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March 11, 1998

Susan Hugo  
Alameda County Department  
of Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

*Handwritten initials: JOP and JAS*

Re: **Fourth Quarter 1997 Monitoring Report**  
Shell Service Station  
5755 Broadway  
Oakland, California  
WIC #204-5510-0303  
Cambria Project #240-314-497

Dear Ms. Hugo:

On behalf of Shell Oil Products Company (Shell), Cambria Environmental Technology, Inc. (Cambria) is submitting this monitoring report to satisfy the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Division 3, Chapter 16, Article 5, Section 2652.d. Presented below are a hydrocarbon and ground water removal summary, the fourth quarter 1997 activities, and the anticipated first quarter 1998 activities.

#### HYDROCARBON AND GROUND WATER REMOVAL SUMMARY

Hydrocarbon Phase	This Quarter	Cumulative	
		(pounds)	(gallons)
Separate-Phase	0	0.55	-
Ground Water with Aqueous-Phase Hydrocarbons	33,600 gallons	-	422,338

CAMBRIA  
ENVIRONMENTAL  
TECHNOLOGY, INC.

1144 65TH STREET,  
SUITE B  
OAKLAND,  
CA 94608

PH: (510) 420-0700

FAX: (510) 420-9170

The table above summarizes removal of separate-phase hydrocarbons by manual bailing reported in pounds, and the removal of ground water with aqueous-phase hydrocarbons from the tank-pit area by vacuum truck reported in gallons. In a March 11, 1998 telephone conversation, Jonathan Speir reported that Crosby & Overton of Oakland, California removed 33,600 gallons of ground water during fourth quarter 1997.

#### **FOURTH QUARTER 1997 ACTIVITIES**

**Quarterly Ground Water Sampling:** Blaine Tech Services, Inc. of San Jose, California (Blaine) measured ground water depths and collected water samples from the site wells (Figure 1). The Blaine report, describing these sampling activities and presenting the analytical results, is included as Attachment A. Cambria calculated ground water elevations (Table 1), compiled the analytical data (Table 2), and prepared a ground water elevation contour map (Figure 1).

**November 20, 1997 Site Visit:** A minor leak was detected in Dispenser 5/6 during a routine Shell site inspection on November 6, 1997 and was repaired by Service Station Systems of San Jose, California that same day. Susan Hugo of the Alameda County Department of Environmental Health, Aura Mattis of Shell, and Maureen Feineman of Cambria met on November 20, 1997, for a visual inspection of the dispenser. No free product or evidence of hydrocarbons was observed at that time. In addition, hydrocarbon concentrations in wells S-1 and S-2, which are located down gradient of the dispenser, remained stable this quarter relative to historic hydrocarbon concentrations.

#### **ANTICIPATED FIRST QUARTER 1998 ACTIVITIES**

**Quarterly Ground Water Sampling:** Blaine will measure ground water depths and collect water samples from the wells. Cambria will tabulate the data and prepare a quarterly monitoring report.

**Tank-Pit Dewatering:** Cambria will continue to monitor water levels and arrange dewatering of the tank-pit, when necessary.

**Sampling Frequency Reduction Request:** On November 5, 1997, Cambria submitted a Sampling Frequency Reduction Request proposing annual sampling of wells S-1 and S-3 during the first quarter and semi-annual sampling of well S-2 during the first and third quarters. We will implement this revised sampling frequency during the first quarter of 1998 unless otherwise advised by your office.

**Upgrade Activities:** A dispenser upgrade is scheduled for the first quarter of 1998. At that time, Cambria will prepare a report summarizing upgrade activities at the site.

Susan Hugo  
March 11, 1998

CAMBRIA

**CLOSING**

We appreciate the opportunity to work with you on this project. Please call if you have any questions.

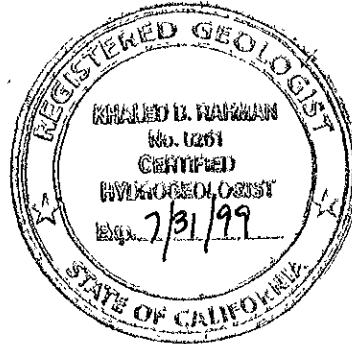
Sincerely,  
Cambria Environmental Technology, Inc.

*Aubrey K Cool*  
FOR

Maureen D. Feineman  
Staff Geologist

*Khaled B. Rahman*

Khaled B. Rahman, R.G., C.H.G.  
Senior Geologist



Attachments: A - Blaine Quarterly Ground Water Monitoring Report

cc: A. E. (Alex) Perez, Shell Oil Products Company, P.O. Box 8080, Martinez, California 94553

