

#521



# GETTLER - RYAN INC.

## TRANSMITTAL

**TO:** Mr. Barney M. Chan  
Alameda County Health Care Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

**DATE:** April 14, 1998  
**G-R #:** 180065

**FROM:** Deanna L. Harding  
Project Manager  
Gettler-Ryan Inc.  
6747 Sierra Court, Suite J  
Dublin, California 94568

**RE:** Unocal Service Station #5043  
449 Hegenberger Road  
Oakland, California

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
1	March 20, 1998	Groundwater Monitoring and Sampling Report First Quarter 1998 - January 14, 1998

**COMMENTS:**

At the request of Tosco Marketing Company, we are providing you a copy of the above referenced report. The site is monitored and sampled on a quarterly basis in March, June, September, and December. If you have questions please contact Ms. Tina R. Berry, Tosco Project Manager, at (925) 277-2321.

Enclosure

cc: Mr. Doug Lee, Gettler-Ryan Inc., 6747 Sierra Court, Suite J, Dublin, CA 94568

agency/1700trb.qmt

APR 14 1998  
228836



# GETTLER - RYAN INC.

March 20, 1998  
G-R Job #180065

4/23/98

Ms. Tina R. Berry  
Tosco Marketing Company  
2000 Crow Canyon Place, Suite 400  
San Ramon, California 94583

localized fp/high conc  
near MW-6 where skimmer  
is misplaced - otherwise  
no significant prob.  
Be

RE: First Quarter 1998 Groundwater Monitoring & Sampling Report  
Unocal Service Station #5043  
449 Hegenberger Road  
Oakland, California

Dear Ms. Berry:

This report documents the quarterly groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R). On January 14, 1998, field personnel monitored six wells (MW3, MW6, MW7, MW8, MW9, MW10) and sampled five wells (MW3, MW7, MW8, MW9, MW10) at the above referenced site.

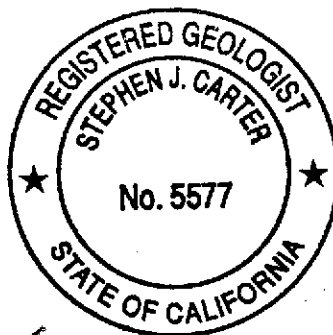
Static groundwater levels were measured and all wells were checked for the presence of separate-phase hydrocarbons. Separate-phase hydrocarbons were present in well (MW6). Static water level data and groundwater elevations are summarized in Table 1. A Potentiometric Map is included as Figure 1.

Groundwater samples were collected from the monitoring wells as specified by G-R Standard Operating Procedure - Groundwater Sampling (attached). The field data sheets are also attached. The samples were analyzed by Sequoia Analytical. Analytical results are summarized in Table 1, and a Concentration Map is included as Figure 2. The chain of custody document and laboratory analytical reports are also attached.

Sincerely,

*Deanna L. Harding*  
Deanna L. Harding  
Project Manager

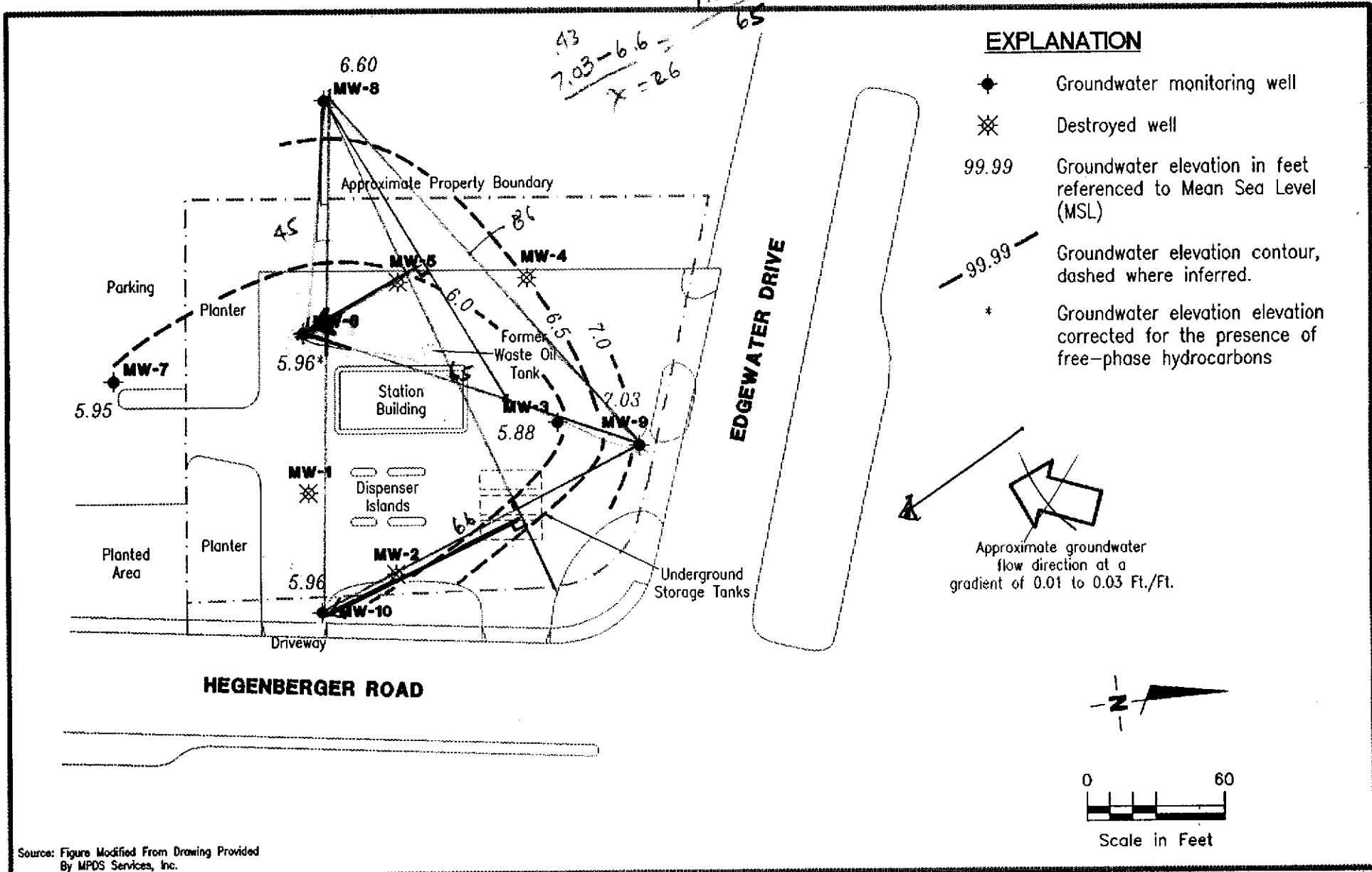
*Stephen J. Carter*  
Stephen J. Carter  
Senior Geologist, R.G. No. 5577



