



GETTLER - RYAN INC.

GROUNDWATER
PROTECTION

TRANSMITTAL 99 NOV -2 PM 3: 58

October 18, 1999

G-R #:180021

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

CC: Mr Doug Lee
Gettler-Ryan Inc.
Dublin, California

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

RE: Tosco (Unocal) SS #6419
6401 Dublin Boulevard
Dublin, California

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DATED	DESCRIPTION
1	October 13, 1999	Groundwater Monitoring and Sampling Report Semi-Annual 1999 - Event of August 2, 1999

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 *November 1, 1999*, this report will be distributed to the following:

Enclosure

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

agency/6419dbd.qmt



GETTLER-RYAN INC.

October 13, 1999
G-R Job #180021

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

RE: Semi-Annual 1999 Groundwater Monitoring & Sampling Report
Tosco (Unocal) Service Station #6419
6401 Dublin Boulevard
Dublin, California

Dear Mr. De Witt:

This report documents the semi-annual groundwater monitoring and sampling event performed by Gettler-Ryan Inc. (G-R). On August 2, 1999, field personnel monitored and sampled seven wells (MW-1 through MW-7) at the above referenced site.

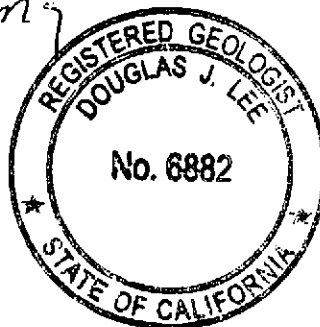
Static groundwater levels were measured and all wells were checked for the presence of separate-phase hydrocarbons. Separate-phase hydrocarbons were not present in the wells. Static water level data and groundwater elevations are summarized in Table 1. Dissolved Oxygen Concentrations are summarized in Table 3. 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,

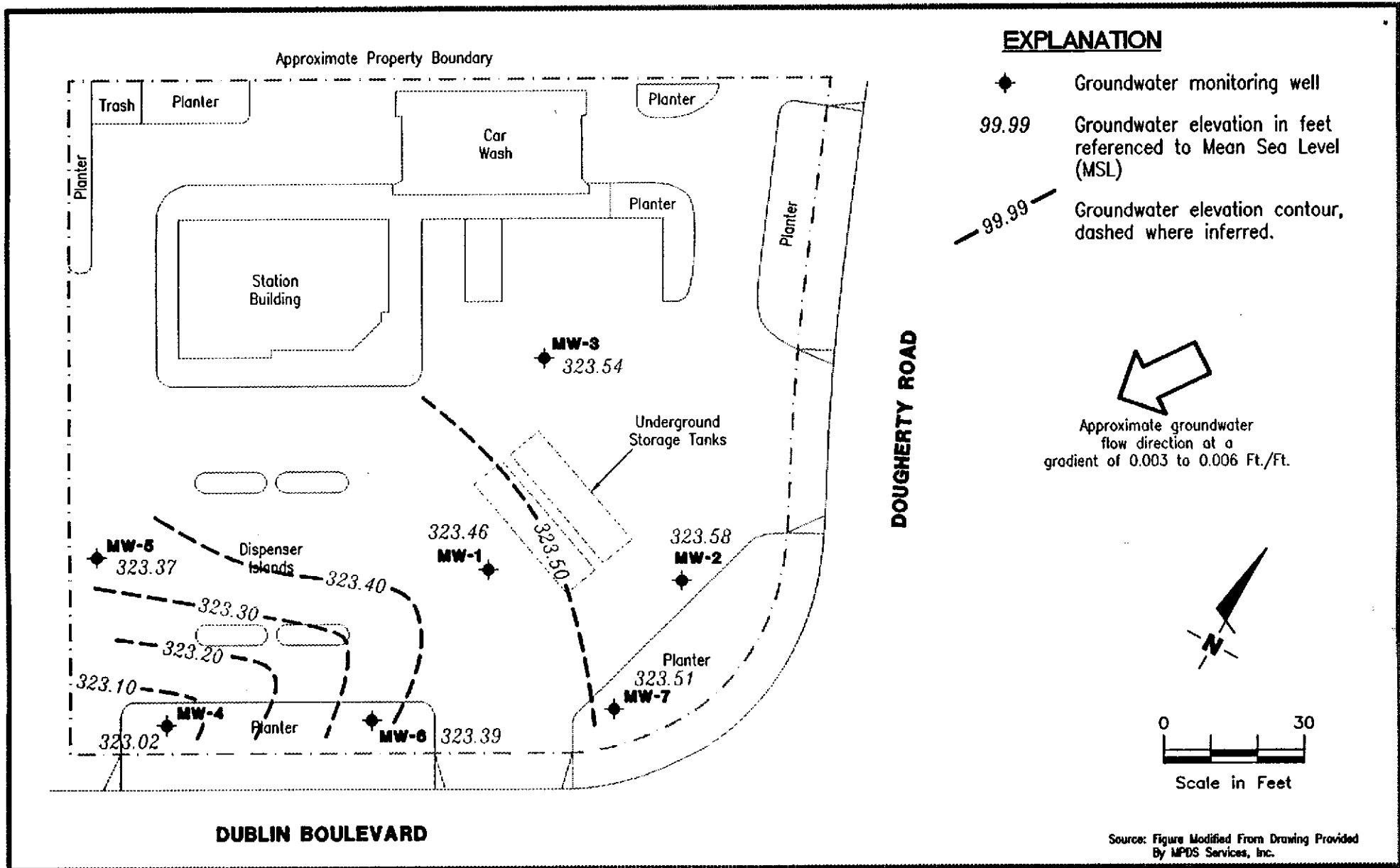
Deanna L. Harding
Project Coordinator

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 - Metals
- Table 3: Dissolved Oxygen Concentrations
- Attachments: Standard Operating Procedure - Groundwater Sampling
Field Data Sheets
Chain of Custody Document and Laboratory Analytical Reports

