



GeoStrategies Inc.

February 2, 1993

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. Penney Silzer of UNOCAL Corporation, we are forwarding a copy of the Quarterly Monitoring Report for the above referenced location. This report presents the results of the fourth quarterly groundwater 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

Enclosure

cc: Ms. Penney Silzer, UNOCAL Corporation
Mr. Richard Hiatt, Regional Water Quality Control Board

:ellenu\809final.wp



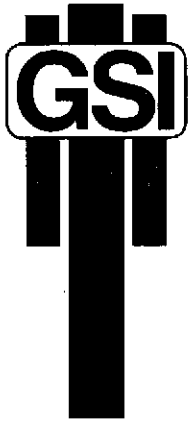
GeoStrategies Inc.

QUARTERLY MONITORING REPORT

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

780901-13

February 1, 1993



GeoStrategies Inc.

February 1, 1993

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

Attn: Ms. Penny L. Silzer

Re: QUARTERLY MONITORING REPORT
UNOCAL Service Station No. 5760
376 Lewelling Boulevard
San Lorenzo, California

Ms. Silzer:

This Quarterly Monitoring Report has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1992 fourth quarter sampling for the above referenced site (Plate 1).

There are currently eight monitoring wells at the site: Wells U-1 through U-8 (Plate 2). These wells were installed in 1988, 1990 and 1992 by Woodward-Clyde Consultants and GSI.

CURRENT QUARTER SAMPLING RESULTS

Depth to water measurements were obtained in each monitoring well on November 20, 1992. Static ground-water levels were measured from the surveyed top of the well box and recorded to the nearest ± 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 southwest with an approximate hydraulic gradient of 0.004.

780901-13

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601 UNIVERSITY AVENUE • SUITE 150 • SACRAMENTO, CALIFORNIA 95825 • (916) 568-7500

GeoStrategies Inc.

UNOCAL Corporation
February 1, 1993
Page 2

Each well was checked for the presence of floating product. **Floating product was observed in Well U-1 at 0.02 feet in measured thickness. Well U-1 contains a product skimmer. The field data sheets are included in Appendix A.**

Ground-water samples were collected on November 20, 1992. **Samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline), according to EPA Method 8015 (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 isoconcentration map for benzene is presented on Plate 4. Groundwater sampling field methods and procedures are included in a previous GSI report dated May 19, 1992.**

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UNOCAL Corporation
February 1, 1993
Page 3

If you have any questions, please call.

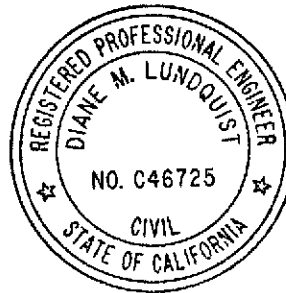
GeoStrategies Inc. by,

Ellen C. Fostersmith

Ellen C. Fostersmith
Geologist

Diane M. Lundquist

Diane M. Lundquist, P.E.
Senior Engineer
C 46725



ECF/DML/rmt

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

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

QC Review *JH*

780901-13

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 | 20-Nov-92 | 3 | 30.0 | 40.51 | 20.29 | 0.02 | 20.24 | ---- | ---- | ---- | ---- |
| U-2 | 20-Nov-92 | 3 | 30.0 | 41.62 | 21.17 | ---- | 20.45 | 5 | 6.89 | 65.9 | 728 |
| U-3 | 20-Nov-92 | 3 | 25.0 | 39.64 | 19.48 | ---- | 20.16 | 2 | 6.79 | 67.0 | 956 |
| U-4 | 20-Nov-92 | 3 | 28.0 | 40.53 | 20.31 | ---- | 20.22 | 5 | 6.69 | 65.7 | 963 |
| U-5 | 20-Nov-92 | 2 | 30.0 | 39.52 | 19.46 | ---- | 20.06 | 5 | 6.80 | 69.8 | 949 |
| U-6 | 20-Nov-92 | 2 | 30.0 | 37.80 | N/A | ---- | ---- | ---- | ---- | ---- | ---- |
| U-7 | 20-Nov-92 | 2 | 35.0 | 37.37 | 17.54 | ---- | 19.83 | 5 | 7.22 | 67.1 | 759 |
| U-8 | 20-Nov-92 | 2 | 30.0 | 38.81 | 18.74 | ---- | 20.07 | 5 | 6.95 | 68.0 | 767 |

- Notes:
1. Static water elevations referenced to Mean Sea Level (MSL).
 2. Physical parameter measurements represent stabilized values.
 3. Static water levels corrected for floating product (conversion factor = 0.80).
 4. Well U-6 had a car over the well.

TABLE 2
HISTORICAL GROUND-WATER QUALITY DATABASE

| SAMPLE DATE | SAMPLE POINT | TPH-G (PPB) | BENZENE (PPB) | TOLUENE (PPB) | ETHYLBENZENE (PPB) | KYLENES (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. |
| 10-Jan-92 | U-1 | ** | | | | |
| 06-Aug-92 | U-1 | FP=0.01 ft | | | | |
| 20-Nov-92 | U-1 | FP=0.02 ft | | | | |
| 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 |
| 05-Mar-92 | U-2 | <30 | <0.30 | 0.36 | <0.30 | <0.30 |
| 07-Apr-92 | U-2 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 06-Aug-92 | U-2 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 20-Nov-92 | U-2 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 23-Aug-90 | U-3 | 110000. | 4400. | 13000. | 2800. | 17000. |
| 05-Dec-90 | U-3* | 89000 | 1900 | 3500 | 1600 | 9800 |