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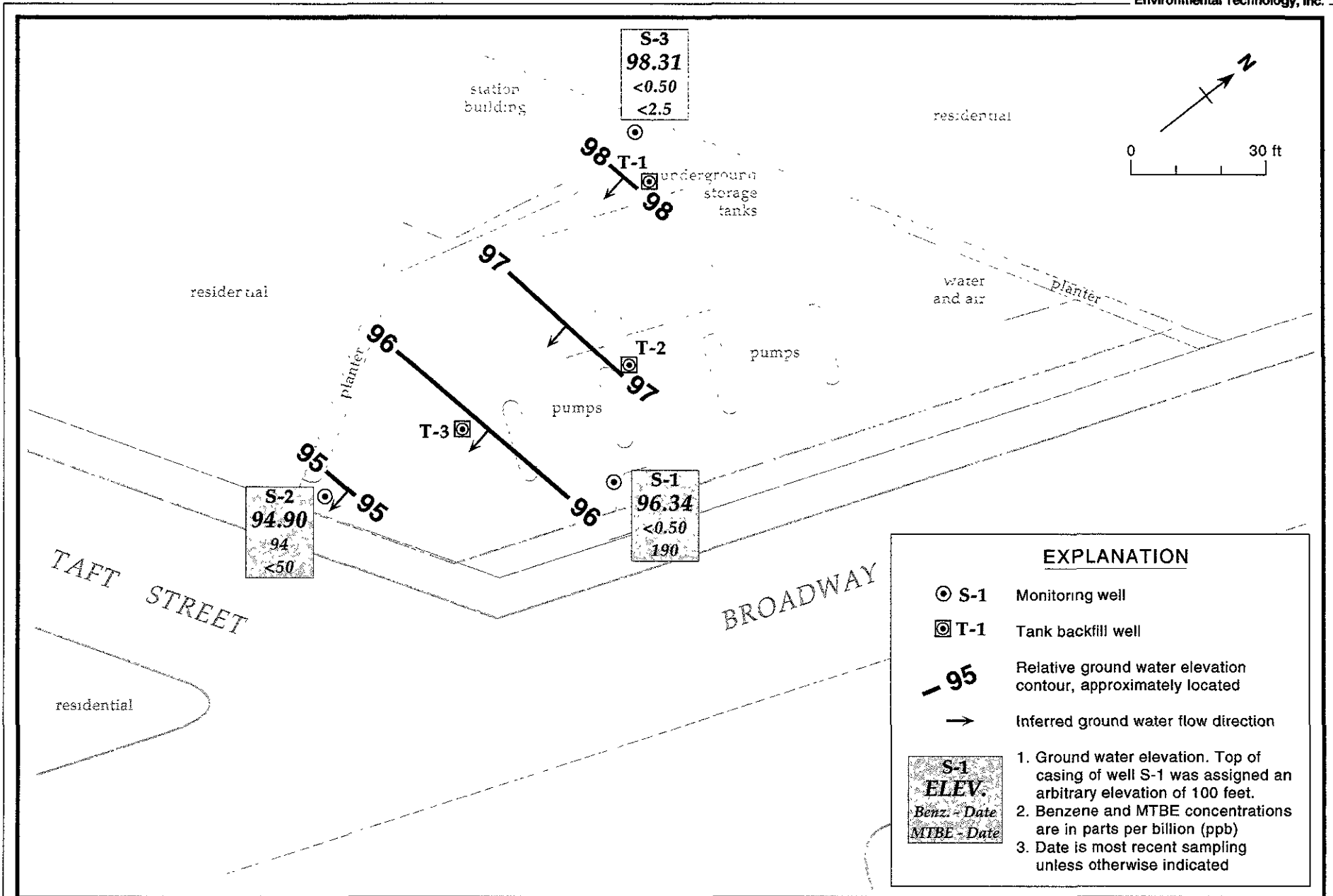


Figure 1. Ground Water Elevation Contours - November 3, 1997 - Shell Service Station, 5755 Broadway, Oakland, California.

**Table 1. Ground Water Elevations - Shell Service Station WIC #204-5510-0303,  
5755 Broadway, Oakland, California**

Well ID	Date	TOC Elevation <sup>a</sup>	Depth to Water (ft below TOC)	Relative Ground Water Elevation (ft)
S-1	01/25/91	100.00	3.88	96.12
	06/03/91		3.51	96.49
	08/30/91		4.24	95.76
	11/22/91		4.29	95.71
	03/13/92		2.87	97.13
	05/28/92		3.79	96.21
	08/19/92		4.43	95.57
	11/18/92		4.34	95.66
	02/10/93		4.20	95.80
	06/11/93		3.39	96.61
	08/03/93		3.69	96.31
	11/02/93		4.26	95.74
	12/16/93		2.73	97.27
	02/01/94		3.38	96.62
	05/04/94		3.00	97.00
	08/18/94		3.70	96.30
	11/09/94		2.52	97.48
	02/22/95		4.08	95.92
	05/02/95		2.58	97.42
	08/30/95		3.48	96.52
	11/28/95		3.99	96.01
	02/02/96		2.00	98.00
	03/09/96		3.38	99.62
	08/22/96		3.43	96.57
	11/07/96		3.70	96.30
	02/20/97		3.60	96.40
05/30/97	3.47	96.53		
08/21/97	3.01	96.99		
11/03/97	3.66	96.34		
S-2	01/25/91	98.92	4.52	94.40
	06/03/91		4.02	94.90
	08/30/91		4.70	94.22
	11/22/91		4.72	94.20
	03/13/92		3.47	95.45
	05/28/92		4.45	94.45
	08/19/92		4.84	94.08
	11/18/92		4.73	94.19
	02/10/93		4.83	94.09
	06/11/93		3.74	95.18
	08/03/93		4.23	94.69
	11/02/93		4.72	94.20
12/16/93	3.00	95.92		

**Table 1. Ground Water Elevations - Shell Service Station WIC #204-5510-0303, 5755 Broadway, Oakland, California (continued)**

Well ID	Date	TOC Elevation <sup>a</sup>	Depth to Water (ft below TOC)	Relative Ground Water Elevation (ft)
	02/01/94		3.48	95.44
	05/04/94		3.26	95.66
	08/18/94		3.98	94.94
	11/09/94		3.10	95.82
	02/22/95		4.02	94.90
	05/02/95		2.86	96.06
	08/30/95		4.06	94.86
	11/28/95		4.48	94.44
	02/02/96		1.99	96.93
	03/09/96		3.27	95.65
	08/22/96		3.85	95.07
	11/07/96		4.00	94.92
	02/20/97		3.20	95.72
	05/30/97		3.87	95.05
	08/21/97		3.29	95.63
	11/03/97		4.02	94.90
S-3	01/25/91	101.67	3.84	97.83
	06/03/91		3.25	98.42
	08/03/91		4.73	96.94
	11/22/91		4.81	96.86
	03/13/92		2.29	99.38
	05/28/92		3.62	98.05
	08/19/92		4.66	97.01
	11/18/92		4.51	97.16
	02/10/93		4.36	97.31
	06/11/93		2.91	98.76
	08/03/93		3.70	97.97
	11/02/93 <sup>b</sup>		---	---
	12/16/93		2.12	99.55
	02/01/94		2.90	98.77
	05/04/94		2.54	99.13
	08/18/94		3.51	98.16
	11/09/94		2.44	99.23
	02/22/95		4.12	97.55
	05/02/95		2.83	98.84
	08/30/95		3.16	98.51
	11/28/95		3.87	97.80
	02/02/96		2.24	99.43
	03/09/96		3.05	98.62
	08/22/96		2.85	98.82
	11/07/96		3.35	98.32
	02/20/97		3.00	98.67

**Table 1. Ground Water Elevations - Shell Service Station WIC #204-5510-0303, 5755 Broadway, Oakland, California (continued)**

Well ID	Date	TOC Elevation <sup>a</sup>	Depth to Water (ft below TOC)	Relative Ground Water Elevation (ft)
	05/30/97		3.00	98.67
	08/21/97		2.94	98.73
	11/03/97		3.36	98.31
T-1	05/30/97	Not Surveyed	2.65	---
	08/21/97		2.69	---
	11/03/97		3.09	---
T-2	05/30/97	Not Surveyed	1.81	---
	08/21/97		1.89	---
	11/03/97		2.25	---
T-3	05/30/97	Not Surveyed	2.31	---
	08/21/97		1.57	---
	11/03/97		3.50	---

**Abbreviations and Notes:**

TOC = Top of Casing

ft = Feet

--- = Not available

a = Top of casing elevations referenced to arbitrary elevation of 100 ft

b = Well inaccessible

**Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-5510-0303, 5755 Broadway, Oakland, California**

Sample ID	Date	Depth to Water (ft below TOC)	TPH-G	B	T	E	X	MTBE	DO (mg/L)
S-1	01/25/91	3.88	<30	<0.3	<0.3	<0.3	<0.3	---	---
	06/03/91	3.51	<30	<0.3	<0.3	<0.3	<0.3	---	---
	08/30/91	4.24	<30	<0.3	<0.3	<0.3	<0.3	---	---
	11/22/91	4.29	<30	2.3	<0.46	0.3	<0.65	---	---
	03/13/92	2.87	<30	<0.52	<0.3	<0.3	<0.3	---	---
	05/28/92	3.79	<50	<0.5	<0.5	<0.5	<0.5	---	---
	08/19/92	4.43	<50	<0.5	<0.5	<0.5	<0.5	---	---
	11/18/92	4.34	<50	<0.5	<0.5	<0.5	<0.5	---	---
	02/10/93	4.20	51	1.4	<0.5	<0.5	<0.5	---	---
	02/10/93 <sup>dup</sup>	4.20	<50	1.2	<0.5	<0.5	<0.5	---	---
	06/11/93	3.39	<50	<0.5	<0.5	<0.5	<0.5	---	---
	08/03/93	3.69	<50	<0.5	<0.5	<0.5	<0.5	---	---
	11/02/93	4.26	70 <sup>a</sup>	<0.5	<0.5	<0.5	<0.5	---	---
	02/01/94	3.38	60 <sup>a</sup>	<0.5	<0.5	<0.5	<0.5	---	---
	05/04/94	3.00	<50	1.1	<0.5	<0.5	<0.5	---	---
	08/18/94	3.70	<50	0.6	<0.5	<0.5	<0.5	---	---
	08/18/94 <sup>dup</sup>	3.70	60 <sup>b</sup>	0.5	<0.5	<0.5	<0.5	---	---
	11/09/94	2.52	<50	4.0	<0.5	<0.5	<0.5	---	---
	02/22/95	4.08	50	0.8	0.7	<0.5	1.3	---	---
	05/02/95	2.58	<50	<0.5	<0.5	<0.5	<0.5	---	---
	08/30/95	3.48	<50	1.7	<0.5	<0.5	<0.5	---	---
	11/28/95	3.99	<50	<0.5	<0.5	<0.5	<0.5	---	---
	02/02/96	2.00	<50	11	<0.5	0.9	<0.5	---	---
	03/09/96	3.38	<50	<0.5	<0.5	<0.5	<0.5	---	---
	08/22/96	3.43	<50	1.5	<0.5	<0.5	<0.5	130	---
	11/07/96	3.70	<50	<0.5	<0.5	<0.5	<0.5	57	4.33
	02/20/97	3.60	<50	0.64	<0.50	<0.50	1.6	6.5	2.0
	05/30/97	3.47	<50	<0.50	<0.50	<0.50	<0.50	46	7.0
	05/30/97	3.47	<50	<0.50	<0.50	<0.50	<0.50	47	7.0
	08/21/97	3.01	<50	<0.50	<0.50	<0.50	0.84	26	3.1
	11/03/97	3.66	<50	<0.50	1.1	<0.50	1.3	190	2.0



**Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-5510-0303, 5755 Broadway, Oakland, California (continued)**

Sample ID	Date	Depth to Water (ft below TOC)	parts per billion (µg/L)					MTBE	DO (mg/L)
			TPH-G	B	T	E	X		
S-2	01/25/91	4.52	450	140	1.8	6.2	15	---	---
	06/03/91	4.02	490	150	2.7	8.2	7	---	---
	08/30/91	4.70	70	0.37	<0.3	<0.3	<0.3	---	---
	11/22/91	4.72	1,600	110	9.3	29	150	---	---
	03/13/92	3.47	1,300	210	5.7	34	79	---	---
	05/28/92	4.45	100	28	<0.5	<0.5	<0.5	---	---
	08/19/92	4.84	470	42	<0.5	8.3	4.0	---	---
	11/18/92	4.73	490	43	39	17	29	---	---
	02/10/93	4.83	19,000	710	760	80	370	---	---
	06/11/93	3.74	33,000	3,100	1,600	370	1,100	---	---
	08/03/93	4.23	18,000	1,400	130	81	130	---	---
	08/03/93 <sup>dup</sup>	4.23	19,000	1,400	140	86	150	---	---
	11/02/93	4.72	12,000 <sup>a</sup>	470	47	31	92	---	---
	11/02/93 <sup>dup</sup>	4.72	13,000 <sup>a</sup>	530	47	35	96	---	---
	02/01/94	3.48	31,000 <sup>a</sup>	430	46	50	130	---	---
	02/01/94 <sup>dup</sup>	3.48	31,000 <sup>a</sup>	300	33	30	100	---	---
	05/04/94	3.26	3,900	1,200	31	53	71	---	---
	05/04/94 <sup>dup</sup>	3.26	4,500	1,200	37	57	110	---	---
	08/18/94	3.98	24,000	600	8.3	15	27	---	---
	11/09/94	3.10	1,400 <sup>a</sup>	240	9.3	13	20	---	---
	11/09/94 <sup>dup</sup>	3.10	1,800	260	8.5	13	21	---	---
	02/22/95	4.02	29,000	550	18	12	63	---	---
	02/22/95 <sup>dup</sup>	4.02	28,000	530	17	10	60	---	---
	05/02/95	2.86	4,400	1,000	25	38	77	---	---
	05/02/95 <sup>dup</sup>	2.86	4,400	1,000	26	41	83	---	---
	08/30/95	4.06	800	350	20	6.7	16	---	---
	08/30/95 <sup>dup</sup>	4.06	960	220	22	12	48	---	---
	11/28/95	4.48	2,000	230	220	50	230	---	---

**Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-5510-0303, 5755 Broadway, Oakland, California (continued)**

Sample ID	Date	Depth to Water (ft below TOC)	TPH-G					X	MTBE	DO (mg/L)
			B	T	E	parts per billion (µg/L)				
	11/28/95 <sup>dup</sup>	4.48	2,100	240	230	51	230	---	---	
	02/02/96	2.00	18,000	540	18	12	22	---	---	
	02/02/96 <sup>dup</sup>	2.00	11,000	600	18	13	28	---	---	
	03/09/96	3.27	3,800	1,500	27	30	58	---	---	
	03/09/96 <sup>dup</sup>	3.27	3,500	1,300	24	21	53	---	---	
	08/22/96	3.85	<20,000	490	<200	<200	<200	43,000	---	
	08/22/96 <sup>dup</sup>	3.85	<20,000	570	<200	<200	<200	59,000 (51,000)	---	
	11/07/96	4.00	<5,000	290	<50	<50	<50	32,000	3.51	
	11/07/96 <sup>dup</sup>	4.00	<5,000	290	<50	<50	<50	32,000	3.51	
	02/20/97	3.20	<10,000	520	<100	<100	<100	28,000	1.0	
	02/20/97 <sup>dup</sup>	3.20	<10,000	520	<100	<100	<100	35,000	1.0	
	05/30/97	3.87	150	15	11	3.5	15	11	6.0	
	08/21/97	3.29	1,600	220	<10	20	<10	18,000	3.3	
	08/21/97 <sup>dup</sup>	3.29	1,500	180	<10	16	<10	21,000	3.3	
	<b>11/03/97</b>	<b>4.02</b>	<b>1,000</b>	<b>94</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;50</b>	<b>1.8</b>	
S-3	01/25/91	NA	<30	<0.3	<0.3	<0.3	<0.3	---	---	
	06/03/91	3.25	<30	<0.3	0.3	0.3	0.3	---	---	
	08/30/91	4.73	<30	<0.3	<0.3	<0.3	<0.3	---	---	
	11/22/91	4.81	<30	<0.3	<0.3	<0.3	<0.3	---	---	
	03/13/92	2.29	<30	<0.3	0.3	0.3	0.3	---	---	
	05/28/92	3.62	<50	<0.5	<0.5	<0.5	<0.5	---	---	
	08/19/92	4.66	<50	<0.5	<0.5	<0.5	0.5	---	---	
	11/18/92	4.51	<50	<0.5	<0.5	<0.5	<0.5	---	---	
	02/10/93	4.36	30	1.9	3.2	2.4	5.6	---	---	
	06/11/93	2.91	<50	<0.5	<0.5	<0.5	<0.5	---	---	
	06/11/93 <sup>dup</sup>	2.91	<50	<0.5	<0.5	<0.5	<0.5	---	---	
	08/03/93	3.70	<50	<0.5	<0.5	<0.5	<0.5	---	---	

**Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-5510-0303, 5755 Broadway, Oakland, California (continued)**

Sample ID	Date	Depth to Water (ft below TOC)	TPH-G	parts per billion (µg/L)					DO (mg/L)
				B	T	E	X	MTBE	
	11/02/93 <sup>c</sup>	—	—	—	—	—	—	—	—
	02/01/94	2.90	<50	<0.5	<0.5	<0.5	<0.5	—	—
	05/04/94	2.54	<50	<0.5	<0.5	<0.5	<0.5	—	—
	08/18/94	3.51	<50	<0.5	<0.5	<0.5	<0.5	—	—
	11/09/94	2.44	<50	<0.5	<0.5	<0.5	<0.5	—	—
	02/22/95	4.12	80	<0.5	0.5	<0.5	0.5	—	—
	05/02/95	2.83	<50	<0.5	<0.5	<0.5	<0.5	—	—
	08/30/95	3.16	<50	0.5	<0.5	<0.5	<0.5	—	—
	11/28/95	3.87	<50	<0.5	<0.5	<0.5	<0.5	—	—
	02/02/96	2.24	<50	<0.5	<0.5	<0.5	<0.5	—	—
	03/09/96	3.05	<50	<0.5	<0.5	<0.5	<0.5	—	—
	08/22/96	2.85	<50	0.80	<0.5	<0.5	<0.5	<2.5	4.6
	11/07/96	3.35	<50	<0.5	<0.5	<0.5	<0.5	<2.5	4.6
	02/20/97	3.00	<50	<0.50	<0.50	<0.50	<0.50	<2.5	1.0
	05/30/97	3.00	140	14	10	3.3	14	8.6	8.0
	08/21/97	2.94	<50	<0.50	<0.50	<0.50	<0.50	<2.5	3.3
	11/03/97	3.36	<50	<0.50	<0.50	<0.50	<0.50	<2.5	2.4
	11/03/97 <sup>dmp</sup>	3.36	<50	<0.50	<0.50	<0.50	<0.50	<2.5	2.4
Bailer	08/19/92		<50	<0.5	<0.5	<0.5	<0.5	—	—
Blank	11/22/91		<50	<0.5	<0.5	<0.5	<0.5	—	—
	02/22/95		<50	<0.5	<0.5	<0.5	<0.5	—	—
Trip	03/13/92		<50	<0.3	<0.3	<0.3	<0.3	—	—
Blank	05/28/92		<50	<0.5	<0.5	<0.5	<0.5	—	—
	08/19/92		<50	<0.5	<0.5	<0.5	<0.5	—	—
	11/18/92		<50	<0.5	<0.5	<0.5	<0.5	—	—
	02/10/93		<50	<0.5	<0.5	<0.5	<0.5	—	—

**Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-5510-0303, 5755 Broadway, Oakland, California (continued)**

Sample ID	Date	Depth to Water (ft below TOC)	TPH-G	parts per billion (µg/L)					DO (mg/L)
				B	T	E	X	MTBE	
	08/03/93		<50	<0.5	<0.5	<0.5	<0.5	---	---
	11/02/93		<50	<0.5	<0.5	<0.5	<0.5	---	---
	02/01/94		<50	<0.5	<0.5	<0.5	<0.5	---	---
	05/04/94		<50	<0.5	<0.5	<0.5	<0.5	---	---
	11/09/94		<50	<0.5	<0.5	<0.5	<0.5	---	---
	02/22/95		<50	<0.5	<0.5	1.0 <sup>d</sup>	<0.5	---	---
	05/02/95		<50	<0.5	<0.5	<0.5	<0.5	---	---
	08/30/95		<50	<0.5	<0.5	<0.5	<0.5	---	---
	11/28/95		<50	<0.5	<0.5	<0.5	<0.5	---	---
MCLs			NE	1	150	700	1,750	NE	

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**Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-5510-0303, 5755 Broadway, Oakland, California  
(continued)**

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**Abbreviations:**

ft = Feet  
TOC = Top of casing  
TPH-G = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015  
B = Benzene by EPA Method 8020  
T = Toluene by EPA Method 8020  
E = Ethylbenzene by EPA Method 8020  
X = Xylenes by EPA Method 8020  
MTBE = Methyl tert-Butyl Ether by EPA Method 8020  
(x) indicates MTBE by EPA Method 8260  
DO = Dissolved oxygen  
— = Not analyzed  
MCLs = California Primary maximum contaminant levels for drinking water  
(22 CCR 64444)  
NE = Not established  
<n = Not detected at detection limits of n µg/L  
dup = Duplicate sample  
µg/L = Micrograms per liter  
mg/L = Milligrams per liter

**Notes:**

a = Concentrations reported as gasoline are primarily due to presence of a discrete peak not indicative of gasoline  
b = This positive result has an atypical pattern for gasoline  
c = Well inaccessible  
d = Positive result confirmed by secondary column or gas chromatography/mass spectrometry analysis

**ATTACHMENT A**

Blaine Quarterly Ground Water Monitoring Report

**BLAINE**  
TECH SERVICES INC.



1680 ROGERS AVENUE  
SAN JOSE, CALIFORNIA 95112  
(408) 573-7771 FAX  
(408) 573-0555 PHONE

December 16, 1997

Shell Oil Company  
P.O. Box 8080  
Martinez, CA 94553

Attn: Alex Perez

Shell WIC #204-5510-0303  
5755 Broadway  
Oakland, California

4th Quarter 1997

## Groundwater Monitoring Report 971103-D-2

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Blaine Tech Services, Inc. performs environmental sampling and documentation as an independent third party. Copies of our Sampling Report along with the laboratory's Certified Analytical Report are forwarded to the consultant overseeing work at this site. Submission of the assembled documents to interested regulatory agencies will be made by the designated consultant.

