GeoStrategies Inc.

1120

QUARTERLY MONITORING REPORT

UNOCAL Service Station No. 1871
96 MacArthur Boulevard
Oakland, California

786880-2

March 8, 1993

GeoStrategies Inc.

March 8, 1993

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

Attn: Mr. Robert A. Boust

Re: QUARTERLY MONITORING REPORT
UNOCAL Service Station No. 1871
96 MacArthur Boulevard
Oakland, California

Mr. Boust:

This Quarterly Monitoring Report has been prepared by GeoStrategies Inc. (GSI) and presents the results of the 1993 first quarter sampling for the above referenced site (Plate 1).

There are currently three monitoring wells at the site; Wells MW-1 MW-2 and MW-3 (Plate 2). These wells were installed in 1992 by ROUX Associates.

CURRENT QUARTER 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 each well casing 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 was to the west with an approximate hydraulic gradient of 0.04.

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.

786880-2

STID 1120

GeoStrategies Inc.

March 8, 1993

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

Attention: Mr. ~~Barney~~ Chan JE

Reference: UNOCAL Service Station No. 1871
96 MacArthur Boulevard
Oakland, California

Mr. Chan:

As requested by Mr. Robert A. Boust of UNOCAL Corporation, we are forwarding a copy of the Quarterly Monitoring Report dated March 8, 1993 prepared for the above referenced location. This report presents the 1993 first quarterly groundwater sampling performed at the above mentioned site.

If you have any questions or comments, please call.

Sincerely,

David J. Vossler
Senior Geologist

DJV/rmt

Enclosure

cc: Mr. Robert A. Boust, UNOCAL Corporation
Mr. Paul Supple, ROUX Associates
Mr. Lester Feldman, Regional Water Quality Control Board

:ellenu\868final.wp

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 8015 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 groundwater quality database presented in Table 2. A chemical concentration map for benzene is presented on Plate 4. Groundwater sampling field methods and procedures are included in the initial GSI report for the site, dated January 28, 1993.

If you have any questions, please call.

GeoStrategies Inc. by,

Ellen C. Fostersmith
Geologist

Michael C. Carey
Engineering Geologist
CEG 1351

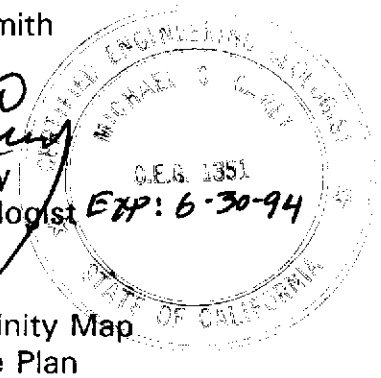


Plate 1. Vicinity Map
Plate 2. Site Plan
Plate 3. Potentiometric Map
Plate 4. Benzene Concentration Map

