



GETTLER-RYAN INC.

R0436

TRANSMITTAL

February 7, 2002
G-R #180181

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

FEB 26 2002

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	February 5, 2002	Groundwater Monitoring and Sampling Report First Quarter - Event of January 3, 2002

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 **February 21, 2002**, 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.

February 5, 2002
G-R Job #180181

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

RE: First Quarter Event of January 3, 2002
Groundwater Monitoring & Sampling Report
Tosco (Unocal) Service Station #4186
1771 First Street
Livermore, California

Dear Mr. De Witt:

This report documents the most recent well development and 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,

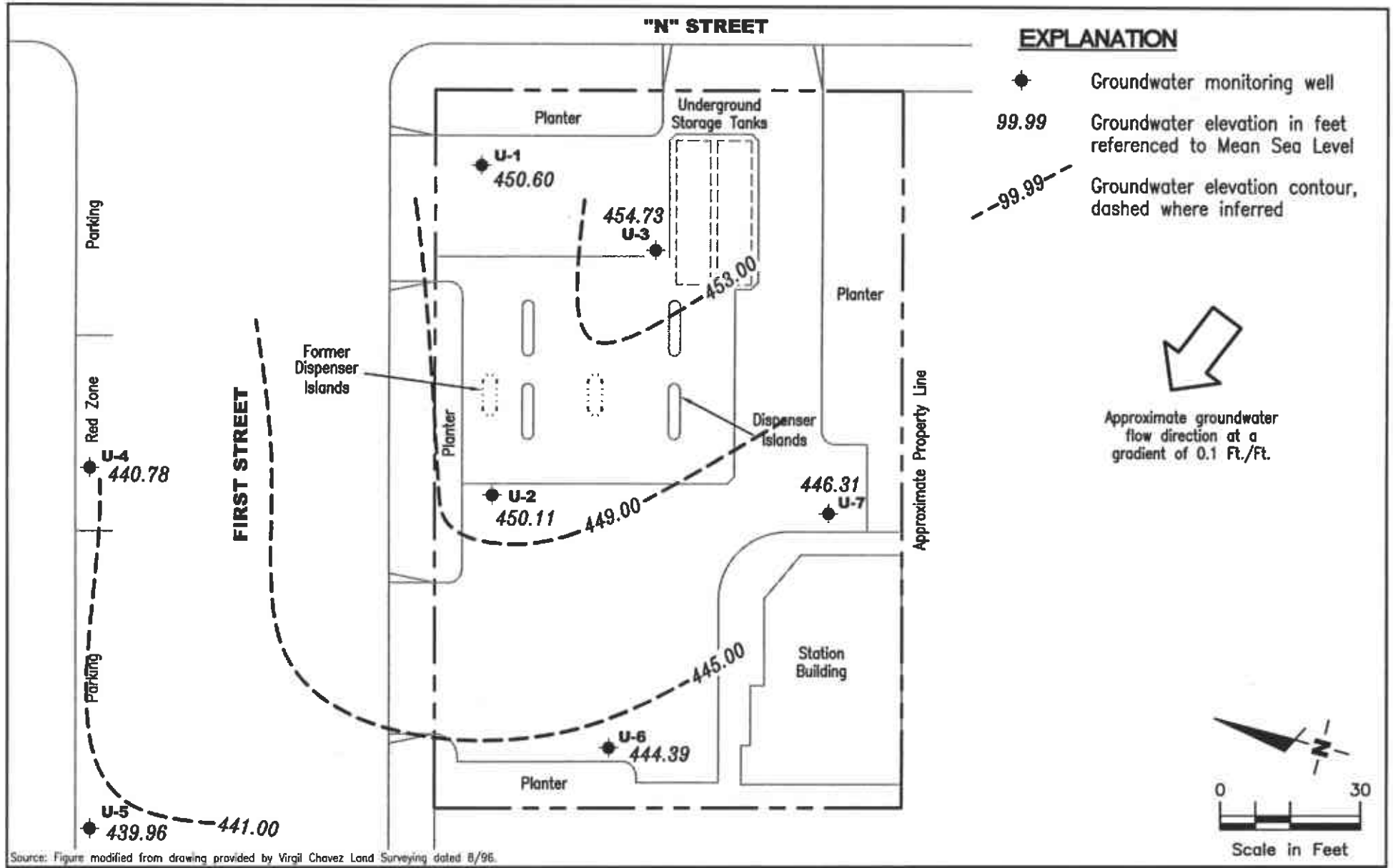
Deanna L. Harding
Project Coordinator

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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 Dublin, CA 94568 (925) 551-7555

