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

Afameda County Health Care Services 1131 Harbor Bay Parkway Alameda, California 94502

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.

No. 6882

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

Harding

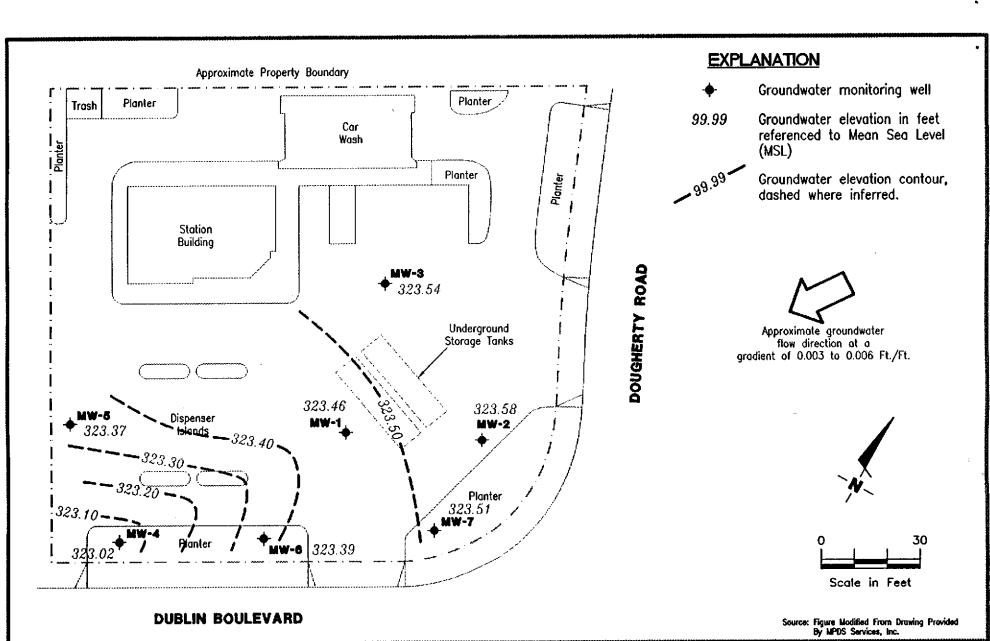
Attachments:

Standard Operating Procedure - Groundwater Sampling

Field Data Sheets

6419.qml

Chain of Custody Document and Laboratory Analytical Reports





Gettler - Ryan Inc.

