



GETTLER-RYAN INC.

ENVIRONMENTAL
PROTECTION

00 JUN 30 AM 9:58

TRANSMITTAL

June 15, 2000
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) SS #4186
1771 First Street
Livermore, California

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
1	June 13, 2000	Groundwater Monitoring and Sampling Report Second Quarter 2000 - Event of April 10, 2000

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 **June 27, 2000**, this report will be distributed to the following:

Enclosure

cc: Ms. Eva Chu
Alameda County Health Care Services
1131 Harbor Bay Parkway
Alameda, CA 94502

trans/4186.dbd



GETTLER-RYAN INC.

June 13, 2000
G-R Job #180181

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

RE: Second Quarter 2000 Groundwater Monitoring & Sampling Report
Tosco (Unocal) Service Station #4186
1771 First Street
Livermore, California

Dear Mr. De Witt:

This report documents the quarterly groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R). On April 10, 2000, field personnel monitored and sampled three wells (U-1, U-2 and U-3) at the above referenced site.

Static groundwater levels were measured and all wells were checked for the presence of separate-phase hydrocarbons. Separate-phase hydrocarbons were not present in the wells. Static water level data and groundwater elevations are summarized in Table 1. A Potentiometric Map is included as Figure 1.

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

Sincerely,

Deanna L. Harding
Project Coordinator

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

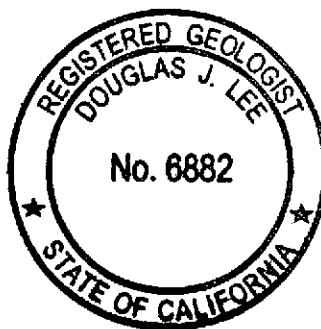
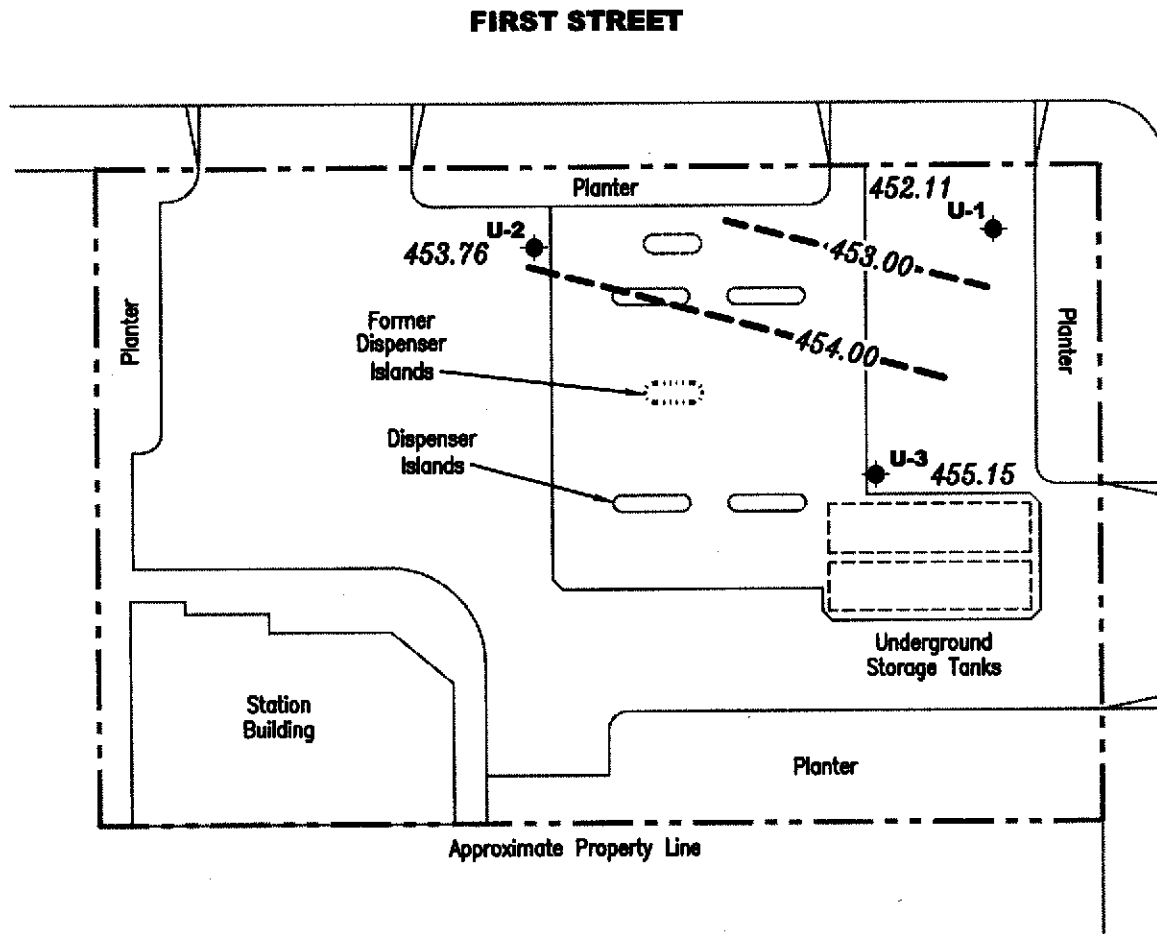