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

FIGURE
1

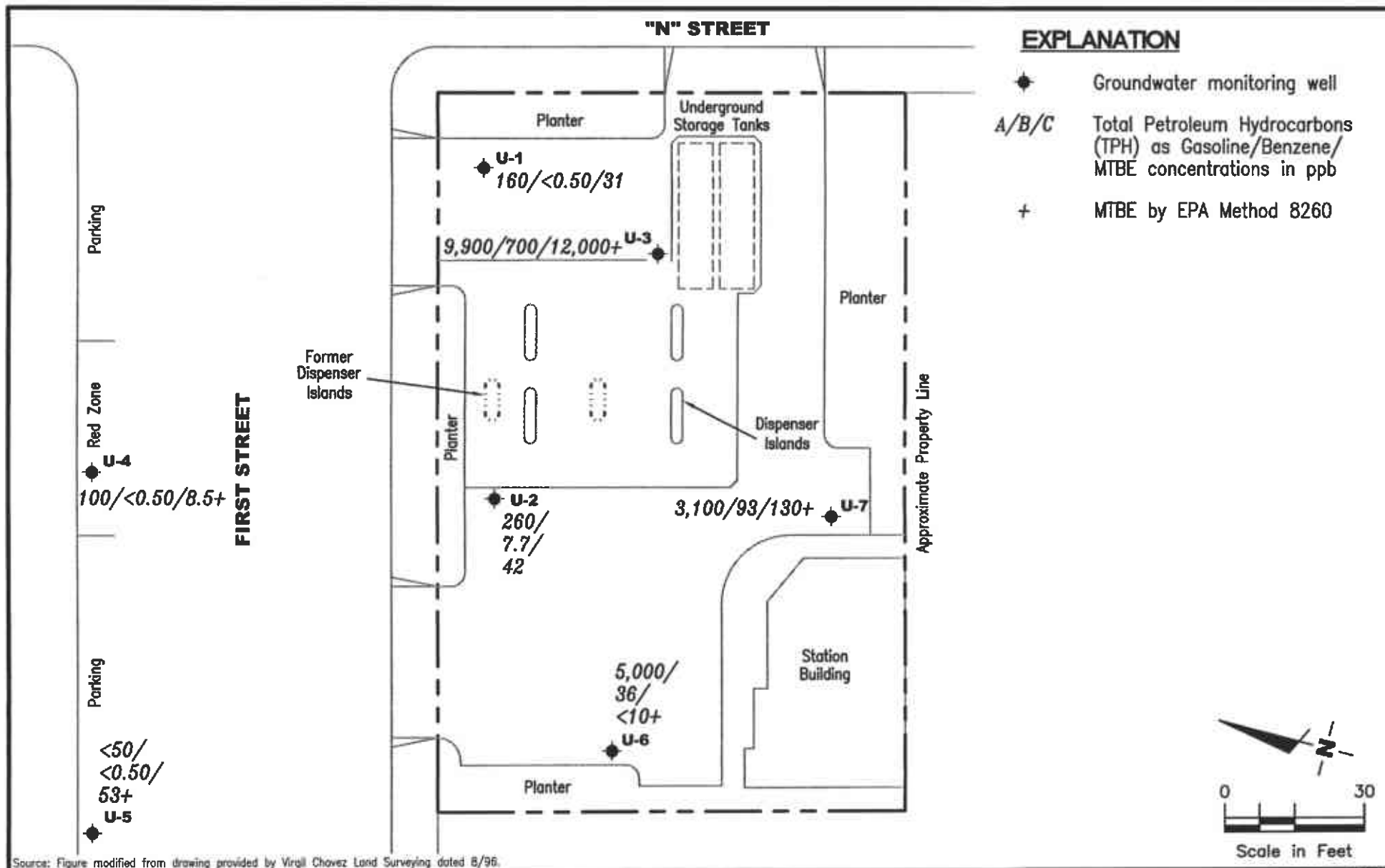
PROJECT NUMBER
 180181

REVIEWED BY

DATE
 January 3, 2002

REVISED DATE

FILE NAME: P:\Enviro\Tosco\4186\002-4186.DWG | Layout Tab: Pot1



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
 January 3, 2002

REVISED DATE

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

WELL ID/ TOC*(ft.)	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
	01/03/02	27.67		450.60	160 ⁹	<0.50	0.51	<0.50	0.69	31
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

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

WELL ID/ TOC*(ft.)	DATE	DTW (ft.)	S.I. (ft. bgs)	GWE (mst)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-2	07/02/01	29.01		448.43	ND	ND	ND	ND	ND	16
(cont)	10/08/01	30.94		446.50	<50	<0.50	<0.50	<0.50	<0.50	82
	01/03/02	27.33		450.11	260 ⁴	7.7	11	1.7	15	42
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
	01/03/02	23.73		454.73	9,900 ⁴	700	130	24	1,000	14,000/12,000 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					--
	01/03/02	36.15		440.78	100 ⁹	<0.50	<0.50	<0.50	<0.50	10/8.5 ³

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

WELL ID/ TOC*(ft.)	DATE	DTW (ft.)	S.I. (ft.bgs)	GWE (msl)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
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
	01/03/02	36.55		439.96	<50	<0.50	0.59	<0.50	0.91	51/53 ³
U-6										
478.38	01/03/02 ⁷	33.99	--	444.39	5,000 ⁸	36	<25	260	450	<250/<10 ³
U-7										
478.74	01/03/02 ⁷	32.43	--	446.31	3,100 ⁸	93	<10	35	73	140/130 ³
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
	01/03/02	--	--	--	<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

DTW = Depth to Water

(ft.) = Feet

S. I. = Screen Interval

(ft.bgs) = Feet Below Ground Surface

GWE = Groundwater Elevation

(msl) = 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

NP = No Purge

* 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). Wells U-6 and U-7 were surveyed on January 16, 2002, using the previous benchmark.

