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

KEI-J87-063
December 7, 1987

Shell Oil Company
P. O. Box 4023
Concord, CA 94596

Attn: Mr. Ray Newsome

Re: **Additional Subsurface Investigation**
Former Shell Service Station
15275 Washington Avenue
San Leandro, California

Dear Mr. Newsome:

This report summarizes the additional soil excavation and sampling performed at the referenced site, after the removal of four underground gasoline storage tanks. The tanks were removed June 9, 1987. Soil samples collected after tank removal showed total petroleum hydrocarbon (TPH) levels ranging from 1.0 to 910 parts per million (ppm). **Additional extensive excavation of the pit is prohibited by the presence of a sewer line and four existing groundwater monitoring wells (see attached site plan) near the pit.** Limited excavation and soil sampling was undertaken around the existing wells by Kaprealian Engineering Inc. (KEI) on October 13, 1987, to document the lateral extent of contamination beyond the pit boundaries.

FIELD INVESTIGATION

On October 13, 1987, KEI supervised the excavation of three trenches extending from the former fuel tank pit at the site. The trenches ranged from 10 to 36 feet in length. One soil sample was taken from each of the trenches at a depth of 8.5 feet. The samples were placed in clean, 2-inch by 4-inch brass tubes which were then sealed with aluminum foil and plastic caps and stored on ice until delivery to the contracted laboratory. The excavated soil was stockpiled on the site for further sampling and possible aeration. It was added to a stockpile of approximately 25 cubic yards of soil which remained on the site from the original pit excavation. This soil had been sampled (Comp Q) September 3, 1987, the results of which showed a TPH level of 850 ppm.

The trench samples, labeled S-1, S-2 and S-3, were analyzed at HAZCAT Organics Laboratory in San Carlos, California for TPH as gasoline, Benzene, Toluene and Xylene (BTX). The analytical results showed TPH levels of 260 ppm for S-1, 100 ppm for S-2 and 730 ppm for S-3. Copies of the Laboratory analyses and chain of custody form are attached. Analyses are summarized in Table 1.

After the receipt of the analytical results, KEI recommended additional soil excavation in the vicinity of sample S-3, to remove as much contaminated soil as possible. All excavated soil was left on the site with pre-existing stockpiles. **During the excavation, a previously unknown tank was discovered in the eastern part of the original fuel tank pit.** The tank had a volume of 1000 gallons and was filled with concrete. **The tank was removed November 16, 1987 in the presence of Mr. Robert Nolan of the San Leandro Fire Department.** KEI supervised the tank removal and collected one native soil sample from beneath the tank. **The sample, labeled A-1, was collected from bulk material excavated by backhoe at a depth of 10.5 feet.** The sample was placed in a clean brass tube and was stored and transported as described above. The sample was analyzed at Sequoia Analytical Laboratory for TPH and BTX. The analytical results showed a TPH level of 950 ppm. **Additional soil was excavated from the area where the sample was collected in an attempt to remove as much contaminated soil as possible.**

Permission was gained from the Bay Area Air Quality Management District (BAAQMD) to aerate the approximately 225 cubic yards of stockpiled soil which remained on the site. After aeration, two composite soil samples, labeled Comp A and Comp B, were collected. Each composite consisted of four individual grab samples taken at various locations, and depths ranging from two to three feet. The samples were collected in clean brass tubes as described above. The samples were analyzed at HAZCAT Organics Laboratory for TPH and BTX. The analytical results showed a TPH level of 1.3 ppm for Comp A and 1.5 ppm for Comp B, indicating the soil had been properly aerated.

DISCUSSIONS AND RECOMMENDATIONS

KEI believes that the additional soil excavation and sampling has shown the lateral extent of contamination at the site. Further excavation of the contaminated soil to the depth of the water table will significantly reduce the degree of environmental impact.

The aerated soil may be backfilled into the existing excavations, or may be disposed of at a Class III site.

LIMITATIONS

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

The results of this study are based on the data obtained from the field and laboratory 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 call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.
Prepared by

Jean Semansky
Geologist

Mardo Kaprealian

Lic. #C29326
Exp. Date 3/31/91

Attachments: Table 1
Site Plan
Laboratory Analyses
Chain of Custody Forms

TABLE -1

SUMMARY OF LABORATORY ANALYSES
(all results in parts per million)

Sample Number	Date Sampled	Total Petroleum Hydrocarbons	Benzene	Toluene	Xylene
S-1	10-13-87	260	10	0.2	3.0
S-2		100	5.7	2.9	52
S-3		730	3.9	1.0	79
A-1*	11-16-87	950	21	1.4	17
Comp Q	9-03-87	850	5.1	14	33
Comp A*	11-25-87	1.3	<0.1	<0.1	0.2
Comp B*		1.5	<0.1	<0.1	0.4

* A-1 Ethylbenzene = 35 ppm
Comp A Ethylbenzene <0.1 ppm
Comp B Ethylbenzene <0.1 ppm

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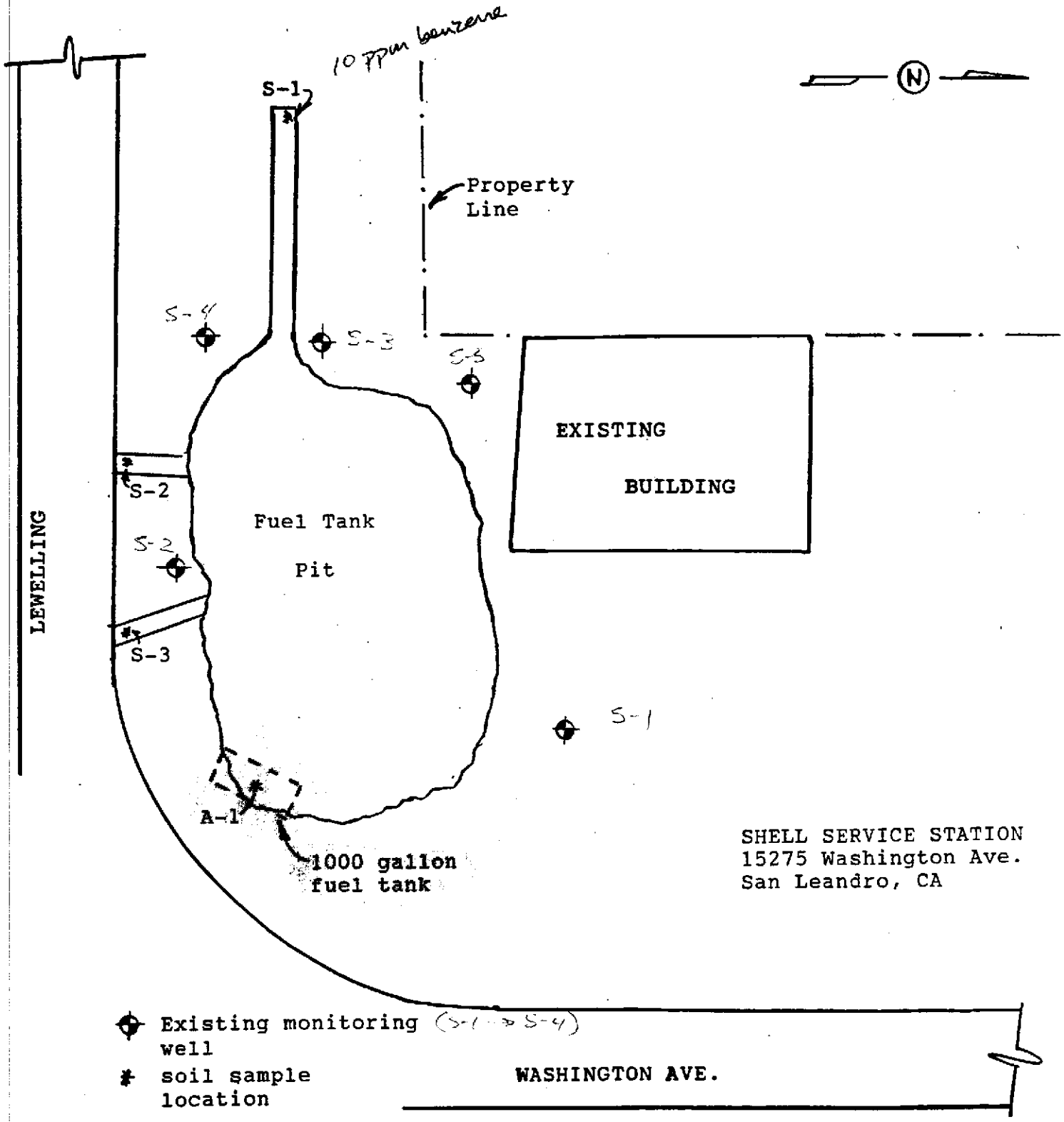

SHELL SERVICE STATION
15275 Washington Ave.
San Leandro, CA

SITE PLAN
1" = 20 ft.

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 09/03/87
Date Received: 09/03/87
Date Reported: 09/09/87

Sample Number
7090329

Sample Description
Shell - San Leandro,
Soil Comp. Q

ANALYSIS

	Detection Limit ppm	Sample Results ppm
Total Hydrocarbons as Gasoline	1	850
Benzene	0.1	5.1
Toluene	0.1	14
Xylenes	0.1	33

NOTE: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

sls

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

RUSH

SAMPLER: Jean Semansky KEI (signature) DATE/TIME OF COLLECTION: 9/3/87 1400 TURNAROUND TIME: 24 Hours

SAMPLE DESCRIPTION AND PROJECT NUMBER: Shell - San Leandro

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
Comp Q	THC BTX	comp	2	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Jean Semansky KEI	1530 9/3/87	Ray KET	15.30 9/3/87
2. Ray KET	18:20 9/3/87	K W Kirby	18:20 9/3/87
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled:10-13-87
Date Received:10-13-87
Date Reported:10-14-87

Sample Number	Sample Description
107030	Shell San Leandro Washington & Lewelling S-1

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Hydrocarbons as Gasoline	1	260
Benzene	0.1	10
Toluene	0.1	0.2
Xylenes	0.1	3.0

Note: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled:10-13-87
Date Received:10-13-87
Date Reported:10-14-87

Sample Number	Sample Description
107031	Shell San Leandro Washington & Lewelling S-2

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Hydrocarbons as Gasoline	1	100
Benzene	0.1	5.7
Toluene	0.1	2.9
Xylenes	0.1	52

Note: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled:10-13-87
Date Received:10-13-87
Date Reported:10-14-87

Sample Number	Sample Description
107032	Shell San Leandro Washington & Lewelling S-3

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Hydrocarbons as Gasoline	1	730
Benzene	0.1	3.9
Toluene	0.1	1.0
Xylenes	0.1	79

Note: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Ronald G. Evans
Lab Director

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

RUSH

SAMPLER: Ray (K'EI) (signature)
DATE/TIME OF COLLECTION: 10/13/87 11:30 AM
TURNAROUND TIME: 24 HRS

SAMPLE DESCRIPTION AND PROJECT NUMBER: SHELL SAN LEANDRO
WASHINGTON / LEWELLING

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
S1	THC, BTX	Grab	1	S
S2	THC, BTX	Grab	1	S
S3	THC, BTX	Grab	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Ray (K'EI)	2:39 10/13/87	HAZCAT	2:39 10/13/87
2.	10/13/87 15:57		15:58 10/13/87
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled:11-16-87
Date Received:11-17-87
Date Reported:11-30-87

Sample Number	Sample Description
117044	Shell San Leandro Washington Ave. A-1

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1	950
Benzene	0.1	21
Toluene	0.1	1.4
Xylenes	0.1	17
Ethylbenzene	0.1	35

Note: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Ronald G. Evans
Lab Director

RAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: [signature] (signature) DATE/TIME OF COLLECTION: 11/16/87 10:15 a.m. TURNAROUND TIME: 10 DAY

SAMPLE DESCRIPTION AND PROJECT NUMBER: Shell - San Leandro - Washington Ave.

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
A-1	TPH G. BTX & E.	Grab	1	S.

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. [signature] 11/16/87	11:37 11-16-87	Chris Lecce KEI	11/16/87 11:37
2. Chris Lecce KEI	11-17-87	Priority Express Frances Ris #175	4PM 11/18/87
3. Frances Ris 5:40 11/17/87		A. Evans Hayward	11/17/87 5:40PM
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: 12-1-87

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled:11-25-87
Date Received:11-25-87
Date Reported:11-30-87

Sample Number	Sample Description
117078	Shell San Leandro 15275 Washington Ave. Comp. A

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1	1.3
Benzene	0.1	<0.1
Toluene	0.1	<0.1
Xylenes	0.1	0.2
Ethylbenzene	0.1	<0.1

Note: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled:11-25-87
Date Received:11-25-87
Date Reported:11-30-87

Sample Number	Sample Description
117079	Shell San Leandro 15275 Washington Ave. Comp. B

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1	1.5
Benzene	0.1	<0.1
Toluene	0.1	<0.1
Xylenes	0.1	0.4
Ethylbenzene	0.1	<0.1

Note: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Ronald G. Evans
Lab Director

RAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: [signature] (tc:) DATE/TIME OF COLLECTION: Nov 25 1135 a.m. TURNAROUND TIME: 24 HRS.
(signature)

SAMPLE DESCRIPTION AND PROJECT NUMBER: Shell - San Leandro.
15275 Washington Ave.

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
Grp A	TPH. G & BTXE	Comp.	4	S
Grp B	" "	"	4	S.

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. [signature] tcs	11.25.87 3:00	Bob Fisher	3:00
2. ~~[signature]~~	4:35 11/25/87	[signature]	11/25/87 4:35 PM
3.			
4.			

* STATE AFFILIATION NEXT TO ~~SIGNATURE~~

REMARKS: RUSH 24 HRS.