



GeoStrategies Inc.

2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

91 DEC 23 10 11 AM

(510) 352-4800

December 19, 1991

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

Attention: Mr. Barney Chan


Reference: UNOCAL Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California 94610

Mr. Chan:

As requested by Ms. Tina Berry of UNOCAL Corporation, we are forwarding a copy of the Site Update report dated December 17, 1991, prepared for the above referenced location. This report presents the results of the October 9, 1991 groundwater sampling performed by Gettler-Ryan Inc.

If you should have any questions or comments, please call.

Very truly yours,


David J. Vossler
Project Geologist

DJV/nsm

Enclosure

cc: Ms. Tina Berry, UNOCAL Corporation
Mr. Tom Callaghan, Regional Water Quality Control Board



GeoStrategies Inc.

SITE UPDATE

UNOCAL Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

781401-9

December 17, 1991



GeoStrategies Inc.

2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

(510) 352-4800

December 17, 1991

UNOCAL Corporation
P.O. Box 5155
San Ramon, California 94583

Attn: Ms. Tina Berry

Re: SITE UPDATE
UNOCAL Service Station No. 5325
3220 Lakeshore Avenue
Oakland, California

Gentlemen:

This Site Update by GeoStrategies Inc. (GSI) presents results of the 1991 fourth quarter ground-water sampling performed by Gettler-Ryan Inc. (G-R) for the above-referenced site (Plate 1). The scope of work presented in the document was performed at the request of UNOCAL. Field work and laboratory analysis methods were performed to comply with current State of California Water Resources Control Board (SWRCB) guidelines. Ground - water sampling procedures are presented in the GSI Well Installation report dated December 19, 1990.

SITE BACKGROUND

There are currently three monitoring wells at the site, (U-1 through U-3) (Plate 2). These wells were installed by GSI on September 24, 1990. These wells have been installed to evaluate the vertical and horizontal extent of petroleum hydrocarbons in soils and shallow groundwater beneath the site. The underground storage tanks were replaced in June 1990.

Quarterly sampling of wells began in October, 1990. Ground-water samples have been analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) according to EPA Method 8015 (Modified) and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020.

781401-9

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CURRENT QUARTERLY SAMPLING RESULTS

Potentiometric Data

Prior to ground-water sampling, water-levels were measured in each monitoring well using an electronic oil-water interface probe. Static ground-water levels were measured from the surveyed top of well box and recorded to the nearest ± 0.01 foot. Elevations corresponding to Mean Sea Level (MSL) are presented in Table 1. Water-level data were used to construct a potentiometric map presented on Plate 3. Shallow groundwater flows generally to the south at a calculated hydraulic gradient of 0.009.

Floating Product Measurements

Each monitoring well was checked for the presence of floating product with an electronic oil-water interface probe. A clear acrylic bailer was used to confirm interface probe results. Floating product was not detected in the wells this quarter.

Ground-water Analytical Data

Prior to collecting samples, monitoring wells were pumped until ground-water parameters stabilized. Purge volumes and physical parameter values are presented in Table 1. Ground-water samples were collected on October 9, 1991. The samples were analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020. Chemical analyses were performed by Sequoia Analytical, a State-certified environmental laboratory located in Redwood City, California.

TPH-Gasoline and benzene were detected in samples from Well U-2 at concentrations of 230 and 7.1 parts per billion (ppb), respectively. Wells U-1 and U-3 were reported as None Detected (ND) for TPH-Gasoline and benzene. A TPH-Gasoline/benzene concentration map was prepared from this data (Plate 4). Ground-water analyses data are presented in Table 2. Historical analytical data for the site are presented in Table 3. The analytical laboratory report and Chain-of-Custody form are presented in Appendix A.

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Quality Control

The Quality Control (QC) sample for the quarter's ground-water sampling was a trip blank. The trip blank was prepared in the Sequoia laboratory using organic-free water to evaluate field and laboratory handling and analytical procedures. The results of the QC sample analyses were reported as ND and are presented in Table 2.

