



GeoStrategies Inc.

QUARTERLY REPORT

Shell Service Station
350 Grand Avenue
Oakland, California
WIC 204-5510-0204

766702-8

June 9, 1992



GeoStrategies Inc.

2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

(510) 352-4800

June 9, 1992

Shell Oil Company
P. O. Box 5278
Concord, California 94520

Attn: Mr. Dan Kirk

Re: QUARTERLY REPORT
Shell Service Station
350 Grand Avenue
Oakland, California
WIC# 204-5510-0204

Mr. Kirk:

This Quarterly Report has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1992 second quarter sampling for the above-referenced site (Plate 1). Sampling data were furnished by the Shell Oil Company sampling contractor.

There are currently three ground-water monitoring wells at the site; Wells S-1 through S-3 (Plate 2). In addition, five exploratory soil borings have been drilled at the site (S-A through S-E). These wells and borings were installed and drilled in 1990 by GSI.

CURRENT QUARTER SAMPLING RESULTS

Depth to water-level measurements were obtained in each monitoring well on April 27, 1992. Static ground-water levels were measured from the surveyed top of each well box and recorded to the nearest ± 0.01 foot. Water level elevations, referenced to Mean Sea Level (MSL) datum and the stabilized values of measured physical parameters are presented in the EMCON monitoring report (Appendix A). Water level data were used to construct a quarterly water-level elevation map (Plate 2). The static ground-water level in Well S-3 appears to be anomalous, and was not used in contouring. *no gradient.*

explain

Each well was checked for the presence of floating product. Floating product was not observed in the wells this quarter.

GeoStrategies Inc.

Shell Oil Company
June 9, 1992
Page 2


Ground-water samples were collected on April 27 1992. Samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) and as Diesel (TPH-Diesel) according to EPA Method 8015 (Modified, and for Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) according to EPA Method 8020. The ground-water samples were analyzed by International Technology (IT) Analytical Services, a California State-certified laboratory located in Cerritos, California. The laboratory analytical report and Chain-of-Custody form are presented in Appendix A. A chemical isoconcentration map for benzene is presented on Plate 3. Historical chemical analytical data are presented in Appendix A.

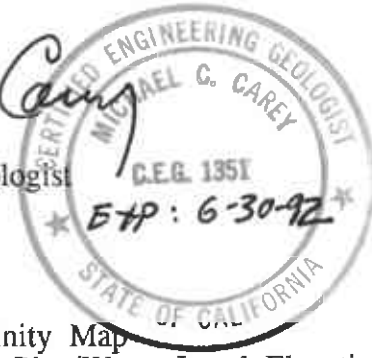
If you have any question, please call.

GeoStrategies Inc. by,



Ellen C. Fostersmith
Geologist


Michael Carey
Engineering Geologist
C.E.G. 1351

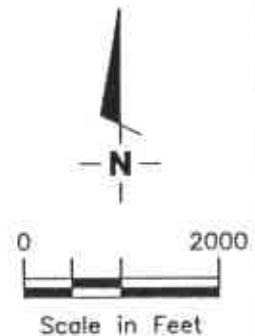
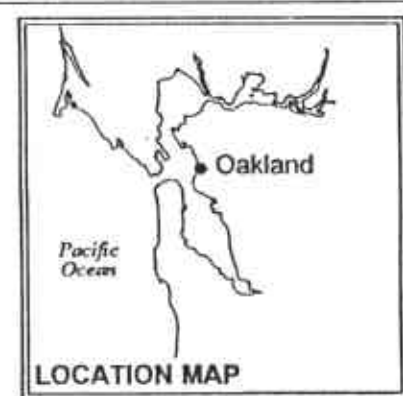
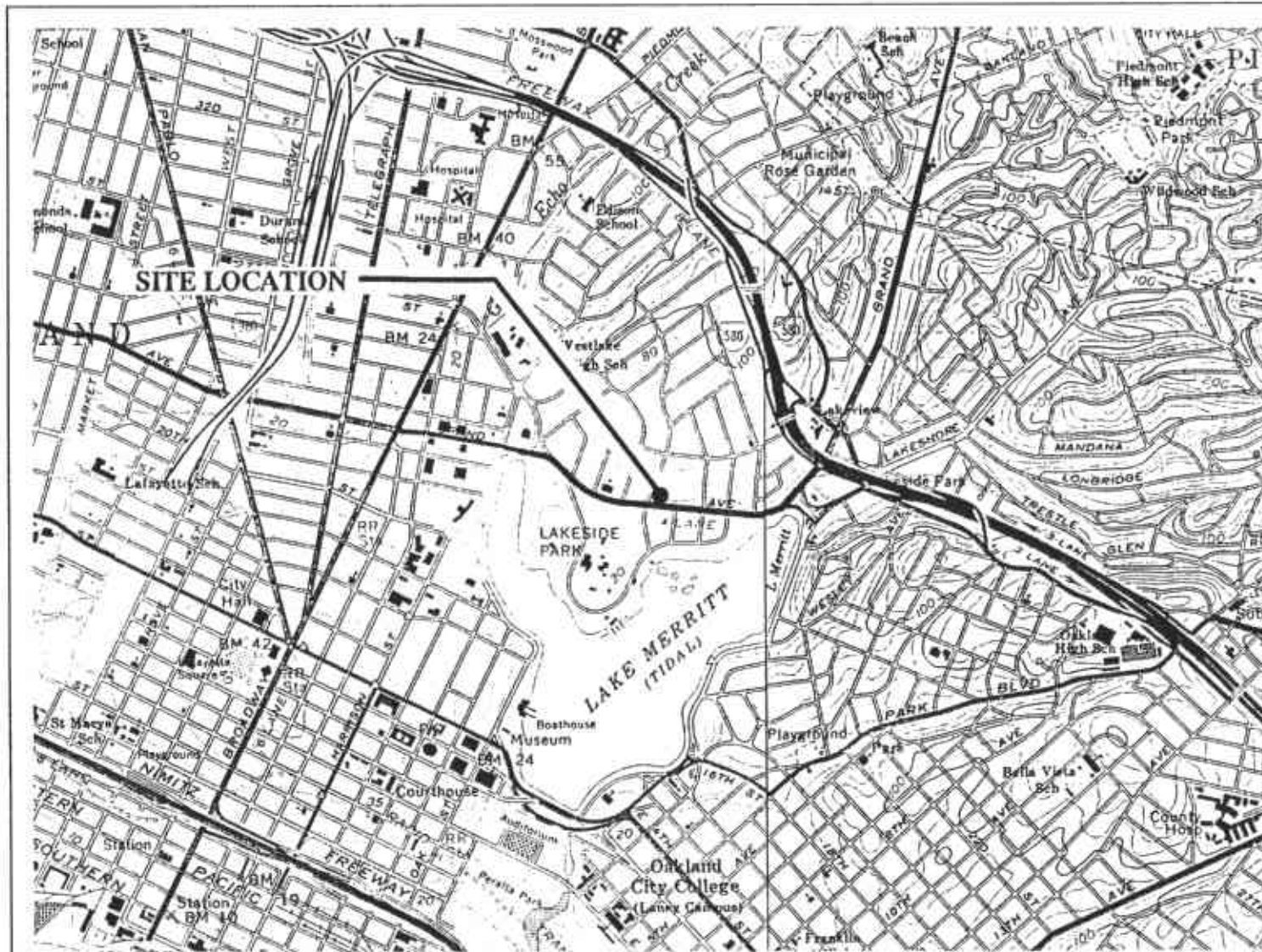


