



**GeoStrategies Inc.**

**SEMIANNUAL MONITORING REPORT**

UNOCAL Service Station No. 3690  
14999 Farnsworth Street  
San Leandro, California

781980-7

June 28, 1993



**GeoStrategies Inc.**

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June 28, 1993

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

Attn: Mr. Ed Ralston

Re: **SEMIANNUAL MONITORING REPORT**  
UNOCAL Service Station No. 3690  
14999 Farnsworth Street  
San Leandro, California

Mr. Ralston:

This Quarterly Monitoring Report has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1993 first semiannual sampling for the above referenced site (Plate 1). The sampling frequency was reduced from a quarterly to semiannual schedule beginning January, 1993.

There are currently three monitoring wells at the site, U-1, U-2, and U-3 (Plate 2). These wells were installed in 1991 by GSI.

#### **CURRENT SEMIANNUAL SAMPLING RESULTS**

Depth to water measurements were obtained in each monitoring well on January 25, 1993. Static ground-water levels were measured from the surveyed top of the well box and recorded to the nearest  $\pm 0.01$  foot. Water-level elevations were referenced to Mean Sea Level (MSL) datum and are presented in Table 1. Water-level data were used to construct a quarterly potentiometric map (Plate 3). Shallow ground-water flow direction is to the southeast with an approximate hydraulic gradient of 0.004.

Each well was checked for the presence of floating product. Floating product was not observed in the wells this quarter. The field data sheets are included in Appendix A.

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## **GeoStrategies Inc.**

UNOCAL Corporation

June 28, 1993

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Ground-water samples were collected on January 25, 1993. Samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline), according to EPA Method 5030 (Modified) and for Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) according to EPA Method 8020. The ground-water samples were analyzed by National Environmental Testing (NET) Pacific, Inc., a California State-certified laboratory located in Santa Rosa, California. The laboratory analytical report and Chain-of-Custody form are included in Appendix B. These data are summarized and included with the historical chemical analytical data presented in Table 2. A chemical concentration map for benzene is presented on Plate 4. Ground-water sampling field methods and procedures were presented in a previous GSI report dated April 15, 1992.

**GeoStrategies Inc.**

UNOCAL Corporation  
June 28, 1993  
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If you have any questions, please call.

GeoStrategies Inc. by,

*Madeleine Fulford*

Madeleine Fulford  
Geologist

*Stephen J. Carter*

Stephen J. Carter  
Project Manager  
R.G. 5577



MF/SJC:rt

Plate 1. Vicinity Map  
Plate 2. Site Plan  
Plate 3. Potentiometric Map  
Plate 4. Benzene Concentration Map

Appendix A: Field Data Sheets  
Appendix B: Laboratory Analytical Report and Chain-of-Custody Form

QC Review: *CMS*

781980-7

**TABLES**

**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	TEMP. (F)	CONDUCTIVITY (uHMOS/cm)
U-1	25-Jan-93	2	30.2	17.24	7.11	—	10.13	5	7.51	68.7	752
U-2	25-Jan-93	2	30.6	16.85	6.84	—	10.01	5	7.64	65.2	632
U-3	26-Jan-93	2	30.2	17.76	7.53	—	10.23	5	7.35	67.7	887

