Weiss Associates Environmental and Geologic Services

5500 Shellmound Street, Emeryville, CA 94608-2411 Fax: 510-547-5043 Phone: **510-450-6000**

March 10, 1995

Jennifer Eberle
Alameda County Department
of Environmental Health
Hazardous Materials Division
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Re: First Quarter 1995
ACDEH STID #1107
Shell Service Station
WIC #204-6001-0109
29 Wildwood Avenue
Piedmont, California
WA Job #81-0463-105

Dear Ms. Eberle:

This letter describes recently completed and anticipated activities at the Shell service station referenced above (Figure 1). This status report satisfies the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 2652.d. Included below are descriptions and results of activities performed in the first quarter 1995 and proposed work for the second quarter 1995.

First Quarter 1995 Activities:

- Blaine Tech Services, Inc. (BTS) San Jose, California measured ground water depths and collected water samples from the site wells. BTS' report describing these activities and the analytic report for the ground water samples are included as Attachment A.

- Weiss Associates (WA) compiled the ground water elevation and analytic data (Tables 1 and 2, respectively) and prepared a ground water elevation contour, and benzene concentrations in ground water map (Figure 2).

- BTS measured dissolved oxygen concentrations in ground water in all site wells (Table 2). The dissolved oxygen concentrations are similar to last quarter and are more than sufficient to support natural hydrocarbon biodegradation. BTS will continue to measure dissolved oxygen concentrations.

Anticipated Second Quarter 1995 Activities:

- WA will submit a Calwater report for the second quarter 1995.
- Ground water depth measurements will be collected during the second quarter of 1995.
- WA will submit a report presenting ground water sampling results for the third quarter of 1995 and ground water depth measurements for the second and third quarters of 1995. The report will include tabulated ground water elevation and analytic data, dissolved oxygen concentrations and a ground water elevation contour map.

Conclusions and Recommendations

The dissolved oxygen concentrations appear adequate for biochemical oxidation. According to Barker et al,[1] approximately 20 µg of dissolved oxygen are required for complete biochemical oxidization of 1 µg BETX in naturally occurring ground water. Based on the 3,200 to 11,000 µg/l dissolved oxygen measured in ground water beneath the site, biochemical oxidation of about 160 to 555 µg/l BETX is possible. Since BETX concentrations in ground water from all site wells fall within this range, there appears to be more than sufficient dissolved oxygen for biochemical oxidation of the hydrocarbons. Therefore, as we discussed in previous reports, WA recommends continued measurement of dissolved oxygen concentrations in ground water to monitor the progress of hydrocarbon biodegradation by naturally occurring microorganisms.

California Regional Water Quality Control Board (RWQCB) personnel have indicated that the RWQCB will allow well sampling frequency reductions on a site specific basis if the frequency reductions are justified by site conditions. WA reviewed historic ground water data for this site to determine the appropriate well sampling frequencies. Our criteria used to determine sampling frequencies is described in detail in Attachment B. Our specific recommendations for this site are presented in Table 3. WA will implement these new well sampling frequencies in the second quarter of 1995 unless we are notified otherwise.

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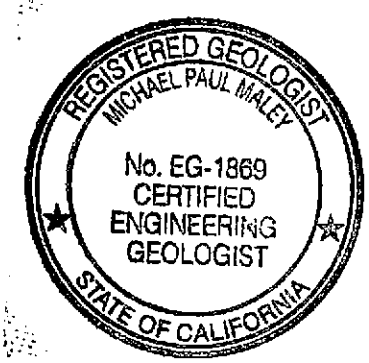
1 Barker, J.F., et al, 1987, Natural Attenuation of Aromation Hydrocarbons in a Shallow Sand Aquifer, Ground Water Monitoring Review, 7(1):64-71.

Please call if you have any questions.



Sincerely,
Weiss Associates

Grady Glasser
Technical Assistant

Michael P. Maley, C.E.G.
Project Hydrogeologist

Attachments: A - BTS' Ground Water Monitoring Report
B - Sampling Frequency Modifications

cc: Dan Kirk, Shell Oil Company, P.O. Box 4023 Concord, California 94524
John Jang, Regional Water Quality Control Board - San Francisco Bay, 2101 Webster Street, Suite 500, Oakland, California 94612

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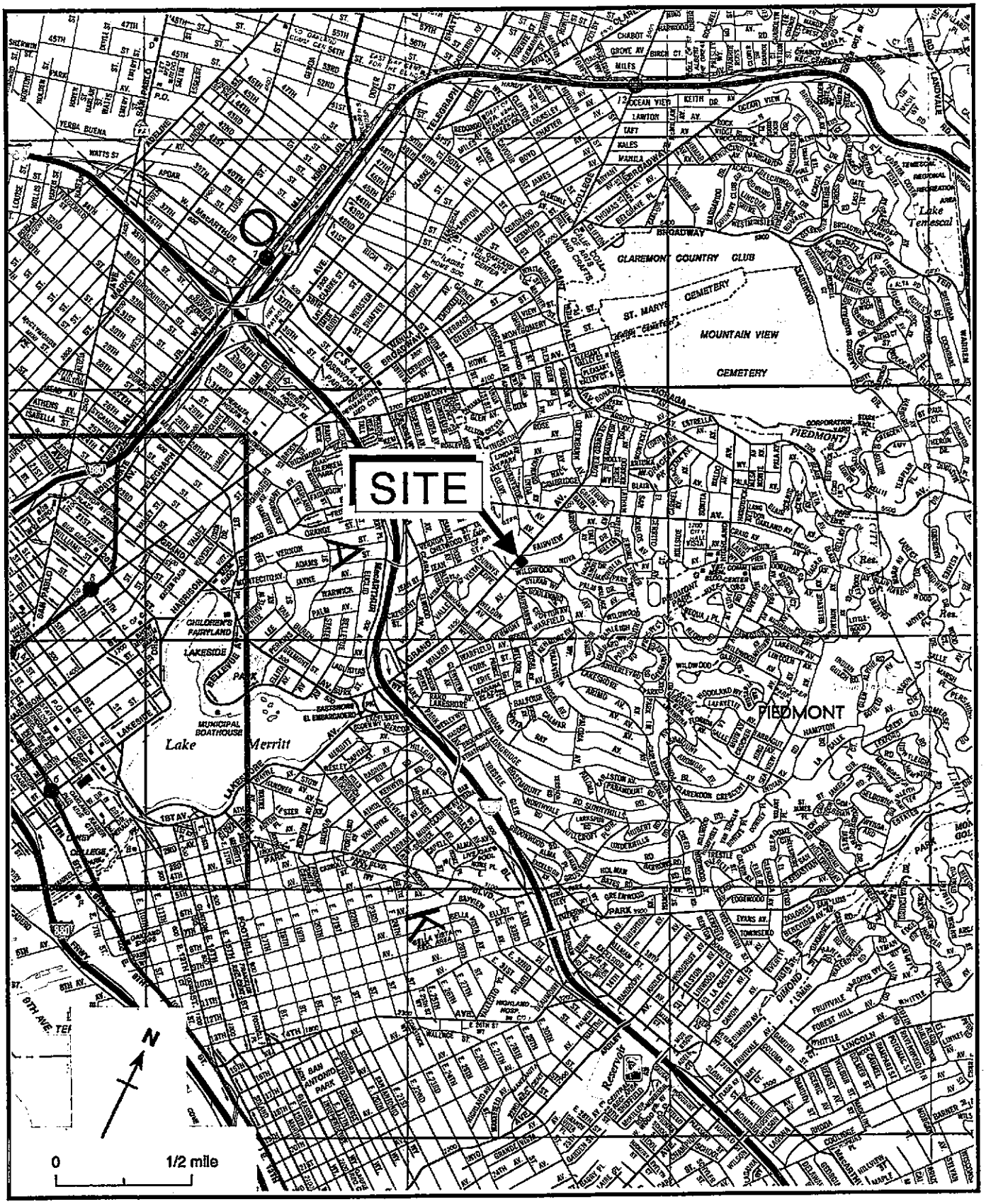

