



GETTLER-RYAN INC.

70-436

TRANSMITTAL

November 26, 2001

G-R #180181

DEC 1 2001

TO: Mr. David B. De Witt
Phillips 66 Company
2000 Crow Canyon Place, Suite 4000
San Ramon, California 94583

CC: Mr. David Vossler
Gettler-Ryan Inc.
Petaluma, California

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

RE: Tosco (Unocal) Service Station
#4186
1771 First Street
Livermore, California

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
1	November 20, 2001	Groundwater Monitoring and Sampling Report Fourth Quarter - Event of October 8, 2001

COMMENTS:

This report is being sent to you for your review/comment, prior to being distributed on your behalf. If no comments are received by **December 10, 2001**, this report will be distributed to the following:

cc: Ms. Eva Chu, Alameda County Health Care Services, 1131 Harbor Bay Pkwy, Alameda CA 94502
Ms. Carol Mahoney, Zone 7 Water Zone, 5997 Parkside Drive, Pleasanton, CA 94588

Enclosure

trans/4186-dbd



GETTLER-RYAN INC.

November 20, 2001
G-R Job #180181

Mr. David B. De Witt
Phillips 66 Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

RE: Fourth Quarter Event of October 8, 2001
Groundwater Monitoring & Sampling Report
Tosco (Unocal) Service Station #4186
1771 First Street
Livermore, California

Dear Mr. De Witt:

This report documents the most recent groundwater monitoring and sampling events performed by Gettler-Ryan Inc. (G-R) at the referenced site. All field work was conducted in accordance with G-R Standard Operating Procedure - Groundwater Sampling (attached).

