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

April 3, 1989

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

RE: Unocal Service Station #6277
15803 East 14th Street
San Leandro, California

Gentlemen:

Per the request of Unocal's Mr. Tim Ross, enclosed please find our reports dated March 27, 1989 for the above referenced site.

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

Sincerely,

Kaprealian Engineering, Inc.

Judy A. Dewey

Judy A. Dewey

Enclosure

cc: Tim Ross, Unocal

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

KEI-P89-0301.R3
March 27, 1989

Unocal Corporation
2175 N. California Blvd., Suite 650
Walnut Creek, CA 94569

Attention: Mr. Tim Ross

RE: Soil Sampling Report for
Unocal Service Station #6277
15803 East 14th Street
San Leandro, California

Dear Mr. Ross:

This report summarizes the soil sampling to date performed by Kaprealian Engineering, Inc. (KEI) at the referenced site. All work has been performed in compliance with the guidelines established by the Regional Water Quality Control Board (RWQCB), and the Alameda County Health Agency.

The scope of the work performed to date by KEI has consisted of the following:

Coordination with regulatory agencies.

Collection of samples of native soil from the sidewalls of the fuel storage tank pit, and beneath the waste oil tank.

Collection of one ground water sample.

Delivery of soil and water samples, including proper Chain of Custody documentation, to a certified analytical laboratory.

Technical review and preparation of this report.

SITE DESCRIPTION AND BACKGROUND

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

FIELD ACTIVITIES

KEI's first field work was conducted on March 13, 1989. Three underground storage tanks were removed from the site. The tanks consisted of two 10,000 gallon fuel storage tanks and one 550 gallon waste oil tank. The tanks were made of steel with a tar and wrapping coating, and no apparent holes or cracks were observed in the tanks. Due to the tar coating and wrapping, very little of the actual tank walls could be observed. Tank removal and soil and water sampling were performed in the presence of Ms. Mary Jo Meyers-Barnes of the Alameda County Health Agency, and Mr. James Ferdinand of the Fire Prevention Bureau.

Water was encountered in the fuel tank pit at a depth of 11 feet, thus prohibiting the collection of any soil samples from immediately beneath the tanks. Six soil samples labeled SW-1, SW-2, SW-3, SW-4, SW-5 and SW-6 were collected from the sidewalls of the fuel tank pit at a depth approximately one foot above the water table. One sample, labeled WO-1, was collected of native soil from beneath the waste oil tank. The undisturbed soil samples were collected from bulk material excavated by backhoe. Soil samples were placed in clean, 2" diameter brass tubes, sealed with aluminum foil, plastic caps and tape, and stored in a cooled ice chest for delivery to a state certified laboratory.

Based on the subjective evidence observed in the field, it was decided to excavate additional soil from three of four tank pit walls. (The fourth wall is adjacent to the existing building.) On March 14, 1989 four trenches were dug to define the limits of additional soil excavation needed. Four soil samples were then collected, SW-3(15), SW-4/5(6), SW-6(12) and SW-7(14). SW-7(14) was from the sidewall of the waste oil tank pit. After the soil sampling was completed, approximately 5,000 gallons of ground water were pumped from the fuel tank pit on March 15, 1989; however, due to on-going soil excavation, contaminated soil was falling into the water and a representative ground water sample could not be collected.

H_2O - 5000 gal pumped

On March 17, 1989 KEI again returned to the site. Additional soil, approximately two feet laterally, was excavated from the fourth tank pit wall adjacent to the building. One additional sidewall soil sample, labeled SW-1(2), was taken. The soil sample was collected as described above. Following soil sampling, an additional 1,000 gallons of ground water were pumped from the excavation. One sample of water from the fuel tank pit, labeled W-1, was collected in clean, glass VOA vials with Teflon screw caps. Both the soil and water samples were stored in a cooled ice chest for delivery to a state certified laboratory.

H_2O - 1000 gal pumped

On March 23, 1989, KEI returned to the site for pipe trench sampling. Six soil samples labeled P1, P2, P3, P4, P5 and P6 were collected beneath the product lines. The samples were stored and delivered to a state certified laboratory as described above.

Also on March 17 and 20, 1989, 12 composite samples, labeled Comp A through Comp L, were collected from excavation soil stockpiled on site. Each composite sample consisted of four grab samples taken at various locations and depths ranging from one to two feet.

SUBSURFACE CONDITIONS

Subsurface soils exposed in the excavation consisted primarily of clayey, sandy gravel to a depth of about four feet, with clay below.