Figure 1. Site Location Map - Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

6/6/90

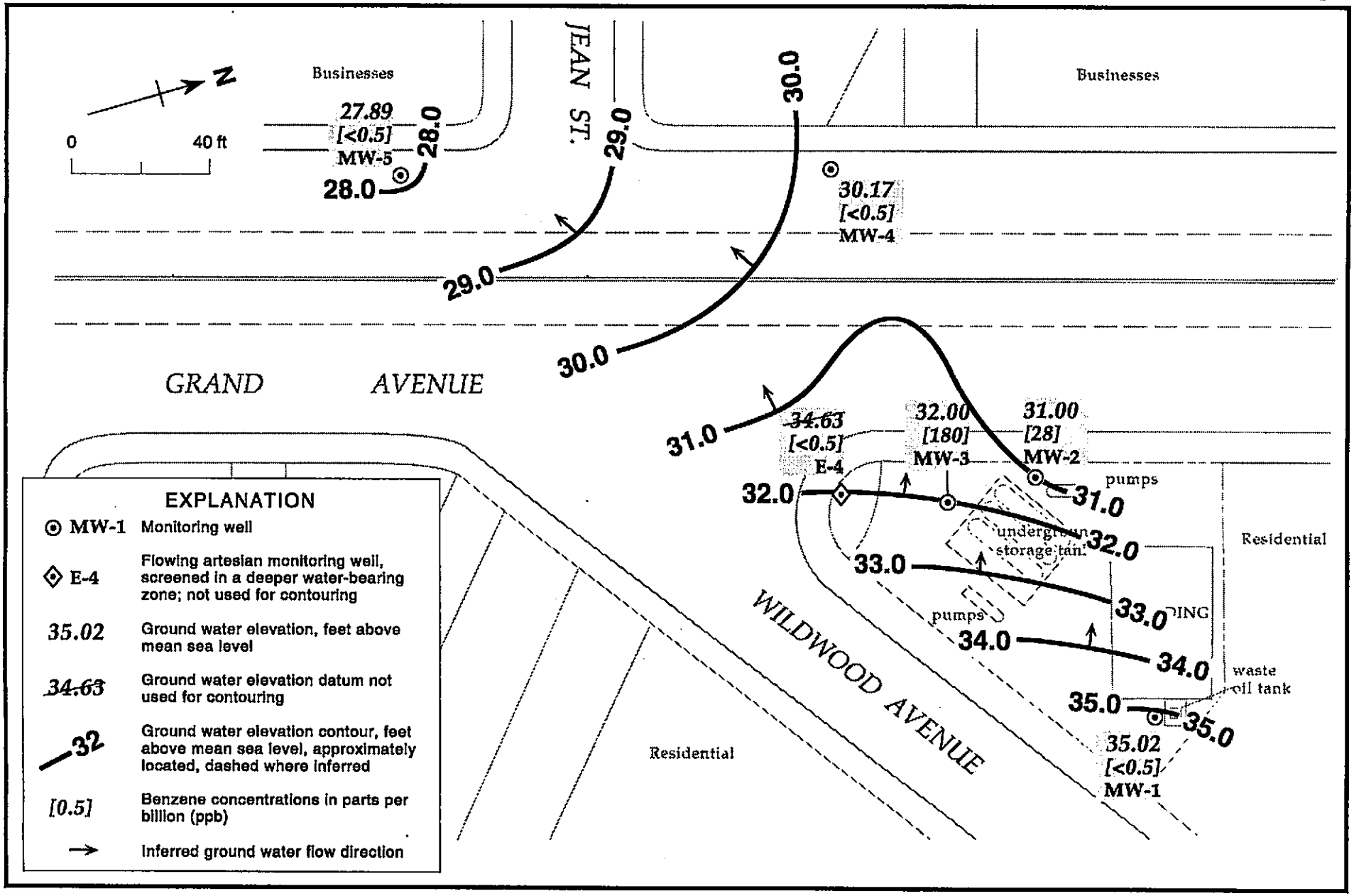

Figure 2. Monitoring Well Locations, Ground Water Elevation Contours and Benzene Concentrations in Ground Water - January 20, 1995 - Shell Service Station, WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Table 1. Ground Water Elevations - Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
MW-1	07/12/89	37.96	2.76	35.20
	01/30/90		3.10	34.86
	04/27/90		3.24	34.72
	07/31/90		4.26	33.70
	10/30/90		4.25	33.71
	01/31/91		3.66	34.30
	04/30/91		3.46	34.50
	07/30/91		4.14	33.82
	10/29/91		3.96	34.00
	01/20/92		3.59	34.37
	04/14/92		3.18	31.71
	07/21/92		4.17	33.79
	10/02/92		4.29	33.67
	01/20/93		2.32	35.64
	05/03/93		3.50	34.46
	06/28/93		3.76	34.20
	07/21/93		4.09	33.87
	10/19/93		3.58	34.38
	01/20/94		---	---
	04/12/94		3.60	34.36
	07/20/94		4.10	33.86
	10/06/94		4.30	33.66
	01/20/95		**2.94**	**35.02**
MW-2	07/12/89	34.89	3.66	31.23
	01/30/90		3.49	31.40
	04/27/90		3.79	31.10
	07/31/90		4.03	30.86
	10/30/90		4.21	30.68
	01/31/91		4.09	30.80
	04/30/91		3.95	30.94
	07/30/91		4.07	30.82
	10/29/91		4.11	30.78
	01/20/92		3.86	31.03
	04/14/92		3.66	34.30
	07/21/92		3.92	30.97
	10/02/92		4.45	30.44
	01/20/93		3.74	31.15
	05/03/93		3.77	31.12
	06/28/93		3.96	30.93
	07/21/93		4.39	30.50
	10/19/93		3.92	30.97
	01/20/94		4.45	30.44

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Table 1. Ground Water Elevations - Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California (continued)

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
	04/12/94		4.72	30.17
	07/20/94		5.32	29.57
	10/06/94		4.03	30.86
	01/20/95		**3.89**	**31.00**
MW-3	07/12/89	35.00	3.83	31.17
	01/30/90		3.24	31.76
	04/27/90		4.02	30.98
	07/31/90		4.31	30.69
	10/30/90		4.52	30.48
	01/31/91		4.33	30.67
	04/30/91		3.79	31.21
	07/30/91		4.37	30.63
	10/29/91		4.00	31.00
	01/20/92		3.87	31.13
	04/14/92		3.15	31.85
	07/21/92		4.17	30.83
	10/02/92		4.43	30.57
	01/20/93		2.20	32.80
	05/03/93		3.50	31.50
	06/28/93		4.08	30.92
	07/21/93		4.12	30.88
	10/19/93		4.20	30.80
	01/20/94		4.08	30.92
	04/12/94		3.70	31.30
	07/20/94		4.26	30.74
	10/06/94		4.31	30.69
	01/20/95		**3.00**	**32.00**
MW-4	01/30/90	33.73	4.50	29.23
	04/27/90		3.62	30.11
	07/31/90		4.19	29.54
	10/30/90		4.19	29.54
	01/31/91		4.49	29.24
	04/30/91		4.02	29.71
	07/30/91		4.39	29.34
	10/29/91		3.75	29.98
	01/20/92		3.94	29.79
	04/14/92		3.71	30.02
	07/21/92		4.02	29.71
	10/02/92		4.13	29.60
	01/20/93		3.10	30.63
	05/03/93		3.70	30.03

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Table 1. Ground Water Elevations - Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California (continued)

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
	06/28/93		3.81	29.92
	07/21/93		3.81	29.92
	10/19/93		3.94	29.79
	01/20/94		4.00	29.73
	04/12/94		4.01	29.72
	07/20/94		3.91	29.82
	10/06/94		3.99	29.74
	01/20/95		**3.56**	**30.17**
MW-5	01/30/90	31.38	7.12	24.26
	04/27/90		4.19	27.19
	07/31/90		4.09	27.29
	10/30/90		4.39	26.99
	01/31/91		4.49	26.89
	04/30/91		4.27	27.11
	07/30/91		4.32	27.06
	10/29/91		3.79	27.59
	01/20/92		4.09	27.29
	04/14/92		4.12	27.26
	07/21/92		4.13	27.25
	10/02/92		4.30	27.08
	01/20/93		3.12	28.26
	05/03/93		4.07	27.31
	06/28/93		4.08	27.30
	07/21/93		4.05	27.33
	10/19/93		4.20	27.18
	01/20/94		4.40	26.98
	04/12/94		4.18	27.20
	07/20/94		4.06	27.32
	10/06/94		4.01	27.37
	01/20/95		**3.49**	**27.89**
E-4	07/12/89	34.63	a	>39.13
	01/30/90		b	>34.63
	04/27/90		b	>34.63
	07/31/90		b	>34.63
	10/30/90		b	>34.63
	01/31/91		b	>34.63
	04/30/91		b	>34.63
	07/30/91		b	>34.63
	10/29/91		b	>34.63
	01/20/92		b	>34.63
	04/14/92		b	>34.63

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Table 1. Ground Water Elevations - Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California (continued)

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
	07/21/92		b	>34.63
	10/02/92		b	>34.63
	01/20/93		b	>34.63
	05/03/93		b	>34.63
	06/28/93		b	>34.63
	07/21/93		b	>34.63
	10/19/93		b	>34.63
	01/20/94		b	>34.63
	04/12/94		b	>34.63
	07/20/94		b	>34.63
	10/06/94		b	>34.63
	01/20/95		**b**	**>34.63**

a = Well E-4 is a flowing artesian well. The potentiometric surface was greater than 4.5 ft above the top of the well casing.
b = Well E-4 potentiometric surface was higher than the top of the well casing.

Table 2. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Well ID	Date Sampled	Depth to Water (ft)	TPH-G	B	E	T	X	Dissolved Oxygen[a]
			<----------parts per billion (µg/L)---------->					
MW-1	07/12/89	2.76	<50	<0.5	<1	<1	<3	---
	01/30/90	3.10	<50	<0.5	<0.5	<0.5	<0.5	---
	04/27/90	3.24	<50	<0.5	<0.5	<0.5	<0.5	---
	07/31/90	4.26	<50	<0.5	<0.5	<0.5	<0.5	---
	10/30/90	4.25	<50	<0.5	<0.5	<0.5	<0.5	---
	01/31/91	3.66	<50	<0.5	<0.5	<0.5	<0.5	---
	04/30/91	3.46	<50	0.8	0.6	<0.5	1.2	---
	07/30/91	4.14	<50	<0.5	<0.5	<0.5	<0.5	---
	10/29/91	3.96	<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/92	3.59	<30	<0.3	<0.3	<0.3	<0.3	---
	04/14/92	3.18	<50	<0.5	<0.5	<0.5	<0.5	---
	07/21/92	4.17	<50	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	4.29	<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/93	2.32	<50	<0.5	<0.5	<0.5	<0.5	---
	05/04/93	3.50	<50	<0.5	<0.5	<0.5	<0.5	1,930
	07/21/93	4.09	<50	<0.5	<0.5	<0.5	<0.5	4,640
	10/19/93	3.58	50	<0.5	<0.5	<0.5	<0.5	4,310
	01/20/94[b]	---	---	---	---	---	---	---
	04/12/94	3.60	<50	<0.5	<0.5	<0.5	<0.5	7,460
	07/20/94	4.10	<50	<0.5	<0.5	<0.5	<0.5	3,200
	10/06/94	4.30	<50	<0.5	<0.5	<0.5	<0.5	3,200
	01/20/95	**2.94**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**10,600**
MW-2	07/12/89	3.66	60	2.7	<1	<1	<3	---
	01/30/90	3.49	<50	6.6	0.54	<0.5	0.93	---
	04/27/90	3.79	60	2.1	<0.5	<0.5	<0.5	---
	07/31/90	4.03	70	1.5	<0.5	<0.5	<0.5	---
	10/30/90	4.21	70	<0.5	<0.5	0.7	1.6	---
	01/31/91	4.09	80	<0.5	0.9	<0.5	1.9	---