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,

- For -

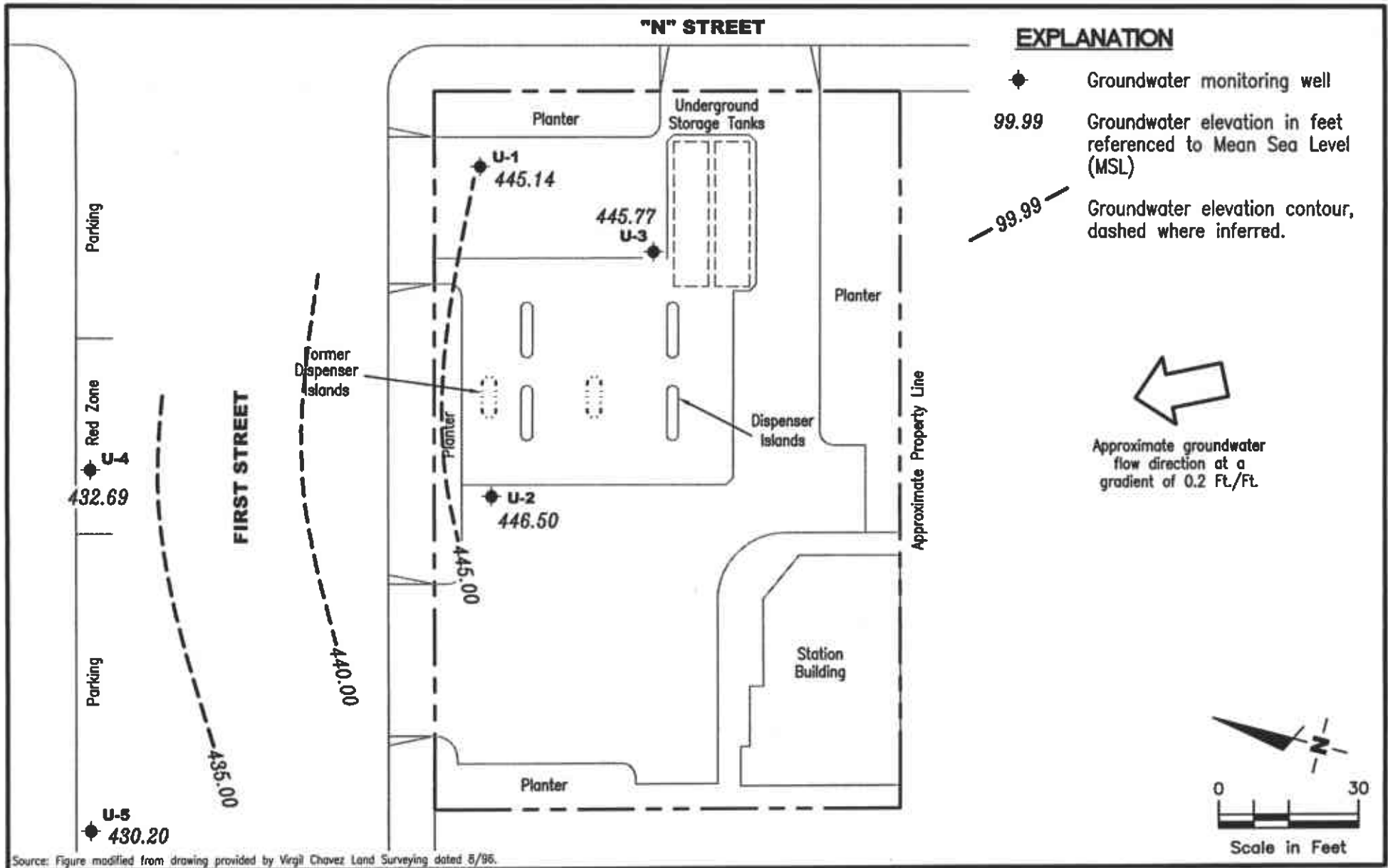
Deanna L. Harding
Project Coordinator

Douglas J. Lee
Senior Geologist, R.G. No. 6882



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

4186.qml



Source: Figure modified from drawing provided by Virgil Chavez Land Surveying dated 8/96.

GETTLER - RYAN INC.
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POTENTIOMETRIC MAP
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

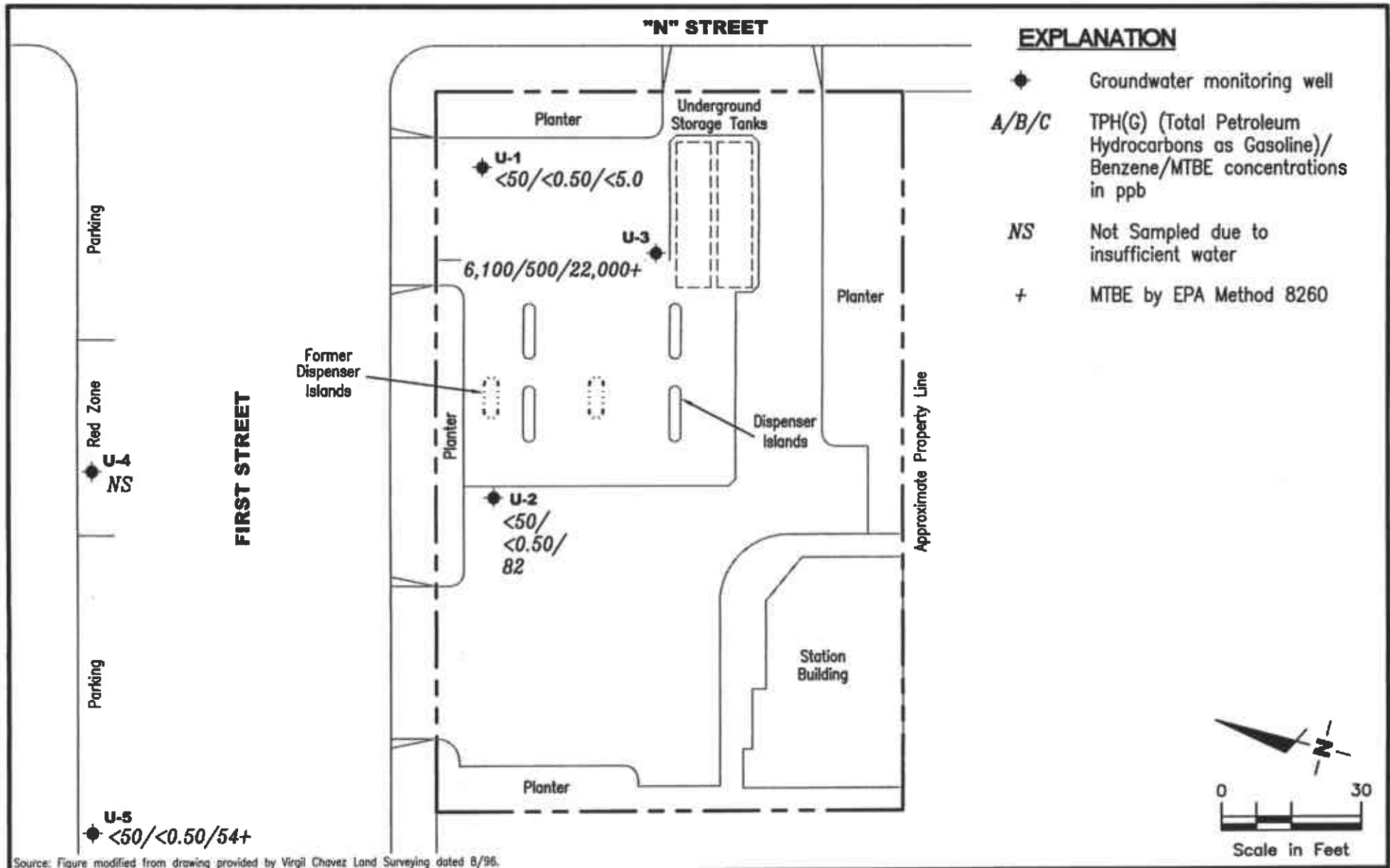
FIGURE
1

PROJECT NUMBER
 180181

REVIEWED BY

DATE
 October 8, 2001

REVISED DATE



Source: Figure modified from drawing provided by Virgil Chavez Land Surveying dated 8/96.