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

QC Review: DJV

786880-2

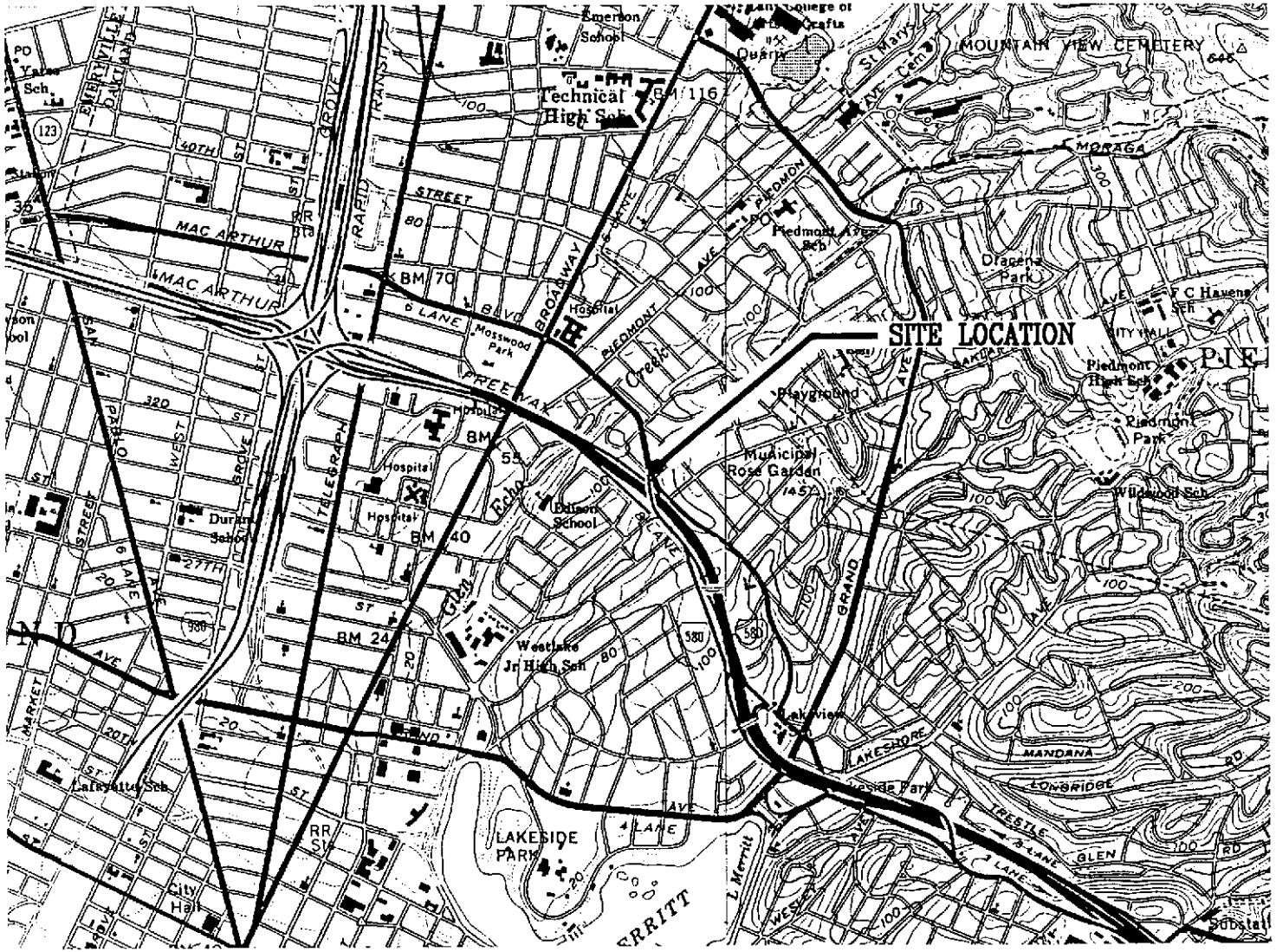
TABLE 2

HISTORICAL GROUND-WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)
03-Nov-92	MW-1	260000	2300	4600	3700	17000
25-Jan-93	MW-1	120000	2100	4600	4900	22000
03-Nov-92	MW-2	140	2.2	<0.5	<0.5	2
25-Jan-93	MW-2	2100	56	1.1	90	140
03-Nov-92	MW-3	2100	120	15	38	200
25-Jan-93	MW-3	2300	80	1.0	55	52

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
PPB = Parts Per Billion.

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



Base Map: USGS Topographic Map

GeoStrategies Inc.