Figure 1: Potentiometric Map
Figure 2: Concentration Map
Table 1: Groundwater Monitoring Data and Analytical Results
Table 2: Groundwater Analytical Results - Oxygenate Compounds
Attachments: Standard Operating Procedure - Groundwater Sampling
Field Data Sheets
Chain of Custody Document and Laboratory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

4186.qml

EXPLANATION

- ◆ Groundwater monitoring well
- 99.99 Groundwater elevation in feet referenced to Mean Sea Level (MSL)
- - - 99.99 - - - Groundwater elevation contour, dashed where inferred.



"N" STREET

Approximate groundwater flow direction at a gradient of 0.07 Ft./Ft.



Source: Virgil Chavez Land Surveying dated August, 1998

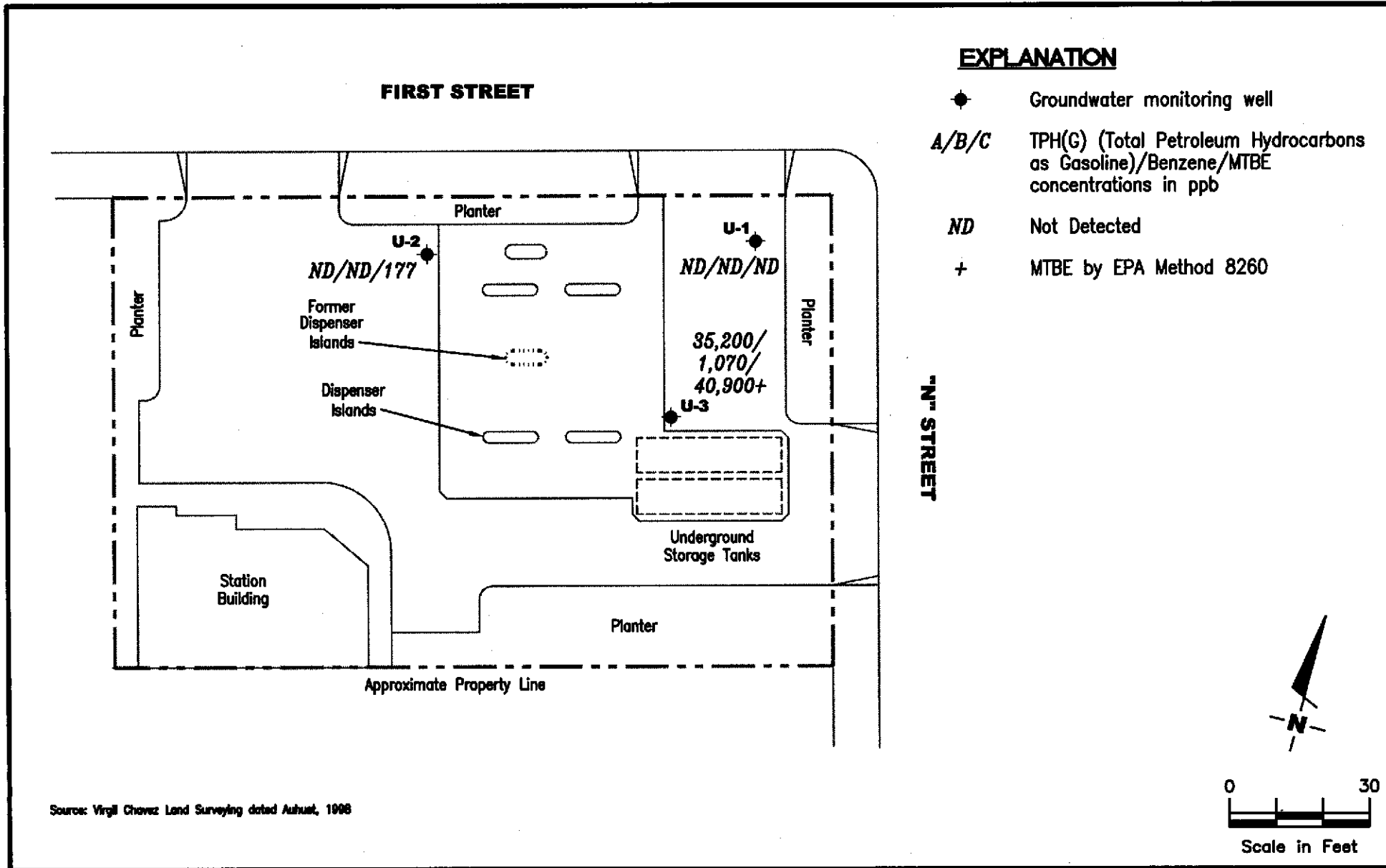


Gettler - Ryan Inc.

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

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

FIGURE
1



Gettler - Ryan Inc.

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

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

FIGURE

2

JOB NUMBER
180181

REVIEWED BY

DATE
April 10, 2000

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.)	GWE (msl)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
U-1									
478.27	07/13/98	23.28	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
U-2									
477.44	07/13/98	23.52	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
U-3									
478.46	07/13/98	23.82	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	35,200⁴	1,070	241	2,820	8,850	35,600/40,900³

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