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CONCENTRATION MAP
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

FIGURE

2

PROJECT NUMBER
 180181

REVIEWED BY

DATE
 October 8, 2001

REVISED DATE

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

WELL ID/ TOC*	DATE	DTW (ft.)	S.I. (ft.bgs)	GWE (msl)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-1										
478.27	07/13/98	23.28	14.0-34.0	454.99	ND	ND	ND	ND	ND	ND
	10/07/98	26.43		451.84	ND	ND	ND	ND	ND	ND
	01/15/99	30.42		447.85	ND	ND	ND	ND	1.1	7.3
	04/14/99	24.21		454.06	ND	ND	ND	ND	ND	160
	07/19/99	27.10		451.17	ND	ND	ND	ND	ND	92
	10/12/99	29.40		448.87	ND	ND	ND	ND	ND	37
	01/24/00	27.90		450.37	ND	ND	ND	ND	ND	28
	04/10/00	26.16		452.11	ND	ND	0.930	ND	ND	ND
	07/17/00	28.04		450.23	ND	ND	ND	ND	ND	160
	10/02/00	28.41		449.86	ND	ND	ND	ND	ND	120
	01/08/01	28.68		449.59	ND	ND	ND	ND	ND	103
	04/03/01	25.74		452.53	ND	ND	ND	ND	ND	55.1
	07/02/01	30.67		447.60	ND	ND	ND	ND	ND	ND
NP	10/08/01	33.13		445.14	<50	<0.50	<0.50	<0.50	<0.50	<5.0
U-2										
477.44	07/13/98	23.52	13.0-33.0	453.92	1,200	130	12	62	180	1,100
	10/07/98	25.31		452.13	ND	ND	ND	ND	ND	160
	01/15/99	30.22		447.22	ND	ND	ND	ND	ND	280
	04/14/99	24.50		452.94	ND	ND	ND	ND	ND	460
	07/19/99	28.54		448.90	ND	ND	ND	ND	ND	220
	10/12/99	30.48		446.96	ND	ND	ND	ND	ND	160
	01/24/00	24.52		452.92	ND	ND	ND	ND	ND	150
	04/10/00	23.68		453.76	ND	ND	ND	ND	ND	177
	07/17/00	28.35		449.09	ND	ND	ND	ND	ND	62.7
	10/02/00	28.72		448.72	ND	ND	ND	ND	ND	52
	01/08/01	29.11		448.33	ND	ND	ND	ND	ND	57.3
	04/03/01	25.95		451.49	ND	ND	ND	ND	ND	30.2
	07/02/01	29.01		448.43	ND	ND	ND	ND	ND	16
	10/08/01	30.94		446.50	<50	<0.50	<0.50	<0.50	<0.50	82

Table 1
Groundwater Monitoring Data and Analytical Results
Tosco (Unocal) Service Station #4186
1771 First Street
Livermore, California

WELL ID/ TOC*	DATE	DTW (ft.)	S.I. (ft.bgs)	GWE (mst)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-3										
478.46	07/13/98	23.82	14.0-34.0	454.64	70,000	3,100	5,500	2,700	16,000	7,500
	10/07/98	25.64		452.82	54,000	5,000	1,100	3,100	14,000	6,100
	01/15/99	30.92		447.54	41,000 ¹	3,100	ND ²	1,800	3,800	15,000
	04/14/99	24.48		453.98	33,000	86	290	2,200	7,800	39,000
	07/19/99	28.46		450.00	48,000	3,900	2,500	3,600	14,000	12,000/16,000 ³
	10/12/99	30.39		448.07	35,000 ⁴	4,200	ND ²	2,300	1,800	22,000/8,300 ⁵
	01/24/00	23.43		455.03	13,000 ⁴	260	ND ²	770	3,200	53,000/42,000 ³
	04/10/00	23.31		455.15	35,200 ⁴	1,070	241	2,820	8,850	35,600/40,900 ³
	07/17/00	27.53		450.93	29,000 ⁴	3,570	525	3,180	5,660	22,500/21,000 ³
	10/02/00	28.19		450.27	11,000 ⁴	2,100	31	2,000	780	25,000/28,000 ^{3,6}
	01/08/01	29.85		448.61	33,600 ⁴	3,060	427	3,040	4,190	24,700/30,900 ³
	04/03/01	24.98		453.48	5,390 ⁴	660	10.8	304	356	15,200/19,300 ⁵
	07/02/01	31.35		447.11	13,000 ⁴	1,200	58	1,300	930	25,000/26,000 ³
NP	10/08/01	32.69		445.77	6,100 ⁴	500	<10	570	130	23,000/22,000 ³
U-4										
476.93	04/03/01 ⁷	31.63	35.0-45.0	445.30	ND	ND	ND	ND	ND	37.8/38.2 ³
	07/02/01	37.96		438.97	ND	ND	ND	ND	ND	ND/5.3 ³
	10/08/01	44.24		432.69	NOT SAMPLED DUE TO INSUFFICIENT WATER				--	--
U-5										
476.51	04/03/01 ⁷	31.75	37.0-47.0	444.76	ND	ND	0.728	ND	0.993	54.8/55.4 ³
	07/02/01	38.68		437.83	ND	ND	ND	ND	ND	88/94 ³
NP	10/08/01	46.31		430.20	<50	<0.50	<0.50	<0.50	<0.50	37/54 ³