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

TABLE 2

## HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	O & G (PPB)
30-Sep-91	U-1	<30	<0.30	<0.30	<0.30	<0.30	N/A
12-Feb-92	U-1	<30	<0.30	<0.30	<0.30	<0.30	N/A
01-May-92	U-1	<50	0.8	<0.5	<0.5	<0.5	N/A
20-Aug-92	U-1	<50	<0.5	<0.5	<0.5	<0.5	N/A
23-Nov-92	U-1	<50	<0.5	<0.5	<0.5	<0.5	N/A
25-Jan-93	U-1	<50	13	<0.5	6.4	12	N/A
30-Sep-91	U-2	<30	<0.30	<0.30	<0.30	<0.30	N/A
12-Feb-92	U-2	<30	<0.30	<0.30	<0.30	<0.30	N/A
01-May-92	U-2	<50	<0.5	<0.5	<0.5	<0.5	N/A
20-Aug-92	U-2	<50	<0.5	<0.5	<0.5	<0.5	N/A
23-Nov-92	U-2	<50	<0.5	<0.5	<0.5	<0.5	N/A
25-Jan-93	U-2	<50	<0.5	<0.5	<0.5	<0.5	N/A
30-Sep-91	U-3	<30	<0.30	<0.30	<0.30	<0.30	<5.0
12-Feb-92	U-3	<30	1.7	<0.30	<0.30	<0.30	N/A
01-May-92	U-3	<50	1.2	<0.5	<0.5	<0.5	N/A
20-Aug-92	U-3	<50	3.6	<0.5	<0.5	<0.5	N/A
23-Nov-92	U-3	<50	2.4	<0.5	<0.5	<0.5	N/A
25-Jan-93	U-3	<50	<0.5	<0.5	<0.5	<0.5	N/A

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.

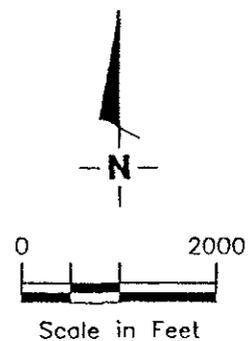
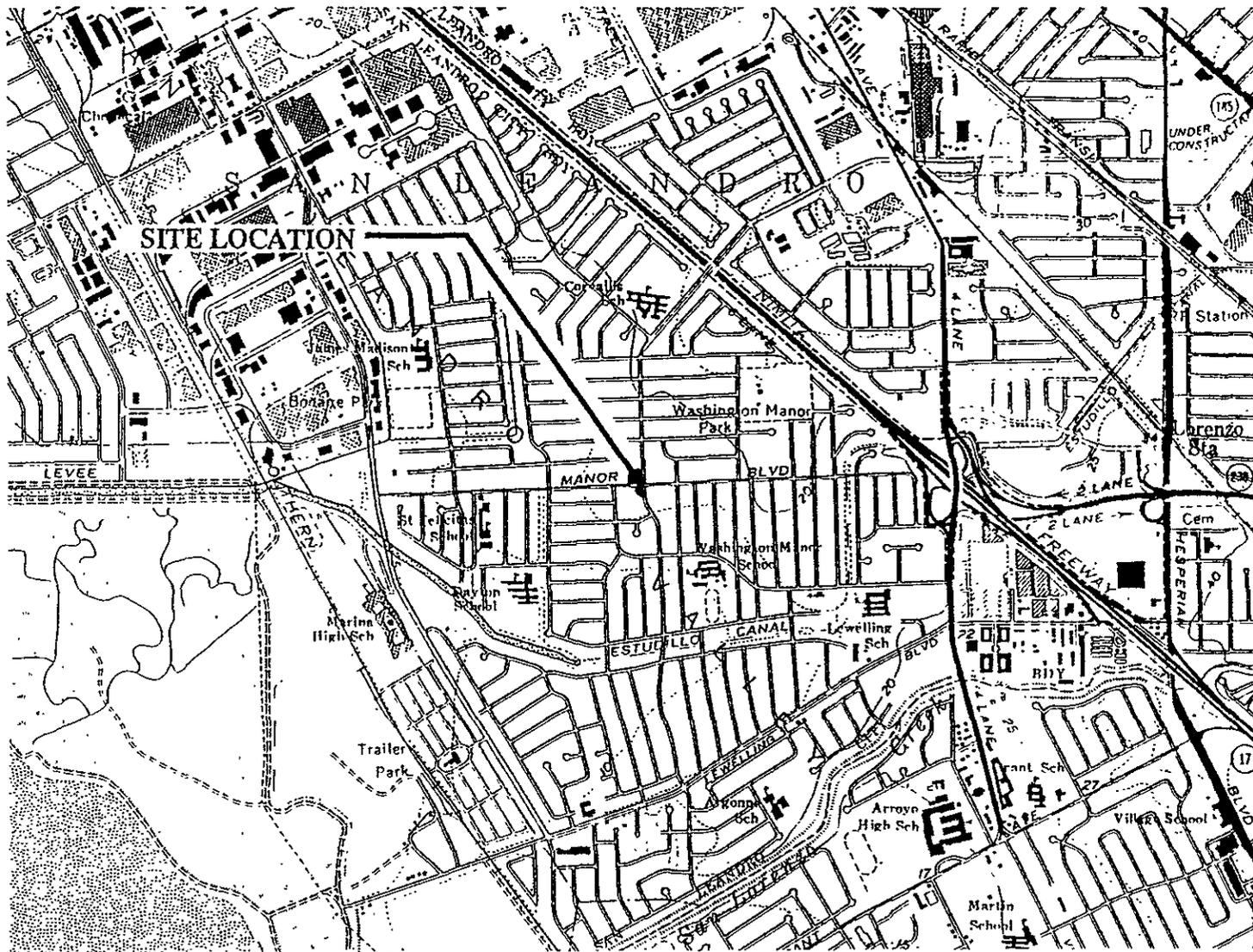
PPB = Parts Per Billion.