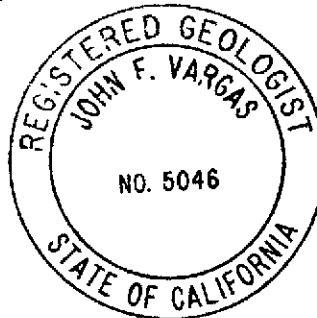
If you have any questions, please call.

GeoStrategies Inc. by,

*Noreen Moyle
for*

Ellen C. Fostersmith
Geologist

John F. Vargas
John F. Vargas
Senior Geologist
R.G. 5046



ECF/JFV/mlg

- Plate 1. Vicinity Map
- Plate 2. Site Plan
- Plate 3. Potentiometric Map
- Plate 4. TPH-G/Benzene Concentration Map

Appendix A: Analytical Laboratory Report and Chain-of-Custody Form

QC Review: RAE

TABLE 1

FIELD MONITORING DATA

WELL NO.	MONITORING DATE	CASING DIA. (IN)	TOTAL WELL DEPTH (FT)	WELL ELEV. (FT)	DEPTH TO WATER (FT)	PRODUCT THICKNESS (FT)	STATIC WATER ELEV. (FT)	PURGED WELL VOLUMES	pH	TEMPERATURE (F)	CONDUCTIVITY (U MHOS/CM)
U-1	09-Oct-91	3	20.3	5.75	9.09	----	-3.34	5	7.57	68.4	2320
U-2	09-Oct-91	3	20.0	4.94	8.59	----	-3.65	2	6.74	70.1	7810
U-3	09-Oct-91	3	20.0	8.14	12.26	----	-4.12	2	7.80	68.5	970

- Notes: 1. Static water elevations referenced to Mean Sea Level (MSL).
 2. Physical parameter measurements represent stabilized values.

TABLE 2

 =====
 GROUND-WATER ANALYSES DATA
 =====

WELL NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
U-1	09-Oct-91	17-Oct-91	<30	<0.30	<0.30	<0.30	<0.30
U-2	09-Oct-91	17-Oct-91	230	7.1	<0.30	<0.30	11
U-3	09-Oct-91	17-Oct-91	<30	<0.30	<0.30	<0.30	<0.30
TB	----	17-Oct-91	<30	<0.30	<0.30	<0.30	<0.30

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline

PPB = Parts Per Billion TB = Trip Blank

Notes: 1. All data shown as <x are reported as ND (none detected).