6419.qnd



Gettler - Ryan Inc.

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

POTENTIOMETRIC MAP
Tosco (Unocal) Service Station #6419
6401 Dublin Boulevard
Dublin, California

FIGURE

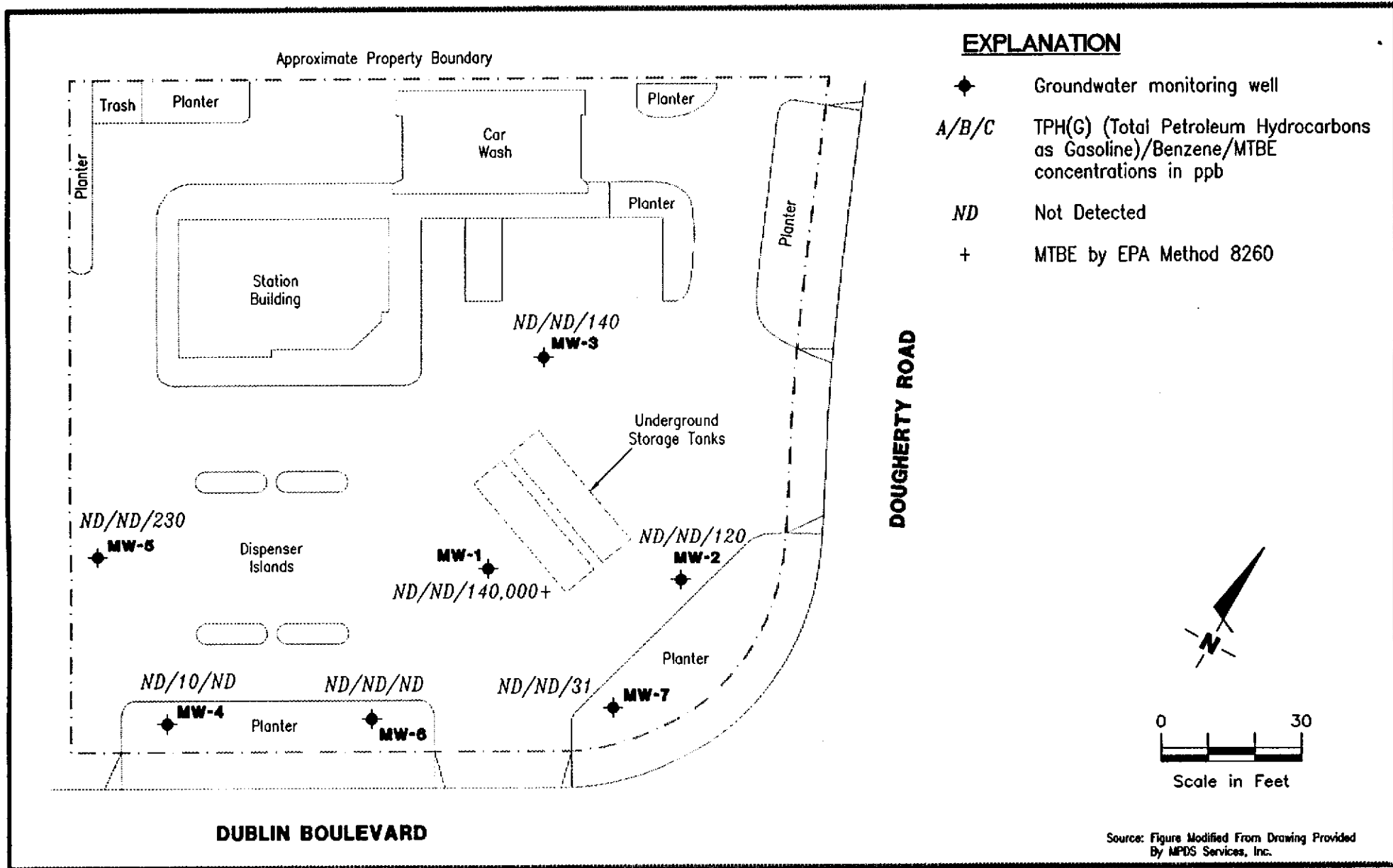
1

JOB NUMBER
180021

REVIEWED BY

DATE
August 2, 1999

REVISED DATE



Gettler - Ryan Inc.