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

WELL ID/ TOC*	DATE	DTW (ft.)	S.L. (ft.bgs)	GWE (msl)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
TRIP BLANK										
	07/13/98	--	--	--	ND	ND	ND	ND	ND	ND
	10/07/98	--	--	--	ND	ND	ND	ND	ND	ND
	01/15/99	--	--	--	ND	ND	ND	ND	ND	ND
	04/14/99	--	--	--	ND	ND	ND	ND	ND	ND
	07/19/99	--	--	--	ND	ND	ND	ND	ND	ND
	10/12/99	--	--	--	ND	ND	ND	ND	ND	ND
	01/24/00	--	--	--	ND	ND	ND	ND	ND	ND
	04/10/00	--	--	--	ND	ND	ND	ND	ND	ND
	07/17/00	--	--	--	ND	ND	ND	ND	ND	ND
	10/02/00	--	--	--	ND	ND	ND	ND	ND	ND
	01/08/01	--	--	--	ND	ND	ND	ND	ND	ND
	04/03/01	--	--	--	ND	ND	ND	ND	ND	ND
	07/02/01	--	--	--	ND	ND	ND	ND	ND	ND
	10/08/01	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<5.0

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

EXPLANATIONS:

TOC = Top of Casing	TPH-G = Total Petroleum Hydrocarbons as Gasoline	ND = Not Detected
DTW = Depth to Water	B = Benzene	-- = Not Measured/Not Analyzed
(ft.) = Feet	T = Toluene	NP = No Purge
S. I. = Screen Interval	E = Ethylbenzene	
(ft.bgs) = Feet Below Ground Surface	X = Xylenes	
GWE = Groundwater Elevation	MTBE = Methyl tertiary butyl ether	
(msl) = Mean sea level	(ppb) = Parts per billion	

- * TOC elevations are relative to msl in feet. The benchmark used was a City of Livermore survey monument at First & "Q" Streets, (Benchmark Elevation = 469.246 feet, msl).
- ¹ Laboratory report indicates gasoline and unidentified hydrocarbons C6-C12.
- ² Detection limit raised. Refer to analytical reports.
- ³ MTBE by EPA Method 8260.
- ⁴ Laboratory report indicates gasoline C6-C12.
- ⁵ MTBE by EPA Method 8260 analyzed past EPA recommended holding time.
- ⁶ Laboratory report indicates the sample was analyzed within holding time. Re-analysis for confirmation or dilution was performed past the recommend holding time.
- ⁷ Well development performed.

Table 2
Groundwater Analytical Results - Oxygenate Compounds
 Tosco (Unocal) Service Station #4186
 1771 First Street
 Livermore, California

WELL ID	DATE	ETHANOL (ppb)	TBA (ppb)	MTBE (ppb)	DIPE (ppb)	ETBE (ppb)	TAME (ppb)	EDB (ppb)	1,2-DCA (ppb)
U-1	10/02/00	--	ND	--	--	--	--	--	--
U-2	10/02/00	--	ND	--	--	--	--	--	--
U-3	07/19/99	--	--	16,000	--	--	--	--	--
	10/12/99	--	--	8,300	--	--	--	--	--
	01/24/00	--	--	42,000	--	--	--	--	--
	04/10/00	--	--	40,900	--	--	--	--	--
	07/17/00	--	--	21,000	--	--	--	--	--
	10/02/00	--	63,000	28,000	--	--	--	--	--
	01/08/01	ND ¹	49,300	30,900	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
	04/03/01 ²	ND ¹	22,200	19,300	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
	07/02/01	ND ¹	27,000	26,000	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
	10/08/01	<140,000	33,000	22,000	<290	<290	<290	<290	<290
U-4	04/03/01	ND	ND	38.2	ND	ND	ND	ND	ND
	07/02/01	ND	ND	5.3	ND	ND	ND	ND	ND
U-5	04/03/01	ND	ND	55.4	ND	ND	ND	ND	ND
	07/02/01	ND	ND	94	ND	ND	ND	ND	ND
	10/08/01	<1,000	<100	54	<2.0	<2.0	<2.0	<2.0	<2.0

Table 2
Groundwater Analytical Results - Oxygenate Compounds
Tosco (Unocal) Service Station #4186
1771 First Street
Livermore, California

EXPLANATIONS:

TBA = Tertiary butyl alcohol
MTBE = Methyl tertiary butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tertiary butyl ether
TAME = Tertiary amyl methyl ether
EDB = 1,2-Dibromoethane
1,2-DCA = 1,2-Dichloroethane
(ppb) = Parts per billion
ND = Not Detected
-- = Not Analyzed

ANALYTICAL METHOD:

EPA Method 8260 for Oxygenate Compounds

¹ Detection limit raised. Refer to analytical reports.

