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GETTLER-RYAN INC.

TRANSMITTAL

ENVIRONMENTAL PROTECTION

98 JUN 19 PM 2:40

TO: Alameda County Health
Care Services Agency
1131 Harbor Bay Parkway
Alameda, California 94501

DATE: June 19, 1998
G-R #: 180012

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

RE: Tosco (Unocal) SS #5484
18950 Lake Chabot Road
Castro Valley, California

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
1	June 11, 1998	Groundwater Monitoring and Sampling Report Annual 1998 - Event of March 2, 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 an annual basis. If you have questions please contact the Tosco Project Manager, Ms. Tina R. Berry at (925) 277-2321.

Enclosure

cc: Mr. Doug Lee, Gettler-Ryan Inc., Dublin, CA

agency/5484trb.qmt



GETTLER-RYAN INC.

June 11, 1998
G-R Job #180012

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

RE: Annual 1998 Groundwater Monitoring & Sampling Report
Tosco (Unocal) Service Station #5484
18950 Lake Chabot Road
Castro Valley, California


Dear Ms. Berry:

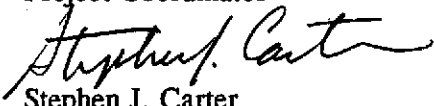
This report documents the annual groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R). On March 2, 1998, field personnel monitored five wells (MW-2 and MW-4 through MW-7) and sampled three wells (MW-4, MW-5 and MW-7) at the above referenced site.

Static groundwater levels were measured and all wells were checked for the presence of separate-phase hydrocarbons. Separate-phase hydrocarbons were not present in the wells. 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 Tables 1 and 2. A Concentration Map is included as Figure 2. The chain of custody document and laboratory analytical reports are also attached.

Sincerely,


Deanna L. Harding
Project Coordinator


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

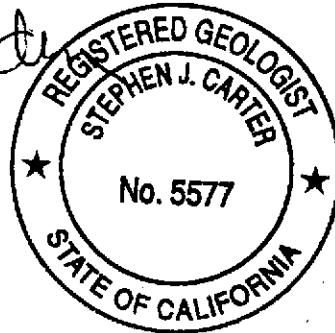
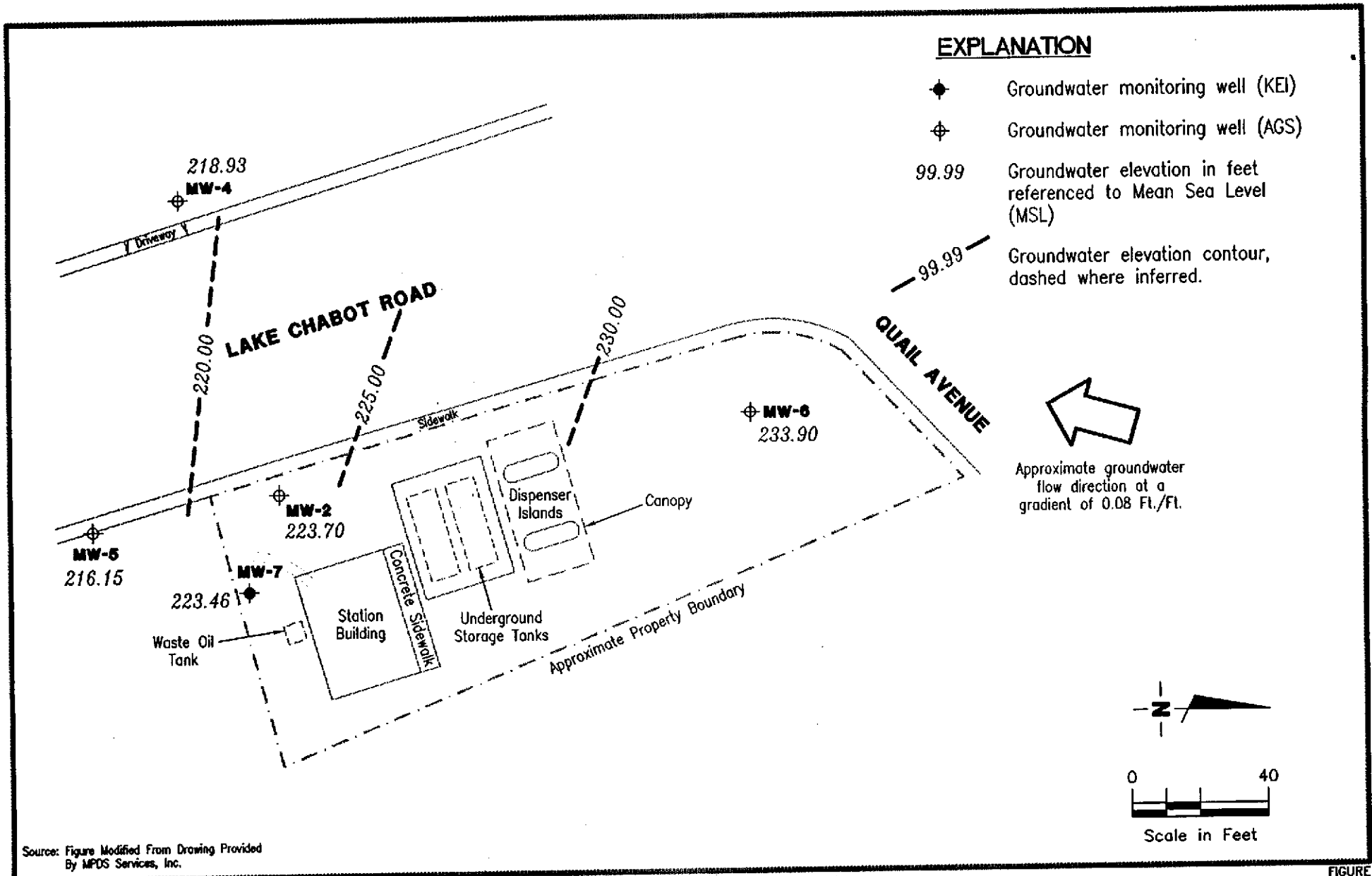


