MONITORING
PURGING
DISPOSING
SAMPLING

MPDS SERVICES, INCORPORATED

May 30, 1995

Alameda County Health Care Services
1131 Harbor Bay Parkway
Alameda, CA 94501

RE: Unocal Service Station #5325
3220 Lakeshore Avenue 94610
Oakland, California

Per the request of the Unocal Corporation Project Manager, Mr. David B. DeWitt, enclosed please find our report (MPDS-UN5325-06) dated April 17, 1995 for the above referenced site.

Should you have any questions regarding the reporting of data, please feel free to call our office at (510) 602-5120. Any other questions may be directed to the Project Manager at (510) 277-2384.

Sincerely,

MPDS Services, Inc.

Jarrel F. Crider

/jfc

Enclosure

cc: Mr. David B. DeWitt

95 MAY 31 PM 3:45

2401 Stanwell Drive, Suite 300, Concord, CA 94520
TEL: (510) 602-5120 FAX: (510) 689-1918

MONITORING
PURGING
DISPOSING
SAMPLING

mpds SERVICES, INCORPORATED

MPDS-UN5325-06
April 17, 1995

Unocal Corporation
2000 Crow Canyon Place, Suite 400
P.O. Box 5155
San Ramon, California 94583

Attention: Mr. David DeWitt

RE: Quarterly Data Report
Unocal Service Station #5325
3220 Lakeshore Avenue
Oakland, California

Dear Mr. DeWitt:

This data report presents the results of the most recent quarter of monitoring and sampling of the monitoring wells at the referenced site by MPDS Services, Inc.

RECENT FIELD ACTIVITIES

The monitoring wells that were monitored and sampled during this quarter are indicated in Table 1. Prior to sampling, the wells were checked for depth to water and the presence of free product or sheen. The monitoring data and the ground water elevations are summarized in Table 1. The ground water flow direction during the most recent quarter is shown on the attached Figure 1.

Ground water samples were collected on March 25, 1995. Prior to sampling, the wells were each purged of between 8.5 and 36 gallons of water. During purging operations, the field parameters pH, temperature, and electrical conductivity were recorded and are presented in Table 2. Once the field parameters were observed to stabilize, and where possible, a minimum of approximately four casing volumes had been removed from each well, samples were then collected using a clean Teflon bailer. The samples were decanted into clean VOA vials, which were then sealed with Teflon-lined screw caps, labeled, and stored in a cooler, on ice, until delivery to a state-certified laboratory. MPDS Services, Inc. transported the purged ground water to the Unocal Refinery located in Rodeo, California, for treatment and discharge to San Pablo Bay under NPDES permit.

ANALYTICAL RESULTS

The ground water samples were analyzed at Sequoia Analytical Laboratory and were accompanied by properly executed Chain of Custody documentation. The analytical results of the ground water samples collected to date are summarized in Table 3. The concentrations of Total Petroleum Hydrocarbons (TPH) as gasoline and benzene detected in the ground water

2401 Stanwell Drive, Suite 300, Concord, CA 94520
TEL: (510) 602-5120 FAX: (510) 689-1918

TABLE 1

SUMMARY OF MONITORING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)◆	Total Well Depth (feet)◆	Product Thickness (feet)	Sheen	Water Purged (gallons)
(Monitored and Sampled on March 25, 1995)						
U-1	1.02▲	7.72	19.87	0.37	N/A	1 (10)
U-2	0.61	7.01	19.55	0	No	19
U-3	0.02	10.96	19.80	0	No	8.5
U-4	1.64	9.51	20.25	0	No	18
U-5	0.63	6.35	20.08	0	No	36
U-6	0.85	6.29	23.80	0	No	12
(Monitored and Sampled on December 24, 1994)						
U-1	0.42	8.04	19.85	0	No	18
U-2	0.35	7.27	19.55	0	No	8
U-3	-0.30	11.28	19.79	0	No	6
U-4	1.34	9.81	20.24	0	No	15
U-5	0.55	6.43	20.07	0	No	36
U-6	0.47	6.67	23.80	0	No	12
(Monitored and Sampled on September 22, 1994)						
U-1	-0.20	8.66	19.90	0	No	17
U-2	-0.31	7.93	19.58	0	No	10
U-3	-0.78	11.76	19.80	0	No	12
U-4	0.36	10.79	20.19	0	No	20
U-5	0.08	6.90	20.12	0	No	35
U-6	-0.20	7.34	23.83	0	No	12
(Monitored and Sampled on June 22, 1994)						
U-1	0.07	8.39	19.84	0	No	17
U-2	0.02	7.60	19.55	0	No	9.5
U-3	-0.66	11.64	19.80	0	No	9
U-4	0.99	10.16	20.25	0	No	17
U-5	0.15	6.83	20.08	0	No	34.5
U-6	0.00	7.14	23.80	0	No	11.5