² Laboratory report indicates this sample was analyzed outside of the EPA recommended holding time.

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 an 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, temperature, pH and electrical conductivity are measured. If purging is to occur, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, suction, Grundfos), or polyvinyl chloride bailers. The measurements are taken 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 # TOSCO # 4186 Job#: 180181
 Address: 1771 First St. Date: 10/8/01
 City: Livermore, Ca. Sampler: Saxtles

Well ID: U-1 Well Condition: OK
 Well Diameter: 2 in. Hydrocarbon Thickness: 0-00 in. Amount Bailed (product/water): 0 (gal.)
 Total Depth: 34.05 ft. Volume Factor (VF) 2" = 0.17 3" = 0.38 4" = 0.66
 Depth to Water: 33.13 ft. 6" = 1.50 12" = 5.80

0.92 x VF 0.17 = 0.65 x 3 (case volume) = Estimated Purge Volume: 0.5 (gal.)

Purge Equipment: Disposable Bailer
 Bailer
 Stack
 Suction
 Grundfos
 Other: _____
 Sampling Equipment: Disposable Bailer
 Bailer
 Pressure Bailer
 Grab Sample
 Other: _____

Starting Time: _____ Weather Conditions: cldy
 Sampling Time: 1120 Water Color: brn Odor: no
 Purging Flow Rate: _____ gpm Sediment Description: silt
 Did well de-water? _____ If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity (µmhos/cm)	Temperature (F)	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
	0						

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-1</u>	<u>3 x VOA VIAL</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>TPHG/BTEX/MTOE</u>

COMMENTS: Insufficient water to purge

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility # TOSCO # 4186 Job#: 180181
 Address: 1771 First St. Date: 10/8/01
 City: Livermore, Ca. Sampler: Verthes

Well ID U-2 Well Condition: OK
 Well Diameter 2 in. Hydrocarbon Thickness: 0-00 in. Amount Bailed (product/water): φ (gal.)
 Total Depth 33.20 ft.
 Depth to Water 30.94 ft.

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

$2.26 \times VF \text{ of } \text{A.P.} = 0.38 \times 3 \text{ (case volume)} = \text{Estimated Purge Volume: } 1.2 \text{ (gal.)}$

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

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

Starting Time: 1130 Weather Conditions: cldy
 Sampling Time: 1135 Water Color: brn. Odor: NO
 Purging Flow Rate: _____ gpm. Sediment Description: silt
 Did well de-water? _____ If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm}$	Temperature F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
1137	0.5	7.63	809	69.7			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
U-2	3 X VOA VIAL	Y	HCL	SEQUOIA	TPHG/BTEX/MTOE

COMMENTS: _____

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/ Facility # TOSCO # 4186
 Address: 1771 First st.
 City: Livermore, Ca.

Job#: 180181
 Date: 10/8/01
 Sampler: Watler

Well ID: U-3
 Well Diameter: 2 in.
 Total Depth: 33.40 ft.
 Depth to Water: 32.69 ft.

Well Condition: OK
 Hydrocarbon Thickness: 0-00 in.
 Amount Bailed (product/water): 0 (gal.)

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

0.71 x VF 0.17 = 0.12 * 3 (case volume) = Estimated Purge Volume: 0.5 (gal.)

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

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

Starting Time: _____
 Sampling Time: 1155
 Purging Flow Rate: _____ gpm.
 Did well de-water? _____

Weather Conditions: cloudy
 Water Color: grayish Odor: Y
 Sediment Description: SILT
 If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity μ mhos/cm	Temperature F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
	<u>0</u>						

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-3</u>	<u>5 X VOA VIAL</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>TPHG/BTEX/MTOE</u>

COMMENTS: Insufficient water to purge.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Well ID: TOSCO # 4186 Job #: 180181
 Address: 1771 First St. Date: 10/8/01
 City: Livermore, Ca. Sampler: Varthos

Well ID: U-4 Well Condition: OK
 Well Diameter: 2 in. Hydrocarbon Thickness: 0-00 in. Amount Bailed (product/water): 0 (gal.)
 Total Depth: 45.30 ft. Volume Factor (VF): 2" = 0.17, 3" = 0.38, 4" = 0.66
 Depth to Water: 74.24 ft. 6" = 1.50, 12" = 5.80