Figure 1: Potentiometric Map
Figure 2: Concentration Map
Table 1: Groundwater Monitoring Data and Analytical Results
Table 2: Groundwater Analytical Results
Attachments: Standard Operating Procedure - Groundwater Sampling
Field Data Sheets
Chain of Custody Document and Laboratory Analytical Reports

5484.qml



Gettler - Ryan Inc.

6747 Sierra Ct., Suite J (925) 551-7555
Dublin, CA 94568

POTENTIOMETRIC MAP
Tosco (Unocal) Service Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

FIGURE
1

JOB NUMBER
180012

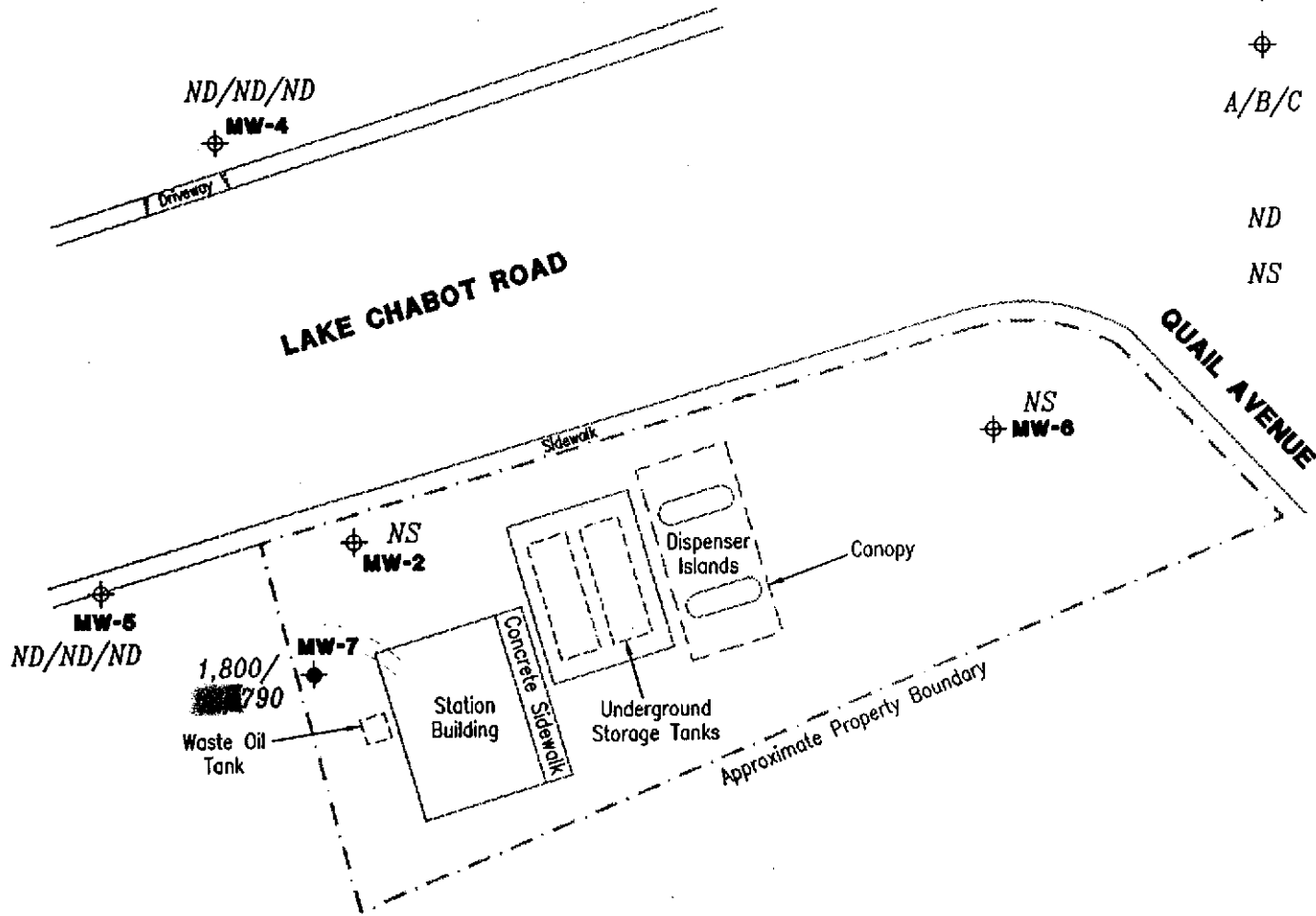
REVIEWED BY

DATE
March 2, 1998

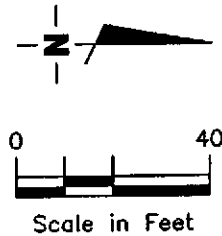
REVISED DATE

EXPLANATION

- ◆ Groundwater monitoring well (KEI)
- ⊕ Groundwater monitoring well (AGS)
- A/B/C TPH(G) (Total Petroleum Hydrocarbons as Gasoline) Benzene/MTBE concentrations in ppb
- ND Not Detected
- NS Not Sampled



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



Gettler - Ryan Inc.

6747 Sierra Ct., Suite J (925) 551-7555
Dublin, CA 94568

CONCENTRATION MAP
Tosco (Unocal) Service Station No. 5484
18950 Lake Chabot Road
Castro Valley, California

FIGURE

2

JOB NUMBER
180012

REVIEWED BY

DATE
March 2, 1998

REVISED DATE

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #5484
 18950 Lake Chabot Road