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Table 2. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Well ID	Date Sampled	Depth to Water (ft)	TPH-G	B	E	T	X	Dissolved Oxygen[a]
			<----------parts per billion (µg/L)---------->					
	04/30/91	3.95	100	5.9	0.7	0.6	2.0	---
	07/30/91	4.07	<50	<0.5	<0.5	<0.7	<0.5	---
	10/29/91	4.11	<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/92	3.86	<30	0.84	<0.41	<0.3	<0.48	---
	04/14/92	3.66	70	16	3.1	<0.5	2.1	---
	07/21/92	3.92	<50	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	4.45	<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/93	3.74	<50	3.8	0.52	<0.5	<0.5	---
	05/04/93	3.77	680[d]	2.8	<0.5	<0.5	<0.5	900
	07/21/93	4.39	<50	8.0	1.8	1.2	7.9	5,880
	10/19/93	3.92	<50	<0.5	<0.5	<0.5	<0.5	5,700
	01/20/94	4.45	<50	1.5	<0.5	<0.5	<0.5	3,200
	04/12/94	4.72	<50	2.9	<0.5	<0.5	<0.5	11,380
	07/20/94	5.32	<50	<0.5	<0.5	<0.5	<0.5	2,400
	10/06/94	4.03	<50	<0.5	<0.5	<0.5	<0.5	2,900
	01/20/95	**3.89**	**290**	**28**	**<0.5**	**<0.5**	**<0.5**	**4,600**
MW-3	07/12/89	3.83	3,900	380	99	41	30	---
	01/30/90	3.24	5,500	440	79	35	130	---
	04/27/90	4.02	4,500	310	37	26	110	---
	07/31/90	4.31	3,500	210	8.4	17	62	---
	10/30/90	4.52	2,300	610	<0.5	<0.5	28	---
	01/31/91	4.33	4,100	300	19	20	81	---
	04/30/91	3.79	3,800	370	8.6	19	60	---
	07/30/91	4.37	3,300	160	15	13	87	---
	10/29/91	4.00	1,000	35	2.9	2.8	8.1	---
	01/20/92	3.87	6,900	380	47	18	48	---
	04/14/92	3.15	6,000	480	41	38	55	---
	07/21/92	4.17	3,700	330	30	13	23	---

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Table 2. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Well ID	Date Sampled	Depth to Water (ft)	TPH-G	B	E	T	X	Dissolved Oxygen[a]
			<----------parts per billion (µg/L)---------->					
	10/02/92	4.43	4,200	260	13	10	12	---
	01/20/93	2.20	4,200	360	32	15	26	---
	01/20/93[dup]	2.20	3,900	370	32	15	26	---
	05/04/93	3.50	12,000	290	120	520	620	630
	07/21/93	4.12	2,000	170	<10	12	11	4,340
	07/21/93[dup]	4.12	2,000	170	<10	10	14	---
	10/19/93	4.20	2,000	240	<0.5	<0.5	<0.5	5,740
	01/20/94	4.08	4,200	280	<10	<10	<10	4,100
	01/20/94[dup]	4.08	3,800	250	<10	<10	<10	4,100
	04/12/94	3.70	4,700	380	<10	<10	<10	10,620
	04/12/94[dup]	3.70	3,400	370	<25	<25	<25	---
	07/20/94	4.26	5,100	320	15	77	34	2,300
	07/20/94[dup]	4.26	4,400	250	13	14	32	---
	10/06/94	4.31	4,300	280	4.0	9.7	15	2,300
	01/20/95	**3.00**	**4,600**	**180**	**16**	**18**	**10**	**11,100**
	01/20/95[dup]	**3.00**	**4,300**	**170**	**15**	**12**	**7.2**	**---**
MW-4	01/31/90	4.50	<50	<0.5	<0.5	<0.5	<0.5	---
	04/27/90	3.62	130[c]	<0.5	<0.5	<0.5	<0.5	---
	07/31/90	4.19	<50	<0.5	<0.5	<0.5	<0.5	---
	10/30/90	4.19	<50	<0.5	<0.5	<0.5	<0.5	---
	01/31/91	4.49	50[c]	<0.5	<0.5	<0.5	<0.5	---
	04/30/91	4.02	<50	<0.5	<0.5	<0.5	<0.5	---
	07/30/91	4.39	<50	<0.5	<0.5	<0.5	<0.5	---
	10/29/91	3.75	<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/92	3.94	<30	<0.3	<0.3	<0.3	<0.3	---
	04/14/92	3.71	<50	<0.5	<0.5	<0.5	<0.5	---
	07/21/92	4.02	<50	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	4.13	<50	<0.5	<0.5	<0.5	<0.5	---

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Table 2. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Well ID	Date Sampled	Depth to Water (ft)	TPH-G	B	E	T	X	Dissolved Oxygen[a]
			<----------parts per billion (µg/L)---------->					
	01/20/93	3.10	<50	<0.5	<0.5	<0.5	<0.5	---
	05/04/93	3.70	<50	<0.5	<0.5	<0.5	<0.5	1,740
	07/21/93	3.81	<50	0.56	<0.5	<0.5	<0.5	4,510
	10/10/93	3.94	<50	<0.5	<0.5	<0.5	<0.5	5,750
	01/20/94	4.00	<50	0.71	<0.5	<0.5	<0.5	4,400
	04/12/94	4.01	<50	<0.5	<0.5	<0.5	<0.5	7,290
	07/20/94	3.91	160	<0.5	<0.5	<0.5	<0.5	6,400
	10/11/94	3.99	410	<0.5	<0.5	<0.5	<0.5	5,000
	01/20/95	**3.56**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**4,900**
MW-5	01/31/90	7.12	<50	<0.5	<0.5	<0.5	<0.5	---
	04/27/90	4.19	210c	<0.5	<0.5	<0.5	<0.5	---
	07/31/90	4.09	90	<0.5	<0.5	<0.5	<0.5	---
	10/30/90	4.39	100	0.8	0.6	0.7	1.4	---
	01/31/91	4.49	80c	<0.5	<0.5	<0.5	<0.5	---
	04/30/91	4.27	90	<0.5	<0.5	<0.5	<0.5	---
	07/30/91	4.37	90	<0.5	<0.5	<0.5	<0.5	---
	10/29/91	3.79	<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/92	4.09	<30	<0.3	<0.3	<0.3	<0.3	---
	04/14/92	4.12	<50c	<0.5	<0.5	<0.5	<0.5	---
	07/21/92	4.13	74c	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	4.30	76c	<0.5	<0.5	<0.5	<0.5	---
	01/20/93	3.12	72c	<0.5	<0.5	<0.5	<0.5	---
	05/04/93	4.07	70c	<0.5	<0.5	<0.5	<0.5	1,620
	05/04/93[dup]	4.07	80c	<0.5	<0.5	<0.5	<0.5	---
	07/21/93	4.05	<50	<0.5	<0.5	<0.5	<0.5	3,460
	10/19/93	4.20	51	<0.5	<0.5	<0.5	<0.5	3,820
	01/20/94	4.40	90	<0.5	<0.5	<0.5	<0.5	4,200
	04/12/94	4.18	67	<0.5	<0.5	<0.5	<0.5	---