Looks like SE not SW as indicated

- Figure 1: Potentiometric Map
- Figure 2: Concentration Map
- Table 1: Groundwater Monitoring Data and Analytical Results
- Attachments: Standard Operating Procedure - Groundwater Sampling  
Field Data Sheets  
Chain of Custody Document and Laboratory Analytical Reports

5043.qml



$$\frac{43}{7.03 - 6.6} = \frac{1.07}{7.03 - 5.96}$$

$$x = 26$$

Source: Figure Modified From Drawing Provided By MPDS Services, Inc.



**Gettler - Ryan Inc.**

6747 Sierra Ct., Suite J (510) 551-7555  
Dublin, CA 94568

**POTENTIOMETRIC MAP**  
Tosco (Unocal) Service Station No. 5043  
449 Hegenberger Road  
Oakland, California

FIGURE

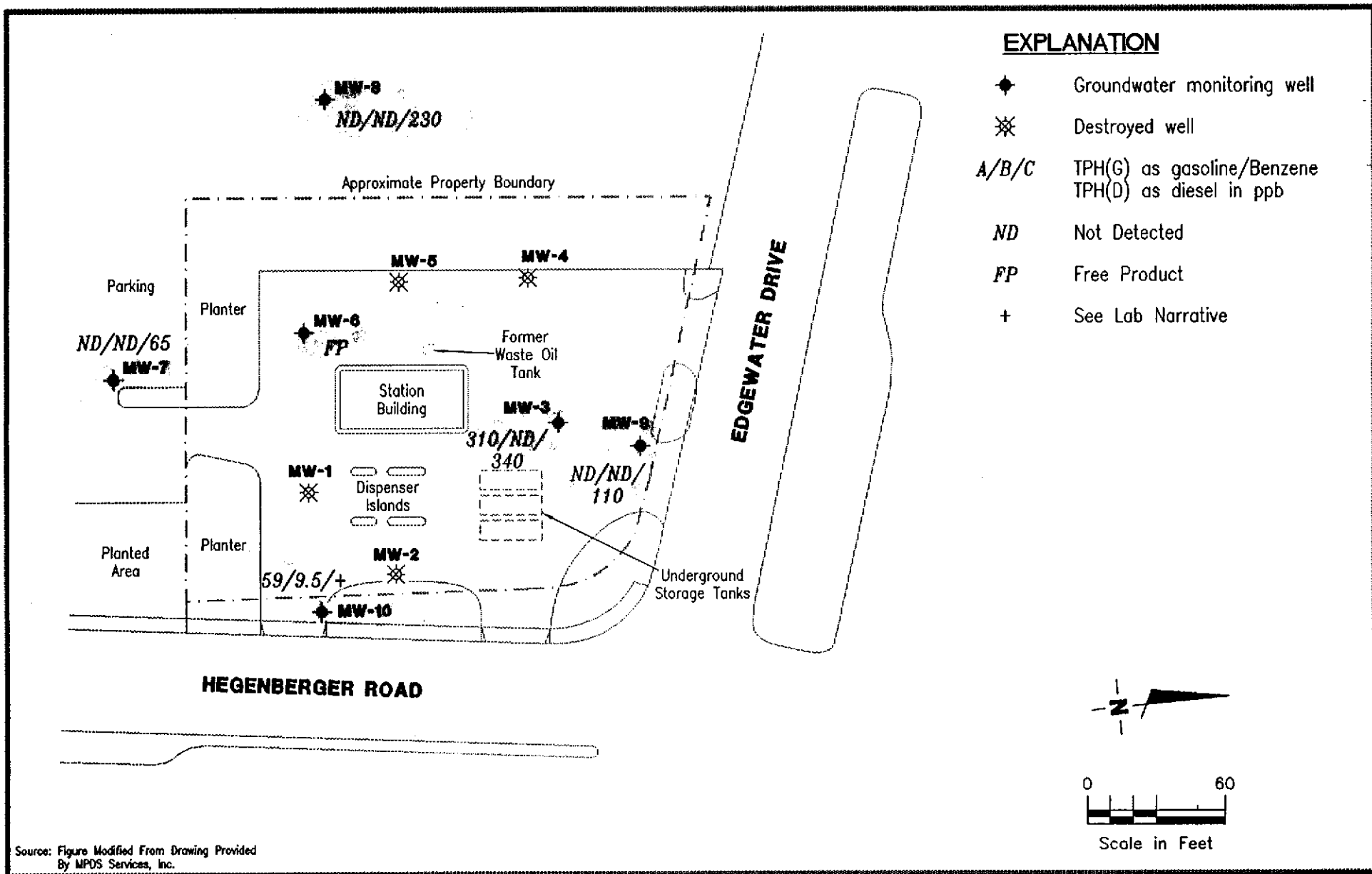
**1**

JOB NUMBER  
180065

REVIEWED BY

DATE  
January 14, 1998

REVISED DATE



**EXPLANATION**

- ◆ Groundwater monitoring well
- ✱ Destroyed well
- A/B/C TPH(G) as gasoline/Benzene  
TPH(D) as diesel in ppb
- ND Not Detected
- FP Free Product
- + See Lab Narrative

Source: Figure Modified From Drawing Provided  
By MPDS Services, Inc.



