### TRANSMITTAL

August 9, 2001

AUG 2 8 2001

G-R #: 180181

TO:

Mr. David B. De Witt

**Tosco Marketing 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

Livermore, California

#### WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
1	August 1, 2001	Groundwater Monitoring and Sampling Report Third Quarter - Event of July 2, 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 August 23, 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

August 1, 2001 G-R Job #180181

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

RE: Third Quarter Event of July 2, 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,

Deanna L. Harding

Project Coordinator

Hagop Kevork P.E. No. C55734

Figure 1:

Potentiometric Map

Figure 2:

Concentration Map

Table 1:

Groundwater Monitoring Data and Analytical Results

Table 2:

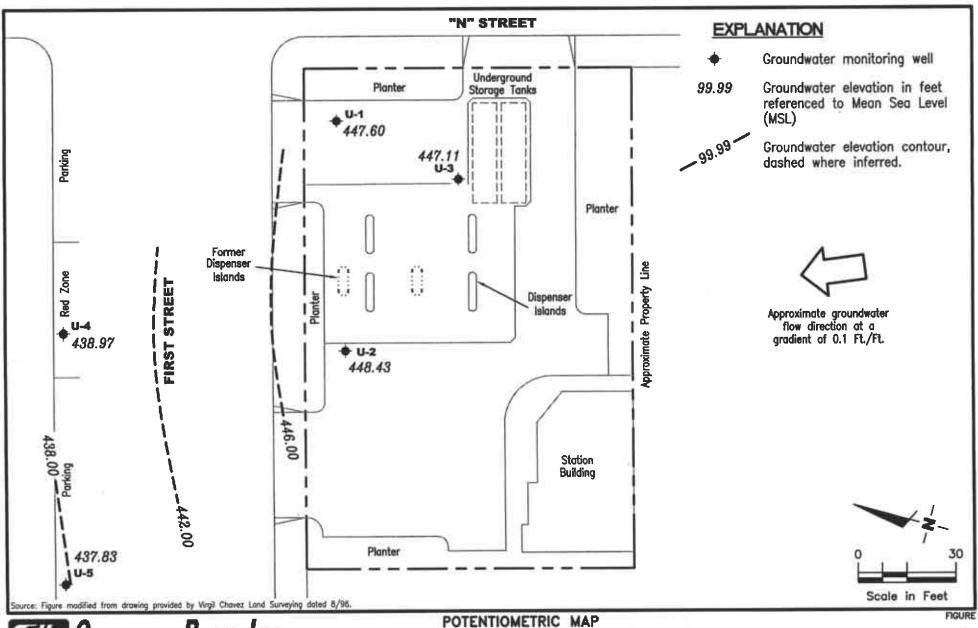
Groundwater Analytical Results - Oxygenate Compounds Standard Operating Procedure - Groundwater Sampling

Attachments:

Field Data Sheets

4186.qml

Chain of Custody Document and Laboratory Analytical Reports



GETTLER - RYAN INC.
6747 Sierro Ct., Suite J
Dublin, CA 94568 (925) 551-7555

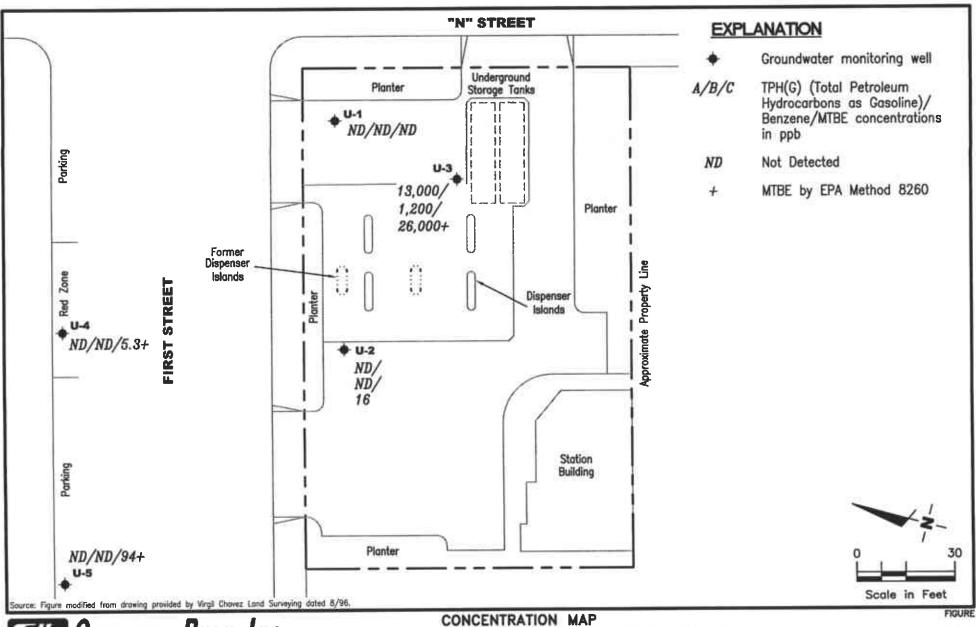
Tosco (Unocal) Service Station #4186 1771 First Street

Livermore, California

PROJECT NUMBER 180181 REVIEWED BY

July 2, 2001

REVISED DATE





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

July 2, 2001

REVISED DATE

PROJECT NUMBER REVIEWED BY 180181

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Table 1
Groundwater Monitoring Data and Analytical Results

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

WELL ID/	DATE	DTW	S.I.	GWE	TPH-G	В	Т	E	X	MTBE
TOC*		(ft.)	(ft. bgs)	(msl)	(ppb)	(ррб)	(ppb)	(ppb)	(ppb)	(ррв)
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
U-2									100	
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	<b>2</b> 5.95		451.49	ND	ND	ND	ND	ND	30.2
	07/02/01	29.01		448.43	ND	ND	ND	ND	ND	16