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.

8 Laboratory report indicates weathered gasoline C6-C12.

9 Laboratory report indicates unidentified hydrocarbons C6-C12.

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
	01/03/02	<50,000	17,000	12,000	<100	<100	<100	<100	<100
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
	01/03/02	<500	<20	8.5	<1.0	<1.0	<1.0	<1.0	<1.0
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
	01/03/02	<500	<20	53	<1.0	<1.0	<1.0	<1.0	<1.0
U-6	01/03/02	<5,000	<200	<10	<10	<10	<10	<10	<10

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-7	01/03/02	<500	30	130	<1.0	<1.0	<1.0	<1.0	<1.0

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 well development, each well is monitored for the presence of free-phase hydrocarbons and the depth to water is recorded. Wells are then developed by alternately surging the well with the bailer, then purging the well with a pump to remove accumulated sediments and draw groundwater into the well. Development continues until the groundwater parameters (temperature, pH, and conductivity) have stabilized.

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 Phillips 66 Company, the purge water and decontamination water generated during sampling activities is transported to Phillips 66 - San Francisco Refinery, located in Rodeo, California.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Well ID: Tosco
 Well No: 4186
 Address: 1771 First St.
 City: Livermore, Ca.

Job #: 180181
 Date: 11/3/02
 Sampler: Vatkes

Well ID: U-1
 Well Diameter: 2 in.
 Total Depth: 34.05 ft.
 Depth to Water: 27.67 ft.

Well Condition: DN
 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	

$6.38 \times VF 0.17 = 1.08 \times 3 \text{ (case volume)} = \text{Estimated Purge Volume: } 3.5 \text{ (gal.)}$

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

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

Starting Time: 1005
 Sampling Time: 1030
 Pumping Flow Rate: _____ gpm.
 Did well de-water? no

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

Time	Volume (gal.)	pH	Conductivity (µmhos/cm)	Temperature (F)	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>1010</u>	<u>1</u>	<u>7.73</u>	<u>911</u>	<u>65.7</u>			
<u>1016</u>	<u>2</u>	<u>7.55</u>	<u>897</u>	<u>66.1</u>			
<u>1024</u>	<u>3.5</u>	<u>7.57</u>	<u>880</u>	<u>66.4</u>			

LABORATORY INFORMATION

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

COMMENTS: _____

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Client: Tosco
 Well ID: 4186
 Address: 1771 First St.
 City: Livermore, Ca.

Job#: 180181
 Date: 11/3/02
 Sampler: VartKey

Well ID: U-2
 Well Diameter: 2 in.
 Total Depth: 33.20 ft.
 Depth to Water: 27.33 ft.

Well Condition: ON
 Hydrocarbon Thickness: 0.00 in.
 Amount Bailed (product/water): 0 (gal.)
 Volume Factor (VF) table:
 2" = 0.17 3" = 0.38 4" = 0.66
 6" = 1.50 12" = 5.80

5.87 x VF 0.17 = 0.99 x 3 (case volume) = Estimated Purge Volume: 3 (gal.)

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

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

Starting Time: 1045
 Sampling Time: 1110
 Pumping Flow Rate: _____ gpm.
 Did well de-water? no

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

Time	Volume (gal.)	pH	Conductivity (µmhos/cm)	Temperature (F)	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>10:50</u>	<u>1</u>	<u>7.60</u>	<u>823</u>	<u>66.0</u>			
<u>10:55</u>	<u>2</u>	<u>7.47</u>	<u>807</u>	<u>66.7</u>			
<u>11:02</u>	<u>3</u>	<u>7.44</u>	<u>796</u>	<u>66.9</u>			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-2</u>	<u>3 x VOA VIAL</u>	<u>Y</u>	<u>HC</u>	<u>SEQUOIA</u>	<u>TPHG/BTEX/MTBE</u>

COMMENTS: Well box full of water/gas - pump # 5 spill about 2 gal. - automatic shut-off valve failed.

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Well ID: Tosco
 Well ID: 4186 Job#: 180181
 Address: 1771 First St. Date: 11/3/02
 City: Livermore, Ca. Sampler: Vatkey

Well ID: U-3 Well Condition: ON
 Well Diameter: 2 in. Hydrocarbon Thickness: 0.00 in. Amount Bailed (product/water): 0 (gal.)
 Well Depth: 33.40 ft. Volume Factor (VF):
 2" = 0.17 3" = 0.38 4" = 0.66
 6" = 1.50 12" = 5.80
 Depth to Water: 23.73 ft.