TABLE 1 (Continued)

SUMMARY OF MONITORING DATA

Well #	Well Casing Elevation (feet)*
U-1	8.46
U-2	7.62
U-3	10.98
U-4	11.15
U-5	6.98
U-6	7.14

◆ The depth to water level and total well depth measurements are taken from the top of the well casings.

▲ Ground water elevation corrected due to the presence of free product (correction factor = 0.75).

(x) Amount of product purged in ounces.

* The elevations of the top of the well casings are surveyed relative to City of Oakland benchmark, at the northeasterly corner of Weller and Cheney Avenue (elevation = 9.055', city datum; add 3.00' to U.S.G.S. datum).

TABLE 2

RECORD OF THE TEMPERATURE, CONDUCTIVITY, AND pH VALUES
IN THE MONITORING WELLS DURING PURGING AND PRIOR TO SAMPLING

(Measured on March 25, 1995)

Well #	Gallons per Casing Volume	Time	Gallons Purged	Casing Volumes Purged	Temperature (°F)	Conductivity ([µmhos/cm] x1000)	pH
U-2	4.64	14:00	0	0	69.0	1.56	7.92
			4.5	0.97	70.4	1.68	7.38
			9.5	2.05	70.8	1.67	7.20
			14.5	3.13	70.9	1.64	7.22
		14:20	19	4.09	71.0	1.64	7.15
U-3	3.27	10:45	0	0	70.2	1.50	7.36
			7	2.14	71.1	1.49	7.21
		10:53	8.5	2.60	71.3	1.42	7.38
			WELL DEWATERED				
U-4	6.98	11:30	0	0	68.8	1.48	7.67
			7	1.00	70.3	1.42	7.32
			14	2.01	71.1	1.42	7.21
			15	2.15	70.6	1.50	7.16
		11:48	18	2.58	67.4	1.53	7.37
			WELL DEWATERED				
U-5	8.92	13:05	0	0	70.1	1.70	7.83
			9	1.01	70.4	1.76	7.41
			18	2.02	70.8	1.72	7.52
			27	3.03	70.8	1.79	7.31
		13:28	36	4.04	70.9	1.71	7.22
U-6	2.98	12:30	0	0	71.1	1.76	7.36
			3	1.01	71.4	1.82	7.21
			6	2.01	72.3	1.85	7.10
			9	3.02	71.6	1.84	7.24
		12:42	12	4.03	71.8	1.89	7.28

TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Well #	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
3/25/95	U-1	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	U-2	170,000	1,900	21,000	4,800	33,000
	U-3	ND	ND	ND	ND	ND
	U-4	ND	ND	ND	ND	ND
	U-5	44,000	390	960	1,500	7,600
	U-6	47,000	450	1,300	1,700	8,200
12/24/94	U-1	50,000	2,500	9,700	2,400	17,000
	U-2	32,000	1,500	890	1,300	5,000
	U-3	ND	ND	ND	ND	ND
	U-4	ND	ND	ND	ND	ND
	U-5	8,700	560	70	670	430
	U-6	6,900	500	59	600	380
9/22/94	U-1	6,100♦	ND	ND	ND	ND
	U-2	8,500♦	29	ND	ND	ND
	U-3	ND	ND	ND	ND	ND
	U-4	ND	0.78	1.3	ND	1.4
	U-5	170	8.4	10	8.5	18
	U-6	130	1.3	0.80	ND	0.73
6/22/94	U-1	200	ND	ND	5.9	21
	U-2	31,000	2,200	62	1,500	3,500
	U-3	ND	ND	ND	ND	ND
	U-4	ND	ND	ND	ND	ND
	U-5	210	7.1	13	4.5	26
	U-6	ND	ND	ND	ND	ND
2/16/94	U-1	6,800♦♦	ND	ND	ND	ND
	U-2	980♦♦	49	13	2.7	40
	U-3	ND	ND	ND	ND	ND
11/16/93	U-1	690♦	ND	ND	ND	ND
	U-2	510♦	ND	ND	ND	ND
	U-3	ND	ND	ND	ND	ND
8/08/93	U-1	4,900**	79	ND	832	270
&	U-2	5,600**	420	ND	410	670
8/09/93	U-3	210	5.0	9.7	0.7	4.1