Table 1
Groundwater Monitoring Data and Analytical Results

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

WELL ID/	DATE	DTW	S.I.	GWE	TPH-G	В	Т	E	X	MTBE
TOC*		(ft.)	(ft. bgs)	(msl)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ррь)
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 <sup>t</sup>	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 <sup>4</sup>	4,200	$ND^2$	2,300	1,800	22,000/8,300 <sup>5</sup>
	01/24/00	23.43		455.03	13,000 <sup>4</sup>	260	$ND^2$	770	3,200	53,000/42,000 <sup>3</sup>
	04/10/00	23.31		455.15	35,200 <sup>4</sup>	1,070	241	2,820	8,850	35,600/40,900 <sup>3</sup>
	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 <sup>4</sup>	2,100	31	2,000	780	25,000/28,000 <sup>3.6</sup>
	01/08/01	29.85		448.61	33,600 <sup>4</sup>	3,060	427	3,040	4,190	24,700/30,900 <sup>3</sup>
	04/03/01	24.98		453.48	5,390 <sup>4</sup>	660	10.8	304	356	15,200/19,300 <sup>5</sup>
	07/02/01	31.35		447.11	13,000 <sup>4</sup>	1,200	58	1,300	930	25,000/26,000 <sup>3</sup>
<b>7</b> 7.4										
<b>U-4</b> 476.93	04/03/017	31.63	35.0-45.0	445.30	ND	ND	ND	ND	ND	37.8/38.2 <sup>3</sup>
110.23	07/02/01	37.96	33.0 13.0	438.97	ND	ND	ND	ND	ND	ND/5.3 <sup>3</sup>
U-5										
476.51	04/03/017	31.75	37.0-47.0	444.76	ND	ND	0.728	ND	0.993	54.8/55.4 <sup>3</sup>
	07/02/01	38.68		437.83	ND	ND	ND	ND	ND	88/94 <sup>3</sup>
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

# 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)
1000		V-7	(J# 283)							
TB-LB	10/12/99				ND	ND	ND	ND	ND	ND
(cont)	01/24/00				ND	ND	ND	ND	ND	ND
(Com)	04/10/00				ND	ND	ND	ND	ND	ND
	07/17/00	<del></del>			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

#### 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

(ppb) = Parts per billion

DTW = Depth to Water

B = Benzene

ND = Not Detected

(ft.) = Feet

T = Toluene

-- = Not Measured/Not Analyzed

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

- \* 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).
- Laboratory report indicates gasoline and unidentified hydrocarbons C6-C12.
- Detection limit raised. Refer to analytical reports.
- MTBE by EPA Method 8260.
- Laboratory report indicates gasoline C6-C12.
- 5 MTBE by EPA Method 8260 analyzed past EPA recommended holding time.
- Laboratory report indicates the sample was analyzed within holding time. Re-analysis for confirmation or dilution was performed past the recommend holding time.
- 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)
<b>U-1</b>	10/02/00		ND		**	<b></b>			
U-2	10/02/00		ND		<del></del>				
	07/10/00			16,000					
U-3	07/19/99			8,300		=-			
	10/12/99			42,000			<b></b>		
	01/24/00 04/10/00	<b>-</b>		40,900	<del></del>				
	07/17/00			21,000					
	10/02/00		63,000	28,000	<del></del>		<del></del>		
	01/08/01	ND <sup>1</sup>	49,300	30,900	$ND^1$	${ m ND}^1$	$ND^1$	$ND^1$	$ND^1$
	04/03/01 <sup>2</sup>	ND <sup>1</sup>	22,200	19,300	ND <sup>1</sup>	$ND^1$	ND <sup>1</sup>	$ND^1$	$ND^{i}$
	07/02/01	ND <sup>1</sup>	27,000	26,000	ND¹	ND <sup>1</sup>	$ND^1$	$ND^1$	ND¹
U-4	04/03/01	ND	ND	38.2	ND	ND	ND	ND	ND
0-4	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
0-3	07/02/01	ND	ND	94	ND	ND	ND	ND	ND

#### Table 2

#### **Groundwater Analytical Results - Oxygenate Compounds**

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

#### **EXPLANATIONS:**

#### **ANALYTICAL METHOD:**

EPA Method 8260 for Oxygenate Compounds

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

Detection limit raised. Refer to analytical reports.

<sup>&</sup>lt;sup>2</sup> 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.

		FIELD DATA				
ient/ cility #	co # 4186		000#1	180181 7/2/01		<del></del>
ddress: <i>177</i>	1 First st.	<u> </u>		`1 1 L		
ty: Live	more, Ca.		Sampler: _	Vartker		
Well ID	<u>u-1</u>	Well Conditio	n: Oh			<del></del> .
/ell Diameter		Hydrocarbon Thickness: _		Amount Bai	or):	(gel.)
otal Depth	34.05 #	Volume Factor (VF)	2" = 0.17	3" = 0.38 • 1.50	12" = 5.80	<b>-</b> 0.66
epth to Water	30. <b>6</b> 7 n				7	
	3.38 xv	1 0.17 =05	X 3 (case volume	) = Estimated Pul	rge Volume: .=	<u></u>
Purge	Disposable Bailer Bailer			Disposable Bai	iler	•
Equipment:	Stack	•		Bailer Pressure Baile	r	
	Suction Grundfos		Other	Grab Sample		•
	Other:	<u> </u>			<u> </u>	<u> </u>
	1305		er Conditions:	_ dear	_	
Starting Time:	1907			<i>l</i>	Odor: NO	
	1227	Water	Color:	6-n.		
Sampling Time:	1322	Sedimo	ent Description:	Sitt	<u> </u>	
	1322 ete:	Sedimo	Color:ent Description:	Sitt	ne:	(gel
Sampling Time: Purging Flow R	1322 ste:	Sedimo	Time:	Volume D.O. (mg/L)	<u> </u>	(gel
Sampling Time: Purging Flow Ra Did well de-wat Time	1322 ate:or	Conductivity  µmhos/cm	ent Description: Time:	Volume D.O. (mg/L)	orp	(gal
Sampling Time: Purging Flow Ra Did well de-wat	ter? pH (gal.)	Conductivity  mnhos/cm  7 9 3	Time:  Temperature  70.3  69.7	Volume D.O. (mg/L)	orp	(gal
Sampling Time: Purging Flow Re Did well de-wat Time	1322	Conductivity  mnhos/cm	Time:  Temperature  70.3  69.7	Volume D.O. (mg/L)	orp	(gal
Sampling Time: Purging Flow Re Did well de-wat Time	1322	Conductivity  mnhos/cm  7 9 3	Time:  Temperature  70.3  69.7	Volume D.O. (mg/L)	orp	(gal
Sampling Time: Purging Flow Re Did well de-wat Time	1322	Conductivity  pmhos/cm  803 790 783	Time:  Temperatur  70.3  69.7  69.5	Volume D.O. (mg/L)	orp	(gal
Sampling Time: Purging Flow Ra Did well de-wat  Time  1308  1311  1315	1322   ter?	Conductivity  mm. Sedime  if yes;  Conductivity  mmhos/cm  703  7803  780  ABORATOF	Temperature 70.3 69.7 69.5	Volume D.O. (mg/L)	ORP (mV)	Aikalinity (ppm)
Sampling Time: Purging Flow Ra Did well de-wat  Time  1308  1311  1315  SAMPLE ID	1322  ste:	Conductivity  pmhos/cm  803 790 783  LABORATOF  REFRIG. PRES	Temperature 70.3 69.7 69.5 RY INFORMATIO	Volume D.O. (mg/L)	ORP (mV)	Aikalinity (ppm)
Sampling Time: Purging Flow Ra Did well de-wat  Time  1308  1311  1315	1322   ter?	Conductivity  pmhos/cm  803 790 783  LABORATOF  REFRIG. PRES	Temperature 70.3 69.7 69.5  RY INFORMATIO	Volume D.O. (mg/L)	ORP (mV)	Aikalinity (ppm)
Sampling Time: Purging Flow Ra Did well de-wat  Time  1308  1311  1315  SAMPLE ID	1322  ste:	Conductivity  pmhos/cm  803 790 783  LABORATOF  REFRIG. PRES	Temperature 70.3 69.7 69.5  RY INFORMATIO	Volume D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
Sampling Time: Purging Flow Ra Did well de-wat  Time  1308  1311  1315  SAMPLE ID	1322  ste:	Conductivity  pmhos/cm  803 790 783  LABORATOF  REFRIG. PRES	Temperature 70.3 69.7 69.5  RY INFORMATIO	Volume D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)