TABLE 3

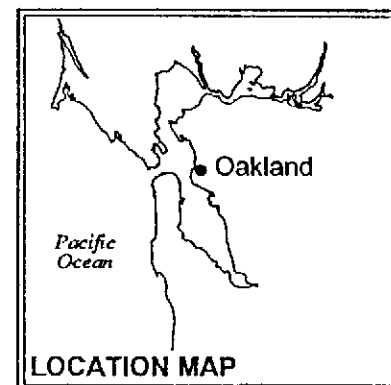
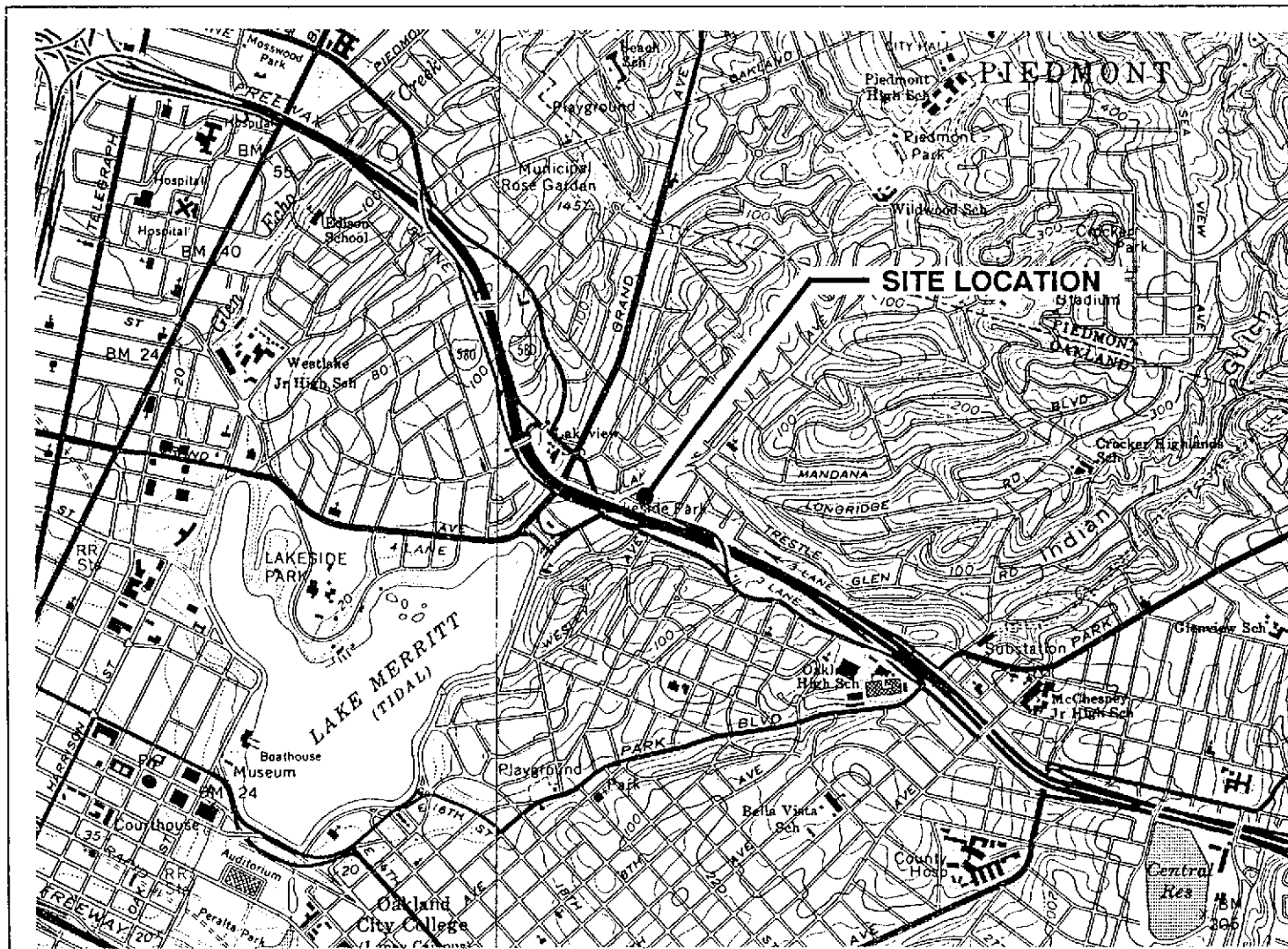
HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
08-Oct-90	U-1	690.	38.	75.	8.6	130.
07-Jan-91	U-1	250.	22.	16.	4.2	17.
01-Apr-91	U-1	160.	13.	8.6	1.0	15.
03-Jul-91	U-1	140	21	4.3	0.36	17
09-Oct-91	U-1	<30	<0.30	<0.30	<0.30	<0.30
08-Oct-90	U-2	780.	27.	46.	15.	130.
07-Jan-91	U-2	1900.	67.	5.8	58.	69.
01-Apr-91	U-2	1700.	250.	89.	34.	190.
03-Jul-91	U-2	2100	150	25	3.1	290
09-Oct-91	U-2	230	7.1	<0.30	<0.30	11
08-Oct-90	U-3	<50.	<0.5	<0.5	<0.5	<0.5
07-Jan-91	U-3	<50.	<0.5	<0.5	<0.5	1.8
01-Apr-91	U-3	<50.	1.0	2.9	0.53	5.4
03-Jul-91	U-3	<30	<0.30	<0.30	<0.30	<0.30
09-Oct-91	U-3	<30	<0.30	<0.30	<0.30	<0.30

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline

PPB = Parts Per Billion

NOTE 1. All data shown as <X are reported as ND (none detected).



Base Map: USGS Topographic Map

Approximate Scale: 1" = 2000'



GeoStrategies Inc.

