DISCOVERED: 11/14/89
- HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER
- DATE DISCHARGE BEGAN: ☒ UNKNOWN
- METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): ☒ REMOVE CONTENTS ☒ REPLACE TANK ☐ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☐ OTHER
- HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE: 11/14/89

SOURCE/CAUSE
- SOURCE OF DISCHARGE: ☐ TANK LEAK ☒ UNKNOWN ☐ PIPING LEAK ☐ OTHER
- TANKS ONLY/CAPACITY: 3@10K & 1-550 GAL. AGE _____ YRS ☒ UNKNOWN
- MATERIAL: ☐ FIBERGLASS ☒ STEEL ☐ OTHER
- CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ CORROSION ☒ UNKNOWN ☐ SPILL ☐ OTHER

CASE TYPE
CHECK ONE ONLY: ☒ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

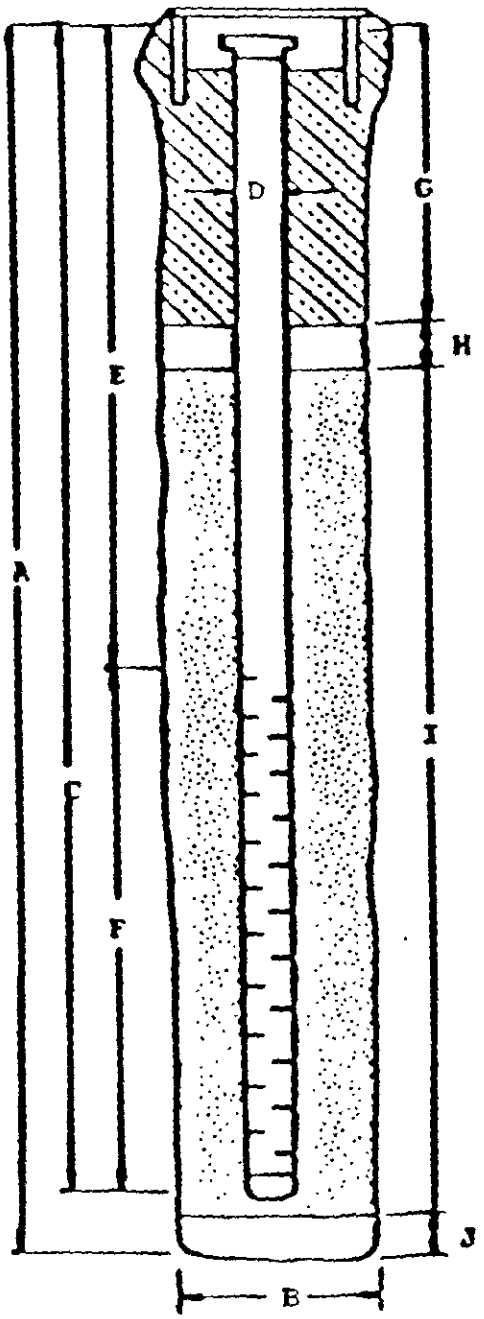
CURRENT STATUS
CHECK ONE ONLY: ☒ SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) ☐ CLEANUP IN PROGRESS ☐ SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) ☐ NO ACTION TAKEN ☐ POST CLEANUP MONITORING IN PROGRESS ☐ NO FUNDS AVAILABLE TO PROCEED ☐ EVALUATING CLEANUP ALTERNATIVES

REMEDIAL ACTION
CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
- ☐ CAP SITE (CD)
- ☒ EXCAVATE & DISPOSE (ED)
- ☐ REMOVE FREE PRODUCT (FP)
- ☐ ENHANCED BIO DEGRADATION (T)
- ☐ CONTAINMENT BARRIER (CB)
- ☒ EXCAVATE & TREAT (ET)
- ☐ PUMP & TREAT GROUNDWATER (GT)
- ☐ REPLACE SUPPLY (RS)
- ☐ TREATMENT AT HOOKUP (HU)
- ☐ NO ACTION REQUIRED (NA)
- ☒ OTHER (OT) Install monitoring wells

COMMENTS

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.) 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.

PARADISO CONSTRUCTION CO.

GENERAL & PETROLEUM CONTRACTORS

LICENSE NO. 259820
P.O. BOX 6397
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(415) 562-5511

SOIL AND GROUNDWATER SAMPLING PROCEDURE

Gasoline, Diesel and Waste Oil Tank Removal

Underground storage tanks require two soil samples per tank of 1000 gallon capacity or greater. Tanks of a smaller capacity require one sample per tank unless otherwise required by local agencies. Samples are collected at a depth of two feet below the tank backfill.

Soil samples from beneath gasoline storage tanks are analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline (low to medium boiling fraction) using EPA method 8020. Samples from beneath diesel fuel storage tanks are analyzed for TPH as diesel (high boiling fraction) using EPA methods 3550 and 8015.

If groundwater is encountered in a fuel tank pit, water sample is collected. The sample is collected in a glass VOA (Volatile Organic Analysis) vial, insuring that no head space remains in the vial. The vial is sealed with a Teflon-lined screw cap. Water from a gasoline tank pit is analyzed for TPH as gasoline and BTX using EPA methods 602 and 5030. Water samples from a diesel tank pit are analyzed for TPH as diesel and BTX using EPA methods 3510 and 8020.