0#4186		Job#:	180181	
First st.	·	Date:		
	- <del></del> -	Sampler:	Vartker	
mant ( Ca ·				
		A A		·
<u>U-2</u>	Well Conditi	on: ———		الماداد
2 10				
33-20 tt			3* = 0.38	
	Factor (VF)	• 5	6" = 1.50	12" = 5.80
	<b></b>			25
4, P _ x v	0.17 -0	X 3 (case volu	ime) = Estimated P	urge Volume:
				_
Bailer		Equipment:		auer
Stack Suction			Pressure Baile	er
Grundfos		O1		<del>-</del>
Other:	<u> </u>	<u></u>		
133	West	her Conditions	:	
1350	Wate	r Color:	<u>brn.</u>	Odor: /
):or	n. Sedir	nent Description	on:	me:
	If yes	s; Time:		
olume nH	Conductivi		eture D.O.	ORP Alkali (mV) (ppr
(gal.)		•		
			•	
$\frac{2}{1.55}$	- <del>- 77-</del>	69.4	<u> </u>	
<u>us</u> <u>4.51</u>				
		RY INFORMA	TION	ANALYSES
(#) - CONTAINER	REFRIG. PR	RY INFORMA	TION LABORATORY	
(月) - CONTAINER 多 × VDA VIAL		RY INFORMA	TION	ANALYSES TPHG   BTEX   MTDE
	REFRIG. PR	RY INFORMA	TION LABORATORY	
	REFRIG. PR	RY INFORMA	TION LABORATORY	
	REFRIG. PR	RY INFORMA	TION LABORATORY	
	Disposable Bailer Bailer Stack Suction Grundfos Other:  1335 1350  17	2 in Hydrocarbo Thickness:  33-20 fr. Volume Factor (VF)  24.0 ( fr. Volume Factor (VF)  Disposable Bailer Bailer Stack Suction Grundfos Other:  1335 West  1350 Wate  1350 If yes  Tolume pH Conductivi grahos/cm  (gal.)	Weather Conditions  Sampler:  Well Condition:  Hydrocarbon Thickness:  Volume Pactor (VF)  Yolume Pactor (VF)  X VF 8-17 - 0.7 X 3 (case volume Equipment:  Stack Suction Grundfos Other:  Weather Conditions Water Color:  Sediment Description If yes; Time:  Volume Ph Conductivity Ph Conductivity Temper (gal.)  7-78 - 7-78 - 7-0.	Sampler: Vantke,  Well Condition:    Vantke,   Vantke,   Vantke,