-- Table 2 continues on next page --

Table 2. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Well ID	Date Sampled	Depth to Water (ft)	TPH-G	B	E	T	X	Dissolved Oxygen[a]
			<----------parts per billion (µg/L)---------->					
	07/20/94	4.06	<50	<0.5	<0.5	<0.5	<0.5	3,200
	10/06/94	4.01	80	<0.5	<0.5	<0.5	<0.5	2,100
	10/06/94[dup]	4.01	60	<0.5	<0.5	<0.5	<0.5	---
	01/20/95	**3.49**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**3,200**
E-4	07/12/89	d	<50	<0.5	<1	<1	<3	---
	01/31/90	d	<50	<0.5	<0.5	<0.5	<0.5	---
	04/27/90	d	120[c]	<0.5	<0.5	<0.5	<0.5	---
	07/31/90	d	<50	<0.5	<0.5	<0.5	<0.5	---
	10/30/90	d	<50	<0.5	<0.5	<0.5	<0.5	---
	01/31/91	d	<50	<0.5	<0.5	<0.5	<0.5	---
	04/30/91	d	<50	<0.5	<0.5	<0.5	<0.5	---
	07/30/91	d	<50	<0.5	<0.5	0.6	<0.5	---
	10/29/91	d	<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/92	d	<30	<0.3	<0.3	<0.3	<0.3	---
	04/14/92	d	<50	<0.5	<0.5	<0.5	<0.5	---
	07/21/92	d	<50	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	d	<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/93	d	<50	<0.5	<0.5	<0.5	<0.5	---
	05/04/93	d	<50	<0.5	<0.5	<0.5	<0.5	630
	07/21/93	d	<50	5.4	1.0	0.72	4.4	5,440
	10/19/93	d	<50	<0.5	<0.5	<0.5	<0.5	5,630
	01/20/94	d	<50	<0.5	<0.5	<0.5	<0.5	---
	04/12/94	d	<50	<0.5	<0.5	<0.5	<0.5	9,410
	07/20/94	d	<50	<0.5	<0.5	<0.5	<0.5	2,000
	10/06/94	d	<50	<0.5	<0.5	<0.5	<0.5	1,300
	01/20/95	**d**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**3,700**

-- Table 2 continues on next page --

Table 2. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Well ID	Date Sampled	Depth to Water (ft)	TPH-G	B	E	T	X	Dissolved Oxygen[a]
			<----------parts per billion (µg/L)---------->					
Trip Blank	07/12/89		<50	<0.5	<1	<1	<3	---
	01/31/90		<50	<0.5	<.5	<0.5	<0.5	---
	04/27/90		<50	<0.5	<0.5	<0.5	<0.5	---
	07/31/90		<50	<0.5	<0.5	<0.5	<0.5	---
	10/30/90		<50	<0.5	<0.5	<0.5	<0.5	---
	01/31/91		<50	<0.5	<0.5	<0.5	<0.5	---
	04/30/91		<50	<0.5	<0.5	<0.5	<0.5	---
	07/30/91		<50	<0.5	<0.5	<0.5	<0.5	---
	10/29/91		<50	<0.5	<0.5	<0.5	<0.5	---
	10/02/92		<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/93		<50	<0.5	<0.5	<0.5	<0.5	---
	05/03/93		<50	<0.5	<0.5	<0.5	<0.5	---
	07/21/93		<50	<0.5	<0.5	<0.5	<0.5	---
	10/19/93		<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/94		<50	<0.5	<0.5	<0.5	<0.5	---
	04/12/94		<50	<0.5	<0.5	0.71	<0.5	---
	07/20/94		<50	<0.5	<0.5	<0.5	<0.5	---
	10/06/94		<50	<0.5	<0.5	<0.5	<0.5	---
	01/20/95		**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**---**
Bailer Blank	04/27/90		110[c]	<0.5	<0.5	<0.5	<0.5	---
	01/31/91		<5	<0.5	<0.5	<0.5	<0.5	---
	10/02/92		ND	ND	ND	ND	ND	---
DTSC MCLs			NE	1	680	100[f]	1,750	NA

-- Table 2 continues on next page --

Table 2. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Abbreviations:

TPH-G = Total Petroleum Hydrocarbons as Gasoline by Modified EPA Method 8015
B = Benzene by EPA Method 602 or 8020
E = Ethylbenzene by EPA Method 602 or 8020
T = Toluene by EPA Method 602 or 8020
X = Xylenes by EPA Method 602 or 8020
HVOCs = Halogenated volatile organic compounds by EPA Method 601 or 624
--- = Not analyzed
NE = Not established
DTSC MCLs = California Department of Toxic Substances Control Maximum Contaminant Levels for drinking water
<n = Not detected above detection limit of n ppb

Notes:

a = Field measurement of dissolved oxygen concentration (ppb)
b = Well inaccessible, not sampled
c = Chromatogram contained discrete peaks; not representative of gasoline
d = Artesian well; potentiometric surface above top-of-casing elevation
e = Researched on later date due to inaccessibility from parked car
f = DTSC recommended action level for drinking water; MCL not established.

Table 3. Recommended Sampling Frequencies for Ground Water Monitoring Wells - Shell Service Station WIC #204-0463-104, 29 Piedmont Ave, Piedmont, California

Well	Current Sampling Frequency	Recommended Sampling Frequency	Rationale for Recommended Sampling Frequency
MW-1	Quarterly	Semi-Annual 1st & 3rd Quarters	Upgradient well; no hydrocarbon concentrations for at least ten consecutive quarters.
MW-2	Quarterly	Semi-Annual 1st & 3rd Quarters	Source area well; no hydrocarbons or low hydrocarbon concentrations for at least six quarters.
MW-3	Quarterly	Semi-Annual 1st & 3rd Quarters	Source area well; stable hydrocarbon concentrations for at least six quarters.
MW-4	Quarterly	Semi-Annual 1st & 3rd Quarters	Down gradient well; no hydrocarbons or low hydrocarbon concentrations for at least six quarters.
MW-5	Quarterly	Semi-Annual 1st & 3rd Quarters	Down gradient well; no hydrocarbons or low hydrocarbon concentrations for at least six quarters.
E-4	Quarterly	Discontinue 1st	Well completed in deeper water bearing zone with significant upward gradient as observed by flowing artesian conditions; based on these hydrogeologic conditions, it is not expected to be impacted by the site; no hydrocarbon concentrations for at least five quarters.

ATTACHMENT A

BLAINE TECH'S GROUND WATER MONITORING REPORT

BLAINE
TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

February 2, 1995

Shell Oil Company
P.O. Box 4023
Concord, CA 94524

Attn: Daniel T. Kirk

SITE:
Shell WIC #204-6001-0109
29 Wildwood Avenue
Piedmont, California

QUARTER:
1st quarter of 1995

QUARTERLY GROUNDWATER SAMPLING REPORT 950120-G-2

This report contains data collected during routine inspection, gauging and sampling of groundwater monitoring wells performed by Blaine Tech Services, Inc. in response to the request of the consultant who is overseeing work at this site on behalf of our mutual client, Shell Oil Company. Data collected in the course of our field work is presented in a TABLE OF WELL GAUGING DATA. The field information was collected during our preliminary gauging and inspection of the wells, the subsequent evacuation of each well prior to sampling, and at the time of sampling.

Measurements taken include the total depth of the well and the depth to water. The surface of water was further inspected for the presence of immiscibles which may be present as a thin film (a sheen on the surface of the water) or as a measurable free product zone (FPZ). At intervals during the evacuation phase, the purge water was monitored with instruments that measure electrical conductivity (EC), potential hydrogen (pH), temperature (degrees Fahrenheit), and turbidity (NTU). In the interest of simplicity, fundamental information is tabulated here, while the bulk of the information is turned over directly to the consultant who is making professional interpretations and evaluations of the conditions at the site.

STANDARD PROCEDURES

Evacuation

Groundwater wells are thoroughly purged before sampling to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The selection of equipment to evacuate each well is based on the physical characteristics of the well and what is known about the performance of the formation in which the well has been installed. There are several suitable devices which can be used for evacuation. The most commonly employed devices are air or gas actuated pumps, electric submersible pumps, and hand or mechanically actuated bailers. Our personnel frequently employ USGS/Middleburg positive displacement pumps or similar air actuated pumps which do not agitate the water standing in the well.

Normal evacuation removes three case volumes of water from the well. More than three case volumes of water are removed in cases where more evacuation is needed to achieve stabilization of water parameters and when requested by the local implementing agency. Less water may be removed in cases where the well dewaters and does not recharge to 80% of its original volume within two hours and any additional time our personnel have reason to remain at the site. In such cases, our personnel return to the site within twenty four hours and collect sample material from the water which has recharged into the well case.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site. Effluent water from purging and on-site equipment cleaning is collected and transported to Shell's Martinez Manufacturing Complex in Martinez, California.

Free Product Skimmer

The column headed VOLUME OF IMMISCIBLES REMOVED (ml) is included in the TABLE OF WELL GAUGING DATA to cover situations where a free product skimming device must be removed from the well prior to gauging. Skimmers are installed in wells with a free product zone on the surface of the water. The skimmer is a free product recovery device which often prevents normal well gauging and free product zone measurements. The 2.0" and 3.0" PetroTraps fall into the category of devices that obstruct normal gauging In cases where the consultant elects to have our personnel pull the skimmers out of the well and gauge the well, our personnel perform the additional task of draining the accumulated free product out of the PetroTrap before putting it back in the well. This

recovered free product is measured and logged in the VOLUME OF IMMISCIBLES REMOVE column. Gauging at such sites is performed in accordance with specific directions from the professional consulting firm overseeing work at the site on Shell's behalf.

Sample Containers

Sample material is collected in specially prepared containers which are provided by the laboratory that performs the analyses.

Sampling

Sample material is collected in stainless steel bailer type devices normally fitted with both a top and a bottom check valve. Water is promptly decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA standard for handling volatile organic and semi-volatile compounds.

Following collection, samples are promptly placed in an ice chest containing pre-frozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

Sample Designations

All sample containers are identified with a site designation and a discrete sample identification number specific to that particular groundwater well. Additional standard notations (e.g. time, date, sampler) are also made on the label.

Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under a standard Shell Oil Company Chain of Custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the Chain of Custody (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

Hazardous Materials Testing Laboratory

The samples obtained at this site were delivered to National Environmental Testing, Inc. in Santa Rosa, California. NET is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #178.

Objective Information Collection

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. performs no consulting and does not become involved in the marketing or installation of remedial systems of any kind. Blaine Tech Services, Inc. is concerned only with the generation of objective information, not with the use of that information to support evaluations and recommendations concerning the environmental condition of the site. Even the straightforward interpretation of objective analytical data is better performed by interested regulatory agencies and those engineers and geologists who are engaged in the work of providing professional opinions about the site and proposals to perform additional investigation or design remedial systems.

Reportage

Submission of this report and the attached laboratory report to interested regulatory agencies is handled by the consultant in charge of the project. Any professional evaluations or recommendations will be made by the consultant under separate cover.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/lp

Attachments: table of well guauging data
chain of custody
certified analytical report

cc: Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608-2411
ATTN: Michael Asport

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)
MW-1	1/20/95	TOC	--	NONE	--	--	2.94	13.00
MW-2	1/20/95	TOC	--	NONE	--	--	3.89	11.49
MW-3 *	1/20/95	TOC	ODOR	NONE	--	--	3.00	8.99
MW-4	1/20/95	TOC	--	NONE	--	--	3.56	12.69
MW-5	1/20/95	TOC	--	NONE	--	--	3.49	16.00
E-4	1/20/95	TOC	--	NONE	--	--	0.00	34.08

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

#5443

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No: 950120-G2

Date: 1-20-95
Page 1 of 2

Site Address: 29 Wildwood Avenue, Piedmont

WIC#: 204-6001-0109

Shell Engineer: Daniel T. Kirk — Phone No.: (510) 675-6168 Fax #: 675-6160

Consultant Name & Address: Blaine Tech Services, Inc. 985 Timothy Dr., San Jose, CA

Consultant Contact: Jim Keller — Phone No.: (408) 995-5535 Fax #: 293-8773

Comments:

Sampled by: GRANT MOHR

Printed Name: GRANT MOHR

LAB: NET

Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	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
MW1	1/20			X		3						X								
MW2				X		3						X								
MW3				X		3						X								
MW4				X		3						X								
MW5				X		3						X								
E4				X		3						X								
EB				X		3						X								
DUP	↓			X		3						X								

Analysis Required

CHECK ONE (1) BOX ONLY — CT/DT

- G.W. Monitoring [X] 4461
- Site Investigation [ ] 4441
- Soil Classify/Disposal [ ] 4442
- Water Classify/Disposal [ ] 4443
- Soil/Air Rem. or Sys. O & M [ ] 4452
- Water Rem. or Sys. O & M [ ] 4453
- Other [ ]

TURN AROUND TIME

- 24 hours [ ]
- 48 hours [ ]
- 15 days [X] (Normal)
- Other [ ] ____

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

UST AGENCY: ____

Relinquished By (signature):	Printed Name:	Date:	Time:	Received (signature):	Printed Name:	Date:	Time:
[signature]	GRANT MOHR	1/23/95	9:30	[signature]	G. Lumbre	1/23/95	9:30
G. Lumbre	G. Lumbre	1/23	1630	Mike Dowling	Mike Dowling	1/23/95	1630
Mike Dowling	Mike Dowling	1/23/95	1620	Phil Prosser	PHIL PROSSER	1/23/95	1625

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

Rev. 7/17/93

Shell Oil Chain of Custody

#5143

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD

Serial No: 950120-G2

Date: 1-20-95
Page 2 of 2

Site Address: 29 Wildwood Avenue, Piedmont

WIC#: 204-6001-0109

Shell Engineer: Daniel T. Kirk
Phone No.: (510) 675-6168
Fax #: 675-6160

Consultant Name & Address: Blaine Tech Services, Inc. 985 Timothy Dr., San Jose, CA