ANALYTICAL RESULTS

Soil samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California, and were accompanied by properly executed Chain of Custody documentation. Samples from the fuel tank pit were analyzed for total petroleum hydrocarbon (TPH) as gasoline using EPA method 3810 or 5030 in conjunction with modified 8015, and benzene, toluene, xylenes and ethylbenzene (BTX&E) using EPA methods 5030 and 8020. The samples from the waste oil tank pit (WO-1 and SW-7(14)) were analyzed for TPH as gasoline, TPH as diesel using EPA method 3550 in conjunction with modified 8015, total oil and grease (TOG) by 413.1 and EPA 8240 constituents.

Soil sample analyses from the fuel tank pit indicate TPH as gasoline ranging from 24 to 150 ppm for samples SW-3(15), SW-4/5(6), and SW-6(12). SW-1, adjacent to the existing building, showed 3,500 ppm of TPH; however, SW-1(2), which was collected after excavating two feet of sidewall toward the building, showed 100 ppm of TPH. Sample SW-2 has 390 ppm of TPH. Samples SW-3, SW-4, SW-5 and SW-6 were not analyzed because their locations were excavated and new samples [SW-3(15), SW-4/5(6), and SW-6(12)] were collected.

Soil samples from the waste oil pit had 280 ppm TOG for WO-1 and 41 ppm TOG for SW-7(14). The analytical results for soil samples are summarized in Table 1. Sample point locations for those samples analyzed are as indicated on the Site Plan.

Soil samples (P1, P2, P3, P4, P5 and P6) from pipe trenches indicate levels of TPH ranging from 1.1 to 6.8 ppm. The analytical results for these samples are summarized in Table 1 and sample locations are shown on the Site Plan, Figure 3.

The results of the composite soil sample analyses from the stockpiled soil showed concentrations of TPH as gasoline ranging from 5.4 to 150 ppm. The analytical results are summarized in Table 3. Sample point locations are indicated on the Site Plan, Figure 2.

The water sample analysis indicates 19,000 ppb TPH as gasoline with 230 ppb benzene. The analytical results for the water sample are summarized in Table 2.

DISCUSSION AND RECOMMENDATIONS

According to the guidelines established by the RWQCB, additional investigation is necessary at the site. To comply with the requirements of the RWQCB, KEI recommends installation of four monitoring wells to determine the ground water flow direction, and begin to determine the vertical and lateral extent of the soil and ground water contamination. KEI's proposal for this work is attached for your review and consideration.

LIMITATIONS

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

Should you have any questions regarding this report, please feel free to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Richard M. Bradish
Staff Engineer

Gary S. Johnson
Registered Geologist

License No. 4315
Exp. Date 6/30/90

Mardo Kaprealian
President

Attachments: Table 1
Table 2
Table 3
Site Plan - Figure 1
- Figure 2
Laboratory Analyses
Chain of Custody documentation
Proposal

KEI-P89-0301.R3
March 27, 1989

TABLE 1

SUMMARY OF LABORATORY ANALYSES
SOIL
(Results in ppm)

(Samples collected on March 13, 14 and 17, 1989)

Sample #	Depth (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
SW-1	10	3500	22	280	600	100
SW-1(2)	10	100	1.3	6.6	16	2.9
SW-2	10	390	40	4.3	71	10
SW-3(15)	10	60	1.6	2.9	7.8	1.5
SW-4/5(6)	10	24	2.6	1.7	2.7	0.56
SW-6(12)	10	150	3.1	6.2	5.6	3.6
SW-7(14)*	10	ND	0.3	ND	ND	ND
P1	3	2.3	ND	0.15	ND	ND
P2	3	1.5	ND	0.31	ND	ND
P3	3	1.1	ND	0.1	ND	ND
P4	3	5.6	ND	0.15	0.39	ND
P5	3	6.8	0.15	0.58	0.55	0.12
P6	3.5	5.5	0.06	0.18	0.15	ND
WO-1**	10	15	ND	ND	0.21	0.88
Detection Limits		1.0	0.05	0.1	0.1	0.1

* TPH as diesel - 6.2 ppm; TOG - 41 ppm; all 8240 constituents are non-detectable except as noted above.

** TPH as diesel - ND; TOG - 280 ppm; all 8240 constituents are non-detectable except as noted above.

ND = Non-detectable.

KEI-P89-0301.R3
March 27, 1989

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER
(Results in ppb)

(Samples collected on March 19, 1989)

Sample #	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
W-1	19,000	230	79	1,300	ND
Detection Limits	50	0.5	0.5	0.5	0.5

ND = Non-detectable

KEI-P89-0301.R3
March 27, 1989

TABLE 3

SUMMARY OF LABORATORY ANALYSES
STOCKPILED SOIL
(Results in ppm)

(Samples collected on March 17, 1989)