Purge Disposable Bailer Stack Pressure Bailer Stack Suction Grundfos Other:  Starting Time:  Purging Flow Rate:  Did well de-water?  Time Volume pH (gal.)  1.35	ount Bailed duct/water): (gal.)  3" = 0.38  12" = 5.80  imated Purge Volume: // (gal.)  sable Bailer sample  Clear  Y Odor: // Volume: (gal.)	Job#: 180181  Date: 7/2/01  Sampler: Vartke  Amount Bai in (product/wate)  2" = 0.17 3" = 0.38	Well Condition: Hydrocarbon Thickness: Volume Factor (VF)	First st.  more, Ca.  U-3  2 in  33.40 in	ddress: 1771 ity: Livers  Well ID
Well ID  Vell Diameter  Vell Diameter  Vell Diameter  Volume  Purge  Disposable Bailer  Equipment:  Bailer  Stack  Suction  Grandfos  Other:  Vell Diameter  Volume  Volume  Volume  Volume  Volume  Factor (VF)  Sampling  Equipment:  Starting Time:  Purging Flow Rate:  Purging Flow Rate:  Purging Flow Rate:  Volume  PH  Conductivity  Frestor  Volume  Volume  Volume  PH  Conductivity  Frestor  Volume  PH  Conductivity  Frestor  Volume  PH  Conductivity  Frestor  Volume  PH  Conductivity  Frestor  Volume  Frestor  Volume  PH  Conductivity  Frestor  Volume  Frestor  Volume  Frestor  Volume  PH  Conductivity  Frestor  Frestor  Frestor  Volume  Frestor  AMALYSI  LABORATORY INFORMATION  AMALYSI  AMALYSI  AMALYSI	ount Bailed  duct/wster):	Amount Bai in. (product/wats 2" = 0.17 3" = 0.38 6" = 1.50	Well Condition: Hydrocarbon Thickness: Volume Factor (VF)	2 in 33.40 fr.	Well ID
Well ID  Well Diameter    Volume   Sampling   Sampling	imated Purge Volume: // Signal    sable Bailer    sample    Volume:    D.O. ORP Alkalinity	Amount Bai in. (product/wate 2" = 0.17 3" = 0.38 6" = 1.50	Hydrocarbon Thickness: Volume Factor (VF)	2 in 33.40 ft.	/ell Diameter
Amount bases   Amou	imated Purge Volume: // Signal    sable Bailer    sample    Volume:    D.O. ORP Alkalinity    (gal.)  (gal.)	in. (product/wats 2" = 0.17 3" = 0.38 6" = 1.50	Volume Factor (VF)	33.40 1	/ell Diameter
Volume   2" = 0.17   3" = 0.38   12" = 5.80   12" = 5.80	imated Purge Volume: // igal.)  sable Bailer sample  Clear  Volume:	6" = 1.50	Volume Factor (VF)		and Dorth
Purge Disposable Bailer Sampling Equipment: Disposable Bailer Stack Pressure Bailer Stack Pressure Bailer Grab Sample Other:  Starting Time: 1400 Weather Conditions: Other: Sampling Time: 1415 Sediment Description: Scitt Sedim	sable Bailer sure Bailer Sample  Clear  Goldon:  Volume:   D.O. ORP Alkalinity	X 3 (case volume) = Estimated Pu	B17-034)	31.23 **	otal pepul
Purge Disposable Bailer Equipment:  Bailer Fressure Bailer Pressure Bailer Pre	Sable Bailer  Sure Bailer  Sample  Clear  My Odor: 4  Volume: 1981	V A location		2 01	epth to Water
Equipment:    Bailer   Stack   Pressure Bailer   Pressure   Pressure   Pressure   Pressure Bailer   Pr	Note Bailer Sample  Clear  My Odor: 4  Volume: 100  D.O. ORP Alkalining	impling Re	Sar	. —	•
Suction Grundfos Other:  Starting Time:  Sampling Time:  Sampling Time:  Purging Flow Rate:  Did well de-water?  Time  Volume (gal.)  1403  1403  1403  1403  1403  1403  1403  1403  1403  1409	Sample  Clear  M. Odor:   Volume:   D.O. ORP Alkalining	Bailer Pressure Baile	Eq.	Bailer '	
Starting Time: 1400 Weather Conditions: Clear  Sampling Time: 1415 Water Color: 9 ranger Odor: 4  Purging Flow Rate: 00m. Sediment Description: Self Volume: 15 yes; Time: Volume: 16 yes; Time: Volume: 17 yes; Time: 10.0. ORP (mg/L) (mg/L) (mg/L)  1403 05 7.70 728 70.0  1406 1 7.50 7.50 715 70.0  1409 (55 7.53 709 69.7 40.0)  LABORATORY INFORMATION  ANALYSIS	Volume:	Grab Sample		Suction	
Starting Time:    1415   Water Conditions:   Graph   Odor:	Volume:			Other:	
Purging Flow Rate:	D.O. ORP Alkalinity		Weather C	1400	Starting Time:
Did well de-water?  Time Volume pH Conductivity Temperature (mg/L) (mV)  1403 05 7.70 728 70.5  1406 1 7.50 715 70.0  1409 (56 7.53 70.9 69.7  LABORATORY INFORMATION  ANALYSIS	D.O. ORP Alkalinity	Uf Describes -	<sub>в.</sub> Sedimen	<u> </u>	
Time Volume pH Conductivity Temperature D.O. (mg/L)  1403 0/5 7.70 728 70.0  1406 1 7.50 715 70.0  1409 (	D.O. ()	Time:	_ If yes;	~	
1403 05 7.70 728 40.3 1406 1 3.50 715 70.0 1409 (.6 7.53 709 69.7	·	remperature (mg/L)	µmhos/cm	Volume pH	
LABORATORY INFORMATION  LABORATORY INFORMATION  ANALYSI  PRESERV. TYPE: LABORATORY  ANALYSI		70.0	$-\frac{728}{215}$	05 7.70	1403
LABORATORY INFORMATION ANALYSI PRESERV. TYPE LABORATORY		69.7	709	1.6 7.5	1406 -
LABORATORY INFORMATION ANALYSI PRESERV. TYPE: LABORATORY ANALYSI					
PRESERV. TYPE	RATORY ANALYSES				
SAMPLE ID TO CONTAIN SECULOR		Y INFORMATION	LABORATORY	(#) - CONTAINER	SAMPLE ID
U-3 5 x VDA VIAL Y HEE		Y INFORMATION SERV. TYPE: LABORATORY SERV. TYPE: CEOUDIA	REFRIG. PRESI		11 3
		Y INFORMATION SERV, TYPE: LABORATORY	REFRIG. PRESI		<u>u3</u>
		Y INFORMATION SERV. TYPE: LABORATORY SERV. TYPE: CEOUDIA	REFRIG. PRESI		<u>u- 3</u>

		FIELD DA	IM SILLE			
ient/ cility # <u>Tosc</u>	co # 4186		Job#:	180181	· · ·	
ddress: <u>1771</u>	First st		Date:	7/2/01		
ty: Liver	more, Ca.		Sample	r: Vartke		· · · · · · · · · · · · · · · · · · ·
Well ID	4-4	Well Cond	lition: 💍	n		
ell Diameter	2 <u>In</u>	Hydrocart Thickness		Amount B		(gel_)
otal Depth	45.30 m	Volume Factor (V	2" = 0.17	3" = 0.3 6" = 1.50		- 0.66
epth to Water	37.96 n	. ve 0 17 =1.0	24 x 3 (case vo	olume) = Estimated F	urge Volume: 🗅	
Purge Equipment:	Disposable Bailer Bailer Stack Suction Grundfos Other:		Sampling Equipment:	Disposable B Bailer Pressure Bail Grab Sample Other:	gilet ler	
Starting Time: Sampling Time: Purging Flow Rate Did well de-water	$\sim$	Wat	ter Color:	s: <u>Clear</u> <u>6 rn</u> ion: <u>Si /+</u> Volu	Odor:nc	<del></del>
11445	(gal.)  1 7.7 2.5 7.66 4 7.8	806	- <u>4</u>	(mg/L)	ORP (mV)	Alkalinity (ppm)
SAMPLE ID	(#) - CONTAINER		ORY INFORMA	TION LABORATORY		YSES
<u>u-4</u>	5 x VDA VIAI		Her	SEQUOI A	(TPHG BTE	AYEDBO
		-				
	<u> </u>					

ient/ cility # <u>7950</u> ddress: <u>1771</u> ity: <u>Liver</u>	First C	st		Da Sa	ite: - impler: -	7/2, Var	tkes		
Well ID Vell Diameter Total Depth Depth to Water	2 47.26 38.68	— Hy	ydrocarb nickness Volume Factor (Vi	eon :	(case volum	An (pro	nount Bailed oduct/water): 3" = 0.38 12 timated Purge	4" = 5.80	(gal.)
Purge Equipment:	Disposable   Bailer Stack Suction Grundfos Other:			Samp	oling oment:	Baile Press Grab	sable Bailer r sure Bailer Sample		
Starting Time: Sampling Time: Purging Flow Ra Did well de-wat	ite:		Wa Se		Descriptio	,	1+ (little	0dor: <u>n0</u>	(gal
Time  1229  1235  1242	Volume (gal.) 1.5 3 4.5	рн 7-70 7-57 7-55	Conduct prohos	/cm	68. 69.	<u> </u>	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
SAMPLE ID	(#) - CON	TAINER RI	LABORA EFRIG.	PRESER	NFORMA V. TYPE	TION LAB	ORATORY	TPHG BTE	LYSES



Relinquiched By (Signature)

Relinquiched By (Signature)

PNika khamban	UNOCAL SS	# 4186		
Fadilly Address	1771 FIRST	STREET,	LIVERMORE,	CA
Consultant Project Numb	180	181.85		·
Consultant Hams Get	tler-Ryan_I	nc. (G-R	Inc.)	<del></del>
Address 6747 S1	erra Court.	Sulta_J	<u>Dublin, C</u>	<u> 4568</u>
Project Contact (Han				
(Pho	ne)510-551-7	555_(Fox No	imber) 510-551	<u> 7888                                  </u>