Groundwater monitoring at this site was performed in accordance with Standard Operating Procedures provided to the interested regulatory agencies. If you have any questions about the work performed at this site please call me at (408) 573-0555 ext. 201.

Yours truly,

Francis Thie

attachments: Table of Well Gauging Data  
Chain of Custody  
Field Data Sheets  
Certified Analytical Report

cc: Cambria Environmental Technology, Inc.  
1144 65th Street, Suite C  
Oakland, CA 94608  
Attn: Josh Bergstrom

(Any professional evaluations or recommendations will be made by the consultant under separate cover.)

## TABLE OF WELL GAUGING DATA

WELL I.D.	DATA COLLECTION DATE	MEASUREMENT REFERENCED TO	QUALITATIVE OBSERVATIONS (sheen)	DEPTH TO FIRST IMMISCIBLES LIQUID (FPZ) (feet)	THICKNESS OF IMMISCIBLES LIQUID ZONE (feet)	VOLUME OF IMMISCIBLES REMOVED (ml)	DEPTH TO WATER (feet)	DEPTH TO WELL BOTTOM (feet)
S-1	11/03/97	TOC	SHEEN	NONE	-	-	3.66	11.66
S-2	11/03/97	TOC	SHEEN	NONE	-	-	4.02	9.49
S-3*	11/03/97	TOC	SHEEN	NONE	-	-	3.36	9.53
T-1	11/03/97	TOC	-	NONE	-	-	3.09	13.53
T-2	11/03/97	TOC	-	NONE	-	-	2.25	13.04
T-3	11/03/97	TOC	-	NONE	-	-	3.50	8.72

\* Sample DUP was a duplicate sample taken from well S-3.





**SHELL OIL COMPANY**  
**RETAIL ENVIRONMENTAL ENGINEERING - WEST**

**CHAIN OF CUSTODY RECORD**

Serial No: 971103

Date: 1 of 1

Site Address: 5755 Broadway, Oakland, CA

WIC#: 204-5510-0303

Shell Engineer: Alex Perez  
 Phone No.: (510) 675-6168  
 Fax #: 675-6172

Consultant Name & Address:  
 Blaine Tech Services, Inc.  
 1680 Rogers Ave., San Jose, CA 95112

Consultant Contact: Fran Thie  
 Phone No.: (408) 573-0555  
 Fax #: 573-7771

Comments: 9711329

Sampled by: [Signature]  
 Printed Name: Dan Venor

**Analysis Required**

TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	Asbestos	Container Size	Preparation Used	Composite Y/N
X	X	X	X		MTBE		50		
X	X	X	X						
X	X	X	X						
X	X	X	X						

LAB: Sevoin

CHECK ONE (1) BOX ONLY	CT/DT	TURN AROUND TIME
G.W. Monitoring <input checked="" type="checkbox"/>	4441	24 hours <input type="checkbox"/>
Site Investigation <input type="checkbox"/>	4441	48 hours <input type="checkbox"/>
Soil Classify/Disposal <input type="checkbox"/>	4442	15 days <input checked="" type="checkbox"/> (Normal)
Water Classify/Disposal <input type="checkbox"/>	4443	Other <input type="checkbox"/>
Soil/Air Rem. or Sys. O & M <input type="checkbox"/>	4452	
Water Rem. or Sys. O & M <input type="checkbox"/>	4453	
Other <input type="checkbox"/>		

NOTE: Notify Lab as soon as possible of 24/48 hrs. TAT.

UST AGENCY: \_\_\_\_\_

Sample ID	Date	Sludge	Soil	Water	Air	No. of conls.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
S-1	11/3			X		3	X	X	X	X				50				
S-2	↓			↓		↓	X	X	X	X								
S-3	↓			↓		↓	X	X	X	X								
EB	↓			↓		↓	X	X	X	X								
Dup	↓			↓		↓	X	X	X	X								

NO 4 1 02

Released By (signature): <u>[Signature]</u>	Printed Name: _____	Date: <u>11/4/97</u>	Received (signature): <u>[Signature]</u>	Printed Name: _____	Date: <u>11/4/97</u>
Released By (signature): <u>[Signature]</u>	Printed Name: _____	Date: <u>11/4/97</u>	Received (signature): <u>[Signature]</u>	Printed Name: <u>Fletcher</u>	Date: <u>11/4/97</u>
Released By (signature): _____	Printed Name: _____	Date: _____	Received (signature): <u>[Signature]</u>	Printed Name: <u>ABAD</u>	Date: <u>11/4/97</u>



# Sequoia Analytical

680 Chesapeake Drive  
404 N. Wiget Lane  
819 Striker Avenue, Suite 8

Redwood City, CA 94063  
Walnut Creek, CA 94598  
Sacramento, CA 95834

(650) 364-9600  
(510) 988-9600  
(916) 921-9600

FAX (650) 364-9233  
FAX (510) 988-9673  
FAX (916) 921-0100

Blaine Tech Services  
1680 Rogers Avenue  
San Jose, CA 95112  
Attention: Fran Thie

Project: Shell Oakland/971103

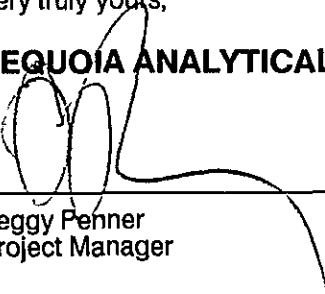
Enclosed are the results from samples received at Sequoia Analytical on November 4, 1997.  
The requested analyses are listed below:

