

MPDS-UN3690-04
August 17, 1995

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

Attention: Mr. Edward C. Ralston

RE: Semi-Annual Data Report
Unocal Service Station #3690
14999 Farnsworth Street
San Leandro, California

ENVIRONMENTAL
PROTECTION
95 SEP 20 PM 12: 22

Dear Mr. Ralston:

This data report presents the results of the most recent 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 semi-annual period 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 semi-annual period is shown on the attached Figure 1.

Ground water samples were collected on July 25, 1995. Prior to sampling, the wells were each purged of between 14 and 16 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 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. 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 documenta-

tion. 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 samples collected during this semi-annual period 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

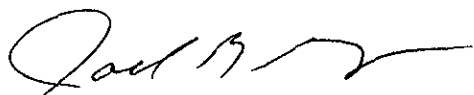
A copy of this report should be sent to Ms. Pamela Evans of the Alameda County Health Care Services Agency.

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

Sincerely,

MPDS Services, Inc.


Sarkis A. Karkarian
Staff Engineer


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

License No. EG 1633
Exp. Date 8/31/96

/jfc

Attachments: Tables 1, 2 & 3
Location Map
Figures 1 & 2
Laboratory Analyses
Chain of Custody documentation

cc: Mr. Greg Gurss, GeoStrategies, Inc.

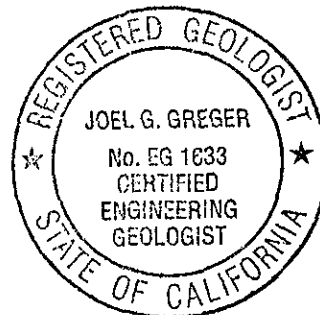


TABLE 1

SUMMARY OF MONITORING DATA

<u>Well #</u>	<u>Ground Water Elevation (feet)</u>	<u>Depth to Water (feet)◆</u>	<u>Total Well Depth (feet)◆</u>	<u>Product Thickness (feet)</u>	<u>Sheen</u>	<u>Water Purged (gallons)</u>
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(Monitored and Sampled on July 25, 1995)

U-1	7.12	9.37	29.89	0	No	14
U-2	8.48	8.00	30.34	0	No	16
U-3	8.44	8.88	29.50	0	No	14.5

(Monitored and Sampled on January 24, 1995)

U-1	9.10	7.39	29.49	0	No	15.5
U-2	9.84	6.64	30.34	0	No	16.5
U-3	9.54	7.78	29.89	0	No	15.5

(Monitored and Sampled on July 20, 1994)

U-1	7.14	9.35	29.50	0	No	14
U-2	7.92	8.56	30.34	0	No	15
U-3	7.46	9.86	29.88	0	No	14

(Monitored and Sampled on January 22, 1994)

U-1	7.39	9.10	29.45	0	No	14
U-2	8.26	8.22	30.30	0	No	15.5
U-3	7.68	9.64	29.80	0	No	14

TABLE 1 (Continued)

SUMMARY OF MONITORING DATA

<u>Well #</u>	<u>Well Casing Elevation (feet)**</u>
U-1	16.49
U-2	16.48
U-3	17.32

- ◆ The depth to water level and total well depth measurements were taken from the top of the well casings.
- * The elevations of the top of the well casings have been surveyed relative to Mean Sea Level.

TABLE 2

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

(Measured on July 25, 1995)

<u>Well #</u>	<u>Gallons per Casing Volume</u>	<u>Time</u>	<u>Gallons Purged</u>	<u>Casing Volumes Purged</u>	<u>Temperature (°F)</u>	<u>Conductivity ([μmhos/cm] x100)</u>	<u>pH</u>
U-1	3.49	11:00	0	0	70.0	6.97	7.94
			3.5	1.00	69.3	6.83	7.81
			7	2.01	69.7	7.14	7.75
			10.5	3.01	69.5	7.87	7.74
			14	4.01	69.6	8.52	7.73
U-2	3.80	9:15	0	0	65.4	20.12	7.23
			4	1.05	67.6	6.95	7.55
			8	2.11	68.8	6.11	7.19
			12	3.16	68.9	6.16	7.16
			16	4.21	69.3	6.16	7.19
U-3	3.50	10:05	0	0	69.6	6.63	7.50
			3.5	1.00	69.3	6.29	7.84
			7	2.00	69.8	6.58	7.73
			10.5	3.00	69.4	7.09	7.69
			14.5	4.14	69.6	8.05	7.68