Consultant Contact: Jim Keller
Phone No.: (408) 995-5535
Fax #: 293-8773

Comments:

Sampled by: GRANT MOHR

Printed Name: [signature]

LAB: NET

CHECK ONE (1) BOX ONLY		CT/DT
G.W. Monitoring	[X]	4461
Site Investigation	[ ]	4441
Soil Classify/Disposal	[ ]	4442
Water Classify/Disposal	[ ]	4443
Soil/Air Rem. or Sys. O & M	[ ]	4452
Water Rem. or Sys. O & M	[ ]	4453
Other	[ ]	

TURN AROUND TIME
- 24 hours [ ]
- 48 hours [ ]
- 16 days [X] (Normal)
- Other [ ] ____

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

UST AGENCY:

Analysis Required

Sample ID	Date	Sludge	Soil	Water	Air	No. of conts.	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
TB	1/20			X		2						X								

Relinquished By (signature):	Printed Name:	Date / Time:	Received (signature):	Printed Name:	Date / Time:
[signature]	GRANT MOHR	Date: 1/23/95 Time: 9:30	[signature]	GP LUMBRE	Date: 1/23/95 Time: 9:3_
[signature]	GP LUMBRE	Date: 1/23/95 Time: 1630	[signature]	Mike Dowlin	Date: 1/23/95 Time: 1630
[signature]	Mike Dowlin	Date: 1/23/95 Time: 1620	[signature]	PAIL PROSSER	Date: 1/23/95 Time: 1620

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

Rev 1/12/93 Shell Oil Chn. of Custody

NATIONAL ENVIRONMENTAL TESTING, INC.

Santa Rosa Division
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Jim Keller
Blaine Tech Services
985 Timothy Dr.
San Jose, CA 95133

Date: 01/27/1995
NET Client Acct. No: 1821
NET Pacific Job No: 95.00311
Received: 01/24/1995

Client Reference Information

SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Results apply only to the samples analyzed. Reproduction of this report is permitted only in its entirety. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Judy Ridley
Project Coordinator

Jim Hoch
Operations Manager

Enclosure(s)

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

SAMPLE DESCRIPTION: MW1
Date Taken: 01/20/1995
Time Taken:
NET Sample No: 234338

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						01/25/1995	2533
DILUTION FACTOR*	1						01/25/1995	2533
as Gasoline	ND		50	ug/L	5030		01/25/1995	2533
Carbon Range:	--						01/25/1995	2533
METHOD 8020 (GC,Liquid)	--						01/25/1995	2533
Benzene	ND		0.5	ug/L	8020		01/25/1995	2533
Toluene	ND		0.5	ug/L	8020		01/25/1995	2533
Ethylbenzene	ND		0.5	ug/L	8020		01/25/1995	2533
Xylenes (Total)	ND		0.5	ug/L	8020		01/25/1995	2533
SURROGATE RESULTS	--						01/25/1995	2533
Bromofluorobenzene (SURR)	89			% Rec.	5030		01/25/1995	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

SAMPLE DESCRIPTION: MW2
Date Taken: 01/20/1995
Time Taken:
NET Sample No: 234339

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						01/25/1995	2533
DILUTION FACTOR*	1						01/25/1995	2533
as Gasoline	290		50	ug/L	5030		01/25/1995	2533
Carbon Range:	C5-C12						01/25/1995	2533
METHOD 8020 (GC,Liquid)	--						01/25/1995	2533
Benzene	28		0.5	ug/L	8020		01/25/1995	2533
Toluene	ND		0.5	ug/L	8020		01/25/1995	2533
Ethylbenzene	ND		0.5	ug/L	8020		01/25/1995	2533
Xylenes (Total)	ND		0.5	ug/L	8020		01/25/1995	2533
SURROGATE RESULTS	--						01/25/1995	2533
Bromofluorobenzene (SURR)	97			% Rec.	5030		01/25/1995	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

SAMPLE DESCRIPTION: MW3
Date Taken: 01/20/1995
Time Taken:
NET Sample No: 234340

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						01/25/1995	2533
DILUTION FACTOR*	10						01/25/1995	2533
as Gasoline	4,600		500	ug/L	5030		01/25/1995	2533
Carbon Range:	C5-C14						01/25/1995	2533
METHOD 8020 (GC,Liquid)	--						01/25/1995	2533
Benzene	180		5	ug/L	8020		01/25/1995	2533
Toluene	18		5	ug/L	8020		01/25/1995	2533
Ethylbenzene	16		5	ug/L	8020		01/25/1995	2533
Xylenes (Total)	10		5	ug/L	8020		01/25/1995	2533
SURROGATE RESULTS	--						01/25/1995	2533
Bromofluorobenzene (SURR)	115			% Rec.	5030		01/25/1995	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

SAMPLE DESCRIPTION: MW4
Date Taken: 01/20/1995
Time Taken:
NET Sample No: 234341

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						01/25/1995	2533
DILUTION FACTOR*	1						01/25/1995	2533
as Gasoline	ND		50	ug/L	5030		01/25/1995	2533
Carbon Range:	--						01/25/1995	2533
METHOD 8020 (GC,Liquid)	--						01/25/1995	2533
Benzene	ND		0.5	ug/L	8020		01/25/1995	2533
Toluene	ND		0.5	ug/L	8020		01/25/1995	2533
Ethylbenzene	ND		0.5	ug/L	8020		01/25/1995	2533
Xylenes (Total)	ND		0.5	ug/L	8020		01/25/1995	2533
SURROGATE RESULTS	--						01/25/1995	2533
Bromofluorobenzene (SURR)	83			% Rec.	5030		01/25/1995	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

SAMPLE DESCRIPTION: MW5
Date Taken: 01/20/1995
Time Taken:
NET Sample No: 234342

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						01/25/1995	2533
DILUTION FACTOR*	1						01/25/1995	2533
as Gasoline	ND		50	ug/L	5030		01/25/1995	2533
Carbon Range:	--						01/25/1995	2533
METHOD 8020 (GC,Liquid)	--						01/25/1995	2533
Benzene	ND		0.5	ug/L	8020		01/25/1995	2533
Toluene	ND		0.5	ug/L	8020		01/25/1995	2533
Ethylbenzene	ND		0.5	ug/L	8020		01/25/1995	2533
Xylenes (Total)	ND		0.5	ug/L	8020		01/25/1995	2533
SURROGATE RESULTS	--						01/25/1995	2533
Bromofluorobenzene (SURR)	71			% Rec.	5030		01/25/1995	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

SAMPLE DESCRIPTION: E4
Date Taken: 01/20/1995
Time Taken:
NET Sample No: 234343

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						01/25/1995	2533
DILUTION FACTOR*	1						01/25/1995	2533
as Gasoline	ND		50	ug/L	5030		01/25/1995	2533
Carbon Range:	--						01/25/1995	2533
METHOD 8020 (GC,Liquid)	--						01/25/1995	2533
Benzene	ND		0.5	ug/L	8020		01/25/1995	2533
Toluene	ND		0.5	ug/L	8020		01/25/1995	2533
Ethylbenzene	ND		0.5	ug/L	8020		01/25/1995	2533
Xylenes (Total)	ND		0.5	ug/L	8020		01/25/1995	2533
SURROGATE RESULTS	--						01/25/1995	2533
Bromofluorobenzene (SURR)	97			% Rec.	5030		01/25/1995	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