Date/Time

Dote/Time

Organization

Organization

MR. DAVID DE WILL Contact (Name) \_ (925) 277-2384 Loborolory Nome Sequoia Analytical Laboratory Release Humber. Samples Collected by (Hame)-Collection Date, Signature Poits

6 Days 10 Doys

As Contracted

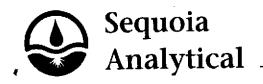
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Organization

			(P)	tope) - I	<u>, , , , , , , , , , , , , , , , , , , </u>	2_(10)	Maiston	7.2.5												
		75					;				•	Analyse	• To B	• Perfor	med	<del></del> -				DO NOT BILL TB-LB ANALYSIS
Lob Sample Mumber	Humber of Containers	11 40	Type G = Grab C = Composite D = Discrete	Ten•	Sample Preservation	load (You or No.)	TPH Gar B TEX WANTEE (BO16) (BO20)	TPH Dissel (BO15)	Oil and Grades (5520)	Puryecbie Malocarbors (8010)	Purpeoble Aromotics (8020)	Purpedole Organica (8240)	Extractable Organics (8270)	Metals CACT-Pb_Zn_Mi (ICVP or AA)	60475 (8260) 1, 2019 45 DB	·				Remorks
731		12	C		Hel	7	X													RUN 6 OXY.'S' +
	<del>-</del>		<u> </u>	1222		٠,	·											- •.		1,2 DCA & EDB
<u> </u>																				BÝ 8260 ON 8020
									<del> </del>	·										MTBE HIT ON U-3
<u> </u>	75	u	4	1415	<u> </u>					-		<del> </del>		<del>                                     </del>	V					ONLY "
05	5	-4	4	1205	u	34			ļ	-	<u> </u>	<del> </del>	<b> </b>	<del>}</del> -						ONET
	5	4	نابعه	1250	u		X		<u> </u>	.  <u></u> -		ļ		<del> </del>	<u> </u>	·	_	<u> </u>	<del> </del>	
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Signature)	<u> </u>	G-	-R Inc	. 7	tdo 1					<u> </u>						910	J	Turn Ar	24	me (Circle Cholee)
	3( 22 03 05 06	orduna or	3( 1 W 3( 3	Iduatine)    Canting Auropara   Containers   Canting Auropara				Sample Munther of Continues of		Charge   C			Another   Anot	Parameter   Para	1	Another   Anot	Analyses To Bo Performed   Analyses To Bo Perf	Analyses To Bo Performed   Analyses To Bo Perf		Pacture   Pact

Received By (Signolure)

Recleved For Laboratory Dy (Signature)



1551 Industrial Road San Carlos, CA 94070-4111 (650) 232-9600 FAX (650) 232-9612 www.sequoialabs.com

JUE 19 700

GETTLER-RYAN INC.

July 18, 2001

Deanna Harding Gettler-Ryan/Geostrategies(1) 6747 Sierra Court, Suite J Dublin, CA 94568 RE: Tosco(1) / L107031

Enclosed are the results of analyses for samples received by the laboratory on 07/02/01. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Latonya Pelt Project Manager

**CA ELAP Certificate Number 2360** 

atonya K. Pelt

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: 07/18/01 06:13

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TB-LB	L107031-01	Water	07/02/01 00:00	07/02/01 19:10
U-1	L107031-02	Water	07/02/01 13:22	07/02/01 19:10
U-2	L107031-03	Water	07/02/01 13:50	07/02/01 19:10
U-3	L107031-04	Water	07/02/01 14:15	07/02/01 19:10
U-4	L107031-05	Water	07/02/01 12:05	07/02/01 19:10
U-5	L107031-06	Water	07/02/01 12:50	07/02/01 19:10

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: 07/18/01 06:13

### Total Purgeable Hydrocarbon (C6-C12) by EPA 8015M and BTEX/MTBE by EPA 8020 Sequoia Analytical - San Carlos

		quoia Ana	-1, 11011						
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Not
TB-LB (L107031-01) Water	Sampled: 07/02/01 00:00	Received:	07/02/01	19:10				<u> </u>	
Purgeable Hydrocarbons as Ga	soline ND	50	ug/l	1	1070060	07/13/01	07/14/01	DHS LUFT	
Benzene	ND	0.50	n	H		#	н	W .	
Toluene	ND	0.50	*	11	**	π	17	*	
Ethylbenzene	ND	0.50	Ħ	m	Ħ	н	77	₩	
Xylenes (total)	ND	0.50	*	**	#	#	. *	r r	
Methyl tert-butyl ether	ND	5.0	н	n	н	н	H		
Surrogate: a,a,a-Trifluorotolue	ene	95.0 %	70	-130	#	77	π	"	
U-1 (L107031-02) Water Sa	mpled: 07/02/01 13:22 F	Received: 07/	02/01_19:	:10				<u>.                                    </u>	
Purgeable Hydrocarbons as Ga	soline ND	50	ug/l	1	1070060	07/13/01	07/14/01	DH\$ LUFT	
Benzene	ND	0.50	**	7	#	#	*	-	
Toluene	, ND	0.50	n	и .	# "	#	**	N	
Ethylbenzene	ND	0.50	11	•	*	Ħ	n	*	
Xylenes (total)	ND	0.50			H	n	It.	*	
Methyl tert-butyl ether	ND	5.0	•	Ħ				H	
Surrogate: a,a,a-Trifluorotolu	ene	96.5 %	70	-130		"		#	
U-2 (L107031-03) Water Sa	ampled: 07/02/01 13:50	Received: 07/	02/01 19	:10		·			
Purgeable Hydrocarbons as Ga	soline ND	. 50	ug/l	1	1070066	07/16/01	07/16/01	DHS LUFT	
Benzene	ND	0.50	**	#		n	•	#	
Toluene	ND	0.50	**	Ħ	•	Ħ	-	11	
Ethylbenzene	ND	0.50	Ħ	**	п	#	#	#	
Xylenes (total)	ND	0.50	•	H	н	Ħ	н	n	
Methyl tert-butyl ether	16	5.0	*	•	**	**	π		

70-130

103 %

Surrogate: a,a,a-Trifluorotoluene

Gettler-Ryan/Geostrategies(1)

Project: Tosco(1)