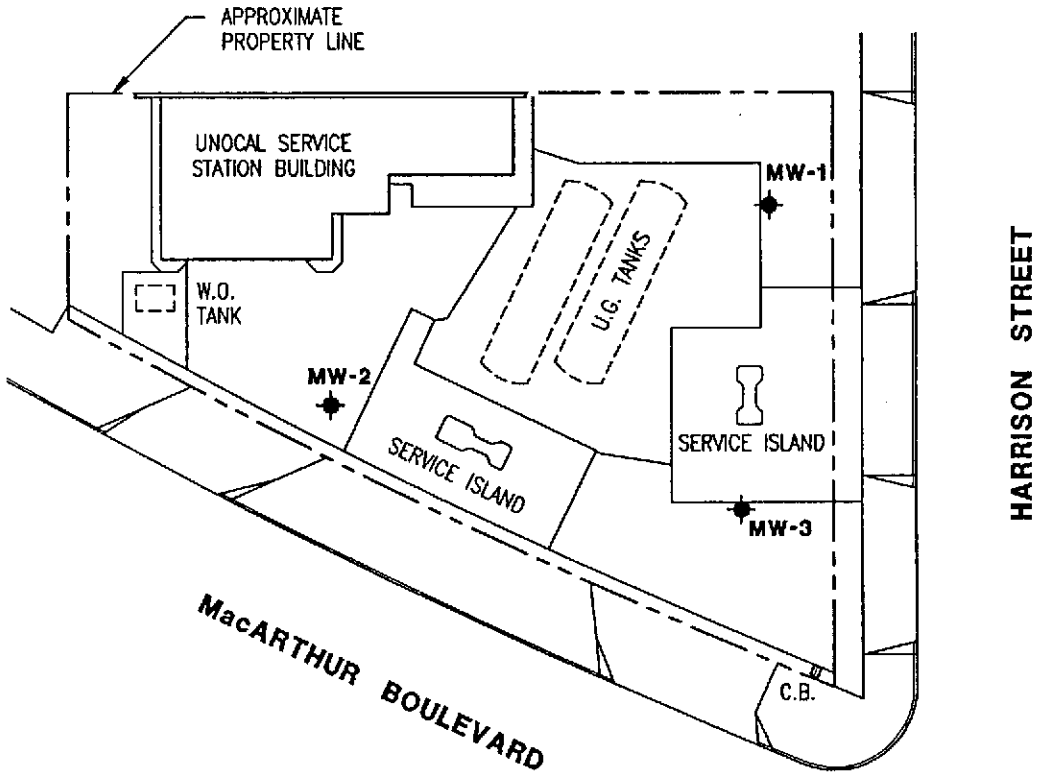
VICINITY MAP
UNOCAL Service Station #1871
96 MacArthur Boulevard
Oakland, California

PLATE 1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7868		12/92	

EXPLANATION

✦ Ground–water monitoring well



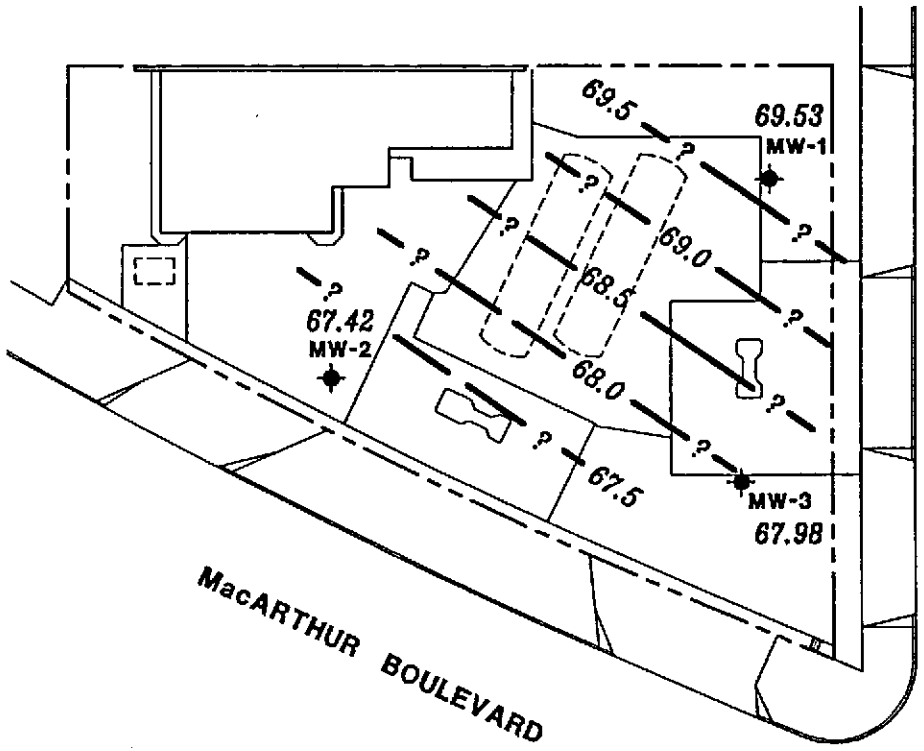
Base Map: UNOCAL Waste Oil Tank Replacement plan dated 04–14–92 and ROUX Assoc Well Location Fig. 4 dated 05/92