Sample #	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethylbenzene
Comp A	5.4	0.1	0.16	0.11	0.37
Comp B	31	0.3	1.4	0.28	3.4
Comp C	18	0.34	0.67	0.35	2.3
Comp D	28	0.4	1.2	0.66	3.6
Comp E	32	0.32	1.1	0.66	3.9
Comp F	150	1.0	6.6	3.7	21
Comp G	22	0.22	0.96	0.53	2.9
Comp H	24	0.14	0.68	0.46	3.0
Comp I	88	0.44	2.9	2.3	14
Comp J	79	0.18	1.8	1.2	11
Comp K	6.7	0.13	ND	0.71	0.12
Comp L	240	2.6	13	35	6.5

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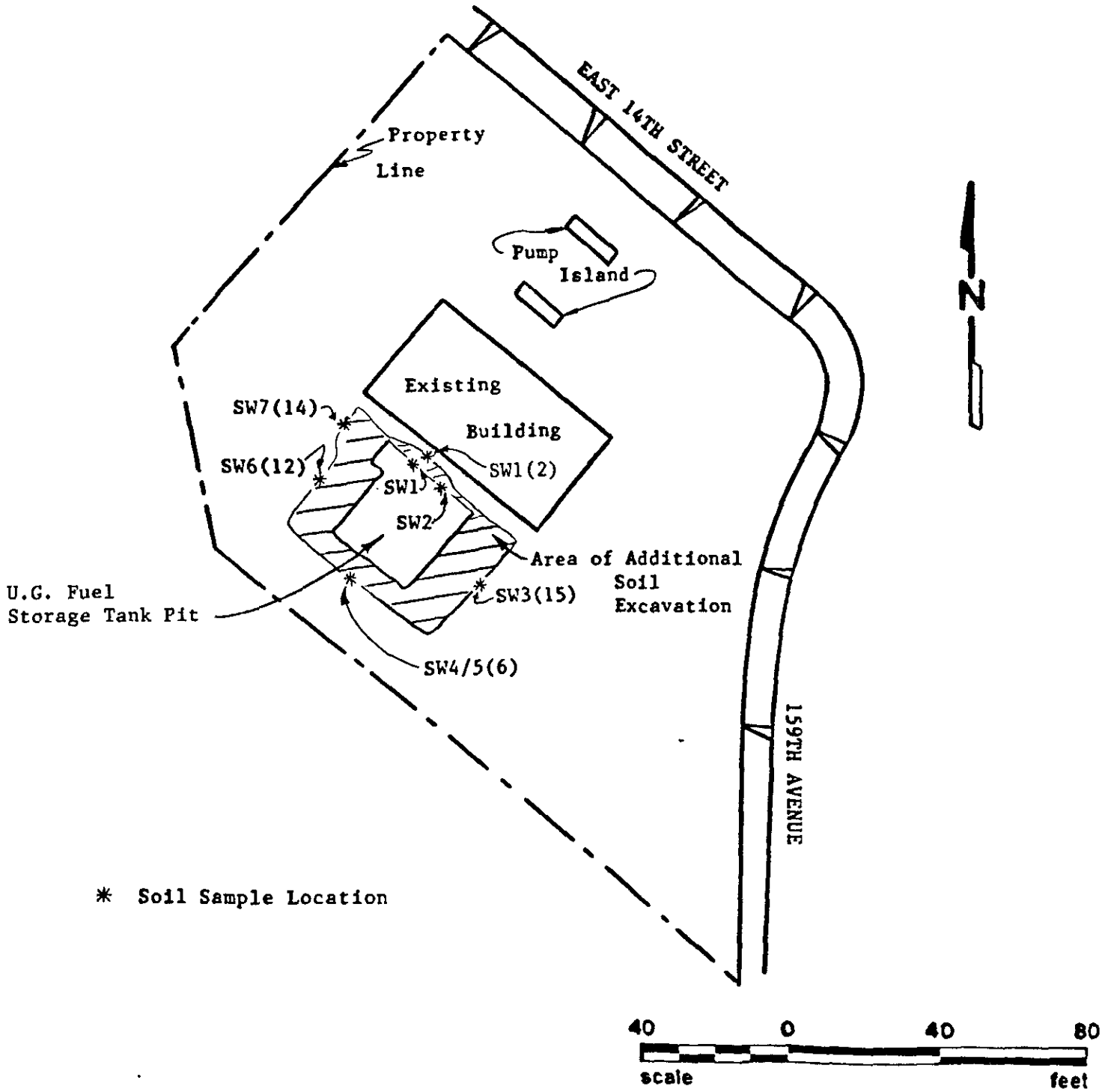