Estimated Purge Volume: 9.67 X VF 0.17 = 1.64 X 3 (case volume) = Estimated Purge Volume: 5 (gal.)

Sample Collection Method: Disposable Bailer
 Sampling Equipment: Disposable Bailer
 Other: _____

Starting Time: 1125 Weather Conditions: clear
 Sampling Time: 1150 Water Color: clear Odor: Y
 Pumping Flow Rate: _____ gpm. Sediment Description: _____
 Did well de-water? no If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity (µmhos/cm)	Temperature (F)	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>1130</u>	<u>1.5</u>	<u>7.48</u>	<u>641</u>	<u>65.3</u>			
<u>1136</u>	<u>3</u>	<u>7.34</u>	<u>629</u>	<u>66.1</u>			
<u>1144</u>	<u>5</u>	<u>7.29</u>	<u>621</u>	<u>66.4</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>HEL</u>	<u>SEQUOIA</u>	<u>TPHG/BTEX/MTOE</u>

COMMENTS: _____

WELL MONITORING/SAMPLING FIELD DATA SHEET

Well ID: Tosco
 Well ID: 4186
 Address: 1771 First St.
 City: Livermore, Ca.
 Job #: 180181
 Date: 11/3/02
 Sampler: Vartkes

Well ID: U-4 Well Condition: DN
 Diameter: 2 in.
 Total Depth: 45.30 ft.
 Depth to Water: 36.15 ft.
 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	

9.15 x VF 0.17 = 1.55 x 3 (case volume) = Estimated Purge Volume: 5 (gal.)

Sampling Equipment: Disposable Bailer
 Other: _____
 Other: _____

Starting Time: 0928 Weather Conditions: overcast
 Sampling Time: 0945 Water Color: brn. Odor: no
 Pumping Flow Rate: 1 gpm Sediment Description: soft
 Did well de-water? no If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity (µmhos/cm)	Temperature (F)	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
0930	1.5	7.67	706	64.7			
0932	3	7.50	691	65.3			
0934	5	7.46	680	65.7			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
U-4	5 X VOA VIAL	Y	HCC	SEQUOIA	TPH6/BTEX/MTBE+ 8042/8260

COMMENTS: _____

WELL MONITORING/SAMPLING FIELD DATA SHEET

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

Job#: 180181
 Date: 1/3/02
 Sampler: Vatkes

Well ID U-5

Well Condition: OK

Well Diameter 2 in.

Hydrocarbon Thickness: 0.00 in. Amount Bailed (product/water): 0 (gal.)

Total Depth 47.20 ft.

Depth to Water 36.55 ft.

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

10.65 x VF 0.17 = 1.81 x 3 (case volume) = Estimated Purge Volume: 5.5 (gal.)

Purge Equipment: Disposable Bailer
 Stack
 Suction
 Grundfos
 Other: _____

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

Starting Time: 0850

Weather Conditions: overcast

Sampling Time: 0905

Water Color: brn. Odor: no

Purging Flow Rate: 1 gpm.

Sediment Description: silt

Did well de-water? no

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>0852</u>	<u>2</u>	<u>7.71</u>	<u>693</u>	<u>64.1</u>	_____	_____	_____
<u>0854</u>	<u>4</u>	<u>7.59</u>	<u>680</u>	<u>64.8</u>	_____	_____	_____
<u>0856</u>	<u>5.5</u>	<u>7.56</u>	<u>674</u>	<u>65.2</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-5</u>	<u>5 x VOA VIAL</u>	<u>Y</u>	<u>HCL</u>	<u>SEQUOIA</u>	<u>TPH6/BTEX/MTOE + 804's (8262)</u>

COMMENTS: _____

**WELL MONITORING/DEVELOPMENT
FIELD DATA SHEET**

Client/ Facility# Tosco 4186 Job#: 180181
 Address: 1771 First st. Date: 11/3/02
 City: Livermore, Ca. Sampler: Vartky

Well ID U-6 Well Condition: OK
 Well Diameter 2 in. Hydrocarbon Thickness: 0.00 Ft. Amount Bailed (product/water): 0 (gal.)
 Total Depth 44.65 ft. Volume 2" = 0.17 3" = 0.38 4" = 0.66
 Depth to Water 33.99 ft. Factor (VF) 6" = 1.50 12" = 5.80

$10.66 \times VF 0.17 = 1.81$ X ¹⁰ (case volume) = Estimated Purge Volume: 18 (gal.)

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

Starting Time: 1205 Weather Conditions: clear
 Sampling Time: 1255 Water Color: brn. Odor: mild
 Purging Flow Rate: 1 gpm. Sediment Description: fine silt (very little)
 Did well de-water? Y If yes; Time: 1214, 1229, 1245 Volume: 8, 12 + 15 (gal.)