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Dublin, CA 94568

CONCENTRATION MAP
Tosco (Unocal) Service Station #6419
6401 Dublin Boulevard
Dublin, California

FIGURE
2

JOB NUMBER
180021

REVIEWED BY

DATE
August 2, 1999

REVISED DATE

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #6419
 6401 Dublin Boulevard
 Dublin, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-1										
330.45	03/14/94	7.27	323.18	810 ¹	1,800 ²	17	ND	ND	ND	--
	08/25/94	8.57	321.88	910 ³	9,200 ²	48	ND	540	ND	--
	09/30/94	8.78	321.67	--	--	--	--	--	--	--
	10/20/94	8.98	321.47	--	--	--	--	--	--	--
	11/18/94	7.69	322.76	910 ³	5,100	33	ND	560	38	--
	12/20/94	7.58	322.87	--	--	--	--	--	--	--
	01/17/95	6.03	324.42	--	--	--	--	--	--	--
	02/15/95	6.29	324.16	660 ¹	3,300	13	ND	180	5.2	--
	03/13/95	5.64	324.81	--	--	--	--	--	--	--
	04/06/95	5.62	324.83	--	--	--	--	--	--	--
	05/17/95	6.26	324.19	200 ³	130	0.75	ND	1.5	ND	--
	06/15/95	6.75	323.70	--	--	--	--	--	--	--
	08/25/95	7.91	322.54	--	490	9.1	ND	21	2.0	-- ⁵
	11/28/95	9.03	321.42	--	1,400	18	3.0	98	3.6	-- ⁵
	02/26/96	5.77	324.68	--	560	9.3	ND	22	ND	1,300
	08/23/96	7.78	322.67	--	ND	ND	ND	ND	ND	640
330.23	02/17/97	5.73	324.50	--	120 ⁴	1.0	0.95	ND	ND	280
	08/18/97	7.38	322.85	--	ND	ND	ND	ND	ND	100
	02/02/98 ^b	5.10	325.13	--	ND ⁷	130	ND ⁷	ND ⁷	ND ⁷	32,000
	08/24/98	6.73	323.50	--	ND ⁷	ND ⁷	ND ⁷	ND ⁷	ND ⁷	26,000/24,000 ⁸
	02/10/99	5.46	324.77	--	ND ⁷	ND ⁷	ND ⁷	ND ⁷	ND ⁷	84,000/100,000 ⁸
	04/12/99	6.38	323.85	--	ND ⁷	ND ⁷	ND ⁷	ND ⁷	ND ⁷	140,000/120,000 ⁸
330.21	05/21/99	5.95	324.26	--	--	--	--	--	--	--
	08/02/99	6.75	323.46	--	ND ⁷	ND ⁷	ND ⁷	ND ⁷	ND ⁷	91,000/140,000 ¹⁰
MW-2										
330.40	03/14/94	7.23	323.17	--	ND	ND	2.8	1.1	8.0	--
	08/25/94	8.41	321.99	--	ND	ND	ND	ND	ND	--
	09/30/94	8.73	321.67	--	--	--	--	--	--	--
	10/20/94	8.92	321.48	--	--	--	--	--	--	--
	11/18/94	7.67	322.73	--	ND	ND	ND	ND	ND	--
	12/20/94	7.48	322.92	--	--	--	--	--	--	--
	01/17/95	6.00	324.40	--	--	--	--	--	--	--
	02/15/95	6.16	324.24	--	ND	ND	ND	ND	ND	--

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #6419
 6401 Dublin Boulevard
 Dublin, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-2	03/13/95	5.59	324.81	--	--	--	--	--	--	--
(cont)	04/06/95	5.51	324.89	--	--	--	--	--	--	--
	05/17/95	6.15	324.25	--	ND	ND	ND	ND	ND	--
	06/15/95	6.61	323.79	--	--	--	--	--	--	--
	08/25/95	7.45	322.95	--	ND	ND	ND	ND	ND	--
	11/28/95	8.85	321.55	--	ND	ND	ND	ND	ND	--
	02/26/96	5.49	324.91	--	ND	ND	ND	ND	ND	--
	08/23/96	7.44	322.96	SAMPLED ANNUALLY		--	--	--	--	--
330.27	02/17/97	5.64	324.63	--	ND	ND	ND	ND	ND	ND
	08/18/97	7.40	322.87	--	--	--	--	--	--	--
	02/02/98	5.09	325.18	--	ND	ND	ND	ND	ND	62
	08/24/98	6.70	323.57	--	--	--	--	--	--	--
	02/10/99	5.56	324.71	--	ND	ND	ND	ND	ND	130
330.30	05/21/99	5.98	324.32	--	--	--	--	--	--	--
	08/02/99	6.72	323.58	--	ND	ND	ND	ND	ND	120
MW-3										
331.11	03/14/94	7.93	323.18	--	150 ⁴	ND	ND	ND	ND	--
	08/25/94	9.20	321.91	--	130 ⁴	ND	ND	ND	ND	--
	09/30/94	9.43	321.68	--	--	--	--	--	--	--
	10/20/94	9.64	321.47	--	--	--	--	--	--	--
	11/18/94	8.39	322.72	--	130 ⁴	ND	ND	ND	ND	--
	12/20/94	8.20	322.91	--	--	--	--	--	--	--
	01/17/95	6.72	324.39	--	--	--	--	--	--	--
	02/15/95	6.93	324.18	--	130 ⁴	ND	ND	ND	ND	--
	03/13/95	6.30	324.81	--	--	--	--	--	--	--
	04/06/95	8.20	322.91	--	--	--	--	--	--	--
	05/17/95	6.88	324.23	--	99 ⁴	ND	ND	ND	ND	--
	06/15/95	7.35	323.76	--	--	--	--	--	--	--
	08/25/95	8.20	322.91	--	ND	ND	ND	ND	ND	-- ⁵
	11/28/95	9.52	321.59	--	ND	ND	ND	ND	ND	--
	02/26/96	6.25	324.86	--	ND	ND	ND	ND	ND	-- ⁵
	08/23/96	7.98	323.13	SAMPLED ANNUALLY		--	--	--	--	--
330.68	02/17/97	6.07	324.61	--	ND	ND	ND	ND	ND	68
	08/18/97	7.82	322.86	--	--	--	--	--	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
 Tosco (Unocal) Service Station #6419
 6401 Dublin Boulevard
 Dublin, California