Vicinity Map
 UNOCAL Service Station #5325
 3220 Lakeshore Avenue
 Oakland, California

PLATE

1

JOB NUMBER
7814

REVIEWED BY RG/CEG

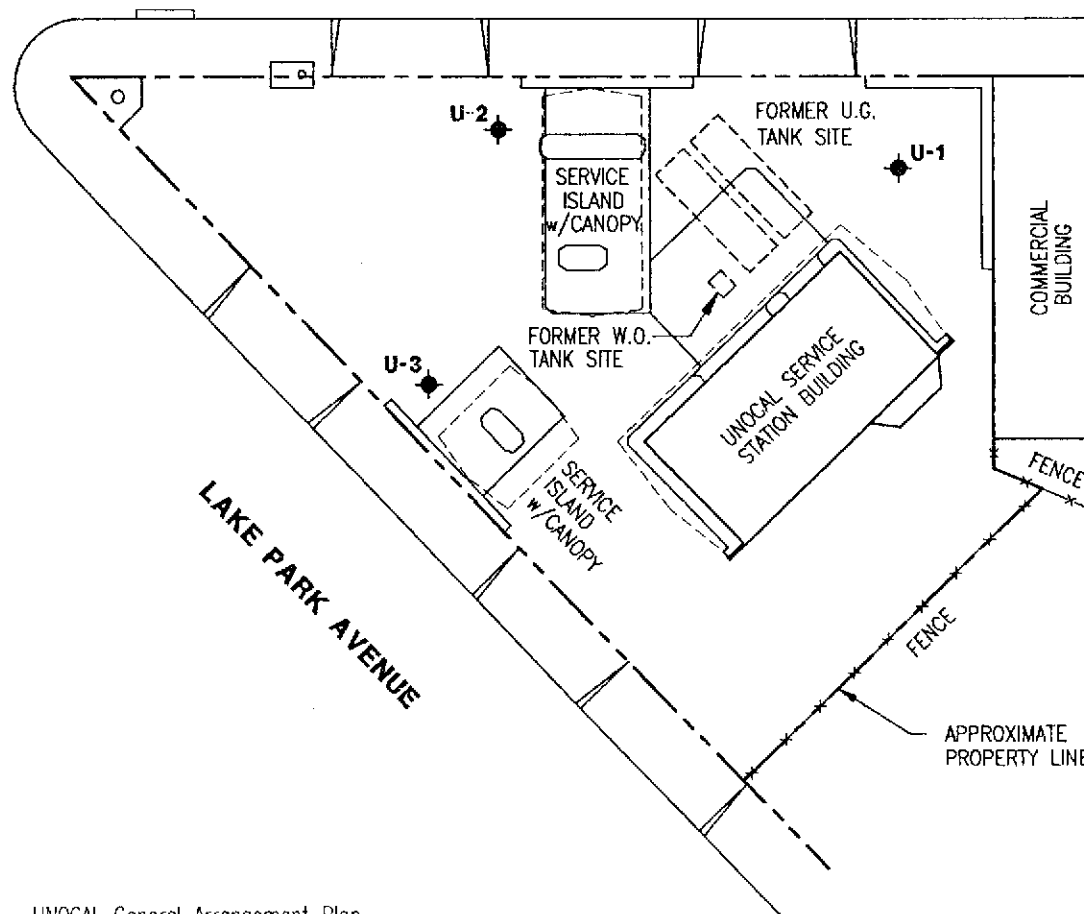
DATE
6/90

REVISED DATE

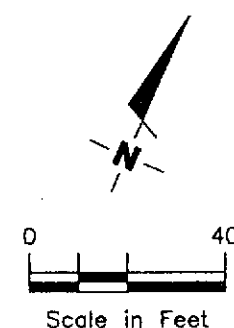
LAKESHORE AVENUE

EXPLANATION

◆ Ground-water monitoring well



Base Map: UNOCAL General Arrangement Plan dated 7-8-66 (Rev, 12-4-84) and field observations



GeoStrategies Inc.