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(G) (ppb)	B (ppb)	I (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
Trip Blank									
TB-LB	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

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

EXPLANATIONS:

TOC = Top of Casing elevation

DTW = Depth to Water

(ft.) = Feet

GWE = Groundwater Elevation

msl = Relative to mean sea level

TPH(G) = Total Petroleum Hydrocarbons as Gasoline

B = Benzene

T = Toluene

E = Ethylbenzene

X = Xylenes

MTBE = Methyl tertiary butyl ether

ppb = Parts per billion

ND = Not Detected

-- = Not Measured/Not Analyzed

* TOC elevations are relative to Mean Sea Level (msl) in feet. The benchmark used was a City of Livermore survey monument at First & "Q" Streets.

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.

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-3	04/10/00	ND	45,100	40,900	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹

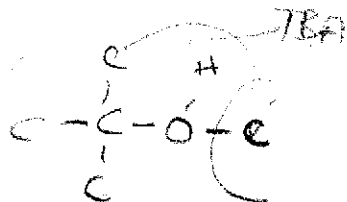
EXPLANATIONS:

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

ANALYTICAL METHOD:

EPA Method 8260 for Oxygenate Compounds

¹ Detection limit raised. Refer to analytical reports.



MTBE

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 # 4186 Job#: 180181
 Address: 1771 First st. Date: 4-10-00
 City: Livermore Sampler: Joe

Well ID U-1 Well Condition: OK
 Well Diameter 2 in. Hydrocarbon Amount Bailed
 Thickness: 0 in (product/water): 0 (gal.)
 Total Depth 34.20 ft
 Depth to Water 26.16 ft

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

8.04 x VF 0.17 = 1.37 x 3 (case volume) = Estimated Purge Volume: 4.5 (gal.)