Well ID/ TOC*	Date	DTW (ft.)	GWE (msl)	TPH(D) (ppb)	TPH(G) (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)
MW-3	02/02/98	5.50	325.18	--	ND	ND	ND	ND	ND	100
(cont)	08/24/98	7.12	323.56	--	--	--	--	--	--	--
	02/10/99	5.80	324.88	--	ND	ND	ND	ND	ND	92
330.49	05/21/99	6.16	324.33	--	--	--	--	--	--	--
	08/02/99	6.95	323.54	--	ND	ND	ND	ND	ND	140
MW-4										
330.36	05/21/99 ⁹	6.43	323.93	--	ND	ND	ND	ND	ND	960/910 ⁸
	08/02/99	7.34	323.02	--	ND	10	ND	13	11	ND
MW-5										
330.20	05/21/99 ⁹	5.99	324.21	--	ND	ND	ND	ND	ND	32/33 ⁸
	08/02/99	6.83	323.37	--	ND	ND	ND	ND	ND	230
MW-6										
330.49	05/21/99 ⁹	6.24	324.25	--	ND	ND	ND	ND	ND	2,200/2,300 ⁸
	08/02/99	7.10	323.39	--	ND	ND	ND	ND	ND	ND
MW-7										
330.43	05/21/99 ⁹	6.13	324.30	--	ND	ND	ND	ND	ND	22/22 ⁸
	08/02/99	6.92	323.51	--	ND	ND	ND	ND	ND	31
Trip Blank										
TB-LB	02/02/98	--	--	--	ND	ND	ND	ND	ND	ND
	08/24/98	--	--	--	ND	ND	ND	ND	ND	ND
	02/10/99	--	--	--	ND	ND	ND	ND	ND	ND
	04/12/99	--	--	--	ND	ND	ND	ND	ND	ND
	05/21/99	--	--	--	ND	ND	ND	ND	ND	ND
	08/02/99	--	--	--	ND	ND	ND	ND	ND	ND

Table 1
Groundwater Monitoring Data and Analytical Results
Tosco (Unocal) Service Station #6419
6401 Dublin Boulevard
Dublin, California

EXPLANATIONS:

Groundwater monitoring data and laboratory results prior to February 2, 1998, were compiled from reports prepared by MPDS Services, Inc.

TOC = Top of Casing elevation

DTW = Depth to Water

(ft.) = Feet

GWE = Groundwater Elevation

msl = Relative to mean sea level

TPH(D) = Total Petroleum Hydrocarbons as Diesel

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 have been surveyed relative to msl, per the benchmark on the northwest corner of Dougherty Road and Sierra Way (Elevation = 331.728 feet msl). These TOC elevations have been used prior to the February 17, 1997 monitoring event. TOC elevations have been resurveyed (after station rebuilding) relative to Mean Sea Level (msl), per the Benchmark on the northwest corner of Dougherty Road and Sierra Way (Elevation = 331.728 feet msl).

¹ Laboratory report indicates the hydrocarbons detected appeared to be a diesel and non-diesel mixture.

² Laboratory report indicates the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.

³ Laboratory report indicates the hydrocarbons detected did not appear to be diesel.

⁴ Laboratory report indicates the hydrocarbons detected did not appear to be gasoline.

⁵ Laboratory has identified the presence of MTBE at a level above or equal to the taste and odor threshold of 40 ppb in the sample collected from this well.

⁶ Well appears to be obstructed at approximately 9 feet.

⁷ Detection limit raised. Refer to analytical reports.

⁸ MTBE by EPA Method 8260.

⁹ Ethanol, t-butanol, di-isopropyl ether (DIPE), ethyl t-butyl ether (ETBE), and t-amyl methyl ether (TAME) by EPA Method 8260 were all ND.

¹⁰ MTBE by EPA Method 8260 analyzed past EPA recommended hold time.