6747 Sierra Ct., Suite J (925) 55 Dublin, CA 94568

(925) 551-7555

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

DATE

August 2, 1999

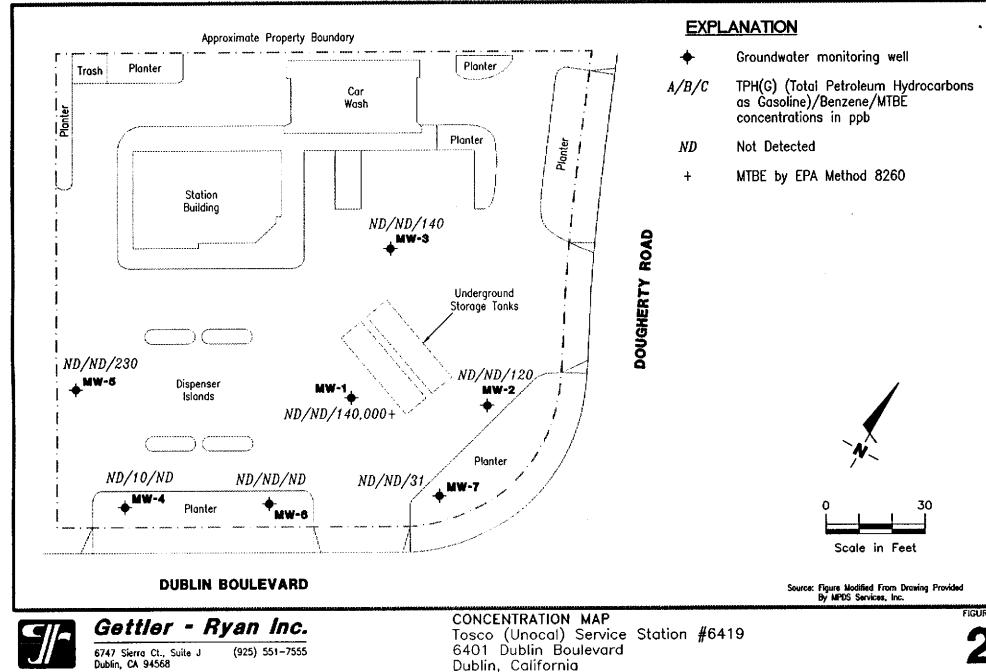
FIGURE

1

1

JOB NUMBER 180021 REVIEWED BY

REVISED DATE



DATE

August 2, 1999

REVIEWED BY

JOB NUMBER 180021

FIGURE

REVISED DATE

Table 1
Groundwater Monitoring Data and Analytical Results

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

Well ID/	Date	DTW	GWE	TPH(D)	TPH(G)	В	T	E	X	MTBE
TOC*		(ft.)	(msl)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(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					- <u>-</u> -		
	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		1204	1.0	0.95	ND	ND	280
	08/18/97	7.38	322.85		ND	ND	ND	ИD	ND	100
	02/02/986	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	84,000/100,0008
	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	91,000/140,000 ¹⁰				
MW-2										
330.40	03/14/94	7.23	323.17		ND	ND	2.8	1.1	8.0	
220170	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				77			
	11/18/94	7.67	322.73	~~	ND	ND	ND	ND	ND	4.
	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	
	02/13/93	0.10	324,24		עאו	ND	MD	MD	ND	

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Table 1
Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #6419 6401 Dublin Boulevard

Dublin, California

Well ID/	Date	DTW	GWE	TPH(D)	TPH(G)	В	Т	E	X	MTBE
TOC*		(ft.)	(msl)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(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				w-			
	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 A	NNUALLY					
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	
331.11	08/25/94	9.20	321.91		130 ⁴	ND	ND	ND	ND	
	09/30/94	9.43	321.68						ND 	
	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	
	02/13/95	6.30	324.81						ND	
	03/13/93	8.20	322.91					••		
	04/00/95	6.88	324.23		99 ⁴	ND	ND	ND	ND	
	05/17/95	7.35	323.76					ND	ND 	
	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	ND	
	02/26/96	6.25	324.86		ND ND	ND ND	ND ND	ND ND	ND ND	5
	08/23/96	7.98	323.13	SAMPLED A			ND 		ND 	
330.68	08/23/90	6.07	324.61	SAMPLED A	ND	ND	ND	ND	ND	68
JJ0.00	02/17/97	7.82	322.86		ND		ND		ND 	
	00/10/3/	7.04	322.80						-	

Table 1
Groundwater Monitoring Data and Analytical Results

Tosco (Unocal) Service Station #6419 6401 Dublin Boulevard

Dublin, California

Well ID/	Date	ĐTW	GWE	TPH(D)	TPH(G)	В	T	E	X	MTBE
TOC*		(ft.)	(msl)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(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	22/228
	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

B = Benzene

ppb = Parts per billion

DTW = Depth to Water

T = Toluene

ND = Not Detected

(ft.) = Feet

E = Ethylbenzene

-- = Not Measured/Not Analyzed

GWE = Groundwater Elevation

X = Xylenes

msl = Relative to mean sea level

MTBE = Methyl tertiary butyl ether

TPH(D) = Total Petroleum Hydrocarbons as Diesel

TPH(G) = Total Petroleum Hydrocarbons as Gasoline

- * 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).
- Laboratory report indicates the hydrocarbons detected appeared to be a diesel and non-diesel mixture.
- Laboratory report indicates the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.
- 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.
- 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.
- Well appears to be obstructed at approximately 9 feet.
- Detection limit raised. Refer to analytical reports.
- 8 MTBE by EPA Method 8260.
- 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.
- 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