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Well #	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
5/07/93	U-1	8,700	600	240	650	3,300
	U-2	17,000	1,800	660	1,700	4,000
	U-3	ND	ND	ND	ND	ND
2/22/93	U-1	34,000	1,400	5,500	910	7,300
	U-2	3,400	2,400	2,100	1,200	5,800
	U-3	ND	ND	ND	ND	ND
6/11/92	U-1	1,000	80	1.4	6.7	41
	U-2	620	17	2.1	ND	37
	U-3	ND	ND	ND	ND	ND
8/20/92	U-1	400*	1	ND	ND	0.6
	U-2	700	28	6.5	1.3	4.6
	U-3	ND	ND	ND	ND	ND
5/05/92	U-1	230	1.2	ND	ND	ND
	U-2	1,600	120	52	6.2	290
	U-3	ND	ND	ND	ND	ND
2/12/92	U-1	250	ND	ND	ND	ND
	U-2	410	1.9	ND	0.36	0.40
	U-3	ND	ND	ND	ND	ND
10/09/91	U-1	ND	ND	ND	ND	ND
	U-2	230	7.1	ND	ND	11
	U-3	ND	ND	ND	ND	ND
7/03/91	U-1	140	21	4.3	0.36	17
	U-2	2,100	150	25	3.1	290
	U-3	ND	ND	ND	ND	ND
4/01/91	U-1	160	13	8.6	1.0	15
	U-2	1,700	250	89	34	190
	U-3	ND	1.0	2.9	0.53	5.4
1/07/91	U-1	250	22	16	4.2	17
	U-2	1,900	67	5.8	58	69
	U-3	ND	ND	ND	ND	1.8

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Well #	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
8/10/90	U-1	690	38	75	8.6	130
	U-2	780	27	46	15	130
	U-3	ND	ND	ND	ND	ND

♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be gasoline.

♦♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.

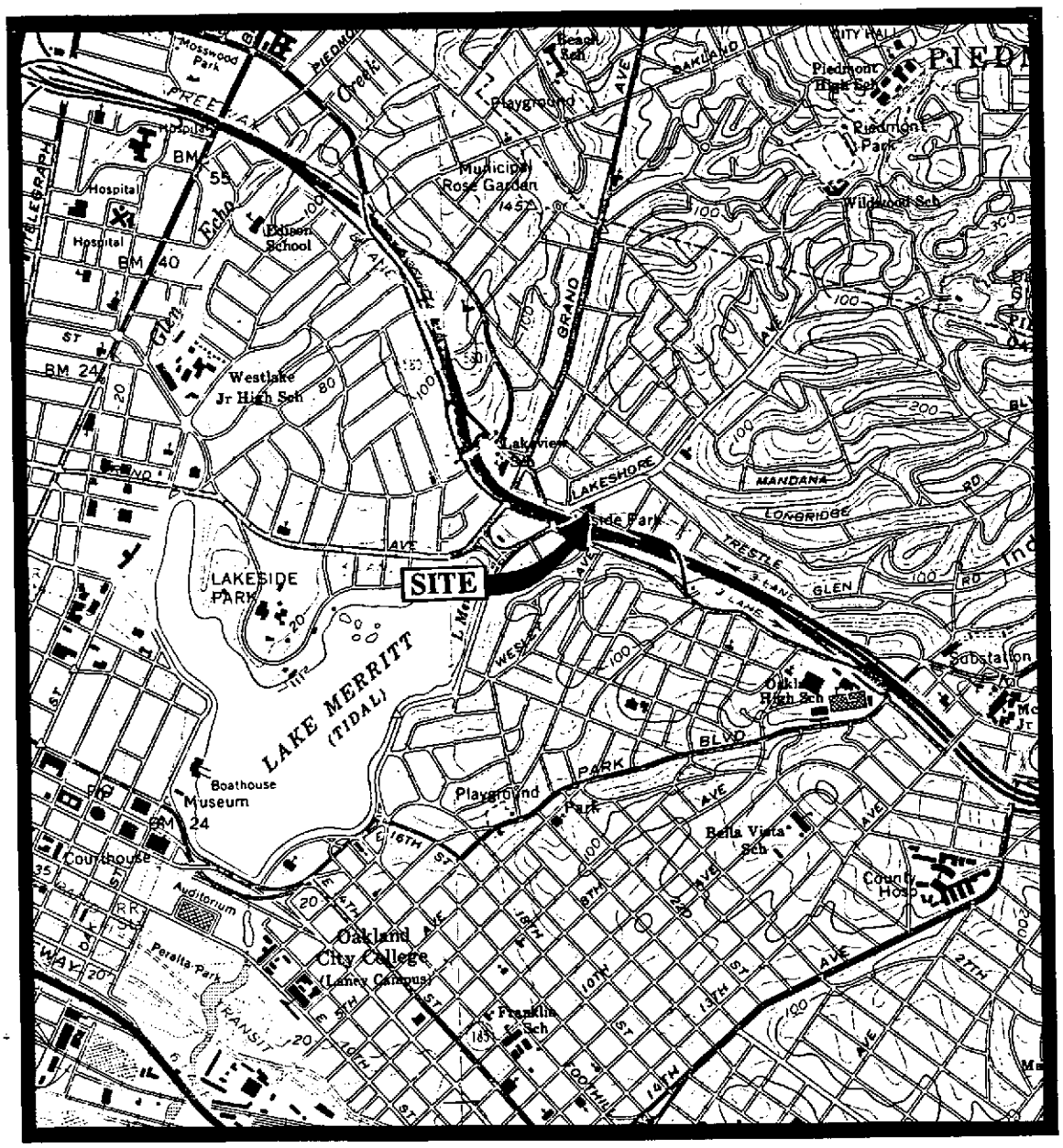
* The positive result for gasoline does not appear to have a typical gasoline pattern.