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

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

Starting Time: 8:35 Weather Conditions: clear
 Sampling Time: 9:00 Water Color: clear Odor: none
 Purging Flow Rate: 0.5 gpm Sediment Description: None
 Did well de-water? _____ If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 10^3$	Temperature F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>8:45</u>	<u>1.5</u>	<u>7.82</u>	<u>6.39</u>	<u>65.0</u>			
<u>8:47</u>	<u>3</u>	<u>7.57</u>	<u>7.05</u>	<u>65.0</u>			
<u>8:49</u>	<u>4.5</u>	<u>7.03</u>	<u>7.06</u>	<u>64.9</u>			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-1</u>	<u>3YcA</u>	<u>Y</u>	<u>HCL</u>	<u>Sequoia</u>	<u>TPHG, BTEX, MTBE</u>

COMMENTS: _____

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

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

Job#: 180181
Date: 4-10-00
Sampler: Joe

Well ID U-2

Well Condition: O.K.

Well Diameter 2 in.

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

Total Depth 33.20 ft

Volume Factor (VF)	2" = 0.17	3" = 0.38	4" = 0.66
	6" = 1.50	12" = 5.90	

Depth to Water 23.68 ft

9.52 x VF 0.17 = 1.62 x 3 (case volume) = Estimated Purge Volume: 5 (gal.)

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

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

Starting Time: 9:10
Sampling Time: 9:20 A.M.
Purging Flow Rate: 6 gpm.
Did well de-water? _____

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

Time	Volume (gal.)	pH	Conductivity μ mhos/cm ¹⁰⁰	Temperature $^{\circ}$ F	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>9:16</u>	<u>1.5</u>	<u>7.22</u>	<u>4.58</u>	<u>66.2</u>			
<u>9:18</u>	<u>3</u>	<u>7.30</u>	<u>4.50</u>	<u>66.1</u>			
<u>9:20</u>	<u>5</u>	<u>7.26</u>	<u>4.51</u>	<u>66.3</u>			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-2</u>	<u>3 YCA</u>	<u>Y</u>	<u>HCL</u>	<u>Sequoia</u>	<u>TPNH, BTEX, MTBE</u>

COMMENTS: _____

WELL MONITORING/SAMPLING FIELD DATA SHEET

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

Job#: 180181
Date: 4-10-00
Sampler: Joe

Well ID: U-3
Well Diameter: 2 in.
Total Depth: 33.40 ft
Depth to Water: 23.31 ft

Well Condition: OK.

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

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

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

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

Starting Time: 9:45 Weather Conditions: clear
Sampling Time: 10:05 AM Water Color: clear Odor: yes
Purging Flow Rate: 0.1 gpm Sediment Description: None
Did well de-water? _____ If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm}$ ^(w)	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>9:44</u>	<u>1.5</u>	<u>7.12</u>	<u>1.85</u>	<u>64.9</u>	_____	_____	_____
<u>9:52</u>	<u>3</u>	<u>7.16</u>	<u>2.02</u>	<u>66.5</u>	_____	_____	_____
<u>9:55</u>	<u>5.5</u>	<u>7.21</u>	<u>2.08</u>	<u>67.0</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>U-3</u>	<u>3V0A</u>	<u>Y</u>	<u>HCL</u>	<u>Sequoia</u>	<u>TPHG, BTEX, MTBE</u>
	<u>2V0A</u>	<u>"</u>	<u>"</u>	<u>"</u>	<u>6 oxy's, 1,2 DCA + EDB</u>

COMMENTS: _____



Facility Number: UNOCAL SS# 4186 L004094
 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. Harding
 (Phone) 510-551-7555 (Fax Number) 510-551-7888

Contact (Name): MS. TINA BERRY DeWitt
 (Phone): (925) 277-2321
 Laboratory Name: Sequoia Analytical
 Laboratory Release Number: _____
 Samples Collected by (Name): JOE ASEMIAN
 Collection Date: 4-10-00
 Signature: [Signature]

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Lead (Yes or No)	Analysis To Be Performed											Remarks		
								TPH Gas + STEK w/MTBE (8016)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd, Cr, Pb, Zn, Ni (ICAP or AA)	60x4's 1,2 DCA + EDS					
TB-LB		1	W	G		HCC	Y	✓													* confirm
U-1	3	3	"	"	9:00	/	"	✓													MTBE by
U-2	3	3	"	"	9:30	/	"	✓													8260 on U-3
U-3	3	3	"	"	10:05	/	"	✓													only