Table 2
Groundwater Analytical Data - Metals
 Tosco (Unocal) Service Station #6419
 6401 Dublin Boulevard
 Dublin, California

Well ID	Date	Cadmium (ppm)	Chromium (ppm)	Lead (ppm)	Nickel (ppm)	Zinc (ppm)
MW-1	03/14/94	ND	0.012	ND	0.030	0.039
	08/25/94	ND	ND	0.024	ND	ND
	11/18/94	ND	0.076	ND	0.067	ND
	02/15/95	ND	ND	ND	ND	ND
	05/17/95	ND	ND	ND	0.021	ND

EXPLANATIONS:

Groundwater laboratory results were compiled from reports prepared by MPDS Services, Inc.

ppm = Parts per million

ND = Not Detected

Table 3
Dissolved Oxygen Concentrations
 Tosco (Unocal) Service Station #6419
 6401 Dublin Boulevard
 Dublin, California

Well ID	Date	Before Purging (mg/L)	After Purging (mg/L)
MW-1	02/15/95	--	4.30
	05/17/95	--	1.20
	08/25/95	--	2.71
	11/28/95	--	3.25
	02/26/96	5.23	1.41
	08/23/96	3.83	N/A
	02/17/97	0.82	0.78
	08/18/97	1.28	2.35
MW-2	02/15/95	--	1.90
	02/26/96	0.62	0.43
	08/23/96	2.04	N/A
	02/17/97	0.90	0.82
	08/18/97	1.16	--
MW-3	02/15/95	--	2.60
	05/17/95	--	1.13
	08/25/95	--	1.86
	11/28/95	--	6.81
	02/26/96	16.83	1.11
	08/23/96	3.29	N/A
	02/17/97	0.80	0.80
	08/18/97	1.43	--

EXPLANATIONS:

Dissolved oxygen concentrations were compiled from reports prepared by MPDS Services, Inc.

mg/L = milligrams per liter

-- = Not Measured

N/A = Not Applicable

Note: Measurements were taken using a LaMotte DO4000 dissolved oxygen meter.

STANDARD OPERATING PROCEDURE - GROUNDWATER SAMPLING

Gettler-Ryan Inc. field personnel adhere to the following procedures for the collection and handling of groundwater samples prior to analysis by the analytical laboratory. Prior to sample collection, the type of analysis to be performed is determined. Loss prevention of volatile compounds is controlled and sample preservation for subsequent analysis is maintained.

Prior to sampling, the presence or absence of free-phase hydrocarbons is determined using a MMC flexi-dip interface probe. Product thickness, if present, is measured to the nearest 0.01 foot and is noted in the field notes. In addition, static water level measurements are collected with the interface probe and are also recorded in the field notes.

After water levels are collected and prior to sampling, temperature, pH and electrical conductivity are measured. If purging is to occur, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, suction, Grundfos), or polyvinyl chloride bailers. The measurements are taken a minimum of three times during the purging. Purging continues until these parameters stabilize.

Groundwater samples are collected using disposable bailers. The water samples are transferred from the bailer into appropriate containers. Pre-preserved containers, supplied by analytical laboratories, are used when possible. When pre-preserved containers are not available, the laboratory is instructed to preserve the sample as appropriate. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards. The samples are labeled to include the job number, sample identification, collection date and time, analysis, preservation (if any), and the sample collector's initials. The water samples are placed in a cooler, maintained at 4°C for transport to the laboratory. Once collected in the field, all samples are maintained under chain of custody until delivered to the laboratory.

The chain of custody document includes the job number, type of preservation, if any, analysis requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

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

As requested by Tosco Marketing Company, the purge water and decontamination water generated during sampling activities is transported to Tosco - San Francisco Area Refinery, located in Rodeo, California.

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Client/ Facility Tosco 6419
 Address: 6401 Dublin Blvd.
 City: Dublin

Job#: 180021
 Date: 8/2/99
 Sampler: Vortex

Well ID MW-1
 Well Diameter 2 in.
 Total Depth 9.20 ft.
 Depth to Water 6.75 ft.

Well Condition: OK

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

2.45 X VF 0.17 = 0.41 X 3 (case volume) = Estimated Purge Volume: 1.25 (gal.)

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

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

Starting Time: 12:45
 Sampling Time: 1:00
 Purging Flow Rate: _____ gpm.
 Did well de-water? _____

Weather Conditions: clear
 Water Color: clear Odor: wild
 Sediment Description: _____
 If yes; Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 100$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
	<u>0.5</u>	<u>7.93</u>	<u>5.36</u>	<u>75.7</u>			
	<u>1</u>	<u>7.76</u>	<u>5.28</u>	<u>74.6</u>			
	<u>1.5</u>	<u>7.72</u>	<u>5.25</u>	<u>74.3</u>			

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-1</u>	<u>3 VOA</u>	<u>Y</u>	<u>HCl</u>	<u>SEQUOIA</u>	<u>TPHS/BTEX/MTBE</u>
<u>MW-1</u>	<u>2 VOA</u>	<u>~</u>	<u>~</u>	<u>~</u>	<u>MTBE (8260)</u>

COMMENTS: _____

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/ Facility Tosco 6419
 Address: 6401 Dublin Blvd.
 City: Dublin

Job#: 180021
 Date: 8/2/99
 Sampler: Vortex

Well ID MW-2
 Well Diameter 2 in.
 Total Depth 17.60 ft.
 Depth to Water 6.72 ft.