	anion Tourism and a second				
Date	Cadmium	Chromium	Lead	Nickel	Zinc
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
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
	03/14/94 08/25/94 11/18/94 02/15/95	03/14/94 ND 08/25/94 ND 11/18/94 ND 02/15/95 ND	(ppm) (ppm) 03/14/94 ND 0.012 08/25/94 ND ND 11/18/94 ND 0.076 02/15/95 ND ND	(ppm) (ppm) (ppm) 03/14/94 ND 0.012 ND 08/25/94 ND ND 0.024 11/18/94 ND 0.076 ND 02/15/95 ND ND ND	(ppm) (ppm) (ppm) (ppm) 03/14/94 ND 0.012 ND 0.030 08/25/94 ND ND 0.024 ND 11/18/94 ND 0.076 ND 0.067 02/15/95 ND ND ND 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.

Total Depth 9.20 ft. Color of the to Water Thickness: Volume Factor (VF) Purge Disposable Bailer Stack Suction Grundfos Other: Starting Time: Starting Time: Purging Flow Rate:	Well Diameter Volume 2" = 0.17 3" = 0.38 4"			80021 12/99 Voetker	8/	Job#: Date: Sampl				1 1 Dubi	ient/ 7050 acility <u>6419</u> ddress: <u>640</u> ity: <u>Du</u>
Total Depth Depth to Water Thickness:	Total Depth Depth to Water Thickness:		<u></u>		on	:	Condition	Well	w-1	Mu	Well ID
Total Depth 9.20 ft. Volume 2 = 0.17 3 = 0.38 4 = 0.66 Purge Disposable Bailer Stack Suction Grundfos Other: Starting Time: Purging Flow Rate: Did well de-water? Time Volume 2 = 0.17 3 = 0.38 4 = 0.66 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 12 = 5.80 13 = 0.38	Total Depth Purple	(Galloge)	~~			· ch		•	2 in.		ell Diameter
Depth to Water Column	Depth to Water Column Factor (VF) 6" = 1.50 12" = 5.80					<u> </u>			o ft.	9.2	stal Denth
Purge Disposable Bailer Equipment: Bailer Stack Bailer Stack Suction Grundfos Other: Other: Other: Odor: Lado Other: Odor: Odor: Odor: Cado Other: Odor: Odo	Purge Disposable Bailer Sampling Equipment: Bailer Stack Bailer Pressure Bailer Grundfos Grundfos Other: Starting Time: Starting Time: Purging Flow Rate: Purging Flow Rate: Disposable Bailer Fressure Bailer Grab Sample Other: Weather Conditions: Water Color: Sediment Description: If yes; Time: Volume: Time Volume pH Conductivity Temperature D.O. ORP (mg/L) (my/)	0.50		50	6" = 1.50	2" = 0.1					•
Sampling Time: Purging Flow Rate: Did well de-water? If yes; Time: Volume PH Conductivity Imperature (gal.) 2.793 S. 26 Time Volume (gal.) J. 793 S. 26 J. 793 S. 26 J. 793 S. 26 J. 793	Sampling Time: Purging Flow Rate: Did well de-water? Time Volume pH Conductivity Temperature (gal.) 291 Conductivity Temperature (mg/L) (mV) Conductivity C		ailer	posable Ba ler essure Baile ab Sample	Disp Baile Pres Grab	npling	San		ole Bailer	Disposat Bailer Stack Suction Grundfor	-
Time Volume pH Conductivity Temperature D.O. ORP Alkalinity umhos/cmx/100 oF (mg/L) (mV) (ppm) 1 7.76 5.28 74.3 1.7.72 5.25 74.3 LABORATORY INFORMATION SAMPLE ID (#) - CONTAINER REFRIG. PRESERV. TYPE LABORATORY ANALYSES MW-/ 3 VOA Y #C/ SEQUOIA TAKS/BTEX/MTBE	Time Volume pH Conductivity Temperature D.O. ORP (gal.) 491		<u>ئىيد _</u> :Odor	<u></u>	le.	or: Descript	Water Col		مص		Sampling Time: Purging Flow Rat
LABORATORY INFORMATION SAMPLE ID (#) - CONTAINER REFRIG. PRESERV. TYPE LABORATORY ANALYSES MW-/ 3 VOA Y HC/ SEQUOIA TPHS/BTEX/NTBE	- 1.5 7.76 5.28 74.6 - 1.5 7.72 5.25 74.3	Alkalinity	ORP	D.O.	ature 子	Temper	ductivity hos/cm X/00	Conc µm	pH 2.91	/olume (gal.)_	Time V
LABORATORY INFORMATION SAMPLE ID (#) - CONTAINER REFRIG. PRESERV. TYPE LABORATORY ANALYSES MW-/ 3 VOA Y HC/ SEQUOIA TPHS/BTEX/NTBE					6.	24.	28	5.	7.76	1	
SAMPLE ID (#) - CONTAINER REFRIG. PRESERV. TYPE LABORATORY ANALYSES MW-/ 3 VOA Y HC SEQUOIA TPHS/BTEX/NTBE					<u>.</u> .	<u> </u>	.25_	- <u>- 5</u> 	7.72	1.5	
MW-1 3 VOA Y HCI SEQUOIA THIS MIRE (8269)	LABORATORY INFORMATION				rion	FORMA	ATORY IN	LABOR			
MTRE (8760)	SAMPLE ID (#) - CONTAINER REFING. TRESERVITOR					TYPE		REFRIG.			SAMPLE ID
MW-1 2 VOA - MISE (8280)	1100-190	_		·			#01				MW-1
	MW-1 2 VOA ~ MIBE (88	<u> </u>	-115E (80		<u> </u>			~		2 VOA	MWZ