$1.06 \times VF \text{ of } 0.17 = 0.18 \times 3 \text{ (case volume)} = \text{Estimated Purge Volume: } 0.5 \text{ (gal.)}$

Purge Equipment: Disposable Bailer Sampling Equipment: Disposable Bailer
 Stack, Suction, Grundfos, Other: _____
 Bailer, Pressure Bailer, Grab Sample, Other: _____

Starting Time: _____ Weather Conditions: cldy
 Sampling Time: _____ Water Color: brn. Odor: none
 Purging Flow Rate: _____ gpm. Sediment Description: heavy silt
 Did well de-water? _____ If yes: Time: _____ Volume: _____ (gal.)

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

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-4</u>	<u>5 X VOA VIAL</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>(TPHG/BTEX/MTOE) (60911/12/14/25/BB)(2/16)</u>

COMMENTS: Unable to sample - all I could get was about 4" of heavy silty

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/
Facility # Tosco # 4186
Address: 1771 First st.
City: Livermore, Ca.

Job#: 180181
Date: 10/8/01
Sampler: Vertek

Well ID: U-5
Well Diameter: 2 in.
Total Depth: 47.20 ft.
Depth to Water: 46.31 ft.

Well Condition: OK
Hydrocarbon Thickness: 0.00 in. Amount Bailed (product/water): 0 (gal.)
Volume Factor (VF):

2" = 0.17	3" = 0.38	4" = 0.66
6" = 1.50	12" = 5.80	

$0.89 \times VF_{0.17} = 0.15 \times 3$ (case volume) = Estimated Purge Volume: 0.5 (gal.)

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

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

Starting Time: _____
Sampling Time: 1045
Purging Flow Rate: _____ gpm.
Did well de-water? _____

Weather Conditions: cloudy
Water Color: brn. Odor: no
Sediment Description: silt
If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity μ mhos/cm	Temperature $^{\circ}$ F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
	<u>0</u>						

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-5</u>	<u>5 X VDA VIAL</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>(TPHG/STEX/MTDE 604's+1,2,4,6+EDG) (8160)</u>

COMMENTS: Insufficient water to purge.



Facility Address 1771 FIRST STREET, LIVERMORE, CA
 Consultant Project Number 180181.85
 Consultant Name Gettler-Ryan Inc. (G-R Inc.)
 Address 6747 Sierra Court, Suite J, Dublin, CA 94568
 Project Contact (Name) Deanna L. Hardine
 (Phone) 510-551-7555 (Fax Number) 510-551-7888

(Phone) (925) 277-2384
 Laboratory Name Sequoia Analytical
 Laboratory Release Number _____
 Samples Collected by (Name) Vartkes Tashjian
 Collection Date 10/8/01
 Signature Walt Kelly

DO NOT BILL
 TB-LB ANALYSIS

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Lead (Yes or No)	Analyses To Be Performed											Remarks	
								TPH Gas - BTX w/MTBE (8016)	TPH Diesel (8015)	Oil and Grease (8270)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd, Cr, Pb, Zn, Ni (ICAP or AA)	604y's (8260)	1,2-DCA & EDB			
TB-LB	01	1	W	G		Hel	Y	X												RUN 6 OXY.'S +
U-1	02	3	W	G	1120			X												1,2 DCA & EDB
U-2	03	3	W	G	1130			X												BY 8260 ON 8020
U-3	04	5	W	G	1155			X												MTBE HIT ON U-3
U-5	05	5	W	G	1045			X												ONLY

Relinquished By (Signature) <u>Walt Kelly</u>	Organization G-R Inc.	Date/Time 10/8/01	Received By (Signature) <u>Stella Daniel</u>	Organization	Date/Time 10/8/01 1800	Turn Around Time (Circle Choice) 24 Hrs. 48 Hrs. 5 Days 10 Days As Contracted
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time	



**Sequoia
Analytical**

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22 October, 2001

Deanna Harding
Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin, CA 94568

GETTLER-RYAN INC.
GENERAL ANALYTICAL LABS

RE: Tosco(1)
Sequoia Report: L110059

Enclosed are the results of analyses for samples received by the laboratory on 10/08/01 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Richard Yee For Latonya Pelt
Project Manager

CA ELAP Certificate #2360



Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#4186
Project Manager: Deanna Harding

Reported:
10/22/01 12:00

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-LB	L110059-01	Water	10/08/01 00:00	10/08/01 18:00
U-1	L110059-02	Water	10/08/01 11:20	10/08/01 18:00
U-2	L110059-03	Water	10/08/01 11:35	10/08/01 18:00
U-3	L110059-04	Water	10/08/01 11:55	10/08/01 18:00
U-5	L110059-05	Water	10/08/01 10:45	10/08/01 18:00