** The concentration reported as gasoline is primarily due to the presence of a combination of gasoline and a discrete peak not indicative of gasoline.

ND = Non-detectable.

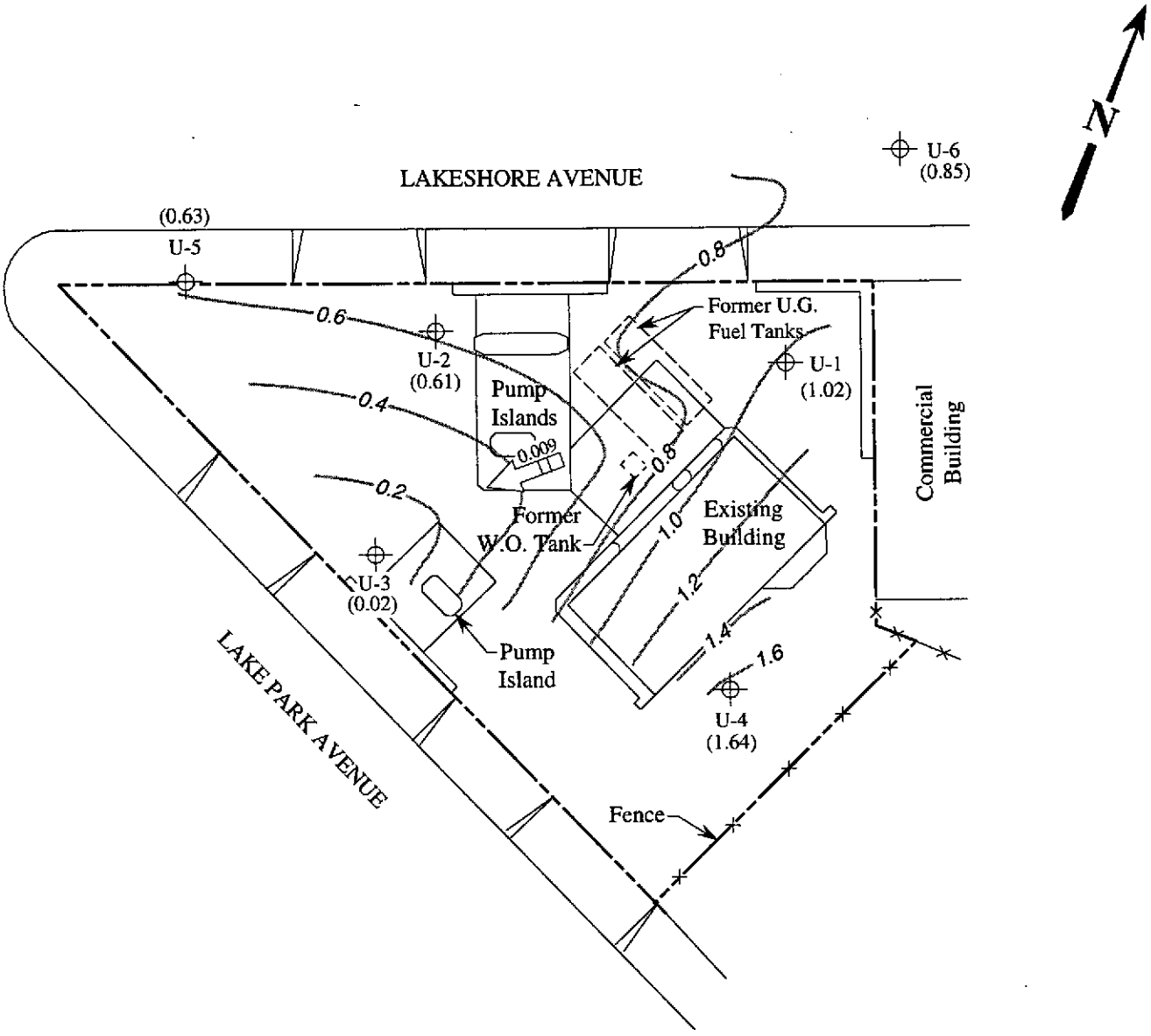
Results are in micrograms per liter (µg/L), unless otherwise indicated.

