



**GeoStrategies Inc.**

2140 WEST WINTON AVENUE  
HAYWARD, CALIFORNIA 94545

(510) 352-4800

February 14, 1992

Alameda County Health Agency  
Division of Hazardous Materials  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, California 94521

Attention: Ms. Pamela Evans

Reference: UNOCAL Service Station No. 5760  
376 Lewelling Boulevard  
San Lorenzo, California

Ms. Evans:

As requested by Ms. Penny Silzer of UNOCAL Corporation, we are forwarding a copy of the Site Update Report for the above referenced location. This report presents the results of the subsequent ground-water sampling conducted at this site.

If you have any questions or comments, please call.

Sincerely,

A handwritten signature in cursive script that reads 'David J. Vossler'.

David J. Vossler  
Senior Geologist

DJV/tdl

Enclosure

cc: Ms. Penny Silzer, UNOCAL Corporation  
Mr. Eddy So, Regional Water Quality Control Board



GeoStrategies Inc.

**SITE UPDATE**

UNOCAL Service Station No. 5760  
376 Lewelling Boulevard  
San Lorenzo, California

780901-8

February 14, 1992



**GeoStrategies Inc.**

2140 WEST WINTON AVENUE  
HAYWARD, CALIFORNIA 94545

(510) 352-4800

February 14, 1992

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

Attn: Ms. Penny Silzer

Re: SITE UPDATE  
UNOCAL Service Station No. 5760  
376 Lewelling Boulevard  
San Lorenzo, California

Gentlemen:

This Site Update by GeoStrategies Inc. (GSI) presents the results of the 1991 fourth quarter ground-water sampling performed by Gettler-Ryan Inc. (G-R) on December 4, 1991, for the above referenced site (Plate 1). The scope of work presented in this document was performed at the request of UNOCAL Corporation. Field work and laboratory analysis methods were performed to comply with current State of California Water Resources Control Board guidelines. G-R groundwater sampling procedures were presented in a GSI Site Update/Work Plan dated February 22, 1991.

**SITE BACKGROUND**

The underground storage tanks were removed and replaced in November, 1987. There are currently four on-site monitoring wells; U-1 through U-4 (Plate 2). Well U-1 was installed by Woodward Clyde Consultants (WCC) in February 1988. During August 1990 GSI installed Wells U-2 through U-4. These wells were installed to evaluate the vertical and horizontal extent of petroleum hydrocarbons in the soil and groundwater beneath the site.

## GeoStrategies Inc.

UNOCAL Corporation  
February 14, 1992  
Page 2

Ground-water monitoring and sampling of wells began in February, 1988 with quarterly sampling beginning in March 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.

### CURRENT QUARTERLY SAMPLING RESULTS

#### Potentiometric Data

Prior to ground-water sampling, depth to water-level measurements were obtained 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  $\pm 0.01$  foot. Corresponding elevations referenced to Mean Sea Level (MSL) are presented in Table 1. Water-level data were used to construct a quarterly potentiometric map (Plate 3). The hydraulic gradient of the first encountered water-bearing zone was calculated to be 0.006 with ground-water flow to the northwest.

#### Floating Product Measurements

Each well was checked for the presence of floating product using an electronic oil-water interface probe. A clear acrylic bailer was used to confirm probe results. Floating product was measured in Well U-1 at a thickness of 0.36 feet.

#### Ground-water Analytical Data

Prior to collecting samples, monitoring wells were purged until ground-water physical parameters stabilized. Purge volumes and physical parameter values are presented in Table 1. Ground-water samples were collected on December 4, 1991. The samples were analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020 by Sequoia Analytical (Sequoia), a State-certified laboratory located in Redwood City, California.

## GeoStrategies Inc.

UNOCAL Corporation  
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Page 3

TPH-Gasoline and Benzene were detected in Well U-3 at concentrations of 75,000 and 2,500 parts per billion (ppb), respectively. Wells U-2 and U-4 were reported as none detected (ND) for both TPH-Gasoline and Benzene. These data are summarized in Table 2. Historical chemical analytical data have been tabulated and presented in Table 3. A chemical concentration map for TPH-Gasoline and benzene is presented on Plate 4. The laboratory analytical report and Chain-of-Custody for are presented in Appendix A.