Sequoia Analytical - San Carlos

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Richard Yee For Latonya Pelt, Project Manager



Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite J Dublin CA, 94568	Project: Tosco(1) Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Reported: 10/22/01 12:00
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**Total Purgeable Hydrocarbon (C6-C12) by EPA 8015M and BTEX/MTBE by EPA 8021B
Sequoia Analytical - San Carlos**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TB-LB (L110059-01) Water Sampled: 10/08/01 00:00 Received: 10/08/01 18:00									
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l	1	1100075	10/17/01	10/17/01	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		104 %		70-130	"	"	"	"	
U-1 (L110059-02) Water Sampled: 10/08/01 11:20 Received: 10/08/01 18:00									
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l	1	1100075	10/17/01	10/17/01	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	5.0	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		99.2 %		70-130	"	"	"	"	
U-2 (L110059-03) Water Sampled: 10/08/01 11:35 Received: 10/08/01 18:00									
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l	1	1100075	10/17/01	10/18/01	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	82	5.0	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		110 %		70-130	"	"	"	"	

Gettler-Ryan/Geostrategies(1)
 6747 Sierra Court, Suite J
 Dublin CA, 94568

 Project: Tosco(1)
 Project Number: Unocal SS#4186
 Project Manager: Deanna Harding

 Reported:
 10/22/01 12:00

Total Purgeable Hydrocarbon (C6-C12) by EPA 8015M and BTEX/MTBE by EPA 8021B
Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
U-3 (L110059-04) Water Sampled: 10/08/01 11:55 Received: 10/08/01 18:00									
Purgeable Hydrocarbons as Gasoline	6100	1000	ug/l	20	1100075	10/17/01	10/18/01	DHS LUFT	P-01
Benzene	500	10	"	"	"	"	"	"	
Toluene	ND	10	"	"	"	"	"	"	
Ethylbenzene	570	10	"	"	"	"	"	"	
Xylenes (total)	130	10	"	"	"	"	"	"	
Methyl tert-butyl ether	23000	1000	"	200	"	"	"	"	M-04
<i>Surrogate: a,a,a-Trifluorotoluene</i>		124 %	70-130	"	"	"	"	"	
U-5 (L110059-05) Water Sampled: 10/08/01 10:45 Received: 10/08/01 18:00									
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l	1	1100075	10/17/01	10/18/01	DHS LUFT	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	37	5.0	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		106 %	70-130	"	"	"	"	"	



Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#4186
Project Manager: Deanna Harding

Reported:
10/22/01 12:00

Volatile Organic 8 Oxygenated Compounds by EPA Method 8260B
Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
U-3 (L110059-04) Water Sampled: 10/08/01 11:55 Received: 10/08/01 18:00									
Ethanol	ND	140000	ug/l	142.9	1100071	10/18/01	10/18/01	EPA 8260B	
1,2-Dibromoethane	ND	290	"	"	"	"	"	"	
1,2-Dichloroethane	ND	290	"	"	"	"	"	"	
Di-isopropyl ether	ND	290	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	290	"	"	"	"	"	"	
Methyl tert-butyl ether	22000	290	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	290	"	"	"	"	"	"	
Tert-butyl alcohol	33000	14000	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		83.6 %		76-114	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		91.4 %		88-110	"	"	"	"	
U-5 (L110059-05) Water Sampled: 10/08/01 10:45 Received: 10/08/01 18:00									
Ethanol	ND	1000	ug/l	1	1100054	10/11/01	10/11/01	EPA 8260B	
1,2-Dibromoethane	ND	2.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	2.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	2.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	2.0	"	"	"	"	"	"	
Methyl tert-butyl ether	54	2.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	2.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	100	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %		76-114	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.4 %		88-110	"	"	"	"	

Gettler-Ryan/Geostrategies(1)
 6747 Sierra Court, Suite J
 Dublin CA, 94568

 Project: Tosco(1)
 Project Number: Unocal SS#4186
 Project Manager: Deanna Harding