 Castro Valley, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D)	TPH(G)	B	T	E	X	MTBE	
				←-----ppb----->							
MW-2	05/23/91			--	ND	ND	ND	ND	ND	--	
	09/20/91			--	ND	ND	ND	ND	ND	--	
	12/19/91			--	140	0.66	ND	0.64	1.2	--	
	03/20/92			--	120	ND	ND	ND	ND	--	
	06/18/92			--	140 ¹	ND	ND	ND	ND	--	
	09/10/92			--	61 ¹	ND	ND	ND	ND	110	
	12/10/92			--	100 ¹	ND	ND	ND	ND	170	
	03/10/93			--	110 ¹	ND	ND	ND	ND	350	
	06/09/93			--	120 ¹	ND	ND	ND	ND	300	
	09/09/93			--	210 ¹	ND	ND	ND	ND	--	
	12/09/93			--	96 ¹	ND	ND	ND	ND	--	
	03/03/94			--	240 ¹	ND	ND	ND	ND	--	
	06/03/94			--	190 ¹	ND	ND	ND	ND	--	
	09/02/94			--	720	ND	ND	ND	4.6	--	
	12/01/94			--	200	0.70	ND	0.58	ND	--	
	03/01/95			--	ND	ND	ND	ND	ND	--	
	06/01/95			--	420 ¹	ND	ND	ND	ND	--	
228.88	09/05/95	5.66	223.22	--	ND	ND	0.80	ND	0.74	-- ⁵	
	12/05/95	6.32	222.56	--	ND	ND	ND	ND	ND	390	
	04/11/96	4.22	224.66	NOT SAMPLED ⁶		--	--	--	--	--	
	03/13/97	6.58	222.30	--	--	--	--	--	--	--	
	03/02/98	5.18	223.70	--	--	--	--	--	--	--	
MW-4	05/23/91			--	ND	ND	ND	ND	ND	--	
	09/20/91			SAMPLED SEMI-ANNUALLY							--
	12/19/91			--	ND	ND	ND	ND	ND	--	
	03/20/92			--	--	--	--	--	--	--	
	06/18/92			--	ND	0.41	0.84	ND	0.55	--	
	09/10/92			--	--	--	--	--	--	--	
	12/10/92			--	ND	ND	ND	ND	ND	--	
	03/10/93			--	ND	ND	ND	ND	ND	--	
	06/09/93			--	ND	ND	ND	ND	ND	--	
	09/09/93			--	ND	ND	ND	ND	ND	--	

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #5484
 18950 Lake Chabot Road
 Castro Valley, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D)	TPH(G)	B	T	E	X	MTBE
				←-----ppb-----→						
MW-4	12/09/93			INACCESSIBLE	--	--	--	--	--	--
(cont)	03/03/94			--	ND	ND	ND	ND	ND	--
	06/03/94			--	ND	ND	ND	ND	ND	--
	09/02/94			--	ND	ND	ND	ND	ND	--
	12/01/94			--	ND	ND	ND	ND	ND	--
	03/01/95			--	ND	ND	1.1	ND	0.75	--
	06/01/95			--	ND	ND	0.78	ND	1.7	--
227.77	09/05/95	9.27	218.50	--	ND	ND	0.70	ND	0.71	--
	12/05/95	9.92	217.85	--	ND	ND	ND	ND	ND	0.68
	04/11/96	7.55	220.22	--	ND	ND	ND	ND	ND	ND
	03/13/97	9.84	217.93	--	ND	ND	ND	ND	ND	ND
	03/02/98	8.84	218.93	--	ND	ND	ND	ND	ND	ND
MW-5	05/23/91			--	ND	ND	ND	ND	ND	--
	09/20/91			450	ND	ND	ND	ND	ND	--
	10/10/91			ND	--	--	--	--	--	--
	12/19/91			--	ND	ND	ND	ND	ND	--
	03/20/92			170	ND	ND	ND	ND	ND	--
	06/18/92			ND	ND	ND	ND	ND	ND	--
	09/10/92			110 ²	ND	ND	ND	ND	ND	--
	12/10/92			83 ³	ND	ND	ND	ND	ND	--
	03/10/93			69 ²	ND	ND	ND	ND	ND	--
	06/09/93			64	ND	ND	ND	ND	ND	--
	09/09/93			58 ³	ND	ND	ND	ND	ND	--
	12/09/93			87 ³	ND	ND	ND	ND	ND	--
	03/03/94			ND	ND	ND	ND	0.71	1.7	ND
	06/03/94			80 ³	ND	ND	ND	ND	ND	--
	09/02/94			130 ²	ND	ND	ND	ND	ND	--
	12/01/94			79 ²	ND	ND	ND	ND	ND	--
	03/01/95			ND	ND	ND	ND	ND	ND	--
	06/01/95			57 ²	ND	ND	ND	ND	ND	--
225.11	09/05/95	9.57	215.54	210 ²	ND	ND	0.95	ND	0.87	-- ⁵
	12/05/95	9.60	215.51	170 ²	ND	ND	ND	ND	ND	27

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #5484
 18950 Lake Chabot Road
 Castro Valley, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D)	TPH(G)	B	T	E	X	MTBE	
				←-----ppb----->							
MW-5 (cont)	04/11/96	7.48	217.63	--	ND	ND	ND	ND	ND	56	
	03/13/97	9.56	215.55	--	ND	ND	ND	ND	ND	ND	
	03/02/98	8.96	216.15	--	ND	ND	ND	ND	ND	ND	
MW-6	05/23/91			--	ND	ND	ND	ND	ND	--	
	09/20/91			SAMPLED SEMI-ANNUALLY							--
	12/19/91			--	ND	ND	ND	ND	ND	--	
	06/18/92			--	ND	ND	ND	ND	ND	--	
	12/10/92			--	ND	ND	ND	ND	ND	--	
	06/09/93			--	ND	ND	ND	ND	ND	--	
	12/09/93			--	150	ND	ND	ND	1.7	--	
	06/03/94			--	ND	ND	ND	ND	ND	--	
	12/01/94			--	ND	ND	ND	ND	ND	--	
	06/01/95			--	ND	ND	0.70	ND	1.7	--	
	239.04	09/05/95	5.69	233.35	--	--	--	--	--	--	--
12/05/95		6.75	232.29	--	ND	ND	ND	ND	ND	1.4	
04/11/96		4.28	234.76	NOT SAMPLED ⁵							--
03/13/97		7.05	231.99	--	--	--	--	--	--	--	
03/02/98		5.14	233.90	--	--	--	--	--	--	--	
MW-7	05/23/91			540	3,000	160	1.2	25	120	--	
	09/20/91			580	1,400	160	0.75	89	130	--	
	12/19/91			770	3,900	240	2.4	280	270	--	
	03/20/92			3,200	11,000	980	ND	990	1,600	--	
	06/18/92			990 ²	5,500	340	4.2	380	410	--	
	09/10/92			290 ²	2,100	160	1.9	140	150	--	
	12/10/92			200 ³	1,200	28	ND	37	13	--	
	03/10/93			1,100 ²	4,400	310	ND	300	330	--	
	06/09/93			830 ³	4,600	430	ND	510	430	--	
	09/09/93			550 ³	2,600 ⁴	160	19	250	120	--	
	12/09/93			250 ²	980	54	4.6	71	5.6	--	
	03/03/94			1,400 ²	9,300	290	ND	590	400	1.7	

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #5484
 18950 Lake Chabot Road
 Castro Valley, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) ←	TPH(G)	B	T ppb	E	X	MTBE →
MW-7	06/03/94			2,000 ²	9,400	380	5.0	820	240	--
(cont)	09/02/94			490 ²	3,800	77	ND	180	42	--
	12/01/94			260 ²	3,100	80	ND	250	190	--
	03/01/95			1,900 ³	3,300	200	3.9	300	350	--
	06/01/95			1,600 ²	3,900	170	ND	400	430	--
231.39	09/05/95	8.61	222.78	ND	710	32	ND	85	33	-- ⁵
	12/05/95	9.69	221.70	110 ²	400	23	ND	34	16	1,600
	12/08/95	9.59	221.80	--	--	--	--	--	--	--
	04/11/96	7.31	224.08	--	1,500	52	ND	160	130	1,500
	03/13/97	9.48	221.91	--	460	13	ND	31	4.0	430
	03/02/98	7.93	223.46	--	1,800	63	ND ⁷	240	60	790
Trip Blank										
TB-LB	03/02/98	--	--	--	ND	ND	ND	ND	ND	ND

Table 1
Groundwater Monitoring Data and Analytical Results
Tosco (Unocal) Service Station 5484
18950 Lake Chabot Road
Castro Valley, California

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to March 2, 1998, were provided by MPDS Services, Inc.