SITE PLAN
Figure 1

Unocal Service Station #6277
15803 East 14th Street
San Leandro, California

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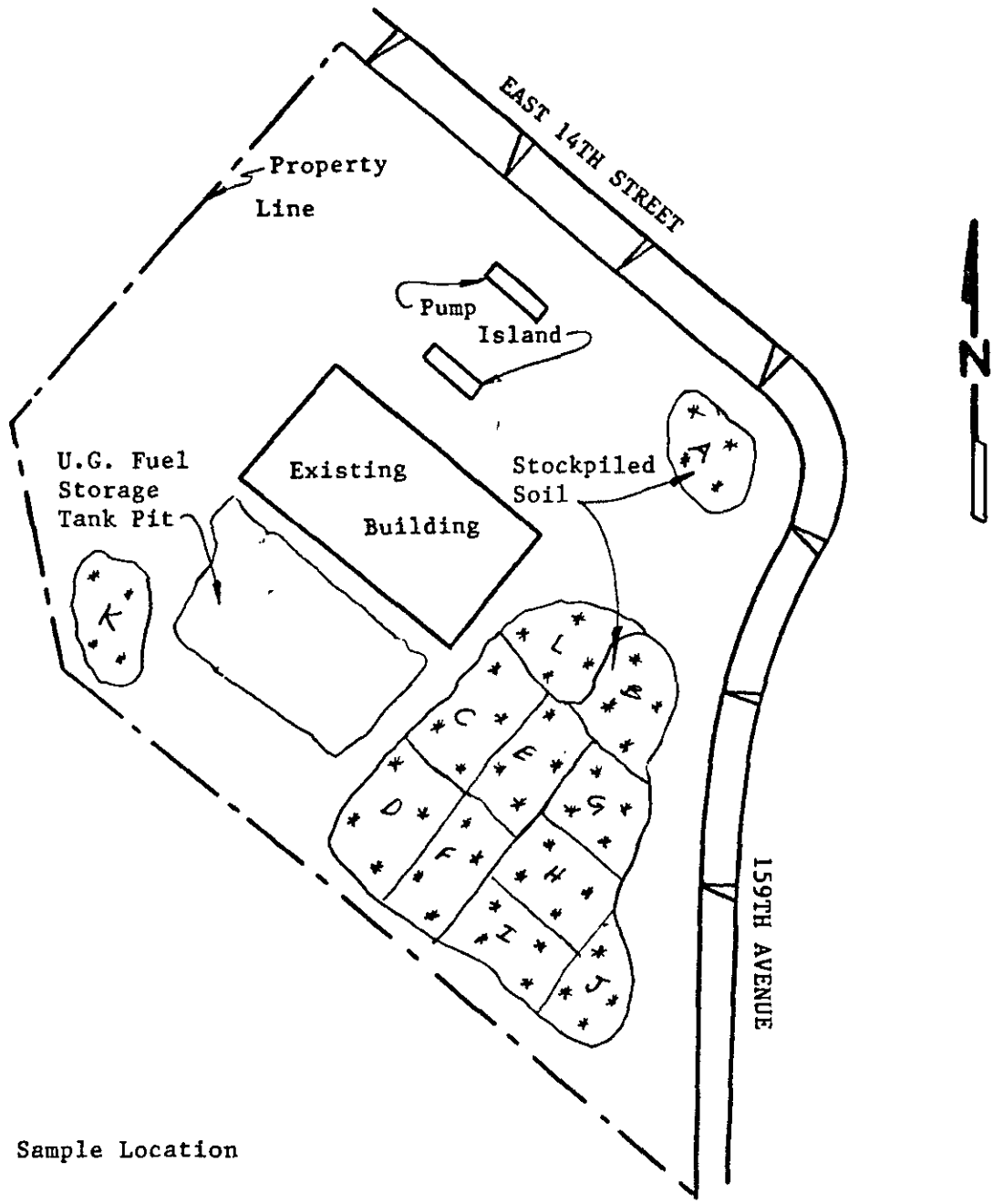