Well Condition: OK
 Hydrocarbon Thickness: Ø (feet) Amount Bailed (product/water): Ø (Gallons)

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

10.88 X VF 0.17 = 1.84 X 3 (case volume) = Estimated Purge Volume: 5.55 (gal.)

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

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

Starting Time: 11:25
 Sampling Time: 11:40
 Purging Flow Rate: 1 gpm.
 Did well de-water? no

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

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 100$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>11:27</u>	<u>2</u>	<u>7.93</u>	<u>6.12</u>	<u>72.9</u>	_____	_____	_____
<u>11:29</u>	<u>4</u>	<u>7.80</u>	<u>6.21</u>	<u>71.9</u>	_____	_____	_____
<u>11:34</u>	<u>6</u>	<u>7.75</u>	<u>6.18</u>	<u>71.4</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-2</u>	<u>3 VOA</u>	<u>Y</u>	<u>HCl</u>	<u>SEQUOIA</u>	<u>TPHS/BTEX/MTBE</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

COMMENTS: _____

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/ Facility Tosco 6419
 Address: 6401 Dublin Blvd.
 City: Dublin

Job#: 180021
 Date: 8/2/99
 Sampler: Vortex

Well ID MW-3

Well Condition: OK

Well Diameter 2 in.

Hydrocarbon Thickness: ∅ (feet) Amount Bailed (product/water): ∅ (Gallons)

Total Depth 18.40 ft.

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

Depth to Water 6.95 ft.

11.45 x VF 0.17 = 1.94 x 3 (case volume) = Estimated Purge Volume: 5.83 (gal.)

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

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

Starting Time: 10:55

Weather Conditions: clear

Sampling Time: 11:10

Water Color: clear Odor: no

Purging Flow Rate: 1 gpm.

Sediment Description: _____

Did well de-water? no

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

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 100$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>10:57</u>	<u>2</u>	<u>7.65</u>	<u>5.77</u>	<u>73.6</u>	_____	_____	_____
<u>10:59</u>	<u>4</u>	<u>7.68</u>	<u>5.94</u>	<u>72.8</u>	_____	_____	_____
<u>11:01</u>	<u>6</u>	<u>7.67</u>	<u>6.02</u>	<u>72.4</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-3</u>	<u>3 VOA</u>	<u>Y</u>	<u>HCl</u>	<u>SEQUOIA</u>	<u>TPHS/BTEX/MTBE</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

COMMENTS: _____

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Client/ Facility Tosco 6419
 Address: 6401 Dublin Blvd.
 City: Dublin

Job#: 180021
 Date: 8/2/99
 Sampler: Vortek

Well ID MW-4

Well Condition: ok

Well Diameter 2 in.

Hydrocarbon Thickness: ∅ (feet) Amount Bailed (product/water): ∅ (Gallons)

Total Depth 19.10 ft.

Depth to Water 7.34 ft.

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

11.76 x VF 0.17 = 1.99 x 3 (case volume) = Estimated Purge Volume: 5.99 (gal.)

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

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

Starting Time: 11:52

Weather Conditions: clear

Sampling Time: 12:05

Water Color: brn Odor: no

Purging Flow Rate: 1 gpm.

Sediment Description: Sand

Did well de-water? no

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

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 100$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>11:54</u>	<u>2</u>	<u>8.22</u>	<u>4.81</u>	<u>71.5</u>	_____	_____	_____
<u>11:56</u>	<u>4</u>	<u>8.07</u>	<u>4.64</u>	<u>69.4</u>	_____	_____	_____
<u>11:58</u>	<u>6</u>	<u>8.03</u>	<u>4.57</u>	<u>69.1</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-4</u>	<u>3 VOA</u>	<u>Y</u>	<u>#C1</u>	<u>SEQUOIA</u>	<u>TPHS/BTEX/MTBE</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

COMMENTS: _____

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/ Facility Tosco 6419
 Address: 6401 Dublin Blvd.
 City: Dublin

Job#: 180021
 Date: 8/2/99
 Sampler: Vortex

Well ID MW-5

Well Condition: OK

Well Diameter 2 in.

Hydrocarbon Thickness: ∅ (feet) Amount Bailed (product/water): ∅ (Gallons)

Total Depth 19.40 ft.

Depth to Water 6.83 ft.

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

12.57 x VF 0.17 = 2.13 x 3 (case volume) = Estimated Purge Volume: 6.41 (gal.)

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

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

Starting Time: 10:22

Weather Conditions: clear

Sampling Time: 10:35

Water Color: brn Odor: no

Purging Flow Rate: 1 gpm.

Sediment Description: Sand

Did well de-water? no

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

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 100$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>10:24</u>	<u>2</u>	<u>7.60</u>	<u>5.55</u>	<u>72.8</u>	_____	_____	_____
<u>10:26</u>	<u>4</u>	<u>7.46</u>	<u>5.50</u>	<u>72.3</u>	_____	_____	_____
<u>10:28</u>	<u>6.5</u>	<u>7.42</u>	<u>5.52</u>	<u>72.1</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-5</u>	<u>3 VOA</u>	<u>Y</u>	<u>HCl</u>	<u>SEQUOIA</u>	<u>TPH3/BTEX/NTDE</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

COMMENTS: _____

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Client/ Facility Tosco 6419
 Address: 6401 Dublin Blvd.
 City: Dublin

Job#: 180021
 Date: 8/2/99
 Sampler: Vortex

Well ID MW-6
 Well Diameter 2 in.
 Total Depth 19.35 ft.
 Depth to Water 7.10 ft.