6747 Sierra Court, Suite J Dublin CA, 94568 Project Number: Unocal SS#4186 Project Manager: Deanna Harding Reported:

07/18/01 06:13

### Total Purgeable Hydrocarbon (C6-C12) by EPA 8015M and BTEX/MTBE by EPA 8020

Sequoia Analytical - San Carlos

41	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
Analyte					Datcu	Першо		1730.110	
U-3 (L107031-04) Water Sampled: 0	7/02/01 14:15	Received: 07/0	2/01 19:1	10				·	
Purgeable Hydrocarbons as Gasoline	13000	5000	ug/l	100	1070067	07/16/01	07/16/01	DHS LUFT	P-0
Benzene	1200	50	m	H	M	Ħ		H	
Toluene	58	50	**			#	н	н	
Ethylbenzene	1300	50	**	-	**	n	#	•	
Xylenes (total)	930	50	Ħ	•	#1		**	n	
Methyl tert-butyl ether	25000	500	Ħ	11	н		n	H	<del></del>
Surrogate: a,a,a-Trifluorotoluene		88.1 %	70-	130	n	"	π	#	
U-4 (L107031-05) Water Sampled: 0	7/02/01 12:05	Received: 07/0	2/01 19:	10				. <u></u>	
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l	1	1070067	07/16/01	07/16/01	DHS LUFT	
Benzene	ND	0.50		m		#	**	Ħ	
Toluene	ND	0.50	•		•	*	17	#	
Ethylbenzene	ND	0.50	#		e	11	н	. #	
Xylenes (total)	ND	0.50	н		н	п	#	*	
Methyl tert-butyl ether	ND	5.0	#	4	Ħ	h	#	n	
Surrogate: a,a,a-Trifluorotoluene		80.8 %	70-	130		H		n	
U-5 (L107031-06) Water Sampled: 0	7/02/01 12:50	Received: 07/0	02/01 19:	10					
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l	1	1070067	07/16/01	07/16/01	DHS LUFT	
Benzene	ND	0.50	**		n	н	*	п	
Toluene	ND	0.50	**	•	•	**	Ħ		
Ethylbenzene	ND	0.50	11		**	**	n		
Xylenes (total)	ND	0.50	н		n	н	Ħ	**	
Methyl tert-butyl ether	88	5.0	Ħ	Ħ	#		H	n	
Surrogate: a,a,a-Trifluorotoluene		75.6 %	70-	-130	. "	"	н	"	

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: 07/18/01 06:13

### Volatile Organic 8 Oxygenated Compounds by EPA Method 8260B

Sequoia Analytical - San Carlos

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
U-3 (L107031-04) Water	Sampled: 07/02/01 14:15	Received: 07/02	2/01 19:	10					
Ethanol	ND	170000	ug/i	166.67	1070064	07/16/01	07/16/01	EPA 8260B	
1,2-Dibromoethane	ND	330	**	*	#			" N	
1,2-Dichloroethane	ND	330	77	#	n			**	
Di-isopropyl ether	ND	330		π					
Ethyl tert-butyl ether	ND	330	н		π	•	-		
Methyl tert-butyl ether	26000	330	*	Ħ	**	#			
Tert-amyl methyl ether	ND	330	17	"	*	n		" •	
Tert-butyl alcohol	27000	17000_		**	*				
Surrogate: 1,2-Dichloroet	hane-d4	13100 %	76	-114	W		*	*	
Surrogate: Toluene-d8		17300 %	88	-110	**	"	*	π	
U-4 (L107031-05) Water	Sampled: 07/02/01 12:05	Received: 07/0	2/01 19	:10				<u> </u>	
Ethanol	ND	1000	ug/l	1	1070037	07/09/01	07/10/01	EPA 8260B	
1,2-Dibromoethane	ND	2.0	*	<b>77</b>	77	n	. 11		
1,2-Dichloroethane	ND	2.0	H	н	11	*1		<b>.</b>	
Di-isopropyl ether	ND	2.0	#1	H	•	H	H		
Ethyl tert-butyl ether	ND	2.0	#		#	ęı	•		
Methyl tert-butyl ether	5.3	2.0	-	*	**	Ħ	#	" 	
Tert-amyl methyl ether	ND	2.0	#1	#	H	n	**	_	
Tert-butyl alcohol	ND	100	#	н	#				
Surrogate: 1,2-Dichloroei	thane-da	93.0 %	70	5-114	,	•	*	*	
Surrogate: Toluene-d8	nune-u+	103 %	88	8-110	#	H	H	Ħ	
U-5 (L107031-06) Water	Sampled: 07/02/01 12:50	Received: 07/	02/01 19	);10					
Ethanol	NI		ug/l	1	1070037	07/09/01	07/10/01	EPA 8260B	
1,2-Dibromoethane	NI		Ħ	н	**	It	11		
1,2-Dichloroethane	NI		n		н	**	P		
Di-isopropyl ether	NI		**	H	H	# .	W	#	•
Ethyl tert-butyl ether	NI		77	7	•	n	**	π 	
Methyl tert-butyl ether	9.			n	n			"	
Tert-amyl methyl ether	NI		•	•	Ħ	п	*	<b></b>	
Tert-butyl alcohol	N	<del>-</del>	ŧ			H			
	<del> </del>	89.2 %	7	6-114	#	n	*	Ħ	
Surrogate: 1,2-Dichloroe Surrogate: Toluene-d8	::nune=44	101 %		8-110	*	#	H	rr	

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: 07/18/01 06:13

RPD

%REC

Total Purgeable Hydrocarbon (C6-C12) by EPA 8015M and BTEX/MTBE by EPA 8020 - Quality Control Sequoia Analytical - San Carlos

Reporting

Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 1070060 - EPA 5030B (P/T)				·····						
Blank (1070060-BLK1)			-	Prepared	& Analyz	ed: 07/13/	01			
Purgeable Hydrocarbons as Gasoline	ND	50	ug/i							
Benzene	ND	0.50	**							
Toluene	ND	0.50	**							
Ethylbenzene	ND	0.50	*							
Xylenes (total)	ND	0,50	n							
Methyl tert-butyl ether	ND	5.0	•							
Surrogate: a,a,a-Trifluorotoluene	9.45		17	10.0		94.5	70-130			
LCS (1070060-BS1)				Prepared	& Analyz	ed: 07/13/	01			
Benzene	8.49	0.50	ug/l	10.0		84.9	70-130			
Toluene	8.29	0.50	n	10.0		82.9	70-130			
Ethylbenzene	8.42	0.50		10.0		84.2	70-130			
Xylenes (total)	25.2	0.50	**	30.0		84.0	70-130			
Surrogate: a,a,a-Trifluorotoluene	8.11	-	"	10.0		81.1	70-130	<u></u>	-	
LCS (1070060-BS2)				Prepared	& Analyz	ed: 07/13/	/01			·
Purgeable Hydrocarbons as Gasoline	255	50	ug/l	250		102	70-130			
Surrogate: a,a,a-Trifluorotoluene	9.91	-	п	10.0		99.1	70-130			
Matrix Spike (1070060-MS1)	So	urce: L10701	13-09	Prepared	& Analyz	æd: 07/13/	/01			
Benzene	8.96	0.50	ug/l	10.0	ND	89.6	60-140			
Toluene	8.80	0.50	#	10.0	ND	88.0	60-140			
Ethylbenzene	8.78	0.50	#	10.0	ND	87.8	60-140			
Xylenes (total)	26.5	0.50	H	30.0	ND	88.3	60-140			
Surrogate: a,a,a-Trifluorotoluene	9.85	· -	**	10.0		98.5	70-130			
Matrix Spike Dup (1070060-MSD1)	So	urce: L1070	13-09	Prepared	& Analyz	ed: 07/13	/01		<del></del>	
Benzene	8.78	0.50	ug/l	10.0	ND	87.8	60-140	2.03	25	
Toluene	8.51	0.50	Ħ	10.0	ND	85.1	60-140	3.35	25	
Ethylbenzene	8.40	0.50	**	10.0	ND	84.0	60-140	4.42	25	
Xylenes (total)	25.7	0.50		30.0	ND	85.7	60-140	3.07	25	
Surrogate: a,a,a-Trifluorotoluene	10.4			10.0		104	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 Reperted: 07/18/01 06:13