### Quality Control

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

### PLANNED ACTIVITIES

The following activities are as proposed:


- o Drill and install three ground-water monitoring wells as outlined in GSI's Work Plan dated February 22, 1991. Two of the three wells are to be constructed within the public right-of-way along Usher Street. The third well is proposed to be installed on private property and will be completed upon receipt of a right-of-entry agreement from the current property owner. *when?*
- o In addition to the three wells proposed, a fourth well will be installed in the public right-a-way along Usher Street. This well will also be constructed, developed, and sampled as outlined in GSI Work Plan dated February 22, 1991. *Don't Del?*

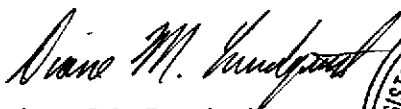
**GeoStrategies Inc.**

UNOCAL Corporation  
February 14, 1992  
Page 4

If you have any questions, please call.

GeoStrategies Inc. by,

  
Cliff M. Garratt  
Hydrogeologist

  
Diane M. Lundquist  
Senior Engineer  
C 46725



CMG/DML/mlg

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

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

QC Review: gbl

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 ( $\mu$ MHOS/CM)
U-1	04-Dec-91	3	----	40.51	20.35	0.36	20.45	----	----	----	----
U-2	04-Dec-91	3	30.2	41.62	21.35	----	20.27	6	7.46	64.4	807
U-3	04-Dec-91	3	25.4	39.64	19.66	----	20.04	2	7.27	67.5	1050
U-4	04-Dec-91	3	28.1	40.53	20.50	----	20.03	4	7.24	67.7	890

- 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-2	04-Dec-91	09-Dec-91	<30	<0.30	<0.30	<0.30	<0.30
U-3	04-Dec-91	09-Dec-91	7500	2500	6100	1900	11000
U-4	04-Dec-91	09-Dec-91	<30	<0.30	<0.30	<0.30	<0.30
TB	----	09-Dec-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)
09-Feb-88	U-1	93000.	3600.	11000.	----	20000.
20-Mar-90	U-1	36000.	2100.	5500.	1900.	9300.
05-Jun-90	U-1	46000.	2300.	5500.	2500.	11000.
24-Aug-90	U-1	27000.	1200.	1800.	1400.	5500.
23-Aug-90	U-2	<50.	<0.5	<0.5	<0.5	<0.5
05-Dec-90	U-2	<50	<0.3	<0.3	<0.3	<0.3
04-Mar-91	U-2	<50.	<0.5	0.9	<0.5	2.6
03-Jun-91	U-2	<30	<0.30	<0.30	<0.30	<0.30
19-Sep-91	U-2	<30	<0.30	<0.30	<0.30	<0.30
04-Dec-91	U-2	<30	<0.30	<0.30	<0.30	<0.30
23-Aug-90	U-3	110000.	4400.	13000.	2800.	17000.
05-Dec-90	U-3*	69000	1900	3500	1600	9800
18-Jan-91	U-3	51000.	1700.	3100.	1500.	7500.
04-Mar-91	U-3	84000.	1400.	10000.	2900.	17000.
03-Jun-91	U-3	130000	5800	19000	4600	24000
19-Sep-91	U-3	61000	3300	9700	2800	15000
04-Dec-91	U-3	75000	2500	6100	1900	11000
23-Aug-90	U-4	<50.	<0.5	1.0	<0.5	1.8
05-Dec-90	U-4*	<50	<0.3	<0.3	<0.3	<0.3
18-Jan-91	U-4	<50.	<0.5	<0.5	<0.5	<0.5
04-Mar-91	U-4	<50.	<0.5	<0.5	<0.5	<0.5
03-Jun-91	U-4	<30	<0.30	<0.30	<0.30	<0.30
19-Sep-91	U-4	<30	<0.30	<0.30	<0.30	<0.30
04-Dec-91	U-4	<30	<0.30	<0.30	<0.30	<0.30

TABLE 3

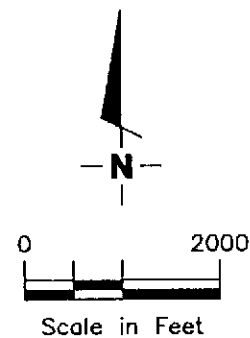
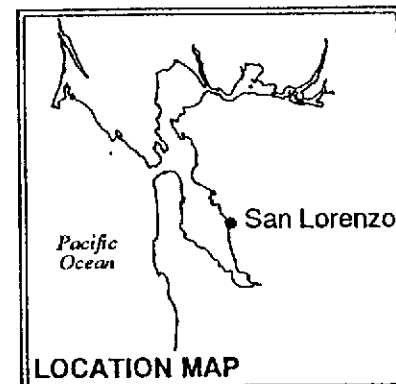
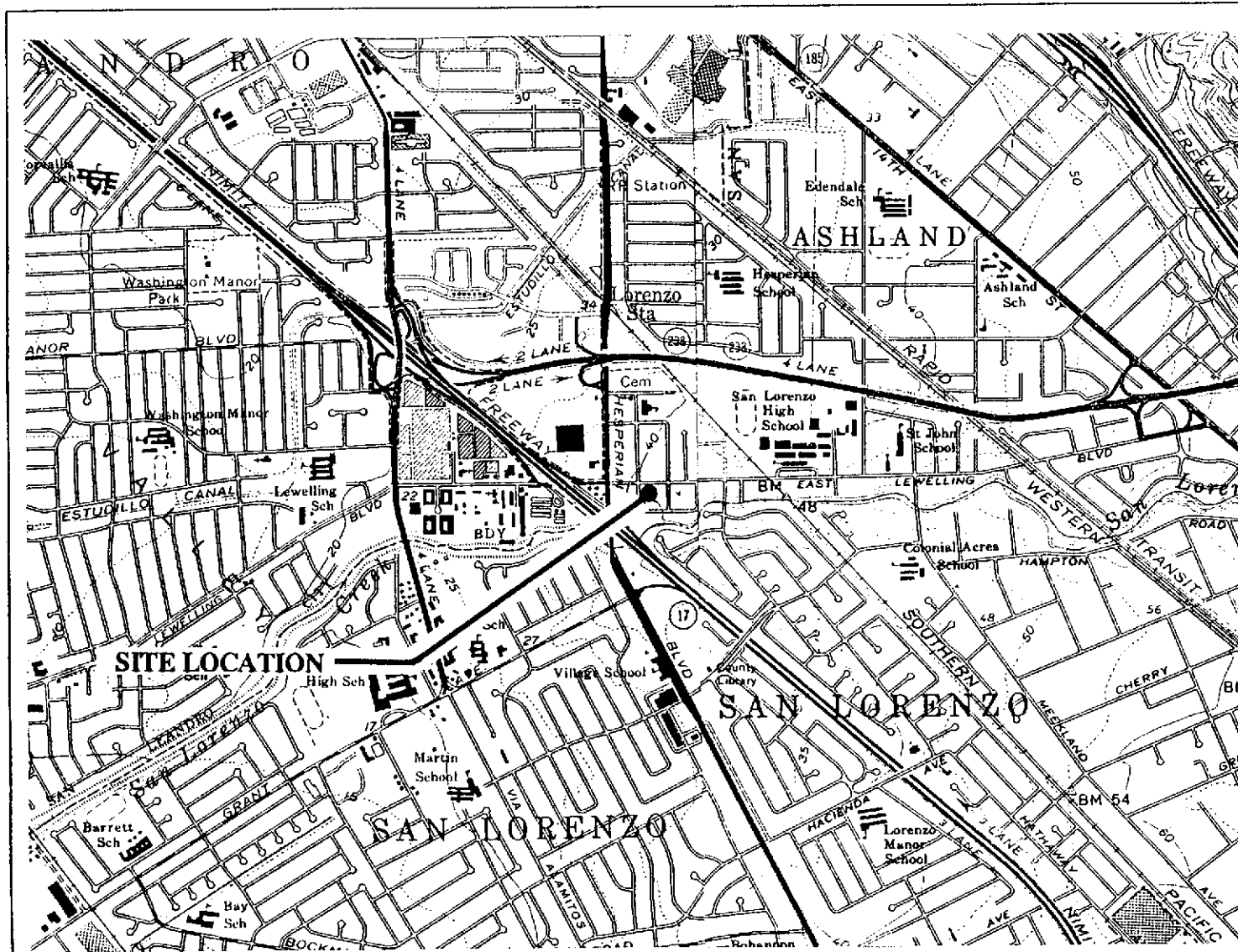
HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
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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).
  2. \*Analytical data for Wells U-3 and U-4 have been changed to reflect the correct values.
  3. Ethylbenzene and Xylenes were combined prior to March 1990.



Base Map: USGS Topographic Map



GeoStrategies Inc.

VICINITY MAP  
 UNOCAL Service Station #5760  
 376 Lewelling Boulevard  
 San Lorenzo, California

PLATE

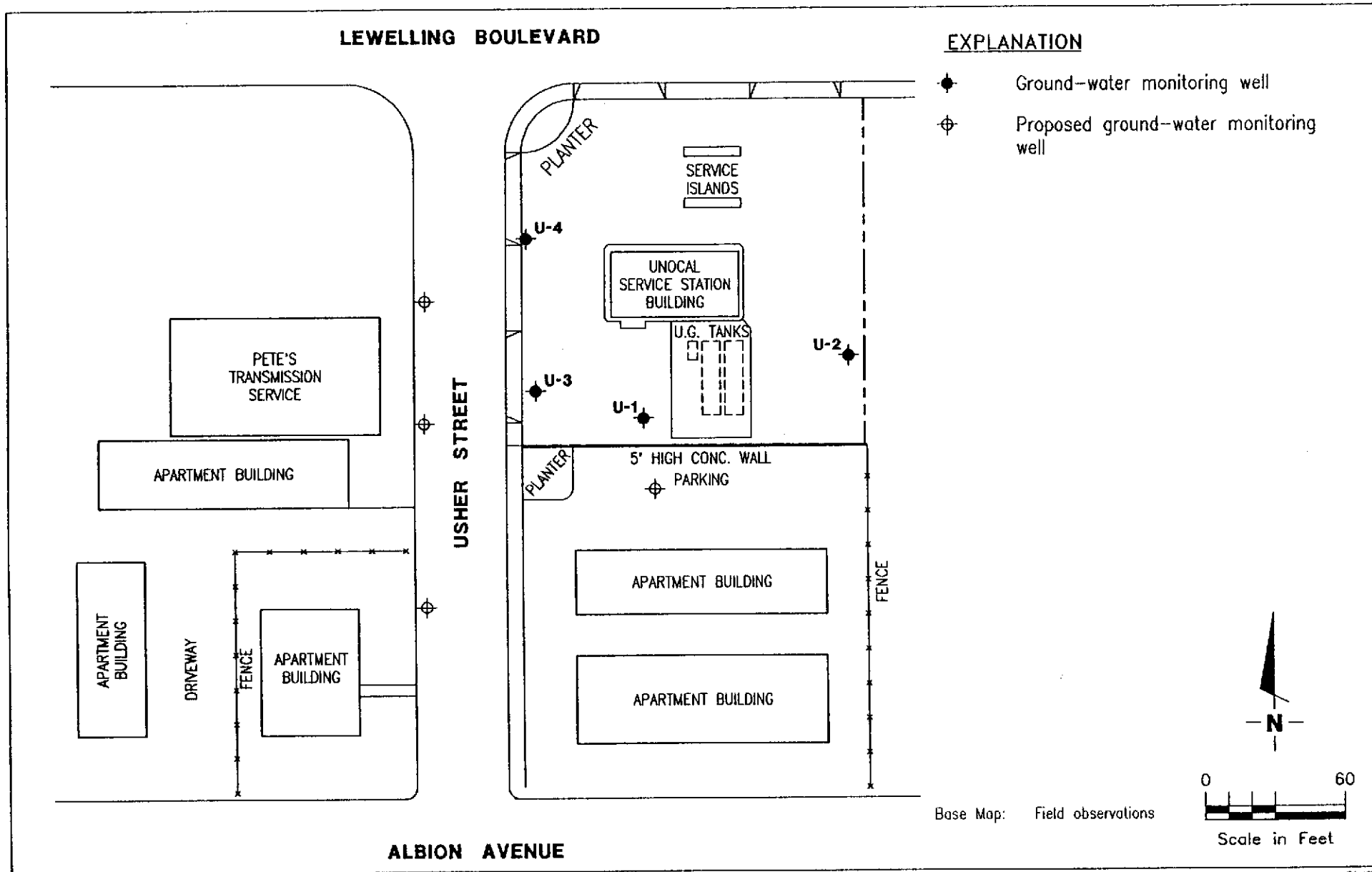
1

JOB NUMBER  
 7809

REVIEWED BY

DATE  
 2/91

REVISED DATE



**EXPLANATION**

- ◆ Ground-water monitoring well
- ⊕ Proposed ground-water monitoring well

Base Map: Field observations



GeoStrategies Inc.

**EXTENDED SITE PLAN**  
 UNOCAL Service Station #5760  
 376 Lewelling Boulevard  
 San Lorenzo, California

PLATE  
**2**

JOB NUMBER  
 780901-8

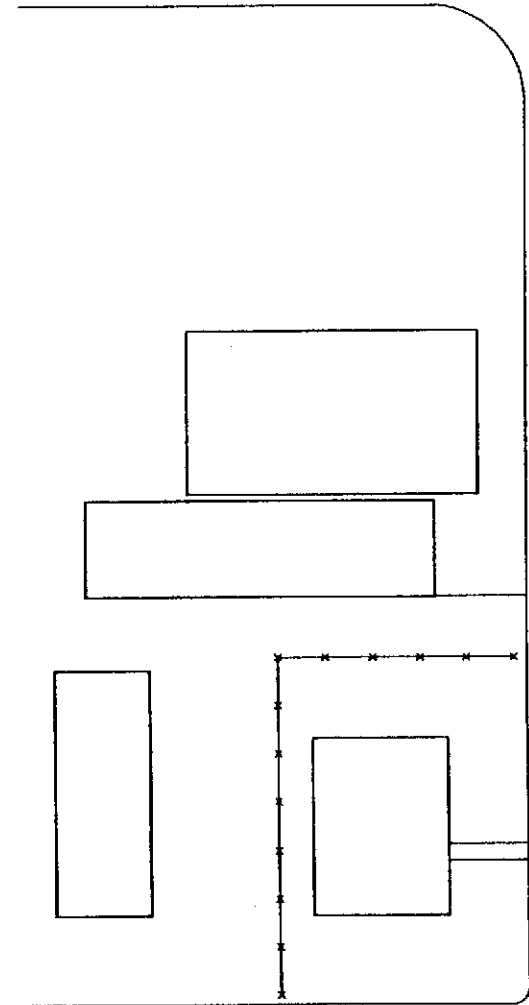
REVIEWED BY  
*Cmg*

DATE  
 1/92

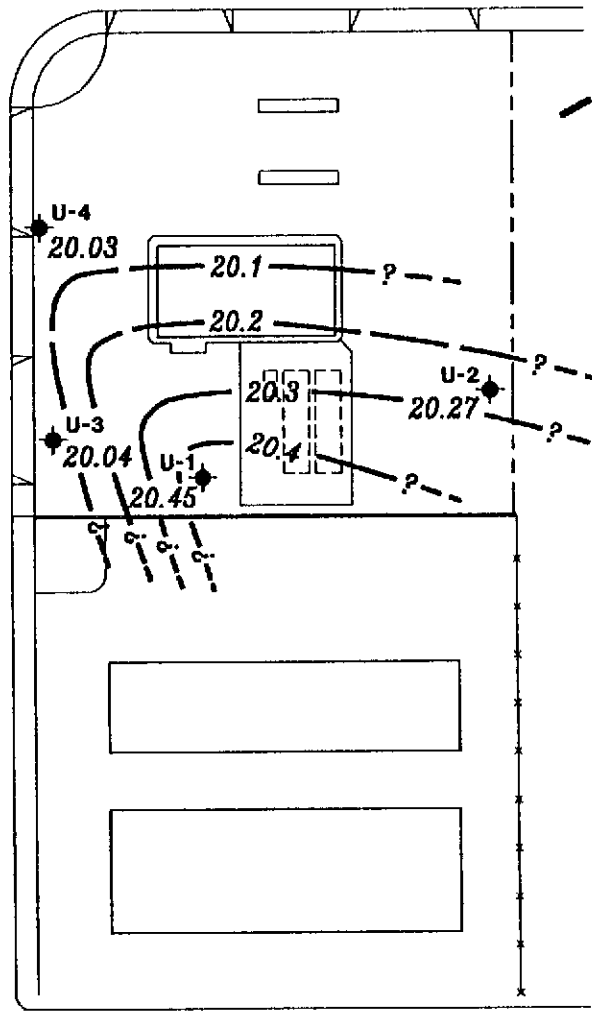
REVISED DATE

LEWELLING BOULEVARD

EXPLANATION

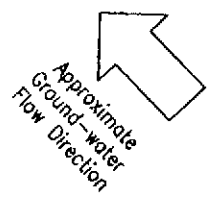


USHER STREET



- Ground-water monitoring well
- Ground-water elevation contour  
Approximate Gradient = 0.006
- 99.99** Ground-water elevation in feet  
referenced to Mean Sea Level  
(MSL) measured on December 4,  
1991

Note: Contours may be influenced by irrigation practices and/or site construction activities.



Base Map: Field observations

Scale in Feet

ALBION AVENUE



GeoStrategies Inc.

POTENTIOMETRIC MAP  
UNOCAL Service Station #5760  
376 Lewelling Boulevard  
San Lorenzo, California

PLATE

**3**

JOB NUMBER  
780901-8

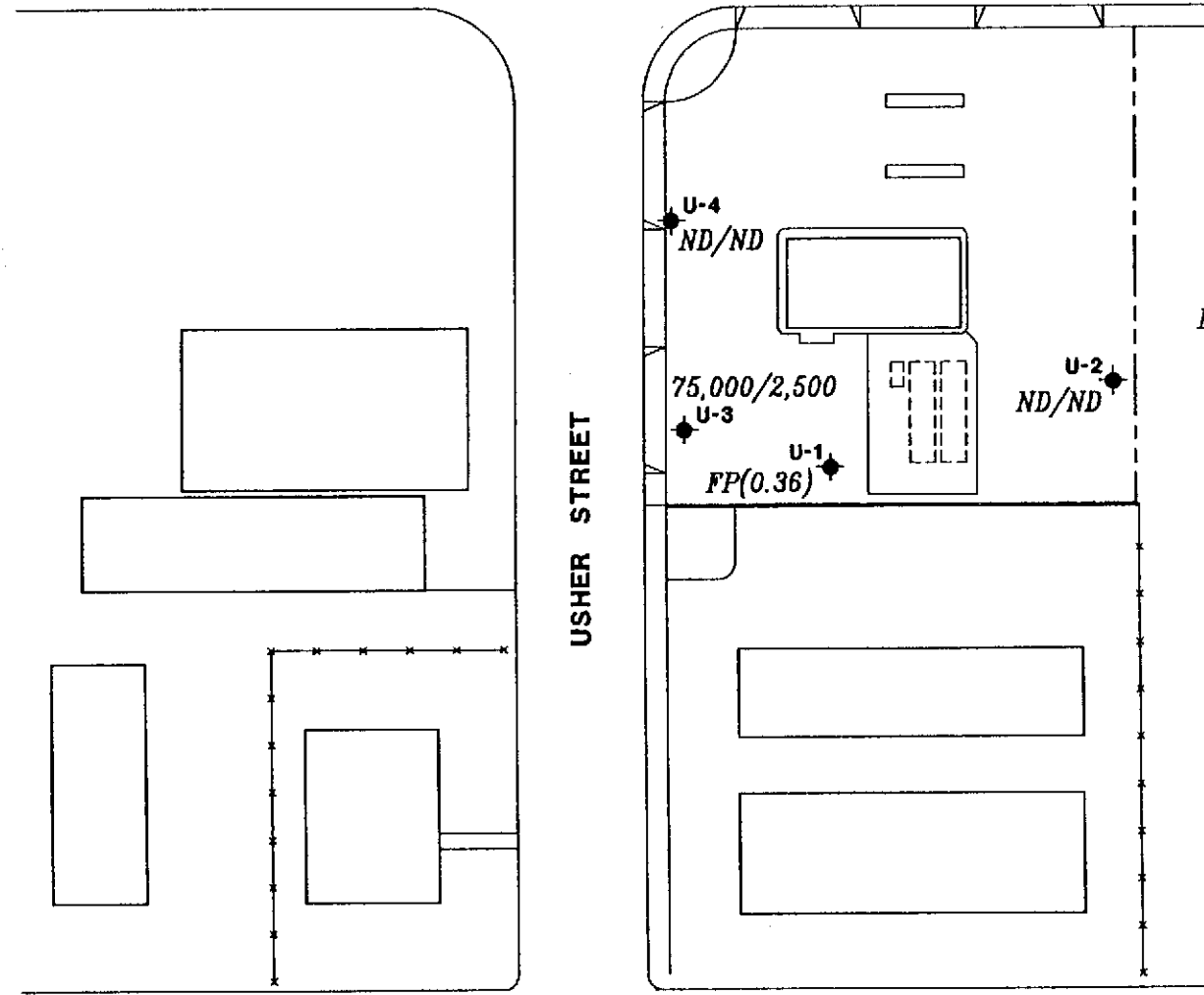
REVIEWED BY  
*Cmg*

DATE  
1/92

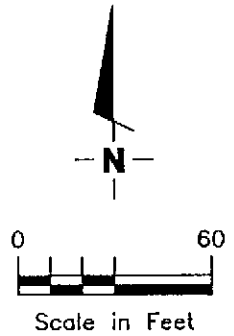
REVISED DATE

LEWELLING BOULEVARD

EXPLANATION



- ◆ Ground-water monitoring well
- 99/9.9 TPH-G (Total Petroleum Hydrocarbons calculated as Gasoline)/Benzene concentrations in ppb sampled on December 4, 1991
- ND Not Detected (See laboratory reports for detection limits)
- FP(0.01) Floating Product (measured thickness in feet)



Base Map: Field observations

ALBION AVENUE



GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP  
 UNOCAL Service Station #5760  
 376 Lewelling Boulevard  
 San Lorenzo, California

PLATE  
**4**

JOB NUMBER  
780901-8

REVIEWED BY  
*cmg*

DATE  
1/92

REVISED DATE

**GeoStrategies Inc.**

**APPENDIX A**  
**LABORATORY ANALYTICAL REPORT**  
**CHAIN-OF-CUSTODY FORM**

RECEIVED

JAN 06 1992



# SEQUOIA ANALYTICAL

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

GETTLER-RYAN INC.  
GENERAL CONTRACTORS

Gettler Ryan	Client Project ID: #3809.01, Unocal #5760	Sampled: Dec 4, 1991
2150 W. Winton Avenue	Matrix Descript: Water	Received: Dec 5, 1991
Hayward, CA 94545	Analysis Method: EPA 5030/8015/8020	Analyzed: Dec 9, 1991
Attention: Tom Paulson	First Sample #: 112-1191	Reported: Dec 31, 1991

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

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons			Ethyl Benzene	Xylenes
		$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)
112-1191	U-2	N.D.	N.D.	N.D.	N.D.	N.D.
112-1192	U-3	75,000	2,500	6,100	1,900	11,000
112-1193	U-4	N.D.	N.D.	N.D.	N.D.	N.D.
112-1194	Travel Blank	N.D.	N.D.	N.D.	N.D.	N.D.

Detection Limits:	30	0.30	0.30	0.30	0.30
-------------------	----	------	------	------	------

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 Tague  
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: #3809.01, Unocal #5760

QC Sample Group: 1121191, 93-94

Reported: Dec 31, 1991

## QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	D.Dreblow	D.Dreblow	D.Dreblow	D.Dreblow
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Dec 9, 1991	Dec 9, 1991	Dec 9, 1991	Dec 9, 1991
QC Sample #:	GBLK120991	GBLK120991	GBLK120991	GBLK120991
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.5	9.3	9.8	29
Matrix Spike % Recovery:	95	93	98	97
Conc. Matrix Spike Dup.:	9.7	9.4	9.8	29
Matrix Spike Duplicate % Recovery:	97	94	98	97
Relative % Difference:	2.1	1.1	0.0	0.0

SEQUOIA ANALYTICAL

*V. Tague*  
Vickie Tague  
Project Manager

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



# 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: #3809.01, Unocal #5760

QC Sample Group: 112-1192

Reported: Dec 31, 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:	Dec 10, 1991	Dec 10, 1991	Dec 10, 1991	Dec 10, 1991
QC Sample #:	GBLK121091	GBLK121091	GBLK121091	GBLK121091
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	10	10	10	30
Matrix Spike % Recovery:	100	100	100	100
Conc. Matrix Spike Dup.:	10	10	10	31
Matrix Spike Duplicate % Recovery:	100	100	100	103
Relative % Difference:	0.0	0.0	0.0	3.3

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:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

er - Ryan Inc.

ENVIRONMENTAL DIVISION

1556 Chain of Custody

COMPANY

Unocal

# 5760

JOB NO.

JOB LOCATION

376 Lewelling

CITY

San Lorenzo

PHONE NO. 510/783-7500

AUTHORIZED

Tom Paulson

DATE

12-4-91

P.O. NO.

3809.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
U-2	2	lyq P	12-4-91/0830	THC(90)BTXE	112-1191
U-3	↓	↓	↓/1530	↓	92
U-4	↓	↓	↓/1520	↓	93
Trip Blank	1	↓	-	↓	94

RELINQUISHED BY: [Signature] 12-4-91 1600

RECEIVED BY: ReFrig #1 12-4-91 - 1600

RELINQUISHED BY: [Signature] #1 12-5-91 08:00

RECEIVED BY: [Signature] 12-5-91 08:00

RELINQUISHED BY: [Signature] 12-5-91 10:20

RECEIVED BY LAB: [Signature] 12-5-91 10:20

DESIGNATED LABORATORY: IT (SCV)

DHS #: 1377

REMARKS: Normal TAT

DATE COMPLETED 12-4-91

FOREMAN [Signature]

COMPANY: Unocal #5760 JOB NO.

JOB LOCATION: 376 Lewelling

CITY: San Lorenzo PHONE NO. 510/783-7500

AUTHORIZED: Tom Paulson DATE: 12-4-91 P.O. NO. 3809.01

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
U-2	2	lyj P	12-4-91/0830	THC (90) BTXE	112-1191
U-3	↓	↓	↓/1530	↓	92
U-4	↓	↓	↓/1520	↓	93
Trip Blank	1	↓	—	↓	94

RELINQUISHED BY: [Signature] 12-4-91 1600

RECEIVED BY: Refrig #1 12-4-91 - 1600

RELINQUISHED BY: [Signature] #1 12-5-91 0800

RECEIVED BY: [Signature] 12-5-91 0800

RELINQUISHED BY: [Signature] 12-5-91 1020

RECEIVED BY LAB: [Signature] 12-5-91 10:20

DESIGNATED LABORATORY: IT (SCV)

DHS #: 1377

REMARKS: Normal TAT

DATE COMPLETED: 12-4-91 FOREMAN: [Signature]