SITE PLAN
UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

PLATE

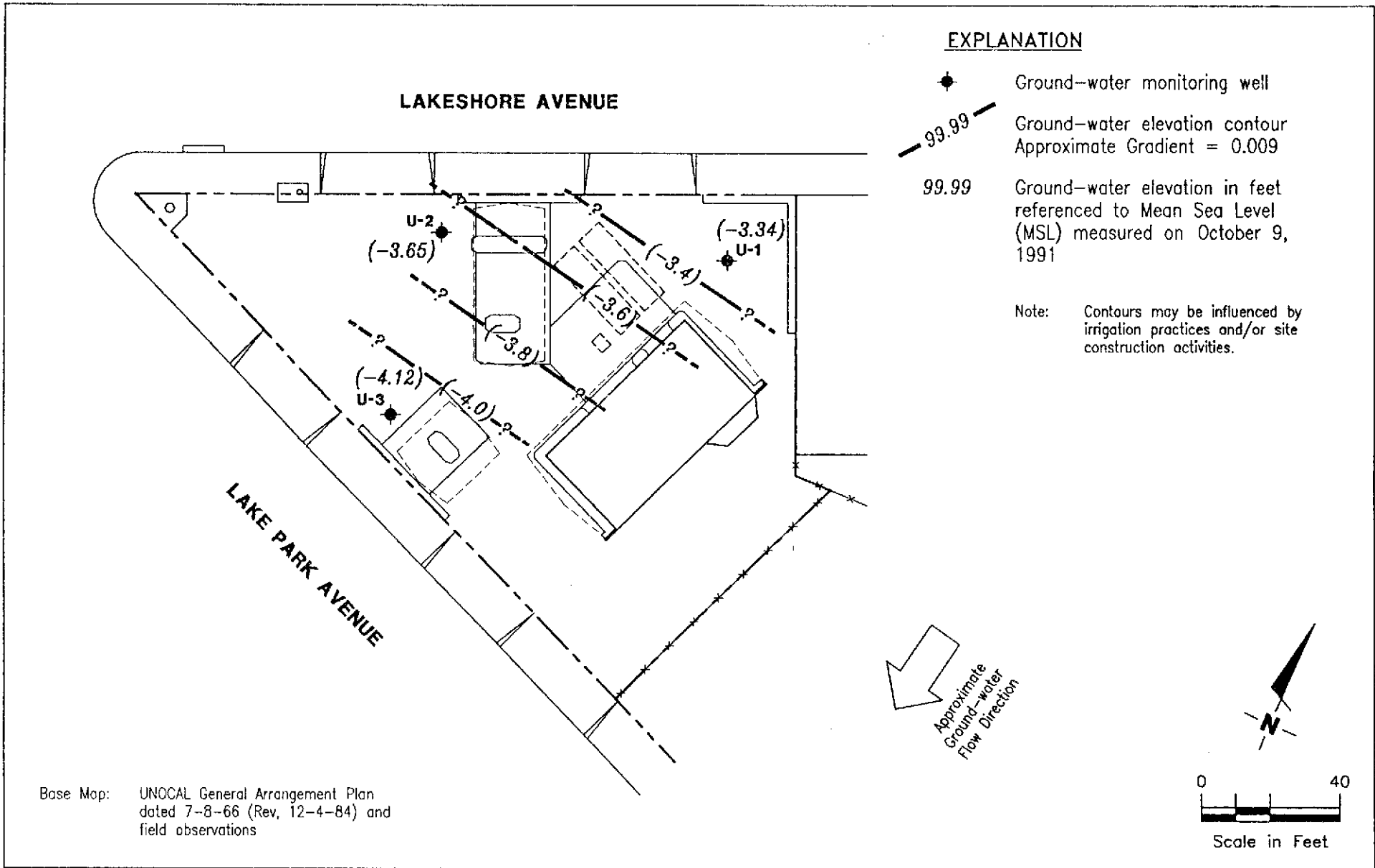
2

JOB NUMBER
781401-9

REVIEWED BY
CMG

DATE
11/91

REVISED DATE



GeoStrategies Inc.

POTENTIOMETRIC MAP
 UNOCAL Service Station #5325
 3220 Lakeshore Avenue
 Oakland, California

PLATE

3

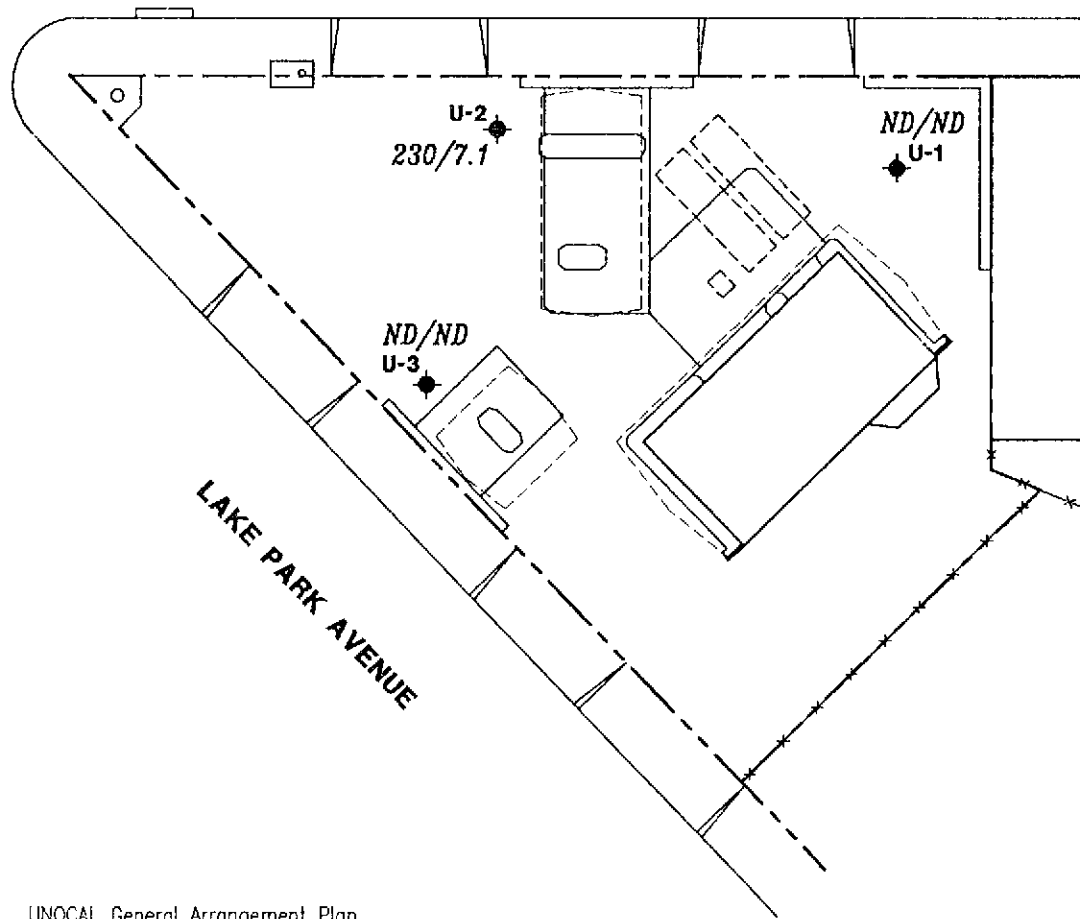
JOB NUMBER
781401-9

REVIEWED BY
cmh

DATE
11/91

REVISED DATE

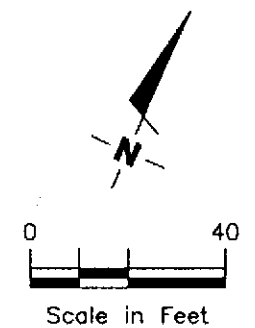
LAKESHORE AVENUE



EXPLANATION

- ◆ Ground-water monitoring well
- 99/9.9 TPH-G (Total Petroleum Hydrocarbons calculated as Gasoline)/Benzene concentrations in ppb sampled on October 9, 1991
- ND Not Detected (See laboratory reports for detection limits)

Base Map: UNOCAL General Arrangement Plan dated 7-8-66 (Rev, 12-4-84) and field observations



GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP
UNOCAL Service Station #5325
3220 Lakeshore Avenue
Oakland, California

PLATE

4

JOB NUMBER
781401-9

REVIEWED BY
CMG

DATE
11/91

REVISED DATE



SEQUOIA ANALYTICAL

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

Gettler Ryan 2150 W. Winton Avenue Hayward, CA 94545 Attention: Tom Paulson	Client Project ID: 3814.01, Unocal 5325, Oakland Matrix Descript: Water Analysis Method: EPA 5030/8015/8020 First Sample #: 110-2444	Sampled: Oct 9, 1991 Received: Oct 11, 1991 Analyzed: Oct 16-17, 1991 Reported: Oct 29, 1991
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TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P.	Benzene	Toluene	Ethyl	Xylenes
		Hydrocarbons			Benzene	
		$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)
110-2444	U-1	N.D.	N.D.	N.D.	N.D.	N.D.
110-2445	U-2	230	7.1	N.D.	N.D.	11
110-2446	U-3	N.D.	N.D.	N.D.	N.D.	N.D.
110-2447	Trip Blank	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	30	0.30	0.30	0.30	0.30
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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


Vickie Tagge
Project Manager



SEQUOIA ANALYTICAL

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

Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Tom Paulson

Client Project ID: 3814.01, Unocal 5325, Oakland

QC Sample Group: 1102444, 46-47

Reported: Oct 29, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L Laikhtman	L Laikhtman	L Laikhtman	L Laikhtman
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Oct 16, 1991	Oct 16, 1991	Oct 16, 1991	Oct 16, 1991
QC Sample #:	GBLK101691	GBLK101691	GBLK101691	GBLK101691
Sample Conc.:	N.D.	N..D	N..D	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.7	9.8	9.9	30
Matrix Spike % Recovery:	97	98	99	100
Conc. Matrix Spike Dup.:	9.7	9.9	10	30
Matrix Spike Duplicate % Recovery:	97	99	100	100
Relative % Difference:	0.0	1.0	1.0	0.0

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

1102444.GET <2>



SEQUOIA ANALYTICAL

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

Gettler Ryan
2150 W. Winton Avenue
Hayward, CA 94545
Attention: Tom Paulson

Client Project ID: 3814.01, Unocal 5325, Oakland

QC Sample Group: 110-2445

Reported: Oct 29, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Jencks	J. Jencks	J. Jencks	J. Jencks
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Oct 17, 1991	Oct 17, 1991	Oct 17, 1991	Oct 17, 1991
QC Sample #:	GBLK101791	GBLK101791	GBLK101791	GBLK101791
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.4	9.4	9.6	28
Matrix Spike % Recovery:	94	94	96	93
Conc. Matrix Spike Dup.:	9.5	9.5	9.5	29
Matrix Spike Duplicate % Recovery:	95	95	95	97
Relative % Difference:	1.1	1.1	1.0	3.5

SEQUOIA ANALYTICAL

Vickie Tague
Project Manager

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

COMPANY

Unocal SS # 5325

JOB NO.

JOB LOCATION

3220 Lakeshore Ave

CITY

Oakland

PHONE NO.

783-7500

AUTHORIZED

Tom Paulson

DATE

10-9-91

P.O. NO.

3814.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
U-1	2	Liquid	10-9-91/1144	THC (gas) BTXE	good/cool
U-2	↓	↓	↓ 1230	↓	
U-3	↓	↓	↓ 1210	↓	
trip	1	↓	↓ 1-	↓	

RELINQUISHED BY:

Guadalupe Sanchez 10-9-91 15:00

RECEIVED BY:

Refrig # 1 10-9-91 15:00

RELINQUISHED BY:

Refrig #1 10-11-91 08:00

RECEIVED BY:

R. Alh 10-11-91 08:00

RELINQUISHED BY:

R. Alh 10-11-91 13:05

RECEIVED BY LAB:

K. WOOD 10/11/91 1305

DESIGNATED LABORATORY:

SEQ

DHS #:

REMARKS:

Normal TAT

DATE COMPLETED

10-9-91

FOREMAN

Guadalupe Sanchez