* Soil Sample Location

40 0 40 80
scale feet

SITE PLAN
Figure 2

Unocal Service Station #6277
15803 East 14th Street
San Leandro, California

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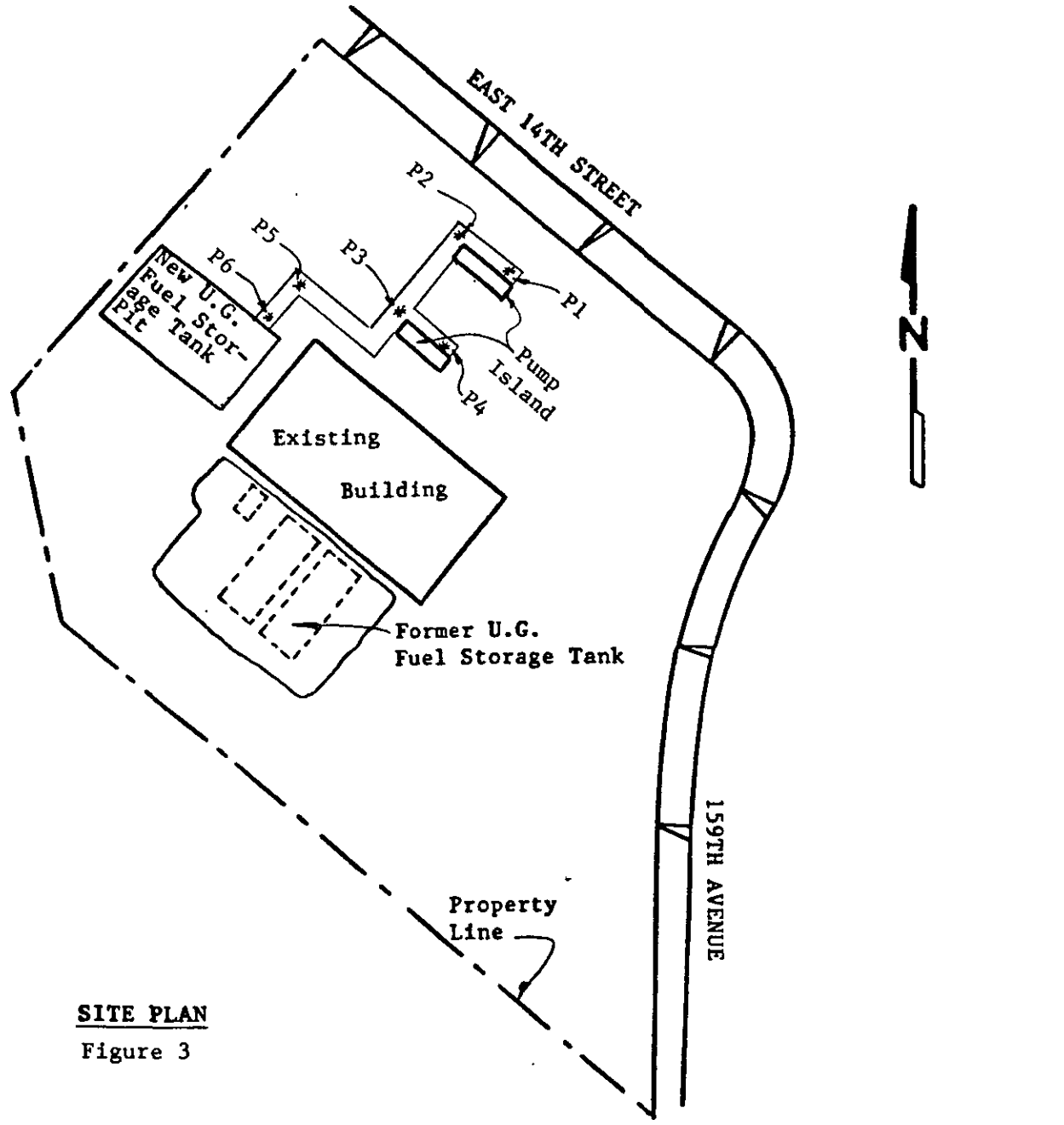

SITE PLAN
Figure 3

* Soil Sample Location

Unocal Service Station #6277
15803 East 14th Street
San Leandro, California

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E. 14th/159th	Sampled:	Mar 17, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 20, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Mar 21, 1989
Attention: Mardo Kapreallan, P.E.	First Sample #:	903-1815 A-B	Reported:	Mar 21, 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)
9031815 A-B	Composite A	5.4	0.1	0.16	0.11	0.37
9031816 A-B	Composite B	31	0.3	1.4	0.28	3.4
9031817 A-B	Composite C	18	0.34	0.67	0.33	2.3
9031818 A-B	Composite D	28	0.4	1.2	0.66	3.6
9031819 A-B	Composite E	32	0.32	1.1	0.66	3.9
9031820 A-B	Composite F	150	1.0	6.6	3.7	21
9031821 A-B	Composite G	22	0.22	0.96	0.53	2.9
9031822 A-B	Composite H	24	0.14	0.68	0.46	3.0
9031823 A-B	Composite I	88	0.44	2.9	2.3	14
Detection Limits:		**1.0**	**0.05**	**0.1**	**0.1**	**0.1**

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

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E. 14th/159th	Sampled:	Mar 17, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 20, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Mar 21, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	903-1824 A-B	Reported:	Mar 21, 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)
9031824 A-B	Composite J	79	0.18	1.8	1.2	11
903-1825	SW1 (2)	100	1.3	6.6	2.9	16
Detection Limits:		**1.0**	**0.05**	**0.1**	**0.1**	**0.1**

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

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E. 14th/159th	Sampled:	Mar 17, 1989
P.O. Box 913	Sample Descript.:	Water, W1	Received:	Mar 20, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/ 8015/8020	Analyzed:	Mar 20, 1989
Attention: Mardo Kapreallan, P.E.	Lab Number:	903-1826 A-B	Reported:	Mar 21, 1989