SAMPLE DESCRIPTION: EB
Date Taken: 01/20/1995
Time Taken:
NET Sample No: 234344

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/MB015	--						01/25/1995	2533
DILUTION FACTOR*	1						01/25/1995	2533
as Gasoline	ND		50	ug/L	5030		01/25/1995	2533
Carbon Range:	--						01/25/1995	2533
METHOD 8020 (GC,Liquid)	--						01/25/1995	2533
Benzene	ND		0.5	ug/L	8020		01/25/1995	2533
Toluene	ND		0.5	ug/L	8020		01/25/1995	2533
Ethylbenzene	ND		0.5	ug/L	8020		01/25/1995	2533
Xylenes (Total)	ND		0.5	ug/L	8020		01/25/1995	2533
SURROGATE RESULTS	--						01/25/1995	2533
Bromofluorobenzene (SURR)	92			% Rec.	5030		01/25/1995	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

SAMPLE DESCRIPTION: DUP
Date Taken: 01/20/1995
Time Taken:
NET Sample No: 234345

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						01/25/1995	2533
DILUTION FACTOR*	10						01/25/1995	2533
as Gasoline	4,300		500	ug/L	5030		01/25/1995	2533
Carbon Range:	C5-C12						01/25/1995	2533
METHOD 8020 (GC,Liquid)	--						01/25/1995	2533
Benzene	170		5	ug/L	8020		01/25/1995	2533
Toluene	12		5	ug/L	8020		01/25/1995	2533
Ethylbenzene	15		5	ug/L	8020		01/25/1995	2533
Xylenes (Total)	7.2		5	ug/L	8020		01/25/1995	2533
SURROGATE RESULTS	--						01/25/1995	2533
Bromofluorobenzene (SURR)	113			% Rec.	5030		01/25/1995	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

SAMPLE DESCRIPTION: TB
Date Taken: 01/20/1995
Time Taken:
NET Sample No: 234346

Parameter	Results	Flags	Reporting Limit	Units	Method	Date Extracted	Date Analyzed	Run Batch No.
TPH (Gas/BTXE,Liquid)								
METHOD 5030/M8015	--						01/25/1995	2533
DILUTION FACTOR*	1						01/25/1995	2533
as Gasoline	ND		50	ug/L	5030		01/25/1995	2533
Carbon Range:	--						01/25/1995	2533
METHOD 8020 (GC,Liquid)	--						01/25/1995	2533
Benzene	ND		0.5	ug/L	8020		01/25/1995	2533
Toluene	ND		0.5	ug/L	8020		01/25/1995	2533
Ethylbenzene	ND		0.5	ug/L	8020		01/25/1995	2533
Xylenes (Total)	ND		0.5	ug/L	8020		01/25/1995	2533
SURROGATE RESULTS	--						01/25/1995	2533
Bromofluorobenzene (SURR)	86			% Rec.	5030		01/25/1995	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

CONTINUING CALIBRATION VERIFICATION STANDARD REPORT

Parameter	CCV Standard % Recovery	CCV Standard Amount Found	CCV Standard Amount Expected	Units	Date Analyzed	Analyst Initials	Run Batch Number
TPH (Gas/BTXE,Liquid)							
as Gasoline	114.0	1.14	1.00	mg/L	01/25/1995	aal	2533
Benzene	86.6	4.33	5.00	ug/L	01/25/1995	aal	2533
Toluene	93.4	4.67	5.00	ug/L	01/25/1995	aal	2533
Ethylbenzene	105.4	5.27	5.00	ug/L	01/25/1995	aal	2533
Xylenes (Total)	103.3	15.5	15.0	ug/L	01/25/1995	aal	2533
Bromofluorobenzene (SURR)	105.0	105	100	% Rec.	01/25/1995	aal	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

METHOD BLANK REPORT

Parameter	Method Blank Amount Found	Reporting Limit	Units	Date Analyzed	Analyst Initials	Run Batch Number
TPH (Gas/BTXE,Liquid)						
as Gasoline	ND	0.05	mg/L	01/25/1995	aal	2533
Benzene	ND	0.5	ug/L	01/25/1995	aal	2533
Toluene	ND	0.5	ug/L	01/25/1995	aal	2533
Ethylbenzene	ND	0.5	ug/L	01/25/1995	aal	2533
Xylenes (Total)	ND	0.5	ug/L	01/25/1995	aal	2533
Bromofluorobenzene (SURR)	88		% Rec.	01/25/1995	aal	2533

Ref: SHELL, 29 Wildwood Avenue, Piedmont, Job No. 950120-G2

MATRIX SPIKE / MATRIX SPIKE DUPLICATE

Parameter	Matrix Spike % Rec.	Matrix Spike Dup % Rec.	RPD	Spike Amount	Sample Conc.	Matrix Spike Conc.	Matrix Spike Dup. Conc.	Units	Date Analyzed	Run Batch	Sample Spiked
TPH (Gas/BTXE,Liquid)											234344
as Gasoline	97.0	93.0	4.2	1.00	ND	0.97	0.93	mg/L	01/25/1995	2533	234344
Benzene	84.0	81.5	3.0	23.8	ND	20.0	19.4	ug/L	01/25/1995	2533	234344
Toluene	92.0	89.5	2.8	83.5	ND	76.8	74.7	ug/L	01/25/1995	2533	234344

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. Actual reporting limits and results have been multiplied by the listed dilution factor. **Do not** multiply the reporting limits or reported values by the dilution factor.
dw	:	Result expressed as dry weight.
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than the applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, Rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, Rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986., Rev. 1, December 1987.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

Revised September, 1993
abb.93

COOLER RECEIPT FORM

Project: 950120-62 Log No: 5143
Cooler received on: 1/23/95 and checked on 1/24/95 by J. Sorensen
(signature)

Were custody papers present?..... (YES) NO
Were custody papers properly filled out?..... (YES) NO
Were the custody papers signed?..... (YES) NO
Was sufficient ice used?..... (YES) NO 4.3°C
Did all bottles arrive in good condition (unbroken)?..... (YES) NO
Did bottle labels match COC?..... (YES) NO
Were proper bottles used for analysis indicated?..... (YES) NO
Correct preservatives used?..... (YES) NO
VOA vials checked for headspace bubbles?..... (YES) NO
Note which voas (if any) had bubbles:*

Sample descriptor:	Number of vials:

*All VOAs with headspace bubbles have been set aside so they will not be used for analysis..... YES NO

List here all other jobs received in the same cooler:

Client Job #	NET log #

(coolerrec)