**Gettler - Ryan Inc.**

6747 Sierra Ct., Suite J (510) 551-7555  
Dublin, CA 94568

**CONCENTRATION MAP**  
Tosco (Unocal) Service Station No. 5043  
449 Hegenberger Road  
Oakland, California

FIGURE  
**2**

JOB NUMBER  
180065

REVIEWED BY

DATE  
January 14, 1998

REVISED DATE

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Unocal Service Station #5043  
 449 Hegenberger Road  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	Product Thickness (ft.)	TPH(D)	TPH(G)	B	T	E	X	MTBE
					←-----ppb----->						
MW-1	02/18/92				13,000	150,000	17,000	26,000	5,200	26,000	--
	05/20/92				--	--	--	--	--	--	--
	08/31/92				8,900 <sup>1</sup>	64,000	13,000	12,000	2,500	22,000	--
	11/30/92				--	--	--	--	--	--	--
	02/04/93				--	--	--	--	--	--	--
	05/04/93				--	--	--	--	--	--	--
	08/04/93				--	--	--	--	--	--	--
	11/03/93				--	--	--	--	--	--	--
	02/07/94				--	--	--	--	--	--	--
	05/19/94				--	--	--	--	--	--	--
	08/15/94				--	--	--	--	--	--	--
	11/14/94				--	--	--	--	--	--	--
	02/21/95				--	--	--	--	--	--	--
05/18/95	DESTROYED (3/95)	--	--	--	--	--	--	--	--	--	
MW-2	02/18/92				4,300	29,000	1,000	5,300	260	7,900	--
	05/20/92				4,300 <sup>1</sup>	24,000	2,200	7,600	630	11,000	--
	08/31/92				1,600 <sup>1</sup>	9,000	1,800	640	140	2,000	--
	11/30/92				5,700 <sup>1</sup>	29,000	2,000	3,400	1,200	6,900	--
	02/04/93				6,100 <sup>1</sup>	18,000	1,600	3,000	ND	6,900	--
	05/04/93				7,100 <sup>1</sup>	63,000	3,200	17,000	470	17,000	--
	08/04/93				1,800 <sup>2</sup>	45,000	2,100	6,600	1,400	12,000	--
	11/03/93				2,600 <sup>2</sup>	72,000	3,700	16,000	3,700	20,000	--
	02/07/94				--	--	--	--	--	--	--
	05/19/94				3,000 <sup>2</sup>	42,000	2,500	1,300	2,300	13,000	--
	08/15/94				2,800 <sup>2</sup>	35,000	2,400	850	1,700	15,000	--
	11/14/94				10,000 <sup>1</sup>	43,000	2,200	6,500	1,800	14,000	--
	02/21/95				2,000 <sup>2</sup>	44,000	2,200	3,200	1,300	1,500	--
05/18/95	DESTROYED (3/95)	--	--	--	--	--	--	--	--	--	
MW-3	02/18/92				ND	230	4.8	22	1.8	33	--
	05/20/92	INACCESSIBLE	--	--	--	--	--	--	--	--	--

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Unocal Service Station #5043  
 449 Hegenberger Road  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	Product Thickness (ft.)	TPH(D)	TPH(G)	ppb				MTBE
							B	T	E	X	
MW-3	08/31/92				92 <sup>2</sup>	210 <sup>4</sup>	1	ND	ND	ND	--
(cont)	11/30/92				94	790 <sup>4</sup>	ND	ND	ND	ND	--
	02/04/93				550 <sup>2</sup>	3,300	320	ND	96	6.1	--
	05/04/93				250 <sup>2</sup>	1,800 <sup>3</sup>	95	ND	ND	ND	--
	08/04/93				100	210 <sup>4</sup>	ND	ND	ND	ND	--
	11/03/93				160	640 <sup>4</sup>	ND	ND	ND	ND	--
	02/07/94				620 <sup>2</sup>	2,700	110	ND	17	ND	--
	05/19/94				480 <sup>2</sup>	1,800	83	ND	6.2	9.1	--
	08/15/94				110 <sup>2</sup>	130	1.1	0.54	ND	0.97	--
	11/14/94				150 <sup>2</sup>	1,600 <sup>4</sup>	ND	ND	ND	ND	--
	02/21/95				850 <sup>2</sup>	3,800	350	ND	130	22	--
	05/18/95				150 <sup>1</sup>	1,300 <sup>3</sup>	42	ND	ND	ND	--
	08/17/95	INACCESSIBLE	--	--	--	--	--	--	--	--	--
	07/26/96	INACCESSIBLE	--	--	--	--	--	--	--	--	--
	10/28/96 <sup>6</sup>	INACCESSIBLE	--	--	--	--	--	--	--	--	--
	01/29/97	INACCESSIBLE	--	--	--	--	--	--	--	--	--
	04/15/97	INACCESSIBLE	--	--	--	--	--	--	--	--	--
	05/27/97	3.45	4.59	0.00	--	670	6.5	ND	ND	ND	250
	06/01/97	3.50	4.54	0.00	610 <sup>2</sup>	--	--	--	--	--	--
8.04	07/15/97	3.71	4.33	0.00	240 <sup>2</sup>	240	ND	ND	ND	ND	490
	10/09/97	3.70	4.34	0.00	500 <sup>2</sup>	270	1.1	ND	2.4	1.4	910
	01/14/98	2.16	5.88	0.00	340 <sup>7</sup>	310	ND	ND	0.62	0.65	140
MW-4	08/31/92				90 <sup>2</sup>	240 <sup>4</sup>	ND	ND	ND	0.54	--
	11/30/92				61	420 <sup>4</sup>	ND	ND	ND	ND	--
	02/04/93				ND	ND	ND	ND	ND	ND	--
	05/04/93				ND	110 <sup>3</sup>	0.95	ND	ND	ND	--
	08/04/93				81	250 <sup>4</sup>	ND	3.5	ND	4.1	--
	11/03/93				68	130 <sup>4</sup>	ND	ND	ND	ND	--
	02/07/94				ND	56 <sup>4</sup>	ND	ND	ND	ND	--
	05/19/94				90 <sup>2</sup>	140 <sup>4</sup>	ND	ND	ND	ND	--
	08/15/94				72 <sup>2</sup>	59 <sup>4</sup>	ND	0.6	ND	ND	--