Time	Volume (gal.)	pH	Conductivity μ mhos/cm	Temperature $^{\circ}$ F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>1207</u>	<u>2</u>	<u>7.77</u>	<u>780</u>	<u>67.6</u>			
<u>1209</u>	<u>4</u>	<u>7.63</u>	<u>803</u>	<u>68.2</u>	<u>Clear after 2nd ga.</u>		
<u>1211</u>	<u>6</u>	<u>7.60</u>	<u>809</u>	<u>68.0</u>			
<u>1214</u>	<u>8</u>	<u>7.54</u>	<u>816</u>	<u>68.2</u>			
<u>1227</u>	<u>10</u>	<u>7.56</u>	<u>807</u>	<u>68.1</u>			
<u>1229</u>	<u>12</u>	<u>7.47</u>	<u>801</u>	<u>68.3</u>			
<u>1245</u>	<u>15</u>	<u>7.42</u>	<u>806</u>	<u>68.5</u>			

Dewatered 3 times. slow recovery.

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-6</u>	<u>5 N/A's</u>	<u>Y</u>	<u>HCl</u>	<u>SEQUOIA</u>	<u>TPH6/BTEX/MTBE + 8org's (826c)</u>

COMMENTS: started with stainless steel Bailer. very little silt, no sand.

**WELL MONITORING/DEVELOPMENT
FIELD DATA SHEET**

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

Job#: 180181
 Date: 1/3/02
 Sampler: Venther

Well ID U-7
 Well Diameter 2 in.
 Total Depth 44.45 ft.
 Depth to Water 32.43 ft.

Well Condition: ok
 Hydrocarbon Thickness: 0.00 Ft. Amount Bailed (product/water): ∅ (gal.)

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

$12.02 \times VF 0.17 = 2.04$ ¹⁰ X (case volume) = Estimated Purge Volume: 20.5 (gal.)

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

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

Starting Time: 1310 Weather Conditions: clear
 Sampling Time: 1400 Water Color: clear Odor: mild
 Purging Flow Rate: 1 gpm. Sediment Description: _____
 Did well de-water? Y If yes; Time: 1318, 1333, 1346 Volume: 7, 10, 13 (gal.)

Time	Volume (gal.)	pH	Conductivity μ mhos/cm	Temperature °F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
1310	2	7.60	721	68.3			
1314	7	7.53	762	68.5			
1316	6	7.50	763	68.3			
1318	8	7.43	767	68.4			
1333	10	7.38	760	68.2			
1345	12	7.32	772	68.3			
1346	13	7.35	770	68.5			
<u>De-watered 3 times - slow recovery</u>							

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-7</u>	<u>5 VOA's</u>	<u>Y</u>	<u>HCl</u>	<u>SEQUOIA</u>	<u>TPHC/BTEX/MTBE</u>

COMMENTS: started with stainless steel Bailer - clear



**Sequoia
Analytical**

1551 Industrial Road
San Carlos, CA 94070
(650) 232-9600
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22 January, 2002

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

RE: Tosco(1)
Sequoia Report: L201017

Enclosed are the results of analyses for samples received by the laboratory on 01/03/02 19:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Latonya Pelt
Project Manager

CA ELAP Certificate #2360

RECEIVED

JAN 22 2002

GETTLER-RYAN INC.
GENERAL CONTRACTORS



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

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

Reported:
01/22/02 12:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-LB	L201017-01	Water	01/03/02 00:00	01/03/02 19:30
U-1	L201017-02	Water	01/03/02 10:30	01/03/02 19:30
U-2	L201017-03	Water	01/03/02 11:10	01/03/02 19:30
U-3	L201017-04	Water	01/03/02 11:50	01/03/02 19:30
U-4	L201017-05	Water	01/03/02 09:45	01/03/02 19:30
U-5	L201017-06	Water	01/03/02 09:05	01/03/02 19:30
U-6	L201017-07	Water	01/03/02 12:55	01/03/02 19:30
U-7	L201017-08	Water	01/03/02 14:00	01/03/02 19:30

Sequoia Analytical - San Carlos

Latonya Pelt, Project Manager

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.



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

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

Reported:
01/22/02 12:10

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 (L201017-01) Water Sampled: 01/03/02 00:00 Received: 01/03/02 19:30									
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l	1	2010043	01/14/02	01/14/02	EPA 8021B	
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>		90.2 %	70-130	"	"	"	"	"	"
U-1 (L201017-02) Water Sampled: 01/03/02 10:30 Received: 01/03/02 19:30									
Purgeable Hydrocarbons as Gasoline	160	50	ug/l	1	2010044	01/14/02	01/14/02	EPA 8021B	P-03
Benzene	ND	0.50	"	"	"	"	"	"	"
Toluene	0.51	0.50	"	"	"	"	"	"	"
Ethylbenzene	ND	0.50	"	"	"	"	"	"	"
Xylenes (total)	0.69	0.50	"	"	"	"	"	"	"
Methyl tert-butyl ether	31	5.0	"	"	"	"	"	"	"
<i>Surrogate: a,a,a-Trifluorotoluene</i>		86.8 %	70-130	"	"	"	"	"	"
U-2 (L201017-03) Water Sampled: 01/03/02 11:10 Received: 01/03/02 19:30									
Purgeable Hydrocarbons as Gasoline	260	50	ug/l	1	2010043	01/14/02	01/14/02	EPA 8021B	P-01
Benzene	7.7	0.50	"	"	"	"	"	"	"
Toluene	11	0.50	"	"	"	"	"	"	"
Ethylbenzene	1.7	0.50	"	"	"	"	"	"	"
Xylenes (total)	15	0.50	"	"	"	"	"	"	"
Methyl tert-butyl ether	42	5.0	"	"	"	"	"	"	"
<i>Surrogate: a,a,a-Trifluorotoluene</i>		124 %	70-130	"	"	"	"	"	"