Note: Laboratory analyses data prior to November 16, 1993, were provided by GeoStrategies, Inc.



Base modified from 7.5 minute U.S.G.S.
Oakland East and West Quadrangles
(both photorevised 1980)

mpds SERVICES, INCORPORATED	**UNOCAL SERVICE STATION #5325** **3220 LAKESHORE AVENUE** **OAKLAND, CALIFORNIA**	**LOCATION MAP**



LEGEND

- Monitoring well
- ( ) Ground water elevation in feet above Mean Sea Level
- #.## Direction of ground water flow with approximate hydraulic gradient
- Contours of ground water elevation

0 40 80

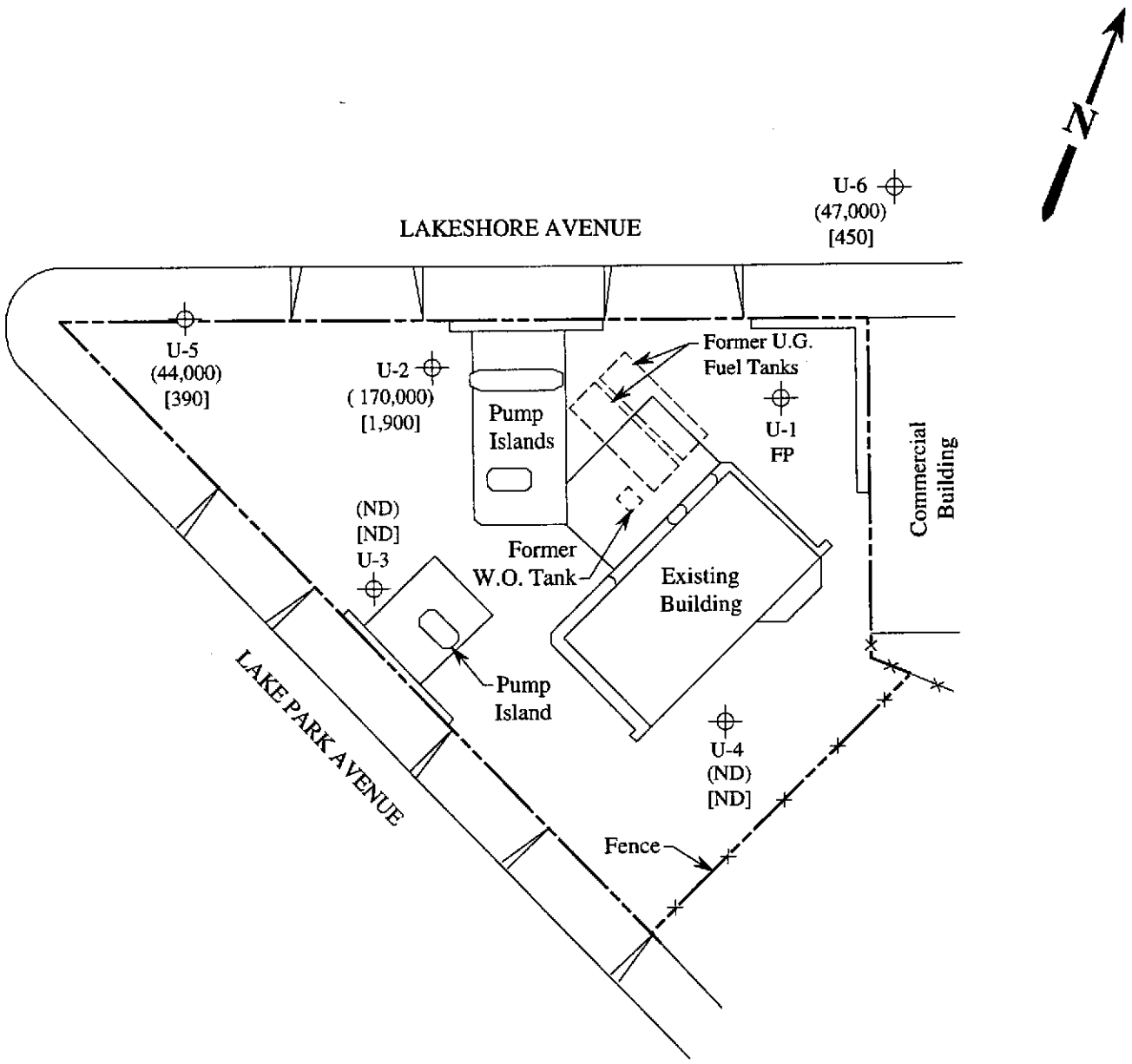
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE MARCH 25, 1995 MONITORING EVENT