O&G = Oil and Grease.

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

**GeoStrategies Inc.**

**ILLUSTRATIONS**



Base Map: USGS Topographic Map

PLATE



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VICINITY MAP  
 UNOCAL Service Station #3690  
 14999 Farnsworth Street  
 San Leandro, California

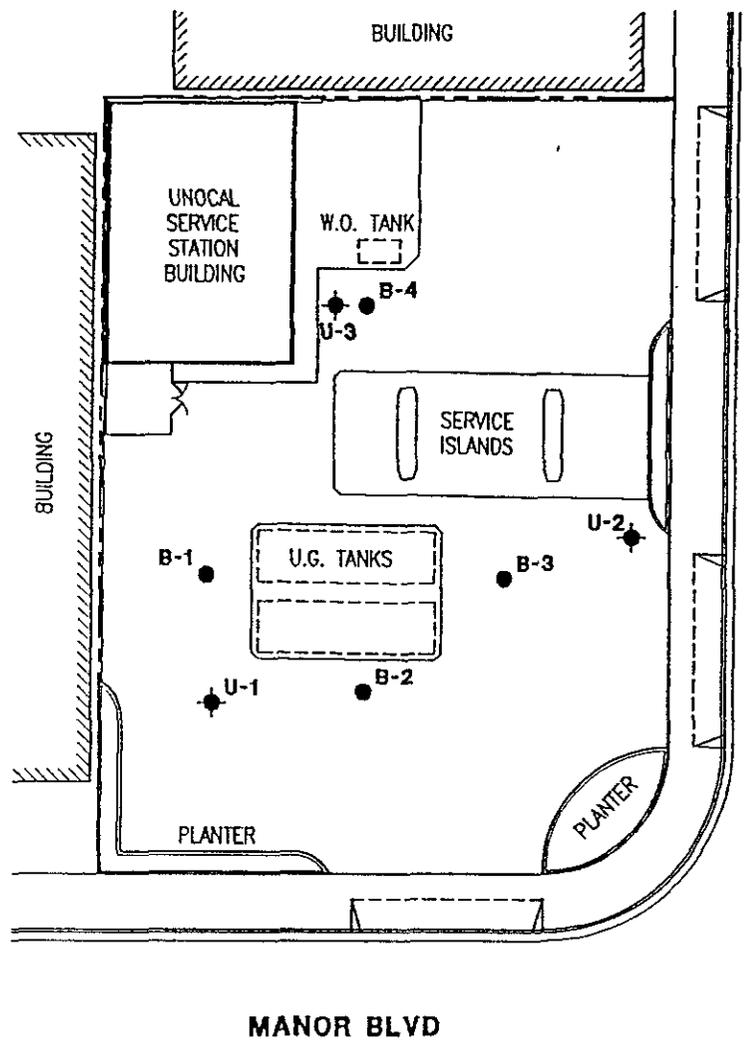
1

JOB NUMBER  
 7819

REVIEWED BY

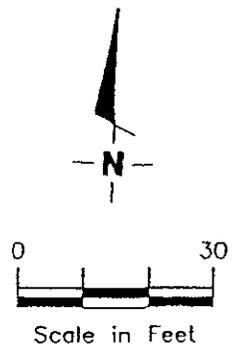
DATE  
 5/91

REVISED DATE



**EXPLANATION**

- ◆ Ground-water monitoring well
- Soil boring



GeoStrategies Inc.

**SITE PLAN**  
 UNOCAL Service Station #3690  
 14999 Farnsworth Street  
 San Leandro, California