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

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

Reported:
01/22/02 12:10

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 (L201017-04) Water Sampled: 01/03/02 11:50 Received: 01/03/02 19:30									
Purgeable Hydrocarbons as Gasoline	9900	1200	ug/l	25	2010044	01/14/02	01/14/02	EPA 8021B	P-01
Benzene	700	12	"	"	"	"	"	"	
Toluene	130	12	"	"	"	"	"	"	
Ethylbenzene	24	12	"	"	"	"	"	"	
Xylenes (total)	1000	12	"	"	"	"	"	"	
Methyl tert-butyl ether	14000	500	"	100	"	"	"	"	M-04
Surrogate: a,a,a-Trifluorotoluene		84.0 %	70-130		"	"	"	"	
U-4 (L201017-05) Water Sampled: 01/03/02 09:45 Received: 01/03/02 19:30									
Purgeable Hydrocarbons as Gasoline	100	50	ug/l	1	2010044	01/14/02	01/15/02	EPA 8021B	P-03
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	10	5.0	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		100 %	70-130		"	"	"	"	
U-5 (L201017-06) Water Sampled: 01/03/02 09:05 Received: 01/03/02 19:30									
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l	1	2010044	01/14/02	01/15/02	EPA 8021B	
Benzene	ND	0.50	"	"	"	"	"	"	
Toluene	0.59	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	0.91	0.50	"	"	"	"	"	"	
Methyl tert-butyl ether	51	5.0	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		92.3 %	70-130		"	"	"	"	



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

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

Reported:
01/22/02 12:10

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-6 (L201017-07) Water Sampled: 01/03/02 12:55 Received: 01/03/02 19:30									
Purgeable Hydrocarbons as Gasoline	5000	2500	ug/l	50	2010044	01/14/02	01/15/02	EPA 8021B	P-02
Benzene	36	25	"	"	"	"	"	"	
Toluene	ND	25	"	"	"	"	"	"	
Ethylbenzene	260	25	"	"	"	"	"	"	
Xylenes (total)	450	25	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		76.8 %	70-130		"	"	"	"	
U-7 (L201017-08) Water Sampled: 01/03/02 14:00 Received: 01/03/02 19:30									
Purgeable Hydrocarbons as Gasoline	3100	1000	ug/l	20	2010044	01/14/02	01/15/02	EPA 8021B	P-02
Benzene	93	10	"	"	"	"	"	"	
Toluene	ND	10	"	"	"	"	"	"	
Ethylbenzene	35	10	"	"	"	"	"	"	
Xylenes (total)	73	10	"	"	"	"	"	"	
Methyl tert-butyl ether	140	100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		84.6 %	70-130		"	"	"	"	

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

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

Reported:
 01/22/02 12:10

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 (L201017-04) Water Sampled: 01/03/02 11:50 Received: 01/03/02 19:30									
Ethanol	ND	50000	ug/l	100	2010020	01/07/02	01/07/02	EPA 8260B	
1,2-Dibromoethane	ND	100	"	"	"	"	"	"	
1,2-Dichloroethane	ND	100	"	"	"	"	"	"	
Di-isopropyl ether	ND	100	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	100	"	"	"	"	"	"	
Methyl tert-butyl ether	12000	100	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	100	"	"	"	"	"	"	
Tert-butyl alcohol	17000	2000	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.5 %		70-130	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.8 %		70-130	"	"	"	"	
U-4 (L201017-05) Water Sampled: 01/03/02 09:45 Received: 01/03/02 19:30									
Ethanol	ND	500	ug/l	1	2010014	01/07/02	01/07/02	EPA 8260B	
1,2-Dibromoethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	8.5	1.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	1.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	20	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.2 %		70-130	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %		70-130	"	"	"	"	
U-5 (L201017-06) Water Sampled: 01/03/02 09:05 Received: 01/03/02 19:30									
Ethanol	ND	500	ug/l	1	2010014	01/07/02	01/07/02	EPA 8260B	
1,2-Dibromoethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	53	1.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	1.0	"	"	"	"	"	"	
Tert-butyl alcohol	ND	20	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		97.8 %		70-130	"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %		70-130	"	"	"	"	