Requested By (Signature): <u>[Signature]</u>	Organization: <u>G-R Inc.</u>	Date/Time: <u>4-10-00</u>	Received By (Signature): <u>[Signature]</u>	Organization: _____	Date/Time (SD): <u>4/10/00</u>	Turn Around Time (Circle Choice) 24 Hrs. 48 Hrs. 6 Days 10 Days <u>As Contracted</u>
Requested By (Signature): _____	Organization: _____	Date/Time: _____	Received By (Signature): _____	Organization: _____	Date/Time: _____	
Requested By (Signature): _____	Organization: _____	Date/Time: _____	Received For Laboratory By (Signature): _____	Organization: _____	Date/Time: _____	



Sequoia Analytical

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

April 24, 2000

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

RE: Tosco/L004094

Dear Deanna Harding

Enclosed are the results of analyses for sample(s) received by the laboratory on April 10, 2000. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Wayne Stevenson
Project Manager

CA ELAP Certificate Number I2360





Gettler-Ryan/Geostrategies 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 4/10/00 Received: 4/10/00 Reported: 4/24/00
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ANALYTICAL REPORT FOR L004094

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TB-LB	L004094-01	Water	4/10/00
U-1	L004094-02	Water	4/10/00
U-2	L004094-03	Water	4/10/00
U-3	L004094-04	Water	4/10/00





Gettler-Ryan/Geostrategies 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 4/10/00 Received: 4/10/00 Reported: 4/24/00
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**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT
Sequoia Analytical - San Carlos**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TB-LB				L004094-01			Water	
Purgeable Hydrocarbons as Gasoline	0040088	4/18/00	4/18/00		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		0.500	ND	"	
Methyl tert-butyl ether	"	"	"		5.00	ND	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		98.9	%	
U-1				L004094-02			Water	
Purgeable Hydrocarbons as Gasoline	0040094	4/19/00	4/19/00		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	0.930	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		0.500	ND	"	
Methyl tert-butyl ether	"	"	"		5.00	ND	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		98.5	%	
U-2				L004094-03			Water	
Purgeable Hydrocarbons as Gasoline	0040088	4/18/00	4/18/00		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		0.500	ND	"	
Methyl tert-butyl ether	"	"	"		5.00	177	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		90.2	%	
U-3				L004094-04			Water	
Purgeable Hydrocarbons as Gasoline	0040093	4/19/00	4/19/00		12500	35200	ug/l	1
Benzene	"	"	"		125	1070	"	
Toluene	"	"	"		125	241	"	
Ethylbenzene	"	"	"		125	2820	"	
Xylenes (total)	"	"	"		125	8850	"	
Methyl tert-butyl ether	"	"	"		1250	35600	"	
Surrogate: a,a,a-Trifluorotoluene	"	"	"	70.0-130		93.9	%	





Gettler-Ryan/Geostrategies 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 4/10/00 Received: 4/10/00 Reported: 4/24/00
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**Volatile Organic Compounds by EPA Method 8260A
Sequoia Analytical - San Carlos**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
U-3				L004094-04			Water	
Ethanol	0040056	4/12/00	4/12/00		333000	ND	ug/l	
1,2-Dibromoethane	"	"	"		667	ND	"	
1,2-Dichloroethane	"	"	"		667	ND	"	
Di-isopropyl ether	"	"	"		667	ND	"	
Ethyl tert-butyl ether	"	"	"		667	ND	"	
Methyl tert-butyl ether	"	"	"		667	40900	"	
Tert-amyl methyl ether	"	"	"		667	ND	"	
Tert-butyl alcohol	"	"	"		33300	45100	"	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	"	"	"	<i>76.0-114</i>		<i>99.8</i>	<i>%</i>	