# Total Purgeable Hydrocarbon (C6-C12) by EPA 8015M and BTEX/MTBE by EPA 8020 - Quality Control Sequoia Analytical - San Carlos

Analyte	Result	Reporting	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1070066 - EPA 5030B (P/T)										
Blank (1070066-BLK1)				Prepared &	k Analyze	d: 07/16/0	1		· · · · · · · · · · · · · · · · · · ·	
Purgeable Hydrocarbons as Gasoline	ND	50	ug/l							
Jenzene	ND	0.50	#							
Soluene	ND	0.50	H							
thylbenzene	ND	0.50	н							
Kylenes (total)	ND	0.50	₩ .							
Methyl tert-butyl ether	ND	5.0								
Surrogate: a,a,a-Trifluorotoluene	7.93	·	*	10.0		79.3	70-130			
LCS (1070066-BS1)				Prepared	& Analyz		01			
	8.52	0.50	ug/l	10.0		85.2	70-130			
Benzene Foluene	8.20	0.50	11	10.0		82.0	70-130			
<del></del>	8.29	0.50	•	10.0		82.9	70-130			
Ethylbenzene	24.4	0.50	n	30.0		81.3	70-130			
Xylenes (total) Surrogate: a,a,a-Trifluorotoluene	9,78			10.0		97.8	70-130			
				Prepared	& Analyz	zed: 07/16/	01			
LCS (1070066-BS2)	249	50	ug/l	250		99.6	70-130			
Purgeable Hydrocarbons as Gasoline				10.0		86.4	70-130			
Surrogate: a,a,a-Trifluorotoluene	8.64		-							
Matrix Spike (1070066-MS1)	Sou	rce: L1071				zed: 07/16/				
Purgeable Hydrocarbons as Gasoline	284	50	ug/l	250	ND	114	60-140			
Surrogate: a,a,a-Trifluorotoluene	9.67		Ħ	10.0		96.7	70-130			
Matrix Spike Dup (1070066-MSD1)	Sor	rce: L1071	15-07	Prepared	& Analy	zed: 07/16				
Purgeable Hydrocarbons as Gasoline	267	50	ug/l	250	ND	107	60-140	6.17	25	
Surrogate: a,a,a-Trifluorotoluene	9.62		*	10.0		96.2	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:

07/18/01 06:13

RPD

%REC

# Total Purgeable Hydrocarbon (C6-C12) by EPA 8015M and BTEX/MTBE by EPA 8020 - Quality Control Sequoia Analytical - San Carlos

Reporting

		керопинд		Shire	Somoe		/ <del>#</del> TO			
Апарус	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 1070067 - EPA 5030B (P/T)										
Blank (1070067-BLK1)				Prepared o	& Analyze	ed: 07/16/	01			
Purgeable Hydrocarbons as Gasoline	ND	50	u <b>g</b> /l							
Benzene	ND	0.50		·						
Toluene ·	ND	0.50	n							
Ethylbenzene	ND	0.50	н							
Xylenes (total)	ND	0.50	*	•						
Methyl tert-butyl ether	ND	5.0	**					_		
Surrogate: a,a,a-Trifluorotoluene	9.49		п	10.0		94.9	70-130			
LCS (1070067-BS1)				Prepared	& Analyz	ed: 07/16/	01			
Benzene	8.14	0.50	ug/l	10.0		81.4	70-130			
Toluene	7.99	0.50	n	10.0		79.9	70-130			
Ethylbenzene	8.13	0.50	H	10.0		81.3	70-130			
Xylenes (total)	24.7	0.50	н	30.0		82.3	70-130			
Surrogate: a,a,a-Trifluorotoluene	9.05		"	10.0		90.5	70-130			
LCS (1070067-BS2)				Prepared	& Analyz	ed: 07/16/	01			
Purgeable Hydrocarbons as Gasoline	213	50	ug/l	250		85.2	70-130			
Surrogate: a,a,a-Trifluorotoluene	9.35		"	10.0		93.5	70-130			
Matrix Spike (1070067-MS1)	So	urce: L10703	31-06	Prepared	& Analyz	ed: 07/16/	<b>0</b> 1			
Purgeable Hydrocarbons as Gasoline	241	50	ug/l	250	ND	96.4	60-140			
Surrogate: a,a,a-Trifluorotoluene	9.96		ii .	10.0		99.6	70-130			
Matrix Spike Dup (1070067-MSD1)	So	urce: L10703	31-06	Prepared	& Analyz	ed: 07/16/	01			
Purgeable Hydrocarbons as Gasoline	258	50	ug/l	250	ND	103	60-140	6.81	25	
Surrogate: a,a,a-Trifluorotoluene	9.69	·	"	10.0		96.9	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: 07/18/01 06:13