Well Condition: OK
 Hydrocarbon Thickness: ∅ (feet) Amount Bailed (product/water): ∅ (Gallons)

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

12.25 x VF 0.17 = 2.08 x 3 (case volume) = Estimated Purge Volume: 6.25 (gal.)

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

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

Starting Time: 12:20
 Sampling Time: 12:35
 Purging Flow Rate: 1 gpm.
 Did well de-water? no

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

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 100$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>12:22</u>	<u>2</u>	<u>7.85</u>	<u>5.83</u>	<u>71.7</u>	_____	_____	_____
<u>12:24</u>	<u>4</u>	<u>7.72</u>	<u>5.70</u>	<u>70.2</u>	_____	_____	_____
<u>12:27</u>	<u>6.5</u>	<u>7.65</u>	<u>5.67</u>	<u>69.9</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-6</u>	<u>3 VOA</u>	<u>Y</u>	<u>HCl</u>	<u>SEQUOIA</u>	<u>TPH3/BTEX/MTBE</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

COMMENTS: _____

**WELL MONITORING/SAMPLING
FIELD DATA SHEET**

Client/ Facility Tosco 6419
 Address: 6401 Dublin Blvd.
 City: Dublin

Job#: 180021
 Date: 8/2/99
 Sampler: Vortex

Well ID MW-7
 Well Diameter 2 in.
 Total Depth 19.35 ft.
 Depth to Water 6.92 ft.

Well Condition: OK

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

12.43 x VF 0.17 = 2.11 x 3 (case volume) = Estimated Purge Volume: 6.34 (gal.)

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

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

Starting Time: 9:55
 Sampling Time: 10:10
 Purging Flow Rate: 1 gpm.
 Did well de-water? no

Weather Conditions: clear
 Water Color: brn Odor: no
 Sediment Description: sand
 If yes: Time: _____ Volume: _____ (gal.)

Time	Volume (gal.)	pH	Conductivity $\mu\text{mhos/cm} \times 100$	Temperature $^{\circ}\text{F}$	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
<u>9:57</u>	<u>2</u>	<u>7.71</u>	<u>4.98</u>	<u>67.2</u>	_____	_____	_____
<u>9:59</u>	<u>4</u>	<u>7.56</u>	<u>5.15</u>	<u>67.4</u>	_____	_____	_____
<u>10:02</u>	<u>6.5</u>	<u>7.50</u>	<u>5.19</u>	<u>67.5</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

LABORATORY INFORMATION

SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
<u>MW-7</u>	<u>3 VOA</u>	<u>Y</u>	<u>HCl</u>	<u>SEQUOIA</u>	<u>TPHS/BTEX/NTDE</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

COMMENTS: _____



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Gettler-Ryan - Dublin
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Deanna Harding

Client Project ID: Unocal SS#6419, Dublin
Sample Matrix: Water
Analysis Method: EPA 5030/8015 Mod./8020
First Sample #: W908068-01

Sampled: Aug 2, 1999
Received: Aug 2, 1999
Reported: Aug 20, 1999

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX / MTBE

Analyte	Reporting Limit µg/L	Sample I.D. W908068-01 TB-LB	Sample I.D. 02 MW-1	Sample I.D. 03 MW-2	Sample I.D. 04 MW-3	Sample I.D. 05 MW-4	Sample I.D. 06 MW-5
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Benzene	0.50	N.D.	N.D.	N.D.	N.D.	10	N.D.
Toluene	0.50	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.	N.D.	N.D.	13	N.D.
Total Xylenes	0.50	N.D.	N.D.	N.D.	N.D.	11	N.D.
MTBE	2.5	N.D.	91,000	120	140	N.D.	230
Chromatogram Pattern:		--	--	--	--	--	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	100	1.0	1.0	1.0	1.0
Date Analyzed:	8/10/99	8/10/99	8/10/99	8/10/99	8/10/99	8/10/99
Instrument Identification:	-	-	-	-	-	-
Surrogate Recovery, %: (QC Limits = 70-130%)	94	100	100	97	100	93

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, #1271

Julianne Fegley
Julianne Fegley
Project Manager

Please Note:

* Report revised 9/9/99 due to omission of results in original data.