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Unocal Service Station #5043  
 449 Hegenberger Road  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	Product Thickness (ft.)	TPH(D)	TPH(G)	B	T	E	X	MTBE
					←-----ppb----->						
MW-4	11/14/94				ND	130 <sup>4</sup>	ND	ND	ND	ND	--
(cont)	02/21/95	DESTROYED (1/95)	--	--	--	--	--	--	--	--	--
MW-5	08/31/92				690 <sup>1</sup>	78	0.89	ND	ND	13	--
	11/30/92 <sup>5</sup>				470 <sup>2</sup>	930	70	290	0.79	14	--
	02/04/93 <sup>5</sup>				5,500 <sup>2</sup>	5,700	38	ND	620	170	--
	05/04/93 <sup>5</sup>				4,600 <sup>1</sup>	7,400	41	ND	1,000	35	--
	08/04/93 <sup>5</sup>				970 <sup>2</sup>	1,500	130	1	460	11	--
	11/03/93				2,100 <sup>2</sup>	13,000	350	ND	3,500	530	--
	02/07/94				830 <sup>2</sup>	2,000	87	ND	370	110	--
	05/19/94				600 <sup>2</sup>	260	44	ND	32	4.1	--
	08/15/94				860 <sup>2</sup>	1,600	110	ND	340	72	--
	11/14/94				290 <sup>1</sup>	250	40	ND	ND	5	--
	02/21/95	DESTROYED (1/95)	--	--	--	--	--	--	--	--	--
MW-6	08/31/92				750 <sup>2</sup>	ND	ND	ND	ND	ND	--
	11/30/92				1,400 <sup>1</sup>	9,200	550	ND	740	1,600	--
	02/04/93				890 <sup>2</sup>	3,600	340	ND	290	550	--
	05/04/93				1,800 <sup>1</sup>	4,900	360	18	450	430	--
	08/04/93				1,100 <sup>2</sup>	3,400	390	ND	440	190	--
	11/03/93				390 <sup>2</sup>	1,400	320	ND	200	7.7	--
	02/07/94				970 <sup>2</sup>	4,900	650	ND	250	35	--
	05/19/94				1,400 <sup>2</sup>	3,600	300	1.7	210	41	--
	08/15/94				790 <sup>2</sup>	1,300	130	6.7	54	57	--
	11/14/94				800 <sup>2</sup>	730	50	ND	ND	39	--
	02/21/95				730 <sup>2</sup>	2,000	250	4.6	25	30	--
	05/18/95	INACCESSIBLE	--	--	--	--	--	--	--	--	--
	08/17/95	INACCESSIBLE	--	--	--	--	--	--	--	--	--
	07/26/96				--	--	--	--	--	--	--
	10/28/96	4.10	4.93**	0.21	--	--	--	--	--	--	--

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Unocal Service Station #5043  
 449 Hegenberger Road  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	Product Thickness (ft.)	←-----ppb----->						
					TPH(D)	TPH(G)	B	T	E	X	MTBE
MW-6	01/29/97	3.24	5.87**	0.31	--	--	--	--	--	--	--
(cont)	04/15/97	4.90	4.76**	1.03	--	--	--	--	--	--	--
	05/27/97	4.50	4.56**	0.25	--	--	--	--	--	--	--
	07/15/97	4.63	4.56**	0.42	--	--	--	--	--	--	--
	07/21/97	4.75	4.31**	0.25	--	--	--	--	--	--	--
	08/06/97	4.50	4.45**	0.10	--	--	--	--	--	--	--
	08/20/97	4.55	4.40**	0.10	--	--	--	--	--	--	--
	09/02/97	4.75	4.16**	0.05	--	--	--	--	--	--	--
8.87	10/09/97	4.84	4.06**	0.04	--	--	--	--	--	--	--
	01/14/98	3.90	5.69**	0.94	--	--	--	--	--	--	--
MW-7	05/27/97	4.50	4.33	0.00	--	68	ND	ND	ND	ND	ND
	06/01/97	4.54	4.29	0.00	69 <sup>2</sup>	--	--	--	--	--	--
	07/15/97	4.70	4.13	0.00	ND	ND	ND	ND	ND	ND	ND
8.83	10/09/97	4.30	4.53	0.00	190 <sup>1</sup>	ND	ND	ND	ND	ND	ND
	01/14/98	2.88	5.95	0.00	65 <sup>7</sup>	ND	ND	ND	ND	ND	36
MW-8	05/27/97	3.42	5.10	0.00	--	310	0.88	0.67	15	70	ND
	06/01/97	3.46	5.06	0.00	320 <sup>2</sup>	--	--	--	--	--	--
	07/15/97	3.49	5.03	0.00	ND	ND	ND	ND	2.7	3.8	ND
8.52	10/09/97	3.73	4.79	0.00	390 <sup>1</sup>	590	1.4	ND	32	4.1	ND
	01/14/98	1.92	6.60	0.00	230 <sup>7</sup>	ND	ND	ND	ND	ND	ND
MW-9	02/21/95				71 <sup>2</sup>	70 <sup>4</sup>	ND	ND	ND	ND	--
	05/18/95				ND	52	ND	1.1	ND	1.9	--
	08/17/95				ND	ND	ND	ND	ND	ND	--
	07/26/96				98	ND	ND	ND	ND	ND	ND
	10/28/96	1.15	7.14	0.00	99 <sup>1</sup>	ND	ND	ND	ND	ND	7.6
	01/29/97	1.05	7.24	0.00	54	ND	ND	ND	ND	ND	5.4
	04/15/97	1.88	6.41	0.00	94 <sup>1</sup>	ND	ND	ND	ND	ND	5.4



**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Unocal Service Station #5043  
 449 Hegenberger Road  
 Oakland, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	Product Thickness (ft.)	ppb							
					TPH(D) <-----	TPH(G)	B	T	E	X	MTBE ----->	
MW-9	05/27/97	1.05	7.24	0.00	--	--	--	--	--	--	--	--
(cont)	07/15/97	1.90	6.39	0.00	ND	ND	ND	ND	ND	ND	ND	ND
8.29	10/09/97	1.76	6.53	0.00	160 <sup>1</sup>	ND	ND	ND	ND	ND	ND	ND
	01/14/98	1.26	7.03	0.00	110 <sup>7</sup>	ND	ND	ND	ND	ND	ND	3.0
MW-10	02/21/95				270 <sup>2</sup>	1,500	250	26	9.1	160	--	--
	05/18/95				75 <sup>1</sup>	810	520	ND	18	23	--	--
	08/17/95				ND	67	25	ND	2.4	ND	--	--
	07/26/96				ND	ND	3.7	ND	ND	ND	ND	ND
	10/28/96	4.09	4.53	0.00	ND	ND	1.1	ND	ND	ND	ND	ND
	01/29/97	2.94	5.68	0.00	ND	210	41	0.67	7.2	4.8	11	11
	04/15/97	4.07	4.55	0.00	ND	110	12	ND	0.77	ND	9.7	9.7
	05/27/97	4.40	4.22	0.00	--	--	--	--	--	--	--	--
	07/15/97	4.19	4.43	0.00	ND	ND	2.1	ND	0.67	0.73	ND	ND
8.62	10/09/97	4.75	3.87	0.00	ND	190	38	0.92	6.6	7.6	ND	ND
	01/14/98	2.66	5.96	0.00	-- <sup>8</sup>	59	9.5	0.85	1.2	1.7	4.5	4.5
Trip Blank TB-LB	01/14/98	--	--	--	--	ND	ND	ND	ND	ND	ND	ND

**Table 1**  
**Groundwater Monitoring Data and Analytical Results**  
 Unocal Service Station #5043  
 449 Hegenberger Road  
 Oakland, California

**EXPLANATIONS:**

Groundwater monitoring data and laboratory analytical results prior to January 14, 1998, were compiled from reports prepared by MPDS Services, Inc.