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

Analyte	Detection Limit ug/L (ppb)	Sample Results ug/L (ppb)
Low to Medium Boiling Point Hydrocarbons	50.0	19,000
Benzene	0.5	230
Toluene	0.5	79
Ethyl Benzene	0.5	N.D.
Xylenes	0.5	1,300

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

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

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

CHAIN OF CUSTODY

SAMPLER: L.M. Bradish (signature) DATE/TIME OF COLLECTION: 3-17-89 TURN AROUND TIME: 24 HR

SAMPLE DESCRIPTION AND PROJECT NUMBER: Chevron-San Leandro E 14th & 159th

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
Comp A	TPH-G & BTXE	C	2	S
" B	" "	C	2	S
" C	" "	C	2	S
" D	" "	C	2	S
" E	" "	C	2	S
" F	" "	C	2	S
" G	" "	C	2	S
" H	" "	C	2	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. L.M. Bradish	3-17-89 1800	T. Radovich	1800 3-17-89
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

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

CHAIN OF CUSTODY

SAMPLER: R.M. Badial (signature) DATE/TIME OF COLLECTION: 3-17-89 TURN AROUND TIME: 24 HR

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - San Leandro
E 12th & 159th

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
Comp I	TPH-G & BTXE	C	2	S
Comp J	" "	C	2	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R.M. Badial	3-17-89 1800	T. Radevich	1800 3-17/89
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

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

CHAIN OF CUSTODY

SAMPLER: R.M. Badish (signature) DATE/TIME OF COLLECTION: 3-17-89 TURN AROUND TIME: 24 HR

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - San Leandro
E 14th & 159th

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
W1	TPH-G & BTXE	G	2	W
SW1(2)	TPH-G & BTXE	G	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R.M. Badish	3-17-89 1800	T. Radevich	1800 3-17-89
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E 14th/159th	Sampled:	Mar 13, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030 or 3810/8015/8020	Analyzed:	Mar 15, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	903-1420	Reported:	Mar 16, 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)
903-1420	SW1	3,500	22	280	100	600
903-1421	SW2	390	4.0	43	10	71
Detection Limits:		1.0	0.05	0.1	0.1	0.1

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

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

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

CHAIN OF CUSTODY

SAMPLER: R. M. Bradish (signature) DATE/TIME OF COLLECTION: 3-13-89 TURN AROUND TIME: 24 Hr

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - San Leandro E 14th & 159th

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
SW1	TPH-G & BTXE	G	1	S
SW2	" "	G	1	S
SW3	" "	G	1	S
SW4	" "	G	1	S
SW5	" "	G	1	S
SW6	" "	G	1	S

never analyzed! HOLD

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R. M. Bradish	951 / 3/14/89	Tom McLain	951 / 3/14/89
2. Tom McLain	11^22 3/14/89	Deborah Newcomb	3/14/89 11:2
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

SEQUOIA ANALYTICAL

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

Kapreallan Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E 14th/159th	Sampled:	Mar 20, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 21, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Mar 22, 1989
Attention: Mardo Kapreallan, P.E.	First Sample #:	903-2173	Reported:	Mar 23, 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)
903-2173	Composite K	6.7	0.13	N.D.	0.12	0.71
903-2174	Composite L	240	2.6	13	6.5	35
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

for Arthur G. Burton
Laboratory Director

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

CHAIN OF CUSTODY

SAMPLER: R. M. Bradish (signature) DATE/TIME OF COLLECTION: 3-20-89 TURN AROUND TIME: 24 HRS

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - San Leandro
E 14th & 159th

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
Comp K	TPH-G & BTXE	C	2	S
" L	" "	C	2	S
HOLD " M	" "	C	2	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R. M. Bradish	3/21/89 2:55	M ARNOLD	3-21-89 1452
2. M	3-21-89 1625	Paula Newcomb	3/21/89 16:25
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

SEQUOIA ANALYTICAL

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

Kapreallan Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E 14th/159th	Sampled: Mar 13, 1989
P.O. Box 913	Sample Descript.:	Soil, WO 1	Received: Mar 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed: Mar 21, 1989
Attention: Mardo Kapreallan, P.E.	Lab Number:	903-1433	Reported: Mar 22, 1989

LOW TO MEDIUM BOILING POINT HYDROCARBONS (EPA 8015/8020)

Analyte	Detection Limit mg/kg (ppm)	Sample Results mg/kg (ppm)
Low to Medium Boiling Point Hydrocarbons	1.0	15

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

for Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E 14th/159th	Sampled:	Mar 13, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 3550/8015	Analyzed:	Mar 20, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	903-1433	Reported:	Mar 21, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
903-1433	WO 1	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

for Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E 14th/159th	Sampled:	Mar 13, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 413.1 (Gravimetric)	Extracted:	Mar 20, 1989
Attention: Mardo Kapreallan, P.E.	First Sample #:	903-1433	Analyzed:	Mar 20, 1989
			Reported:	Mar 22, 1989