mpds SERVICES, INCORPORATED

UNOCAL SERVICE STATION #5325
3220 LAKESHORE AVENUE
OAKLAND, CALIFORNIA

FIGURE
1



LEGEND

- ⊕ Monitoring well
- ( ) Concentration of TPH as gasoline in µg/L
- [ ] Concentration of benzene in µg/L

ND = Non-detectable

0 40 80

Approx. scale feet

PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON MARCH 25, 1995

mpds SERVICES, INCORPORATED

UNOCAL SERVICE STATION #5325
3220 LAKESHORE AVENUE
OAKLAND, CALIFORNIA

FIGURE
2

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

MPDS Services	Client Project ID:	Unocal #5325, 3220 Lakeshore, Oakland	Sampled: Mar 25, 1995
2401 Stanwell Dr., Ste. 300	Matrix Descript:	Water	Received: Mar 25, 1995
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported: Apr 12, 1995
Attention: Sarkis Karkarian	First Sample #:	503-1465	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Sample Number	Sample Description	Purgeable Hydrocarbons µg/L	Benzene µg/L	Toluene µg/L	Ethyl Benzene µg/L	Total Xylenes µg/L
503-1465	U-2	170,000	1,900	21,000	4,800	33,000
503-1466	U-3	ND	ND	ND	ND	ND
503-1467	U-4	ND	ND	ND	ND	ND
503-1468	U-5	44,000	390	960	1,500	7,600
503-1469	U-6	47,000	450	1,300	1,700	8,200
Detection Limits:		**50**	**0.50**	**0.50**	**0.50**	**0.50**

Total Purgeable Petroleum Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as ND were not present above the stated limit of detection.

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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MPDS Services
2401 Stanwell Dr., Ste. 300
Concord, CA 94520
Attention: Sarkis Karkarian

Client Project ID: Unocal #5325, 3220 Lakeshore, Oakland
Matrix: Liquid
QC Sample Group: 5031465-69

Reported: Apr 12, 1995

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon
MS/MSD Batch#:	5031458	5031458	5031458	5031458
Date Prepared:	4/7/95	4/7/95	4/7/95	4/7/95
Date Analyzed:	4/7/95	4/7/95	4/7/95	4/7/95
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	80	85	85	90
Matrix Spike Duplicate % Recovery:	80	90	90	92
Relative % Difference:	0.0	5.7	5.7	2.2
LCS Batch#:	3LCS040795	3LCS040795	3LCS040795	3LCS040795
Date Prepared:	4/7/95	4/7/95	4/7/95	4/7/95
Date Analyzed:	4/7/95	4/7/95	4/7/95	4/7/95
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5
LCS % Recovery:	78	83	84	86
% Recovery Control Limits:	71-133	72-128	72-130	71-120

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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MPDS Services
2401 Stanwell Dr., Ste. 300
Concord, CA 94520
Attention: Sarkis Karkarian

Client Project ID: Unocal #5325, 3220 Lakeshore, Oakland
Matrix: Liquid
QC Sample Group: 5031465-69
Reported: Apr 12, 1995

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon
MS/MSD Batch#:	5031467	5031467	5031467	5031467
Date Prepared:	4/10/95	4/10/95	4/10/95	4/10/95
Date Analyzed:	4/10/95	4/10/95	4/10/95	4/10/95
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	80	85	85	85
Matrix Spike Duplicate % Recovery:	80	80	80	83
Relative % Difference:	0.0	6.1	6.1	2.4
LCS Batch#:	3LCS041095	3LCS041095	3LCS041095	3LCS041095
Date Prepared:	4/10/95	4/10/95	4/10/95	4/10/95
Date Analyzed:	4/10/95	4/10/95	4/10/95	4/10/95
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5
LCS % Recovery:	84	90	91	94
% Recovery Control Limits:	71-133	72-128	72-130	71-120

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

Sequoia Analytical

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MPDS Services
2401 Stanwell Dr., Ste. 300
Concord, CA 94520
Attention: Sarkis Karkarian

Client Project ID: Unocal #5325, 3220 Lakeshore, Oakland
Matrix: Liquid
QC Sample Group: 5031465-69

Reported: Apr 12, 1995

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon
MS/MSD Batch#:	5031362	5031362	5031362	5031362
Date Prepared:	4/10/95	4/10/95	4/10/95	4/10/95
Date Analyzed:	4/10/95	4/10/95	4/10/95	4/10/95
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	75	90	95	95
Matrix Spike Duplicate % Recovery:	80	95	95	98
Relative % Difference:	6.5	5.4	0.0	3.1
LCS Batch#:	2LCS041095	2LCS041095	2LCS041095	2LCS041095
Date Prepared:	4/10/95	4/10/95	4/10/95	4/10/95
Date Analyzed:	4/10/95	4/10/95	4/10/95	4/10/95
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
LCS % Recovery:	86	95	99	100
% Recovery Control Limits:	71-133	72-128	72-130	71-120

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

M P D S Services, Inc.
2401 Stanwell Drive, Suite 400, Concord, CA 94520
Tel: (510) 602-5120 Fax: (510) 689-1918

CHAIN OF CUSTODY

SAMPLER: (Joe) HOVSIA AJEMIAN

WITNESSING AGENCY:

UNOCAL S/S # 5325 CITY: Oakland

ADDRESS: 3220 Lakeshore

TURN AROUND TIME: Regular

SAMPLE ID NO	DATE	TIME	WATER	GRAB	COMP	NO OF CONT	SAMPLING LOCATION	TPH-GAS BTEX	TPH-DIESEL	TOG	8010					REMARKS
U-2	3-25-95	2:30 p.m	✓	✓		2 (VOA)	Wells	✓			5031465		AB			VOA-s preserved
U-3	〃	11:15 a.m	✓	✓		〃	〃	✓			5031466		↓			
U-4	〃	12:00 p.m	✓	✓		〃	〃	✓			5031467					
U-5	〃	1:40 p.m	✓	✓		〃	〃	✓			5031468					
U-6	〃	12:48 p.m	✓	✓		〃	〃	✓			5031469		↓			

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:
(SIGNATURE) [signature]	4:30 p.m 3-25-95	(SIGNATURE) [signature]
(SIGNATURE) [signature]	0830 3/27-95	(SIGNATURE) [signature]
(SIGNATURE) [signature]	3-27. 1300	(SIGNATURE) Melissa Creusere
(SIGNATURE)		(SIGNATURE)

THE FOLLOWING MUST BE COMPLETED BY THE LABORATORY ACCEPTING SAMPLES FOR ANALYSES:

1. HAVE ALL SAMPLES RECEIVED FOR ANALYSIS BEEN STORED ON ICE? Yes
2. WILL SAMPLES REMAIN REFRIGERATED UNTIL ANALYZED? Yes
3. DID ANY SAMPLES RECEIVED FOR ANALYSIS HAVE HEAD SPACE? NO
4. WERE SAMPLES IN APPROPRIATE CONTAINERS AND PROPERLY PACKAGED? Yes

SIGNATURE: [signature] TITLE: Analyst DATE: 3-25-95