TOC = Top of Casing elevation

DTW = Depth to Water

(ft.) = Feet

GWE = Groundwater Elevation

msl = Relative to mean sea level

TPH(G) = Total Petroleum Hydrocarbons as Gasoline

B = Benzene

T = Toluene

E = Ethylbenzene

X = Xylenes

MTBE = Methyl tertiary butyl ether

ppb = Parts per billion

ND = Not Detected

-- = Not Measured/Not Analyzed

TOG = Total Oil and Grease

\* TOC elevations are relative to msl, per the City of Oakland Benchmark #3880 (Elevation = 20.37 feet, msl).

\*\* Groundwater elevation corrected for the presence of free product  $[(TOC-DTW) + (Product\ Thickness \times 0.77)]$ .

1 Laboratory reported that the hydrocarbons detected did not appear to be diesel.

2 Laboratory reported that the hydrocarbons detected appeared to be a diesel and non-diesel mixture.

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

4 Laboratory reported that the hydrocarbons detected did not appear to be gasoline.

5 TOG was ND.

6 The well was obstructed with debris at 0.55 feet. A water sample was collected but was not analyzed as it was considered not representative of ground water in this well.

7 Laboratory report indicates unidentified hydrocarbons C9-C24

8 Sample bottle broken at Laboratory.

*Depth to water and groundwater elevation history will be updated in future reports.*

## STANDARD OPERATING PROCEDURE - GROUNDWATER SAMPLING

Gettler-Ryan Inc. field personnel adhere to the following procedures for the collection and handling of groundwater samples prior to analysis by the analytical laboratory. Prior to sample collection, the type of analysis to be performed is determined. Loss prevention of volatile compounds is controlled and sample preservation for subsequent analysis is maintained.

Prior to sampling, the presence or absence of free-phase hydrocarbons is determined using a MMC flexi-dip interface probe or equivalent. Product thickness, if present, is measured to the nearest 0.01 foot and is noted in the field notes. In addition, static water level measurements are collected with the interface probe and are also recorded in the field notes.

After water levels are collected and prior to sampling, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, suction, Grundfos), or polyvinyl chloride bailers. Temperature, pH and electrical conductivity are measured a minimum of three times during the purging. Purging continues until these parameters stabilize.

Groundwater samples are collected using disposable bailers. The water samples are transferred from the bailer into appropriate containers. Pre-preserved containers, supplied by analytical laboratories, are used when possible. When pre-preserved containers are not available, the laboratory is instructed to preserve the sample as appropriate. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards. The samples are labeled to include the job number, sample identification, collection date and time, analysis, preservation (if any), and the sample collector's initials. The water samples are placed in a cooler, maintained at 4°C for transport to the laboratory. Once collected in the field, all samples are maintained under chain of custody until delivered to the laboratory.

The chain of custody document includes the job number, type of preservation, if any, analysis requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

As requested by Tosco Marketing Company, the purge water and decontamination water generated during sampling activities is transported to Tosco - San Francisco Area Refinery, located in Rodeo, California.

## WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/  
 Facility # ToSCO # 5093 Job#: 180065  
 Address: 449 HEGENBERGER RD. Date: 1-14-98  
 City: OAKLAND Sampler: STEVE BAIAN

Well ID MW-3 Well Condition: O.K.  
 Well Diameter 2 in. Hydrocarbon Thickness: 1/2 in. Amount Bailed (product/water): \_\_\_\_\_ (gal.)  
 Total Depth 14.19 ft  
 Depth to Water 2.16 ft

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.80	

12.03 x VF 0.17 = 2.05 x 3 (case volume) = Estimated Purge Volume: 6.5 (gal.)

Purge Equipment: Disposable Bailer  
 Bailer  
 Stack  
 Suction  
 Grundfos  
 Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
 Bailer  
 Pressure Bailer  
 Grab Sample  
 Other: \_\_\_\_\_

Starting Time: 12:20 Weather Conditions: RAIN  
 Sampling Time: 12:45 Water Color: CLEAR Odor: NONE  
 Purging Flow Rate: \_\_\_\_\_ gpm. Sediment Description: \_\_\_\_\_  
 Did well de-water? No If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu$ mhos/cm	Temperature $^{\circ}$ C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)

### LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/  
Facility # Tosco #5043 Job#: 180065  
Address: 449 HEGENBERGER Date: 1-14-98  
City: OAKLAN Sampler: STEVE BAIAN

Well ID MW-6 Well Condition: OK - Replaced well cap & lock.  
Well Diameter 2 in. Hydrocarbon Thickness: 0.94' feet Amount Bailed (product/water): 1.5 (gal.)  
Total Depth 12.78 ft.  
Depth to Water 3.90 ft.

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.80	

\_\_\_\_\_ X VF \_\_\_\_\_ = \_\_\_\_\_ X 3 (case volume) = Estimated Purge Volume: \_\_\_\_\_ (gal.)

Purge Equipment: Disposable Bailer  
Bailer  
Stack  
Suction  
Grundfos  
Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
Bailer  
Pressure Bailer  
Grab Sample  
Other: \_\_\_\_\_

Starting Time: \_\_\_\_\_ Weather Conditions: \_\_\_\_\_  
Sampling Time: \_\_\_\_\_ Water Color: \_\_\_\_\_ Odor: \_\_\_\_\_  
Purging Flow Rate: \_\_\_\_\_ gpm. Sediment Description: \_\_\_\_\_  
Did well de-water? \_\_\_\_\_ If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu$ mhos/cm	Temperature $^{\circ}$ C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)

### LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES

COMMENTS: THERE IS A SKIMMER IN MW-6. THERE IS (15) OZ OF PRODUCT IN THE SKIMMER. I DID BAIL ALL THE PRODUCT. THE PRODUCT LOOK LIKE FRESH GASOLINE. I DID PLACE THE SKIMMER IN MW-6.

## WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/  
 Facility # Tosco # 5043 Job#: 180065  
 Address: 449 HEGERBERGER Rd Date: 1-14-98  
 City: OAKLAND Sampler: STEVE BALIAN

Well ID MW-7 Well Condition: O.K.  
 Well Diameter 2 in. Hydrocarbon Amount Bailed  
 Thickness: Ø in. (product/water): \_\_\_\_\_ (gal.)  
 Total Depth 13.15 ft.  
 Depth to Water 2.88 ft.

Volume	2" = 0.17	3" = 0.38	4" = 0.66
Factor (VF)	6" = 1.50	12" = 5.80	

10.27 x VF 0.17 = 1.75 x 3 (case volume) = Estimated Purge Volume: 5.5 (gal.)

Purge Equipment: Disposable Bailer  
 Bailer  
 Stack  
 Suction  
 Grundfos  
 Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
 Bailer  
 Pressure Bailer  
 Grab Sample  
 Other: \_\_\_\_\_

Starting Time: 9:15 Weather Conditions: RAIN  
 Sampling Time: 9:40 Water Color: CLEAR Odor: \_\_\_\_\_  
 Purging Flow Rate: \_\_\_\_\_ gpm. Sediment Description: \_\_\_\_\_  
 Did well de-water? No If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu$ mhos/cm	Temperature $^{\circ}$ C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)

### LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/  
Facility # Tosco # 5043  
Address: 449 HEGENBERGER Rd.  
City: OAKLAND

Job#: 180065  
Date: 1-14-98  
Sampler: STEVE BALIAN

Well ID MW-8  
Well Diameter 2 in.  
Total Depth 14.85 ft.  
Depth to Water 1.92 ft.

Well Condition: O.K.

Hydrocarbon Thickness:	Amount Bailed (product/water):			
	in.	(gal.)	(gal.)	(gal.)
<u>2</u>	2" = 0.17	3" = 0.38	4" = 0.66	
	6" = 1.50	12" = 5.80		

12.93 X VF 0.17 = 2.20 X 3 (case volume) = Estimated Purge Volume: 7 (gal.)

Purge Equipment: Disposable Bailer  
Bailer  
Stack  
Suction  
Grundfos  
Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
Bailer  
Pressure Bailer  
Grab Sample  
Other: \_\_\_\_\_

Starting Time: 9:50  
Sampling Time: 10:10  
Purging Flow Rate: \_\_\_\_\_ gpm.  
Did well de-water? No

Weather Conditions: RAIN  
Water Color: CLEAR Odor: \_\_\_\_\_  
Sediment Description: \_\_\_\_\_  
If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu$ mhos/cm	Temperature $^{\circ}$ C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

### LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/  
 Facility # TOSLO # 5043 Job#: 180065  
 Address: 449 HEGENBERGER Rd. Date: 1-14-98  
 City: DAKLAND Sampler: STEVE BALIAN

Well ID MW-9 Well Condition: \*  
 Well Diameter 2 in. Hydrocarbon Amount Bailed  
 Thickness: 6 in. (product/water): \_\_\_\_\_ (gal.)  
 Total Depth 12.00 ft.  
 Depth to Water 1.26 ft.

Volume	2" = 0.17	3" = 0.38	4" = 0.66
Factor (VF)	6" = 1.50	12" = 5.80	

10.74 x VF 0.17 = 1.83 x 3 (case volume) = Estimated Purge Volume: 5.5 (gal.)

Purge Equipment: Disposable Bailer  
 Bailer  
 Stack  
 Suction  
 Grundfos  
 Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
 Bailer  
 Pressure Bailer  
 Grab Sample  
 Other: \_\_\_\_\_

Starting Time: 10:20 Weather Conditions: RAIN  
 Sampling Time: 11:05 Water Color: CLEAR Odor: —  
 Purging Flow Rate: \_\_\_\_\_ gpm. Sediment Description: \_\_\_\_\_  
 Did well de-water? No If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm}$	Temperature $^{\circ}\text{C}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)

### LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES

COMMENTS: \* THE CASING IS TOO LOW, AND MUDDY WATER CAN ENTER TO THE WELL WHEN YOU OPEN THE WELL CAP.



**WELL MONITORING/SAMPLING  
FIELD DATA SHEET**

Client/  
Facility # Tosco #5043  
Address: 449 HEGERBERGER RD.  
City: OAKLAND

Job#: 180065  
Date: 1-14-98  
Sampler: STEVE BALIAN

Well ID MW-10  
Well Diameter 2 in.  
Total Depth 12.80 ft  
Depth to Water 2.66 ft

Well Condition: O.K.

Hydrocarbon Thickness:	<u>0</u> in.	Amount Bailed (product/water):	_____ (gal.)
Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.80	

10.14 X VF 0.17 = 1.72 X 3 (case volume) = Estimated Purge Volume: 5.5 (gal.)

Purge Equipment: Disposable Bailer  
Bailer  
Stack  
Suction  
Grundfos  
Other: \_\_\_\_\_

Sampling Equipment: Disposable Bailer  
Bailer  
Pressure Bailer  
Grab Sample  
Other: \_\_\_\_\_

Starting Time: 11:35  
Sampling Time: 12:00  
Purging Flow Rate: \_\_\_\_\_ gpm.  
Did well de-water? No

Weather Conditions: RAIN  
Water Color: CLEAR Odor: \_\_\_\_\_  
Sediment Description: \_\_\_\_\_  
If yes; Time: \_\_\_\_\_ Volume: \_\_\_\_\_ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu$ mhos/cm	Temperature $^{\circ}$ C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

**LABORATORY INFORMATION**

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568 Attention: Deanna Harding	Client Proj. ID: Unocal 5043/Oakland Sample Descript: TB-LB Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9801865-01	Sampled: 01/14/98 Received: 01/15/98 Analyzed: 01/28/98 Reported: 01/30/98
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QC Batch Number: GC012898BTEX06A  
Instrument ID: GCHP06

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	98

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
\_\_\_\_\_  
Mike Gregory  
Project Manager



Gettler Ryan/Geostrategies  
6747 Sierra Court Suite J  
Dublin, CA 94568

Attention: Deanna Harding

Client Proj. ID: Unocal 5043/Oakland  
Sample Descript: MW-3  
Matrix: LIQUID  
Analysis Method: EPA 8015 Mod  
Lab Number: 9801865-02