RPD

%REC

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

		Reporting		Spike	Source		%REC		KPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 1070037 - EPA 5030B [P/T]		·		<u>-</u>				<del></del> -		
Blank (1070037-BLK1)				Prepared	& Analyz	ed: 07/09/0	)1			
Ethanol	ND	1000	ug/l							
,2-Dibromoethane	ND	2.0	#							
,2-Dichloroethane	ND	2.0	**							
Di-isopropyl ether	ND	2.0	н							
Ethyl tert-butyl ether	ND	2.0	T							
Methyl tert-butyl ether	ND	2.0	17							
Fert-amyl methyl ether	ND	2.0	*							
Fert-butyl alcohol	ND	100								
Surrogate: 1,2-Dichloroethane-d4	42.0		H	50.0		84.0	76-114			
Surrogate: Toluene-d8	49.5		*	50.0		99.0	88-110			
Blank (1070037-BLK2)				Prepared	& Analyz	ed: 07/10/	01		<u> </u>	
Ethanol	ND	1000	ug/l			•				
1,2-Dibromoethane	ND	2.0	**							
1,2-Dichloroethane	ND	2.0	H							
Di-isopropyl ether	ND	2.0	**							
Ethyl tert-butyl ether	ND	2.0	н							
Methyl tert-butyl ether	ND	2.0	Ħ							
Tert-amyl methyl ether	ND	2.0	*							
Tert-butyl alcohol	ND	100	*							
Surrogate: 1,2-Dichloroethane-d4	45.7		н	50.0		91.4	76-114			
Surrogate: Toluene-d8	54.3		"	50.0		109	88-110			
Blank (1070037-BLK3)				Prepared	i & Analy	zed: 07/13/	01	,		
Ethanol	ND	1000	ug/l							
1,2-Dibromoethane	ND	2.0	**			•				٠
1,2-Dichloroethane	ND	2.0	*							
Di-isopropyl ether	ND	2.0	Ħ							
Ethyl tert-butyl ether	ND	2.0	-							
Methyl tert-butyl ether	ND	2.0	п							
Tert-amyl methyl ether	ND	2.0	n							
Tert-butyl alcohol	ND	100								
Surrogate: 1,2-Dichloroethane-d4	44.7			50.0		89.4	76-114			•
Surrogate: Toluene-d8	51.2		*	50.0		102	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

Spike

Reported: 07/18/01 06:13

RPD

%REC

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

Reporting

analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
atch 1070037 - EPA 5030B [P/T]						· <u>·</u>				<u>.</u> .
.CS (1070037-BS1)				Prepared &	& Analyz					
lethyl tert-butyl ether	58.1	2.0	ug/l	50.0		116	70-130			
urrogate: 1,2-Dichloroethane-d4	42.3		,,	50.0		84.6	76-114			
urrogate: Toluene-d8	46.7		n	50.0		93.4	88-110			
CS (1070037-BS2)				Prepared a	& Analyz	ed: 07/10/0	01			
fethyl tert-butyl ether	48.5	2.0	ug/l	50.0		97.0	70-130			
urrogate: 1,2-Dichloroethane-d4	46.7		ır	50.0		93.4	76-114		-	
urrogate: Toluene-d8	50.8		•	50.0		102	88-110			
5				Prenared .	& Analyz	ed: 07/13/	01			
Activit cert-butyl ether	47.4	2.0	ug/l	50.0		94.8	70-130			
	45.9		11	50.0		91.8	76-114			
Surrogate: 1,2-Dichloroethane-d4 Surrogate: Toluene-d8	43.9 52.2		*	50.0		104	88-110			
_					05/00/01	à	4. 07/10 <i>/</i> 01			
Matrix Spike (1070037-MS1)		rce: L10705				Analyzec 97.8	1: 07/10/01 60-140	<del></del>		
Methyl tert-butyl ether	48.9	2.0	ug/l	50.0	ND_					
Surrogate: 1,2-Dichloroethane-d4	47.0		,,	50.0		94.0	76-114			
Surrogate: Toluene-d8	51.7		*	50.0		103	88-110			
Matrix Spike Dup (1070037-MSD1)	Sou	rce: L10705	3-01	Prepared:	07/09/01	Analyze	d: 07/10/01			
Methyl tert-butyl ether	46.0	2.0	ug/l	50.0	ND	92.0	60-140	6.11	25	
Surrogate: 1,2-Dichloroethane-d4	46.4	<del></del>	н	50.0		92.8	76-114	•		
Surrogate: Toluene-d8	50.8		n	50.0		102	88-110			
Batch 1070064 - EPA 5030B [P/T]										
Blank (1070064-BLK1)				Prepared	& Analy	zed: 07/13/	/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	н							
Methyl tert-butyl ether	ND	2.0	•							
Tert-amyl methyl ether	ND	2.0	#							
Tert-butyl alcohol	ND	100	#							
Surrogate: 1,2-Dichloroethane-d4	44.7		н	50.0		89.4	76-114			
Surrogate: Toluene-d8	51.2		"	50.0		102	88-110			

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.

Project: Tosco(1)

Project Number: Unocal SS#4186 Project Manager: Deanna Harding Reported: 07/18/01 06:13

### 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
<u> </u>	TOO MILE					-	<del></del>			
Batch 1070064 - EPA 5030B [P/T]							<u></u>		•	
Blank (1070064-BLK2)				Prepared d	& Analyze	d: 07/16/0	01			
Ethanol	ND	1000	ug/l							
1,2-Dibromoethane	ND	2.0	**							
1,2-Dichloroethane	ND	2.0	Ħ							
Di-isopropyl ether	ND	2.0	n							
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	11							
Surrogate: 1,2-Dichloroethane-d4	41.7		n	50.0		83.4	76-114			
Surrogate: Toluene-d8	49.0		*	50.0		98.0	88-110			
LCS (1070064-BS1)				Prepared	& Analyz	ed: 07/13/				
Methyl tert-butyl ether	47.4	2.0	ug/l	50.0		94.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	45.9		#	50.0		91.8	76-114			
Surrogate: Toluene-d8	52.2		*	50.0		104	88-110			
LCS (1070064-BS2)				Prepared	& Analyz	ed: 07/16/	01			
Methyl tert-butyl ether	48.6	2.0	ug/l	50.0		97.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	39.7		-	50.0		79.4	76-114			
Surrogate: Toluene-d8	49.6		"	50.0		99.2	88-110			
Matrix Spike (1070064-MS1)	Sou	ırce: L10707	74-03	Prepared	& Analyz	ed: 07/13/	01			
Methyl tert-butyl ether	39.0	2.0	ug/l	50.0	ND	78.0	60-140		· ,,, "··	
Surrogate: 1,2-Dichloroethane-d4	42.8		"	50.0		85.6	76-114			
Surrogate: Toluene-d8	51.1		#	50.0		102	88-110			
Matrix Spike Dup (1070064-MSD1)	So	arce: L1070'	74-03	Prepared		zed: 07/13/				
Methyl tert-butyl ether	46.6	2.0	ug/l	50.0	ND	93.2	60-140	17.8	25	
Surrogate: 1,2-Dichloroethane-d4	42.1	<u></u>		50.0		84.2	76-114			
Surrogate: Toluene-d8	51.2		*	50.0		102	88-110			

Gettler-Ryan/Geostrategies(1)

6747 Sierra Court, Suite J

Dublin CA, 94568

Project Number: Unocal SS#4186

Project Manager: Deanna Harding

07/18/01 06:13

#### **Notes and Definitions**

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