TOC = Top of Casing	B = Benzene	ppb = Parts per billion
DTW = Depth to Water	T = Toluene	ND = Not Detected
(ft.) = Feet	E = Ethylbenzene	-- = Not Measured/Not Analyzed
GWE = Groundwater Elevation	X = Xylenes	
msl = Relative to mean sea level	MTBE = Methyl tertiary butyl ether	
TPH(D) = Total Petroleum Hydrocarbons as Diesel		
TPH(G) = Total Petroleum Hydrocarbons as Gasoline		

* TOC elevations are relative to Mean Sea Level (msl), per the Alameda County Benchmark (Elevation = 219.68 feet msl).

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

² Laboratory report indicates that the hydrocarbons detected did not appear to be diesel.

³ Laboratory report indicates that the hydrocarbons detected appeared to be a diesel and non-diesel mixture.

⁴ Laboratory reported that the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.

⁵ Laboratory has potentially identified the presence of MTBE at reportable levels in the groundwater sample collected from this well.

⁶ Sampling discontinued per Alameda County Health Care Services letter dated April 1, 1996.

⁷ Detection limit raised. Refer to analytical results.

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

Table 2
Groundwater Analytical Results
 Tosco (Unocal) Service Station #5484
 18950 Lake Chabot Road
 Castro Valley, California

Well ID	Date	TOG (ppm)	Bis (2-ethylhexyl) phthalate (ppb)	2-Methyl- naphthalene (ppb)	Naphthalene (ppb)	1,2- Dichloroethane (ppb)
MW-4	04/11/96	--	ND	ND	ND	ND
	03/13/97	--	ND	ND	ND	ND
	03/02/98 ⁶	--	--	--	--	ND
MW-5	03/10/93	--	ND	ND	ND	ND
	06/09/93	--	--	--	--	ND
	09/09/93	--	--	--	--	ND
	12/09/93	--	--	--	--	ND
	03/03/94	--	--	--	--	ND
	06/03/94	--	--	--	--	ND
	09/02/94	--	--	--	--	ND
	12/01/94	--	--	--	--	ND
	03/01/95	--	--	--	--	ND
	06/01/95	--	--	--	--	ND
	09/05/95	--	--	--	--	ND
	12/05/95	--	--	--	--	ND
	04/11/96	--	ND	ND	ND	ND
	03/13/97	--	740	ND	ND	ND
	03/02/98 ⁶	--	--	--	--	ND
MW-7	05/23/91	ND	--	--	--	3.4
	09/20/91	ND	--	--	--	ND
	12/19/91	ND	--	--	--	3.1
	03/20/92	ND	--	--	--	ND
	06/18/92	ND	--	--	--	ND
	09/10/92	--	--	--	--	2.3
	12/10/92	--	--	--	--	2.0
	03/10/93 ¹	--	13	19	83	1.3
	06/09/93 ²	--	13	19	83	1.3
	09/09/93 ³	--	ND	11	48	1.5
	12/09/93	--	ND	ND	15	1.5
	03/03/94	--	ND	34	130	1.7
	06/03/94	--	ND	18	61	1.4
	09/02/94	--	ND	ND	ND	1.1
	12/01/94	--	ND	ND	2.5	1.0
	03/01/95 ⁴	--	ND	40	120	1.6
	06/01/95	--	ND	13	83	1.4
	09/05/95	--	ND	ND	7.0	1.8
	12/05/95 ⁵	--	--	--	--	ND
	12/08/95	--	ND	ND	14	--
	04/11/96	--	ND	7.6	42	0.75
03/13/97	--	120	ND	9.0	ND	
03/02/98 ⁶	--	--	--	--	0.92	

Table 2
Groundwater Analytical Results
Tosco (Unocal) Service Station #5484
18950 Lake Chabot Road
Castro Valley, California

EXPLANATIONS:

Groundwater analytical results prior to March 2, 1998, were provided by MPDS Services, Inc.

TOG = Total Oil and Grease

ppb = Parts per billion

ppm = Parts per million

ND = Not Detected

-- = Not Analyzed

- ¹ Nine "tentatively identified compounds" were detected by the EPA Method 8270 open scan at concentrations ranging from 10 ppb to 59 ppb. Refer to laboratory analysis sheets for the specific compounds and concentrations.
- ² Ten "tentatively identified compounds" were detected by the EPA Method 8270 open scan at concentrations ranging from 14 ppb to 150 ppb. Refer to laboratory analysis sheets for the specified compounds and concentrations.
- ³ Seven "tentatively identified compounds" were detected by the EPA Method 8270 open scan at concentrations ranging 11 ppb to 88 ppb. Refer to laboratory analysis sheets for the specific compounds and concentrations.
- ⁴ Phenol was detected at a concentration of 2.1 ppb.
- ⁵ Tetrachloroethene was detected at a concentration of 56 ppb.
- ⁶ EPA Method 8270 requested on chain of custody; laboratory inadvertently omitted testing.

Note: All EPA Method 8010 and 8270 compounds were ND, except as listed above.

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. 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.

A laboratory supplied trip blank accompanies each sampling set. For sampling sets greater than 20 samples, 5% trip blanks are included. The trip blank is analyzed for some or all of the same compounds as the groundwater samples.

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 # 5484 Job#: 180012
 Address: 18950 Lake Chabot Rd. Date: 3-2-98
 City: Castro Valley Sampler: Jor

Well ID MW-2 Well Condition: O.K.
 Well Diameter 2 in. Hydrocarbon Amount Bailed
 Thickness: _____ in. (product/water): _____ (gal.)
 Total Depth 19.18 ft.
 Depth to Water 5.18 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: None
 Purging Flow Rate: _____ gpm Sediment Description: _____
 Did well de-water? _____ If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity μ mhos/cm	Temperature -C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)

LABORATORY INFORMATION

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

COMMENTS: Monitored only

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Client/Facility # 5484 Job#: 180012
 Address: 18950 Lake Chabot Rd. Date: 3-2-98
 City: Castro Valley Sampler: Joe

Well ID MW-4 Well Condition: O.K.
 Well Diameter 4 in. Hydrocarbon Amount Bailed
 Thickness: _____ in. (product/water): _____ (gal.)
 Total Depth 27.25 ft
 Depth to Water 8.84 ft

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

18.41 x VF 0.66 = 12.15 x 3 (case volume) = Estimated Purge Volume: 37 (gal.)

Purge Equipment: Disposable Bailer
 Bailer
 Stack
 Suction
 Grundfos
 Other: _____

Sampling Equipment: Disposable Bailer
 Bailer
 Pressure Bailer
 Grab Sample
 Other: _____

Starting Time: 10:10 Weather Conditions: Fair
 Sampling Time: 10:52 A.M. Water Color: None Odor: None
 Purging Flow Rate: 1.8 gpm. Sediment Description: None
 Did well de-water? _____ If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 1000$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>10:27</u>	<u>12</u>	<u>7.37</u>	<u>8.19</u>	<u>69.6</u>	_____	_____	_____
<u>10:33</u>	<u>25</u>	<u>7.42</u>	<u>8.10</u>	<u>69.9</u>	_____	_____	_____
<u>10:40</u>	<u>37</u>	<u>7.43</u>	<u>8.14</u>	<u>69.9</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-4</u>	<u>3 VOA</u>	<u>Y</u>	<u>HCL</u>	<u>Seq. Lab</u>	<u>TPHG, BTEX, MTB</u>
<u>"</u>	<u>2 VOA</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>8010</u>
<u>"</u>	<u>1 AmSer</u>	<u>"</u>	<u>—</u>	<u>"</u>	<u>8270</u>
_____	_____	_____	_____	_____	_____

COMMENTS: _____

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/
Facility # 5484
Address: 18950 Lake Club Rd.
City: Castro Valley

Job#: 180012
Date: 3-2-98
Sampler: Joe

Well ID: MW-5
Well Diameter: 4 in.
Total Depth: 23.81 ft.
Depth to Water: 8.96 ft.

Well Condition: O.K.

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

14.85 X VF 0.66 = 9.8 X 3 (case volume) = Estimated Purge Volume: 30 (gal.)

Purge Equipment: Disposable Bailer
Bailer
Stack
Suction
Grundfos
Other: _____

Sampling Equipment: Disposable Bailer
Bailer
Pressure Bailer
Grab Sample
Other: _____

Starting Time: 11:05
Sampling Time: 11:40 A.M.
Purging Flow Rate: 1.5 gpm.
Did well de-water? _____

Weather Conditions: Fair
Water Color: clear Odor: None
Sediment Description: None
If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 100$	Temperature $^{\circ}\text{C}$ / $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>11:17</u>	<u>10</u>	<u>7.61</u>	<u>7.49</u>	<u>70.5</u>			
<u>11:22</u>	<u>20</u>	<u>7.15</u>	<u>7.53</u>	<u>70.1</u>			
<u>11:28</u>	<u>30</u>	<u>7.19</u>	<u>7.57</u>	<u>70.1</u>			
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-5</u>	<u>3 Vol A</u>	<u>Y</u>	<u>HCL</u>	<u>Seq. Lab</u>	<u>TPAC, BTEX, MTBE</u>
<u>"</u>	<u>2 Vol A</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>8010</u>
<u>"</u>	<u>1 AmSer</u>	<u>"</u>	<u>—</u>	<u>"</u>	<u>8270</u>
_____	_____	_____	_____	_____	_____

COMMENTS: _____

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/
Facility # 5484
Address: 18950 Lake Chabot Rd
City: Castro Valley

Job#: 180012
Date: 3-2-98
Sampler: Joe

Well ID MW-6

Well Condition: OK

Well Diameter 4 in

Hydrocarbon
Thickness: _____ in. Amount Bailed
(product/water): _____ (gal.)

Total Depth 26.94 ft

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

Depth to Water 5.14 ft

_____ 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: None

Purging Flow Rate: _____ gpm

Sediment Description: _____

Did well de-water? _____

If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity µmhos/cm	Temperature °C	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)

LABORATORY INFORMATION

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

COMMENTS: Monitored only

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility # 5484 Job#: 180012
 Address: 18950 Lake Chabot Rd. Date: 3-2-97
 City: Castro Valley Sampler: Joc

Well ID MW-7 Well Condition: O.K.
 Well Diameter 2 in. Hydrocarbon Amount Bailed
 Thickness: _____ in. (product/water): _____ (gal.)
 Total Depth 19.55 ft
 Depth to Water 7.93 ft

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

11.62 x VF 0.17 = 1.98 x 3 (case volume) = Estimated Purge Volume: 6 (gal.)

Purge Equipment: Disposable Bailer
 Bailer
 Stack
 Suction
 Grundfos
 Other: _____

Sampling Equipment: Disposable Bailer
 Bailer
 Pressure Bailer
 Grab Sample
 Other: _____

Starting Time: 12:10 Weather Conditions: Fair
 Sampling Time: 12:35 A.M. Water Color: Clear Odor: None
 Purging Flow Rate: 1 gpm Sediment Description: None
 Did well de-water? _____ If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity (µmhos/cm) x 100	Temperature (°F)	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>12:20</u>	<u>2</u>	<u>7.20</u>	<u>3.83</u>	<u>71.2</u>			
<u>12:22</u>	<u>4</u>	<u>7.21</u>	<u>3.67</u>	<u>71.0</u>			
<u>12:25</u>	<u>6</u>	<u>7.20</u>	<u>3.64</u>	<u>70.8</u>			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-7</u>	<u>3 VOA</u>	<u>Y</u>	<u>HCC</u>	<u>Seq. Lab</u>	<u>TPHG, BTEX, MTBE</u>
<u>"</u>	<u>2 VOA</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>8010</u>
<u>"</u>	<u>1 Amberl</u>	<u>"</u>	<u>-</u>	<u>"</u>	<u>8270</u>

COMMENTS: _____



Gettler Ryan/Geostrategies 6747 Sierra Court Suite J Dublin, CA 94568	Client Proj. ID: Tosco 5484, 180012 Sample Descript: TB-LB Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9803011-01	Sampled: 03/02/98 Received: 03/02/98 Analyzed: 03/11/98 Reported: 06/08/98
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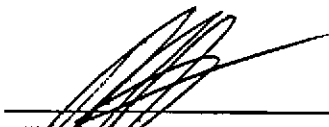
QC Batch Number: GC031198BTEX06A
Instrument ID: GCHP06

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:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	107

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: Tosco 5484, 180012 Sample Descript: MW-4 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9803011-02	Sampled: 03/02/98 Received: 03/02/98 Analyzed: 03/11/98 Reported: 06/08/98
Attention: Deanna Harding		

QC Batch Number: GC031198BTEX06A
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:		N.D.

Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	125

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: Tosco 5484, 180012
Sample Descript: MW-4
Matrix: LIQUID
Analysis Method: EPA 8010
Lab Number: 9803011-02

Sampled: 03/02/98
Received: 03/02/98
Analyzed: 03/09/98
Reported: 06/08/98


QC Batch Number: GC030998801024A
Instrument ID: GCHP24_2

Halogenated Volatile Organics (EPA 8010)

Analyte	Detection Limit ug/L	Sample Results ug/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.
1,2-Dichlorobenzene	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-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.
Surrogates	Control Limits %	% Recovery
1-Chloro-2-fluorobenzene	70 130	109

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: Tosco 5484, 180012 Sample Descript: MW-5 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9803011-03	Sampled: 03/02/98 Received: 03/02/98 Analyzed: 03/11/98 Reported: 06/08/98
Attention: Deanna Harding		


QC Batch Number: GC031198BTEX06A
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:		
Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	96

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: Tosco 5484, 180012 Sample Descript: MW-5 Matrix: LIQUID Analysis Method: EPA 8010 Lab Number: 9803011-03	Sampled: 03/02/98 Received: 03/02/98 Analyzed: 03/09/98 Reported: 06/08/98
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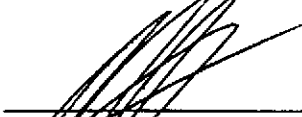
QC Batch Number: GC030998801024A
Instrument ID: GCHP24_2

Halogenated Volatile Organics (EPA 8010)

Analyte	Detection Limit ug/L	Sample Results ug/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.
1,2-Dichlorobenzene	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-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.
Surrogates	Control Limits %	% Recovery
1-Chloro-2-fluorobenzene	70 130	89

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: Tosco 5484, 180012 Sample Descript: MW-7 Matrix: LIQUID Analysis Method: EPA 8010 Lab Number: 9803011-04	Sampled: 03/02/98 Received: 03/02/98 Analyzed: 03/09/98 Reported: 06/08/98
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QC Batch Number: GC030998801024A
Instrument ID: GCHP24_2

Halogenated Volatile Organics (EPA 8010)

Analyte	Detection Limit ug/L	Sample Results ug/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.
1,2-Dichlorobenzene	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	0.92
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.
Surrogates	Control Limits %	% Recovery
1-Chloro-2-fluorobenzene	70 130	126

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: Tosco 5484, 180012

Received: 03/02/98

Lab Proj. ID: 9803011

Reported: 06/08/98

LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 12 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

8010: 4-BFB surrogate is reported.

SEQUOIA ANALYTICAL


Mike Gregory
Project Manager





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

Client Project ID: Tosco 5484, 180012
Matrix: Liquid

Work Order #: 9803011-02-04

Reported: Mar 17, 1998

QUALITY CONTROL DATA REPORT

Analyte:	1,1-Dichloro-ethene	Trichloro-ethene	Chloro-Benzene
QC Batch#:	GC030998801024A	GC030998801024A	GC030998801024A
Analy. Method:	EPA 8010	EPA 8010	EPA 8010
Prep. Method:	EPA 5030	EPA 5030	EPA 5030

Analyst:	B. Ali	B. Ali	B. Ali
MS/MSD #:	980301102	980301102	980301102
Sample Conc.:	N.D.	N.D.	N.D.
Prepared Date:	3/9/98	3/9/98	3/9/98
Analyzed Date:	3/9/98	3/9/98	3/9/98
Instrument I.D.#:	GCHP24	GCHP24	GCHP24
Conc. Spiked:	25 µg/L	25 µg/L	25 µg/L

Result:	26	26	25
MS % Recovery:	104	104	100

Dup. Result:	26	25	23
MSD % Recov.:	104	100	92

RPD:	0.0	3.9	8.3
RPD Limit:	0-25	0-25	0-25

LCS #:	BLK030998	BLK030998	BLK030998
Prepared Date:	3/9/98	3/9/98	3/9/98
Analyzed Date:	3/9/98	3/9/98	3/9/98
Instrument I.D.#:	GCHP24	GCHP24	GCHP24
Conc. Spiked:	25 µg/L	25 µg/L	25 µg/L
LCS Result:	27	26	25
LCS % Recov.:	108	104	100

MS/MSD	60-140	60-140	60-140
LCS	65-135	70-130	70-130
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.

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

SEQUOIA ANALYTICAL

Mike Gregory
Project Manager





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

Client Project ID: Tosco 5484, 180012
Matrix: Liquid

Work Order #: 9803011 -01-03

Reported: Mar 17, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC031198BTEX06A	GC031198BTEX06A	GC031198BTEX06A	GC031198BTEX06A	GC031198BTEX06A
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 #:	980339004	980339004	980339004	980339004	980339004
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	3/11/98	3/11/98	3/11/98	3/11/98	3/11/98
Analyzed Date:	3/11/98	3/11/98	3/11/98	3/11/98	3/11/98
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:	9.5	9.6	9.8	29	50
MS % Recovery:	95	96	98	100	83
Dup. Result:	9.6	9.7	9.7	29	51
MSD % Recov.:	96	97	97	97	85
RPD:	1.0	1.0	1.0	0.0	2.0
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK031198	BLK031198	BLK031198	BLK031198	BLK031198
Prepared Date:	3/11/98	3/11/98	3/11/98	3/11/98	3/11/98
Analyzed Date:	3/11/98	3/11/98	3/11/98	3/11/98	3/11/98
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:	9.2	9.3	9.4	28	48
LCS % Recov.:	92	93	94	93	80

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					

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

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

9803011.GET <1>





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

Client Project ID: Tosco 5484, 180012
Matrix: Liquid

Work Order #: 9803011-04

Reported: Mar 17, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC031298BTEX06A	GC031298BTEX06A	GC031298BTEX06A	GC031298BTEX06A	GC031298BTEX06A
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 #:	9802H9805	9802H9805	9802H9805	9802H9805	9802H9805
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	3/12/98	3/12/98	3/12/98	3/12/98	3/12/98
Analyzed Date:	3/12/98	3/12/98	3/12/98	3/12/98	3/12/98
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:	7.3	7.4	7.6	22	31
MS % Recovery:	73	74	76	100	52
Dup. Result:	9.8	10	10	30	42
MSD % Recov.:	98	100	100	100	70
RPD:	29	30	27	31	30
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK031298	BLK031298	BLK031298	BLK031298	BLK031298
Prepared Date:	3/12/98	3/12/98	3/12/98	3/12/98	3/12/98
Analyzed Date:	3/12/98	3/12/98	3/12/98	3/12/98	3/12/98
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:	10	10	11	31	44
LCS % Recov.:	100	100	110	103	73

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					

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

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

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