<u>SAMPLE #</u>	<u>SAMPLE DESCRIPTION</u>	<u>DATE COLLECTED</u>	<u>TEST METHOD</u>
9711329 -01	LIQUID, S-1	11/03/97	TPGM2W Purgeable TPH/BTEX
9711329 -02	LIQUID, S-2	11/03/97	TPGM2W Purgeable TPH/BTEX
9711329 -03	LIQUID, S-3	11/03/97	TPGM2W Purgeable TPH/BTEX
9711329 -04	LIQUID, EB	11/03/97	TPGM2W Purgeable TPH/BTEX
9711329 -05	LIQUID, DUP	11/03/97	TPGM2W Purgeable TPH/BTEX

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

**SEQUOIA ANALYTICAL**




---

Peggy Penner  
Project Manager



Blaine Tech Services 1680 Rogers Avenue San Jose, CA 95112	Client Proj. ID: Shell Oakland/971103 Sample Descript: S-1 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9711329-01	Sampled: 11/03/97 Received: 11/04/97 Analyzed: 11/16/97 Reported: 11/20/97
--	--	---

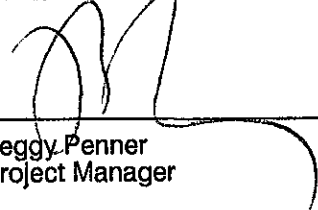
GC Batch Number: GC111697BTEX01A  
Instrument ID: GCHP1

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	190
Benzene	0.50	N.D.
Toluene	0.50	1.1
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	1.3
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70                      130	113

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

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Peggy Penner  
Project Manager





Blaine Tech Services 1680 Rogers Avenue San Jose, CA 95112	Client Proj. ID: Shell Oakland/971103 Sample Descript: S-2 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9711329-02	Sampled: 11/03/97 Received: 11/04/97  Analyzed: 11/17/97 Reported: 11/20/97
Attention: Fran Thie		

QC Batch Number: GC111797BTEX06A  
Instrument ID: GCHP6

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	1000	1000
Methyl t-Butyl Ether	50	N.D.
Benzene	10	94
Toluene	10	N.D.
Ethyl Benzene	10	N.D.
Xylenes (Total)	10	N.D.
Chromatogram Pattern:		C6-C8
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	115

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

**SEQUOIA ANALYTICAL** - ELAP #1210

Peggy Penner  
Project Manager





Blaine Tech Services 1680 Rogers Avenue San Jose, CA 95112	Client Proj. ID: Shell Oakland/971103 Sample Descript: S-3 Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9711329-03	Sampled: 11/03/97 Received: 11/04/97  Analyzed: 11/17/97 Reported: 11/20/97
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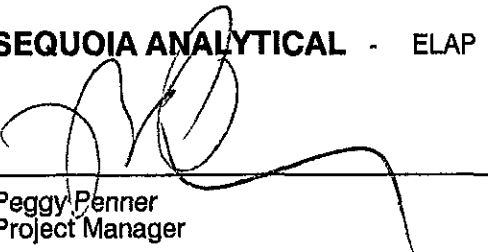
QC Batch Number: GC111797BTEX21A  
Instrument ID: GCHP21

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	100

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

**SEQUOIA ANALYTICAL** - ELAP #1210

  
Peggy Penner  
Project Manager





Blaine Tech Services 1680 Rogers Avenue San Jose, CA 95112	Client Proj. ID: Shell Oakland/971103 Sample Descript: EB Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9711329-04	Sampled: 11/03/97 Received: 11/04/97  Analyzed: 11/17/97 Reported: 11/20/97
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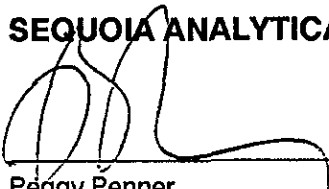
QC Batch Number: GC111797BTEX06A  
Instrument ID: GCHP6

### Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70                      130	104

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

SEQUOIA ANALYTICAL - ELAP #1210




---

Peggy Penner  
Project Manager



Blaine Tech Services 1680 Rogers Avenue San Jose, CA 95112	Client Proj. ID: Shell Oakland/971103 Sample Descript: DUP Matrix: LIQUID Analysis Method: 8015Mod/8020 Lab Number: 9711329-05	Sampled: 11/03/97 Received: 11/04/97 Analyzed: 11/17/97 Reported: 11/20/97
--	--	---

GC Batch Number: GC111797BTEX06A  
Instrument ID: GCHP6

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX and MTBE**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	N.D.
Methyl t-Butyl Ether	2.5	N.D.
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		
<b>Surrogates</b>	<b>Control Limits %</b>	<b>% Recovery</b>
Trifluorotoluene	70 130	104

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

SEQUOIA ANALYTICAL - ELAP #1210

  
Peggy Penner  
Project Manager





Blaine Tech Services, Inc.  
1680 Rogers Ave.  
San Jose, CA 95112  
Attention: Fran Thie

Client Project ID: Shell Oakland / 971103  
Matrix: Liquid

Work Order #: 9711329 -01

Reported: Nov 25, 1997

**QUALITY CONTROL DATA REPORT**

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC111697BTEX01A	GC111697BTEX01A	GC111697BTEX01A	GC111697BTEX01A	GC111697BTEX01A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	T. Tran	T. Tran	T. Tran	T. Tran	T. Tran
MS/MSD #:	971132901	971132901	971132901	971132901	971132901
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	11/16/97	11/16/97	11/16/97	11/16/97	11/16/97
Analyzed Date:	11/16/97	11/16/97	11/16/97	11/16/97	11/16/97
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	9.0	10	9.8	30	62
MS % Recovery:	90	100	98	100	103
Dup. Result:	11	9.1	10	30	61
MSD % Recov.:	110	91	100	100	102
RPD:	20	9.4	2.0	0.0	1.6
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK111697	BLK111697	BLK111697	BLK111697	BLK111697
Prepared Date:	11/16/97	11/16/97	11/16/97	11/16/97	11/16/97
Analyzed Date:	11/16/97	11/16/97	11/16/97	11/16/97	11/16/97
Instrument I.D.#:	GCHP1	GCHP1	GCHP1	GCHP1	GCHP1
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	9.5	9.6	10	30	62
LCS % Recov.:	95	96	100	100	103

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

**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**

Peggy Ferner  
Project Manager

\*\* MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

9711329.BLA <1>







Blaine Tech Services, Inc.  
1680 Rogers Ave.  
San Jose, CA 95112  
Attention: Fran Thie

Client Project ID: Shell Oakland / 971103  
Matrix: Liquid

Work Order #: 9711329-02, 04-05

Reported: Nov 25, 1997

**QUALITY CONTROL DATA REPORT**

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC111897BTEX06A	GC111897BTEX06A	GC111897BTEX06A	GC111897BTEX06A	GC111897BTEX06A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	C. Demartini	C. Demartini	C. Demartini	C. Demartini	C. Demartini
MS/MSD #:	971161103	971161103	971161103	971161103	971161103
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	11/17/97	11/17/97	11/17/97	11/17/97	11/17/97
Analyzed Date:	11/17/97	11/17/97	11/17/97	11/17/97	11/17/97
Instrument I.D.#:	GCHP6	GCHP6	GCHP6	GCHP6	GCHP6
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	12	12	12	37	60
MS % Recovery:	120	120	120	123	100
Dup. Result:	12	12	12	36	58
MSD % Recov.:	120	120	120	120	97
RPD:	0	0.0	0.0	2.7	3.4
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK111797	BLK111797	BLK111797	BLK111797	BLK111797
Prepared Date:	11/17/97	11/17/97	11/17/97	11/17/97	11/17/97
Analyzed Date:	11/17/97	11/17/97	11/17/97	11/17/97	11/17/97
Instrument I.D.#:	GCHP6	GCHP6	GCHP6	GCHP6	GCHP6
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	12	11	11	31	54
LCS % Recov.:	120	110	110	103	90

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

**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**

Peggy Penner  
Project Manager

\*\* MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9711329.BLA <2>





Blaine Tech Services, Inc.  
1680 Rogers Ave.  
San Jose, CA 95112  
Attention: Fran Thie

Client Project ID: Shell Oakland / 971103  
Matrix: Liquid

Work Order #: 9711329-03

Reported: Nov 25, 1997

**QUALITY CONTROL DATA REPORT**

Analyte:	Benzene	Toluene	Ethyl Benzene	Xylenes	Gas
QC Batch#:	GC111797BTEX21A	GC111797BTEX21A	GC111797BTEX21A	GC111797BTEX21A	GC111797BTEX21A
Analy. Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M
Prep. Method:	EPA 5030	EPA 5030	EPA 5030	EPA 5030	EPA 5030

Analyst:	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab	A. Miraftab
MS/MSD #:	971161104	971161104	971161104	971161104	971161104
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.
Prepared Date:	11/17/97	11/17/97	11/17/97	11/17/97	11/17/97
Analyzed Date:	11/17/97	11/17/97	11/17/97	11/17/97	11/17/97
Instrument I.D.#:	GCHP21	GCHP21	GCHP21	GCHP21	GCHP21
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
Result:	10	10	10	30	53
MS % Recovery:	100	100	100	100	88
Dup. Result:	10	10	10	30	57
MSD % Recov.:	100	100	100	100	95
RPD:	0.0	0.0	0.0	0.0	7.3
RPD Limit:	0-25	0-25	0-25	0-25	0-25

LCS #:	BLK111797	BLK111797	BLK111797	BLK111797	BLK111797
Prepared Date:	11/17/97	11/17/97	11/17/97	11/17/97	11/17/97
Analyzed Date:	11/17/97	11/17/97	11/17/97	11/17/97	11/17/97
Instrument I.D.#:	GCHP21	GCHP21	GCHP21	GCHP21	GCHP21
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L	60 µg/L
LCS Result:	10	10	10	29	51
LCS % Recov.:	100	100	100	97	85

MS/MSD	60-140	60-140	60-140	60-140	60-140
LCS	70-130	70-130	70-130	70-130	70-130
Control Limits					

SEQUOIA ANALYTICAL

Peggy Fenner  
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.

\*\* MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference

9711329.BLA <3>





Sequoia  
Analytical

680 Chesapeake Drive  
404 N. Wiget Lane  
819 Striker Avenue, Suite 8

Redwood City, CA 94063  
Walnut Creek, CA 94598  
Sacramento, CA 95834

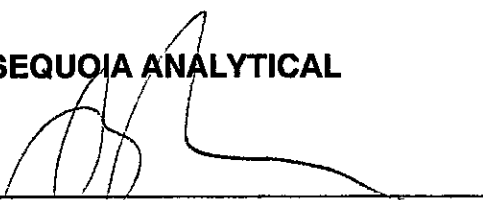
(650) 364-9600  
(510) 988-9600  
(916) 921-9600

FAX (650) 364-9233  
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### LABORATORY NARRATIVE

In order to properly interpret this report, it must be reproduced in its entirety. This report contains a total of 1.0 pages including the laboratory narrative, sample results, quality control, and related documents as required (cover page, COC, raw data, etc.).

**SEQUOIA ANALYTICAL**  
  
Peggy Penner  
Project Manager