ECF/MCC/shl

Plate 1. Vicinity Map
Plate 2. Site Plan/Water Level Elevation Map
Plate 3. Benzene Isoconcentration Map

Appendix A: EMCON Monitoring Report and Chain-of-Custody

QC Review: RAL



Base Map: USGS Topographic Map



GeoStrategies Inc.

VICINITY MAP
 Shell Service Station
 350 Grand Avenue
 Oakland, California

PLATE

1

JOB NUMBER
7667

REVIEWED BY
cy

DATE
3/91

REVISED DATE

EXPLANATION

◆ Ground-water monitoring well

● Soil boring

99.99 Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on April 27, 1992

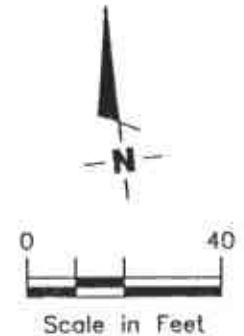
- NOTES:
1. Water levels may be influenced irrigation practices and/or site construction activities.
 2. Well S-3 appears anomalous and was not used in contouring.



GRAND AVENUE

Base Map: Shell Site Plan dated 12-21-89

SSW gradient ->
TPH-g (ppb)
TPH-d (ppb)
Benzene (ppb)



GeoStrategies Inc.

SITE PLAN\WATER LEVEL MAP
 Shell Service Station
 350 Grand Avenue
 Oakland, California

PLATE

2

JOB NUMBER
766702-8

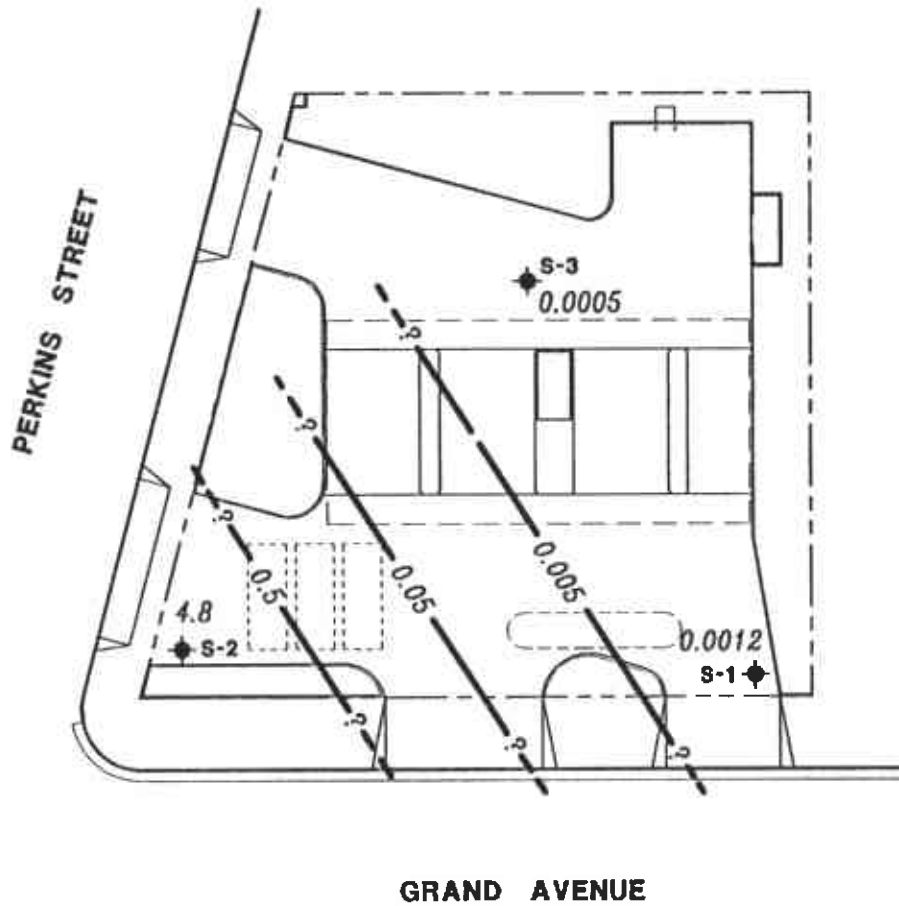
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6/92