Sampled: 01/14/98  
Received: 01/15/98  
Extracted: 01/20/98  
Analyzed: 01/21/98  
Reported: 01/30/98

QC Batch Number: GC0120980HBPEXA  
Instrument ID: GCHP19B

**Total Extractable Petroleum Hydrocarbons (TEPH)**

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel	50	340
Chromatogram Pattern: Unidentified HC		C9-C24
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
n-Pentacosane (C25)	50                      150	86

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Mike Gregory  
Project Manager



Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568	Client Proj. ID: Unocal 5043/Oakland Sample Descript: MW-3 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9801865-02	Sampled: 01/14/98 Received: 01/15/98 Analyzed: 01/28/98 Reported: 01/30/98
Attention: Deanna Harding		

QC Batch Number: GC012898BTEX18A  
Instrument ID: GCHP18

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**


Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	310
Methyl t-Butyl Ether	2.5	140
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	0.62
Xylenes (Total)	0.50	0.65
Chromatogram Pattern:		GAS

Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	122

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Mike Gregory  
Project Manager



Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568	Client Proj. ID: Unocal 5043/Oakland Sample Descript: MW-7 Matrix: LIQUID Analysis Method: EPA 8015 Mod Lab Number: 9801865-03	Sampled: 01/14/98 Received: 01/15/98 Extracted: 01/20/98 Analyzed: 01/22/98 Reported: 01/30/98
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QC Batch Number: GC012098OHBPEXZ  
 Instrument ID: GCHP5A

**Total Extractable Petroleum Hydrocarbons (TEPH)**

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel Chromatogram Pattern: Unidentified HC	50	65  C9-C24
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
n-Pentacosane (C25)	50 150	94

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
 Mike Gregory  
 Project Manager



Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568	Client Proj. ID: Unocal 5043/Oakland Sample Descript: MW-7 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9801865-03	Sampled: 01/14/98 Received: 01/15/98 Analyzed: 01/28/98 Reported: 01/30/98
Attention: Deanna Harding		


QC Batch Number: GC012898BTEX18A  
Instrument ID: GCHP18

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	36
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	91

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
\_\_\_\_\_  
Mike Gregory  
Project Manager



Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568	Client Proj. ID: Unocal 5043/Oakland Sample Descript: MW-8 Matrix: LIQUID Analysis Method: EPA 8015 Mod Lab Number: 9801865-04	Sampled: 01/14/98 Received: 01/15/98 Extracted: 01/20/98 Analyzed: 01/22/98 Reported: 01/30/98
Attention: Deanna Harding		

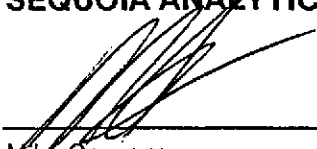
QC Batch Number: GC012098OHBPEXZ  
Instrument ID: GCHP5A

**Total Extractable Petroleum Hydrocarbons (TEPH)**

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel Chromatogram Pattern: Unidentified HC	50	230 C9-C24
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
n-Pentacosane (C25)	50 150	91

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
\_\_\_\_\_  
Mike Gregory  
Project Manager





Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568	Client Proj. ID: Unocal 5043/Oakland Sample Descript: MW-8 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9801865-04	Sampled: 01/14/98 Received: 01/15/98 Analyzed: 01/28/98 Reported: 01/30/98
Attention: Deanna Harding		


QC Batch Number: GC012898BTEX06A  
Instrument ID: GCHP06

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70                      130	76

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
\_\_\_\_\_  
Mike Gregory  
Project Manager



Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568	Client Proj. ID: Unocal 5043/Oakland Sample Descript: MW-9 Matrix: LIQUID Analysis Method: EPA 8015 Mod Lab Number: 9801865-05	Sampled: 01/14/98 Received: 01/15/98 Extracted: 01/20/98 Analyzed: 01/22/98 Reported: 01/30/98
Attention: Deanna Harding		


QC Batch Number: GC012098OHBPEXZ  
Instrument ID: GCHP5A

**Total Extractable Petroleum Hydrocarbons (TEPH)**

Analyte	Detection Limit ug/L	Sample Results ug/L
TEPH as Diesel Chromatogram Pattern: Unidentified HC	50	110 C9-C24
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
n-Pentacosane (C25)	50                      150	92

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
\_\_\_\_\_  
Mike Gregory  
Project Manager



Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568	Client Proj. ID: Unocal 5043/Oakland Sample Descript: MW-9 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9801865-05	Sampled: 01/14/98 Received: 01/15/98 Analyzed: 01/28/98 Reported: 01/30/98
Attention: Deanna Harding		

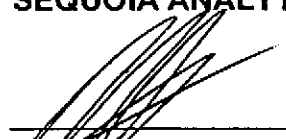
QC Batch Number: GC012898BTEX06A  
Instrument ID: GCHP06

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	3.0
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	100

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Mike Gregory  
Project Manager



Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568	Client Proj. ID: Unocal 5043/Oakland Sample Descript: MW-10 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9801865-06	Sampled: 01/14/98 Received: 01/15/98 Analyzed: 01/28/98 Reported: 01/30/98
Attention: Deanna Harding		

QC Batch Number: GC012898BTEX01A  
Instrument ID: GCHP01

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**


Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	59
Methyl t-Butyl Ether	2.5	4.5
Benzene	0.50	9.5
Toluene	0.50	0.85
Ethyl Benzene	0.50	1.2
Xylenes (Total)	0.50	1.7
Chromatogram Pattern:		GAS

Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	113

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
\_\_\_\_\_  
Mike Gregory  
Project Manager



Gettler Ryan/Geostrategies  
6747 Sierra Court Suite J  
Dublin, CA 94568  
Attention: Deanna Harding

Client Proj. ID: Unocal 5043/Oakland  
Lab Proj. ID: 9801865

Received: 01/15/98  
Reported: 01/30/98

### LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 17 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

TPGM2W: Sample 865-3 reshot to confirm analytes.

pH analysis:

The voas had a pH = 1

SEQUOIA ANALYTICAL

Mike Gregory  
Project Manager



Gettler Ryan/Geostrategies  
6747 Sierra Court, Ste J  
Dublin, CA 94568  
Attention: Deanna Harding

Client Project ID: Unocal SS#5043/Oakland  
Matrix: Liquid

Work Order #: 9801865 -01-03

Reported: Jan 30, 1998

**QUALITY CONTROL DATA REPORT**

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC012898BTEX18A	GC012898BTEX18A	GC012898BTEX18A	GC012898BTEX18A	GC012898BTEX18A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD #:	980188103	980188103	980188103	980188103	980188103
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Analyzed Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Instrument I.D.#:	GCHP18	GCHP18	GCHP18	GCHP18	GCHP18
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	8.4	8.5	8.5	25	59
MS % Recovery:	84	85	85	83	98
Dup. Result:	8.6	8.8	8.7	27	60
MSD % Recov.:	86	88	87	90	100
RPD:	2.4	3.5	2.3	7.7	1.7
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK012898	BLK012898	BLK012898	BLK012898	BLK012898
Prepared Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Analyzed Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Instrument I.D.#:	GCHP18	GCHP18	GCHP18	GCHP18	GCHP18
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	10	10	10	32	71
LCS % Recov.:	100	100	100	107	118

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

SEQUOIA ANALYTICAL

*M. Gregory*  
M. Gregory  
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.