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Client/ Tos Facility 641	20 9			Job#:	180021		
	ol Aublin B	114.		Date:	8/2/99		
	eblin			Sampler	· Vartke		
Well ID	MW-2	Wel	l Condition:		on	<u> </u>	
Well Diameter			irocarbon ckness:	Ø (Amount 6	-	(Gallons)
Total Depth	17.60 tt.	Vo	lume	2" = 0.17	3" = 0.3	8 4	" = 0.66
Depth to Water	6.72 to	Fa	ctor (VF)		5" = 1.50	12" = 5.80	
Purge Equipment:	Disposable Bailer Bailer Stack Suction Grundfos Other:		Samp	oling	Disposable B Bailer Pressure Bail Grab Sample Other:	ailer er	(gal.)
Starting Time:	11:25				der		
Sampling Time:					n:		
Did well de-wat	er? <u>1</u>	gom.			Volur		
Time 11:27 11:29	Volume pH 7.93	μm 6.	ductivity hos/cm/x/00	Temperatu 72.9 71.9	mg/L)	ORP (mV)	Alkalinity (ppm)
	<u> </u>						
SAMPLE ID	(#) - CONTAINER	LABOP	ATORY INFO		N LABORATORY	ANAL	YSES
MW-2	3 VOA	Υ	#C		AIOUL	TPHS/BTE	X/NTBE
COMMENTS:	<u></u>	L	<u>. </u>				
COMMENTS:							

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Client/ Tosa Facility 6419				Job#:		80021	<u>-</u>	
Address: 640	ol Dublin B	114.		Date:		12/99		<u>.</u>
City:	blin			Sample	er:1	Varthe		•
Well ID	MW-3	We	ll Condition:		01	<u> </u>		
Well Diameter	Z in		drocarbon ckness:	· Ø		Amount B	- AT	(Gallons)
Total Depth	18.40 ft	· v	olume	2" = 0.1	7	3" = 0.31	3 4'	= 0.66
Depth to Water	6.95 h	. Fa	ictor (VF)		6" # 1.		12" = 5.80	
	x	vf <i>8-1-</i>	= <u>1.94</u> x	3 (case vo	olume) =	Estimated Po	ırge Volume: _S	C.83 (gal.)
Purge Equipment:	Disposable Bailer Bailer Stack Suction Grundfos Other:			ipling ipment:	Bai Pre Gra	posable B ler essure Baile ab Sample her:	er	
Sampling Time: Purging Flow Ra		gom.	Sediment	or: Descript			Odor: <u>/^</u>	
	Volume pH (gal.) 7.6	- μπ گ ـ	ductivity thos/cmx/00		ature	D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
17:01	7 7.68 6 7.6	2 <u>- s</u>	5.02	-72. 72	<u>?</u> .4			
SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV.			RATORY	ANAL	YSES
MW-3	3 VOA	Y	#0	. !	SEQUOIA		TPHS/BTE	X/NTBE
		<u> </u>		L		<u>. </u>	<u> </u>	
COMMENTS: .								
<u> </u>			<u> </u>					