TABLE 3

SUMMARY OF LABORATORY ANALYSES
 WATER

<u>Date</u>	<u>Well #</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Xylenes</u>
7/25/95	U-1	ND	ND	ND	ND	ND
	U-2	ND	ND	ND	ND	ND
	U-3	ND	ND	ND	ND	ND
1/24/95	U-1	71**	ND	ND	ND	ND
	U-2	ND	ND	ND	ND	ND
	U-3	ND	ND	ND	ND	ND
7/20/94	U-1	87**	ND	ND	ND	ND
	U-2	ND	ND	ND	ND	ND
	U-3	ND	3.2	ND	ND	ND
1/22/94	U-1	ND	ND	ND	ND	ND
	U-2	ND	ND	0.82	ND	2.1
	U-3	ND	0.92	ND	ND	ND
8/09/93	U-1	110*	ND	ND	ND	ND
	U-2	ND	ND	ND	ND	ND
	U-3	ND	1.0	ND	ND	ND
1/25/93	U-1	ND	13	ND	6.4	12
	U-2	ND	ND	ND	ND	ND
	U-3	ND	ND	ND	ND	ND
11/23/92	U-1	ND	ND	ND	ND	ND
	U-2	ND	ND	ND	ND	ND
	U-3	ND	2.4	ND	ND	ND
8/20/92	U-1	ND	ND	ND	ND	ND
	U-2	ND	ND	ND	ND	ND
	U-3	ND	3.6	ND	ND	ND

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
 WATER

<u>Date</u>	<u>Well #</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Xylenes</u>
5/01/92	U-1	ND	0.8	ND	ND	ND
	U-2	ND	ND	ND	ND	ND
	U-3	ND	1.2	ND	ND	ND
2/12/92	U-1	ND	ND	ND	ND	ND
	U-2	ND	ND	ND	ND	ND
	U-3	ND	1.7	ND	ND	ND
9/30/91	U-1	ND	ND	ND	ND	ND
	U-2	ND	ND	ND	ND	ND
	U-3▲	ND	ND	ND	ND	ND

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

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

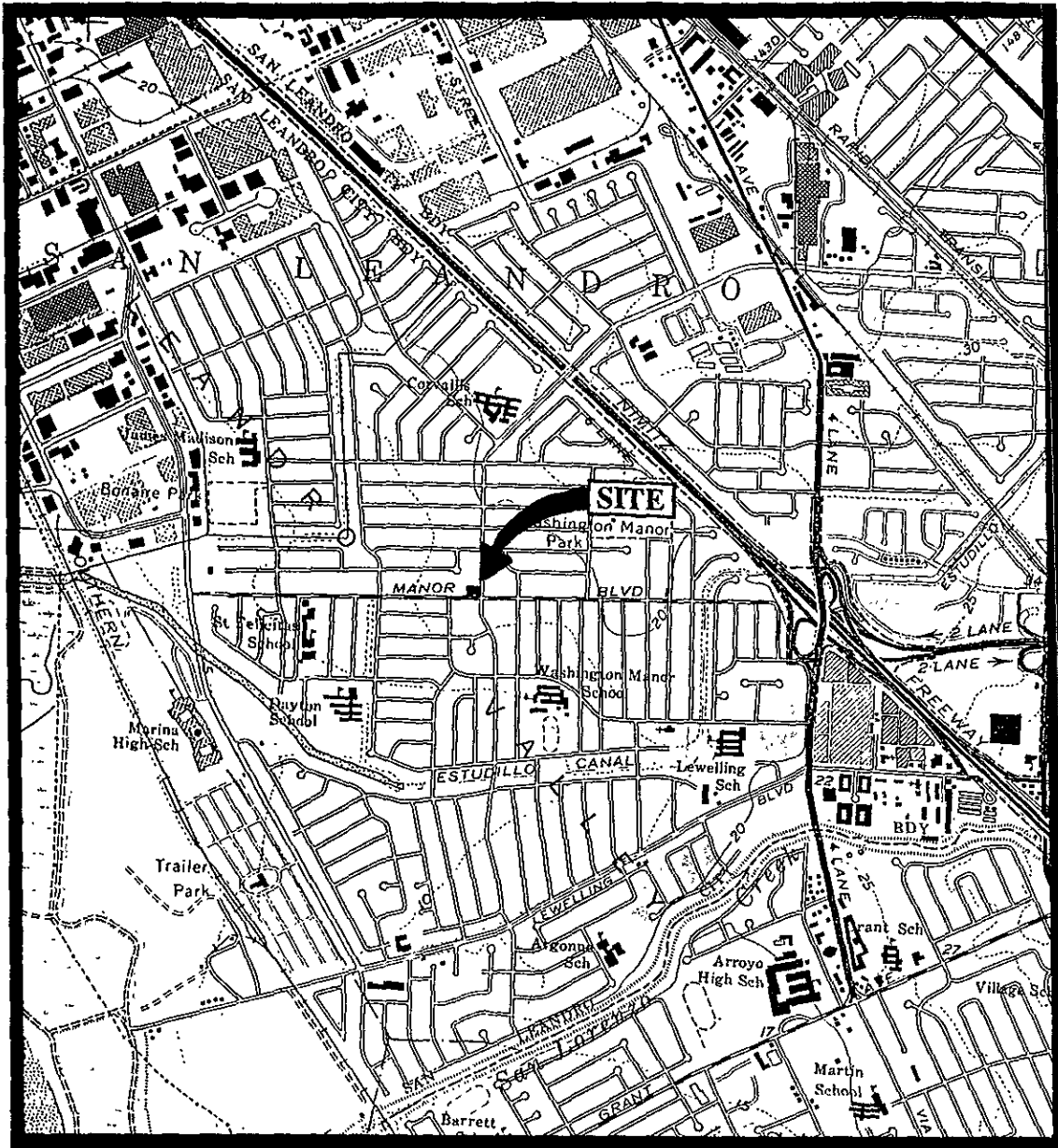
▲ Oil and Grease concentrations were non-detectable.

ND = Non-detectable.

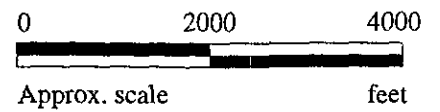
-- Indicates analysis was not performed.

Results are in micrograms per liter ($\mu\text{g/L}$), unless otherwise indicated.

Note: Laboratory analyses data prior to January 22, 1994, were provided by GeoStrategies, Inc.



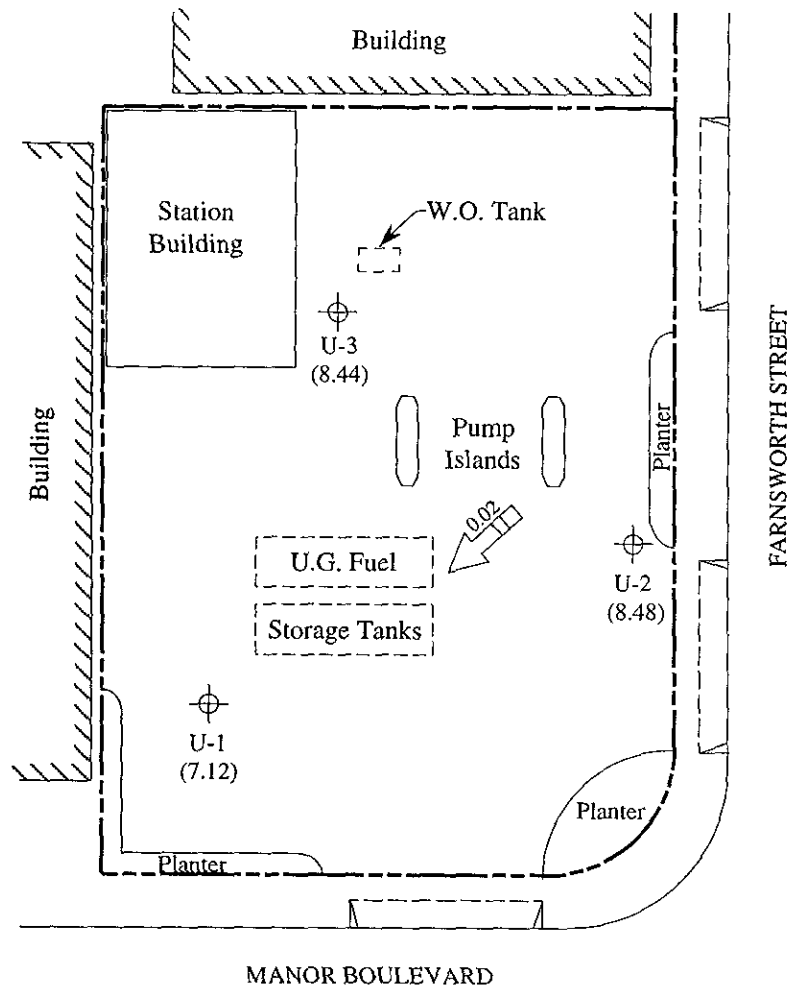
Base modified from 7.5 minute U.S.G.S. San Leandro Quadrangle
(photorevised 1980)



MPDS SERVICES, INCORPORATED

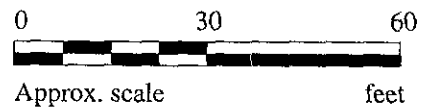
**UNOCAL SERVICE STATION #3690
14999 FARNSWORTH STREET
SAN LEANDRO, CALIFORNIA**

**LOCATION
MAP**



LEGEND

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

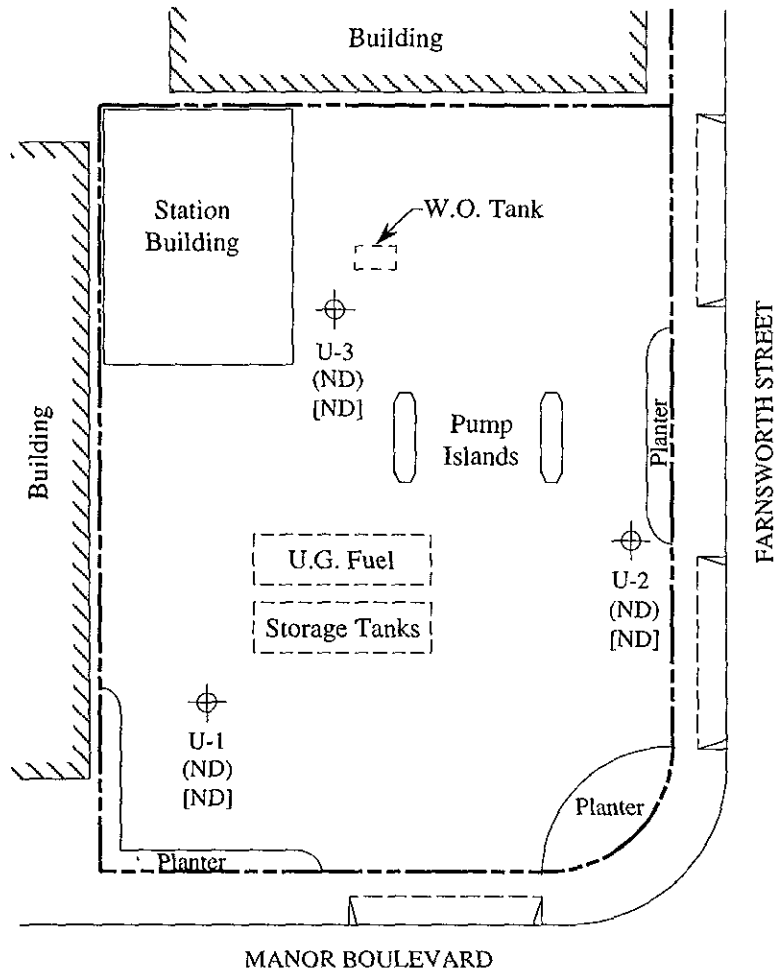


GROUND WATER FLOW DIRECTION MAP FOR THE JULY 25, 1995 MONITORING EVENT

MPDS SERVICES, INCORPORATED

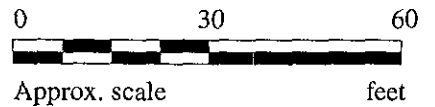
**UNOCAL SERVICE STATION #3690
14999 FARNSWORTH STREET
SAN LEANDRO, CALIFORNIA**

**FIGURE
1**



LEGEND

- ⊕ Monitoring well
- () Concentration of TPH as gasoline in $\mu\text{g/L}$
- [] Concentration of benzene in $\mu\text{g/L}$
- ND Non-detectable



PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON JULY 25, 1995

mpds SERVICES, INCORPORATED

**UNOCAL SERVICE STATION #3690
14999 FARNSWORTH STREET
SAN LEANDRO, CALIFORNIA**

**FIGURE
2**



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

Client Project ID: Unocal #3690, 14999 Farnsworth,
Matrix Descript: Water San Leandro
Analysis Method: EPA 5030/8015 Mod./8020
First Sample #: 507-1843

Sampled: Jul 25, 1995
Received: Jul 25, 1995
Reported: Aug 8, 1995

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
507-1843	U1	ND	ND	ND	ND	ND
507-1844	U2	ND	ND	ND	ND	ND
507-1845	U3	ND	ND	ND	ND	ND

Detection Limits:	50	0.50	0.50	0.50	0.50
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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	Client Project ID: Unocal #3690, 14999 Farnsworth,	Sampled: Jul 25, 1995
2401 Stanwell Dr., Ste. 300	Matrix Descript: Water	Received: Jul 25, 1995
Concord, CA 94520	Analysis Method: EPA 5030/8015 Mod./8020	Reported: Aug 8, 1995
Attention: Sarkis Karkarian	First Sample #: 507-1843	

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
507-1843	U1	--	1.0	8/3/95	HP-4	100
507-1844	U2	--	1.0	8/3/95	HP-5	94
507-1845	U3	--	1.0	8/3/95	HP-5	93

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager





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

Client Project ID: Unocal #3690, 14999 Farnsworth, San Leandro
Matrix: Liquid

QC Sample Group: 5071843-45

Reported: Aug 8, 1995

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	K. Nill	K. Nill	K. Nill	K. Nill

MS/MSD Batch#:	5071843	5071843	5071843	5071843
Date Prepared:	8/3/95	8/3/95	8/3/95	8/3/95
Date Analyzed:	8/3/95	8/3/95	8/3/95	8/3/95
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	90	100	105	103
Matrix Spike Duplicate % Recovery:	90	100	105	103
Relative % Difference:	0.0	0.0	0.0	0.0

LCS Batch#:	2LCS080395	2LCS080395	2LCS080395	2LCS080395
Date Prepared:	8/3/95	8/3/95	8/3/95	8/3/95
Date Analyzed:	8/3/95	8/3/95	8/3/95	8/3/95
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
LCS % Recovery:	89	100	104	105

% Recovery Control Limits:	71-133	72-128	72-130	71-120
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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: Sarkis Karkarian

Client Project ID: Unocal #3690, 14999 Farnsworth, San Leandro
Matrix: Liquid

QC Sample Group: 5071843-45

Reported: Aug 8, 1995

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	K. Nill	K. Nill	K. Nill	K. Nill

MS/MSD	Benzene	Toluene	Ethyl Benzene	Xylenes
Batch#:	5071844	5071844	5071844	5071844
Date Prepared:	8/3/95	8/3/95	8/3/95	8/3/95
Date Analyzed:	8/3/95	8/3/95	8/3/95	8/3/95
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:	100	100	105	107
Matrix Spike Duplicate % Recovery:	90	95	95	100
Relative % Difference:	11	5.1	10	6.5

LCS Batch#:	3LCS080395	3LCS080395	3LCS080395	3LCS080395
Date Prepared:	8/3/95	8/3/95	8/3/95	8/3/95
Date Analyzed:	8/3/95	8/3/95	8/3/95	8/3/95
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5
LCS % Recovery:	91	96	97	101

% Recovery Control Limits:	71-133	72-128	72-130	71-120
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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