\*\* MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

9801865.GET <1>



Gettler Ryan/Geostrategies  
6747 Sierra Court, Ste J  
Dublin, CA 94568  
Attention: Deanna Harding

Client Project ID: Unocal SS#5043/Oakland  
Matrix: Liquid

Work Order #: 9801865-04-05

Reported: Jan 30, 1998

**QUALITY CONTROL DATA REPORT**

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC012898BTEX06A	GC012898BTEX06A	GC012898BTEX06A	GC012898BTEX06A	GC012898BTEX06A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD #:	980196703	980196703	980196703	980196703	980196703
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Analyzed Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Instrument I.D.#:	GCHP6	GCHP6	GCHP6	GCHP6	GCHP6
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	13	13	13	39	62
MS % Recovery:	130	130	130	130	103
Dup. Result:	11	11	11	34	53
MSD % Recov.:	110	110	110	113	88
RPD:	17	17	17	14	16
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK012898	BLK012898	BLK012898	BLK012898	BLK012898
Prepared Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Analyzed Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Instrument I.D.#:	GCHP6	GCHP6	GCHP6	GCHP6	GCHP6
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	13	13	13	39	61
LCS % Recov.:	130	130	130	130	102

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

SEQUOIA ANALYTICAL

*[Signature]*  
Mike Gregory  
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.

\*\* MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9801865.GET <2>



Gettler Ryan/Geostrategies  
6747 Sierra Court, Ste J  
Dublin, CA 94568  
Attention: Deanna Harding

Client Project ID: Unocal SS#5043/Oakland  
Matrix: Liquid

Work Order #: 9801865-06

Reported: Jan 30, 1998

**QUALITY CONTROL DATA REPORT**

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC012898BTEX01A	GC012898BTEX01A	GC012898BTEX01A	GC012898BTEX01A	GC012898BTEX01A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel	J. Minkel
MS/MSD #:	980196703	980196703	980196703	980196703	980196703
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Analyzed Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	12	12	12	38	80
MS % Recovery:	120	120	120	127	133
Dup. Result:	11	11	11	35	74
MSD % Recov.:	110	110	110	117	123
RPD:	8.7	8.7	8.7	8.2	7.8
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK012898	BLK012898	BLK012898	BLK012898	BLK012898
Prepared Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Analyzed Date:	1/28/98	1/28/98	1/28/98	1/28/98	1/28/98
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	9.1	9.1	9.3	28	59
LCS % Recov.:	91	91	93	93	98

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

**SEQUOIA ANALYTICAL**

Mike Gregory  
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.

\*\* MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9801865.GET <3>





Gettler Ryan/Geostrategies  
6747 Sierra Court, Ste J  
Dublin, CA 94568  
Attention: Deanna Harding

Client Project ID: Unocal SS#5043/Oakland  
Matrix: Liquid

Work Order #: 9801865-02

Reported: Jan 30, 1998

**QUALITY CONTROL DATA REPORT**

**Analyte:** Diesel  
**QC Batch#:** GC0120980HBPEXA  
**Analy. Method:** EPA 8015M  
**Prep. Method:** EPA 3510

**Analyst:** G. Fish  
**MS/MSD #:** 980185401  
**Sample Conc.:** N.D.  
**Prepared Date:** 1/20/98  
**Analyzed Date:** 1/21/98  
**Instrument I.D.#:** GCHP5  
**Conc. Spiked:** 1000 µg/L

**Result:** 830  
**MS % Recovery:** 83

**Dup. Result:** 810  
**MSD % Recov.:** 81

**RPD:** 2.4  
**RPD Limit:** 0-50

**LCS #:** BLK012098  
**Prepared Date:** 1/20/98  
**Analyzed Date:** 1/21/98  
**Instrument I.D.#:** GCHP5  
**Conc. Spiked:** 1000 µg/L  
**LCS Result:** 650  
**LCS % Recov.:** 65

**MS/MSD** 50-150  
**LCS** 60-140  
**Control Limits**

**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**

*Mike Gregory*  
Project Manager



Gettler Ryan/Geostrategies 6747 Sierra Court, Ste J Dublin, CA 94568 Attention: Deanna Harding	Client Project ID: Unocal SS#5043/Oakland Matrix: Liquid Work Order #: 9801865-03-05	Reported: Jan 30, 1998
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**QUALITY CONTROL DATA REPORT**

<b>Analyte:</b> Diesel
<b>QC Batch#:</b> GC0120980HBPEXZ
<b>Analy. Method:</b> EPA 8015M
<b>Prep. Method:</b> EPA 3520

**Analyst:** G. Fish  
**MS/MSD #:** 980186602  
**Sample Conc.:** 56000\*  
**Prepared Date:** 1/20/98  
**Analyzed Date:** 1/22/98  
**Instrument I.D.#:** GCHP4  
**Conc. Spiked:** 1000 µg/L

**Result:** 100000\*  
**MS % Recovery:** 4400

**Dup. Result:** 80000\*  
**MSD % Recov.:** 2400

**RPD:** 22\*  
**RPD Limit:** 0-50

\*MS/MSD was diluted due to matrix interference

**LCS #:** BLK012098Zs

**Prepared Date:** 1/20/98  
**Analyzed Date:** 1/22/98  
**Instrument I.D.#:** GCHP5  
**Conc. Spiked:** 1000 µg/L

**LCS Result:** 800  
**LCS % Recov.:** 80

<b>MS/MSD</b>	50-150
<b>LCS</b>	60-140
<b>Control Limits</b>	

**SEQUOIA ANALYTICAL**

Mike Gregory  
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.

\*\* MS= Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9801865.GET <5>