9/97-fieldet.frm

Client/ Tos Facility 641	e0 9		, i .		180021		
Address: 640	ol Dublin E	2114.		Date:	8/2/99		
City:	blio			Sampler:	Vortke	1	
Well ID	HW-4	We	ell Condition	:	oh		and the expenses of the second
Well Diameter	2 in	-	drocarbon ickness:	\ ∅ (fr	Amount E	-67	(Gailons)
Total Depth	19.10		olume	2" = 0.17	3" = 0.3	8 4	* = 0.66
Depth to Water	7.34	. F:	actor (VF)	6"	= 1.50	12" = 5.80	
Purge Equipment:	Disposable Baile Bailer Stack Suction Grundfos Other:	r	San	ıpling	Disposable B Bailer Pressure Bail Grab Sample Other:	ailer er	5,79 (qal.)
Starting Time: Sampling Time:	11:52				_ele- brn		
	ate:				Sand		
Did well de-wat	er?		If yes; Ti	me:	Volu	me:	(gal.)
Time	Volume pH (gal.)		nductivity nhos/cm X100 4-8	₹. r	e D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
11:28	4 8-0-		4.64	69.1			
SAMPLE ID	(#) - CONTAINER	LABO	RATORY INF	4.1	I ABORATORY	ANAL	
HW-4	3 VOA	Y	#0	SEQ	AIOL	TAKS/BTE	ex/HTBE
					:		
	<u> </u>	<u> </u>	1				
COMMENTS:		·			. 		
			······································	<u></u>			

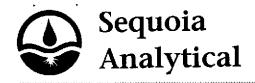
9/97-Heidet.frm

	9 01 Dublio B	°11d.			180021		
City:	blin			Sampler: ,	Vortker		
Well ID	Mw-5	Wel	l Condition:		9h		
Well Diameter	2in.		lrocarbon ckness:	√	Amount 8	- T	(Gallons)
Total Depth	19.40 ft.	Vo	olume ctor (VF)	2" = 0.17 6"	3" = 0.38 = 1.50		= 0.66
Depth to Water	6.83 n.		= <u>2.13</u> x	3 (case volume) = Estimated P	urge Volume: _	6.4 (_{loal.1}
Purge Equipment:	Disposable Bailer Bailer Stack Suction Grundfos Other:		Sam	pling	Qisposable Baller Pressure Balle Grab Sample Other:	ailer	
	10:35 ate:		Water Cold	or:b Description:	_ clear Sand	Odor:n&	
Time	er?	μm	ductivity hos/cm X/gO	Temperature	Volur : D.O. (mg/L)	ORP (mV)	Alkalinity (ppm)
10:28	4 7.4x 6.5 3.4	<u> </u>	5.52 5.50	72.3			
		LABO		ORMATION		4.1.4.1	Vese
SAMPLE ID	(#) - CONTAINER	REFRIG.	PRESERV.	TYPE U	JOIA	TPHS/BT	
μω-5	3 707	,	7, 01				
COMMENTS:							

ddress: 640 ity:	1 Aublin B	111.		180021 8/2/99 Varther		
Well ID	MW-6	Well Conditio	n:	9h		
/ell Diameter		Hydrocarbon	<i>€</i> #100	Amount Ba	~^	(Gallons)
otal Depth	19.35 ft.	Thickness:	2" = 0.17	3" = 0.38	4"	= 0.66
epth to Water	7.10 1	Factor (VF)	6" :	= 1.50	12" = 5.80	
		vf 8.17 <u>-2.08</u> sa	X 3 (case volume) = Estimated Pt	irge Volume: <u>6</u>	ر (gal.)
Purge quipment:	Disposable Bailer Bailer		uipment: (Disposable Baller	aler	
	Stack Suction			Pressure Baile	er	
	Grundfos Other:			Grab Sample Other:		
Starting Time: Sampling Time:	12:20 12:35 ate:	Water C	Conditions: olor: t Description:	bra_		
	er?	If yes;	Time:	Volur	ne:	(ga
Time	Volume pH (gal.) 7.85	Conductivity µmhos/cmX/or 5.33	<u> 717</u>	D.O. (mg/L)	ORP (mV)	Alkalinit (ppm)
12:24	4 3.32	5 5.67	70.2 69.9			
12:27 _	6.5 7.6					
		LABORATORY I	NFORMATION	1		
	(#) - CONTAINER			ABORATORY	THE/BTE	
SAMPLE ID	3 VOA	Y HC	. 2500	JOIA	PTRSIBIE	
SAMPLE ID					1	
					 	

Client/ Tosco Facility 6419	ව 			lob#:	<u> 18</u>	0021		
Address: 6401		1 Vd .		Date: 8/2/99				.
City: Due				Sampler	r: <u>1/2</u>	atkes		
Well ID	HU-7	Wel	Condition:		on			
Well Diameter	2 in.		rocarbon :kness:	Ø		mount B	◆ /\	(Gallons)
Total Depth	19.35 ft.	Vo	lume	2" = 0.17		3" = 0.38	4'	' = 0.66
Depth to Water	692 ft.	Fac	ctor (VF)		6" = 1.30	, 	12" = 5.80	
Purge Equipment:	Disposable Bailer Bailer Stack Suction Grundfos Other:		Samı		Dispo Baile Press Grab	osable Ba	er	~> 7 (qal.)
	9:55	apm.	Sediment D	r:	<u>bro</u> in:d	ond.	Odor: <u>ro</u>	
4	olume pH	$\mu \mathrm{m}$	If yes; Indicativity hos/cm X/0 0	Temperat	ure	D.O. (mg/L)		Alkalinity (ppm)
9:59	4 7.56		-15	67.9	1			
10:02	6.5 7.5C	<u> </u>	<u>.19</u> .	6-1	<u> </u>			
								
CANCICIO	(#) - CONTAINER	LABOF	ATORY INF		ON LABORA	TORY	ANAL	YSES
SAMPLE ID	3 VOA	Y	#C		AIOUD		TPHS/BTE	X/HTBE
				·		 		
						· ·		
COMMENTS:								

										, –	·					Cl	hain	-of	-C1	<u>ustc</u>	ody-Record
TOSC	O	Consu	Facility Iltant Proj Iltant Han Idrann 6	y Address Jest Num me <u>Get</u> 747_Si	6401 ber 18 ttler- ierra	AL SS# 6 Dublin B 30021.85 Ryan Inc Court, S eanna L.	(G-	R Inc	(,:		9456	– La R S	aborotory aborotory	/ Hame. / Releas Collected Date:	(Phone) Seq Numb d by (No	Mr. (930 uola er	DAVID 5) 27 Anal	DEW 17-23 ytica	184 11		
San Flamon, Called	14323	P,		ntaet (Hc (Ph	ione) 51()-551-755	<u>5 (Fan</u>	Number)510-			s	Ignotur⊕.		e Perfor		16kg		<u></u> -		DO NOT BILL TB-LB ANALYSIS
Sample Number	Lab Sample Number	Number of Containers	Matrix S = Sol A = Air K = Water C = Charcoal	Type C = Grab C = Composite D = Discrete	Tirre	Sample Preservation	load (Yee or No.)	TPH Gas + BYEX WANTEE (BOLG)	TPH Dissel (8015)	Oil and Greame (5520)	Purpeable Halocarberra (5010)	Purgeable Aromatics (8020)	Purpedile_Organics (8240)	Extractable Organics (8270)	Metals CACT-PS_ZA-NI (ICAP or AA)						Remarks
		-	W	C	<u> </u>	Hel	4	X	 	 								15			* CONFIRM
B-LB	-00	6_			100	70,	7	X	 				<u> </u>	<u> </u>	1		 				mthe Hit on
	-DV	42		7	1143		· +	X							-	-	-	 	 		MW-1 00/4
W-2	-02° -04	3	и	7	1192			X			ļ			ļ	-	-	 	-			BY MISE BY
W-3	15	3	-	,	12/01	_	4	X		1			_		1	 	1-	-			\$250
1W-4	100	3	7	-		4	4	X			ļ		-			 		 	-	1	
W-5	-D	3	4	5	23/	- ~	U	K						-	-	-		+	 	 	<u> </u>
4W-6 MW-7		13		1-	101912		-	X	1-	-	-	-		-		-	-	+	 	-	
~w - T		 	1								-	-	-				-	-	 	 	
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elinquished By	/ 1/ .	<u> </u>		rganization 3-R In		Date/Thre 3		Received	د_،	Jea	<u> </u>			2720	ر 8	3/2/9		 	Tum A	24	me (Circle Cholce)
eilingulehed B	y (signature))	0.	rganizatio	on l	8/3/99		Received	by 1970	inaturel			Organiz			ale/jim <i>B/3</i> ate/jim	9:2	1/		5 10	Doys Days ontraoted
alinguished B			C	Organization CFA)		Date/Ilme		Reoleved		boratory						8/3/ /3	199	1			<u> </u>



Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 Petaluma, CA 94954 San Carlos, CA 94070-4111 (650) 364-9600 (925) 988-9600 (916) 921-9600 (707) 792-1865 (650) 232-9600 FAX (650) 364-9233 FAX (925) 988-9673 FAX (916) 921-0100 FAX (707) 792-0342 FAX (650) 232-9612

Gettler-Ryan - Dublin 6747 Sierra Court, Suite J Dublin, CA 94568

Attention: Deanna Harding

Client Project ID: Sample Matrix: Analysis Method:

First Sample #:

Unocal SS#6419, Dublin Water

water EPA 5030/8015 Mod./8020

W908068-01

Sampled: Aug 2, 1999 Received: Aug 2, 1999

Reported: 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	Sampie 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 Par	ttern:				••		

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

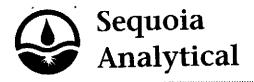
ulianne Fegley

Project Manager

Please Note:

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

W908068.GET <1>



Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 Petaluma, CA 94954 San Carlos, CA 94070-4111 (650) 364-9600 (925) 988-9600 (916) 921-9600 (707) 792-1865 (650) 232-9600

FAX (650) 364-9233 FAX (925) 988-9673 FAX (916) 921-0100 FAX (707) 792-0342 FAX (650) 232-9612

Gettler-Ryan - Dublin 6747 Sierra Court, Suite J

Dublin, CA 94568 Attention: Deanna Harding Client Project ID: Sample Matrix: Analysis Method:

First Sample #:

Unocal SS#6419, Dublin

Water

EPA 5030/8015 Mod./8020

W908068-07

Sampled: Aug Received: Aug Reported: Aug

Aug 2, 1999 Aug 2, 1999 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 Pa	ttern:	••		

Quality Control Data

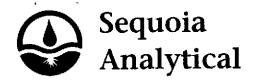
Report Limit Multiplication Factor:	1.0	1.0
Date Analyzed:	8/11/99	8/12/99
Instrument Identification:	-	-
Surrogate Recovery, %: (QC Limits = 70-130%)	97	97

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 Project Manager



 Redwood City, CA 94063
 (650) 364-9600
 FAX (650) 364-9233

 Walnut Creek, CA 94598
 (925) 988-9600
 FAX (925) 988-9673

 Sacramento, CA 95834
 (916) 921-9600
 FAX (916) 921-0100

 Petaluma, CA 94954
 (707) 792-1865
 FAX (707) 792-0342

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

Gettler-Ryan - Dublin 6747 Sierra Court, Suite J Dublin, CA 94568 Attention: Deanna Harding Client Project ID: Sample Descript: Analysis Method: Lab Number:

Unocal SS#6419, Dublin Water, MW-1 EPA 8260 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 Dibromofluoromethane	Control Limit %	, 	% Recovery

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

SEQUOIA ANALYTICAL, #1271

Julianne Fegley Project Manager Please Note:

* Analyzed past the EPA recommended holding time.



Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 Petaluma, CA 94954 San Carlos, CA 94070-4111 (650) 364-9600 (925) 988-9600 (916) 921-9600 (707) 792-1865 (650) 232-9600 FAX (650) 364-9233 FAX (925) 988-9673 FAX (916) 921-0100 FAX (707) 792-0342 FAX (650) 232-9612

Gettler-Ryan - Dublin 6747 Sierra Court, Suite J Dublin, CA 94568 Client Project ID: Matrix:

Unocal \$\$#6419, Dublin

Liquid

Attention: Deanna Harding

QC Sample Group: W908068

Reported:

Aug 20, 1999

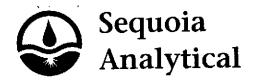
QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE
			peuzene		
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8260
Analyst:	Walnut Creek	Walnut Creek	Walnut Creek	Walnut Creek	Walnut Creek
MS/MSD					
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#:	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:	60-140	60-140	60-140	60-140	70-130

SEQUOIA ANALYTICAL, #1271

Julianne Fegley Project Manager 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.



Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 Petaluma, CA 94954 San Carlos, CA 94070-4111 (650) 364-9600 (925) 988-9600 (916) 921-9600 (707) 792-1865 (650) 232-9600

FAX (650) 364-9233 FAX (925) 988-9673 FAX (916) 921-0100 FAX (707) 792-0342 FAX (650) 232-9612

Gettler-Ryan - Dublin 6747 Sierra Court, Suite J Dublin, CA 94568

Client Project ID: Matrix:

Unocal SS#6419, Dublin

Liquid

Attention: Deanna Harding

QC Sample Group: W908068

Reported:

Aug 20, 1999

QUALITY CONTROL DATA REPORT

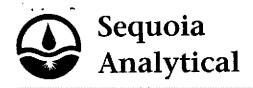
ANALYTE		T .l	Falson	- Widones	· · · · · · · · · · · · · · · · · · ·
ANALYTE	Benzene	Toluene	Ethyl	Xylenes	
			Benzene		
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Analyst:	Walnut Creek	Walnut Creek	Walnut Creek	Walnut Creek	
MS/MSD				11/000400 40	
Batch#:	W908169-10	W908169-10	W908169-10	W908169-10	
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.#:	•	•	. ·	-	
1.00 %	4				
LCS %	00		22	100	
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**



Redwood City, CA 94063 Walnut Creek, CA 94598 Sacramento, CA 95834 Petaluma, CA 94954 San Carlos, CA 94070-4111 (650) 364-9600 (925) 988-9600 (916) 921-9600 (707) 792-1865 (650) 232-9600 FAX (650) 364-9233 FAX (925) 988-9673 FAX (916) 921-0100 FAX (707) 792-0342 FAX (650) 232-9612

Gettler-Ryan - Dublin 6747 Sierra Court, Suite J Dublin, CA 94568

Client Project ID:

Unocal SS#6419, Dublin

Matrix:

Liquid

Attention: Deanna Harding

QC Sample Group: W908068

Reported:

Aug 20, 1999

QUALITY CONTROL DATA REPORT

ANALYTE				· · · · · · · · · · · · · · · · · · ·	
ANALYTE	Benzene	Toluene	Ethyl	Xylenes	
			Benzene		
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Analyst:	Walnut Creek	Walnut Creek	Walnut Creek		
<u> </u>		·		-	
MS/MSD					
Batch#:		0	0	0	
D. I. D	- 4 - 4	- 4 4	- 4 4	- 4 4	
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	10 9	
% Necovery.	109	92	90	109	
Matrix Spike					
Duplicate %					
Recovery:	104	89	95	108	
		~			
Relative %					
Difference:	5.6	3.9	1.6	1.0	
	Nove had National Association (No. 10, 104 Association)			.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
LCS Batch#:	-	-	•	-	
Date Prepared:	_				
Date Analyzed:	-	-	•	-	
Instrument I.D.#:	-	•	•	-	
msuument i.b.#.	•	•	•	•	
LCS %					
Recovery:	-	_	-	_	
% Recovery				,	
Control Limits:	70-130	70-130	70-130	70-130	

SEQUOIA ANALYTICAL, #1271

Julianne Fegley Project Manager 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.