GeoStrategies Inc.

SITE PLAN
UNOCAL Service Station #1871
96 MacArthur Boulevard
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7868		12/92	



HARRISON STREET

EXPLANATION

- Ground-water monitoring well
- 99.99 — Ground-water elevation contour. Approximate Gradient = 0.04
- **99.99** Ground-water elevation in feet referenced to Mean Sea Level (MSL) measured on **January 25, 1993**

NOTES: 1. Contours may be influenced by irrigation practices and/or site construction activities.

Approximate Ground-water Flow Direction

N

0 30

Scale in Feet

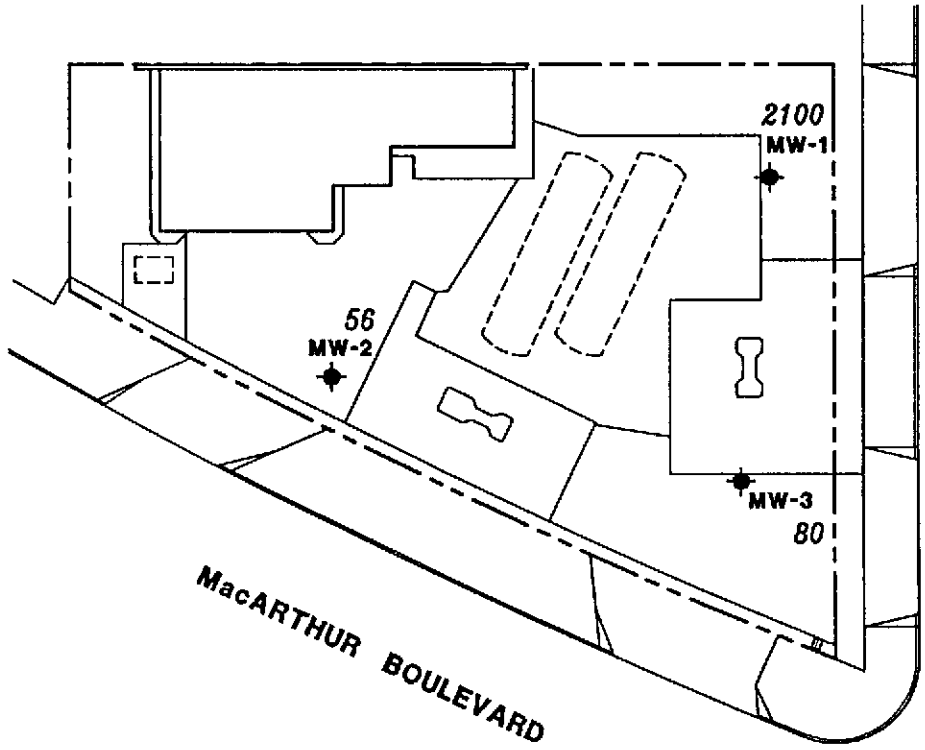
Base Map: UNOCAL Waste Oil Tank Replacement plan dated 04-14-92 and ROUX Assoc Well Location Fig. 4 dated 05/92

GeoStrategies Inc.

POTENTIOMETRIC MAP
UNOCAL Service Station #1871
96 MacArthur Boulevard
Oakland, California

PLATE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
786880-2	DJV	2/93	



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)

Base Map: UNOCAL Waste Oil Tank Replacement plan dated 04–14–92 and ROUX Assoc Well Location Fig. 4 dated 05/92

0 30

Scale in Feet

GeoStrategies Inc.