Gettler-Ryan/Geostrategies 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 4/10/00 Received: 4/10/00 Reported: 4/24/00
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**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT/Quality Control
Sequoia Analytical - San Carlos**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0040088		Date Prepared: 4/18/00		Extraction Method: EPA 5030B [P/T]						
Blank		0040088-BLK1								
Purgeable Hydrocarbons as Gasoline	4/18/00			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	0.500				
Methyl tert-butyl ether	"			ND	"	5.00				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.5	"	70.0-130	105			
LCS		0040088-BS1								
Benzene	4/18/00	10.0		9.52	ug/l	70.0-130	95.2			
Toluene	"	10.0		9.31	"	70.0-130	93.1			
Ethylbenzene	"	10.0		9.39	"	70.0-130	93.9			
Xylenes (total)	"	30.0		27.8	"	70.0-130	92.7			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.6	"	70.0-130	106			
LCS		0040088-BS2								
Purgeable Hydrocarbons as Gasoline	4/18/00	250		214	ug/l	70.0-130	85.6			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.70	"	70.0-130	97.0			
Matrix Spike		0040088-MS1		L004096-03						
Benzene	4/18/00	10.0	ND	9.67	ug/l	60.0-140	96.7			
Toluene	"	10.0	ND	9.32	"	60.0-140	93.2			
Ethylbenzene	"	10.0	ND	9.61	"	60.0-140	96.1			
Xylenes (total)	"	30.0	ND	27.6	"	60.0-140	92.0			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.50	"	70.0-130	95.0			
Matrix Spike Dup		0040088-MSD1		L004096-03						
Benzene	4/18/00	10.0	ND	10.5	ug/l	60.0-140	105	25.0	8.23	
Toluene	"	10.0	ND	10.3	"	60.0-140	103	25.0	9.99	
Ethylbenzene	"	10.0	ND	10.2	"	60.0-140	102	25.0	5.96	
Xylenes (total)	"	30.0	ND	30.6	"	60.0-140	102	25.0	10.3	
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.11	"	70.0-130	91.1			
Batch: 0040093		Date Prepared: 4/19/00		Extraction Method: EPA 5030B [P/T]						
Blank		0040093-BLK1								
Purgeable Hydrocarbons as Gasoline	4/19/00			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	0.500				





Gettler-Ryan/Geostrategies 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 4/10/00 Received: 4/10/00 Reported: 4/24/00
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Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUF1/Quality Control
Sequoia Analytical - San Carlos

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Blank (continued)										
0040093-BLK1										
Methyl tert-butyl ether	4/19/00			ND	ug/l	5.00				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.3	"	70.0-130	103			
LCS										
0040093-BS1										
Benzene	4/19/00	10.0		10.6	ug/l	70.0-130	106			
Toluene	"	10.0		10.4	"	70.0-130	104			
Ethylbenzene	"	10.0		10.4	"	70.0-130	104			
Xylenes (total)	"	30.0		31.4	"	70.0-130	105			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.81	"	70.0-130	88.1			
LCS										
0040093-BS2										
Purgeable Hydrocarbons as Gasoline	4/19/00	250		234	ug/l	70.0-130	93.6			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.19	"	70.0-130	91.9			
Matrix Spike										
0040093-MS1 L004111-02										
Purgeable Hydrocarbons as Gasoline	4/19/00	250	ND	246	ug/l	60.0-140	98.4			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		9.22	"	70.0-130	92.2			
Matrix Spike Dup										
0040093-MSD1 L004111-02										
Purgeable Hydrocarbons as Gasoline	4/19/00	250	ND	252	ug/l	60.0-140	101	25.0	2.61	
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.58	"	70.0-130	85.8			
Batch: 0040094										
Date Prepared: 4/19/00										
Extraction Method: EPA 5030B [P/T]										
Blank										
0040094-BLK1										
Purgeable Hydrocarbons as Gasoline	4/19/00			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	0.500				
Methyl tert-butyl ether	"			ND	"	5.00				
Surrogate: a,a,a-Trifluorotoluene	"	10.0		10.0	"	70.0-130	100			
LCS										
0040094-BS1										
Benzene	4/19/00	10.0		8.70	ug/l	70.0-130	87.0			
Toluene	"	10.0		8.40	"	70.0-130	84.0			
Ethylbenzene	"	10.0		8.05	"	70.0-130	80.5			
Xylenes (total)	"	30.0		25.1	"	70.0-130	83.7			
Surrogate: a,a,a-Trifluorotoluene	"	10.0		8.75	"	70.0-130	87.5			
LCS										
0040094-BS2										
Purgeable Hydrocarbons as Gasoline	4/19/00	250		226	ug/l	70.0-130	90.4			