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

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

Reported:
01/22/02 12:10

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-6 (L201017-07) Water Sampled: 01/03/02 12:55 Received: 01/03/02 19:30									R-05
Ethanol	ND	5000	ug/l	10	2010020	01/07/02	01/07/02	EPA 8260B	
1,2-Dibromoethane	ND	10	"	"	"	"	"	"	
1,2-Dichloroethane	ND	10	"	"	"	"	"	"	
Di-isopropyl ether	ND	10	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	10	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	10	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	10	"	"	"	"	"	"	
Tert-butyl alcohol	ND	200	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		94.5 %	70-130		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.7 %	70-130		"	"	"	"	
U-7 (L201017-08) Water Sampled: 01/03/02 14:00 Received: 01/03/02 19:30									
Ethanol	ND	500	ug/l	1	2010014	01/07/02	01/07/02	EPA 8260B	
1,2-Dibromoethane	ND	1.0	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.0	"	"	"	"	"	"	
Di-isopropyl ether	ND	1.0	"	"	"	"	"	"	
Ethyl tert-butyl ether	ND	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	130	1.0	"	"	"	"	"	"	
Tert-amyl methyl ether	ND	1.0	"	"	"	"	"	"	
Tert-butyl alcohol	30	20	"	"	"	"	"	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>		99.7 %	70-130		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	70-130		"	"	"	"	



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

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

Reported:
01/22/02 12:10

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 2010043 - EPA 5030B (P/T)										
Blank (2010043-BLK1) Prepared & Analyzed: 01/14/02										
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>	8.21		"	10.0		82.1	70-130			
LCS (2010043-BS1) Prepared & Analyzed: 01/14/02										
Benzene	11.4	0.50	ug/l	10.0		114	70-130			
Toluene	11.1	0.50	"	10.0		111	70-130			
Ethylbenzene	10.9	0.50	"	10.0		109	70-130			
Xylenes (total)	33.2	0.50	"	30.0		111	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	8.65		"	10.0		86.5	70-130			
LCS (2010043-BS2) Prepared & Analyzed: 01/14/02										
Purgeable Hydrocarbons as Gasoline	270	50	ug/l	250		108	70-130			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	9.16		"	10.0		91.6	70-130			
Matrix Spike (2010043-MS1) Source: L201019-04 Prepared: 01/14/02 Analyzed: 01/15/02										
Purgeable Hydrocarbons as Gasoline	264	50	ug/l	250	ND	106	60-140			
<i>Surrogate: a,a,a-Trifluorotoluene</i>	9.73		"	10.0		97.3	70-130			
Matrix Spike Dup (2010043-MSD1) Source: L201019-04 Prepared: 01/14/02 Analyzed: 01/15/02										
Purgeable Hydrocarbons as Gasoline	261	50	ug/l	250	ND	104	60-140	1.14	25	
<i>Surrogate: a,a,a-Trifluorotoluene</i>	9.23		"	10.0		92.3	70-130			



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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2010044 - EPA 5030B (P/T)										
Blank (2010044-BLK1)										
Prepared & Analyzed: 01/14/02										
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	"							
Surrogate: a,a,a-Trifluorotoluene	7.63		"	10.0		76.3	70-130			
LCS (2010044-BS1)										
Prepared & Analyzed: 01/14/02										
Benzene	8.17	0.50	ug/l	10.0		81.7	70-130			
Toluene	7.32	0.50	"	10.0		73.2	70-130			
Ethylbenzene	7.11	0.50	"	10.0		71.1	70-130			
Xylenes (total)	21.0	0.50	"	30.0		70.0	70-130			
Surrogate: a,a,a-Trifluorotoluene	7.83		"	10.0		78.3	70-130			
LCS (2010044-BS2)										
Prepared & Analyzed: 01/14/02										
Purgeable Hydrocarbons as Gasoline	275	50	ug/l	250		110	70-130			
Surrogate: a,a,a-Trifluorotoluene	7.89		"	10.0		78.9	70-130			
Matrix Spike (2010044-MS1)										
Source: L201016-06 Prepared: 01/14/02 Analyzed: 01/15/02										
Purgeable Hydrocarbons as Gasoline	263	50	ug/l	250	ND	105	60-140			
Surrogate: a,a,a-Trifluorotoluene	9.81		"	10.0		98.1	70-130			
Matrix Spike Dup (2010044-MSD1)										
Source: L201016-06 Prepared: 01/14/02 Analyzed: 01/15/02										
Purgeable Hydrocarbons as Gasoline	246	50	ug/l	250	ND	98.4	60-140	6.68	25	
Surrogate: a,a,a-Trifluorotoluene	9.17		"	10.0		91.7	70-130			