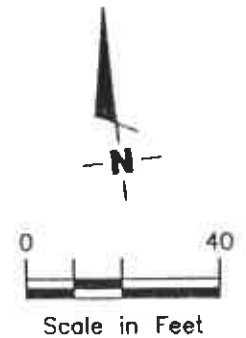
REVISED DATE

EXPLANATION

- ◆ Ground-water monitoring well
- Benzene isoconcentration contour
- 0.05 Benzene concentration in ppm sampled on April 27, 1992



Base Map: Shell Site Plan dated 12-21-89



GeoStrategies Inc.

BENZENE ISOCONCENTRATION MAP
Shell Service Station
350 Grand Avenue
Oakland, California

PLATE
3

JOB NUMBER
766702-8

REVIEWED BY
EM

DATE
6/92

REVISED DATE

GeoStrategies Inc.

**APPENDIX A
EMCON MONITORING REPORT
AND
CHAIN-OF-CUSTODY**

RECEIVED

MAY 28 1992

GeoStrategies Inc.

May 28, 1992
Project: G67-24.01
WIC#: 204-5510-0204



EMCON
ASSOCIATES

Consultants in Wastes
Management and
Environmental Control

Ms. Ellen Fostersmith
Geo Strategies Inc.
2140 West Winton Avenue
Hayward, California 94545

Re: Second quarter 1992 ground-water monitoring report, Shell Oil
Company, 350 Grand Avenue, Oakland, California

Dear Ms. Fostersmith:

This letter presents the results of the second quarter 1992 ground-water monitoring event for the Shell Oil Company (Shell) site located at 350 Grand Avenue, Oakland California. Second quarter monitoring was conducted on April 27 and 28, 1992. The site is monitored quarterly.

GROUND-WATER LEVEL SURVEY

A water-level survey preceded the purging and sampling of the monitoring wells. The wells included in the survey are identified in figure 1 (supplied by Geo Strategies Inc.). During the survey, wells S-1, S-2, and S-3 were measured for depth to water, floating product thickness, and total depth. Depth to water and floating product thickness were measured to the nearest 0.01 foot with an oil/water interface probe. No floating product was observed in any wells. Total depth was measured to the nearest 0.1 foot. Results of the second quarter water-level survey, and available data from four previous surveys, are summarized in table 1.

SAMPLING AND ANALYSIS

Ground-water samples were collected from wells S-1, S-2, and S-3 on April 27 and 28, 1992. Prior to sample collection, the wells were purged with polyvinyl chloride bailers. During the purging operation, ground water was monitored for pH, electrical conductivity, and temperature as a function of volume of water removed. Purging continued until these parameters were stable and a minimum of three casing volumes of ground water were removed. All three wells were evacuated to dryness before the removal of three casing volumes. The wells were allowed to recharge for up to 24 hours. Samples were collected after the wells had recharged to a level sufficient for sample collection. Field measurements from second quarter monitoring, and available measurements from four previous monitoring events, are summarized in table 1. Purge water from

G672401B.DOC



the monitoring wells was contained in a 55-gallon drum. The drum was identified with a Shell-approved label and secured for on-site storage.

Ground-water samples were collected with a Teflon® bailer, labeled, placed on ice, and transported to a Shell-approved and state-certified analytical laboratory for analysis. Shell chain-of-custody documents accompanied all samples to the laboratory.

All equipment that was placed down a well or that came in contact with ground water was steam cleaned with deionized water prior to use at each well.

Quality control samples for second quarter monitoring included a trip blank. All water samples collected during second quarter monitoring were analyzed for total petroleum hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and total petroleum hydrocarbons as diesel (TPH-d).

ANALYTICAL RESULTS

Analytical results for the second quarter 1992 monitoring event, and available results from four previous monitoring events, are summarized in table 2. The original certified analytical report and copy of the final chain-of-custody document are attached.

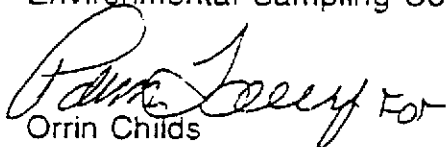
If you have any questions, please call.