BENZENE CONCENTRATION MAP
UNOCAL Service Station #1871
96 MacArthur Boulevard
Oakland, California

PLATE **4**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
786880–2		2/93	

APPENDIX A
FIELD DATA SHEETS

GETTLER-RYAN INC.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

COMPANY Unocal #1871 JOB # 9868.80

LOCATION 96 MacArthur DATE 1-25-93

CITY Oakland TIME

Well ID. mw-1 Well Condition ok

Well Diameter 4 in. Hydrocarbon Thickness — ft.

Total Depth 25.0 ft.

Depth to Liquid- 11.65 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 13.35 x(VF) .66 = (Estimated Purge Volume) 45 gal. (9)

Purging Equipment DD

Sampling Equipment Bailer

Starting Time 1151 Purging Flow Rate 5 gpm.

(Estimated Purge Volume) 45 gal. / (Purging Flow Rate) 5 gpm. = (Anticipated Purging Time) 9 min.

Time	pH	Conductivity	Temperature	Volume
1152	7.31	540	67.5	5 gal
1154	7.09	929	68.3	15 ↓
1202	7.06	1037	67.3	16 ↓

Did well dewater? Yes If yes, time 1154 Volume 15 gal

Sampling Time 1202 Weather Conditions Sun

Analysis Gas (BTXE) Bottles Used 3 x 40 ml

Chain of Custody Number

COMMENTS Replaced lock & Cap (# 2034)

FOREMAN [signature] ASSISTANT

GETTLER–RYAN INC.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

COMPANY Unocal # 1871 JOB # 9868.80

LOCATION 96 MacArthur DATE 1-25-93

CITY Oakland TIME

Well ID. MW-2 Well Condition OK

Well Diameter 4 in. Hydrocarbon Thickness – ft.

Total Depth 25.0 ft.

Depth to Liquid- 9.19 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 15.81 x(VF) .66 = (Estimated Purge Volume) 52.5 gal. (10.5)

Purging Equipment DD

Sampling Equipment Bailer

Starting Time 1108 Purging Flow Rate 5 gpm.

(Estimated Purge Volume) 52.5 gal. / (Purging Flow Rate) 5 gpm. = (Anticipated Purging Time) 10.5 min.

Time	pH	Conductivity	Temperature	Volume
1109	7.36	692	67.0	5 gal
1112	7.42	717	66.8	20
1115	7.47	731	66.6	35
1120	7.49	778	66.8	36

Did well dewater? Yes If yes, time 1115 Volume 35 gal

Sampling Time 1120 Weather Conditions Sun

Analysis gas (BTXE) Bottles Used 3x40 ml

Chain of Custody Number

COMMENTS Replaced cap & lock #2268

FOREMAN [signature] ASSISTANT

GETTLER-RYAN INC.

General and Environmental Contractors

WELL SAMPLING FIELD DATA SHEET

COMPANY Unocal JOB # 9868.80

LOCATION 96 MacArthur DATE 1-25-93

CITY Oakland TIME

Well ID. mw-3 Well Condition OK

Well Diameter 4 in. Hydrocarbon Thickness ft.

Total Depth 25.0 ft.

Depth to Liquid- 9.50 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 15.50 x(VF) .66 = (Estimated Purge Volume) 51.5 gal. (10.3)

Purging Equipment DD

Sampling Equipment Bailer

Starting Time 1130 Purging Flow Rate 5 gpm.

(Estimated Purge Volume) 51.5 gal. / (Purging Flow Rate) 5 gpm. = (Anticipated Purging Time) 10.3 min.