PLATE

**2**

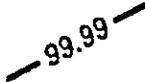
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REVIEWED BY

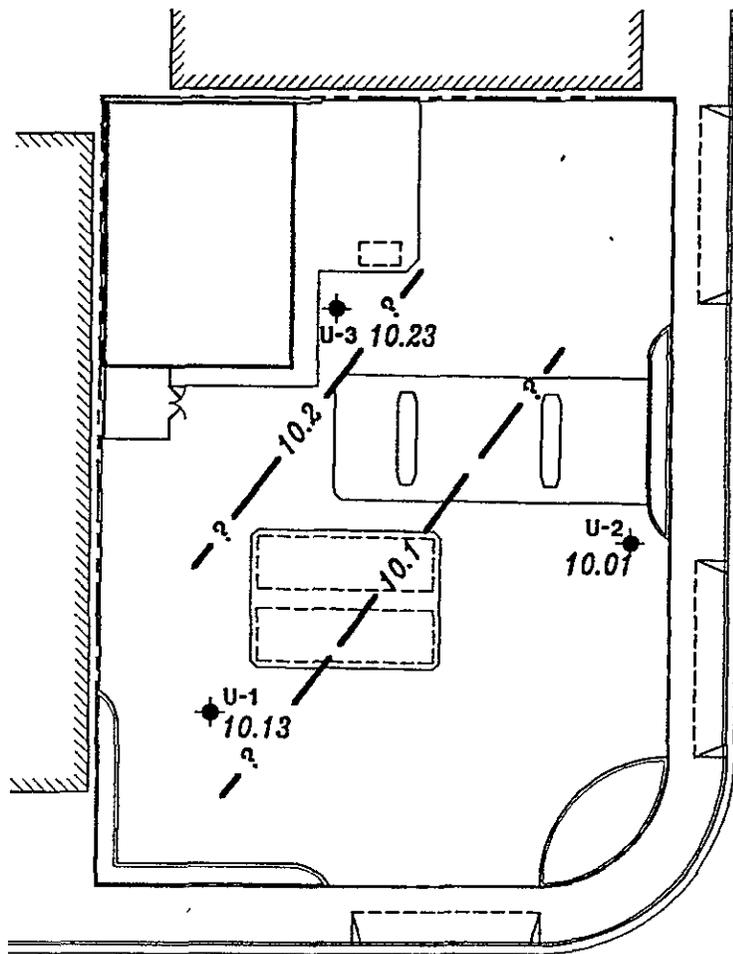
DATE  
5/92

REVISED DATE

**EXPLANATION**

-  Ground-water monitoring well
-  Ground-water elevation contour  
Approximate Gradient = 0.004
- 99.99** Ground-water elevation in feet  
referenced to Mean Sea Level  
(MSL) measured on January 25,  
1993

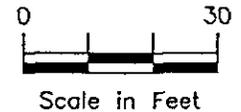
Note: Contours may be influenced by irrigation practices and/or site construction activities.



FARNSWORTH STREET

MANOR BLVD

Approximate  
Ground-water  
Flow Direction

GeoStrategies Inc.