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
903-1433	WO 1	280

Detection Limits:	**30.0**

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

SEQUOIA ANALYTICAL

for Arthur G. Burton
Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E 14th/159th	Sampled:	Mar 13, 1989
P.O. Box 913	Sample Descript:	Soil, WO 1	Received:	Mar 14, 1989
Benicia, CA 94510	Analysis Method:	EPA 8240	Analyzed:	Mar 20, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	903-1433	Reported:	Mar 22, 1989

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500.0	N.D.
Benzene	100.0	N.D.
Bromodichloromethane	100.0	N.D.
Bromoform	100.0	N.D.
Bromomethane	100.0	N.D.
2-Butanone	500.0	N.D.
Carbon disulfide	100.0	N.D.
Carbon tetrachloride	100.0	N.D.
Chlorobenzene	100.0	N.D.
Chlorodibromomethane	100.0	N.D.
Chloroethane	100.0	N.D.
2-Chloroethyl vinyl ether	500.0	N.D.
Chloroform	100.0	N.D.
Chloromethane	100.0	N.D.
1,1-Dichloroethane	100.0	N.D.
1,2-Dichloroethane	100.0	N.D.
1,1-Dichloroethene	100.0	N.D.
Total 1,2-Dichloroethene	100.0	N.D.
1,2-Dichloropropane	100.0	N.D.
cis 1,3-Dichloropropene	100.0	N.D.
trans 1,3-Dichloropropene	100.0	N.D.
Ethylbenzene	100.0	880
2-Hexanone	500.0	N.D.
Methylene chloride	100.0	N.D.
4-Methyl-2-pentanone	500.0	N.D.
Styrene	100.0	N.D.
1,1,2,2-Tetrachloroethane	100.0	N.D.
Tetrachloroethene	100.0	N.D.
Toluene	100.0	N.D.
1,1,1-Trichloroethane	100.0	N.D.
1,1,2-Trichloroethane	100.0	N.D.
Trichloroethene	100.0	N.D.
Trichlorofluoromethane	100.0	N.D.
Vinyl acetate	100.0	N.D.
Vinyl chloride	100.0	N.D.
Total Xylenes	100.0	210

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

SEQUOIA ANALYTICAL

for Arthur G Burton
Laboratory Director

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
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BENICIA, CA 94510
(415) 676 · 9100 (707) 746 · 6915

CHAIN OF CUSTODY

SAMPLER: L.M. Bradish (signature) DATE/TIME OF COLLECTION: 3-13-89 TURN AROUND TIME: 1 Week

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal-San Leandro
E 14th & 159th

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
WO 1	TPH-G&BTXE; TPH-D;	G	1	S
	TOG(413.1); 8240			

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. L.M. Bradish	951 3/14/89	Tim McLain	951 3/14/89
2. Tim McLain	3/14 1122		3/14/89 1120
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

SEQUOIA ANALYTICAL

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Kapreallan Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E 14th/159th	Sampled:	Mar 14, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030 or 3810/8015/8020	Analyzed:	Mar 16, 1989
Attention: Mardo Kapreallan, P.E.	First Sample #:	903-1504	Reported:	Mar 16, 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)
903-1504	SW3 (15)	60	1.6	2.9	1.5	7.8
903-1505	SW4/5 (6)	24	2.6	1.7	0.56	2.7
903-1506	SW6 (12)	150	3.1	6.2	3.6	5.6
Detection Limits:		**1.0**	**0.05**	**0.1**	**0.1**	**0.1**

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

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

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CHAIN OF CUSTODY

SAMPLER: R.M. Bradish (signature) DATE/TIME OF COLLECTION: 3-14-89 TURN AROUND TIME: 24 Hr

SAMPLE DESCRIPTION AND PROJECT NUMBER: Chevron - San Leandro
E 12th & 159th

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
SW 3(15)	TPH-G & BTXE	G	1	S
SW 4/5(6)	" "	G	1	S
SW 6(12)	" "	G	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R.M. Bradish	9:20 3/15/89	Tim McLain	9:20 3/15/89
2. Tim McLain	10:55 3/15/89	Deborah Newell	10:55 3/15/89
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E. 14th/159th	Sampled:	Mar 14, 1989
P.O. Box 913	Sample Descript.:	Soil, SW7 (14)	Received:	Mar 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Mar 22, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	903-1507	Reported:	Mar 22, 1989

LOW TO MEDIUM BOILING POINT HYDROCARBONS (EPA 8015/8020)