Very truly yours,

EMCON Associates



David Larsen
Environmental Sampling Coordinator



Orrin Childs
Environmental Sampling Supervisor

DL/OC:dl

Attachments: Table 1 - Monitoring well field measurement data
Table 2 - Summary of analytical results
Figure 1 - Monitoring well locations
Certified analytical report
Chain-of-custody document

Table 1
Monitoring Well Field Measurement Data
Second Quarter 1992

Shell Station: 350 Grand Avenue
Oakland, California
WIC #: 204-5510-0204

Date: 05/27/92
Project Number: G67-24.01

Well Desig- nation	Water Level Field Date	TOB Elevation (ft-MSL)	Depth to Water (feet)	Ground- water Elevation (ft-MSL)	Total Well Depth (feet)	Floating Product Thickness (feet)	Water Sample Field Date	pH (std. units)	Electrical Conductivity (micromhos/cm)	Temperature (degrees F)	Turbidity (NTU)
S-1	04/25/91	20.84	7.37	13.47	17.6	ND	04/25/91	7.11	820	65.7	NR
S-1	07/19/91	20.84	8.92	11.92	17.6	ND	07/19/91	7.11	877	69.8	NR
S-1	10/09/91	20.84	9.62	11.22	17.6	ND	10/09/91	7.19	676	70.1	NR
S-1	01/23/92	20.84	8.94	11.90	17.5	ND	01/23/92	6.65	749	60.9	>200
S-1	04/27/92	20.84	7.06	13.78	17.3	ND	04/27/92	6.94	707	67.7	>200
S-2	04/25/91	21.24	8.24	13.00	15.0	ND	04/25/91	6.69	784	65.0	NR
S-2	07/19/91	21.24	9.55	11.69	15.0	ND	07/19/91	7.10	819	70.5	NR
S-2	10/09/91	21.24	10.26	10.98	15.0	ND	10/09/91	6.67	680	71.9	NR
S-2	01/23/92	21.24	9.51	11.73	15.0	ND	01/23/92	6.35	1150	51.8	>200
S-2	04/27/92	21.24	7.83	13.41	14.8	ND	04/27/92	6.68	1094	74.1	>200
S-3	04/25/91	22.70	12.96	9.74	15.0	ND	04/25/91	6.59	699	62.9	NR
S-3	07/19/91	22.70	12.45	10.25	15.1	ND	07/19/91	7.12	608	67.8	NR
S-3	10/09/91	22.70	12.98	9.72	15.1	ND	10/09/91	6.51	451	70.1	NR
S-3	01/23/92	22.70	13.06	9.64	15.0	ND	01/23/92	5.58	544	55.5	>200
S-3	04/27/92	22.70	7.25	15.45	14.7	ND	04/28/92	6.80	667	72.4	>200

TOB = top of well box

ft-MSL = elevation in feet, relative to mean sea level

std. units = standard pH units

micromhos/cm = micromhos per centimeter

degrees F = degrees Fahrenheit

NTU = nephelometric turbidity units

ND = None detected

NR = Not reported; data not available

Table 2
 Summary of Analytical Results
 Second Quarter 1992
 milligrams per liter (mg/l) or parts per million (ppm)

Shell Station: 350 Grand Avenue
 Oakland, California
 WIC #: 204-5510-0204

Date: 05/27/92
 Project Number: 087-24.01

Sample Designation	Water Sample Field Date	TPH-g	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-d
		(mg/l) <i>ppm ppb</i>	(mg/l) <i>ppb</i>	(mg/l)	(mg/l)	(mg/l)	(mg/l) <i>ppb</i>
S-1	04/25/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
S-1	07/19/91	<0.05	0.0068	<0.0005	<0.0005	<0.0005	<0.05
S-1	10/09/91	0.12	0.010	<0.0005	<0.0005	<0.0005	0.26 [^]
S-1	01/23/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
S-1	04/27/92	<0.05 [✓]	0.0012	<0.0005	<0.0005	<0.0005	0.07 [*]
S-2	04/25/91	32.	2.9	0.48	1.4	2.3	20.*
S-2	07/19/91	21.	4.7	0.43	1.2	2.4	30.*
S-2	10/09/91	29.	6.3	0.51	1.7	2.4	32.*
S-2	01/23/92	31.	5.8	0.48	2.0	2.7	38.*
S-2	04/27/92	21.+ <i>21,000</i>	4.8 <i>4,300</i>	0.32	1.6	1.4	12.* <i>12,000</i>
S-3	04/25/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
S-3	07/19/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
S-3	10/09/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
S-3	01/23/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA\$
S-3	04/28/92	<0.05	0.0005	<0.0005	<0.0005	<0.0005	0.10 <i>100</i>
TB	04/25/91	NR	NR	NR	NR	NR	NR
TB	07/19/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
TB	10/09/91	NR	NR	NR	NR	NR	NR
TB	01/23/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.05
TB	04/28/92	<0.05	0.0011	<0.0005	<0.0005	<0.0005	<0.05

TPH-g = total petroleum hydrocarbons as gasoline

TPH-d = total petroleum hydrocarbons as diesel

[^] = Compounds detected and calculated as diesel are not characteristic of the standard diesel chromatographic pattern

^{*} = Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline

⁺ = Compounds detected and calculated as gasoline are not characteristic of the standard gasoline chromatographic pattern

NA = Not analyzed

\$ = Well dried during purging and did not recover to a level sufficient for collection of a sample for analysis of TPH-d

NR = Not reported; data not available

EXPLANATION

- ◆ Ground-water monitoring well
- Soil boring

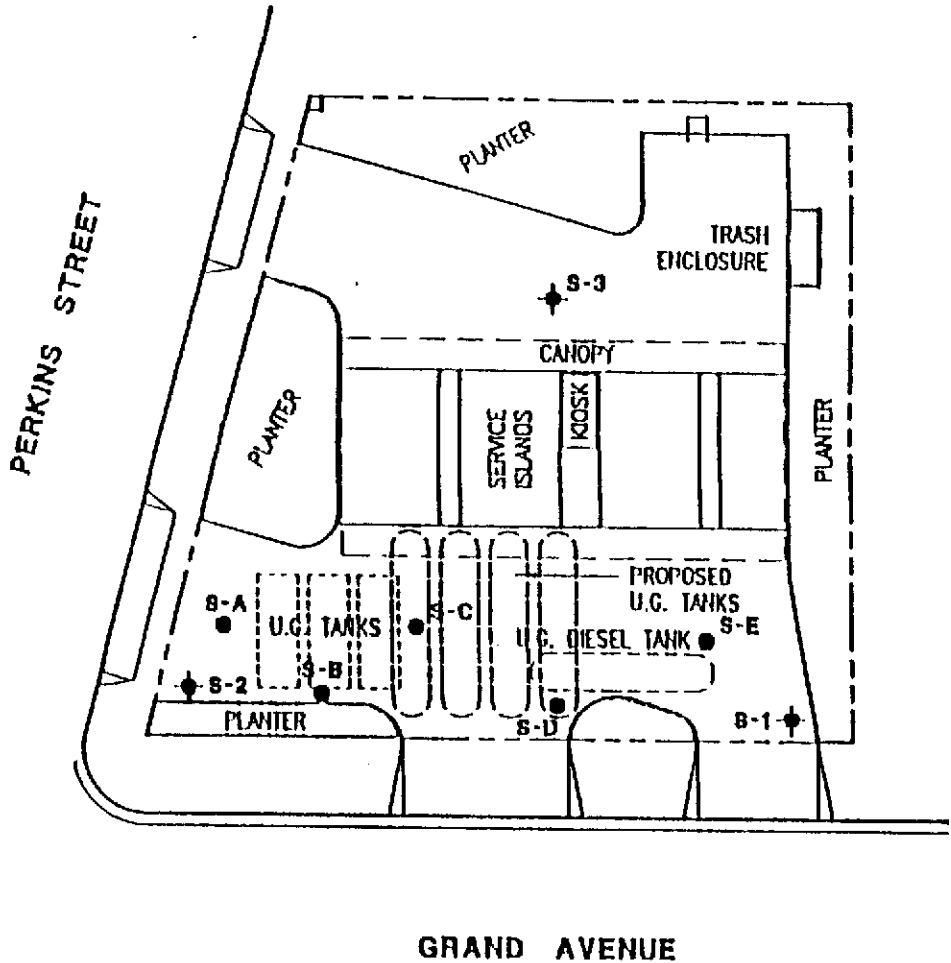
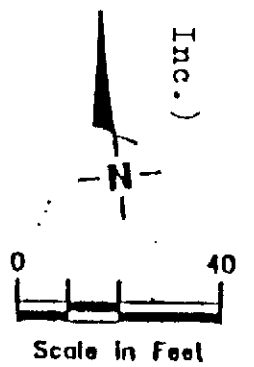


Figure 1
(Supplied by Geo Strategies, Inc.)



Base Map: Shell Site Plan dated 12-21-89



GeoStrategies Inc.

SITE PLAN
Shell Service Station
350 Grand Avenue
Oakland, California

JOB NUMBER
766702-5

REVIEWED BY
EFS

DATE
9/91

REVISED DATE

CERTIFICATE OF ANALYSIS

EMCON ASSOCIATES
1938 JUNCTION AVE
SAN JOSE CA 95131
DAVID LARSEN

Date: 05/12/92

Work Order: C2-04-242

Project/P.O.#: 204-5510-0204
SHELL NORTH

This is the Certificate of Analysis for the following samples:

Client Work ID: 350 Grand Ave, Oakland
Date Received: 04/30/92 275000
Number of Samples: 8
Sample Type: LIQUID

Shell Site: 350 Grand Ave, Oakland
WIC No.: 204-5510-0204
Shell Engineer: Kurt Miller
Shell Consultant: EMCON Associates / David Larsen
Work Description: Quarterly Monitoring
Class Type: 5461

Samples were labeled as follows:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
S-1	C2-04-242-01
S-2	C2-04-242-02
S-3	C2-04-242-03
TRIP BLANK	C2-04-242-04
MATRIX SPIKE	C2-04-242-05
MATRIX SPIKE DUPLICATE	C2-04-242-06
METHOD BLANK 1	C2-04-242-07

Reviewed and Approved:

Marla Miller
Marla Miller
Project Manager

EMCON ASSOCIATES

MAY 14 1992

RECEIVED

Company: ENCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

Samples, continued from above:

<u>SAMPLE IDENTIFICATION</u>	<u>LABORATORY #</u>
METHOD BLANK 2	C2-04-242-08

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

Work Order: C2-04-242

TEST NAME: HIGH BOILING FUEL HCs

SAMPLE ID: S-1

LAB SAMPLE ID: C204242-01D

SAMPLE DATE: 04/27/92

ANALYSIS DATE: 05/08/92

EXTRACTION DATE: 05/01/92

	Results in	MG/L:	Detection Limit
TPHC AS DIESEL		0.07**	0.05

	Surrogate	% Recovery	Limit
BENZO(A)PYRENE		87	50 - 150

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: VOLATILE FUEL HYDROCARBONS

SAMPLE ID: S-1

LAB SAMPLE ID: C204242-01A

SAMPLE DATE: 04/27/92

ANALYSIS DATE: 05/04/92

EXTRACTION DATE:

	Results in	MG/L:	Detection Limit
TPHC AS UNLEADED GASOLINE		ND	0.05

Surrogate	% Recovery
A,A,A-TRIFLUOROTOLUENE	99

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: BTEX BY METHOD 8020

SAMPLE ID: S-1

LAB SAMPLE ID: C204242-01A

SAMPLE DATE: 04/27/92

ANALYSIS DATE: 05/04/92

CONFIRMATION DATE:

	Results in	MG/L:	Detection Limit
BENZENE		0.0012	0.0005
TOLUENE		ND	0.0005
ETHYLBENZENE		ND	0.0005
XYLENES (TOTAL)		ND	0.0005

Surrogate	% Recovery	Limits
A,A,A-TRIFLUOROTOLUENE	93	75 - 125
1-CHLORO-2-FLUOROBENZENE		-

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: HIGH BOILING FUEL HCs

SAMPLE ID: S-2

LAB SAMPLE ID: C204242-02D

SAMPLE DATE: 04/27/92

ANALYSIS DATE: 05/12/92

EXTRACTION DATE: 05/11/92

	Results in	MG/L:	Detection Limit
TPHC AS DIESEL		12**	0.3

	Surrogate	% Recovery	Limit
BENZO(A)PYRENE		90	50 - 150

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: ENCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: VOLATILE FUEL HYDROCARBONS

SAMPLE ID: S-2

LAB SAMPLE ID: C204242-02A

SAMPLE DATE: 04/27/92

ANALYSIS DATE: 05/05/92

EXTRACTION DATE:

	Results in	MG/L:	Detection Limit
	TPHC AS UNLEADED GASOLINE	21***	2

Surrogate	% Recovery
A,A,A-TRIFLUOROTOLUENE	104

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '**' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: BTEX BY METHOD 8020

SAMPLE ID: S-2

LAB SAMPLE ID: C204242-02A

SAMPLE DATE: 04/27/92

ANALYSIS DATE: 05/06/92

CONFIRMATION DATE:

	Results in	MG/L:	Detection Limit
BENZENE		4.8	0.05
TOLUENE		0.32	0.05
ETHYLBENZENE		1.6	0.05
XYLENES (TOTAL)		1.4	0.05

Surrogate	% Recovery	Limits
A,A,A-TRIFLUOROTOLUENE	99	75 - 125
1-CHLORO-2-FLUOROBENZENE		-

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCOR ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: HIGH BOILING FUEL HCs

SAMPLE ID: S-3

LAB SAMPLE ID: C204242-03D

SAMPLE DATE: 04/28/92

ANALYSIS DATE: 05/08/92

EXTRACTION DATE: 05/01/92

	Results in	MG/L:	Detection Limit
TPHC AS DIESEL		0.10	0.05

	Surrogate	% Recovery	Limit
BENZO(A)PYRENE		85	50 - 150

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: VOLATILE FUEL HYDROCARBONS

SAMPLE ID: S-3

LAB SAMPLE ID: C204242-03A

SAMPLE DATE: 04/28/92

ANALYSIS DATE: 05/04/92

EXTRACTION DATE:

	Results in	MG/L:	Detection Limit
TPHC AS UNLEADED GASOLINE		ND	0.05

Surrogate	% Recovery
A,A,A-TRIFLUOROTOLUENE	97

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable
'*' Surrogate recovery is outside QC limit.
'D' Surrogate is diluted out.
'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EDCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: BTEX BY METHOD 8020

SAMPLE ID: S-3

LAB SAMPLE ID: C204242-03A

SAMPLE DATE: 04/28/92

ANALYSIS DATE: 05/04/92

CONFIRMATION DATE:

	Results in	MG/L:	Detection Limit
BENZENE		0.0005	0.0005
TOLUENE		ND	0.0005
ETHYLBENZENE		ND	0.0005
XYLENES (TOTAL)		ND	0.0005

	Surrogate	% Recovery	Limits
A,A,A-TRIFLUOROTOLUENE		90	75 - 125
1-CHLORO-2-FLUOROBENZENE			-

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCOM ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: HIGH BOILING FUEL HCs

SAMPLE ID: TRIP BLANK

LAB SAMPLE ID: C204242-04C

SAMPLE DATE: not spec

ANALYSIS DATE: 05/08/92

EXTRACTION DATE: 05/01/92

	Results in	MG/L:	Detection Limit
TPHC AS DIESEL		ND	0.05

Surrogate	% Recovery	Limit
BENZO(A)PYRENE	88	50 - 150

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: ENCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: VOLATILE FUEL HYDROCARBONS

SAMPLE ID: TRIP BLANK

LAB SAMPLE ID: C204242-04A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/04/92

EXTRACTION DATE:

	Results in	MG/L:	Detection Limit
TPHC AS UNLEADED GASOLINE		ND	0.05

Surrogate	% Recovery
A,A,A-TRIFLUOROTOLUENE	104

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICE
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: BTEX BY METHOD 8020

SAMPLE ID: TRIP BLANK

LAB SAMPLE ID: C204242-04A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/04/92

CONFIRMATION DATE:

	Results in	MG/L:	Detection Limit
BENZENE		0.0011	0.0005
TOLUENE		ND	0.0005
ETHYLBENZENE		ND	0.0005
XYLENES (TOTAL)		ND	0.0005

Surrogate	% Recovery	Limits
A,A,A-TRIFLUOROTOLUENE	97	75 - 125
1-CHLORO-2-FLUOROBENZENE		-

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: HIGH BOILING FUEL HCs

SAMPLE ID: MATRIX SPIKE

LAB SAMPLE ID: C204242-05A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/07/92

EXTRACTION DATE:

	Results in	%REC:	Detection Limit
TPHC AS DIESEL		78	-

	Surrogate	% Recovery	Limit
BENZO(A)PYRENE		98	50 - 150

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EDCOM ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: VOLATILE FUEL HYDROCARBONS

SAMPLE ID: MATRIX SPIKE

LAB SAMPLE ID: C204242-05A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/04/92

EXTRACTION DATE:

	Results in	%REC:	Detection Limit
TPHC AS UNLEADED GASOLINE		90	-

Surrogate	% Recovery
A,A,A-TRIFLUOROTOLUENE	98

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: BTEX BY METHOD 8020

SAMPLE ID: MATRIX SPIKE

LAB SAMPLE ID: C204242-05A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/04/92

CONFIRMATION DATE:

	Results in	%REC:	Detection Limit
BENZENE		98	-
TOLUENE		93	-
ETHYLBENZENE		93	-
XYLENES (TOTAL)		93	-

Surrogate	% Recovery	Limits
A,A,A-TRIFLUOROTOLUENE	97	75 - 125
1-CHLORO-2-FLUOROBENZENE		-

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: HIGH BOILING FUEL HCs

SAMPLE ID: MATRIX SPIKE DUPLICATE

LAB SAMPLE ID: C204242-06A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/07/92

EXTRACTION DATE:

	Results in	%REC:	Detection Limit
TPHC AS DIESEL		76	-

	Surrogate	% Recovery	Limit
BENZO(A)PYRENE		89	50 - 150

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable
'*' Surrogate recovery is outside QC limit.
'D' Surrogate is diluted out.
'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCOR ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: VOLATILE FUEL HYDROCARBONS

SAMPLE ID: MATRIX SPIKE DUPLICATE

LAB SAMPLE ID: C204242-06A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/04/92

EXTRACTION DATE:

	Results in	%REC:	Detection Limit
TPHC AS UNLEADED GASOLINE		91	-

Surrogate	% Recovery
A,A,A-TRIFLUOROTOLUENE	100

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: BTEX BY METHOD 8020

SAMPLE ID: MATRIX SPIKE DUPLICATE

LAB SAMPLE ID: C204242-06A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/04/92

CONFIRMATION DATE:

	Results in	%REC:	Detection Limit
BENZENE		99	-
TOLUENE		94	-
ETHYLBENZENE		93	-
XYLENES (TOTAL)		93	-

Surrogate	% Recovery	Limits
A,A,A-TRIFLUOROTOLUENE	99	75 - 125
1-CHLORO-2-FLUOROBENZENE		-

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: HIGH BOILING FUEL HCs

SAMPLE ID: METHOD BLANK 1

LAB SAMPLE ID: C204242-07A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/08/92

EXTRACTION DATE: 05/01/92

	Results in	MG/L:	Detection Limit
TPHC AS DIESEL		ND	0.05

	Surrogate	% Recovery	Limit
BENZO(A)PYRENE		93	50 - 150

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES
Date: 05/12/92
Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: VOLATILE FUEL HYDROCARBONS

SAMPLE ID: METHOD BLANK 1
LAB SAMPLE ID: C204242-07A
SAMPLE DATE: not spec
ANALYSIS DATE: 05/04/92
EXTRACTION DATE:

	Results in	MG/L:	Detection Limit
	TPHC AS UNLEADED GASOLINE	ND	0.05

Surrogate % Recovery
A,A,A-TRIFLUOROTOLUENE 105

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
'NA' indicates not applicable
'*' Surrogate recovery is outside QC limit.
'D' Surrogate is diluted out.
'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: KMCOM ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: BTEX BY METHOD 8020

SAMPLE ID: METHOD BLANK 1

LAB SAMPLE ID: C204242-07A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/04/92

CONFIRMATION DATE:

	Results in	MG/L:	Detection Limit
BENZENE		ND	0.0005
TOLUENE		ND	0.0005
ETHYLBENZENE		ND	0.0005
XYLENES (TOTAL)		ND	0.0005

Surrogate	% Recovery	Limits	
A,A,A-TRIFLUOROTOLUENE	98	75	- 125
1-CHLORO-2-FLUOROBENZENE			-

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: HIGH BOILING FUEL HCs

SAMPLE ID: METHOD BLANK 2

LAB SAMPLE ID: C204242-08A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/12/92

EXTRACTION DATE: 05/11/92

	Results in	MG/L:	Detection Limit
TPHC AS DIESEL		ND	0.2

	Surrogate	% Recovery	Limit
BENZO(A)PYRENE		90	50 - 150

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES
Date: 05/12/92
Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: VOLATILE FUEL HYDROCARBONS

SAMPLE ID: METHOD BLANK 2
LAB SAMPLE ID: C204242-08A
SAMPLE DATE: not spec
ANALYSIS DATE: 05/05/92
EXTRACTION DATE:

	Results in	MG/L:	Detection Limit
TPHC AS UNLEADED GASOLINE		ND	0.05

Surrogate	% Recovery
A,A,A-TRIFLUOROTOLUENE	106

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: EMCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME: BTEX BY METHOD 8020

SAMPLE ID: METHOD BLANK 2

LAB SAMPLE ID: C204242-08A

SAMPLE DATE: not spec

ANALYSIS DATE: 05/06/92

CONFIRMATION DATE:

	Results in	MG/L:	Detection Limit
BENZENE		ND	0.0005
TOLUENE		ND	0.0005
ETHYLBENZENE		ND	0.0005
KYLENES (TOTAL)		ND	0.0005

	Surrogate	% Recovery	Limits	
A,A,A-TRIFLUOROTOLUENE		99	75	- 125
1-CHLORO-2-FLUOROBENZENE				-

Comments: 'ND' or '<' indicates that the compound is not detected at the specified limit.
 'NA' indicates not applicable
 '*' Surrogate recovery is outside QC limit.
 'D' Surrogate is diluted out.
 'B' indicates analyte found in the associated blank as well as in the sample, value reported is not blank corrected.

Company: ENCOM ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

COMMENTS

** The chromatographic pattern of extractable hydrocarbons found in the sample does not match the diesel standard. The pattern in the sample is more consistent with the pattern found in lower boiling hydrocarbons.

*** The chromatographic pattern of purgeable hydrocarbons found in the sample does not match the gasoline standard. The sample was quantitated as gasoline.

Company: ENCON ASSOCIATES

Date: 05/12/92

Client Work ID: 350 Grand Ave, Oakland

275000

IT ANALYTICAL SERVICES
CERRITOS, CA

Work Order: C2-04-242

TEST NAME HIGH BOILING FUEL HCs TEST CODE 8015D1

High boiling fuel hydrocarbons are analyzed by methods established by the California DHS' LUFT manual. An aliquot of the sample is serially extracted with methylene chloride. The extracts are combined, exchanged with hexane, and concentrated to a final volume of 2 ml. A portion of the extract is directly injected into a gas chromatograph equipped with a 30 meter capillary column. Detection and quantitation is made by a flame ionization detector. Diesel Fuel Number 2 is used as the calibration standard.

TEST NAME VOLATILE FUEL HYDROCARBONS TEST CODE 8015U

Low boiling fuel hydrocarbons are analyzed by methods established by the California DHS' LUFT manual. An aliquot of the sample is purged with helium and the volatile fuel hydrocarbons are transferred to the vapor phase. The vapor is swept through a sorbent column where the hydrocarbons are adsorbed. Upon completion, the sorbent column is heated and backflushed onto a gas chromatograph equipped with a 30 meter capillary column. Detection and quantitation is made by a flame ionization detector. Unleaded gasoline is used as the calibration standard.

TEST NAME BTEX BY METHOD 8020

TEST CODE BTEX_W

The sample was analyzed for benzene, toluene, ethylbenzene and total xylenes according to USEPA Methods 8020 and 5030. An aliquot of the sample is purged with helium and the volatile compounds are transferred to the vapor phase. The vapor is swept through a sorbent column where the aromatics are adsorbed. Upon completion the sorbent column is heated and backflushed onto a GC column. The trapped compounds are separated by the megabore column and detected by a photoionization detector.

RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD

Date: _____
Page 1 of 1

Site Address: 350 Grand Avenue
Oakland CA

WIC#: 204-5510-0204

Shell Engineer: Kurt Miller
Phone No. (510) _____
Fax #: 685-3853

Consultant Name & Address: EMCON Assoc.
1938 Junction Ave.
San Jose, CA 95131

Consultant Contact: David Larsen
Phone No. (408) _____
Fax #: 453-2269

Comments: 3-40As for gas, BTEX
2-Liters for Diesel
2-40As and 1-Liter for TB

Sampled By: Chris Chaco
Printed Name: Chris Chaco

Sample ID	Date	Soil	Water	Air	No. of conds.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal
S-3	4-28-92		X		5	X	X	X		
S-1	4-27-92				5	X	X	X		
S-2	4-27-92				5	X	X	X		
TB			∇		3	X	X	X		

Analysis Required

LAB:

CHECK ONE (1) BOX ONLY	CT/DT	TURN AROUND
Quarterly Monitoring <input checked="" type="checkbox"/>	5461	24 hours <input type="checkbox"/>
Site Investigation <input type="checkbox"/>	5441	48 hours <input type="checkbox"/>
Soil for disposal <input type="checkbox"/>	5442	15 days <input checked="" type="checkbox"/> (N)
Water for disposal <input type="checkbox"/>	5443	Other <input type="checkbox"/>
Air Sample- Sys O&M <input type="checkbox"/>	5452	NOTE: Notify Lab soon as possible w 24/48 hrs. TAT.
Water Sample - Sys O&M <input type="checkbox"/>	5453	
Other <input type="checkbox"/>		

Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLI CONDITIC COMMEN
40 ml	HCL	No	INTACT SW	28
↓	↓	↓	↓	

Relinquished By (signature): *Chris Chaco*
Relinquished By (signature): *David Sulewski ET*
Relinquished By (signature): _____

Printed name: Chris Chaco
Printed name: DAVID SULEWSKI
Printed name: _____

Date: 4/29/92
Time: 04:30
Date: 4/29/92
Time: 09:30
Date: _____
Time: _____

Received (signature): *David Sulewski ET*
Received (signature): *J. Martin*
Received (signature): _____

Printed name: DAVID SULEWSKI
Printed name: J. MARTIN
Printed name: _____

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

Last Revision Date: 10/15/91

T2-04-015 / (2nd copy) C204242

Jarf



GeoStrategies Inc.

2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

(510) 352-4800

June 9, 1992

STID
3714

Alameda County
Department of Environmental Health
80 Swan Way, Suite 200
Oakland, California 94621

Attention: Mr. Paul Smith

Reference: Shell Service Station
350 Grand Avenue
Oakland, California
WIC 204-5510-0204 94610 ✓

Mr. Smith:

As requested by Mr. Dan Kirk of Shell Oil Company, we are forwarding a copy of the June 9, 1992 Quarterly Report for the above referenced location. This report presents the results of the ground-water sampling conducted during the second quarter of 1992.

If you have any questions, please call.

Sincerely,

Ellen Fostersmith
Geologist

enclosure

cc: Dan Kirk, Shell Oil Company.
Tom Callaghan, Regional Water Quality Control Board

92 JUN 10 10:26 AM '92