POTENTIOMETRIC MAP  
UNOCAL Service Station #3690  
14999 Farnsworth Street  
San Leandro, California

PLATE

**3**

JOB NUMBER  
781980-7

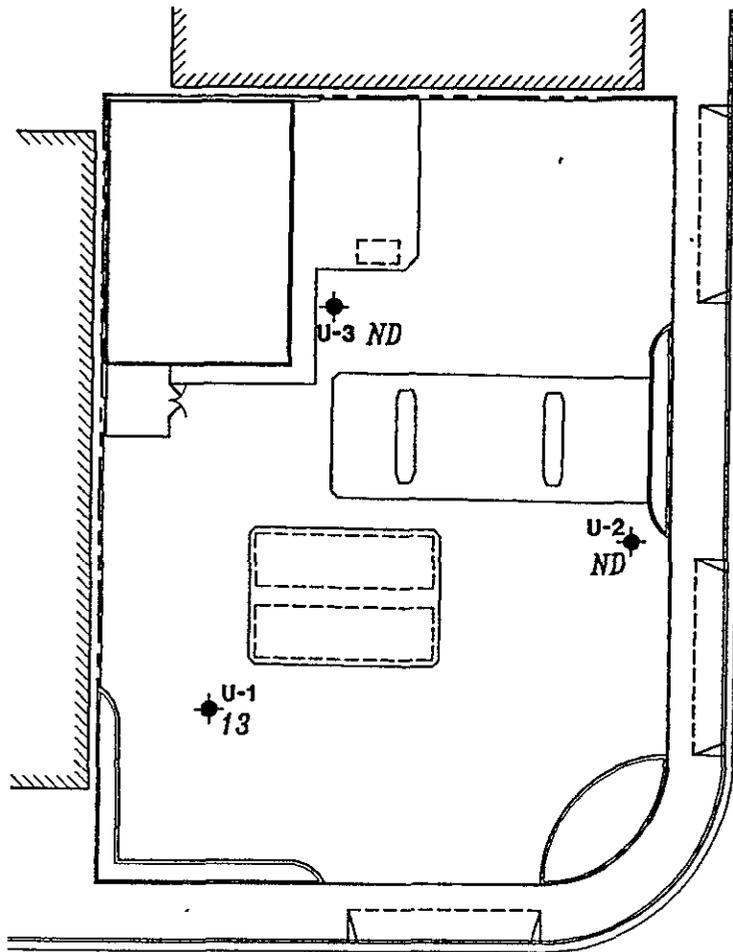
REVIEWED BY  
*E.M.*

DATE  
3/93

REVISED DATE

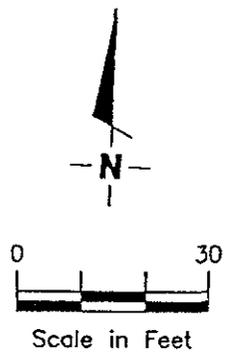
EXPLANATION

- ◆ Ground-water monitoring well
- 0.05 Benzene concentration in ppb sampled on January 25, 1993
- ND Not Detected (See laboratory reports for detection limits)



FARNSWORTH STREET

MANOR BLVD



GeoStrategies Inc.

BENZENE CONCENTRATION MAP  
UNOCAL Service Station #3690  
14999 Farnsworth Street  
San Leandro, California

PLATE

4

JOB NUMBER  
781980-7

REVIEWED BY  
E.M.

DATE  
3/93

REVISED DATE

**GeoStrategies Inc.**

**APPENDIX A  
FIELD DATA SHEETS**



# GETTLER-RYAN INC.

General and Environmental Contractors

## WELL SAMPLING FIELD DATA SHEET

COMPANY Unocal # 3690 JOB # 9819.80  
 LOCATION 14999 FARNWORTH DATE 1-25-93  
 CITY SAN LEANDRO TIME \_\_\_\_\_

Well ID. U-1 Well Condition OK  
 Well Diameter 2 in. Hydrocarbon Thickness \_\_\_\_\_ ft.  
 Total Depth 30.2 ft.  
 Depth to Liquid- 7.11 ft.  