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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
Batch 2010014 - EPA 5030B [P/T]										
Prepared & Analyzed: 01/04/02										
Blank (2010014-BLK1)										
Ethanol	ND	500	ug/l							
1,2-Dibromoethane	ND	1.0	"							
1,2-Dichloroethane	ND	1.0	"							
Di-isopropyl ether	ND	1.0	"							
Ethyl tert-butyl ether	ND	1.0	"							
Methyl tert-butyl ether	ND	1.0	"							
Tert-amyl methyl ether	ND	1.0	"							
Tert-butyl alcohol	ND	20	"							
Surrogate: 1,2-Dichloroethane-d4	9.68		"	10.0		96.8	70-130			
Surrogate: Toluene-d8	9.91		"	10.0		99.1	70-130			
Prepared & Analyzed: 01/07/02										
Blank (2010014-BLK2)										
Ethanol	ND	500	ug/l							
1,2-Dibromoethane	ND	1.0	"							
1,2-Dichloroethane	ND	1.0	"							
Di-isopropyl ether	ND	1.0	"							
Ethyl tert-butyl ether	ND	1.0	"							
Methyl tert-butyl ether	ND	1.0	"							
Tert-amyl methyl ether	ND	1.0	"							
Tert-butyl alcohol	ND	20	"							
Surrogate: 1,2-Dichloroethane-d4	9.78		"	10.0		97.8	70-130			
Surrogate: Toluene-d8	10.1		"	10.0		101	70-130			
Prepared & Analyzed: 01/04/02										
LCS (2010014-BS1)										
Methyl tert-butyl ether	45.5	1.0	ug/l	50.0		91.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	9.67		"	10.0		96.7	70-130			
Surrogate: Toluene-d8	9.72		"	10.0		97.2	70-130			



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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 2010014 - EPA 5030B [P/T]

LCS (2010014-BS2)

Prepared & Analyzed: 01/07/02

Methyl tert-butyl ether	44.3	1.0	ug/l	50.0		88.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	9.42		"	10.0		94.2	70-130			
Surrogate: Toluene-d8	9.80		"	10.0		98.0	70-130			

Matrix Spike (2010014-MS1)

Source: L201014-04

Prepared & Analyzed: 01/04/02

Methyl tert-butyl ether	45.2	1.0	ug/l	50.0	3.6	83.2	60-140			
Surrogate: 1,2-Dichloroethane-d4	9.39		"	10.0		93.9	70-130			
Surrogate: Toluene-d8	9.60		"	10.0		96.0	70-130			

Matrix Spike Dup (2010014-MSD1)

Source: L201014-04

Prepared & Analyzed: 01/04/02

Methyl tert-butyl ether	47.9	1.0	ug/l	50.0	3.6	88.6	60-140	6.29	25	
Surrogate: 1,2-Dichloroethane-d4	9.53		"	10.0		95.3	70-130			
Surrogate: Toluene-d8	9.79		"	10.0		97.9	70-130			

Batch 2010020 - EPA 5030B [P/T]

Blank (2010020-BLK1)

Prepared & Analyzed: 01/07/02

Ethanol	ND	500	ug/l							
1,2-Dibromoethane	ND	1.0	"							
1,2-Dichloroethane	ND	1.0	"							
Di-isopropyl ether	ND	1.0	"							
Ethyl tert-butyl ether	ND	1.0	"							
Methyl tert-butyl ether	ND	1.0	"							
Tert-amyl methyl ether	ND	1.0	"							
Tert-butyl alcohol	ND	20	"							
Surrogate: 1,2-Dichloroethane-d4	9.78		"	10.0		97.8	70-130			
Surrogate: Toluene-d8	10.1		"	10.0		101	70-130			

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**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
Batch 2010020 - EPA 5030B [P/T]										
LCS (2010020-BS1)				Prepared & Analyzed: 01/07/02						
Methyl tert-butyl ether	44.3	1.0	ug/l	50.0		88.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	9.42		"	10.0		94.2	70-130			
Surrogate: Toluene-d8	9.80		"	10.0		98.0	70-130			
Matrix Spike (2010020-MS1)				Source: L201015-09		Prepared & Analyzed: 01/07/02				
Methyl tert-butyl ether	42.3	1.0	ug/l	50.0	ND	84.6	60-140			
Surrogate: 1,2-Dichloroethane-d4	9.50		"	10.0		95.0	70-130			
Surrogate: Toluene-d8	9.75		"	10.0		97.5	70-130			
Matrix Spike Dup (2010020-MSD1)				Source: L201015-09		Prepared & Analyzed: 01/07/02				
Methyl tert-butyl ether	41.0	1.0	ug/l	50.0	ND	82.0	60-140	3.12	25	
Surrogate: 1,2-Dichloroethane-d4	9.47		"	10.0		94.7	70-130			
Surrogate: Toluene-d8	9.77		"	10.0		97.7	70-130			



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Notes and Definitions

- M-04 MTBE was reported from second analysis.
- P-01 Chromatogram Pattern: Gasoline C6-C12
- P-02 Chromatogram Pattern: Weathered Gasoline C6-C12
- P-03 Chromatogram Pattern: Unidentified Hydrocarbons C6-C12
- R-05 The reporting limit(s) for this sample have been raised due to high levels of non-target interferents.
- 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