GeoStrategies Inc.

SITE UPDATE

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

780901-5

May 3, 1991

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

May 3, 1991

Gettler-Ryan Inc.
2150 West Winton Avenue
Hayward, California 9454

Attn: Mr. John Werfal

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 first quarter ground-water sampling performed by Gettler-Ryan Inc. (G-R) on March 4, 1991, for the above referenced site (Plate 1). The scope of work presented in this 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 guidelines. G-R groundwater sampling procedures were presented in a GSI Site Update 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 completed 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.

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 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). Ground-water flow is to the northwest at a calculated hydraulic gradient of 0.002. Historically, groundwater flow has been to the southwest.

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 0.05 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 March 4, 1991. The samples were analyzed for TPH-Gasoline according EPA Method 8015 (Modified) and BTEX according to EPA Method 8020 by International Technology (IT) Analytical Services, a State-certified laboratory located in San Jose, California.

TPH-Gasoline and Benzene were detected in Well U-3 at concentrations of 84000. and 1400. 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.

Quality Control

A 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 field handling procedures of samples and analytical procedures. The results of QC sample analyses are presented in Table 2. The laboratory chemical analytical report and Chain-of-Custody form are attached to this report.

If you have any questions, please call.

GeoStrategies Inc. by,

Cliff M. Garratt
Hydrogeologist

David H. Peterson
Senior Geologist
C.E.G. 1186

REGISTERED GEOLOGIST
DAVID H. PETERSON
No. 1186
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

CMG/DHP/mlg

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

QC Review:

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	04-Mar-91	3	----	40.51	20.05	0.05	20.50	----	----	----	----
U-2	04-Mar-91	3	30.2	41.62	21.04	----	20.58	5	7.04	65.5	1078
U-3	04-Mar-91	3	25.4	39.64	19.25	----	20.39	2	6.87	68.8	1356
U-4	04-Mar-91	3	28.1	40.53	20.20	----	20.33	2	6.93	68.9	1228

Notes: 1. Water level elevations referenced to Mean Sea Level (MSL).
2. Physical parameter measurements represent stabilized values.
3. pH values reported in pH units.
4. Static water-levels corrected for floating product (conversion factor = 0.80).

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-Mar-91	13-Mar-91	<50.	<0.5	0.9	<0.5	2.6
U-3	04-Mar-91	14-Mar-91	84000.	1400.	10000.	2900.	17000.
U-4	04-Mar-91	13-Mar-91	<50.	<0.5	<0.5	<0.5	<0.5
TB	----	13-Mar-91	<50.	<0.5	<0.5	<0.5	<0.5

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPB = Parts Per Billion TB = Trip Blank

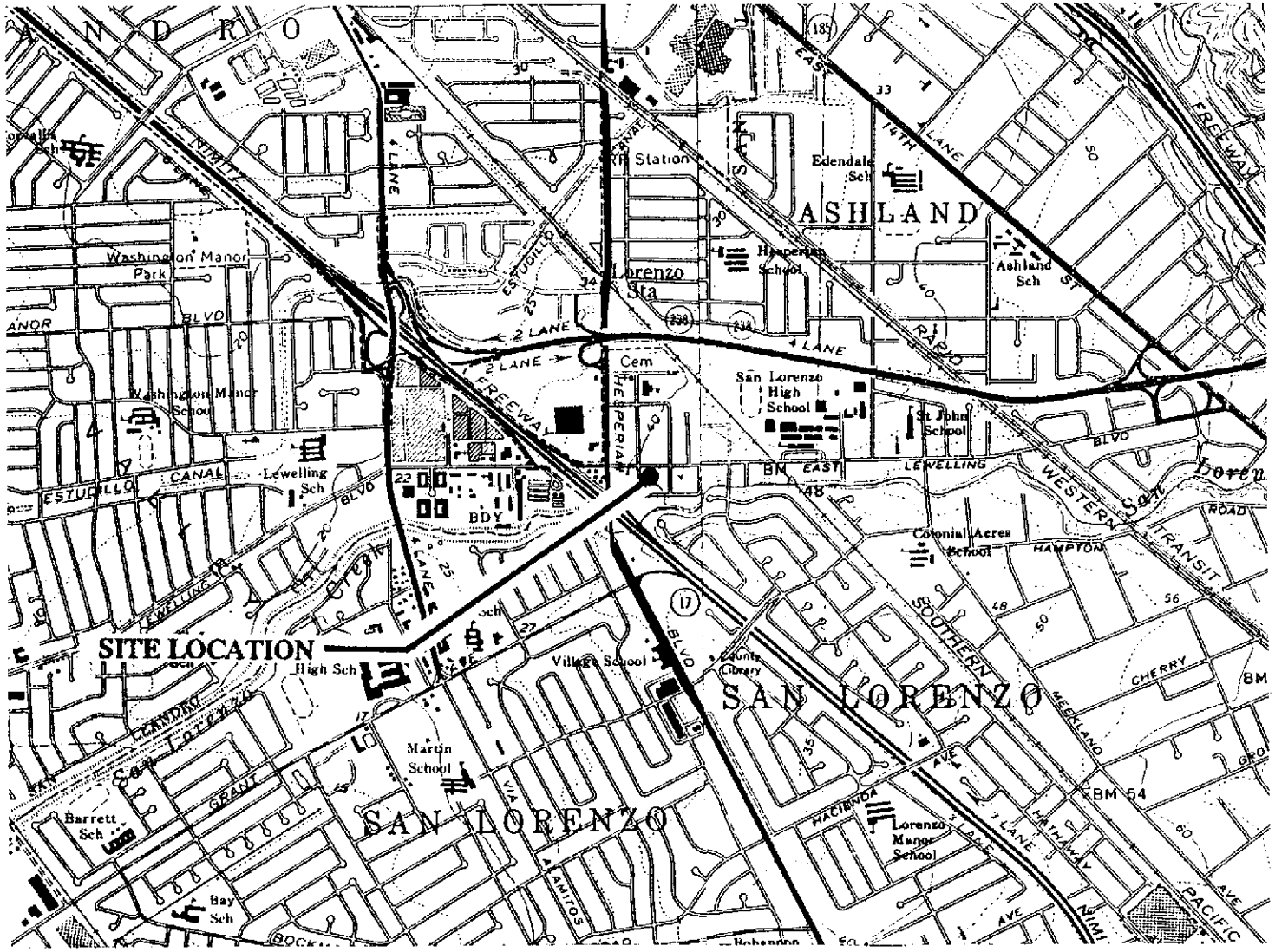
Notes: 1. All data shown as <x are reported as ND (none detected).
2. DHS Action Levels and MCLs are subject to change pending State review.

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
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.
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

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.



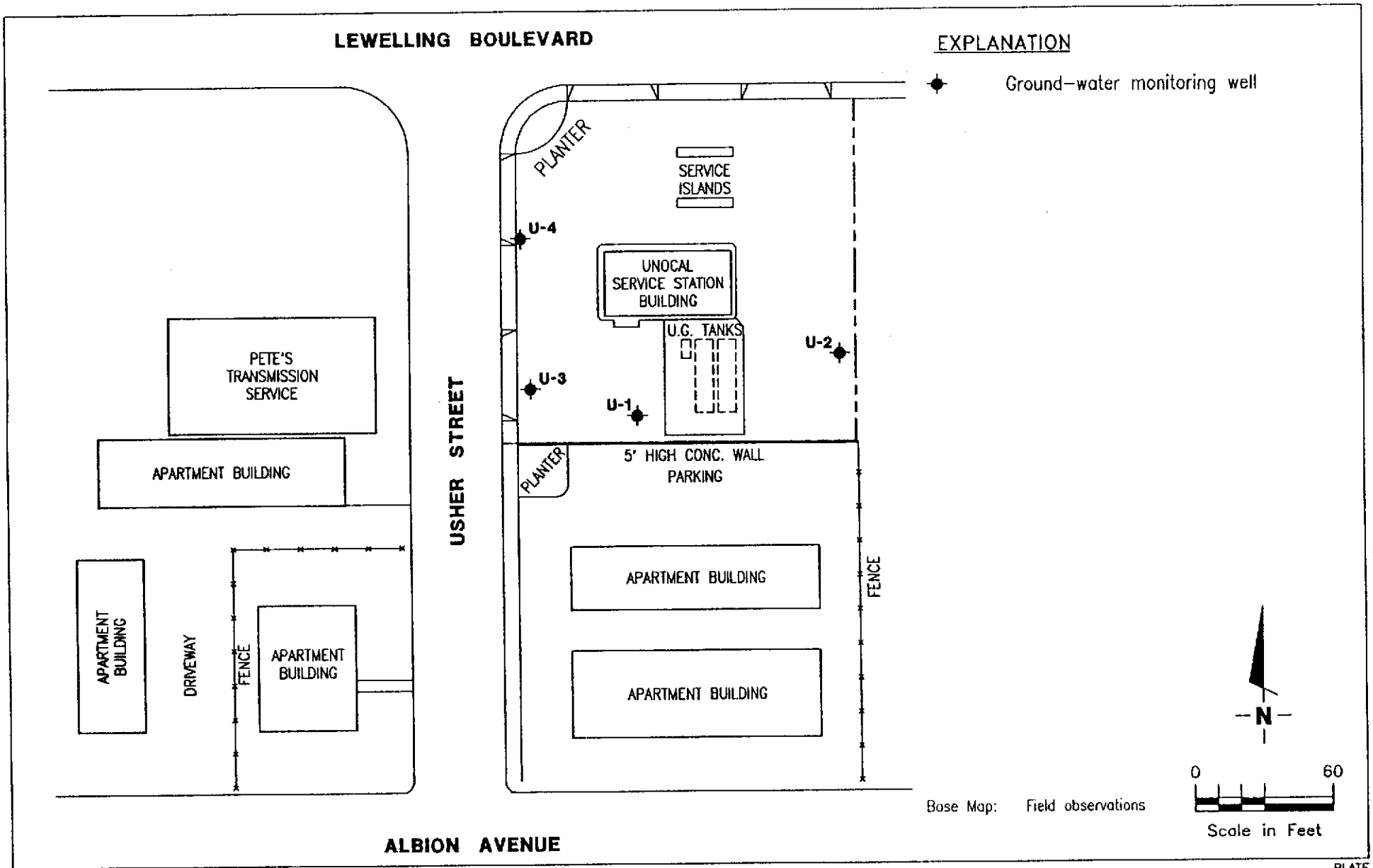
Base Map: USGS Topographic Map

GeoStrategies Inc.

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

PLATE
1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7809		2/91	

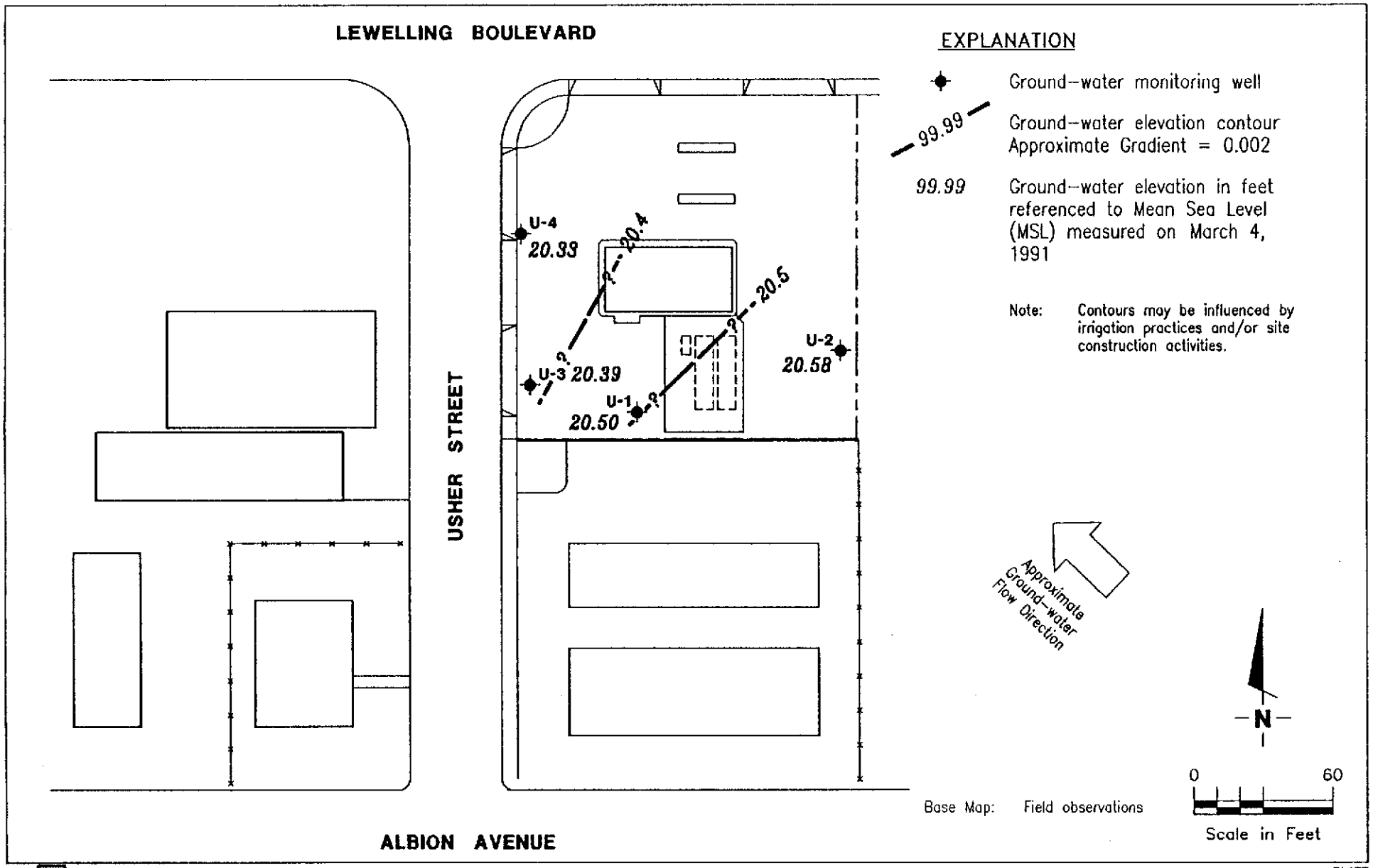


GeoStrategies Inc.

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

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
780901	DHP	4/91	

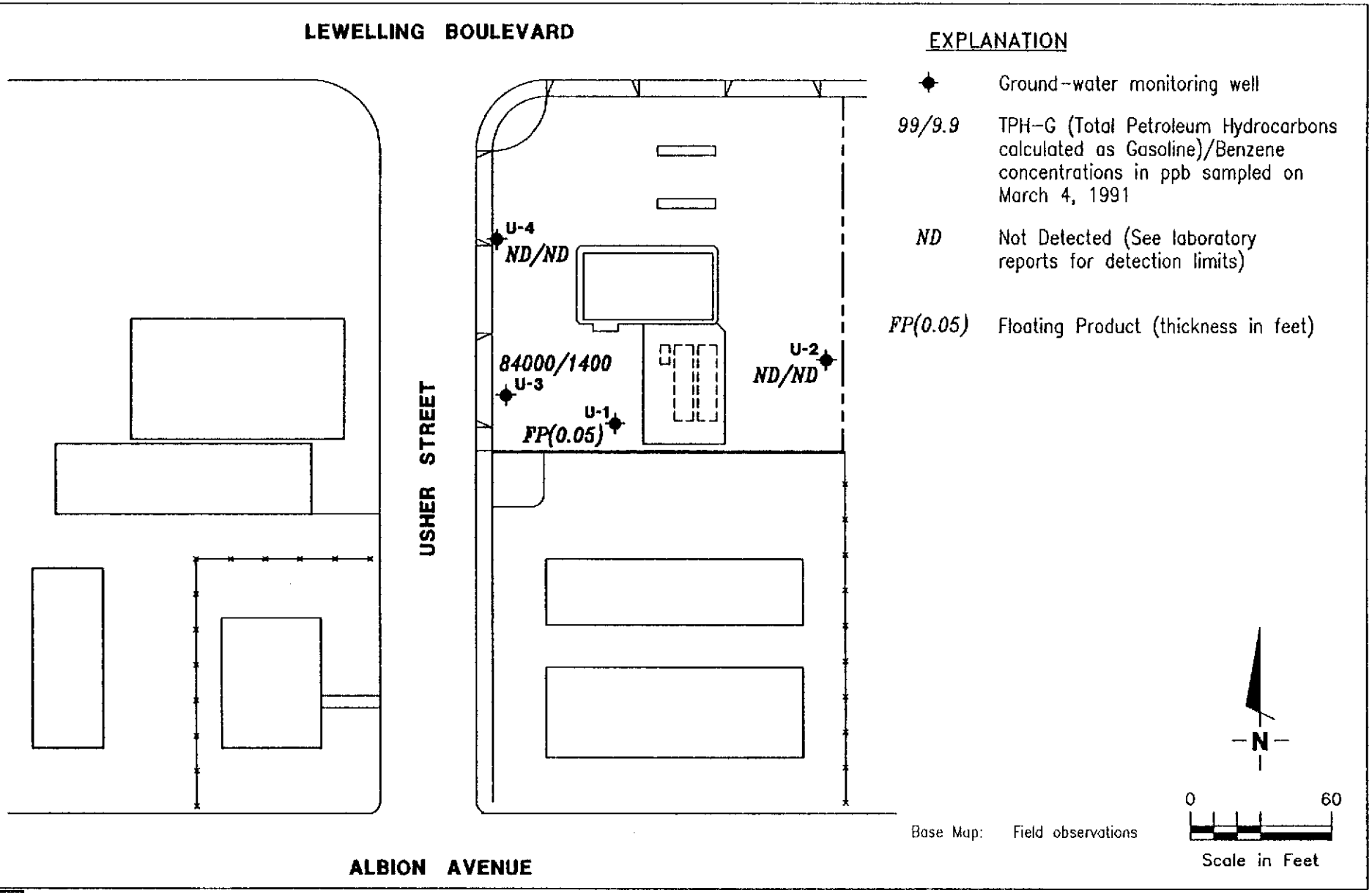


GeoStrategies Inc.

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

PLATE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
780901	DHP	4/91	



GeoStrategies Inc.

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

PLATE
4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
780901	DHP	4/91	

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Date: 03/19/91

Gettler-Ryan
2150 West Winton
Hayward, CA 94545
Tom Paulson

Work Order: T1-03-043 P.O. Number: 3809

This is the Certificate of Analysis for the following samples:

Client Work ID: GR3809, Unocal #5760
Date Received: 03/05/91
Number of Samples: 4
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 03/19/91
Client Work ID: GR3809, Unocal #5760

Work Order: T1-03-043

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: U-2
SAMPLE DATE: 03/04/91
LAB SAMPLE ID: T103043-01
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		03/13/91
Low Boiling Hydrocarbons	Mod.8015		03/13/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	0.9
Ethylbenzene	0.5	None
Xylenes (total)	0.5	2.6

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 03/19/91
Client Work ID: GR3809, Unocal #5760

Work Order: T1-03-043

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: U-3
SAMPLE DATE: 03/04/91
LAB SAMPLE ID: T103043-02
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		03/14/91
Low Boiling Hydrocarbons	Mod.8015		03/14/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	5000.	84000.
BTEX		
Benzene	50.	1400.
Toluene	50.	10000.
Ethylbenzene	50.	2900.
Xylenes (total)	50.	17000.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 03/19/91
Client Work ID: GR3809, Unocal #5760

Work Order: T1-03-043

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: U-4
SAMPLE DATE: 03/04/91
LAB SAMPLE ID: T103043-03
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		03/13/91
Low Boiling Hydrocarbons	Mod.8015		03/13/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 03/19/91
Client Work ID: GR3809, Unocal #5760

Work Order: T1-03-043

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: Trip Blank
SAMPLE DATE: not spec
LAB SAMPLE ID: T103043-04
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

RESULTS in Micrograms per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		03/13/91
Low Boiling Hydrocarbons	Mod.8015		03/13/91

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	50.	None
BTEX		
Benzene	0.5	None
Toluene	0.5	None
Ethylbenzene	0.5	None
Xylenes (total)	0.5	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 03/19/91
Client Work ID: GR3809, Unocal #5760

Work Order: T1-03-043

TEST NAME: Spike and Spike Duplicates

SAMPLE ID: Quality Control
SAMPLE DATE: not spec
LAB SAMPLE ID: T103043-05A
EXTRACTION DATE:
ANALYSIS DATE: 03/12/91
ANALYSIS METHOD: Mod.8015

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

RESULTS in Micrograms per Liter

PARAMETER	Sample Amt	Spike Amt	MS Result	MSD Result	MS %Rec	MSD %Rec	RPD
Gasoline	ND<50	2500	1934.	1944.	77.	78.	1.

SURROGATES	MS %Rec	MSD %Rec
1,3-Dichlorobenzene	77.	78.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Gettler-Ryan
Date: 03/19/91
Client Work ID: GR3809, Unocal #5760

Work Order: T1-03-043

TEST CODE TPHVB TEST NAME TPH Gas,BTEX by 8015/8020

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

ENVIRONMENTAL DIVISION

COMPANY Unocal SS# 5760 JOB NO.

JOB LOCATION 376 Lewelling Blvd / Usher

CITY San Lorenzo PHONE NO. 727-7500

AUTHORIZED Tom Paulson DATE 3-4-91 P.O. NO. 3809.01

	SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
1	U-2	3	Liquid	3.4.91 / 13:55	THC (gw) BTEX	Good
2	U-3	↓	↓	/ 14:52	↓	↓
3	U-4	↓	↓	/ 14:30	↓	↓
4	Trip blank	1	↓	/ —	↓	↓

RELINQUISHED BY: Guadalupe Sanchez 3-4-91 17:00

RECEIVED BY: Refrig #1 3-4-91 17:00

RELINQUISHED BY: Refrig #1 3-5-91 0700

RECEIVED BY: [signature] 3-5-91 0700

RELINQUISHED BY: [signature] 3-5-91 1230

RECEIVED BY LAB: [signature] 3/5/91 1230

DESIGNATED LABORATORY: IT SCV DHS #: 137

REMARKS:

Normal TAT

DATE COMPLETED 3-4-91 FOREMAN Guadalupe Sanchez

ORIGINAL