Volume Factor (VF)	2" = 0.17	6" = 1.50	12" = 5.80
	3" = 0.38	8" = 2.60	
	4" = 0.66	10" = 4.10	

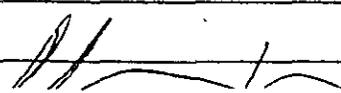
  
 (# of casing volumes) 5 x 23.09 x(VF) .17 = (Estimated Purge Volume) 19.5 gal.  
 (3.9)

Purging Equipment DD  
 Sampling Equipment Bailer

Starting Time 9:32 Purging Flow Rate 2 gpm.  
 (Estimated Purge Volume) 19.5 gal. / (Purging Flow Rate) 2 gpm. = (Anticipated Purging Time) 10 min.

Time	pH	Conductivity	Temperature	Volume
9:33	7.60	600	66.1	2 gal.
9:36	7.57	657	66.7	8
9:41	7.57	653	66.9	18
9:46	7.51	752	66.7	19

Did well dewater? No If yes, time \_\_\_\_\_ Volume \_\_\_\_\_  
 Sampling Time 9:46 Weather Conditions Sun  
 Analysis gas (BTXE) Bottles Used 3x40ml  
 Chain of Custody Number \_\_\_\_\_

COMMENTS  


# GETTLER-RYAN INC.

General and Environmental Contractors

## WELL SAMPLING FIELD DATA SHEET

COMPANY Unocal # 3690 JOB # 9819.80  
 LOCATION 14999 FARMWORTH DATE 1-25-93  
 CITY SAN LEANDRO TIME \_\_\_\_\_

Well ID. U-2 Well Condition OK  
 Well Diameter 2 in. Hydrocarbon Thickness \_\_\_\_\_ ft.  
 Total Depth 30.6 ft.  
 Depth to Liquid- 6.84 ft.  

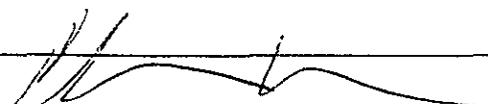
Volume Factor (VF)	2" = 0.17	6" = 1.50	12" = 5.80
	3" = 0.38	8" = 2.60	
	4" = 0.66	10" = 4.10	

  
 (# of casing volumes) 5 x 23.76 x (VF) .17 = (Estimated Purge Volume) 20 gal.  
 (4)  
 Purging Equipment DD  
 Sampling Equipment Bailer

Starting Time 909 Purging Flow Rate 2 gpm.  
 (Estimated Purge Volume) 20 gal. / (Purging Flow Rate) 2 gpm. = (Anticipated Purging Time) 10 min.

Time	pH	Conductivity	Temperature	Volume
910	7.56	699	64.2	2 gal
913	7.57	684	66.1	8
916	7.66	673	66.0	14
919	7.65	671	66.6	20
924	7.64	632	65.2	21 ↓

Did well dewater? No If yes, time \_\_\_\_\_ Volume \_\_\_\_\_  
 Sampling Time 924 Weather Conditions Sun  
 Analysis gas (BTXE) Bottles Used 3x40ml  
 Chain of Custody Number \_\_\_\_\_

COMMENTS \_\_\_\_\_  
 \_\_\_\_\_  
 FOREMAN  ASSISTANT \_\_\_\_\_

# GETTLER-RYAN INC.

General and Environmental Contractors

## WELL SAMPLING FIELD DATA SHEET

COMPANY Unocal # 3690 JOB # 9819.80  
 LOCATION 14999 FARNWORTH DATE 1-25-93  
 CITY SAN LEANDRO TIME \_\_\_\_\_

Well ID. U-3 Well Condition OK  
 Well Diameter 2 in. Hydrocarbon Thickness \_\_\_\_\_ ft.  
 Total Depth 30.2 ft.  
 Depth to Liquid- 7.53 ft.  
 (# of casing volumes) 5 x 22.67 x(VF) .17 = (Estimated Purge Volume) 19 gal. (3.8)

Volume Factor (VF)	2" = 0.17	6" = 1.50	12" = 5.80
	3" = 0.38	8" = 2.60	
	4" = 0.66	10" = 4.10	

Purging Equipment DD  
 Sampling Equipment Bailer

Starting Time 9:55 Purging Flow Rate \_\_\_\_\_ gpm.  
 (Estimated Purge Volume) 19 gal. / (Purging Flow Rate) 2 gpm. = (Anticipated Purging Time) 9.5 min.