Gettler-Ryan/Geostrategies 6747 Sierra Court, Suite D Dublin, CA 94568	Project: Tosco Project Number: Unocal SS#4186 Project Manager: Deanna Harding	Sampled: 4/10/00 Received: 4/10/00 Reported: 4/24/00
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**Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT/Quality Control
Sequoia Analytical - San Carlos**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS (continued)	0040094-BS2									
Surrogate: <i>a,a,a</i> -Trifluorotoluene	4/19/00	10.0		10.1	ug/l	70.0-130	101			
Matrix Spike	0040094-MS1		L004111-06							
Purgeable Hydrocarbons as Gasoline	4/19/00	250	ND	247	ug/l	60.0-140	98.8			
Surrogate: <i>a,a,a</i> -Trifluorotoluene	"	10.0		8.63	"	70.0-130	86.3			
Matrix Spike Dup	0040094-MSD1		L004111-06							
Purgeable Hydrocarbons as Gasoline	4/19/00	250	ND	263	ug/l	60.0-140	105	25.0	6.08	
Surrogate: <i>a,a,a</i> -Trifluorotoluene	"	10.0		10.6	"	70.0-130	106			





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Volatile Organic Compounds by EPA Method 8260A/Quality Control
Sequoia Analytical - San Carlos

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0040056			Date Prepared: 4/11/00			Extraction Method: EPA 5030B (P/T)				
Blank			0040056-BLK1							
Ethanol	4/11/00			ND	ug/l	1000				
1,2-Dibromoethane	"			ND	"	2.00				
1,2-Dichloroethane	"			ND	"	2.00				
Di-isopropyl ether	"			ND	"	2.00				
Ethyl tert-butyl ether	"			ND	"	2.00				
Methyl tert-butyl ether	"			ND	"	2.00				
Tert-amyl methyl ether	"			ND	"	2.00				
Tert-butyl alcohol	"			ND	"	100				
Surrogate: 1,2-Dichloroethane-d4	"	50.0		50.1	"	76.0-114	100			
Blank			0040056-BLK2							
Ethanol	4/12/00			ND	ug/l	1000				
1,2-Dibromoethane	"			ND	"	2.00				
1,2-Dichloroethane	"			ND	"	2.00				
Di-isopropyl ether	"			ND	"	2.00				
Ethyl tert-butyl ether	"			ND	"	2.00				
Methyl tert-butyl ether	"			ND	"	2.00				
Tert-amyl methyl ether	"			ND	"	2.00				
Tert-butyl alcohol	"			ND	"	100				
Surrogate: 1,2-Dichloroethane-d4	"	50.0		49.2	"	76.0-114	98.4			
LCS			0040056-BS1							
Methyl tert-butyl ether	4/11/00	50.0		48.6	ug/l	70.0-130	97.2			
Surrogate: 1,2-Dichloroethane-d4	"	50.0		51.3	"	76.0-114	103			
LCS			0040056-BS2							
Methyl tert-butyl ether	4/12/00	50.0		48.5	ug/l	70.0-130	97.0			
Surrogate: 1,2-Dichloroethane-d4	"	50.0		49.5	"	76.0-114	99.0			
Matrix Spike			0040056-MS1 L004083-01							
Methyl tert-butyl ether	4/11/00	50.0	ND	46.6	ug/l	60.0-140	93.2			
Surrogate: 1,2-Dichloroethane-d4	"	50.0		51.3	"	76.0-114	103			
Matrix Spike Dup			0040056-MSD1 L004083-01							
Methyl tert-butyl ether	4/11/00	50.0	ND	55.0	ug/l	60.0-140	110	25.0	16.5	
Surrogate: 1,2-Dichloroethane-d4	"	50.0		50.5	"	76.0-114	101			





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Notes and Definitions

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- 1 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
- Recov. Recovery
- RPD Relative Percent Difference