Time	pH	Conductivity	Temperature	Volume
1131	7.47	817	69.8	5 gal
1134	7.40	851	70.3	20
1140	7.28	875	69.1	21

Did well dewater? Yes If yes, time 1134 Volume 20

Sampling Time 1140 Weather Conditions Sun

Analysis Gas (BTXE) Bottles Used 3x40ml

Chain of Custody Number

COMMENTS

FOREMAN [signature] ASSISTANT

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: 02/16/1993
NET Client Acct No: 67900
NET Pacific Job No: 93.00222
Received: 01/27/1993

Client Reference Information

Unocal-1871, 96 MacArthur, Oakland, P.O. No: 9868.80

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)

Ref: Unocal-1871, 96 MacArthur, Oakland, P.O. No: 9868.80

Descriptor, Lab No. and Results

Parameter	MW-1 01/25/1993 12:02 149649	MW-2 01/25/1993 11:20 149650	Reporting Limit	Units	Method
TPH (Gas/BTXE,Liquid)					
METHOD 5030 (GC,FID)	--	--			
DATE ANALYZED	01-27-93	01-28-93			
DILUTION FACTOR*	100	10			
as Gasoline	120,000	2,100	50	ug/L	5030
METHOD 8020 (GC,Liquid)	--	--			
DATE ANALYZED	01-27-93	01-27-93			
DILUTION FACTOR*	100	1			
Benzene	2,100	56	0.5	ug/L	8020
Ethylbenzene	4,900	90	0.5	ug/L	8020
Toluene	4,600	1.1	0.5	ug/L	8020
Xylenes (Total)	22,000	140	0.5	ug/L	8020
SURROGATE RESULTS	--	--			
Bromofluorobenzene	121	115		% Rec.	5030

Ref: Unocal-1871, 96 MacArthur, Oakland, P.O. No: 9868.80

Descriptor, Lab No. and Results

Parameter	MW-3 01/25/1993 11:40 149651	TB 149652	Reporting Limit	Units	Method
TPH (Gas/BTXE,Liquid)					
METHOD 5030 (GC,FID)	--	--			
DATE ANALYZED	01-27-93	01-27-93			
DILUTION FACTOR*	1	1			
as Gasoline	2,300	ND	50	ug/L	5030
METHOD 8020 (GC,Liquid)	--	--			
DATE ANALYZED	01-27-93	01-27-93			
DILUTION FACTOR*	1	1			
Benzene	80	ND	0.5	ug/L	8020
Ethylbenzene	55	ND	0.5	ug/L	8020
Toluene	1.0	ND	0.5	ug/L	8020
Xylenes (Total)	52	ND	0.5	ug/L	8020
SURROGATE RESULTS	--	--			
Bromofluorobenzene	114	101		% Rec.	5030

Ref: Unocal-1871, 96 MacArthur, Oakland, P.O. No: 9868.80

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	50	ug/L	108	ND	101	99	2.0
Benzene	0.5	ug/L	102	ND	114	113	<1
Toluene	0.5	ug/L	104	ND	101	100	<1
Gasoline	50	ug/L	110	ND	118	119	<1
Benzene	0.5	ug/L	93	ND	108	108	<1
Toluene	0.5	ug/L	95	ND	106	106	<1

COMMENT: Blank Results were ND on other analytes tested.

NET®

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 [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 — 3156 Chain of Custody

COMPANY Unocal # 1871 JOB NO. 1225

JOB LOCATION 96 MACARTHUR

CITY OAKLAND PHONE NO. (510) 783-7500

AUTHORIZED F. CLINE DATE 1-25-93 P.O. NO. 9868.80

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
mw-1	3	H_2O	1-25-93/1202	THC (gas) BTXE	
mw-2	↓	↓	/1120	↓	
mw-3	↓	↓	/1140	↓	
TB	1				

RELINQUISHED BY: [signature] 1/25/93 10:00

RECEIVED BY: Kurt Holman 1/26/93 11:34

RELINQUISHED BY: Kurt Holman 1/26/93 1900

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY LAB: [signature] 1/27/93 0800

DESIGNATED LABORATORY: NET DHS #:

REMARKS: NORMAL TAT

DATE COMPLETED 1-25-93 FOREMAN [signature]

seals intact: A-L.

CUSTODY SEALED KH @ 1/26/93 1900

ORIGINAL