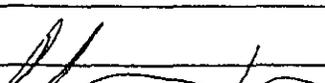
Time	pH	Conductivity	Temperature	Volume
<u>9:56</u>	<u>7.42</u>	<u>824</u>	<u>66.8</u>	<u>2 gal</u>
<u>9:59</u>	<u>7.43</u>	<u>836</u>	<u>68.2</u>	<u>8</u>
<u>10:04</u>	<u>7.41</u>	<u>791</u>	<u>67.2</u>	<u>18</u>
<u>10:09</u>	<u>7.35</u>	<u>887</u>	<u>67.7</u>	<u>19</u>

Did well dewater? NO If yes, time \_\_\_\_\_ Volume \_\_\_\_\_

Sampling Time 1009 Weather Conditions Sun

Analysis gas (BTYE) Bottles Used 3x40ml

Chain of Custody Number \_\_\_\_\_

COMMENTS \_\_\_\_\_  


**GeoStrategies Inc.**

**APPENDIX B  
LABORATORY ANALYTICAL REPORT  
AND  
CHAIN-OF-CUSTODY FORM**



NATIONAL  
ENVIRONMENTAL  
TESTING, INC.

NET Pacific, Inc.  
435 Tesconi Circle  
Santa Rosa, CA 95401  
Tel: (707) 526-7200  
Fax: (707) 526-9623

Frank Cline  
Gettler-Ryan Inc.  
2150 W. Winton Avenue  
Hayward, CA 94545

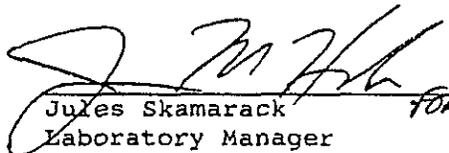
Date: 02/10/1993  
NET Client Acct No: 67900  
NET Pacific Job No: 93.00220  
Received: 01/27/1993

Client Reference Information

Unocal-3690, 14999 Farnsworth, San Leandro, P.O. No:9819.80

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

  
Jules Skamarack FOR:  
Laboratory Manager

JS:rct  
Enclosure(s)



Client No: 67900  
Client Name: Gettler-Ryan Inc.  
NET Log No: 93.00220

Date: 02/10/1993

Page: 2

Ref: Unocal-3690, 14999 Farnsworth, San Leandro, P.O. No:9819.80

Descriptor, Lab No. and Results

Parameter	U-1	U-2	Reporting Limit	Units	Method
	01/25/1993 09:46 149638	01/25/1993 09:24 149639			
TPH (Gas/BTXE,Liquid)					
METHOD 5030 (GC,FID)	--	--			
DATE ANALYZED	01-28-93	01-27-93			
DILUTION FACTOR*	1	1			
as Gasoline	ND	ND	50	ug/L	5030
METHOD 8020 (GC,Liquid)	--	--			
DATE ANALYZED	01-28-93	01-27-93			
DILUTION FACTOR*	1	1			
Benzene	13	ND	0.5	ug/L	8020
Ethylbenzene	6.4	ND	0.5	ug/L	8020
Toluene	ND	ND	0.5	ug/L	8020
Xylenes (Total)	12	ND	0.5	ug/L	8020
SURROGATE RESULTS	--	--			
Bromofluorobenzene	99	86		% Rec.	5030



Client No: 67900  
Client Name: Gettler-Ryan Inc.  
NET Log No: 93.00220

Date: 02/10/1993

Page: 3

Ref: Unocal-3690, 14999 Farnsworth, San Leandro, P.O. No:9819.80

Descriptor, Lab No. and Results

Parameter	U-3	TB	Reporting Limit	Units	Method
TPH (Gas/BTXE,Liquid)					
METHOD 5030 (GC,FID)	--	--			
DATE ANALYZED	01-28-93	01-27-93			
DILUTION FACTOR*	1	1			
as Gasoline	ND	ND	50	ug/L	5030
METHOD 8020 (GC,Liquid)	--	--			
DATE ANALYZED	01-28-93	01-27-93			
DILUTION FACTOR*	1	1			
Benzene	ND	ND	0.5	ug/L	8020
Ethylbenzene	ND	ND	0.5	ug/L	8020
Toluene	ND	ND	0.5	ug/L	8020
Xylenes (Total)	ND	ND	0.5	ug/L	8020
SURROGATE RESULTS	--	--			
Bromofluorobenzene	91	86		% Rec.	5030



Client No: 67900  
Client Name: Gettler-Ryan Inc.  
NET Log No: 93.00220

Date: 02/10/1993

Page: 4

Ref: Unocal-3690, 14999 Farnsworth, San Leandro, P.O. No:9819.80

QUALITY CONTROL DATA

<u>Parameter</u>	<u>Reporting Limits</u>	<u>Units</u>	<u>Cal Verf Stand % Recovery</u>	<u>Blank Data</u>	<u>Spike % Recovery</u>	<u>Duplicate Spike % Recovery</u>	<u>RPD</u>
Gasoline	50	ug/L	101	ND	102	88	15
Benzene	0.5	ug/L	105	ND	101	86	16
Toluene	0.5	ug/L	105	ND	131	87	41
Gasoline	50	ug/L	102	ND	109	102	7.0
Benzene	0.5	ug/L	105	ND	94	89	5.0
Toluene	0.5	ug/L	106	ND	103	97	6.0

COMMENT: Blank Results were ND on other analytes tested.



## KEY TO ABBREVIATIONS and METHOD REFERENCES

- < : Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
- \* : Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
- ICVS : Initial Calibration Verification Standard (External Standard).
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
- mg/L : Concentration in units of milligrams of analyte per liter of sample.
- mL/L/hr : Milliliters per liter per hour.
- MPN/100 mL : Most probable number of bacteria per one hundred milliliters of sample.
- N/A : Not applicable.
- NA : Not analyzed.
- ND : Not detected; the analyte concentration is less than applicable listed reporting limit.
- NTU : Nephelometric turbidity units.
- RPD : Relative percent difference,  $100 \text{ [Value 1 - Value 2] / mean value}$ .
- SNA : Standard not available.
- ug/Kg (ppb) : Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
- ug/L : Concentration in units of micrograms of analyte per liter of sample.
- umhos/cm : Micromhos per centimeter.

### Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

COOLER RECEIPT FORM

Project: Unocal - 14999 Farnsworth San Leandro Log No: 1823  
Cooler received on: 1/27/93 and checked on 1/27/93 by A. Lopez  
(signature) Ammy Lopez

- Were custody papers present?.....  YES NO
- Were custody papers properly filled out?.....  YES NO
- Were the custody papers signed?.....  YES NO
- Was sufficient ice used?.....  YES NO
- Did all bottles arrive in good condition (unbroken)?.....  YES NO
- Did bottle labels match COC?.....  YES NO
- Were proper bottles used for analysis indicated?.....  YES NO
- Correct preservatives used?.....  YES NO
- VOA vials checked for headspace bubbles?.....  YES NO

Note which voas (if any) had bubbles:

Sample descriptor:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Number of vials:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

List here all other jobs received in the same cooler:

Gettler-Ryan Job #	NET log #
<u>9861.80</u>	<u>1827</u>
<u>9831.80</u>	<u>1824</u>
<u>9868.80</u>	<u>1825</u>
_____	_____
_____	_____
_____	_____

Trip Blank Batch Number 83 # of bottles recv'd 31