| SAMPLE DATE | SAMPLE POINT | TPH-G (PPB) | BENZENE (PPB) | TOLUENE (PPB) | ETHYLBENZENE (PPB) | XYLENES (PPB) |
|-------------|--------------|-------------|---------------|---------------|--------------------|---------------|
| 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 |
| 05-Mar-92 | U-3 | 180000 | 5300 | 15000 | 5400 | 26000 |
| 07-Apr-92 | U-3 | 97000 | 6100 | 16000 | 5400 | 28000 |
| 06-Aug-92 | U-3 | 140,000 | 5,100 | 13,000 | 5,000 | 23,000 |
| 20-Nov-92 | U-3 | 50000 | 3200 | 4700 | 1900 | 10000 |
| 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 |
| 05-Mar-92 | U-4 | <30 | <0.30 | <0.30 | <0.30 | <0.30 |
| 07-Apr-92 | U-4 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 06-Aug-92 | U-4 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 20-Nov-92 | U-4 | <50 | <0.5 | 2.5 | <0.5 | <0.5 |
| 07-Apr-92 | U-5 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 06-Aug-92 | U-5 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 20-Nov-92 | U-5 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |

| SAMPLE DATE | SAMPLE POINT | TPH-G (PPB) | BENZENE (PPB) | TOLUENE (PPB) | ETHYLBENZENE (PPB) | XYLENES (PPB) |
|-------------|--------------|-------------|---------------|---------------|--------------------|---------------|
| 07-Apr-92 | U-6 | 6600 | 90 | <0.5 | 820 | 1200 |
| 06-Aug-92 | U-6 | 9200 | 160 | <0.5 | 360 | 150 |
| 20-Nov-92 | U-6 | NA | | | | |
| 07-Apr-92 | U-7 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 06-Aug-92 | U-7 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 20-Nov-92 | U-7 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 07-Apr-92 | U-8 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |
| 06-Aug-92 | U-8 | <50 | <0.5 | <0.5 | <0.5 | <0.5 |

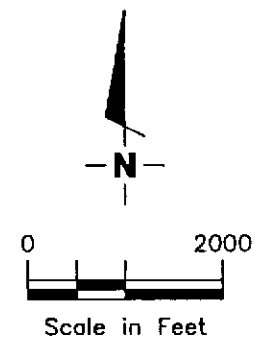
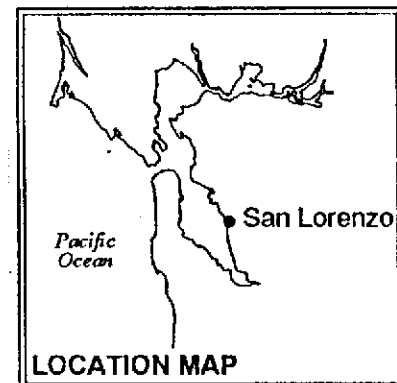
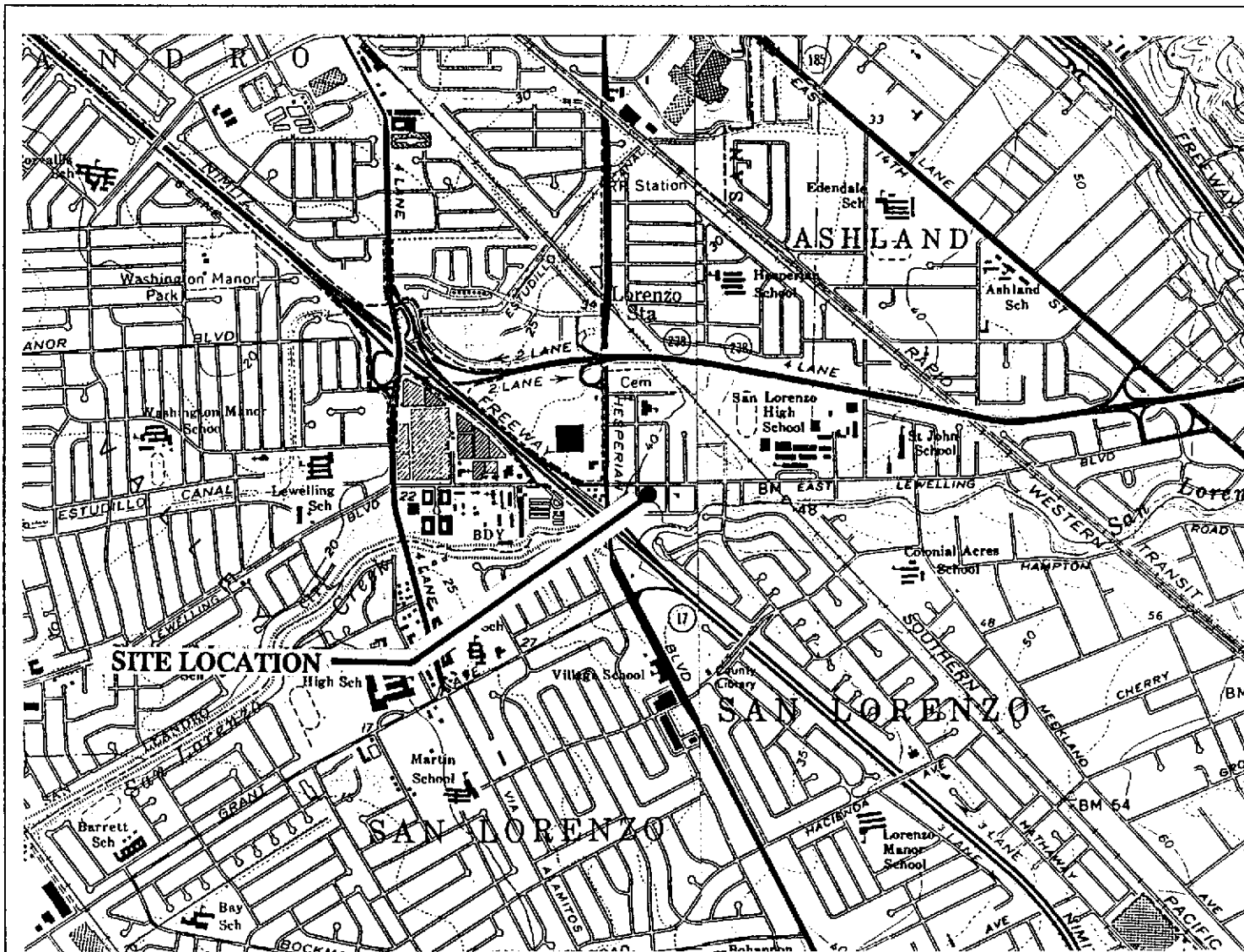
TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.

PPB = Parts Per Billion.

** = Product Skimmer installed in well.

FP = Floating Product.

- Notes:
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 correlations.
 3. Ethylbenzene and xylenes were combined prior to March 1990.



Base Map: USGS Topographic Map



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

PLATE

1

JOB NUMBER
7809

REVIEWED BY
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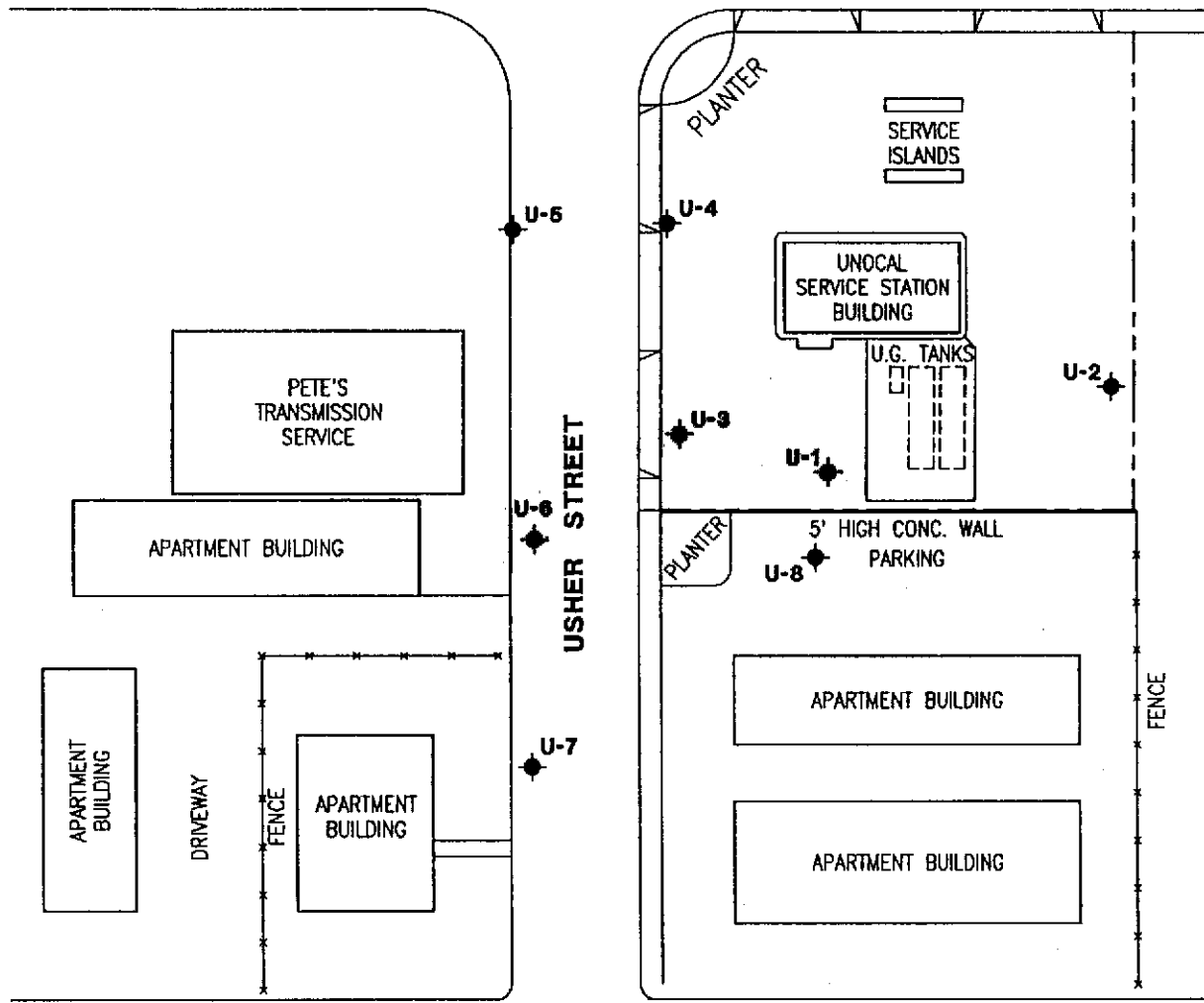
DATE
2/91

REVISED DATE

LEWELLING BOULEVARD

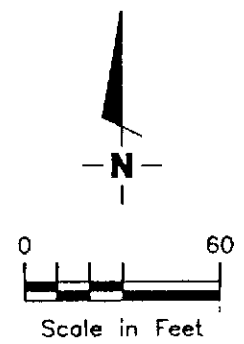
EXPLANATION

◆ Ground-water monitoring well



ALBION AVENUE

Base Map: Field observations



GeoStrategies Inc.

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

PLATE

2

JOB NUMBER
7809

REVIEWED BY
[Signature]

DATE
5/92

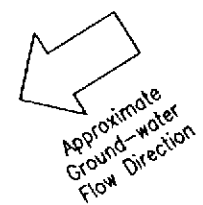
REVISED DATE

LEWELLING BOULEVARD

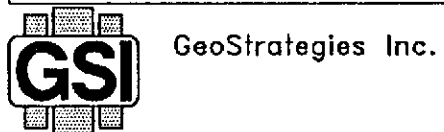
EXPLANATION

- ◆ Ground-water monitoring well
- 99.99 --- Ground-water elevation contour. Approximate Gradient = 0.004
- 99.99 Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on November 20, 1992
- NA Not Accessible

- NOTES:
1. Contours may be influenced by irrigation practices and/or site construction activities.
 2. Well U-1 contains a product skimmer.



Base Map: Field observations



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

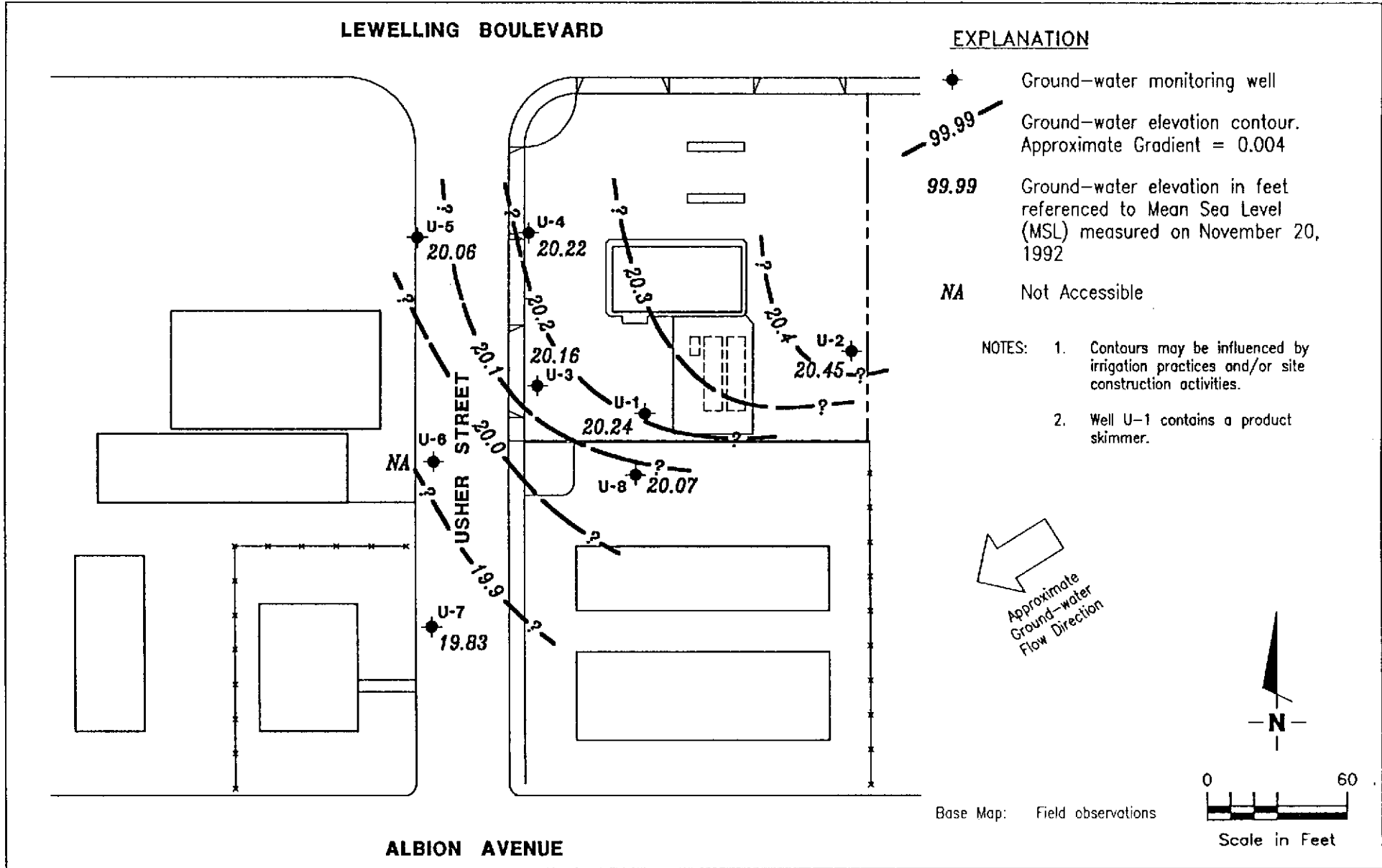
PLATE
3

JOB NUMBER
 780901-13

REVIEWED BY

DATE
 1/93

REVISED DATE

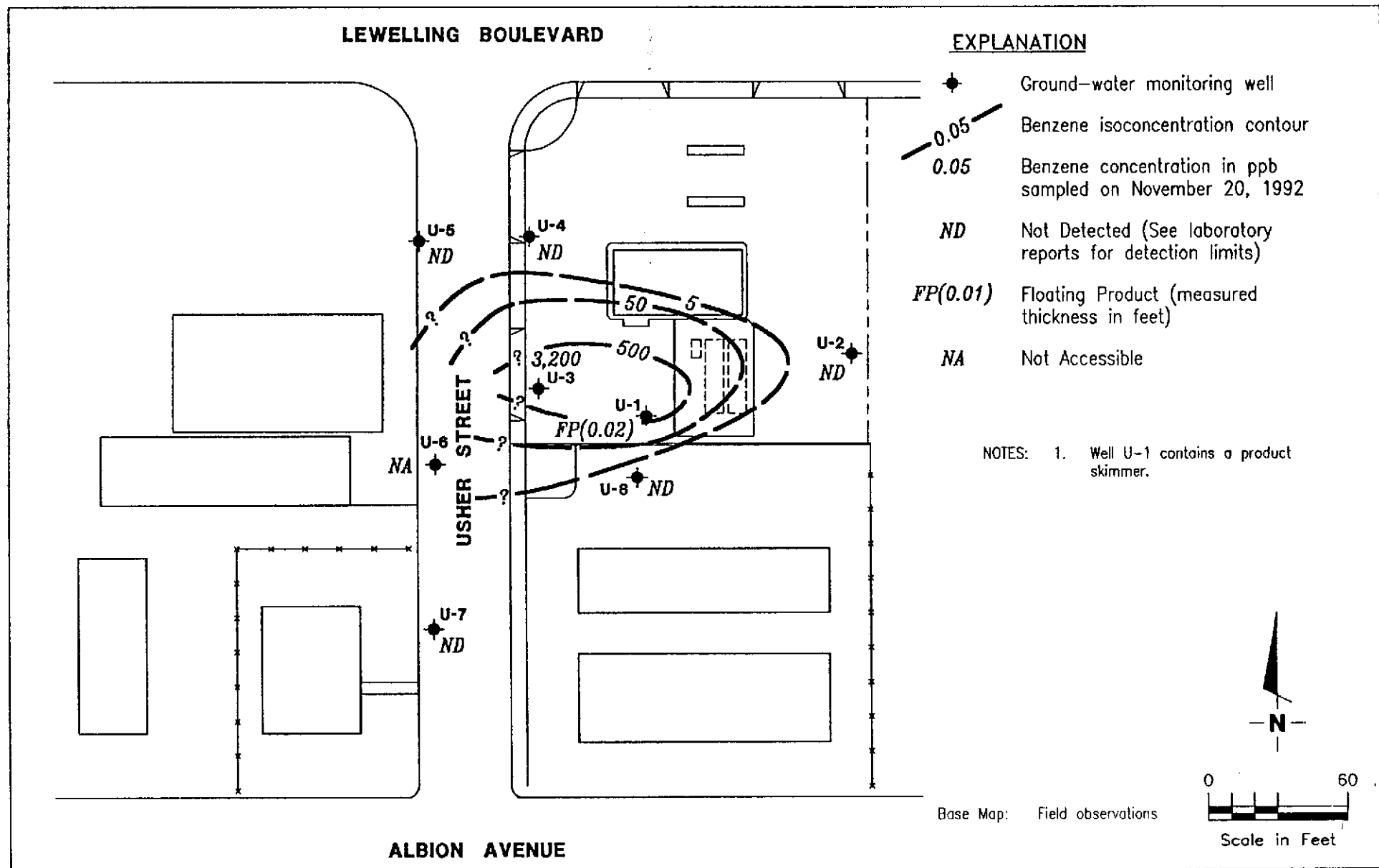


LEWELLING BOULEVARD

EXPLANATION

- ◆ Ground-water monitoring well
- 0.05- Benzene isoconcentration contour
- 0.05 Benzene concentration in ppb sampled on November 20, 1992
- ND Not Detected (See laboratory reports for detection limits)
- FP(0.01) Floating Product (measured thickness in feet)
- NA Not Accessible

NOTES: 1. Well U-1 contains a product skimmer.



Base Map: Field observations



GeoStrategies Inc.

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

PLATE

4

JOB NUMBER
780901-13

REVIEWED BY
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DATE
1/93

REVISED DATE

GeoStrategies Inc.

APPENDIX A
FIELD DATA SHEETS

GETTLER-RYAN INC.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

COMPANY Unocal JOB # 3809.01
 LOCATION 376 Lewelling DATE 11-20-92
 CITY San Lorenzo TIME _____

Well ID. U-2 Well Condition OK
 Well Diameter 2 - (3) in. Hydrocarbon Thickness _____ ft.
 Total Depth 30.0 ft.
 Depth to Liquid- 21.17 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 | |

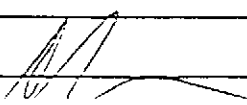
(# of casing volumes) 5 x 8.83 x(VF) .17 - (.38) = (Estimated Purge Volume) 16.8 gal.
 (3.4)

Purging Equipment DD
 Sampling Equipment Bailer

Starting Time 1040 Purging Flow Rate 2 gpm.
 (Estimated Purge Volume) 16.8 gal. / (Purging Flow Rate) 2 gpm. = (Anticipated Purging Time) 8.4 min.

| Time | pH | Conductivity | Temperature | Volume |
|-------------|-------------|--------------|-------------|--------------|
| <u>1041</u> | <u>6.91</u> | <u>784</u> | <u>66.0</u> | <u>2 gal</u> |
| <u>1044</u> | <u>6.89</u> | <u>777</u> | <u>65.7</u> | <u>8</u> |
| <u>1048</u> | <u>6.90</u> | <u>742</u> | <u>66.1</u> | <u>16</u> |
| <u>1053</u> | <u>6.89</u> | <u>728</u> | <u>65.9</u> | <u>17</u> ✓ |

Did well dewater? No If yes, time _____ Volume _____
 Sampling Time 1053 Weather Conditions Plc
 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 JOB # 3809.01
 LOCATION 376 Lewelling DATE 11-20-92
 CITY San Lorenzo TIME _____

Well ID. U-3 Well Condition OK
 Well Diameter 2-3 in. Hydrocarbon Thickness _____ ft.
 Total Depth 25.0 ft.
 Depth to Liquid- 19.48 ft.

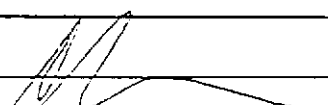
| | | | |
|--------------------|-----------|------------|------------|
| Volume Factor (VF) | 2" = 0.17 | 6" = 1.50 | 12" = 5.80 |
| | 3" = 0.38 | 8" = 2.80 | |
| | 4" = 0.66 | 10" = 4.10 | |

 (# of casing volumes) 5 x 5.52 x(VF) .17 - .38 = (Estimated Purge Volume) 10.5 gal.
 (2.1)
 Purging Equipment DD
 Sampling Equipment Bailer

Starting Time 1030 Purging Flow Rate 2 gpm.
 (Estimated Purge Volume) 10.5 gal. / (Purging Flow Rate) 2 gpm. = (Anticipated Purging Time) 5.3 min.

| Time | pH | Conductivity | Temperature | Volume |
|-------------|-------------|--------------|-------------|--------------|
| <u>1034</u> | <u>6.79</u> | <u>942</u> | <u>66.8</u> | <u>4 gal</u> |
| <u>1105</u> | <u>6.79</u> | <u>956</u> | <u>67.0</u> | <u>5 gal</u> |
| | | | | |
| | | | | |

Did well dewater? yes If yes, time 1034 Volume 4 gal
 Sampling Time 1105 Weather Conditions PLC
 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 JOB # 3809,01
 LOCATION 376 Lewelling DATE 11-20-92
 CITY San Lorenzo TIME _____

Well ID. U-4 Well Condition OK
 Well Diameter 2-(3) in. Hydrocarbon Thickness _____ ft.
 Total Depth 28.0 ft.
 Depth to Liquid- 20.31 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 7.69 x(VF) .17 - (38) = (Estimated Purge Volume) 14.6 gal.
 (2.9)

Purging Equipment DD
 Sampling Equipment Bailer

Starting Time 1008 Purging Flow Rate 2 gpm.
 (Estimated Purge Volume) 14.6 gal. / (Purging Flow Rate) 2 gpm. = (Anticipated Purging Time) 7.3 min.

| Time | pH | Conductivity | Temperature | Volume |
|-------------|-------------|--------------|-------------|--------------|
| <u>1009</u> | <u>6.75</u> | <u>930</u> | <u>65.8</u> | <u>2 gal</u> |
| <u>1012</u> | <u>6.71</u> | <u>935</u> | <u>66.1</u> | <u>8</u> |
| <u>1015</u> | <u>6.69</u> | <u>937</u> | <u>66.0</u> | <u>14</u> |
| <u>1020</u> | <u>6.69</u> | <u>963</u> | <u>65.7</u> | <u>15</u> |

Did well dewater? No If yes, time _____ Volume _____

Sampling Time 1020 Weather Conditions PLC

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 JOB # 3809.01
 LOCATION 376 Lewelling DATE 11-20-92
 CITY San Lorenzo TIME _____

Well ID. U-5 Well Condition OK
 Well Diameter (2)-3 in. Hydrocarbon Thickness _____ ft.
 Total Depth 30 ft.
 Depth to Liquid- 19.46 ft.
 (# of casing volumes) 5 x 10.54 x (VF) (.17) - .38 = (Estimated Purge Volume) 9 gal. (1.8)
 Purging Equipment DD
 Sampling Equipment Bailer

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

Starting Time 951 Purging Flow Rate 2 gpm.
 (Estimated Purge Volume) 9 gal. / (Purging Flow Rate) 2 gpm. = (Anticipated Purging Time) 4.5 min.

| Time | pH | Conductivity | Temperature | Volume |
|------------|-------------|--------------|-------------|--------------|
| <u>952</u> | <u>6.83</u> | <u>888</u> | <u>69.6</u> | <u>2 gal</u> |
| <u>955</u> | <u>6.81</u> | <u>941</u> | <u>68.9</u> | <u>8</u> |
| <u>959</u> | <u>6.80</u> | <u>949</u> | <u>69.8</u> | <u>7 ↓</u> |
| | | | | |
| | | | | |

Did well dewater? No If yes, time _____ Volume _____
 Sampling Time 959 Weather Conditions PLC
 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 JOB # 3809.01
 LOCATION 376 Lewelling DATE 11-20-92
 CITY San Lorenzo TIME _____

Well ID. U-7 Well Condition OK
 Well Diameter (2)-3 in. Hydrocarbon Thickness _____ ft.
 Total Depth 35 ft.
 Depth to Liquid- 17.54 ft.

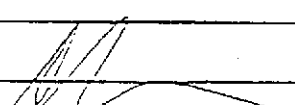
| | | | |
|--------------------|-----------|------------|------------|
| Volume Factor (VF) | 2" = 0.17 | 6" = 1.50 | 12" = 5.80 |
| | 3" = 0.38 | 8" = 2.60 | |
| | 4" = 0.66 | 10" = 4.10 | |

 (# of casing volumes) 5 x 17.46 x (VF) (.17) = .38 = (Estimated Purge Volume) 14.8 gal.
 Purging Equipment DD
 Sampling Equipment Bailer

Starting Time 914 Purging Flow Rate 2 gpm.
 (Estimated Purge Volume) 14.8 gal. / (Purging Flow Rate) 2 gpm. = (Anticipated Purging Time) 7.4 min.

| Time | pH | Conductivity | Temperature | Volume |
|------|------|--------------|-------------|--------|
| 915 | 7.29 | 746 | 67.8 | 2 gal |
| 918 | 7.30 | 749 | 67.7 | 8 |
| 921 | 7.32 | 748 | 67.5 | 14 |
| 925 | 7.22 | 759 | 67.1 | 15 ✓ |

Did well dewater? No If yes, time _____ Volume _____
 Sampling Time 925 Weather Conditions PLC
 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 JOB # 3809.01
 LOCATION 376 Lewelling DATE 11-20-92
 CITY San Lorenzo TIME _____

Well ID. U-8 Well Condition OK
 Well Diameter 2)-3 in. Hydrocarbon Thickness _____ ft.
 Total Depth 30 ft.
 Depth to Liquid- 18.74 ft.

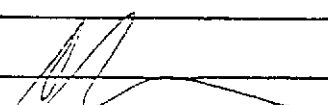
| | | | |
|--------------------|-----------|------------|------------|
| Volume Factor (VF) | 2" = 0.17 | 6" = 1.50 | 12" = 5.80 |
| | 3" = 0.38 | 8" = 2.60 | |
| | 4" = 0.66 | 10" = 4.10 | |

 (# of casing volumes) 5 x 11.26 x (VF) .17 - .38 = (Estimated Purge Volume) 9.6 gal.
 (1.9)
 Purging Equipment DD
 Sampling Equipment Bailer

Starting Time 934 Purging Flow Rate 2 gpm.
 (Estimated Purge Volume) 9.6 gal. / (Purging Flow Rate) 2 gpm. = (Anticipated Purging Time) 4.8 min.

| Time | pH | Conductivity | Temperature | Volume |
|------------|-------------|--------------|-------------|--------------|
| <u>935</u> | <u>7.07</u> | <u>773</u> | <u>67.6</u> | <u>2 gal</u> |
| <u>938</u> | <u>6.99</u> | <u>766</u> | <u>67.8</u> | <u>8</u> |
| <u>942</u> | <u>6.95</u> | <u>767</u> | <u>68.0</u> | <u>9</u> ↓ |
| | | | | |
| | | | | |

Did well dewater? No If yes, time _____ Volume _____
 Sampling Time 942 Weather Conditions Plc
 Analysis gas (BTXE) 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

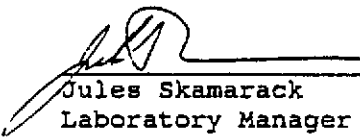
Date: 12/17/1992
NET Client Acct No: 67900
NET Pacific Job No: 92.49495
Received: 11/25/1992

Client Reference Information

Unocal-5760, 376 Lewelling, San Lorenzo, PO. No: 3809.01

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
Laboratory Manager

JS:rct
Enclosure(s)



Client No: 67900
 Client Name: Gettler-Ryan Inc.
 NET Job No: 92.49495

Date: 12/17/1992

Page: 2

Ref: Unocal-5760, 376 Lewelling, San Lorenzo, PO. No: 3809.01

Descriptor, Lab No. and Results

| Parameter | Method | Reporting Limit | U-2 | U-3 | Units |
|-------------------------|--------|--------------------|-------------------------------|-------------------------------|--------|
| | | | 11/20/1992 10:53 145642 | 11/20/1992 11:05 145643 | |
| TPH (Gas/BTXE,Liquid) | | | -- | -- | |
| METHOD 5030 (GC,FID) | | | | | |
| DATE ANALYZED | | | 12-01-92 | 12-02-92 | |
| DILUTION FACTOR* | | | 1 | 500 | |
| as Gasoline | 5030 | 50 | ND | 50,000 | ug/L |
| METHOD 8020 (GC,Liquid) | | | -- | -- | |
| DATE ANALYZED | | | 12-01-92 | 12-02-92 | |
| DILUTION FACTOR* | | | 1 | 500 | |
| Benzene | 8020 | 0.5 | ND | 3,200 | ug/L |
| Ethylbenzene | 8020 | 0.5 | ND | 1,900 | ug/L |
| Toluene | 8020 | 0.5 | ND | 4,700 | ug/L |
| Xylenes (Total) | 8020 | 0.5 | ND | 10,000 | ug/L |
| SURROGATE RESULTS | | | -- | -- | |
| Bromofluorobenzene | 5030 | | 76 | 79 | % Rec. |



Client No: 67900
 Client Name: Gettler-Ryan Inc.
 NET Job No: 92.49495

Date: - 12/17/1992

Page: 3

Ref: Unocal-5760, 376 Lewelling, San Lorenzo, PO. No: 3809.01

Descriptor, Lab No. and Results

| Parameter | Method | Reporting Limit | U-4 | U-5 | Units |
|-------------------------|--------|--------------------|-------------------------------|-------------------------------|--------|
| | | | 11/20/1992 10:20 145644 | 11/20/1992 09:59 145645 | |
| TPH (Gas/BTXE,Liquid) | | | -- | -- | |
| METHOD 5030 (GC,FID) | | | | | |
| DATE ANALYZED | | | 12-02-92 | 12-02-92 | |
| DILUTION FACTOR* | | | 1 | 1 | |
| as Gasoline | 5030 | 50 | ND | ND | ug/L |
| METHOD 8020 (GC,Liquid) | | | -- | -- | |
| DATE ANALYZED | | | 12-02-92 | 12-02-92 | |
| DILUTION FACTOR* | | | 1 | 1 | |
| Benzene | 8020 | 0.5 | ND | ND | ug/L |
| Ethylbenzene | 8020 | 0.5 | ND | ND | ug/L |
| Toluene | 8020 | 0.5 | 2.5 | ND | ug/L |
| Xylenes (Total) | 8020 | 0.5 | ND | ND | ug/L |
| SURROGATE RESULTS | | | -- | -- | |
| Bromofluorobenzene | 5030 | | 72 | 71 | % Rec. |



Client No: 67900
Client Name: Gettler-Ryan Inc.
NET Job No: 92.49495

Date: 12/17/1992

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Ref: Unocal-5760, 376 Lewelling, San Lorenzo, PO. No: 3809.01

Descriptor, Lab No. and Results

| Parameter | Method | Reporting Limit | U-7 | U-8 | Units |
|-------------------------|--------|--------------------|-------------------------------|-------------------------------|--------|
| | | | 11/20/1992 09:25 145646 | 11/20/1992 09:42 145647 | |
| TPH (Gas/BTXE,Liquid) | | | | | |
| METHOD 5030 (GC,FID) | | | -- | -- | |
| DATE ANALYZED | | | 12-03-92 | 12-03-92 | |
| DILUTION FACTOR* | | | 1 | 1 | |
| as Gasoline | 5030 | 50 | ND | ND | ug/L |
| METHOD 8020 (GC,Liquid) | | | -- | -- | |
| DATE ANALYZED | | | 12-03-92 | 12-03-92 | |
| DILUTION FACTOR* | | | 1 | 1 | |
| Benzene | 8020 | 0.5 | ND | ND | ug/L |
| Ethylbenzene | 8020 | 0.5 | ND | ND | ug/L |
| Toluene | 8020 | 0.5 | ND | ND | ug/L |
| Xylenes (Total) | 8020 | 0.5 | ND | ND | ug/L |
| SURROGATE RESULTS | | | -- | -- | |
| Bromofluorobenzene | 5030 | | 87 | 61 | % Rec. |



Client No: 67900
Client Name: Gettler-Ryan Inc.
NET Job No: 92.49495

Date: -12/17/1992

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Ref: Unocal-5760, 376 Lewelling, San Lorenzo, PO. No: 3809.01

Descriptor, Lab No. and Results

| Parameter | Method | Reporting Limit | TB 11/20/1992 145648 | Units |
|-------------------------|--------|--------------------|----------------------------|--------|
| TPH (Gas/BTXE,Liquid) | | | | |
| METHOD 5030 (GC,FID) | | | -- | |
| DATE ANALYZED | | | 12-02-92 | |
| DILUTION FACTOR* | | | 1 | |
| as Gasoline | 5030 | 50 | ND | ug/L |
| METHOD 8020 (GC,Liquid) | | | -- | |
| DATE ANALYZED | | | 12-02-92 | |
| DILUTION FACTOR* | | | 1 | |
| Benzene | 8020 | 0.5 | ND | ug/L |
| Ethylbenzene | 8020 | 0.5 | ND | ug/L |
| Toluene | 8020 | 0.5 | ND | ug/L |
| Xylenes (Total) | 8020 | 0.5 | ND | ug/L |
| SURROGATE RESULTS | | | -- | |
| Bromofluorobenzene | 5030 | | 71 | % Rec. |



Client No: 67900
Client Name: Gettler-Ryan Inc.
NET Job No: 92.49495

Date: 12/17/1992

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Ref: Unocal-5760, 376 Lewelling, San Lorenzo, PO. No: 3809.01

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 | 109 | ND | 102 | 110 | 7.5 |
| Benzene | 0.5 | ug/L | 86 | ND | 91 | 85 | 7.3 |
| Toluene | 0.5 | ug/L | 119 | ND | 97 | 100 | 4.0 |
| Gasoline | 50 | ug/L | 108 | ND | 106 | 102 | 4.0 |
| Benzene | 0.5 | ug/L | 78 | ND | 97 | 92 | 5.0 |
| Toluene | 0.5 | ug/L | 104 | ND | 94 | 92 | 2.0 |
| Gasoline | 50 | ug/L | 100 | ND | 117 | 101 | 15 |
| Benzene | 0.5 | ug/L | 80 | ND | 108 | 96 | 12 |
| Toluene | 0.5 | ug/L | 83 | ND | 108 | 99 | 8.7 |

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.

Gettler - Ryan Inc.

ENVIRONMENTAL DIVISION

1591 Chain of Custody

COMPANY Unocal # 5760

JOB NO. 9960

JOB LOCATION 376 Lewelling

CITY San Lorenzo

PHONE NO. ⁽⁵¹⁰⁾ 783-7500

AUTHORIZED F. Cline

DATE 11-20-92

P.O. NO. 3809.01

| SAMPLE ID | NO. OF CONTAINERS | SAMPLE MATRIX | DATE/TIME SAMPLED | ANALYSIS REQUIRED | SAMPLE CONDITION LAB ID |
|-----------|-------------------|------------------|-------------------|-------------------|-------------------------|
| U-2 | 3 | H ₂ O | 11-20-92/1053 | THC (gas) BTXE | |
| U-3 | ↓ | ↓ | ↓ / 1105 | ↓ | |
| U-4 | ↓ | ↓ | ↓ / 1020 | ↓ | |
| U-5 | ↓ | ↓ | ↓ / 959 | ↓ | |
| U-7 | ↓ | ↓ | ↓ / 925 | ↓ | |
| U-8 | ↓ | ↓ | ↓ / 942 | ↓ | |
| TB | 2 | ↓ | — | ↓ | |

CUSTODY SEALED 11/24/92
 1900 - *MWT*
 Seals intact. AL.

RELINQUISHED BY: *[Signature]* 11-20-92 1445

RECEIVED BY: *[Signature]* 11-24-92 11:00

RELINQUISHED BY: *[Signature]* 11-24-92 13:00

RECEIVED BY: *Mindy Tarsan* 11/24/92

RELINQUISHED BY: *Mindy Tarsan*

RECEIVED BY LAB: *[Signature]* 11/25/92 0800

DESIGNATED LABORATORY: NET

DHS #

REMARKS: Normal TAT

DATE COMPLETED 11-20-92

FOREMAN *[Signature]*