Soil samples collected from beneath waste oil tanks are analyzed for TPH high boiling fraction, using EPA method 3550 and 8015; total oil and grease (TOG) using EPA extraction method 3550 and gravimetric determination method 8010 and 8020 or EPA method 8240. Groundwater samples collected are collected as described above and are analyzed for TPH, high boiling fraction using EPA methods 3510 and 8020, and volatile organic compounds using EPA method 6240.

The analysis for all soil and water samples are done by a state certified lab.

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GENERAL

The company will furnish all safety equipment and tools to keep your place of work safe as possible, "use them".

Housekeeping: Keep the jobsite clear of scrap materials and debris especially near the trenches and excavations.

Barricades: The bulk of our work involves underground tanks and piping, so it involves trrenching and excavation and a good many sites are kept in operation; we also have to provide safety for the general public. Use an ample amount of barricades and trench covers so that customers that are trying to use the facility are aware of the hazard that exists. Be especially aware of children that come on the site to see what is going on, and keep them well away from the excavation and equipment, or better yet keep them off the site entirely.

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PERSONAL PROTECTIVE EQUIPMENT

1. EYE PROTECTION: When cutting or burning, chipping or breaking concrete, or anytime you are subjected to eye injury, wear your goggles or safety glasses.

2. HEAD PROTECTION: When you are working in an area where you are subjected to falling objects or the site is a hard hat area, wear your hard hat.

3. BODY PROTECTION: Clothing appropriate for the work must be worn.

4. FOOT PROTECTION: Wear sturdy shoes appropriate to the work you are doing. When using a pavement breaker wear your toe protection devices.

5. HAND PROTECTION: When handling rough materials such as timbers, steel sheets, bars, and scrap; wear your gloves.

6. HEARING PROTECTION: When using a pavement breaker or operating noisy equipment, use your ear protection.

7. RESPIRATORY PROTECTION: Respirators must be worn when working in a confined space where dangerous air contamination exists, when sand blasting where toxic material evolves or when welding where there may be toxic substances.

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EQUIPMENT

1. Only trained or experienced employees may operate equipment.

2. Equipment operators must be sure other workers are clear before moving or operating this equipment. When changing buckets, be certain that the workers helping to change the bucket is clear before moving the boom. When using the boom for hoisting or moving equipment and or materials be sure the worker is clear before lifting or taking a strain on rigging.

3. Don't use damaged slings or cables, if they are questionable, call the office for replacement.

4. Avoid operations that expose employees to over head loads.

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TOOLS

1. Don't use tools and equipment that are not in good repair; notify the office of the repairs that are needed.

2. All power tools are to be grounded.

3. SKILL SAWS: Saw guard must not be blocked open.

4. AIR COMPRESSORS: Air tank must be drained often, safety valve must be popped daily, all hoses to have safety clasp, and don't disconnect under pressure.

5. LADDERS: Defective or unsafe ladders will not be used, they shall be repaired or scrapped.

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FIRE PROTECTION/PREVENTION

1. SMOKING: No smoking on any service station site except in an approved area away from the islands and tanks.

2. FLAMMABLE LIQUIDS: No sources of ignition are allowed in any work area where there is presence of flammable liquids, gasoling etc...

3. FIRE EXTINGUISHERS: All trucks and heavy equipment are to be equipped with one 5 lb. A.B.C. extinguisher.

4. Gasoline should not be used as a cleaning agent.

5. No burning or welding should be done in an enclosed tank or vessel until it has been determined that there is no possibility of fire or explosion.

6. A gas detection device is available, all persons should be familiar with this device and know how to use it.

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EXCAVATION

1. Prior to excavating, the location of underground utilities must be determined and utility owners must be notified. This function will normally be done by the office but if you are not sure, call the office, especially, if you are to excavate in the street or sidewalk area.

2. All excavations 5' or more in depth that are to be entered, must be sloped 3/4 to 1 foot or shored.

3. All excavation must be inspected and monitored for ground movement on a continuing basis.

4. There must be proper qualified supervision at all times during excavation.

5. Safety provisions must be taken while installing and removing shoring, the work can be extremely dangerous if good practice is ignored.

6. Keep spoils well back 2' or more from the edge of all excavations.

7. Effective barriers and barricades are to be used around all excavations for your protection as well as others that may want to see the work going on. Keep all others not involved in the work well back from the excavations, especially children.

8. Watch for overhead power lines, keep at least 10' away from these conductors.

9. Trench covers: A facility that is to be kept in operation, as many are, set up barricades and cover trenches to reduce the possibility of a customer driving or walking into an open trench. When work is done for the day, insure that you leave the site in a safe condition.

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CONFINED SPACES

Before employees are allowed to enter confined spaces:

1. Lines containing hazardous substances must be disconnected, blinded, or blocked.
2. The space must be emptied, flushed or purged.
3. The air must be tested for dangerous contamination or oxygen deficiency. Ventilation is required if testing reveals any hazard.

Working in a confined space where dangerous air contamination exists requires:

1. Appropriate respiratory protection.
2. Safety belt (or harness) protection.
3. One standby employee (with respirator).