Sequoia Analytical

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Gettler-Ryan - Dublin
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Deanna Harding

Client Project ID: Unocal SS#6419, Dublin
Sample Matrix: Water
Analysis Method: EPA 5030/8015 Mod./8020
First Sample #: W908068-07

Sampled: Aug 2, 1999
Received: Aug 2, 1999
Reported: Aug 20, 1999

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX / MTBE

Analyte	Reporting Limit µg/L	Sample I.D. W908068-07 MW-6	Sample I.D. 08 MW-7
Purgeable Hydrocarbons	50	N.D.	N.D.
Benzene	0.50	N.D.	N.D.
Toluene	0.50	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.
MTBE	2.5	N.D.	31

Chromatogram Pattern: -- --

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0
Date Analyzed:	8/11/99	8/12/99
Instrument Identification:	-	-
Surrogate Recovery, %: (QC Limits = 70-130%)	97	97

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL, #1271

Julianne Fegley
Julianne Fegley
Project Manager

W908068.GET <2>





Sequoia Analytical

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Gettler-Ryan - Dublin
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Deanna Harding

Client Project ID: Unocal SS#6419, Dublin
Sample Descript: Water, MW-1
Analysis Method: EPA 8260
Lab Number: W908068-02

Sampled: Aug 2, 1999
Received: Aug 2, 1999
Analyzed: Sep 8, 1999
Reported: Sep 20, 1999

MTBE by EPA 8260

Analyte	Detection Limit µg/L	Sample Results µg/L
Methyl t-Butyl Ether (MTBE).....	1,000	140000

Surrogates	Control Limit %	% Recovery
Dibromofluoromethane.....	50	150
		118

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL, #1271

Julianne Fegley
Julianne Fegley
Project Manager

Please Note:
* Analyzed past the EPA recommended holding time.





Sequoia Analytical

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Gettler-Ryan - Dublin
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Deanna Harding

Client Project ID: Unocal SS#6419, Dublin
Matrix: Liquid

QC Sample Group: W908068

Reported: Aug 20, 1999

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8260
Analyst:	Walnut Creek	Walnut Creek	Walnut Creek	Walnut Creek	Walnut Creek

MS/MSD	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE
Batch#:	W908170-05	W908170-05	W908170-05	W908170-05	W908523-08
Date Prepared:	8/11/99	8/11/99	8/11/99	8/11/99	9/8/99
Date Analyzed:	8/11/99	8/11/99	8/11/99	8/11/99	9/8/99
Instrument I.D.#:	-	-	-	-	-
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	50 µg/L
Matrix Spike % Recovery:	92	84	93	95	104
Matrix Spike Duplicate % Recovery:	99	89	90	102	104
Relative % Difference:	6.8	6.8	5.8	3.8	0.0

LCS Batch#:	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE
LCS Batch#:	LCS081199	LCS081199	LCS081199	LCS081199	LCS090899
Date Prepared:	8/11/99	8/11/99	8/11/99	8/11/99	9/8/99
Date Analyzed:	8/11/99	8/11/99	8/11/99	8/11/99	9/8/99
Instrument I.D.#:	-	-	-	-	-
LCS % Recovery:	103	94	96	107	102

% Recovery Control Limits:	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE
% Recovery Control Limits:	60-140	60-140	60-140	60-140	70-130

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL, #1271

Julianne Fegley
Julianne Fegley
Project Manager





Sequoia Analytical

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Gettler-Ryan - Dublin
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Deanna Harding

Client Project ID: Unocal SS#6419, Dublin
Matrix: Liquid

QC Sample Group: W908068

Reported: Aug 20, 1999

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	Walnut Creek	Walnut Creek	Walnut Creek	Walnut Creek

MS/MSD Batch#:	W908169-10	W908169-10	W908169-10	W908169-10
Date Prepared:	8/10/99	8/10/99	8/10/99	8/10/99
Date Analyzed:	8/10/99	8/10/99	8/10/99	8/10/99
Instrument I.D.#:	-	-	-	-
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	96	87	88	100
Matrix Spike Duplicate % Recovery:	98	89	89	101
Relative % Difference:	3.5	1.6	2.3	1.0

LCS Batch#:	LCS081099	LCS081099	LCS081099	LCS081099
Date Prepared:	8/10/99	8/10/99	8/10/99	8/10/99
Date Analyzed:	8/10/99	8/10/99	8/10/99	8/10/99
Instrument I.D.#:	-	-	-	-
LCS % Recovery:	98	90	89	102

% Recovery Control Limits:	70-130	70-130	70-130	70-130
----------------------------	--------	--------	--------	--------

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL, #1271

Julianne Fegley
Project Manager





Sequoia Analytical

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Gettler-Ryan - Dublin
6747 Sierra Court, Suite J
Dublin, CA 94568
Attention: Deanna Harding

Client Project ID: Unocal SS#6419, Dublin
Matrix: Liquid

QC Sample Group: W908068

Reported: Aug 20, 1999

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	Walnut Creek	Walnut Creek	Walnut Creek	Walnut Creek

MS/MSD Batch#:	Benzene	Toluene	Ethyl Benzene	Xylenes
	0	0	0	0
Date Prepared:	8/12/99	8/12/99	8/12/99	8/12/99
Date Analyzed:	8/12/99	8/12/99	8/12/99	8/12/99
Instrument I.D.#:	-	-	-	-
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	109	92	96	109
Matrix Spike Duplicate % Recovery:	104	89	95	108
Relative % Difference:	5.6	3.9	1.6	1.0

LCS Batch#:	-	-	-	-
Date Prepared:	-	-	-	-
Date Analyzed:	-	-	-	-
Instrument I.D.#:	-	-	-	-
LCS % Recovery:	-	-	-	-

% Recovery Control Limits:	Benzene	Toluene	Ethyl Benzene	Xylenes
	70-130	70-130	70-130	70-130

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL, #1271

Julianne Fegley
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