 Reported:
 10/22/01 12:00

**Total Purgeable Hydrocarbon (C6-C12) by EPA 8015M and BTEX/MTBE by EPA 8021B - Quality Control
 Sequoia Analytical - San Carlos**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1100075 - EPA 5030B (P/T)										
Blank (1100075-BLK1)										
Prepared & Analyzed: 10/17/01										
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l							
Benzene	ND	0.50	"							
Toluene	ND	0.50	"							
Ethylbenzene	ND	0.50	"							
Xylenes (total)	ND	0.50	"							
Methyl tert-butyl ether	ND	5.0	"							
<i>Surrogate: a,a,a-Trifluorotoluene</i>	9.14		"	10.0		91.4	70-130			
LCS (1100075-BS1)										
Prepared & Analyzed: 10/17/01										
Benzene	9.90	0.50	ug/l	10.0		99.0	70-130			
Toluene	9.85	0.50	"	10.0		98.5	70-130			
Ethylbenzene	10.1	0.50	"	10.0		101	70-130			
Xylenes (total)	30.5	0.50	"	30.0		102	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	9.49		"	10.0		94.9	70-130			
LCS (1100075-BS2)										
Prepared & Analyzed: 10/17/01										
Purgeable Hydrocarbons as Gasoline	255	50	ug/l	250		102	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	9.45		"	10.0		94.5	70-130			
Matrix Spike (1100075-MS1)										
Source: L110046-03 Prepared & Analyzed: 10/17/01										
Purgeable Hydrocarbons as Gasoline	263	50	ug/l	250	ND	105	60-140			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	11.0		"	10.0		110	70-130			
Matrix Spike Dup (1100075-MSD1)										
Source: L110046-03 Prepared & Analyzed: 10/17/01										
Purgeable Hydrocarbons as Gasoline	269	50	ug/l	250	ND	108	60-140	2.26	25	
<i>Surrogate: a,a,a-Trifluorotoluene</i>	10.5		"	10.0		105	70-130			



Gettler-Ryan/Geostrategies(1)
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Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#4186
Project Manager: Deanna Harding

Reported:
10/22/01 12:00

Volatile Organic 8 Oxygenated Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1100054 - EPA 5030B [P/T]

Blank (1100054-BLK1)

Prepared & Analyzed: 10/11/01

Ethanol	ND	1000	ug/l							
1,2-Dibromoethane	ND	2.0	"							
1,2-Dichloroethane	ND	2.0	"							
Di-isopropyl ether	ND	2.0	"							
Ethyl tert-butyl ether	ND	2.0	"							
Methyl tert-butyl ether	ND	2.0	"							
Tert-amyl methyl ether	ND	2.0	"							
Tert-butyl alcohol	ND	100	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	47.2		"	50.0		94.4	76-114			
<i>Surrogate: Toluene-d8</i>	49.5		"	50.0		99.0	88-110			

LCS (1100054-BS1)

Prepared & Analyzed: 10/11/01

Methyl tert-butyl ether	45.4	2.0	ug/l	50.0		90.8	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	48.4		"	50.0		96.8	76-114			
<i>Surrogate: Toluene-d8</i>	48.4		"	50.0		96.8	88-110			

Matrix Spike (1100054-MS1)

Source: L110057-07

Prepared & Analyzed: 10/11/01

Methyl tert-butyl ether	49.5	2.0	ug/l	50.0	3.0	93.0	60-140			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	49.5		"	50.0		99.0	76-114			
<i>Surrogate: Toluene-d8</i>	50.8		"	50.0		102	88-110			

Matrix Spike Dup (1100054-MSD1)

Source: L110057-07

Prepared & Analyzed: 10/11/01

Methyl tert-butyl ether	50.8	2.0	ug/l	50.0	3.0	95.6	60-140	2.76	25	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	51.0		"	50.0		102	76-114			
<i>Surrogate: Toluene-d8</i>	49.6		"	50.0		99.2	88-110			

Batch 1100071 - EPA 5030B [P/T]

Blank (1100071-BLK2)

Prepared & Analyzed: 10/18/01

Ethanol	ND	1000	ug/l							
1,2-Dibromoethane	ND	2.0	"							
1,2-Dichloroethane	ND	2.0	"							
Di-isopropyl ether	ND	2.0	"							
Ethyl tert-butyl ether	ND	2.0	"							
Methyl tert-butyl ether	ND	2.0	"							
Tert-amyl methyl ether	ND	2.0	"							
Tert-butyl alcohol	ND	100	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	41.9		"	50.0		83.8	76-114			

Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#4186
Project Manager: Deanna Harding

Reported:
10/22/01 12:00

Volatile Organic 8 Oxygenated Compounds by EPA Method 8260B - Quality Control
Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 1100071 - EPA 5030B [P/T]

Blank (1100071-BLK2)

Prepared & Analyzed: 10/18/01

Surrogate: Toluene-d8	45.7		ug/l	50.0		91.4	88-110			
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LCS (1100071-BS2)

Prepared & Analyzed: 10/18/01

Methyl teri-butyl ether	45.5	2.0	ug/l	50.0		91.0	70-130			
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Surrogate: 1,2-Dichloroethane-d4	42.4		"	50.0		84.8	76-114			
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Surrogate: Toluene-d8	50.5		"	50.0		101	88-110			
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Gettler-Ryan/Geostrategies(1)
6747 Sierra Court, Suite J
Dublin CA, 94568

Project: Tosco(1)
Project Number: Unocal SS#4186
Project Manager: Deanna Harding

Reported:
10/22/01 12:00

Notes and Definitions

M-04 MTBE was reported from second analysis.
P-01 Chromatogram Pattern: Gasoline C6-C12
DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference