

JE  
510 1120

September 12, 1996

Alameda County Health Care Services  
1131 Harbor Bay Parkway  
Alameda, California 94502

RE: Unocal Service Station #1871  
96 MacArthur Boulevard  
Oakland, California

Per the request of the Unocal Corporation Project Manager, Mr. Robert A. Boust, enclosed please find our report (MPDS-UN1871-12) dated August 27, 1996 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) 277-2334.

Sincerely,

MPDS Services, Inc.



Jarrel F. Crider

/dr

Enclosure

cc: Mr. Robert A. Boust

ENVIRONMENTAL  
PROTECTION  
96 SEP 20 PM 2:07

MPDS-UN1871-12  
August 27, 1996

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

Attention: Mr. Robert A. Boust

RE: Quarterly Data Report  
Unocal Service Station #1871  
96 MacArthur Boulevard  
Oakland, California

Dear Mr. Boust:

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 July 24, 1996. Prior to sampling, the wells were each purged of between 6.5 and 30 gallons of water. During purging operations, the field parameters pH, temperature, and electrical conductivity were recorded on the purging/sampling data sheets which are attached to this report. 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 and/or one-liter amber bottles, as appropriate, which were then sealed with Teflon-lined screw caps, labeled, and stored in a cooler, on ice, until delivery to a state-certified laboratory. Equipment blank, Field blank and Trip blank samples (denoted as ES1, ES2 and ES3, respectively) were also collected for quality assurance and control. 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 2. The concentrations of Total Petroleum

Hydrocarbons (TPH) as gasoline and benzene detected in the ground water samples collected this quarter are shown on the attached Figure 2. Copies of the laboratory analytical results and the Chain of Custody documentation are attached to this report.

LIMITATIONS

Environmental changes, either naturally-occurring or artificially-induced, may cause changes in ground water levels and flow paths, thereby changing the extent and concentration of any contaminants.

DISTRIBUTION

A copy of this report should be sent to the Alameda County Health Care Services Agency.

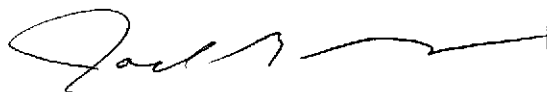
If you have any questions regarding this report, please do not hesitate to call Mr. Joel G. Greger at (510) 602-5120.

Sincerely,

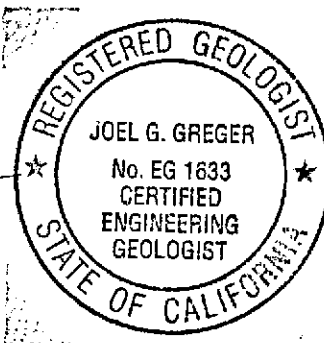
MPDS Services, Inc.



Haig (Gary) Tejirian  
Senior Staff Geologist



Joel G. Greger, C.E.G.  
Senior Engineering Geologist



License No. EG 1633  
Exp. Date 8/31/98

- Attachments: Tables 1 & 2  
Location Map  
Figures 1 & 2  
Laboratory Analyses  
Chain of Custody documentation  
Purging/Sampling Data Sheets

cc: Mr. Thomas J. Berkins, Kaprealian Engineering, Inc.

**Table 1**  
 Summary of Monitoring Data

Well #	Ground Water Elevation (feet)	Depth to Water (feet)*	Total Well Depth (feet)*	Product Thickness (feet)	Seen	Water Purged (gallons)
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**(Monitored and Sampled on July 24, 1996)**

MW-1	72.09	14.15	24.10	0	No	26
MW-2	71.64	10.02	24.70	0	No	25
MW-3	70.38	12.17	23.68	0	No	30
MW-4	71.57	10.47	19.56	0	No	6.5
MW-5	71.00	10.80	20.00	0	No	6.5

**(Monitored and Sampled on April 18, 1996)**

MW-1	72.84	13.40	24.20	0	No	23
MW-2	72.39	9.27	24.80	0	No	41
MW-3	71.25	11.30	23.77	0	No	33
MW-4	72.21	9.83	19.61	0	No	7.5
MW-5	72.15	9.65	20.05	0	No	7.5

**(Monitored and Sampled on January 18, 1996)**

MW-1	66.97	14.21	24.13	0	No	17
MW-2	66.50	10.11	24.74	0	No	38
MW-3	65.69	11.79	23.71	0	No	31

**(Monitored and Sampled on October 23, 1995)**

MW-1	66.33	14.85	24.1	0	No	20
MW-2	65.91	10.70	24.7	0	No	46
MW-3	64.98	12.50	23.65	0	No	30

Well #	Well Casing Elevation (feet)**	Well Casing Elevation (feet)*
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MW-1	81.18	86.24
MW-2	76.61	81.66
MW-3	77.48	82.55
MW-4	N/A	82.04
MW-5	N/A	81.80

**Table 1**  
Summary of Monitoring Data

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- ◆ The depth to water level and total well depth measurements were taken from the top of the well casings.
- \* The top of casing elevations were re-surveyed by Kier & Wright in May, 1996, per City of Oakland Benchmark No. 2310, a cut square in concrete curb at mid point of return at the northeast corner of El Dorado and Fairmont Streets (elevation = 77.53 feet MSL). These well casing elevations are used beginning with the April 18, 1996 monitoring event.
- \*\* The elevations of the top of the well casings, used prior to April 18, 1996, were surveyed by Roux Associates relative to Mean Sea Level (benchmark unknown).

**Table 2**  
 Summary of Laboratory Analyses  
 Water

Well #	Date	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE
MW-1	11/3/92	--	260,000	2,300	4,600	3,700	17,000	--
	1/25/93	--	120,000	2,100	4,600	4,900	22,000	--
	4/29/93	--	100,000	850	2,000	4,300	19,000	--
	7/16/93	--	29,000	590	560	980	4,200	--
	10/19/93	--	67,000	1,400	2,600	2,900	5,000	--
	1/20/94	--	92,000	1,200	3,000	3,400	17,000	--
	4/13/94	--	51,000	1,000	2,600	3,200	15,000	--
	7/13/94	--	35,000	550	150	1,400	5,700	--
	10/10/94	--	52,000	1,000	810	3,300	12,000	--
	1/10/95	--	810	16	18	59	250	--
	4/17/95	--	48,000	880	530	2,500	11,000	--
	7/24/95	--	48,000	1,500	420	2,700	9,700	--
	10/23/95	--	47,000	780	210	2,100	11,000	270
	1/18/96	--	30,000	1,500	500	3,500	13,000	2,400
	4/18/96	--	66,000	2,700	2,200	3,100	13,000	57,000
7/24/96	--	5,600	2,100	ND	160	160	24,000	
MW-2	11/3/92	--	140	2.2	ND	ND	2.0	--
	1/25/93	--	2,100	56	1.1	90	140	--
	4/29/93	--	1,500	290	ND	33	11	--
	7/16/93	--	510*	17	0.60	3.2	2.5	--
	10/19/93	--	670	24	1.1	7.7	23	--
	1/20/94	--	820	97	ND	12	ND	--
	4/13/94	--	550	71	ND	5.1	1.3	--
	7/13/94	--	2,000	490	ND	17	13	--
	10/10/94	--	2,300	340	ND	25	ND	--
	1/10/95	--	850	3.8	ND	8.5	1.3	--
	4/17/95	--	1,300	4.7	ND	8.3	1.2	--
	7/24/95	--	960	20	ND	4.2	6.2	--
	10/23/95	--	ND	ND	ND	ND	ND	19
	1/18/96	--	900	300	86	7.6	18	4,300
	4/18/96	--	18,000	3,600	680	890	4,100	19,000
7/24/96	--	100,000	13,000	21,000	2,700	16,000	120,000	
MW-3	11/3/92	--	2,100	120	15	38	200	--
	1/25/93	--	2,300	80	1	55	52	--
	4/29/93	--	4,500	1,700	ND	200	140	--
	7/16/93	--	4,000*	1,100	28	52	70	--
	10/19/93	--	3,800	42	ND	50	56	--
	1/20/94	--	4,200	11	ND	21	15	--
	4/13/94	--	4,200	210	ND	36	53	--
	7/13/94	--	1,800**	16	16	ND	21	--
	10/10/94	--	4,300	11	ND	12	ND	--

**Table 2**  
 Summary of Laboratory Analyses  
 Water

Well #	Date	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE
MW-3	1/10/95	--	310	4.6	ND	3.5	2.1	--
(Cont.)	4/17/95	--	7,800	ND	4.6	300	450	--
	7/24/95	--	3,200	170	ND	22	16	--
	10/23/95	--	3,900	55	ND	19	11	4,500
	1/18/96	--	2,200	270	33	26	18	5,500
	4/18/96	--	6,000	1,800	ND	100	230	48,000
	7/24/96	--	ND	2,500	ND	ND	ND	71,000
MW-4	4/18/96♦	110†	ND	630	ND	ND	ND	18,000
	7/24/96♦♦	ND	ND	ND	ND	ND	5.2	3,900
MW-5	4/18/96	--	31,000	5,500	1,400	1,700	8,100	66,000
	7/24/96	--	32,000	6,400	ND	1,600	6,100	120,000

\* Primarily due to the presence of discrete peaks not indicative of gasoline.

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

† Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to contain diesel.

♦ Total Oil & Grease and all EPA Method 8010 constituents were non-detectable.

♦♦ Total Oil & Grease and all EPA Method 8010 and 8270 constituents were non-detectable.

-- Indicates analysis was not performed.

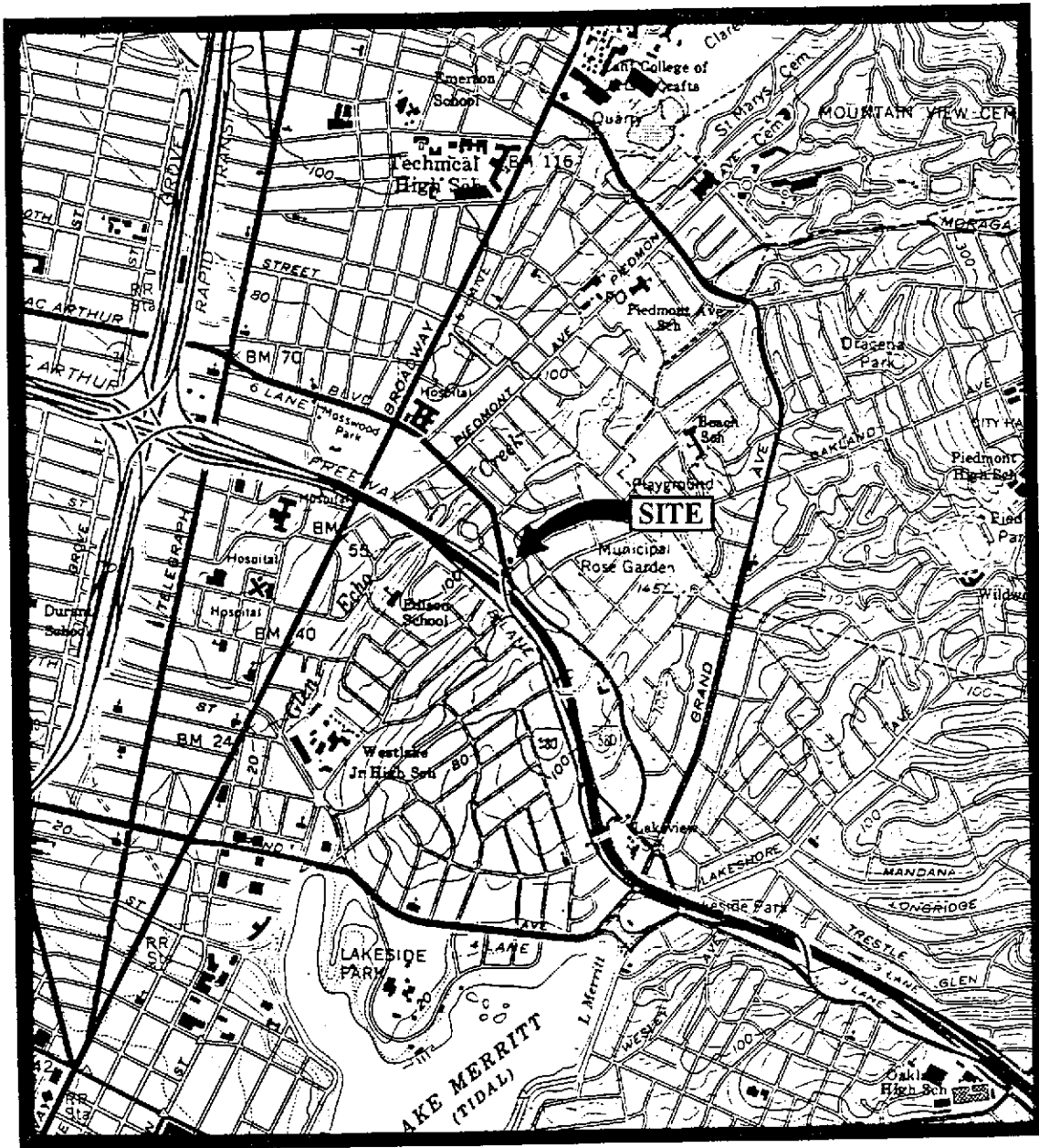
ND = Non-detectable.

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

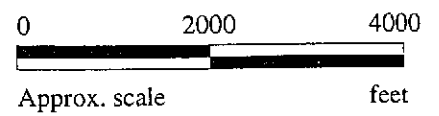
Note: The detection limit for results reported as ND by Sequoia Analytical Laboratory is equal to the stated detection limit times the dilution factor indicated on the laboratory analytical sheets.


Prior to August 1, 1995, the total purgeable petroleum hydrocarbon (TPH as gasoline) quantification range used by Sequoia Analytical Laboratory was C4 - C12. Since August 1, 1995, the quantification range used by Sequoia Analytical Laboratory is C6 - C12.

Laboratory analyses data prior to October 19, 1993, were provided by GeoStrategies, Inc.

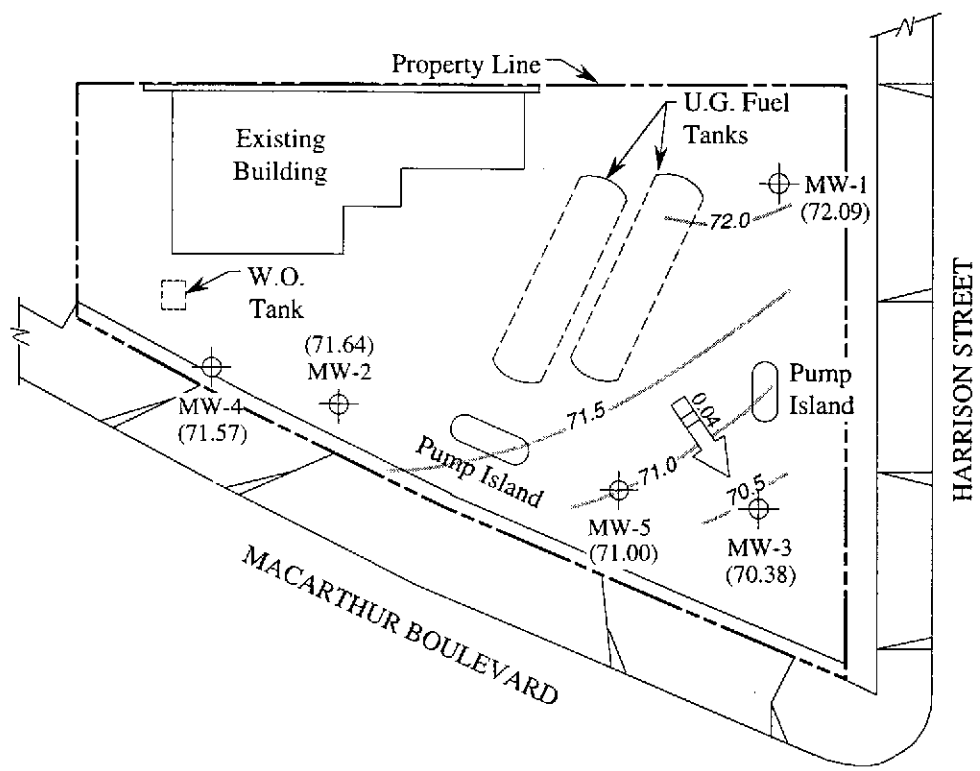
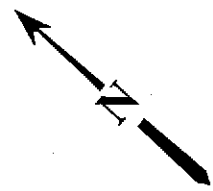


Base modified from 7.5 minute U.S.G.S.  
Oakland East and West Quadrangles  
(both photorevised 1980)







	UNOCAL SERVICE STATION # 1871 96 MACARTHUR BOULEVARD OAKLAND, CALIFORNIA	LOCATION MAP
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**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

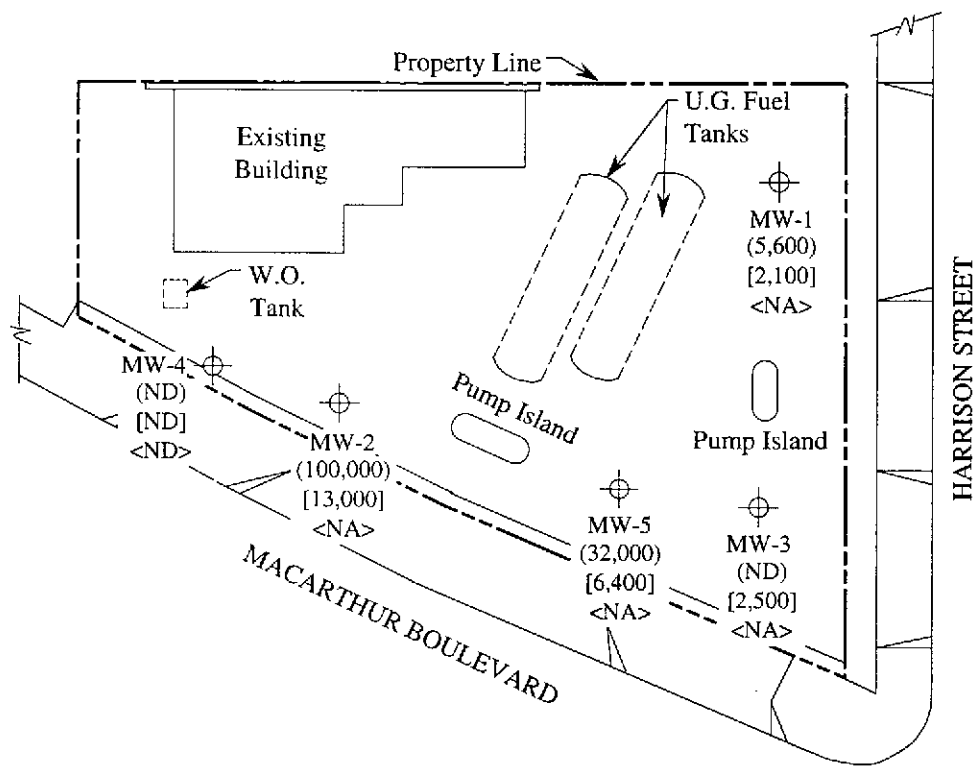
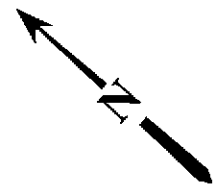


**GROUND WATER FLOW DIRECTION MAP FOR THE JULY 24, 1996 MONITORING EVENT**



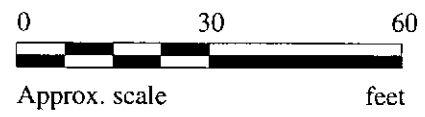
**UNOCAL SERVICE STATION # 1871  
96 MACARTHUR BOULEVARD  
OAKLAND, CALIFORNIA**

**FIGURE  
1**



**LEGEND**

- ⊕ Monitoring well
- ( ) Concentration of TPH as gasoline in µg/L
- [ ] Concentration of benzene in µg/L
- < > Concentration of TPH as diesel in µg/L
- ND Non-detectable, NA Not analyzed



**PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON JULY 24, 1996**



**UNOCAL SERVICE STATION # 1871  
96 MACARTHUR BOULEVARD  
OAKLAND, CALIFORNIA**

**FIGURE  
2**



MPDS Services 2401 Stanwell Dr., Ste. 300 Concord, CA 94520 Attention: Jarrel Crider	Client Project ID: Unocal #1871, 96 MacArthur, Oakland Matrix Descript: Water Analysis Method: EPA 5030/8015 Mod./8020 First Sample #: 607-1835	Sampled: Jul 24, 1996 Received: Jul 24, 1996 Reported: Aug 14, 1996
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**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
607-1835	MW-1	5,600	2,100	ND	160	160
607-1836	MW-2	100,000	13,000	21,000	2,700	16,000
607-1837	MW-3	ND	2,500	ND	ND	ND
607-1838	MW-4	ND	ND	ND	ND	5.2
607-1839	MW-5	32,000	6,400	ND	1,600	6,100
607-1840	ES-1	ND	ND	ND	ND	ND
607-1841	ES-2	ND	ND	ND	ND	ND
607-1842	ES-3	ND	ND	ND	ND	ND

*(Handwritten mark resembling a question mark or scribble)*

<b>Detection Limits:</b>	<b>50</b>	<b>0.50</b>	<b>0.50</b>	<b>0.50</b>	<b>0.50</b>
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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





MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Jarrel Crider

Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
Matrix Descript: Water  
Analysis Method: EPA 5030/8015 Mod./8020  
First Sample #: 607-1835

Sampled: Jul 24, 1996  
Received: Jul 24, 1996  
Reported: Aug 14, 1996

**TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION**

Sample Number	Sample Description	Chromatogram Pattern	DL Mult. Factor	Date Analyzed	Instrument ID	Surrogate Recovery, % QC Limits: 70-130
607-1835	MW-1	Gasoline	100	8/6/96	HP-2	104
607-1836	MW-2	Gasoline	400	8/5/96	HP-5	91
607-1837	MW-3	--	200	8/6/96	HP-2	107
607-1838	MW-4	--	10	8/5/96	HP-5	92
607-1839	MW-5	Gasoline	400	8/6/96	HP-2	102
607-1840	ES-1	--	1.0	8/5/96	HP-5	96
607-1841	ES-2	--	1.0	8/6/96	HP-4	105
607-1842	ES-3	--	1.0	8/6/96	HP-4	103

**SEQUOIA ANALYTICAL, #1271**

Signature on File

Alan B. Kemp  
Project Manager





# Sequoia Analytical

680 Chesapeake Drive  
404 N. Wiget Lane  
819 Striker Avenue, Suite 8

Redwood City, CA 94063  
Walnut Creek, CA 94598  
Sacramento, CA 95834

(415) 364-9600  
(510) 988-9600  
(916) 921-9600

FAX (415) 364-9233  
FAX (510) 988-9673  
FAX (916) 921-0100

MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Jarrel Crider

Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
Sample Descript: Water  
Analysis for: MTBE (Modified EPA 8020)  
First Sample #: 607-1835

Sampled: Jul 24, 1996  
Received: Jul 24, 1996  
Analyzed: Aug 5-6, 1996  
Reported: Aug 14, 1996

## LABORATORY ANALYSIS FOR: MTBE (Modified EPA 8020)

Sample Number	Sample Description	Detection Limit µg/L	Sample Result µg/L
607-1835	MW-1	60	24,000
607-1836	MW-2	240	120,000
607-1837	MW-3	120	71,000
607-1838	MW-4	40	3,900
607-1839	MW-5	240	120,000

Analytes reported as N.D. were not present above the stated limit of detection.

### SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp  
Project Manager





MPDS Services 2401 Stanwell Dr., Ste. 300 Concord, CA 94520 Attention: Jarrel Crider	Client Project ID: Unocal #1871, 96 MacArthur, Oakland Sample Matrix: Water Analysis Method: EPA 3510/8015 Mod. First Sample #: 607-1838	Sampled: Jul 24, 1996 Received: Jul 24, 1996 Reported: Aug 14, 1996
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**TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS**

Analyte	Reporting Limit µg/L	Sample I.D. 607-1838 MW-4
Extractable Hydrocarbons	50	N.D.

Chromatogram Pattern: --

**Quality Control Data**

Report Limit Multiplication Factor:	1.0
Date Extracted:	7/29/96
Date Analyzed:	7/30/96
Instrument Identification:	HP-3A

Extractable Hydrocarbons are quantitated against a fresh diesel standard.  
Analytes reported as N.D. were not detected above the stated reporting limit.

**SEQUOIA ANALYTICAL, #1271**

Signature on File

Alan B. Kemp  
Project Manager





MPDS Services	Client Project ID: Unocal #1871, 96 MacArthur, Oakland	Sampled: Jul 24, 1996
2401 Stanwell Dr., Ste. 300	Sample Descript: Water, MW-4	Received: Jul 24, 1996
Concord, CA 94520	Analysis Method: EPA 5030/8010	Analyzed: Jul 31, 1996
Attention: Jarrel Crider	Lab Number: 607-1838	Reported: Aug 14, 1996

**HALOGENATED VOLATILE ORGANICS (EPA 8010)**

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	0.50	N.D.
Bromoform.....	0.50	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	0.50	N.D.
Chlorobenzene.....	0.50	N.D.
Chloroethane.....	1.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	1.0	N.D.
Dibromochloromethane.....	0.50	N.D.
1,3-Dichlorobenzene.....	0.50	N.D.
1,4-Dichlorobenzene.....	0.50	N.D.
1,2-Dichlorobenzene.....	0.50	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	0.50	N.D.
cis-1,2-Dichloroethene.....	0.50	N.D.
trans-1,2-Dichloroethene.....	0.50	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	0.50	N.D.
trans-1,3-Dichloropropene.....	0.50	N.D.
Methylene chloride.....	5.0	N.D.
1,1,2,2-Tetrachloroethane.....	0.50	N.D.
Tetrachloroethene.....	0.50	N.D.
1,1,1-Trichloroethane.....	0.50	N.D.
1,1,2-Trichloroethane.....	0.50	N.D.
Trichloroethene.....	0.50	N.D.
Trichlorofluoromethane.....	0.50	N.D.
Vinyl chloride.....	1.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL, #1271**

Signature on File

Alan B. Kemp  
Project Manager





MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Jarrel Crider

Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
Sample Descript: Water, MW-4  
Analysis Method: EPA 8270  
Lab Number: 607-1838

Sampled: Jul 24, 1996  
Received: Jul 24, 1996  
Extracted: Aug 1, 1996  
Analyzed: Aug 5, 1996  
Reported: Aug 14, 1996

**SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)**

Analyte	Detection Limit µg/L	Sample Results µg/L
Acenaphthene.....	2.0	N.D.
Acenaphthylene.....	2.0	N.D.
Aniline.....	2.0	N.D.
Anthracene.....	2.0	N.D.
Benzidine.....	50	N.D.
Benzoic Acid.....	10	N.D.
Benzo(a)anthracene.....	2.0	N.D.
Benzo(b)fluoranthene.....	2.0	N.D.
Benzo(k)fluoranthene.....	2.0	N.D.
Benzo(g,h,i)perylene.....	2.0	N.D.
Benzo(a)pyrene.....	2.0	N.D.
Benzyl alcohol.....	2.0	N.D.
Bis(2-chloroethoxy)methane.....	2.0	N.D.
Bis(2-chloroethyl)ether.....	2.0	N.D.
Bis(2-chloroisopropyl)ether.....	2.0	N.D.
Bis(2-ethylhexyl)phthalate.....	10	N.D.
4-Bromophenyl phenyl ether.....	2.0	N.D.
Butyl benzyl phthalate.....	2.0	N.D.
4-Chloroaniline.....	2.0	N.D.
2-Chloronaphthalene.....	2.0	N.D.
4-Chloro-3-methylphenol.....	2.0	N.D.
2-Chlorophenol.....	2.0	N.D.
4-Chlorophenyl phenyl ether.....	2.0	N.D.
Chrysene.....	2.0	N.D.
Dibenz(a,h)anthracene.....	2.0	N.D.
Dibenzofuran.....	2.0	N.D.
Di-N-butyl phthalate.....	10	N.D.
1,3-Dichlorobenzene.....	2.0	N.D.
1,4-Dichlorobenzene.....	2.0	N.D.
1,2-Dichlorobenzene.....	2.0	N.D.
3,3-Dichlorobenzidine.....	10	N.D.
2,4-Dichlorophenol.....	2.0	N.D.
Diethyl phthalate.....	2.0	N.D.
2,4-Dimethylphenol.....	2.0	N.D.
Dimethyl phthalate.....	2.0	N.D.
4,6-Dinitro-2-methylphenol.....	10	N.D.
2,4-Dinitrophenol.....	10	N.D.
2,4-Dinitrotoluene.....	2.0	N.D.
2,6-Dinitrotoluene.....	2.0	N.D.
Di-N-octyl phthalate.....	2.0	N.D.







MPDS Services	Client Project ID: Unocal #1871, 96 MacArthur, Oakland	Sampled: Jul 24, 1996
2401 Stanwell Dr., Ste. 300	Sample Descript: Water, MW-4	Received: Jul 24, 1996
Concord, CA 94520	Analysis Method: EPA 8270	Extracted: Aug 1, 1996
Attention: Jarrel Crider	Lab Number: 607-1838	Analyzed: Aug 5, 1996
		Reported: Aug 14, 1996

**SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)**

Analyte	Detection Limit µg/L	Sample Results µg/L
Fluoranthene.....	2.0	N.D.
Fluorene.....	2.0	N.D.
Hexachlorobenzene.....	2.0	N.D.
Hexachlorobutadiene.....	2.0	N.D.
Hexachlorocyclopentadiene.....	2.0	N.D.
Hexachloroethane.....	2.0	N.D.
Indeno(1,2,3-cd)pyrene.....	2.0	N.D.
Isophorone.....	2.0	N.D.
2-Methylnaphthalene.....	2.0	N.D.
2-Methylphenol.....	2.0	N.D.
4-Methylphenol.....	2.0	N.D.
Naphthalene.....	2.0	N.D.
2-Nitroaniline.....	10	N.D.
3-Nitroaniline.....	10	N.D.
4-Nitroaniline.....	10	N.D.
Nitrobenzene.....	2.0	N.D.
2-Nitrophenol.....	2.0	N.D.
4-Nitrophenol.....	10	N.D.
N-Nitrosodimethylamine.....	2.0	N.D.
N-Nitrosodiphenylamine.....	2.0	N.D.
N-Nitroso-di-N-propylamine.....	2.0	N.D.
Pentachlorophenol.....	10	N.D.
Phenanthrene.....	2.0	N.D.
Phenol.....	2.0	N.D.
Pyrene.....	2.0	N.D.
1,2,4-Trichlorobenzene.....	2.0	N.D.
2,4,5-Trichlorophenol.....	10	N.D.
2,4,6-Trichlorophenol.....	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL, #1271**

Signature on File

Alan B. Kemp  
Project Manager

Please Note:  
 \*Surrogate recoveries for this sample were below lower control limits. These results should be considered approximate.





MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Jarrel Crider

Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
Matrix Descript: Water  
Analysis Method: SM 5520 B&F (Gravimetric)  
First Sample #: 607-1838

Sampled: Jul 24, 1996  
Received: Jul 24, 1996  
Extracted: Aug 5, 1996  
Analyzed: Aug 5, 1996  
Reported: Aug 14, 1996

**TOTAL RECOVERABLE PETROLEUM OIL**

Sample Number	Sample Description	Oil & Grease mg/L (ppm)	Detection Limit Multiplication Factor
607-1838	MW-4	N.D.	1.0

**Detection Limits:**

**5.0**

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL, #1271**

Signature on File

Alan B. Kemp  
Project Manager





MPDS Services  
 2401 Stanwell Dr., Ste. 300  
 Concord, CA 94520  
 Attention: Jarrel Crider

Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
 Matrix: Liquid

QC Sample Group: 6071835-842

Reported: Aug 14, 1996

**QUALITY CONTROL DATA REPORT**

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel	Oil & Grease
<b>Method:</b>	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015	SM 5520
<b>Analyst:</b>	S. Chullakorn	S. Chullakorn	S. Chullakorn	S. Chullakorn	J. Dinsay	D. Newcomb

<b>MS/MSD Batch#:</b>	6071840	6071840	6071840	6071840	BLK072996	BLK080596
<b>Date Prepared:</b>	8/5/96	8/5/96	8/5/96	8/5/96	7/29/96	8/5/96
<b>Date Analyzed:</b>	8/5/96	8/5/96	8/5/96	8/5/96	7/30/96	8/5/96
<b>Instrument I.D.#:</b>	HP-5	HP-5	HP-5	HP-5	HP-3A	Manual
<b>Conc. Spiked:</b>	20 µg/L	20 µg/L	20 µg/L	60 µg/L	300 µg/L	100 mg/L
<b>Matrix Spike % Recovery:</b>	105	105	105	107	100	85
<b>Matrix Spike Duplicate % Recovery:</b>	115	110	110	110	93	85
<b>Relative % Difference:</b>	9.1	4.7	4.7	3.1	6.9	0.0

<b>LCS Batch#:</b>	5LCS080596	5LCS080596	5LCS080596	5LCS080596	LCS072996	BLK080596
<b>Date Prepared:</b>	8/5/96	8/5/96	8/5/96	8/5/96	7/29/96	8/5/96
<b>Date Analyzed:</b>	8/5/96	8/5/96	8/5/96	8/5/96	7/30/96	8/5/96
<b>Instrument I.D.#:</b>	HP-5	HP-5	HP-5	HP-5	HP-3A	Manual
<b>LCS % Recovery:</b>	95	90	90	92	93	84

<b>% Recovery Control Limits:</b>	60-140	60-140	60-140	60-140	50-150	60-140
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**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, #1271**

Signature on File  
 Alan B. Kemp  
 Project Manager





MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Jarrel Crider

Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
Matrix: Liquid

QC Sample Group: 6071835-842

Reported: Aug 14, 1996

**QUALITY CONTROL DATA REPORT**

<b>ANALYTE</b>	Benzene	Toluene	Ethyl Benzene	Xylenes
<b>Method:</b>	EPA 8020	EPA 8020	EPA 8020	EPA 8020
<b>Analyst:</b>	S. Chullakorn	S. Chullakorn	S. Chullakorn	S. Chullakorn

<b>MS/MSD Batch#:</b>	6071841	6071841	6071841	6071841
<b>Date Prepared:</b>	8/6/96	8/6/96	8/6/96	8/6/96
<b>Date Analyzed:</b>	8/6/96	8/6/96	8/6/96	8/6/96
<b>Instrument I.D.#:</b>	HP-4	HP-4	HP-4	HP-4
<b>Conc. Spiked:</b>	20 µg/L	20 µg/L	20 µg/L	60 µg/L
<b>Matrix Spike % Recovery:</b>	90	90	90	93
<b>Matrix Spike Duplicate % Recovery:</b>	85	85	90	90
<b>Relative % Difference:</b>	5.7	5.7	0.0	3.6

<b>LCS Batch#:</b>	4LCS080696	4LCS080696	4LCS080696	4LCS080696
<b>Date Prepared:</b>	8/6/96	8/6/96	8/6/96	8/6/96
<b>Date Analyzed:</b>	8/6/96	8/6/96	8/6/96	8/6/96
<b>Instrument I.D.#:</b>	HP-4	HP-4	HP-4	HP-4
<b>LCS % Recovery:</b>	85	85	85	85

<b>% Recovery Control Limits:</b>	60-140	60-140	60-140	60-140
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**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, #1271**

Signature on File

Alan B. Kemp  
Project Manager





MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Jarrel Crider

Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
Matrix: Liquid

QC Sample Group: 6071835-842

Reported: Aug 14, 1996

**QUALITY CONTROL DATA REPORT**

<b>ANALYTE</b>	Benzene	Toluene	Ethyl Benzene	Xylenes
<b>Method:</b>	EPA 8020	EPA 8020	EPA 8020	EPA 8020
<b>Analyst:</b>	K. Nill	K. Nill	K. Nill	K. Nill

<b>MS/MSD Batch#:</b>	6071998	6071998	6071998	6071998
<b>Date Prepared:</b>	8/6/96	8/6/96	8/6/96	8/6/96
<b>Date Analyzed:</b>	8/6/96	8/6/96	8/6/96	8/6/96
<b>Instrument I.D.#:</b>	HP-2	HP-2	HP-2	HP-2
<b>Conc. Spiked:</b>	20 µg/L	20 µg/L	20 µg/L	60 µg/L
<b>Matrix Spike % Recovery:</b>	115	110	120	113
<b>Matrix Spike Duplicate % Recovery:</b>	115	110	120	115
<b>Relative % Difference:</b>	0.0	0.0	0.0	1.5

<b>LCS Batch#:</b>	2LCS080696	2LCS080696	2LCS080696	2LCS080696
<b>Date Prepared:</b>	8/6/96	8/6/96	8/6/96	8/6/96
<b>Date Analyzed:</b>	8/6/96	8/6/96	8/6/96	8/6/96
<b>Instrument I.D.#:</b>	HP-2	HP-2	HP-2	HP-2
<b>LCS % Recovery:</b>	110	110	115	112

<b>% Recovery Control Limits:</b>	60-140	60-140	60-140	60-140
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**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, #1271**

Signature on File

Alan B. Kemp  
Project Manager





MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Jarrel Crider

Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
Matrix: Liquid

QC Sample Group: 6071835-842

Reported: Aug 14, 1996

**QUALITY CONTROL DATA REPORT**

<b>ANALYTE</b>	1,1-Dichloro-ethene	Trichloro-ethene	Chloro-benzene
<b>Method:</b>	EPA 8010	EPA 8010	EPA 8010
<b>Analyst:</b>	I. Dalvand	I. Dalvand	I. Dalvand

<b>MS/MSD</b>			
<b>Batch#:</b>	6071838	6071838	6071838
<b>Date Prepared:</b>	7/31/96	7/31/96	7/31/96
<b>Date Analyzed:</b>	7/31/96	7/31/96	7/31/96
<b>Instrument I.D.#:</b>	HP-7	HP-7	HP-7
<b>Conc. Spiked:</b>	10 µg/L	10 µg/L	10 µg/L
<b>Matrix Spike % Recovery:</b>	135	172	97
<b>Matrix Spike Duplicate % Recovery:</b>	133	153	97
<b>Relative % Difference:</b>	1.5	12	0.0

<b>LCS Batch#:</b>	LCS073196	LCS073196	LCS073196
<b>Date Prepared:</b>	7/31/96	7/31/96	7/31/96
<b>Date Analyzed:</b>	7/31/96	7/31/96	7/31/96
<b>Instrument I.D.#:</b>	HP-7	HP-7	HP-7
<b>LCS % Recovery:</b>	100	112	94

<b>% Recovery Control Limits:</b>	60-140	60-140	60-140
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**Please Note:**

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**SEQUOIA ANALYTICAL, #1271**

Signature on File

Alan B. Kemp  
Project Manager





MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Jarrel Crider

Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
Matrix: Liquid

QC Sample Group: 6071835-842

Reported: Aug 15, 1996

**QUALITY CONTROL DATA REPORT**

ANALYTE	Phenol	2-Chlorophenol	1,4-Dichloro-benzene	N-Nitroso-Di-N-propylamine	1,2,4-Trichloro-benzene	4-Chloro-3-Methylphenol
Prep. Method:	EPA 3510	EPA 3510	EPA 3510	EPA 3510	EPA 3510	EPA 3510
Method:	EPA 8270	EPA 8270	EPA 8270	EPA 8270	EPA 8270	EPA 8270
Analyst:	T. Granicher	T. Granicher	T. Granicher	T. Granicher	T. Granicher	T. Granicher

MS/MSD Batch#:	MS073096	MS073096	MS073096	MS073096	MS073096	MS073096
Date Prepared:	7/30/96	7/30/96	7/30/96	7/30/96	7/30/96	7/30/96
Date Analyzed:	8/9/96	8/9/96	8/9/96	8/9/96	8/9/96	8/9/96
Instrument I.D.#:	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1
Conc. Spiked:	200 µg/L	200 µg/L	100 µg/L	100 µg/L	100 µg/L	200 µg/L
Matrix Spike % Recovery:	68	64	48	70	50	112
Matrix Spike Duplicate % Recovery:	100	87	62	96	66	154
Relative % Difference:	38	31	26	31	28	32
RPD Limit:	0-20	0-15	0-13	0-18	0-18	0-20

LCS Batch#:	LCS080196	LCS080196	LCS080196	LCS080196	LCS080196	LCS080196
Date Prepared:	7/30/96	7/30/96	7/30/96	7/30/96	7/30/96	7/30/96
Date Analyzed:	8/9/96	8/9/96	8/9/96	8/9/96	8/9/96	8/9/96
Instrument I.D.#:	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1
LCS % Recovery:	37	52	56	64	56	68

% Recovery Control Limits:	12-110	27-123	36-97	41-116	39-98	23-97
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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.





MPDS Services Client Project ID: Unocal #1871, 96 MacArthur, Oakland  
 2401 Stanwell Dr., Ste. 300 Matrix: Liquid  
 Concord, CA 94520  
 Attention: Jarrel Crider QC Sample Group: 6071835-842 Reported: Aug 15, 1996

**QUALITY CONTROL DATA REPORT**

ANALYTE	Acenaphthene	4-Nitrophenol	2,4-Dinitro-toluene	Pentachloro-phenol	Pyrene
Prep. Method:	EPA 3510	EPA 3510	EPA 3510	EPA 3510	EPA 3510
Method:	EPA 8270	EPA 8270	EPA 8270	EPA 8270	EPA 8270
Analyst:	T. Granicher	T. Granicher	T. Granicher	T. Granicher	T. Granicher

MS/MSD	Acenaphthene	4-Nitrophenol	2,4-Dinitro-toluene	Pentachloro-phenol	Pyrene
Batch#:	MS073096	MS073096	MS073096	MS073096	MS073096
Date Prepared:	7/30/96	7/30/96	7/30/96	7/30/96	7/30/96
Date Analyzed:	8/9/96	8/9/96	8/9/96	8/9/96	8/9/96
Instrument I.D.#:	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1
Conc. Spiked:	100 µg/L	200 µg/L	100 µg/L	200 µg/L	100 µg/L
Matrix Spike % Recovery:	62	63	52	89	64
Matrix Spike Duplicate % Recovery:	78	46	64	102	70
Relative % Difference:	23	31	21	14	9.0
RPD Limit:	0-18	0-47	0-13	0-27	0-17

LCS Batch#:	Acenaphthene	4-Nitrophenol	2,4-Dinitro-toluene	Pentachloro-phenol	Pyrene
LCS080196	LCS080196	LCS080196	LCS080196	LCS080196	LCS080196
Date Prepared:	7/30/96	7/30/96	7/30/96	7/30/96	7/30/96
Date Analyzed:	8/9/96	8/9/96	8/9/96	8/9/96	8/9/96
Instrument I.D.#:	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1	GC/MS 1
LCS % Recovery:	76	42	70	70	98

% Recovery Control Limits:	Acenaphthene	4-Nitrophenol	2,4-Dinitro-toluene	Pentachloro-phenol	Pyrene
	46-118	10-80	24-96	9-103	26-127

**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, #1271**

Signature on File

Alan B. Kemp  
 Project Manager





# M P D S Services, Inc.

2401 Stenwell Drive, Suite 400, Concord, CA 94520  
Tel: (510) 602-5120 Fax: (510) 689-1918

9607466

## CHAIN OF CUSTODY

SAMPLER			UNOCAL				ANALYSES REQUESTED										TURN AROUND TIME:		
(JOE) HOVSIA AJEMIAN			S/S # 1871 CITY: Oakland				TPH-GAS BTX&MT&B	TPH-DIESEL	TOG	8010	8270								Regular
WITNESSING AGENCY			ADDRESS: 96 MacArthur																
SAMPLE ID NO.	DATE	TIME	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION												
MW-1	7-24-96	10:30 A.M.	✓	-		2 (VOA)	Wells	✓											6071835 A-B
MW-2	"	11:15 A.M.	✓	-		2 (VOA)	"	✓											6071836
MW-3	"	9:50 A.M.	✓	-		2 (VOA)	"	✓											6071837
MW-4	"	8:55 A.M.	✓	-		4 (VOA) 3 Amber	"	✓	✓	✓	✓	✓							6071838 A-G
MW-5	"	11:55 A.M.	✓	-		2 (VOA)	"	✓											6071839 A-B

E 12 22

RELINQUISHED BY:	DATE/TIME	RECEIVED BY:	THE FOLLOWING MUST BE COMPLETED BY THE LABORATORY ACCEPTING SAMPLES FOR ANALYSES:			
(SIGNATURE) Sue Dorian	7-24-96 1:30 P.M.	(SIGNATURE) Lisa DeCaracas 7-24-96	1. HAVE ALL SAMPLES RECEIVED FOR ANALYSIS BEEN STORED ON ICE? YES			
(SIGNATURE) [Signature]	7/25/96 0715	(SIGNATURE) [Signature]	2. WILL SAMPLES REMAIN REFRIGERATED UNTIL ANALYZED? YES			
(SIGNATURE) [Signature]		(SIGNATURE) [Signature]	3. DID ANY SAMPLES RECEIVED FOR ANALYSIS HAVE HEAD SPACE? NO			
(SIGNATURE) [Signature]		(SIGNATURE) [Signature]	4. WERE SAMPLES IN APPHOPHATE CONTAINERS AND PROPERLY PACKAGED? YES			
(SIGNATURE) [Signature]	7/25/96 1630	(SIGNATURE) [Signature]	SIGNATURE:	TITLE:	DATE:	
			Lisa DeCaracas	analyst	7-24-96	

9607406

# 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			UNOCAL					ANALYSES REQUESTED						TURN AROUND TIME:	
(JOE) HOVSIA AJEMIAN			S/S # <u>1871</u> CITY: <u>Oakland</u>					TPH-GAS BTEX	TPH-DIESEL	TOG	8010				Regular
WITNESSING AGENCY			ADDRESS: <u>96 MacArthur</u>												
SAMPLE ID NO.	DATE	TIME	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION								
ES1	7-24-96					1 volt		✓			6071840				
ES2								✓			6071841				
ES3								✓			6071842				
RELINQUISHED BY:			DATE/TIME		RECEIVED BY:			THE FOLLOWING <u>MUST BE</u> COMPLETED BY THE LABORATORY ACCEPTING SAMPLES FOR ANALYSES:							
(SIGNATURE) <u>[Signature]</u>			1:30		(SIGNATURE) <u>[Signature]</u>			1. HAVE ALL SAMPLES RECEIVED FOR ANALYSIS BEEN STORED ON ICE? yes							
(SIGNATURE) <u>[Signature]</u>			7-24-96		(SIGNATURE) <u>[Signature]</u>			2. WILL SAMPLES REMAIN REFRIGERATED UNTIL ANALYZED? yes							
(SIGNATURE) <u>[Signature]</u>			7/25/96 0815		(SIGNATURE) <u>[Signature]</u>			3. DID ANY SAMPLES RECEIVED FOR ANALYSIS HAVE HEAD SPACE? NO							
(SIGNATURE) <u>[Signature]</u>			7-25		(SIGNATURE) <u>[Signature]</u>			4. WERE SAMPLES IN APPROPRIATE CONTAINERS AND PROPERLY PACKAGED? yes							
(SIGNATURE) <u>[Signature]</u>			7/25/96 1630		(SIGNATURE) <u>[Signature]</u>			SIGNATURE: <u>[Signature]</u>			TITLE: Analyst		DATE: 7-24-96		

## PURGING/SAMPLING DATA SHEET

SAMPLING LOCATION: #1871 - Oakland DATE & TIME SAMPLED: 7-24-96 10:30<sup>A.M.</sup> P.M.  
96 MacArthur FIELD TECHNICIAN: Joe  
 PURGE METHOD: Pump DATE(S) PURGED: 7-24-96  
 WELL NUMBER: MW-1  
 WATER LEVEL-INITIAL: 14.15 SAMPLING METHOD: Boil  
 WATER LEVEL-FINAL: 15.92 CONTAINERS: 2  
 WELL DEPTH: 24.10 PRESERVATIVES:   
 WELL CASING VOLUME: 6.47 † CASING DIAMETER: 4"

TIME	GALLONS PURGED	TEMPERATURE (°F) (± 1°F)	ELECTRICAL CONDUCTIVITY ([μmhos/cm]x1000) (± 10% of TOTAL)	pH (± 0.2)
10:00	0	70.0	5.85	7.36
	6.5	70.2	5.92	7.35
	13	70.3	5.96	7.30
	20	70.9	6.12	7.25
10:20	26	71.0	5.94	7.20

† Correction Factors:

Well Diameter	Factor
2"	0.17
3"	0.37
4"	0.65
4.5"	0.82
6"	1.46
8"	2.6
12"	5.87

## PURGING/SAMPLING DATA SHEET

SAMPLING LOCATION: #11871- Oakland DATE & TIME SAMPLED: 7-24-96 11:15 A.M.  
96 MacArthur Blvd FIELD TECHNICIAN: Joe  
 PURGE METHOD: Pump DATE(S) PURGED: 7-24-96  
 WELL NUMBER: MW-2  
 WATER LEVEL-INITIAL: 10.02 SAMPLING METHOD: Bail  
 WATER LEVEL-FINAL: 12.65 CONTAINERS: 2  
 WELL DEPTH: 24.70 PRESERVATIVES:   
 WELL CASING VOLUME: 6.20 †CASING DIAMETER: 4"

TIME	GALLONS PURGED	TEMPERATURE (°F) (± 1°F)	ELECTRICAL CONDUCTIVITY (µmhos/cm)x1000 (± 10% of TOTAL)	pH (± 0.2)
10:45	0	69.8	4.96	7.55
	6	70.8	4.95	7.36
	12	71.0	4.91	7.27
	19	71.0	4.92	7.30
11:02	25	71.4	4.91	7.36

† Correction Factors:

Well Diameter	Factor
2"	0.17
3"	0.37
4"	0.65
4.5"	0.82
6"	1.46
8"	2.6
12"	5.87

## PURGING/SAMPLING DATA SHEET

SAMPLING LOCATION: H1871 - Oakland DATE & TIME SAMPLED: 7-24-96 9:50<sup>(A.M.)</sup> P.M.  
96 MacArthur Blvd FIELD TECHNICIAN: Joe  
 PURGE METHOD: Pump DATE(S) PURGED: 7-24-96  
 WELL NUMBER: MW-3  
 WATER LEVEL-INITIAL: 12.17 SAMPLING METHOD: Bail  
 WATER LEVEL-FINAL: 13.41 CONTAINERS: 3  
 WELL DEPTH: 23.68 PRESERVATIVES:   
 WELL CASING VOLUME: 7.48 †CASING DIAMETER: 4"

TIME	GALLONS PURGED	TEMPERATURE (°F) (± 1°F)	ELECTRICAL CONDUCTIVITY ( $\mu$ mhos/cm)x1000 (± 10% of TOTAL)	pH (± 0.2)
9:15	0	70.2	4.55	7.67
	7	71.0	4.42	7.39
	15	71.4	4.48	7.28
	23	70.9	4.47	7.22
9:40	30	70.8	4.46	7.18

† Correction Factors:

Well Diameter	Factor
2"	0.17
3"	0.37
4"	0.65
4.5"	0.82
6"	1.46
8"	2.6
12"	5.87

## PURGING/SAMPLING DATA SHEET

SAMPLING LOCATION: #1871 - Oakland DATE & TIME SAMPLED: 7-24-96 8:55 A.M.  
P.M.

96 MacArthur FIELD TECHNICIAN: Joe

PURGE METHOD: Pump Bail DATE(S) PURGED: 7-24-96

WELL NUMBER: MW-4

WATER LEVEL-INITIAL: 10.47 SAMPLING METHOD: Bail

WATER LEVEL-FINAL: 11.96 CONTAINERS: 7

WELL DEPTH: 19.56 PRESERVATIVES:

WELL CASING VOLUME: 1.55 †CASING DIAMETER: 2"

TIME	GALLONS PURGED	TEMPERATURE (°F) (± 1°F)	ELECTRICAL CONDUCTIVITY ([μmhos/cm]x100) (± 10% of TOTAL)	pH (± 0.2)
8:25	0	68.7	4.11	7.92
	1.5	69.0	4.08	7.27
	3	68.5	4.06	7.20
	4.5	68.6	4.09	7.18
8:38	6.5	68.4	4.10	7.15

† Correction Factors:

Well Diameter	Factor
2"	0.17
3"	0.37
4"	0.65
4.5"	0.82
6"	1.46
8"	2.6
12"	5.87

## PURGING/SAMPLING DATA SHEET

SAMPLING LOCATION: #1871 - Oakland DATE & TIME SAMPLED: 7-24-96 11:55 P.M. A.M.

96 MacArthur FIELD TECHNICIAN: Joe

PURGE METHOD: Bail DATE(S) PURGED: 7-24-96

WELL NUMBER: MW-5

WATER LEVEL-INITIAL: 10.80 SAMPLING METHOD: Bail

WATER LEVEL-FINAL: 11.35 CONTAINERS: 3

WELL DEPTH: 20.00 PRESERVATIVES:

WELL CASING VOLUME: 1.56 CASING DIAMETER: 2"

TIME	GALLONS PURGED	TEMPERATURE (°F) (± 1°F)	ELECTRICAL CONDUCTIVITY ([μmhos/cm]x1000) (± 10% of TOTAL)	pH (± 0.2)
11:30	0	68.4	4.35	7.60
	1.5	68.2	4.49	7.40
	3	68.1	4.52	7.31
	5	68.0	4.52	7.28
11:43	6.5	68.3	4.56	7.25

† Correction Factors:

Well Diameter	Factor
2"	0.17
3"	0.37
4"	0.65
4.5"	0.82
6"	1.46
8"	2.6
12"	5.87