Analyte	Detection Limit mg/kg (ppm)		Sample Results mg/kg (ppm)
Low to Medium Boiling Point Hydrocarbons	1.0	.....	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

for Arthur G. Burton
Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E. 14th/159th	Sampled:	Nov 9, 1900
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 3550/8015	Analyzed:	Mar 21, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	903-1507	Reported:	Mar 22, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
903-1507	SW7 (14)	6.2

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

for Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E. 14th/159th	Sampled:	Mar 14, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 413.1 (Gravimetric)	Extracted:	Mar 20, 1989
Attention: Mardo Kapreallan, P.E.	First Sample #:	903-1507	Analyzed:	Mar 21, 1989
			Reported:	Mar 22, 1989

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
903-1507	SW7 (14)	41

Detection Limits:	**30.0**

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

SEQUOIA ANALYTICAL

for Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, E. 14th/159th	Sampled:	Mar 14, 1989
P.O. Box 913	Sample Descript:	Soil, SW7 (14)	Received:	Mar 15, 1989
Benicia, CA 94510	Analysis Method:	EPA 8240	Analyzed:	Mar 21, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	903-1507	Reported:	Mar 22, 1989

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500.0	N.D.
Benzene	**100.0**	**300**
Bromodichloromethane	100.0	N.D.
Bromoform	100.0	N.D.
Bromomethane	100.0	N.D.
2-Butanone	500.0	N.D.
Carbon disulfide	100.0	N.D.
Carbon tetrachloride	100.0	N.D.
Chlorobenzene	100.0	N.D.
Chlorodibromomethane	100.0	N.D.
Chloroethane	100.0	N.D.
2-Chloroethyl vinyl ether	500.0	N.D.
Chloroform	100.0	N.D.
Chloromethane	100.0	N.D.
1,1-Dichloroethane	100.0	N.D.
1,2-Dichloroethane	100.0	N.D.
1,1-Dichloroethene	100.0	N.D.
Total 1,2-Dichloroethene	100.0	N.D.
1,2-Dichloropropane	100.0	N.D.
cis 1,3-Dichloropropene	100.0	N.D.
trans 1,3-Dichloropropene	100.0	N.D.
Ethylbenzene	100.0	N.D.
2-Hexanone	500.0	N.D.
Methylene chloride	100.0	N.D.
4-Methyl-2-pentanone	500.0	N.D.
Styrene	100.0	N.D.
1,1,2,2-Tetrachloroethane	100.0	N.D.
Tetrachloroethene	100.0	N.D.
Toluene	100.0	N.D.
1,1,1-Trichloroethane	100.0	N.D.
1,1,2-Trichloroethane	100.0	N.D.
Trichloroethene	100.0	N.D.
Trichlorofluoromethane	100.0	N.D.
Vinyl acetate	100.0	N.D.
Vinyl chloride	100.0	N.D.
Total Xylenes	100.0	N.D.

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

SEQUOIA ANALYTICAL

for Arthur G. Burton
Laboratory Director

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CHAIN OF CUSTODY

SAMPLER: R.M. Bradish (signature)

DATE/TIME OF COLLECTION: 3-14-89

TURN AROUND TIME: 1 WEEK

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - San Leandro, E 14th & 159th

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
SW7(14)	TPH-G & BTXE;	G	1	S
	TPH-D; TOG (418.1)			
	8240			

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R.M. Bradish	9:20 3/15/89	Tim McLain	9:20 3/15/89
2. Tim McLain	10:55 3/15/89	[signature]	10:55 3/15/89
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

SEQUOIA ANALYTICAL
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Kapreallan Engineering, Inc.	Client Project ID:	Unocal, San Leandro	Sampled:	Mar 23, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Mar 24, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Mar 25, 1989
Attention: Mardo Kapreallan, P.E.	First Sample #:	903-2646	Reported:	Mar 27, 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)
903-2646	P1	2.3	N.D.	0.15	N.D.	N.D.
903-2647	P2	1.5	N.D.	0.31	N.D.	N.D.
903-2648	P3	1.1	N.D.	0.1	N.D.	N.D.
903-2649	P4	5.6	N.D.	0.15	N.D.	0.39
903-2650	P5	6.8	0.15	0.56	0.12	0.55
903-2651	P6	5.5	0.062	0.18	N.D.	0.15
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

for Arthur G. Burton
Laboratory Director

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CHAIN OF CUSTODY

SAMPLER: R.M. Bradish (signature) DATE/TIME OF COLLECTION: 3-23-89 TURN AROUND TIME: 24 HR

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - San Leandro E14th & 159th

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
P1	TPH-G & BTXE	G	1	S
P2	" "	G	1	S
P3	" "	G	1	S
P4	" "	G	1	S
P5	" "	G	1	S
P6	" "	G	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R.M. Bradish		Tim McLain	11:25 3-24-89
2. Tim McLain	3/24/89 1:45 PM	C. Smith	145pm 3/24/89
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: