Chevron

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San Ramon, CA 94583-0804

Marketing – Northwest Region
Phone 510 842 9500

November 30, 1995

Ms. Amy Leach
Alameda County Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502

Re: Former Chevron Station # 9-5607, 5269 Crow Canyon Road, Castro Valley, CA
Attached groundwater monitoring report (Blaine Tech, 10/20/95)
Attached memorandum (CRTC, 10/27/95)

Dear Ms. Leach:

I appreciated the opportunity to discuss relevant issues concerning the subject site with you and Scott Seery on September 26, 1995. I would also like to acknowledge receipt of your letter dated September 29, 1995, in which, you summarized the key issues and action items that Chevron agreed to address. In addressing these issues and items, I am providing the following according to the way each were numbered in your letter:

1. The groundwater extraction system was shut-off in May, 1995. The treatment system was reconfigured and discharge permits were renewed during October, 1995. **System start-up and compliance sampling was initiated on November 29, 1995. Continuous extraction from wells C-9 and RW will resume as soon as approval of compliance sample results is received from Oro Loma Sanitary District.**

   Groundwater samples were collected from extraction wells C-9 and RW by Blaine Tech Services (Blaine Tech) on October 2 and 24, 1995. The samples collected on October 2nd were obtained during a routine site monitoring event and were analyzed for several intrinsic bioremediation parameters. Since no samples were analyzed for dissolved petroleum hydrocarbons, Blaine Tech resampled both wells for this purpose on October 24th. **Both sampling events occurred prior to restarting the groundwater extraction pumps. As a result, sample results should be reflective of groundwater not influenced by pumping.** Analytical results from both sampling episodes are reported in Blaine Tech's quarterly monitoring report (attached).

2. Attached you will find a report dated October 20, 1995, which was prepared by Blaine Tech to describe quarterly groundwater monitoring that was performed at the subject site on October 2, 1995.

   During their October site visit, Blaine Tech gauged and sampled all fifteen site-related monitoring wells and both extraction wells (C-9 and RW). The measured direction of groundwater flow was generally toward the west. This was consistent with previous site measurements. Groundwater samples were collected from all seventeen site wells and were analyzed for the presence of TPHGas and BTEX constituents. In addition, analyses were also performed to assess the degree (if any) to which intrinsic

bioremediation is occurring. Several parameters such as, dissolved oxygen, iron, nitrate, sulfate, and phosphate were measured. Samples taken from wells C-9 and RW on October 2, 1995 were mistakenly not analyzed for dissolved hydrocarbons. Blaine Tech resampled these wells on October 24, 1995 for dissolved hydrocarbon analyses.

The data table contained in Blaine's report presents the results of dissolved hydrocarbon analyses. The results of the intrinsic bioremediation parameter analyses were not included in Blaine Tech's table but, were included in the analytical appendix. The measured concentrations of petroleum hydrocarbons were similar to those detected during previous site monitoring events. The results obtained from wells C-9 and RW were also similar to concentrations that have been detected at these wells previously. Figures 2 and 3 in Blaine's report describe the extent of the dissolved benzene and TPHgas plumes, respectively. From these figures it can be seen that the extent of hydrocarbons dissolved in groundwater has been defined.

Attached you will also find a memorandum dated October 27, 1995, which was prepared by Chevron Research and Technology Company (CRTC) to interpret and describe the results of the intrinsic bioremediation parameter sampling. Included in CRTC's memorandum are Figures B - H which are isoconcentration maps showing the distribution of bioremediation parameters in groundwater as they were measured in July and October, 1995. From their interpretation of these data CRTC arrived at several conclusions.

It was concluded that the hydrocarbon plume is stable and is not migrating. As a result, the plume would not be expected to impact Crow Creek. The no impact to the creek is demonstrated in Figure 1A of CRTC's memorandum as well as, by the actual site groundwater monitoring data. CRTC points out that the migrational limit of the plume is independent of any engineered migration control (i.e., pumping).

In the memorandum, CRTC states that the plume stability is due in part to natural attenuation processes, one of which, is biodegradation. The measured intrinsic bioremediation parameters suggest that anaerobic biodegradation is occurring. The data appearing in CRTC's Figure H are inconclusive as to whether or not aerobic biodegradation is occurring. CRTC points out that the dissolved oxygen values obtained by Blaine Tech were anomalously uniform across the site. In typical situations where aerobic biodegradation is occurring, dissolved oxygen concentrations are inversely proportional to dissolved hydrocarbon concentrations with the highest concentrations (background) being found outside the plume boundary. However, based on the fact that anaerobic degradation is occurring, it would be reasonable to assume that the subsurface is oxygen starved and that aerobic degradation is inhibited.

3. The ASTM *ES 38-94 Emergency Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* was referred to for the purpose of performing an initial risk assessment. Site-specific BTEX levels in groundwater at wells C-9 and C-12 were compared to the Risk-Based Screening Levels that appear in the Tier 1 Look-up Tables. As was recommended in your September letter, two probable groundwater exposure pathways were considered. One was groundwater volatilization to outdoor air and the other was groundwater vapor intrusion from groundwater to buildings. In both cases, the levels used were representative of residential exposure scenarios.

   In the case where groundwater volatilization to outdoor air was considered, it was recognized that the cancer risk range of 1.0 E-4 to 1.0 E-6 corresponded to risk-based screening levels for dissolved benzene of 1,100 to 11.0 ppm, respectively. In comparing the site-specific levels of benzene at wells C-9 and C-12 (7.2 and 0.050 ppm) it was recognized that none of the risk-based levels for this exposure pathway were exceeded.

   For the case where groundwater vapor intrusion to buildings was considered, it was recognized that the cancer risk range of 1.0 E-4 to 1.0 E-6 corresponded to risk-based screening levels for dissolved

benzene of 8.12 to 0.0812 ppm, respectively. When the site-specific levels of benzene at wells C-9 and C-12 (7.2 and 0.050 ppm) were compared it was recognized that the most conservative risk-based levels for this exposure pathway were exceeded at well C-9. None of the risk-based levels were exceeded by levels at well C-12.

When comparing the most conservative risk numbers to Figure 2 in Blaine Tech's report, it can be seen that the greatest potential for risk occurs beneath those buildings east of Waterford Place which lie within the 81.0 ppb isoconcentration contour. It is important however, to note that this potential for risk is strongly dependent on the degree to which the assumptions used in the risk-based model match the actual site-specific conditions.

As was mentioned above, the actual exceedence of risk-based levels depends strongly on site conditions matching those which are assumed in the development of the Tier 1 model. One of the assumptions used in the model is that there is no loss of chemical concentration as it diffuses toward the ground surface. Chevron believes that the extent of hydrocarbon vapor diffusion in soils beneath the subject site is such that the actual vapor concentrations reaching the surface would not exceed the risk-based levels. **Therefore, Chevron recommends that actual soil vapor measurements be obtained from those potentially sensitive areas offsite and that a more rigorous (Tier 2) assessment of potential risks be performed. The results obtained will be used to determine site-specific target levels and points of compliance.**

4. Upon review of the acquired results from the Tier 2 assessment, Chevron will evaluate the feasibility of corrective action alternatives. A report of the Tier 2 findings and recommendations will be submitted to your agency by March 1, 1996. Groundwater extraction and monitoring will remain in effect throughout the Tier 2 assessment.

5. Thank you for the information on the condition of wells C-6, C-9, C-12, and RW. Chevron has asked Blaine Tech to make the necessary repairs to each of these wells.

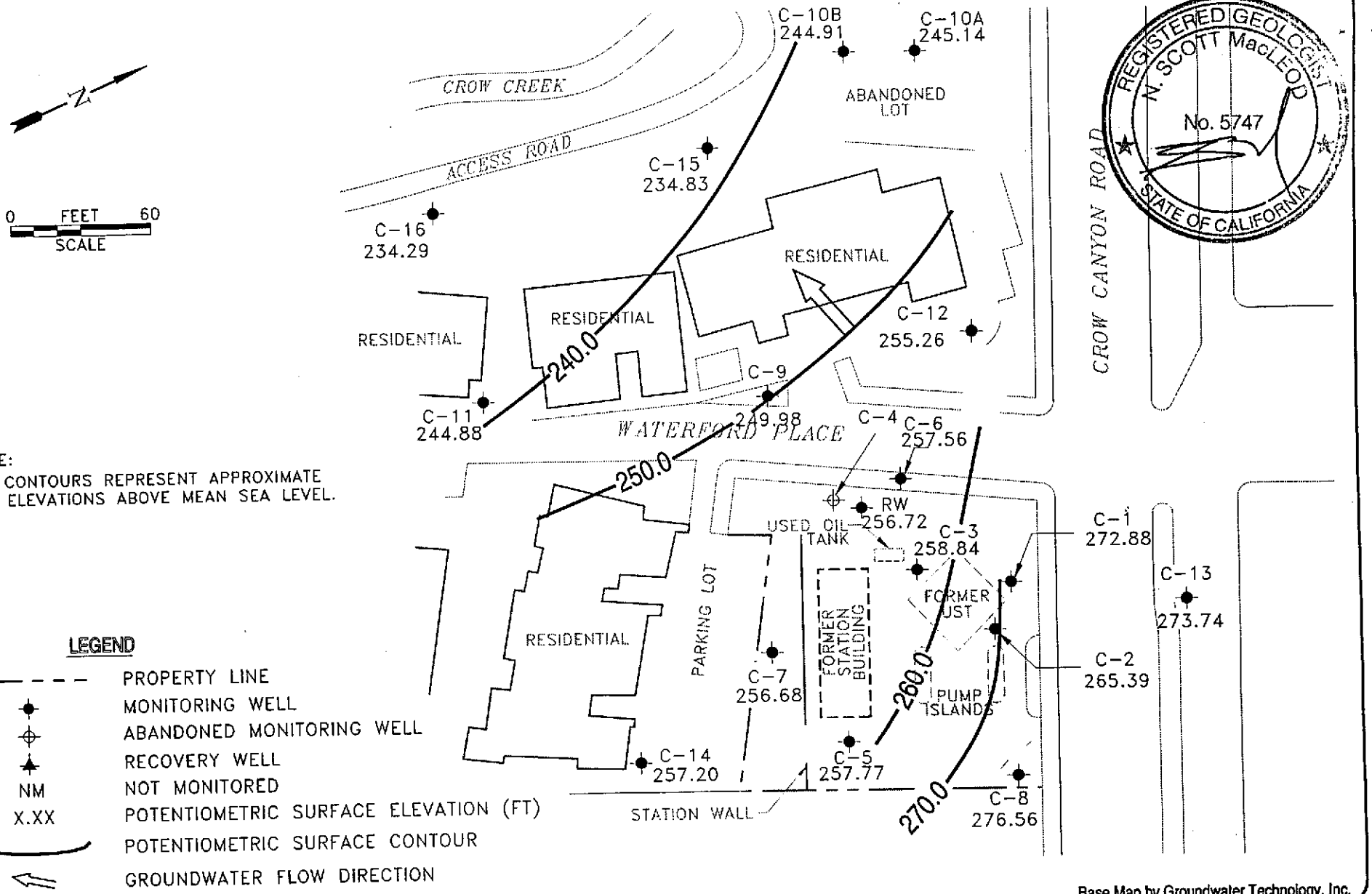
If you have any questions or comments, I can be reached at (510) 842-8695.

Sincerely,

Brett L. Hunter
Environmental Engineer
Site Assessment and Remediation

Attachments

cc: Rich Hiett, San Francisco Bay RWQCB, Oakland, CA
Kevin Hinckley, 5269 Crow Canyon Road, Castro Valley, CA 94546
Bette Owen, Chevron USA, Products Company, San Ramon, CA (w/o attachment)



NOTE:
1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

LEGEND

- PROPERTY LINE
- MONITORING WELL
- ABANDONED MONITORING WELL
- RECOVERY WELL
- NM — NOT MONITORED
- X.XX — POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

Base Map by Groundwater Technology, Inc.

CAMBRIA
Environmental Technology, Inc.

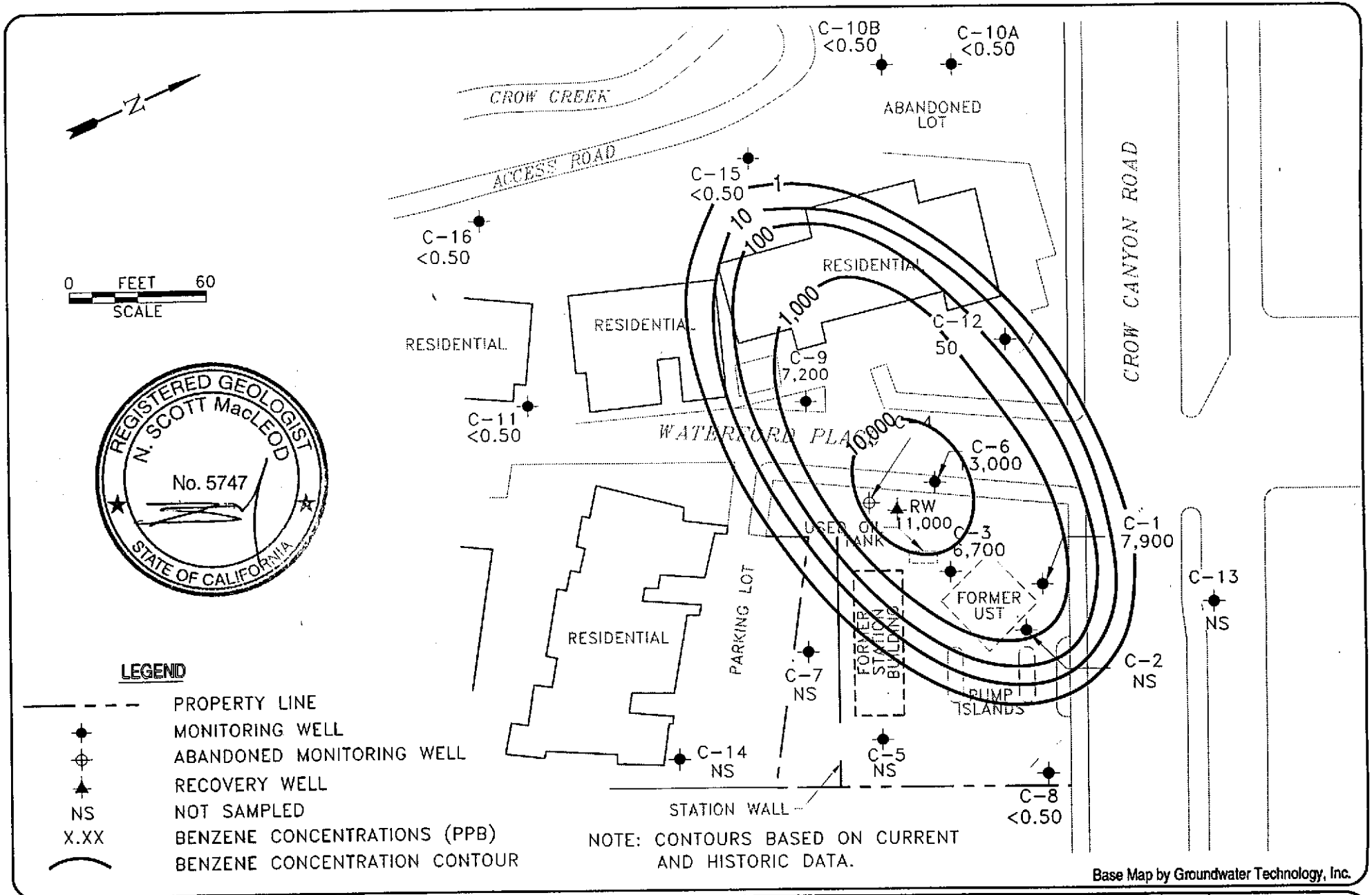
Chevron Station 9-5607
5269 Crow Canyon Road
Castro Valley, California

\PROJECT\CHEVRON\9-5607\5607-QM.DWG

Ground Water Elevations

October 2, 1995

FIGURE
1



CAMBRIA
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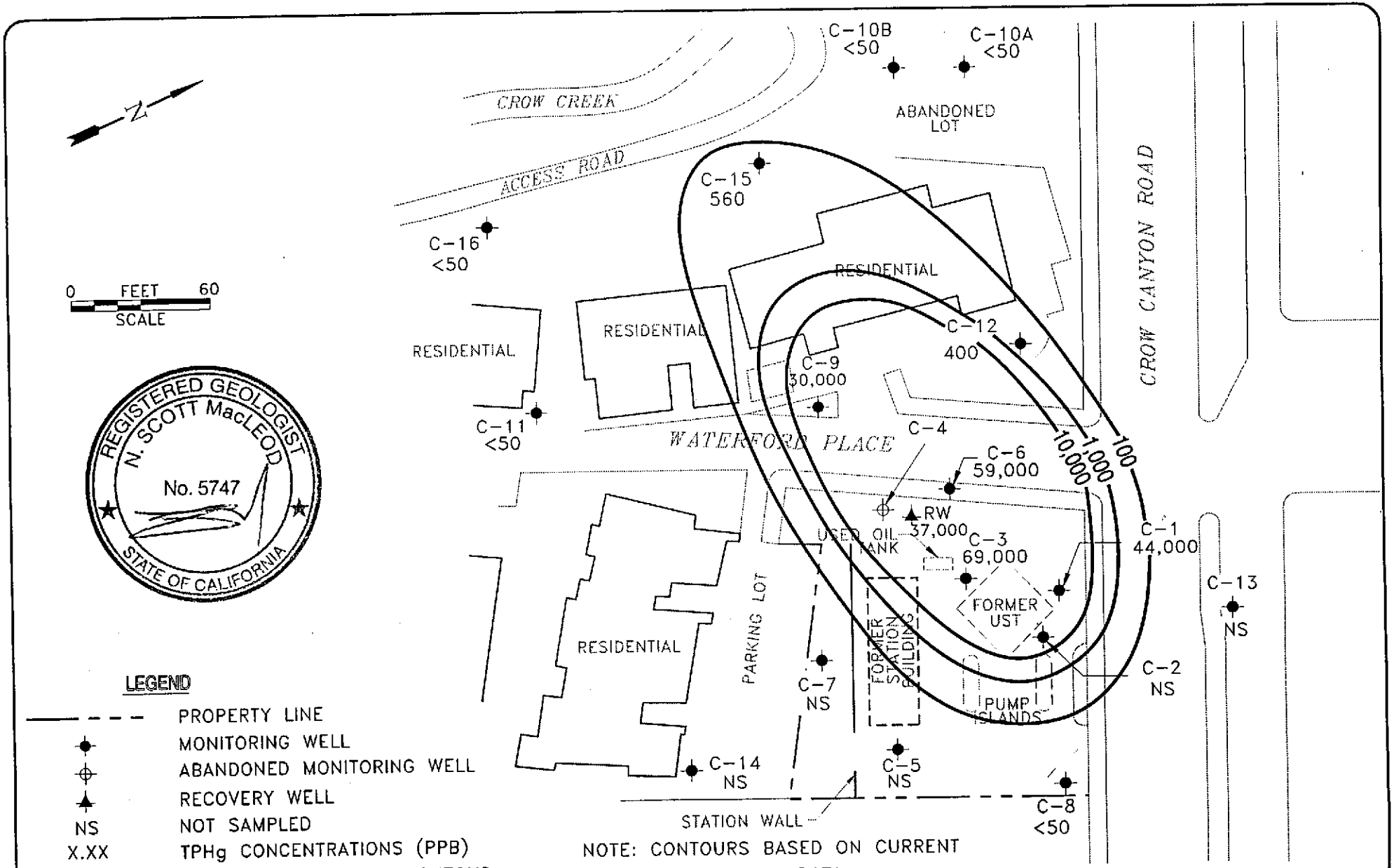
Chevron Station 9-5607
5269 Crow Canyon Road
Castro Valley, California

\PROJECT\CHEVRON\9-5607\5607-BNZ.DWG

Benzene Concentrations in Ground Water

October 2, 1995

FIGURE
2



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Chevron Station 9-5607
5269 Crow Canyon Road
Castro Valley, California

\PROJECT\CHEVRON\9-5607\5607-GAS.DWG

TPH-Gasoline Concentrations in Ground Water

October 2, 1995

FIGURE
3

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-1										
03/26/85	283.46	260.63	22.83	--	--	--	--	--	--	--
07/03/86	283.46	259.88	23.58	--	--	--	--	--	--	--
03/26/87	283.46	262.96	20.50	--	--	--	--	--	--	--
03/28/88	283.46	257.46	26.00	--	--	--	--	--	--	--
03/10/89	283.46	267.60	15.86	--	--	--	--	--	--	--
04/03/89	283.46	266.61	16.85	--	--	--	--	--	--	--
05/08/89	283.46	260.78	22.68	--	--	--	--	--	--	--
06/05/89	283.46	258.80	24.66	--	--	--	--	--	--	--
07/12/90	283.46	257.90	25.56	--	--	--	--	--	--	--
08/10/90	283.46	257.57	25.89	--	--	--	--	--	--	--
09/13/89	283.46	256.91	26.55	--	22,000	3600	1100	1000	3500	--
10/04/89	283.46	258.22	25.24	--	--	--	--	--	--	--
11/03/89	283.46	258.43	25.03	--	--	--	--	--	--	--
12/04/89	283.46	257.09	26.37	--	13,000	2000	550	610	1600	--
03/07/90	283.46	260.98	22.48	--	--	--	--	--	--	--
03/09/90	283.46	--	--	--	--	--	--	--	--	--
06/12/90	283.46	259.11	24.35	--	21,000	3500	1400	840	4000	--
09/20/90	283.46	257.19	26.27	--	23,000	2100	1200	860	5000	--
12/20/90	283.46	260.87	22.59	--	8200	760	410	260	1100	--
03/27/91	283.46	264.38	19.08	--	--	--	--	--	--	--
06/18/91	283.46	256.35	27.11	--	--	--	--	--	--	--
09/12/91	283.46	255.24	28.22	--	--	--	--	--	--	--
01/23/92	283.46	256.81	26.65	--	--	--	--	--	--	--
04/13/92	283.46	261.30	22.16	--	38,000	3100	1300	850	3100	--
08/03/92	283.46	257.31	26.15	--	13,000	1300	470	550	1600	ND
10/22/92	283.46	256.67	26.79	--	24,000	3500	1400	1500	4300	--
01/18/93	283.46	264.86	18.60	--	370,000	6900	8900	3100	23,000	--
04/19/93	283.46	262.34	21.12	--	51,000	8000	7000	1400	10,000	--
07/21,22/93	283.46	260.18	23.28	--	22,000	3400	1000	990	3100	--
10/25/93	283.46	258.80	24.66	--	14,000	2000	550	790	2300	--
01/21/94	283.46	262.99	20.47	--	1100	350	6.0	3.0	15	--
04/18/94	283.46	260.36	23.10	--	24,000	3200	1000	1000	3100	--
07/06-07/94	283.46	260.56	22.90	--	65,000	6500	4200	1600	9300	--
10/07/94	283.46	258.75	24.71	--	27,000	5100	1200	1400	4300	--
01/11/95	283.46	265.16	18.30	--	29,000	1300	1200	930	4000	--
04/24/95	283.46	266.52	16.94	--	75,000	8900	5000	1700	8400	--
07/31/95	283.46	262.90	20.56	--	56,000	11,000	2600	2500	11,000	--
10/02/95	283.46	272.88	10.58	--	44,000	7900	1100	2100	6500	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-2										
03/26/85	284.37	--	--	--	--	--	--	--	--	--
07/03/86	284.37	264.68	19.69	--	--	--	--	--	--	--
03/26/87	284.37	268.92	15.45	--	--	--	--	--	--	--
03/28/88	284.37	263.45	20.92	--	--	--	--	--	--	--
03/10/89	284.37	271.57	12.80	--	--	--	--	--	--	--
04/03/89	284.37	270.11	14.26	--	--	--	--	--	--	--
05/08/89	284.37	265.95	18.42	--	--	--	--	--	--	--
06/05/89	284.37	264.28	20.09	--	--	--	--	--	--	--
07/12/90	284.37	263.58	20.79	--	--	--	--	--	--	--
08/10/90	284.37	262.97	21.40	--	--	--	--	--	--	--
09/13/89	284.37	262.51	21.86	--	320	62	4.0	10	14	--
10/04/89	284.37	264.48	19.89	--	--	--	--	--	--	--
11/03/89	284.37	263.61	20.76	--	--	--	--	--	--	--
12/04/89	284.37	263.55	20.82	--	1000	240	37	66	130	--
03/07/90	284.37	266.54	17.83	--	--	--	--	--	--	--
03/09/90	284.37	266.54	17.83	--	390	280	35	27	50	--
06/12/90	284.37	264.48	19.89	--	700	260	34	28	55	--
09/20/90	284.37	262.40	21.97	--	--	--	--	--	--	--
12/20/90	284.37	266.64	17.73	--	--	--	--	--	--	--
03/27/91	284.37	269.27	15.10	--	--	--	--	--	--	--
06/18/91	284.37	261.69	22.68	--	--	--	--	--	--	--
09/12/91	284.37	260.45	23.92	--	--	--	--	--	--	--
01/23/92	284.37	263.13	21.24	--	--	--	--	--	--	--
04/13/92	284.37	266.83	17.54	--	1100	120	76	17	72	--
08/03/92	284.37	262.32	22.05	--	--	--	--	--	--	--
10/22/92	284.37	261.34	23.03	--	--	--	--	--	--	--
01/18/93	284.37	269.51	14.86	--	70	6.4	ND	ND	ND	--
04/19/93	284.37	267.57	16.80	--	--	--	--	--	--	--
07/21,22/93	284.37	265.12	19.25	--	--	--	--	--	--	--
10/25/93	284.37	264.72	19.65	--	--	--	--	--	--	--
01/21/94	284.37	258.80	25.57	--	43,000	5100	1800	2000	6800	--
04/18/94	284.37	274.61	9.76	--	--	--	--	--	--	--
07/06-07/94	284.37	265.61	18.76	--	--	--	--	--	--	--
10/07/94	284.37	264.20	20.17	--	--	--	--	--	--	--
01/11/95	284.37	270.33	14.04	Sampled annually	780	290	9.1	19	58	--
04/24/95	284.37	272.03	12.34	--	--	--	--	--	--	--
07/31/95	284.37	266.82	17.55	--	--	--	--	--	--	--
10/02/95	284.37	265.39	18.98	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-3										
03/26/85	285.98	--	--	--	--	--	--	--	--	--
07/03/86	285.98	259.94	26.04	--	--	--	--	--	--	--
03/26/87	285.98	260.34	25.64	--	--	--	--	--	--	--
03/28/88	285.98	257.16	28.82	--	--	--	--	--	--	--
03/10/89	285.98	263.20	22.78	--	--	--	--	--	--	--
04/03/89	285.98	263.27	22.71	--	--	--	--	--	--	--
05/08/89	285.98	260.03	25.95	--	--	--	--	--	--	--
06/05/89	285.98	258.36	27.62	--	--	--	--	--	--	--
07/12/90	285.98	257.69	28.29	--	--	--	--	--	--	--
08/10/90	285.98	257.52	28.46	--	--	--	--	--	--	--
09/13/89	285.98	256.65	29.33	--	60,000	1400	6800	2300	10,000	--
10/04/89	285.98	257.01	28.97	--	--	--	--	--	--	--
11/03/89	285.98	257.26	28.72	--	--	--	--	--	--	--
12/04/89	285.98	256.97	29.01	--	56,000	1300	3300	1400	2700	--
03/07/90	285.98	258.29	27.69	--	--	--	--	--	--	--
03/09/90	285.98	258.29	27.69	--	42,000	1100	5700	1600	7900	--
06/12/90	285.98	257.89	28.09	--	160,000	1400	7100	3400	16,000	--
09/24/90	285.98	256.80	29.18	--	53,000	850	7700	2000	10,000	--
12/20/90	285.98	257.71	28.27	--	520	1200	5400	5400	33,000	--
03/27/91	285.98	261.18	24.80	--	92,000	1300	3100	1200	11,000	--
06/18/91	285.98	255.14	30.84	--	--	--	--	--	--	--
09/12/91	285.98	254.34	31.64	Free Product (0.03')	--	--	--	--	--	--
01/23/92	285.98	255.46	30.52	Sheen	--	--	--	--	--	--
04/13/92	285.98	259.04	26.94	Free Product (0.01')	--	--	--	--	--	--
08/03/92	285.98	255.98	30.00	--	220,000	1300	2800	3100	17,000	ND
10/22/92	285.98	255.38	30.62	Free Product (0.03')	--	--	--	--	--	--
01/18/93	285.98	262.07	23.91	--	1,000,000	2400	5300	10,000	61,000	--
04/19/93	285.98	260.98	25.00	--	94,000	33,000	22,000	1600	9200	--
07/21,22/93	285.98	259.43	26.55	--	44,000	2600	5500	1300	6900	--
10/25/93	285.98	257.26	28.72	--	35,000	3900	2400	1100	6600	--
01/21/94	285.98	256.32	29.66	--	120,000	4200	2200	2000	11,000	--
04/18/94	285.98	259.24	26.74	--	29,000	1200	310	520	2000	--
07/06-07/94	285.98	259.62	26.36	--	84,000	2700	1400	1400	9700	--
10/07/94	285.98	257.49	28.49	--	40,000	1600	390	1200	6100	--
01/11/95	285.98	262.84	23.14	--	34,000	4200	910	720	3800	--
04/24/95	285.98	266.10	19.88	--	210,000	43,000	28,000	2400	13,000	--
07/31/95	285.98	261.30	24.68	--	110,000	33,000	17,000	2300	12,000	--
10/02/95	285.98	258.84	27.14	--	69,000	6700	4000	2000	11,000	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-4										
03/26/85	273.01	257.87	15.14	--	--	--	--	--	--	--
07/03/86	273.01	257.64	15.37	--	--	--	--	--	--	--
03/26/87	273.01	--	--	--	--	--	--	--	--	--
03/28/88	273.01	254.97	18.04	--	--	--	--	--	--	--
03/10/89	273.01	--	--	--	--	--	--	--	--	--
04/03/89	273.01	259.67	13.34	--	--	--	--	--	--	--
05/08/89	273.01	257.41	15.60	--	--	--	--	--	--	--
06/05/89	273.01	256.50	16.51	--	--	--	--	--	--	--
07/12/90	273.01	256.02	16.99	--	--	--	--	--	--	--
08/10/90	273.01	255.74	17.27	--	--	--	--	--	--	--
09/13/89	273.01	254.85	18.16	--	57,000	21,000	3100	3200	11,000	--
10/04/89	273.01	254.77	18.24	--	--	--	--	--	--	--
11/03/89	273.01	254.84	18.17	--	--	--	--	--	--	--
12/04/89	273.01	254.56	18.45	--	48,000	17,000	2200	2800	9800	--
03/07/90	273.01	255.81	17.20	--	--	--	--	--	--	--
03/09/90	273.01	255.81	17.20	--	43,000	20,000	2300	2800	11,000	--
06/12/90	273.01	256.35	16.66	--	82,000	21,000	2400	4000	16,000	--
09/24/90	273.01	254.90	18.11	--	--	--	--	--	--	--
12/20/90	273.01	--	--	Abandoned	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-5										
03/26/85	287.95	262.62	25.33	--	--	--	--	--	--	--
07/03/86	287.95	261.54	26.41	--	--	--	--	--	--	--
03/26/87	287.95	262.99	24.96	--	--	--	--	--	--	--
03/28/88	287.95	258.15	29.80	--	--	--	--	--	--	--
03/10/89	287.95	262.06	25.89	--	--	--	--	--	--	--
04/03/89	287.95	263.57	24.38	--	--	--	--	--	--	--
05/08/89	287.95	260.15	27.80	--	--	--	--	--	--	--
06/05/89	287.95	258.53	29.42	--	--	--	--	--	--	--
07/12/90	287.95	258.09	29.86	--	--	--	--	--	--	--
08/10/90	287.95	258.18	29.77	--	--	--	--	--	--	--
09/13/89	287.95	257.00	30.95	--	310	ND	ND	ND	ND	--
10/04/89	287.95	256.47	31.48	--	--	--	--	--	--	--
11/03/89	287.95	256.63	31.32	--	--	--	--	--	--	--
12/04/89	287.95	256.25	31.70	--	ND	ND	ND	ND	ND	--
03/07/90	287.95	257.67	30.28	--	--	--	--	--	--	--
03/09/90	287.95	257.67	30.28	--	ND	ND	ND	ND	ND	--
06/12/90	287.95	257.47	30.48	--	90	ND	ND	ND	ND	--
09/24/90	287.95	256.17	31.78	--	ND	ND	ND	ND	ND	--
12/20/90	287.95	254.66	33.29	--	170	ND	ND	1.0	0.7	--
03/27/91	287.95	259.97	27.98	--	--	--	--	--	--	--
06/18/91	287.95	255.43	32.52	--	--	--	--	--	--	--
09/12/91	287.95	254.58	33.37	--	--	--	--	--	--	--
01/23/92	287.95	255.28	32.67	--	--	--	--	--	--	--
04/13/92	287.95	259.47	28.48	--	140	ND	ND	0.7	ND	--
08/03/92	287.95	255.45	32.50	--	ND	ND	ND	ND	ND	ND
10/22/92	287.95	253.97	33.98	--	--	--	--	--	--	--
01/18/93	287.95	260.93	27.02	--	230	6.6	2.2	3.4	2.2	--
04/19/93	287.95	263.14	24.81	--	--	--	--	--	--	--
07/21,22/93	287.95	258.89	29.06	--	130	ND	0.6	ND	ND	--
10/25/93	287.95	257.00	30.95	--	--	--	--	--	--	--
01/21/94	287.95	256.04	31.91	--	ND	ND	ND	ND	ND	--
04/18/94	287.95	257.80	30.15	--	--	--	--	--	--	--
07/06-07/94	287.95	258.91	29.04	--	ND	ND	ND	ND	ND	--
10/07/94	287.95	256.11	31.84	--	--	--	--	--	--	--
01/11/95	287.95	262.97	24.98	Sampled biannually	700	1.1	6.0	1.5	2.1	--
04/24/95	287.95	266.17	21.78	--	--	--	--	--	--	--
07/31/95	287.95	--	--	Inaccessible	--	--	--	--	--	--
10/02/95	287.95	257.77	30.18	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-6										
03/26/85	--	--	16.74	--	--	--	--	--	--	--
07/03/86	275.28	257.82	17.46	--	--	--	--	--	--	--
03/26/87	275.28	256.91	18.37	--	--	--	--	--	--	--
03/28/88	275.28	245.44	29.84	--	--	--	--	--	--	--
03/10/89	275.28	260.84	14.44	--	--	--	--	--	--	--
04/03/89	275.28	260.84	14.44	--	--	--	--	--	--	--
05/08/89	275.28	258.12	17.16	--	--	--	--	--	--	--
06/05/89	275.28	256.77	18.51	--	--	--	--	--	--	--
07/12/90	275.28	256.57	18.71	--	--	--	--	--	--	--
08/10/90	275.28	255.96	19.32	--	--	--	--	--	--	--
09/13/89	275.28	255.33	19.95	--	47	5600	3000	2400	10,000	--
10/04/89	275.28	255.41	19.87	--	--	--	--	--	--	--
11/03/89	275.28	255.93	19.35	--	--	--	--	--	--	--
12/04/89	275.28	255.69	19.59	--	40,000	8100	1800	1700	7500	--
03/07/90	275.28	256.89	18.39	--	--	--	--	--	--	--
03/09/90	275.28	256.89	18.39	--	73,000	23,000	5900	3400	17,000	--
06/12/90	275.28	256.41	18.87	--	85,000	19,000	6500	3400	16,000	--
09/24/90	275.28	255.29	19.99	--	72,000	15,000	3200	2600	11,000	--
12/20/90	275.28	253.71	21.57	--	100,000	11,000	4200	3400	16,000	--
03/27/91	275.28	258.96	16.32	--	100,000	11,000	4400	2300	11,000	--
06/18/91	275.28	251.95	23.33	--	--	--	--	--	--	--
09/12/91	275.28	251.32	23.96	--	--	--	--	--	--	--
01/23/92	275.28	263.20	12.08	--	--	--	--	--	--	--
04/13/92	275.28	255.43	19.85	Sheen	--	--	--	--	--	--
08/03/92	275.28	260.56	14.72	--	120,000	16,000	1100	2300	15,000	ND
10/22/92	275.28	260.37	14.91	--	63,000	7400	920	1800	14,000	--
01/18/93	275.28	259.84	15.44	--	77,000	13,000	1600	2700	12,000	--
04/19/93	275.28	266.03	9.25	--	56,000	14,000	1100	2400	9100	--
07/21,22/93	275.28	257.93	17.35	--	38,000	6600	610	1500	5800	--
10/25/93	275.28	254.25	21.03	--	42,000	11,000	800	2200	8200	--
01/21/94	275.28	253.71	21.57	--	57,000	11,000	940	2300	9800	--
04/18/94	275.28	257.17	18.11	--	48,000	9800	830	1900	7500	--
07/06-07/94	275.28	258.28	17.00	--	46,000	6800	610	900	6200	--
10/07/94	275.28	256.09	19.19	--	35,000	5900	410	1400	3800	--
01/11/95	275.28	256.64	18.64	--	54,000	1200	1100	2100	9500	--
04/24/95	275.28	262.72	12.56	--	81,000	12,000	1500	2400	9900	--
07/31/95	275.28	259.54	15.74	--	75,000	12,000	1200	2800	11,000	--
10/02/95	275.28	257.56	17.72	--	59,000	13,000	990	2800	10,000	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-7										
03/26/85	--	--	9.61	--	--	--	--	--	--	--
07/03/86	270.70	259.96	10.74	--	--	--	--	--	--	--
03/26/87	270.70	260.62	10.08	--	--	--	--	--	--	--
03/28/88	270.70	256.91	13.79	--	--	--	--	--	--	--
03/10/89	270.70	260.28	10.42	--	--	--	--	--	--	--
04/03/89	270.70	261.56	9.14	--	--	--	--	--	--	--
05/08/89	270.70	258.79	11.91	--	--	--	--	--	--	--
06/05/89	270.70	259.16	11.54	--	--	--	--	--	--	--
07/12/90	270.70	257.25	13.45	--	--	--	--	--	--	--
08/10/90	270.70	257.33	13.37	--	--	--	--	--	--	--
09/13/89	270.70	256.10	14.60	--	410	1.3	ND	10	ND	--
10/04/89	270.70	255.53	15.17	--	--	--	--	--	--	--
11/03/89	270.70	255.42	15.28	--	--	--	--	--	--	--
12/04/89	270.70	255.00	15.70	--	1000	1.0	ND	5.0	ND	--
03/07/90	270.70	256.48	14.22	--	--	--	--	--	--	--
03/09/90	270.70	256.48	14.22	--	590	2.8	2.4	3.5	2.0	--
06/12/90	270.70	256.52	14.18	--	1200	ND	5	8.2	3.2	--
09/24/90	270.70	255.26	15.44	Sheen	400	1.4	1.9	1.4	2.2	--
09/24/90	270.70	255.26	15.44	Duplicate	580	ND	2.4	1.4	1.5	--
12/20/90	270.70	253.62	17.08	--	2300	ND	6.5	4.7	9.3	--
03/27/91	270.70	258.05	12.65	--	980	ND	2.4	9.1	3.0	--
06/18/91	270.70	254.26	16.44	--	--	--	--	--	--	--
09/12/91	270.70	253.65	17.05	--	1200	ND	3.1	6.5	2.7	--
01/23/92	270.70	253.78	16.92	--	--	--	--	--	--	--
04/13/92	270.70	257.70	13.00	--	830	ND	1.0	7.8	1.2	--
08/03/92	270.70	--	--	--	--	--	--	--	--	--
10/22/92	270.70	--	--	Could not locate	--	--	--	--	--	--
01/18/93	270.70	--	--	Could not locate	--	--	--	--	--	--
04/19/93	270.70	--	--	Could not locate	--	--	--	--	--	--
07/21,22/93	270.70	257.76	12.94	--	890	0.9	3.0	4.0	4.0	--
10/25/93	270.70	255.87	14.83	--	--	--	--	--	--	--
01/21/94	270.70	254.76	15.94	--	660	ND	6.0	1.0	3.0	--
04/18/94	270.70	255.72	14.98	--	--	--	--	--	--	--
07/06-07/94	270.70	257.76	12.94	--	960	ND	5.8	4.2	8.2	--
10/07/94	270.70	254.87	15.83	--	--	--	--	--	--	--
01/11/95	270.70	261.45	9.25	Sampled biannually	900	<0.5	<0.5	2.3	1.3	--
04/24/95	270.70	264.00	6.70	--	--	--	--	--	--	--
07/31/95	270.70	259.46	11.24	--	690	<1.2	<1.2	<1.2	<1.2	--
10/02/95	270.70	256.68	14.02	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-8										
03/26/85	--	--	8.68	--	--	--	--	--	--	--
07/03/86	288.40	274.51	13.89	--	--	--	--	--	--	--
03/26/87	288.40	282.39	6.01	--	--	--	--	--	--	--
03/28/88	288.40	277.74	10.66	--	--	--	--	--	--	--
03/10/89	288.40	281.79	6.61	--	--	--	--	--	--	--
04/03/89	288.40	281.94	6.46	--	--	--	--	--	--	--
05/08/89	288.40	279.43	8.97	--	--	--	--	--	--	--
06/05/89	288.40	277.52	10.88	--	--	--	--	--	--	--
07/12/90	288.40	276.25	12.15	--	--	--	--	--	--	--
08/10/90	288.40	275.94	12.46	--	--	--	--	--	--	--
09/13/89	288.40	275.62	12.78	--	ND	ND	ND	ND	ND	--
10/04/89	288.40	275.89	12.51	--	--	--	--	--	--	--
11/03/89	288.40	273.77	14.63	--	--	--	--	--	--	--
12/04/89	288.40	278.81	9.59	--	64	0.6	0.6	ND	1.0	--
03/07/90	288.40	279.60	8.80	--	--	--	--	--	--	--
03/09/90	288.40	279.60	8.80	--	ND	ND	ND	ND	ND	--
06/12/90	288.40	279.46	8.94	--	120	2.5	1.2	1.0	1.4	--
09/24/90	288.40	274.86	13.54	--	--	--	--	--	--	--
12/20/90	288.40	279.07	9.33	--	--	--	--	--	--	--
03/27/91	288.40	282.30	6.10	--	54	0.7	ND	0.7	1.9	--
06/18/91	288.40	276.44	11.96	--	--	--	--	--	--	--
09/12/91	288.40	274.80	13.60	--	ND	ND	ND	ND	ND	--
09/12/91	288.40	274.80	13.60	Duplicate	ND	ND	ND	ND	ND	--
01/23/92	288.40	264.20	24.20	--	--	--	--	--	--	--
04/13/92	288.40	280.05	8.35	--	ND	ND	ND	ND	ND	--
08/03/92	288.40	275.82	12.58	--	ND	ND	ND	ND	ND	ND
10/22/92	288.40	275.30	13.10	--	ND	ND	ND	ND	ND	--
01/18/93	288.40	282.28	6.12	--	ND	ND	ND	ND	ND	--
04/19/93	288.40	281.35	7.05	--	ND	ND	ND	ND	ND	--
07/21,22/93	288.40	277.05	11.35	--	ND	ND	ND	ND	ND	--
10/25/93	288.40	275.55	12.85	--	ND	ND	ND	ND	ND	--
01/21/94	288.40	277.85	10.55	--	ND	ND	ND	ND	ND	--
04/18/94	288.40	278.89	9.51	--	ND	1.2	0.9	ND	1.6	--
07/06-07/94	288.40	277.02	11.38	--	ND	ND	ND	ND	ND	--
10/07/94	288.40	275.48	12.92	--	ND	ND	ND	ND	ND	--
01/11/95	288.40	283.04	5.36	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	288.40	281.82	6.58	--	<50	<0.5	0.61	<0.5	0.51	--
07/31/95	288.40	278.94	9.46	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	288.40	276.56	11.84	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-9										
07/03/86	268.46	254.57	13.89	--	--	--	--	--	--	--
03/26/87	268.46	254.72	13.74	--	--	--	--	--	--	--
03/28/88	268.46	253.47	14.99	--	--	--	--	--	--	--
03/10/89	268.46	255.07	13.39	--	--	--	--	--	--	--
04/03/89	268.46	255.62	12.84	--	--	--	--	--	--	--
05/08/89	268.46	254.08	14.38	--	--	--	--	--	--	--
06/05/89	268.46	253.10	15.36	--	--	--	--	--	--	--
07/12/90	268.46	252.81	15.65	--	--	--	--	--	--	--
08/10/90	268.46	252.66	15.80	--	--	--	--	--	--	--
09/13/89	268.46	251.93	16.53	--	42,000	14,000	1100	2800	4200	--
10/04/89	268.46	251.94	16.52	--	--	--	--	--	--	--
11/03/89	268.46	251.95	16.51	--	--	--	--	--	--	--
12/04/89	268.46	251.67	16.79	--	36,000	11,000	670	2500	3800	--
03/07/90	268.46	252.24	16.22	--	--	--	--	--	--	--
03/09/90	268.46	252.24	16.22	--	28,000	12,000	940	3000	4700	--
06/12/90	268.46	253.58	14.88	--	39,000	11,000	1600	2300	4800	--
09/24/90	268.46	252.16	16.30	--	120,000	13,000	1600	3700	6800	--
12/20/90	268.46	251.23	17.23	--	51,000	9300	560	2800	3300	--
12/20/90	268.46	251.23	17.23	Duplicate	44,000	12,000	580	2800	3500	--
03/27/91	268.46	254.68	13.78	--	56,000	3400	5000	1600	5600	--
06/18/91	268.46	249.82	18.64	--	--	--	--	--	--	--
09/12/91	268.46	--	--	Inaccessible	--	--	--	--	--	--
10/24/95	268.46	250.39	18.07	--	30,000	7200	440	2500	1600	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-10A										
03/07/90	264.84	244.63	20.21	--	--	--	--	--	--	--
03/09/90	264.84	--	--	--	ND	1.6	0.7	0.8	3.5	--
06/12/90	264.84	245.14	19.70	--	ND	ND	ND	ND	ND	--
09/24/90	264.84	245.30	19.54	--	ND	ND	ND	ND	ND	--
12/20/90	264.84	245.00	19.84	--	ND	ND	ND	ND	ND	--
03/27/91	264.84	246.83	18.01	--	--	--	--	--	--	--
06/18/91	264.84	244.68	20.16	--	ND	ND	ND	ND	ND	--
09/12/91	264.84	244.27	20.57	--	ND	ND	ND	ND	ND	--
01/23/92	264.84	244.17	20.67	--	ND	ND	ND	ND	ND	--
04/13/92	264.84	245.44	19.40	--	53	0.9	1.3	ND	1.0	--
08/03/92	264.84	245.03	19.81	--	ND	ND	ND	ND	ND	ND
10/22/92	264.84	245.01	19.83	--	ND	ND	ND	ND	0.5	--
01/18/93	264.84	247.80	17.04	--	ND	ND	ND	ND	ND	--
04/19/93	264.84	247.07	17.77	--	ND	ND	ND	ND	ND	--
04/19/93	264.84	247.28	17.56	--	ND	ND	ND	ND	ND	--
10/25/93	264.84	247.07	17.77	--	ND	ND	ND	ND	ND	--
01/21/94	264.84	246.93	17.91	--	ND	ND	ND	ND	ND	--
04/18/94	264.84	247.81	17.03	--	ND	3.0	3.0	1.4	5.5	--
07/06-07/94	264.84	248.06	16.78	--	ND	ND	ND	ND	ND	--
10/07/94	264.84	247.63	17.21	--	ND	ND	ND	ND	ND	--
01/11/95	264.84	248.78	16.06	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	264.84	248.32	16.52	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	264.84	245.82	19.02	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	264.84	245.14	19.70	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-10B										
03/07/90	264.85	243.41	21.44	--	--	--	--	--	--	--
06/12/90	264.85	244.91	19.94	--	ND	ND	ND	ND	ND	--
09/24/90	264.85	245.08	19.77	--	ND	ND	ND	ND	ND	--
12/20/90	264.85	244.85	20.00	--	ND	ND	ND	ND	ND	--
03/27/91	264.85	246.62	18.23	--	--	--	--	--	--	--
06/18/91	264.85	244.41	20.44	--	--	--	--	--	--	--
09/12/91	264.85	244.03	20.82	--	ND	ND	ND	ND	ND	--
01/23/92	264.85	243.93	20.92	--	ND	ND	ND	ND	ND	--
04/13/92	264.85	245.17	19.68	--	ND	ND	ND	ND	ND	--
08/03/92	264.85	244.78	20.07	--	ND	ND	ND	ND	ND	ND
10/22/92	264.85	244.73	20.12	--	ND	ND	ND	ND	ND	--
01/18/93	264.85	247.49	17.36	--	60	3.3	11	2.1	8.9	--
04/19/93	264.85	246.95	17.90	--	ND	ND	ND	ND	ND	--
07/21,22/93	264.85	246.99	17.86	--	ND	ND	ND	ND	ND	--
10/25/93	264.85	246.75	18.10	--	ND	ND	ND	ND	ND	--
01/21/94	264.85	246.62	18.23	--	ND	ND	ND	ND	ND	--
04/18/94	264.85	247.49	17.36	--	ND	ND	ND	ND	0.5	--
07/06-07/94	264.85	247.80	17.05	--	ND	ND	ND	ND	ND	--
10/07/94	264.85	247.31	17.54	--	ND	ND	ND	ND	ND	--
01/11/95	264.85	248.61	16.24	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	264.85	247.95	16.90	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	264.85	245.57	19.28	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	264.85	244.91	19.94	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-11										
03/07/90	265.30	242.56	22.74	--	--	--	--	--	--	--
03/09/90	265.30	--	--	--	ND	1.2	0.7	ND	1.4	--
06/12/90	265.30	243.32	21.98	--	ND	ND	ND	ND	ND	--
09/24/90	265.30	243.42	21.88	--	ND	ND	ND	ND	ND	--
12/20/90	265.30	242.12	23.18	--	ND	ND	ND	ND	ND	--
03/27/91	265.30	243.78	21.52	--	ND	ND	ND	ND	1.5	--
06/18/91	265.30	243.40	21.90	--	--	--	--	--	--	--
09/12/91	265.30	242.60	22.70	--	ND	ND	ND	ND	ND	--
01/23/92	265.30	241.84	23.46	--	ND	ND	ND	ND	ND	--
04/13/92	265.30	243.73	21.57	--	ND	ND	ND	ND	ND	--
08/03/92	265.30	242.63	22.67	--	ND	ND	ND	ND	ND	ND
10/22/92	265.30	242.01	23.29	--	ND	ND	ND	ND	ND	--
01/18/93	265.30	243.94	21.36	--	ND	ND	1.2	ND	2.2	--
04/19/93	265.30	245.33	19.97	--	ND	ND	ND	ND	ND	--
07/21,22/93	265.30	244.65	20.65	--	ND	ND	ND	ND	ND	--
10/25/93	265.30	244.55	20.75	--	ND	ND	ND	ND	ND	--
01/21/94	265.30	243.69	21.61	--	ND	ND	ND	ND	ND	--
04/18/94	265.30	244.52	20.78	--	ND	ND	ND	ND	ND	--
07/06-07/94	265.30	244.88	20.42	--	ND	ND	ND	ND	ND	--
10/07/94	265.30	243.70	21.60	--	ND	ND	ND	ND	ND	--
01/11/95	265.30	245.28	20.02	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	265.30	247.58	17.72	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	265.30	246.12	19.18	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	265.30	244.88	20.42	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-12										
03/07/90	269.66	254.74	14.92	--	--	--	--	--	--	--
03/09/90	269.66	--	--	--	1400	230	140	33	180	--
06/12/90	269.66	254.87	14.79	--	720	190	71	18	73	--
09/24/90	269.66	253.94	15.72	--	ND	1.1	ND	ND	0.6	--
12/20/90	269.66	254.40	15.26	--	810	210	26	8.2	23	--
03/27/91	269.66	257.55	12.11	--	2900	350	220	52	210	--
06/18/91	269.66	253.28	16.38	--	--	--	--	--	--	--
09/12/91	269.66	252.11	17.55	--	350	59	12	4.5	8.5	--
01/23/92	269.66	252.55	17.11	--	450	110	31	7.9	22	--
04/13/92	269.66	255.26	14.40	--	5000	1100	76	100	200	--
08/03/92	269.66	253.83	15.83	--	520	200	21	13	25	ND
10/22/92	269.66	253.52	16.14	--	1300	310	66	35	56	--
01/18/93	269.66	257.96	11.70	--	5600	1200	430	220	610	--
04/19/93	269.66	256.61	13.05	--	2000	600	99	96	170	--
07/21,22/93	269.66	256.82	12.84	--	540	95	36	18	56	--
10/25/93	269.66	255.63	14.03	--	350	90	29	20	50	--
01/21/94	269.66	255.51	14.15	--	450	73	18	14	37	--
04/18/94	269.66	256.71	12.95	--	370	70	21	12	39	--
07/06-07/94	269.66	257.35	12.31	--	840	200	35	28	66	--
10/07/94	269.66	256.31	13.35	--	830	85	29	17	63	--
01/11/95	269.66	258.43	11.23	--	2100	570	190	98	390	--
04/24/95	269.66	259.34	10.32	--	820	120	28	23	61	--
07/31/95	269.66	256.92	12.74	--	520	79	13	16	42	--
10/02/95	269.66	255.26	14.40	--	400	50	5.3	11	29	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-13										
03/07/90	284.32	273.14	11.18	--	--	--	--	--	--	--
03/09/90	284.32	--	--	--	ND	15	3.7	1.0	6.2	--
06/12/90	284.32	273.62	10.70	--	ND	2.6	ND	ND	ND	--
09/24/90	284.32	272.72	11.60	--	ND	2.4	ND	ND	ND	--
12/20/90	284.32	274.16	10.16	--	ND	1.6	ND	ND	ND	--
03/27/91	284.32	276.68	7.64	--	--	--	--	--	--	--
06/18/91	284.32	273.00	11.32	--	--	--	--	--	--	--
09/12/91	284.32	272.48	11.84	--	ND	ND	ND	ND	ND	--
01/23/92	284.32	273.77	10.55	--	--	--	--	--	--	--
04/13/92	284.32	273.36	10.96	--	ND	1.0	ND	ND	ND	--
08/03/92	284.32	273.42	10.90	--	ND	ND	ND	ND	ND	ND
10/22/92	284.32	273.14	11.18	--	--	--	--	--	--	--
01/18/93	284.32	276.92	7.40	--	290	54	10	5.4	12	--
04/19/93	284.32	275.39	8.93	--	--	--	--	--	--	--
07/21,22/93	284.32	273.57	10.75	--	ND	ND	ND	ND	ND	--
10/25/93	284.32	273.47	10.85	--	--	--	--	--	--	--
01/21/94	284.32	273.27	11.05	--	ND	ND	ND	ND	ND	--
04/18/94	284.32	273.61	10.71	--	--	--	--	--	--	--
07/06-07/94	284.32	273.67	10.65	--	ND	0.5	ND	ND	ND	--
10/07/94	284.32	273.24	11.08	--	--	--	--	--	--	--
01/11/95	284.32	278.94	5.38	Sampled bi-annually	120	15	<0.5	3.1	2.7	--
04/24/95	284.32	276.54	7.78	--	--	--	--	--	--	--
07/31/95	284.32	274.38	9.94	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	284.32	273.74	10.58	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-14										
03/07/90	270.74	255.56	15.18	--	--	--	--	--	--	--
03/09/90	270.74	--	--	--	ND	ND	ND	ND	ND	--
06/12/90	270.74	257.32	13.42	--	ND	ND	ND	ND	ND	--
09/24/90	270.74	257.90	12.84	--	ND	ND	ND	ND	ND	--
12/20/90	270.74	254.02	16.72	--	ND	1.7	0.7	ND	0.7	--
03/27/91	270.74	262.74	8.00	--	ND	ND	ND	ND	1.3	--
06/18/91	270.74	255.53	15.21	--	--	--	--	--	--	--
09/12/91	270.74	255.13	15.61	--	ND	ND	ND	ND	ND	--
01/23/92	270.74	246.10	24.64	--	--	--	--	--	--	--
04/13/92	270.74	258.53	12.21	--	ND	ND	ND	ND	ND	--
08/03/92	270.74	256.10	14.64	--	ND	ND	ND	ND	ND	ND
10/22/92	270.74	253.80	16.94	--	--	--	--	--	--	--
01/18/93	270.74	265.64	5.10	--	ND	ND	ND	ND	ND	--
04/19/93	270.74	263.86	6.88	--	--	--	--	--	--	--
07/21,22/93	270.74	259.58	11.16	--	ND	ND	ND	ND	ND	--
10/25/93	270.74	256.87	13.87	--	--	--	--	--	--	--
01/21/94	270.74	255.42	15.32	--	ND	ND	ND	ND	ND	--
04/18/94	270.74	254.85	15.89	--	--	--	--	--	--	--
07/06-07/94	270.74	258.66	12.08	--	ND	ND	ND	ND	ND	--
10/07/94	270.74	255.45	15.29	--	--	--	--	--	--	--
01/11/95	270.74	266.94	3.80	Sampled bi-annually	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	270.74	265.68	5.06	--	--	--	--	--	--	--
07/31/95	270.74	260.34	10.40	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	270.74	257.20	13.54	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-15										
03/07/90	246.15	235.05	11.10	--	--	--	--	--	--	--
03/09/90	246.15	--	--	--	410	ND	1.4	0.5	0.6	--
06/12/90	246.15	235.37	10.78	--	420	11	ND	ND	ND	--
09/24/90	246.15	235.22	10.93	--	430	ND	1.5	ND	ND	--
12/20/90	246.15	235.07	11.08	--	300	1.3	1.1	0.6	1.5	--
03/27/91	246.15	237.65	8.50	--	520	4.6	1.1	ND	1.0	--
06/18/91	246.15	235.32	10.83	--	290	ND	1.1	ND	ND	--
06/18/91	246.15	235.32	10.83	Duplicate	320	ND	1.3	ND	ND	--
09/12/91	246.15	235.10	11.05	--	330	ND	0.9	ND	ND	--
01/23/92	246.15	235.35	10.80	--	210	ND	0.6	ND	ND	--
01/23/92	246.15	235.35	10.80	Duplicate	190	1.2	0.8	ND	ND	--
04/13/92	246.15	236.57	9.58	--	430	1.8	ND	ND	ND	--
08/03/92	246.15	234.94	11.21	--	640	ND	2.1	0.7	1.3	ND
10/22/92	246.15	234.50	11.65	--	420	ND	ND	ND	0.8	--
01/18/93	246.15	239.03	7.12	--	640	7.0	3.0	2.9	6.7	--
04/19/93	246.15	237.22	8.93	--	260	6.0	2.0	0.7	ND	--
07/21,22/93	246.15	236.37	9.78	--	580	ND	8.0	ND	0.6	--
10/25/93	246.15	236.41	9.74	--	240	ND	12.0	ND	0.6	--
01/21/94	246.15	235.78	10.37	--	420	0.6	ND	0.6	ND	--
04/18/94	246.15	236.19	9.96	--	550	1.0	4.6	0.6	ND	--
07/06-07/94	246.15	235.92	10.23	--	660	0.7	ND	ND	0.7	--
10/07/94	246.15	235.47	10.68	--	440	13	0.8	ND	1.2	--
01/11/95	246.15	238.84	7.31	--	750	2.5	<0.5	<0.5	0.6	--
04/24/95	246.15	237.41	8.74	--	850	<0.5	<0.5	<0.5	<0.5	--
07/31/95	246.15	235.41	10.74	--	640	<0.5	1.6	<0.5	<0.5	--
10/02/95	246.15	234.83	11.32	--	560	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-16										
03/07/90	246.69	228.19	18.50	--	--	--	--	--	--	--
03/09/90	246.69	--	--	--	ND	ND	ND	ND	ND	--
06/12/90	246.69	235.27	11.42	--	ND	ND	ND	ND	ND	--
09/24/90	246.69	235.30	11.39	--	ND	ND	ND	ND	ND	--
12/20/90	246.69	235.12	11.57	--	ND	ND	ND	ND	0.7	--
03/27/91	246.69	237.93	8.76	--	ND	ND	ND	ND	1.3	--
03/27/91	246.69	237.93	8.76	Duplicate	ND	ND	ND	ND	1.2	--
06/18/91	246.69	235.51	11.18	--	ND	ND	ND	ND	ND	--
09/12/91	246.69	234.74	11.95	--	ND	ND	ND	ND	ND	--
01/23/92	246.69	234.28	12.41	--	ND	ND	ND	ND	ND	--
04/13/92	246.69	236.00	10.69	--	ND	ND	ND	ND	ND	--
08/03/92	246.69	234.49	12.20	--	ND	ND	ND	ND	ND	ND
10/22/92	246.69	234.09	12.60	--	ND	ND	ND	ND	ND	--
01/18/93	246.69	237.69	9.00	--	ND	ND	ND	ND	ND	--
04/19/93	246.69	236.80	9.89	--	ND	ND	ND	ND	ND	--
07/21,22/93	246.69	236.44	10.25	--	ND	ND	ND	ND	ND	--
10/25/93	246.69	235.73	10.96	--	ND	ND	ND	ND	ND	--
01/21/94	246.69	234.93	11.76	--	ND	ND	0.7	ND	1.0	--
04/18/94	246.69	235.47	11.22	--	ND	ND	ND	ND	ND	--
07/06-07/94	246.69	235.32	11.37	--	ND	ND	ND	ND	ND	--
10/07/94	246.69	234.30	12.39	--	ND	ND	ND	ND	ND	--
01/11/95	246.69	237.73	8.96	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	246.69	236.31	10.38	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	246.69	235.37	11.32	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	246.69	234.29	12.40	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
RW										
12/04/89	--	--	--	--	62,000	29,000	1700	1800	8800	--
03/07/90	274.52	256.02	18.50	--	--	--	--	--	--	--
06/12/90	274.52	256.03	18.49	--	31,000	15,000	2000	560	3100	--
09/24/90	274.52	--	--	--	--	--	--	--	--	--
12/20/90	274.52	--	--	--	ND	0.5	ND	ND	1.2	--
03/27/91	274.52	--	--	--	--	--	--	--	--	--
06/18/91	274.52	--	--	--	--	--	--	--	--	--
09/12/91	274.52	--	--	Insufficient water	--	--	--	--	--	--
01/23/92	274.52	--	--	Insufficient water	--	--	--	--	--	--
04/13/92	274.52	--	--	Insufficient water	--	--	--	--	--	--
08/03/92	274.52	--	--	Insufficient water	--	--	--	--	--	--
10/22/92	274.52	--	--	Insufficient water	--	--	--	--	--	--
01/18/93	274.52	--	--	Insufficient water	--	--	--	--	--	--
04/19/93	274.52	--	--	Insufficient water	--	--	--	--	--	--
07/21,22/93	274.52	--	--	Insufficient water	--	--	--	--	--	--
10/25/93	274.52	--	--	--	--	--	--	--	--	--
01/21/94	274.52	--	--	--	--	--	--	--	--	--
04/18/94	274.52	--	--	--	--	--	--	--	--	--
07/06-07/94	274.52	--	--	--	--	--	--	--	--	--
10/07/94	274.52	--	--	--	--	--	--	--	--	--
10/24/95	274.52	256.63	17.89	--	37,000	11,000	380	1100	3000	--
TRIP BLANK										
01/11/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--

Note: Blaine Tech Services, Inc. began routine monitoring of the groundwater wells at this site on November 1, 1994. Earlier field data and analytical results are drawn from the November 4, 1994 Groundwater Technology, Inc. report.

ABBREVIATIONS:
TPH = Total Petroleum Hydrocarbons
ND = Not detected at or above the minimum quantitation limit. See laboratory reports for minimum quantitation limits.

MEMORANDUM

Richmond, California
October 27, 1995

Former Chevron Service
Station No. 9-5607
5269 Crow Canyon Road
Castro Valley, California

Mr. Brett Hunter
San Ramon, CA

The following comments concern my interpretation of the status of the subsurface hydrocarbons, and an estimate of the downgradient migrational extent of dissolved benzene originating at former Chevron Service Station No. 9-5607, in Castro Valley, California.

Observations

1) The site is the location of a former Chevron service station, which operated until late 1990. The product USTs, fuel dispensers and associated piping were excavated and removed in October 1990.

There are presently seven groundwater monitor wells (C-1 to -3, -5 to -8) and one extraction well (RW) located on-site (see attached Site Map/Groundwater Elevation Map - Figure 1). The site is also characterized by eight monitor wells (C-10A, -10B, -11 to -16) and one recovery well (C-9) located off-site.

2) The site is underlain by an unconsolidated sediment sequence of clay, silty clay, silty sand and sandy clay. A shale to silty sandstone bedrock was noted during several well installations at a minimum depth of approximately 18 feet below ground level (BGL). Depth to groundwater during the October 2, 1995 monitoring event ranged from approximately 10 to 30 feet BGL, with an apparent flow direction to the southwest. The potentiometric surface is restricted to the unconsolidated sediment.

3) During the most recent groundwater sampling event (October 2, 1995), detectable concentrations of BTEX compounds were restricted to wells C-1 to -3, -5, -6, -9, -12 and RW (see attached Cumulative Table of Well Data and Analytical Results). On-site wells C-3 and C-6 previously contained a measurable thickness of liquid phase hydrocarbons

(LHC), with the last noted occurrence of LHC in the two wells being October 1992 and April 1992, respectively.

Downgradient wells C-10A, -10B and -16 have not contained detectable concentrations of dissolved hydrocarbons for at least the last six quarterly monitoring events. The concentrations of dissolved BTEX in well C-15 have not exceeded 5 ppb for the last four quarterly monitoring events.

The consistently nondetect to minimal concentrations of dissolved hydrocarbons in the downgradient wells indicate a stable, steady state plume with an apparently finite migrational distance. The steady state nature of the dissolved phase plume is noted by the relatively constant hydrocarbon concentrations characterizing most of the on-site and off-site wells.

4) Remediation activity at the site has consisted primarily of groundwater extraction from wells RW and C-9, for the purpose of inhibiting the off-site migration of dissolved hydrocarbons. The groundwater recovery system was operational from March 26, 1990 until May 25, 1995. A summary of the system flow rate, and influent and effluent analytical data are presented on attached Tables 1 and 2.

Comments

1) The results of a contaminant fate and transport computer model (Modflow/MT3D), prepared in August 1992, concludes that dissolved benzene, originating from a source at the former Chevron facility, will not apparently impact Crow Creek. A no impact simulation is shown regardless of whether groundwater is pumped or not (see attached memo addressed to C.B. Rogers, dated August 13, 1992).

The model simulations predicted in the August 1992 memo are consistent with the areal distribution of recent groundwater analytical data, attesting to the relatively stable nature of the existing plume.

2) The historical record of groundwater analytical data indicates that the dissolved phase plume is both (a) restricted in areal extent, and (b) has maintained a relatively stable configuration for at least the last five years for which groundwater data has been available.

The absence, to minimal concentrations, of dissolved BTEX compounds in downgradient wells C-10A, -10B, -15 and -16, defines an apparent migrational distance of hydrocarbon impacted groundwater of less than approximately 300 feet from the presumed on-site source area. The maximum migrational distance from the source area is likely a function of the local degradation/attenuation rate of the dissolved hydrocarbons exceeding the hydrocarbon input.

Based on on-site groundwater analytical data, the measured concentrations of dissolved benzene as a function of distance generally obeys a first order decay relationship, as expressed by the following equation.

$$\ln (C/C_o) = -k/v\ (d)$$

where: C = reduced concentration at a given distance from the "source"
C_o = initial concentration at the "source"
d = distance between measured wells along the line of hydraulic gradient
k/v = relationship of degradation/attenuation rate to solute velocity

The water quality and spatial arrangement of the groundwater monitor wells at the site, allows for a calculated estimate of the dissolved benzene degradation/attenuation rate (k), expressed as the combined function k/v (where v = velocity of solute) (Kemblowski, et al, 1987, Fate and Transport of Residual Hydrocarbons in Groundwater, NGWA Petroleum Hydrocarbons Conference, Houston, Texas, p.207-231).

The degradation/attenuation rate may be derived by quantifying the apparent decline in dissolved benzene values in two or more wells, oriented along the line of groundwater flow direction. The calculation involves the groundwater analytical data and spatial relationship of the wells in both the presumed source area and at the downgradient monitoring points.

The attached Dissolved Benzene Concentration vs Distance Diagram (attached Figure A) provides a graphical representation of the measured concentrations of dissolved benzene (log scale), as a function of distance from the presumed source areas.

The input data for Figure A is as follows:

Well	Concentration (ppb)	Sampled Date	Distance from Source (feet)
C-3	33,000	7/31/95	0
C-6	13,000	10/2/95	40
RW	11,000	10/2/95	40
C-9	7200	10/2/95	90
C-15	13	10/7/94	200

The graphical plot indicates a stable dissolved phase plume with a finite migrational distance. The slope of the regressed line defines the parameter k/v, and suggests a first order decay rate for the dissolved benzene as a function of distance.

The slope of the k/v line predicts that the dissolved benzene concentrations in the migrating plume should decline to values of less than 1 ppb at a distance of approximately 265 feet downgradient of well C-3 (see attached Site Map/Estimated Migrational

Distance - Figure 1A). The predicted downgradient extent of the plume is consistent with observed on-site groundwater analytical data.

3) The apparent equilibrium line of downgradient hydrocarbon migration is noted at the site, which likely developed in response to the attenuation and destruction of dissolved phase hydrocarbons by a variety of processes. Destructive processes include biodegradation, abiotic oxidation and hydrolysis. Other attenuating mechanisms include adsorption, dilution and volatilization.

The process of biodegradation results in the ultimate transformation of the hydrocarbon compound into the metabolic byproducts of bacterial activity; water and carbon dioxide. The limitation on the degree of biodegradation is often the absence of a suitable electron acceptor compound available in the subsurface. By measuring groundwater for the presence of the various electron acceptor compounds, the areal distribution of the dissolved phase plume may be explained.

The most common electron acceptor preferred for aerobic bacterial biodegradation is dissolved oxygen. Alternative electron acceptor compounds which will facilitate anaerobic bacterial activity include nitrates, ferric iron and sulfates.

The following electron acceptor data from the Castro Valley site provides an explanation for the observed dissolved hydrocarbon equilibrium line oriented upgradient of wells C-10A, -10B, -15 and -16. The equilibrium line likely in part develops in response to the availability of the compounds required for bacterial degradation.

(a) the distribution of dissolved sulfates (Figures B and C), for both the July 31, 1995 and October 5, 1995 sampling events, indicate minimal concentrations in the area of elevated hydrocarbon values, and significantly higher concentrations in the surrounding upgradient and downgradient wells.

The nondetect to low sulfate concentrations in the core portions of the hydrocarbon plume suggests that anaerobic biodegradation is locally occurring, and is limited by the absence of a suitable electron acceptor compound. The elevated dissolved sulfate concentrations in the downgradient wells, likely inhibits the migration of dissolved phase hydrocarbons due to the relative abundance of this electron acceptor.

(b) Figures D and E show the dissolved concentrations of ferrous iron in on-site and off-site wells during the July and October sampling events. The areas characterized by elevated dissolved BTEX concentrations exhibit associated high concentrations of ferrous iron. These chemical data suggest that ferric iron is likely being degraded to ferrous iron during the active anaerobic biodegradation of dissolved hydrocarbons.

The relatively low concentrations of ferrous iron in the downgradient wells suggest that there is an abundance of dissolved ferric iron present, which will have an inhibiting effect on the further migration of dissolved hydrocarbons.

The observed elevated concentrations of dissolved sulfate, and the inferred high concentrations of ferric iron in the downgradient wells likely serves to inhibit the downgradient migration of dissolved hydrocarbons, by providing the electron acceptors needed for bacterial degradation processes. Anaerobic degradation is apparently actively occurring at the site, based on the available electron acceptor data.

(c) the relative absence of dissolved nitrates in the local subsurface suggests that the compound does not have an influence on the observed distribution of dissolved hydrocarbons (see attached Figures F and G).

(d) the measured concentrations of dissolved oxygen (DO) are anomalously uniform throughout the site, suggesting the possibility of sampling error (see attached Figure H). The samples were measured with a YSI Oxygen Meter, attached to a 50 foot probe extension for direct analysis within the well. The wells were purged prior to sampling.

The expected pattern would be relatively low dissolved oxygen concentrations within the wells containing elevated concentrations of dissolved hydrocarbons, with higher DO values present in the peripheral wells.

4) The effectiveness of the groundwater extraction system is likely minimal, due to the low recovery rate and limited effective capture radii of the individual pumping wells.

Capture radius calculation (Keely and Tsang, 1983)

(a) downgradient capture radius

$r_{dg} = Q/2\ (3.14)T(i)$

where: r_{dg} = downgradient capture radius
Q = pumping rate = 0.16 gpm; based on the average pumping rate per extraction wells from January 16, 1994 to May 4, 1995
T = transmissivity = 5.6 ft^2/day; calculated from the equation
T = kb:
where: k = hydraulic conductivity = $1x10^{-4}$ cm/sec, based on published values for a silty water bearing zone.
b = aquifer thickness = 20 feet, based on data from well installation logs.
i = hydraulic gradient = 0.13, calculated from groundwater elevation data, October 2, 1995

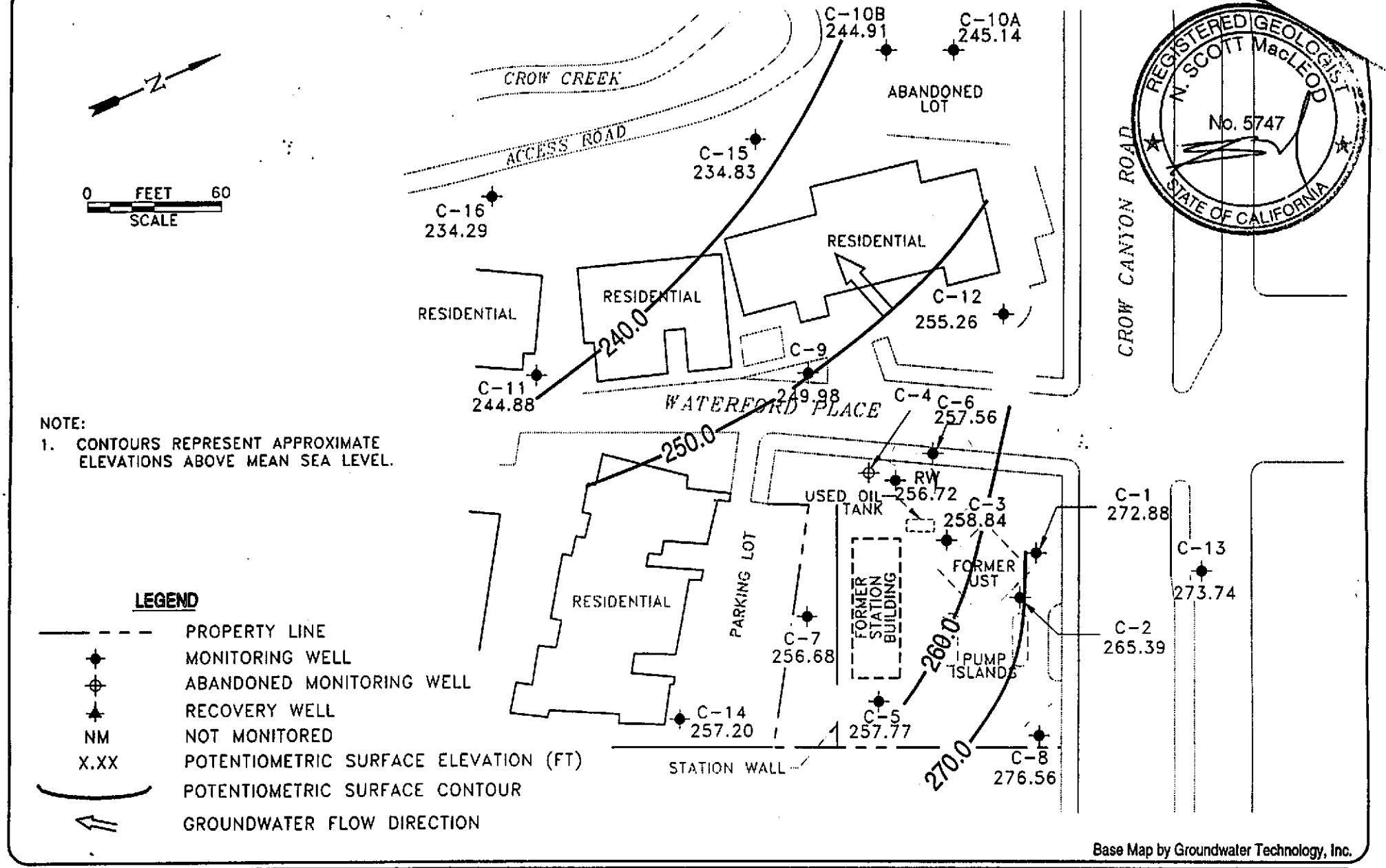
r_{dg} = **downgradient capture radius = 6.7 feet**

r_{cg} = crossgradient capture radius = r_{dg} (3.14) = 21 feet

Please call me at (510) 242-1383 if you would like to discuss this site further.

Sheldon N. Nelson
Lead Hydrogeologist

cc: T.E. Buscheck
J.N. Stambolis
J.R. Randall



NOTE:
1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

LEGEND

- PROPERTY LINE
- MONITORING WELL
- ABANDONED MONITORING WELL
- RECOVERY WELL
- NM — NOT MONITORED
- X.XX — POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

Base Map by Groundwater Technology, Inc.

CAMBRIA
Environmental Technology, Inc.

Chevron Station 9-5607
5269 Crow Canyon Road
Castro Valley, California

\PROJECT\CHEVRON\9-5607\5607-QM.DWG

Ground Water Elevations
October 2, 1995

FIGURE
1

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-1										
03/26/85	283.46	260.63	22.83	--	--	--	--	--	--	--
07/03/86	283.46	259.88	23.58	--	--	--	--	--	--	--
03/26/87	283.46	262.96	20.50	--	--	--	--	--	--	--
03/28/88	283.46	257.46	26.00	--	--	--	--	--	--	--
03/10/89	283.46	267.60	15.86	--	--	--	--	--	--	--
04/03/89	283.46	266.61	16.85	--	--	--	--	--	--	--
05/08/89	283.46	260.78	22.68	--	--	--	--	--	--	--
06/05/89	283.46	258.80	24.66	--	--	--	--	--	--	--
07/12/90	283.46	257.90	25.56	--	--	--	--	--	--	--
08/10/90	283.46	257.57	25.89	--	--	--	--	--	--	--
09/13/89	283.46	256.91	26.55	--	22,000	3600	1100	1000	3500	--
10/04/89	283.46	258.22	25.24	--	--	--	--	--	--	--
11/03/89	283.46	258.43	25.03	--	--	--	--	--	--	--
12/04/89	283.46	257.09	26.37	--	13,000	2000	550	610	1600	--
03/07/90	283.46	260.98	22.48	--	--	--	--	--	--	--
03/09/90	283.46	--	--	--	--	--	--	--	--	--
06/12/90	283.46	259.11	24.35	--	21,000	3500	1400	840	4000	--
09/20/90	283.46	257.19	26.27	--	23,000	2100	1200	860	5000	--
12/20/90	283.46	260.87	22.59	--	8200	760	410	260	1100	--
03/27/91	283.46	264.38	19.08	--	--	--	--	--	--	--
06/18/91	283.46	256.35	27.11	--	--	--	--	--	--	--
09/12/91	283.46	255.24	28.22	--	--	--	--	--	--	--
01/23/92	283.46	256.81	26.65	--	--	--	--	--	--	--
04/13/92	283.46	261.30	22.16	--	38,000	3100	1300	850	3100	--
08/03/92	283.46	257.31	26.15	--	13,000	1300	470	550	1600	ND
10/22/92	283.46	256.67	26.79	--	24,000	3500	1400	1500	4300	--
01/18/93	283.46	264.86	18.60	--	370,000	6900	8900	3100	23,000	--
04/19/93	283.46	262.34	21.12	--	51,000	8000	7000	1400	10,000	--
07/21,22/93	283.46	260.18	23.28	--	22,000	3400	1000	990	3100	--
10/25/93	283.46	258.80	24.66	--	14,000	2000	550	790	2300	--
01/21/94	283.46	262.99	20.47	--	1100	350	6.0	3.0	15	--
04/18/94	283.46	260.36	23.10	--	24,000	3200	1000	1000	3100	--
07/06-07/94	283.46	260.56	22.90	--	65,000	6500	4200	1600	9300	--
10/07/94	283.46	258.75	24.71	--	27,000	5100	1200	1400	4300	--
01/11/95	283.46	265.16	18.30	--	29,000	1300	1200	930	4000	--
04/24/95	283.46	266.52	16.94	--	75,000	8900	5000	1700	8400	--
07/31/95	283.46	262.90	20.56	--	56,000	11,000	2600	2500	11,000	--
10/02/95	283.46	272.88	10.58	--	44,000	7900	1100	2100	6500	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-2										
03/26/85	284.37	--	--	--	--	--	--	--	--	--
07/03/86	284.37	264.68	19.69	--	--	--	--	--	--	--
03/26/87	284.37	268.92	15.45	--	--	--	--	--	--	--
03/28/88	284.37	263.45	20.92	--	--	--	--	--	--	--
03/10/89	284.37	271.57	12.80	--	--	--	--	--	--	--
04/03/89	284.37	270.11	14.26	--	--	--	--	--	--	--
05/08/89	284.37	265.95	18.42	--	--	--	--	--	--	--
06/05/89	284.37	264.28	20.09	--	--	--	--	--	--	--
07/12/90	284.37	263.58	20.79	--	--	--	--	--	--	--
08/10/90	284.37	262.97	21.40	--	--	--	--	--	--	--
09/13/89	284.37	262.51	21.86	--	320	62	4.0	10	14	--
10/04/89	284.37	264.48	19.89	--	--	--	--	--	--	--
11/03/89	284.37	263.61	20.76	--	--	--	--	--	--	--
12/04/89	284.37	263.55	20.82	--	1000	240	37	66	130	--
03/07/90	284.37	266.54	17.83	--	--	--	--	--	--	--
03/09/90	284.37	266.54	17.83	--	390	280	35	27	50	--
06/12/90	284.37	264.48	19.89	--	700	260	34	28	55	--
09/20/90	284.37	262.40	21.97	--	--	--	--	--	--	--
12/20/90	284.37	266.64	17.73	--	--	--	--	--	--	--
03/27/91	284.37	269.27	15.10	--	--	--	--	--	--	--
06/18/91	284.37	261.69	22.68	--	--	--	--	--	--	--
09/12/91	284.37	260.45	23.92	--	--	--	--	--	--	--
01/23/92	284.37	263.13	21.24	--	--	--	--	--	--	--
04/13/92	284.37	266.83	17.54	--	1100	120	76	17	72	--
08/03/92	284.37	262.32	22.05	--	--	--	--	--	--	--
10/22/92	284.37	261.34	23.03	--	--	--	--	--	--	--
01/18/93	284.37	269.51	14.86	--	70	6.4	ND	ND	ND	--
04/19/93	284.37	267.57	16.80	--	--	--	--	--	--	--
07/21,22/93	284.37	265.12	19.25	--	--	--	--	--	--	--
10/25/93	284.37	264.72	19.65	--	--	--	--	--	--	--
01/21/94	284.37	258.80	25.57	--	43,000	5100	1800	2000	6800	--
04/18/94	284.37	274.61	9.76	--	--	--	--	--	--	--
07/06-07/94	284.37	265.61	18.76	--	--	--	--	--	--	--
10/07/94	284.37	264.20	20.17	--	--	--	--	--	--	--
01/11/95	284.37	270.33	14.04	Sampled annually	780	290	9.1	19	58	--
04/24/95	284.37	272.03	12.34	--	--	--	--	--	--	--
07/31/95	284.37	266.82	17.55	--	--	--	--	--	--	--
10/02/95	284.37	265.39	18.98	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-3										
03/26/85	285.98	--	--	--	--	--	--	--	--	--
07/03/86	285.98	259.94	26.04	--	--	--	--	--	--	--
03/26/87	285.98	260.34	25.64	--	--	--	--	--	--	--
03/28/88	285.98	257.16	28.82	--	--	--	--	--	--	--
03/10/89	285.98	263.20	22.78	--	--	--	--	--	--	--
04/03/89	285.98	263.27	22.71	--	--	--	--	--	--	--
05/08/89	285.98	260.03	25.95	--	--	--	--	--	--	--
06/05/89	285.98	258.36	27.62	--	--	--	--	--	--	--
07/12/90	285.98	257.69	28.29	--	--	--	--	--	--	--
08/10/90	285.98	257.52	28.46	--	--	--	--	--	--	--
09/13/89	285.98	256.65	29.33	--	60,000	1400	6800	2300	10,000	--
10/04/89	285.98	257.01	28.97	--	--	--	--	--	--	--
11/03/89	285.98	257.26	28.72	--	--	--	--	--	--	--
12/04/89	285.98	256.97	29.01	--	56,000	1300	3300	1400	2700	--
03/07/90	285.98	258.29	27.69	--	--	--	--	--	--	--
03/09/90	285.98	258.29	27.69	--	42,000	1100	5700	1600	7900	--
06/12/90	285.98	257.89	28.09	--	160,000	1400	7100	3400	16,000	--
09/24/90	285.98	256.80	29.18	--	53,000	850	7700	2000	10,000	--
12/20/90	285.98	257.71	28.27	--	520	1200	5400	5400	33,000	--
03/27/91	285.98	261.18	24.80	--	92,000	1300	3100	1200	11,000	--
06/18/91	285.98	255.14	30.84	--	--	--	--	--	--	--
09/12/91	285.98	254.34	31.64	Free Product (0.03')	--	--	--	--	--	--
01/23/92	285.98	255.46	30.52	Sheen	--	--	--	--	--	--
04/13/92	285.98	259.04	26.94	Free Product (0.01')	--	--	--	--	--	--
08/03/92	285.98	255.98	30.00	--	220,000	1300	2800	3100	17,000	ND
10/22/92	285.98	255.38	30.62	Free Product (0.03')	--	--	--	--	--	--
01/18/93	285.98	262.07	23.91	--	1,000,000	2400	5300	10,000	61,000	--
04/19/93	285.98	260.98	25.00	--	94,000	33,000	22,000	1600	9200	--
07/21,22/93	285.98	259.43	26.55	--	44,000	2600	5500	1300	6900	--
10/25/93	285.98	257.26	28.72	--	35,000	3900	2400	1100	6600	--
01/21/94	285.98	256.32	29.66	--	120,000	4200	2200	2000	11,000	--
04/18/94	285.98	259.24	26.74	--	29,000	1200	310	520	2000	--
07/06-07/94	285.98	259.62	26.36	--	84,000	2700	1400	1400	9700	--
10/07/94	285.98	257.49	28.49	--	40,000	1600	390	1200	6100	--
01/11/95	285.98	262.84	23.14	--	34,000	4200	910	720	3800	--
04/24/95	285.98	266.10	19.88	--	210,000	43,000	28,000	2400	13,000	--
07/31/95	285.98	261.30	24.68	--	110,000	33,000	17,000	2300	12,000	--
10/02/95	285.98	258.84	27.14	--	69,000	6700	4000	2000	11,000	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-4										
03/26/85	273.01	257.87	15.14	--	--	--	--	--	--	--
07/03/86	273.01	257.64	15.37	--	--	--	--	--	--	--
03/26/87	273.01	--	--	--	--	--	--	--	--	--
03/28/88	273.01	254.97	18.04	--	--	--	--	--	--	--
03/10/89	273.01	--	--	--	--	--	--	--	--	--
04/03/89	273.01	259.67	13.34	--	--	--	--	--	--	--
05/08/89	273.01	257.41	15.60	--	--	--	--	--	--	--
06/05/89	273.01	256.50	16.51	--	--	--	--	--	--	--
07/12/90	273.01	256.02	16.99	--	--	--	--	--	--	--
08/10/90	273.01	255.74	17.27	--	--	--	--	--	--	--
09/13/89	273.01	254.85	18.16	--	57,000	21,000	3100	3200	11,000	--
10/04/89	273.01	254.77	18.24	--	--	--	--	--	--	--
11/03/89	273.01	254.84	18.17	--	--	--	--	--	--	--
12/04/89	273.01	254.56	18.45	--	48,000	17,000	2200	2800	9800	--
03/07/90	273.01	255.81	17.20	--	--	--	--	--	--	--
03/09/90	273.01	255.81	17.20	--	43,000	20,000	2300	2800	11,000	--
06/12/90	273.01	256.35	16.66	--	82,000	21,000	2400	4000	16,000	--
09/24/90	273.01	254.90	18.11	--	--	--	--	--	--	--
12/20/90	273.01	--	--	Abandoned	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-5										
03/26/85	287.95	262.62	25.33	--	--	--	--	--	--	--
07/03/86	287.95	261.54	26.41	--	--	--	--	--	--	--
03/26/87	287.95	262.99	24.96	--	--	--	--	--	--	--
03/28/88	287.95	258.15	29.80	--	--	--	--	--	--	--
03/10/89	287.95	262.06	25.89	--	--	--	--	--	--	--
04/03/89	287.95	263.57	24.38	--	--	--	--	--	--	--
05/08/89	287.95	260.15	27.80	--	--	--	--	--	--	--
06/05/89	287.95	258.53	29.42	--	--	--	--	--	--	--
07/12/90	287.95	258.09	29.86	--	--	--	--	--	--	--
08/10/90	287.95	258.18	29.77	--	--	--	--	--	--	--
09/13/89	287.95	257.00	30.95	--	310	ND	ND	ND	ND	--
10/04/89	287.95	256.47	31.48	--	--	--	--	--	--	--
11/03/89	287.95	256.63	31.32	--	--	--	--	--	--	--
12/04/89	287.95	256.25	31.70	--	ND	ND	ND	ND	ND	--
03/07/90	287.95	257.67	30.28	--	--	--	--	--	--	--
03/09/90	287.95	257.67	30.28	--	ND	ND	ND	ND	ND	--
06/12/90	287.95	257.47	30.48	--	90	ND	ND	ND	ND	--
09/24/90	287.95	256.17	31.78	--	ND	ND	ND	ND	ND	--
12/20/90	287.95	254.66	33.29	--	170	ND	ND	1.0	0.7	--
03/27/91	287.95	259.97	27.98	--	--	--	--	--	--	--
06/18/91	287.95	255.43	32.52	--	--	--	--	--	--	--
09/12/91	287.95	254.58	33.37	--	--	--	--	--	--	--
01/23/92	287.95	255.28	32.67	--	--	--	--	--	--	--
04/13/92	287.95	259.47	28.48	--	140	ND	ND	0.7	ND	--
08/03/92	287.95	255.45	32.50	--	ND	ND	ND	ND	ND	ND
10/22/92	287.95	253.97	33.98	--	--	--	--	--	--	--
01/18/93	287.95	260.93	27.02	--	230	6.6	2.2	3.4	2.2	--
04/19/93	287.95	263.14	24.81	--	--	--	--	--	--	--
07/21,22/93	287.95	258.89	29.06	--	130	ND	0.6	ND	ND	--
10/25/93	287.95	257.00	30.95	--	--	--	--	--	--	--
01/21/94	287.95	256.04	31.91	--	ND	ND	ND	ND	ND	--
04/18/94	287.95	257.80	30.15	--	--	--	--	--	--	--
07/06-07/94	287.95	258.91	29.04	--	ND	ND	ND	ND	ND	--
10/07/94	287.95	256.11	31.84	--	--	--	--	--	--	--
01/11/95	287.95	262.97	24.98	Sampled biannually	700	1.1	6.0	1.5	2.1	--
04/24/95	287.95	266.17	21.78	--	--	--	--	--	--	--
07/31/95	287.95	--	--	Inaccessible	--	--	--	--	--	--
10/02/95	287.95	257.77	30.18	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-6										
03/26/85	--	--	16.74	--	--	--	--	--	--	--
07/03/86	275.28	257.82	17.46	--	--	--	--	--	--	--
03/26/87	275.28	256.91	18.37	--	--	--	--	--	--	--
03/28/88	275.28	245.44	29.84	--	--	--	--	--	--	--
03/10/89	275.28	260.84	14.44	--	--	--	--	--	--	--
04/03/89	275.28	260.84	14.44	--	--	--	--	--	--	--
05/08/89	275.28	258.12	17.16	--	--	--	--	--	--	--
06/05/89	275.28	256.77	18.51	--	--	--	--	--	--	--
07/12/90	275.28	256.57	18.71	--	--	--	--	--	--	--
08/10/90	275.28	255.96	19.32	--	--	--	--	--	--	--
09/13/89	275.28	255.33	19.95	--	47	5600	3000	2400	10,000	--
10/04/89	275.28	255.41	19.87	--	--	--	--	--	--	--
11/03/89	275.28	255.93	19.35	--	--	--	--	--	--	--
12/04/89	275.28	255.69	19.59	--	40,000	8100	1800	1700	7500	--
03/07/90	275.28	256.89	18.39	--	--	--	--	--	--	--
03/09/90	275.28	256.89	18.39	--	73,000	23,000	5900	3400	17,000	--
06/12/90	275.28	256.41	18.87	--	85,000	19,000	6500	3400	16,000	--
09/24/90	275.28	255.29	19.99	--	72,000	15,000	3200	2600	11,000	--
12/20/90	275.28	253.71	21.57	--	100,000	11,000	4200	3400	16,000	--
03/27/91	275.28	258.96	16.32	--	100,000	11,000	4400	2300	11,000	--
06/18/91	275.28	251.95	23.33	--	--	--	--	--	--	--
09/12/91	275.28	251.32	23.96	--	--	--	--	--	--	--
01/23/92	275.28	263.20	12.08	--	--	--	--	--	--	--
04/13/92	275.28	255.43	19.85	Sheen	--	--	--	--	--	--
08/03/92	275.28	260.56	14.72	--	120,000	16,000	1100	2300	15,000	ND
10/22/92	275.28	260.37	14.91	--	63,000	7400	920	1800	14,000	--
01/18/93	275.28	259.84	15.44	--	77,000	13,000	1600	2700	12,000	--
04/19/93	275.28	266.03	9.25	--	56,000	14,000	1100	2400	9100	--
07/21,22/93	275.28	257.93	17.35	--	38,000	6600	610	1500	5800	--
10/25/93	275.28	254.25	21.03	--	42,000	11,000	800	2200	8200	--
01/21/94	275.28	253.71	21.57	--	57,000	11,000	940	2300	9800	--
04/18/94	275.28	257.17	18.11	--	48,000	9800	830	1900	7500	--
07/06-07/94	275.28	258.28	17.00	--	46,000	6800	610	900	6200	--
10/07/94	275.28	256.09	19.19	--	35,000	5900	410	1400	3800	--
01/11/95	275.28	256.64	18.64	--	54,000	1200	1100	2100	9500	--
04/24/95	275.28	262.72	12.56	--	81,000	12,000	1500	2400	9900	--
07/31/95	275.28	259.54	15.74	--	75,000	12,000	1200	2800	11,000	--
10/02/95	275.28	257.56	17.72	--	59,000	13,000	990	2800	10,000	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-7										
03/26/85	--	--	9.61	--	--	--	--	--	--	--
07/03/86	270.70	259.96	10.74	--	--	--	--	--	--	--
03/26/87	270.70	260.62	10.08	--	--	--	--	--	--	--
03/28/88	270.70	256.91	13.79	--	--	--	--	--	--	--
03/10/89	270.70	260.28	10.42	--	--	--	--	--	--	--
04/03/89	270.70	261.56	9.14	--	--	--	--	--	--	--
05/08/89	270.70	258.79	11.91	--	--	--	--	--	--	--
06/05/89	270.70	259.16	11.54	--	--	--	--	--	--	--
07/12/90	270.70	257.25	13.45	--	--	--	--	--	--	--
08/10/90	270.70	257.33	13.37	--	--	--	--	--	--	--
09/13/89	270.70	256.10	14.60	--	410	1.3	ND	10	ND	--
10/04/89	270.70	255.53	15.17	--	--	--	--	--	--	--
11/03/89	270.70	255.42	15.28	--	--	--	--	--	--	--
12/04/89	270.70	255.00	15.70	--	1000	1.0	ND	5.0	ND	--
03/07/90	270.70	256.48	14.22	--	--	--	--	--	--	--
03/09/90	270.70	256.48	14.22	--	590	2.8	2.4	3.5	2.0	--
06/12/90	270.70	256.52	14.18	--	1200	ND	5	8.2	3.2	--
09/24/90	270.70	255.26	15.44	Sheen	400	1.4	1.9	1.4	2.2	--
09/24/90	270.70	255.26	15.44	Duplicate	580	ND	2.4	1.4	1.5	--
12/20/90	270.70	253.62	17.08	--	2300	ND	6.5	4.7	9.3	--
03/27/91	270.70	258.05	12.65	--	980	ND	2.4	9.1	3.0	--
06/18/91	270.70	254.26	16.44	--	--	--	--	--	--	--
09/12/91	270.70	253.65	17.05	--	1200	ND	3.1	6.5	2.7	--
01/23/92	270.70	253.78	16.92	--	--	--	--	--	--	--
04/13/92	270.70	257.70	13.00	--	830	ND	1.0	7.8	1.2	--
08/03/92	270.70	--	--	--	--	--	--	--	--	--
10/22/92	270.70	--	--	Could not locate	--	--	--	--	--	--
01/18/93	270.70	--	--	Could not locate	--	--	--	--	--	--
04/19/93	270.70	--	--	Could not locate	--	--	--	--	--	--
07/21,22/93	270.70	257.76	12.94	--	890	0.9	3.0	4.0	4.0	--
10/25/93	270.70	255.87	14.83	--	--	--	--	--	--	--
01/21/94	270.70	254.76	15.94	--	660	ND	6.0	1.0	3.0	--
04/18/94	270.70	255.72	14.98	--	--	--	--	--	--	--
07/06-07/94	270.70	257.76	12.94	--	960	ND	5.8	4.2	8.2	--
10/07/94	270.70	254.87	15.83	--	--	--	--	--	--	--
01/11/95	270.70	261.45	9.25	Sampled biannually	900	<0.5	<0.5	2.3	1.3	--
04/24/95	270.70	264.00	6.70	--	--	--	--	--	--	--
07/31/95	270.70	259.46	11.24	--	690	<1.2	<1.2	<1.2	<1.2	--
10/02/95	270.70	256.68	14.02	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-8										
03/26/85	--	--	8.68	--	--	--	--	--	--	--
07/03/86	288.40	274.51	13.89	--	--	--	--	--	--	--
03/26/87	288.40	282.39	6.01	--	--	--	--	--	--	--
03/28/88	288.40	277.74	10.66	--	--	--	--	--	--	--
03/10/89	288.40	281.79	6.61	--	--	--	--	--	--	--
04/03/89	288.40	281.94	6.46	--	--	--	--	--	--	--
05/08/89	288.40	279.43	8.97	--	--	--	--	--	--	--
06/05/89	288.40	277.52	10.88	--	--	--	--	--	--	--
07/12/90	288.40	276.25	12.15	--	--	--	--	--	--	--
08/10/90	288.40	275.94	12.46	--	--	--	--	--	--	--
09/13/89	288.40	275.62	12.78	--	ND	ND	ND	ND	ND	--
10/04/89	288.40	275.89	12.51	--	--	--	--	--	--	--
11/03/89	288.40	273.77	14.63	--	--	--	--	--	--	--
12/04/89	288.40	278.81	9.59	--	64	0.6	0.6	ND	1.0	--
03/07/90	288.40	279.60	8.80	--	--	--	--	--	--	--
03/09/90	288.40	279.60	8.80	--	ND	ND	ND	ND	ND	--
06/12/90	288.40	279.46	8.94	--	120	2.5	1.2	1.0	1.4	--
09/24/90	288.40	274.86	13.54	--	--	--	--	--	--	--
12/20/90	288.40	279.07	9.33	--	--	--	--	--	--	--
03/27/91	288.40	282.30	6.10	--	54	0.7	ND	0.7	1.9	--
06/18/91	288.40	276.44	11.96	--	--	--	--	--	--	--
09/12/91	288.40	274.80	13.60	--	ND	ND	ND	ND	ND	--
09/12/91	288.40	274.80	13.60	Duplicate	ND	ND	ND	ND	ND	--
01/23/92	288.40	264.20	24.20	--	--	--	--	--	--	--
04/13/92	288.40	280.05	8.35	--	ND	ND	ND	ND	ND	--
08/03/92	288.40	275.82	12.58	--	ND	ND	ND	ND	ND	ND
10/22/92	288.40	275.30	13.10	--	ND	ND	ND	ND	ND	--
01/18/93	288.40	282.28	6.12	--	ND	ND	ND	ND	ND	--
04/19/93	288.40	281.35	7.05	--	ND	ND	ND	ND	ND	--
07/21,22/93	288.40	277.05	11.35	--	ND	ND	ND	ND	ND	--
10/25/93	288.40	275.55	12.85	--	ND	ND	ND	ND	ND	--
01/21/94	288.40	277.85	10.55	--	ND	ND	ND	ND	ND	--
04/18/94	288.40	278.89	9.51	--	ND	1.2	0.9	ND	1.6	--
07/06-07/94	288.40	277.02	11.38	--	ND	ND	ND	ND	ND	--
10/07/94	288.40	275.48	12.92	--	ND	ND	ND	ND	ND	--
01/11/95	288.40	283.04	5.36	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	288.40	281.82	6.58	--	<50	<0.5	0.61	<0.5	0.51	--
07/31/95	288.40	278.94	9.46	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	288.40	276.56	11.84	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-9										
07/03/86	268.46	254.57	13.89	--	--	--	--	--	--	--
03/26/87	268.46	254.72	13.74	--	--	--	--	--	--	--
03/28/88	268.46	253.47	14.99	--	--	--	--	--	--	--
03/10/89	268.46	255.07	13.39	--	--	--	--	--	--	--
04/03/89	268.46	255.62	12.84	--	--	--	--	--	--	--
05/08/89	268.46	254.08	14.38	--	--	--	--	--	--	--
06/05/89	268.46	253.10	15.36	--	--	--	--	--	--	--
07/12/90	268.46	252.81	15.65	--	--	--	--	--	--	--
08/10/90	268.46	252.66	15.80	--	--	--	--	--	--	--
09/13/89	268.46	251.93	16.53	--	42,000	14,000	1100	2800	4200	--
10/04/89	268.46	251.94	16.52	--	--	--	--	--	--	--
11/03/89	268.46	251.95	16.51	--	--	--	--	--	--	--
12/04/89	268.46	251.67	16.79	--	36,000	11,000	670	2500	3800	--
03/07/90	268.46	252.24	16.22	--	--	--	--	--	--	--
03/09/90	268.46	252.24	16.22	--	28,000	12,000	940	3000	4700	--
06/12/90	268.46	253.58	14.88	--	39,000	11,000	1600	2300	4800	--
09/24/90	268.46	252.16	16.30	--	120,000	13,000	1600	3700	6800	--
12/20/90	268.46	251.23	17.23	--	51,000	9300	560	2800	3300	--
12/20/90	268.46	251.23	17.23	Duplicate	44,000	12,000	580	2800	3500	--
03/27/91	268.46	254.68	13.78	--	56,000	3400	5000	1600	5600	--
06/18/91	268.46	249.82	18.64	--	--	--	--	--	--	--
09/12/91	268.46	--	--	Inaccessible	--	--	--	--	--	--
10/24/95	268.46	250.39	18.07	--	30,000	7200	440	2500	1600	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-10A										
03/07/90	264.84	244.63	20.21	--	--	--	--	--	--	--
03/09/90	264.84	--	--	--	ND	1.6	0.7	0.8	3.5	--
06/12/90	264.84	245.14	19.70	--	ND	ND	ND	ND	ND	--
09/24/90	264.84	245.30	19.54	--	ND	ND	ND	ND	ND	--
12/20/90	264.84	245.00	19.84	--	ND	ND	ND	ND	ND	--
03/27/91	264.84	246.83	18.01	--	--	--	--	--	--	--
06/18/91	264.84	244.68	20.16	--	ND	ND	ND	ND	ND	--
09/12/91	264.84	244.27	20.57	--	ND	ND	ND	ND	ND	--
01/23/92	264.84	244.17	20.67	--	ND	ND	ND	ND	ND	--
04/13/92	264.84	245.44	19.40	--	53	0.9	1.3	ND	1.0	--
08/03/92	264.84	245.03	19.81	--	ND	ND	ND	ND	ND	ND
10/22/92	264.84	245.01	19.83	--	ND	ND	ND	ND	0.5	--
01/18/93	264.84	247.80	17.04	--	ND	ND	ND	ND	ND	--
04/19/93	264.84	247.07	17.77	--	ND	ND	ND	ND	ND	--
04/19/93	264.84	247.28	17.56	--	ND	ND	ND	ND	ND	--
10/25/93	264.84	247.07	17.77	--	ND	ND	ND	ND	ND	--
01/21/94	264.84	246.93	17.91	--	ND	ND	ND	ND	ND	--
04/18/94	264.84	247.81	17.03	--	ND	3.0	3.0	1.4	5.5	--
07/06-07/94	264.84	248.06	16.78	--	ND	ND	ND	ND	ND	--
10/07/94	264.84	247.63	17.21	--	ND	ND	ND	ND	ND	--
01/11/95	264.84	248.78	16.06	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	264.84	248.32	16.52	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	264.84	245.82	19.02	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	264.84	245.14	19.70	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-10B										
03/07/90	264.85	243.41	21.44	--	--	--	--	--	--	--
06/12/90	264.85	244.91	19.94	--	ND	ND	ND	ND	ND	--
09/24/90	264.85	245.08	19.77	--	ND	ND	ND	ND	ND	--
12/20/90	264.85	244.85	20.00	--	ND	ND	ND	ND	ND	--
03/27/91	264.85	246.62	18.23	--	--	--	--	--	--	--
06/18/91	264.85	244.41	20.44	--	--	--	--	--	--	--
09/12/91	264.85	244.03	20.82	--	ND	ND	ND	ND	ND	--
01/23/92	264.85	243.93	20.92	--	ND	ND	ND	ND	ND	--
04/13/92	264.85	245.17	19.68	--	ND	ND	ND	ND	ND	--
08/03/92	264.85	244.78	20.07	--	ND	ND	ND	ND	ND	ND
10/22/92	264.85	244.73	20.12	--	ND	ND	ND	ND	ND	--
01/18/93	264.85	247.49	17.36	--	60	3.3	11	2.1	8.9	--
04/19/93	264.85	246.95	17.90	--	ND	ND	ND	ND	ND	--
07/21,22/93	264.85	246.99	17.86	--	ND	ND	ND	ND	ND	--
10/25/93	264.85	246.75	18.10	--	ND	ND	ND	ND	ND	--
01/21/94	264.85	246.62	18.23	--	ND	ND	ND	ND	ND	--
04/18/94	264.85	247.49	17.36	--	ND	ND	ND	ND	0.5	--
07/06-07/94	264.85	247.80	17.05	--	ND	ND	ND	ND	ND	--
10/07/94	264.85	247.31	17.54	--	ND	ND	ND	ND	ND	--
01/11/95	264.85	248.61	16.24	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	264.85	247.95	16.90	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	264.85	245.57	19.28	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	264.85	244.91	19.94	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-11										
03/07/90	265.30	242.56	22.74	--	--	--	--	--	--	--
03/09/90	265.30	--	--	--	ND	1.2	0.7	ND	1.4	--
06/12/90	265.30	243.32	21.98	--	ND	ND	ND	ND	ND	--
09/24/90	265.30	243.42	21.88	--	ND	ND	ND	ND	ND	--
12/20/90	265.30	242.12	23.18	--	ND	ND	ND	ND	ND	--
03/27/91	265.30	243.78	21.52	--	ND	ND	ND	ND	1.5	--
06/18/91	265.30	243.40	21.90	--	--	--	--	--	--	--
09/12/91	265.30	242.60	22.70	--	ND	ND	ND	ND	ND	--
01/23/92	265.30	241.84	23.46	--	ND	ND	ND	ND	ND	--
04/13/92	265.30	243.73	21.57	--	ND	ND	ND	ND	ND	--
08/03/92	265.30	242.63	22.67	--	ND	ND	ND	ND	ND	ND
10/22/92	265.30	242.01	23.29	--	ND	ND	ND	ND	ND	--
01/18/93	265.30	243.94	21.36	--	ND	ND	1.2	ND	2.2	--
04/19/93	265.30	245.33	19.97	--	ND	ND	ND	ND	ND	--
07/21,22/93	265.30	244.65	20.65	--	ND	ND	ND	ND	ND	--
10/25/93	265.30	244.55	20.75	--	ND	ND	ND	ND	ND	--
01/21/94	265.30	243.69	21.61	--	ND	ND	ND	ND	ND	--
04/18/94	265.30	244.52	20.78	--	ND	ND	ND	ND	ND	--
07/06-07/94	265.30	244.88	20.42	--	ND	ND	ND	ND	ND	--
10/07/94	265.30	243.70	21.60	--	ND	ND	ND	ND	ND	--
01/11/95	265.30	245.28	20.02	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	265.30	247.58	17.72	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	265.30	246.12	19.18	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	265.30	244.88	20.42	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-12										
03/07/90	269.66	254.74	14.92	--	--	--	--	--	--	--
03/09/90	269.66	--	--	--	1400	230	140	33	180	--
06/12/90	269.66	254.87	14.79	--	720	190	71	18	73	--
09/24/90	269.66	253.94	15.72	--	ND	1.1	ND	ND	0.6	--
12/20/90	269.66	254.40	15.26	--	810	210	26	8.2	23	--
03/27/91	269.66	257.55	12.11	--	2900	350	220	52	210	--
06/18/91	269.66	253.28	16.38	--	--	--	--	--	--	--
09/12/91	269.66	252.11	17.55	--	350	59	12	4.5	8.5	--
01/23/92	269.66	252.55	17.11	--	450	110	31	7.9	22	--
04/13/92	269.66	255.26	14.40	--	5000	1100	76	100	200	--
08/03/92	269.66	253.83	15.83	--	520	200	21	13	25	ND
10/22/92	269.66	253.52	16.14	--	1300	310	66	35	56	--
01/18/93	269.66	257.96	11.70	--	5600	1200	430	220	610	--
04/19/93	269.66	256.61	13.05	--	2000	600	99	96	170	--
07/21,22/93	269.66	256.82	12.84	--	540	95	36	18	56	--
10/25/93	269.66	255.63	14.03	--	350	90	29	20	50	--
01/21/94	269.66	255.51	14.15	--	450	73	18	14	37	--
04/18/94	269.66	256.71	12.95	--	370	70	21	12	39	--
07/06-07/94	269.66	257.35	12.31	--	840	200	35	28	66	--
10/07/94	269.66	256.31	13.35	--	830	85	29	17	63	--
01/11/95	269.66	258.43	11.23	--	2100	570	190	98	390	--
04/24/95	269.66	259.34	10.32	--	820	120	28	23	61	--
07/31/95	269.66	256.92	12.74	--	520	79	13	16	42	--
10/02/95	269.66	255.26	14.40	--	400	50	5.3	11	29	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-13										
03/07/90	284.32	273.14	11.18	--	--	--	--	--	--	--
03/09/90	284.32	--	--	--	ND	15	3.7	1.0	6.2	--
06/12/90	284.32	273.62	10.70	--	ND	2.6	ND	ND	ND	--
09/24/90	284.32	272.72	11.60	--	ND	2.4	ND	ND	ND	--
12/20/90	284.32	274.16	10.16	--	ND	1.6	ND	ND	ND	--
03/27/91	284.32	276.68	7.64	--	--	--	--	--	--	--
06/18/91	284.32	273.00	11.32	--	--	--	--	--	--	--
09/12/91	284.32	272.48	11.84	--	ND	ND	ND	ND	ND	--
01/23/92	284.32	273.77	10.55	--	--	--	--	--	--	--
04/13/92	284.32	273.36	10.96	--	ND	1.0	ND	ND	ND	--
08/03/92	284.32	273.42	10.90	--	ND	ND	ND	ND	ND	ND
10/22/92	284.32	273.14	11.18	--	--	--	--	--	--	--
01/18/93	284.32	276.92	7.40	--	290	54	10	5.4	12	--
04/19/93	284.32	275.39	8.93	--	--	--	--	--	--	--
07/21,22/93	284.32	273.57	10.75	--	ND	ND	ND	ND	ND	--
10/25/93	284.32	273.47	10.85	--	--	--	--	--	--	--
01/21/94	284.32	273.27	11.05	--	ND	ND	ND	ND	ND	--
04/18/94	284.32	273.61	10.71	--	--	--	--	--	--	--
07/06-07/94	284.32	273.67	10.65	--	ND	0.5	ND	ND	ND	--
10/07/94	284.32	273.24	11.08	--	--	--	--	--	--	--
01/11/95	284.32	278.94	5.38	Sampled bi-annually	120	15	<0.5	3.1	2.7	--
04/24/95	284.32	276.54	7.78	--	--	--	--	--	--	--
07/31/95	284.32	274.38	9.94	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	284.32	273.74	10.58	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-14										
03/07/90	270.74	255.56	15.18	--	--	--	--	--	--	--
03/09/90	270.74	--	--	--	ND	ND	ND	ND	ND	--
06/12/90	270.74	257.32	13.42	--	ND	ND	ND	ND	ND	--
09/24/90	270.74	257.90	12.84	--	ND	ND	ND	ND	ND	--
12/20/90	270.74	254.02	16.72	--	ND	1.7	0.7	ND	0.7	--
03/27/91	270.74	262.74	8.00	--	ND	ND	ND	ND	1.3	--
06/18/91	270.74	255.53	15.21	--	--	--	--	--	--	--
09/12/91	270.74	255.13	15.61	--	ND	ND	ND	ND	ND	--
01/23/92	270.74	246.10	24.64	--	--	--	--	--	--	--
04/13/92	270.74	258.53	12.21	--	ND	ND	ND	ND	ND	--
08/03/92	270.74	256.10	14.64	--	ND	ND	ND	ND	ND	ND
10/22/92	270.74	253.80	16.94	--	--	--	--	--	--	--
01/18/93	270.74	265.64	5.10	--	ND	ND	ND	ND	ND	--
04/19/93	270.74	263.86	6.88	--	--	--	--	--	--	--
07/21,22/93	270.74	259.58	11.16	--	ND	ND	ND	ND	ND	--
10/25/93	270.74	256.87	13.87	--	--	--	--	--	--	--
01/21/94	270.74	255.42	15.32	--	ND	ND	ND	ND	ND	--
04/18/94	270.74	254.85	15.89	--	--	--	--	--	--	--
07/06-07/94	270.74	258.66	12.08	--	ND	ND	ND	ND	ND	--
10/07/94	270.74	255.45	15.29	--	--	--	--	--	--	--
01/11/95	270.74	266.94	3.80	Sampled bi-annually	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	270.74	265.68	5.06	--	--	--	--	--	--	--
07/31/95	270.74	260.34	10.40	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	270.74	257.20	13.54	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-15										
03/07/90	246.15	235.05	11.10	--	--	--	--	--	--	--
03/09/90	246.15	--	--	--	410	ND	1.4	0.5	0.6	--
06/12/90	246.15	235.37	10.78	--	420	11	ND	ND	ND	--
09/24/90	246.15	235.22	10.93	--	430	ND	1.5	ND	ND	--
12/20/90	246.15	235.07	11.08	--	300	1.3	1.1	0.6	1.5	--
03/27/91	246.15	237.65	8.50	--	520	4.6	1.1	ND	1.0	--
06/18/91	246.15	235.32	10.83	--	290	ND	1.1	ND	ND	--
06/18/91	246.15	235.32	10.83	Duplicate	320	ND	1.3	ND	ND	--
09/12/91	246.15	235.10	11.05	--	330	ND	0.9	ND	ND	--
01/23/92	246.15	235.35	10.80	--	210	ND	0.6	ND	ND	--
01/23/92	246.15	235.35	10.80	Duplicate	190	1.2	0.8	ND	ND	--
04/13/92	246.15	236.57	9.58	--	430	1.8	ND	ND	ND	--
08/03/92	246.15	234.94	11.21	--	640	ND	2.1	0.7	1.3	ND
10/22/92	246.15	234.50	11.65	--	420	ND	ND	ND	0.8	--
01/18/93	246.15	239.03	7.12	--	640	7.0	3.0	2.9	6.7	--
04/19/93	246.15	237.22	8.93	--	260	6.0	2.0	0.7	ND	--
07/21,22/93	246.15	236.37	9.78	--	580	ND	8.0	ND	0.6	--
10/25/93	246.15	236.41	9.74	--	240	ND	12.0	ND	0.6	--
01/21/94	246.15	235.78	10.37	--	420	0.6	ND	0.6	ND	--
04/18/94	246.15	236.19	9.96	--	550	1.0	4.6	0.6	ND	--
07/06-07/94	246.15	235.92	10.23	--	660	0.7	ND	ND	0.7	--
10/07/94	246.15	235.47	10.68	--	440	13	0.8	ND	1.2	--
01/11/95	246.15	238.84	7.31	--	750	2.5	<0.5	<0.5	0.6	--
04/24/95	246.15	237.41	8.74	--	850	<0.5	<0.5	<0.5	<0.5	--
07/31/95	246.15	235.41	10.74	--	640	<0.5	1.6	<0.5	<0.5	--
10/02/95	246.15	234.83	11.32	--	560	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
C-16										
03/07/90	246.69	228.19	18.50	--	--	--	--	--	--	--
03/09/90	246.69	--	--	--	ND	ND	ND	ND	ND	--
06/12/90	246.69	235.27	11.42	--	ND	ND	ND	ND	ND	--
09/24/90	246.69	235.30	11.39	--	ND	ND	ND	ND	ND	--
12/20/90	246.69	235.12	11.57	--	ND	ND	ND	ND	0.7	--
03/27/91	246.69	237.93	8.76	--	ND	ND	ND	ND	1.3	--
03/27/91	246.69	237.93	8.76	Duplicate	ND	ND	ND	ND	1.2	--
06/18/91	246.69	235.51	11.18	--	ND	ND	ND	ND	ND	--
09/12/91	246.69	234.74	11.95	--	ND	ND	ND	ND	ND	--
01/23/92	246.69	234.28	12.41	--	ND	ND	ND	ND	ND	--
04/13/92	246.69	236.00	10.69	--	ND	ND	ND	ND	ND	--
08/03/92	246.69	234.49	12.20	--	ND	ND	ND	ND	ND	ND
10/22/92	246.69	234.09	12.60	--	ND	ND	ND	ND	ND	--
01/18/93	246.69	237.69	9.00	--	ND	ND	ND	ND	ND	--
04/19/93	246.69	236.80	9.89	--	ND	ND	ND	ND	ND	--
07/21,22/93	246.69	236.44	10.25	--	ND	ND	ND	ND	ND	--
10/25/93	246.69	235.73	10.96	--	ND	ND	ND	ND	ND	--
01/21/94	246.69	234.93	11.76	--	ND	ND	0.7	ND	1.0	--
04/18/94	246.69	235.47	11.22	--	ND	ND	ND	ND	ND	--
07/06-07/94	246.69	235.32	11.37	--	ND	ND	ND	ND	ND	--
10/07/94	246.69	234.30	12.39	--	ND	ND	ND	ND	ND	--
01/11/95	246.69	237.73	8.96	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	246.69	236.31	10.38	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	246.69	235.37	11.32	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	246.69	234.29	12.40	--	<50	<0.5	<0.5	<0.5	<0.5	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	Organic Lead
RW										
12/04/89	--	--	--	--	62,000	29,000	1700	1800	8800	--
03/07/90	274.52	256.02	18.50	--	--	--	--	--	--	--
06/12/90	274.52	256.03	18.49	--	31,000	15,000	2000	560	3100	--
09/24/90	274.52	--	--	--	--	--	--	--	--	--
12/20/90	274.52	--	--	--	ND	0.5	ND	ND	1.2	--
03/27/91	274.52	--	--	--	--	--	--	--	--	--
06/18/91	274.52	--	--	--	--	--	--	--	--	--
09/12/91	274.52	--	--	Insufficient water	--	--	--	--	--	--
01/23/92	274.52	--	--	Insufficient water	--	--	--	--	--	--
04/13/92	274.52	--	--	Insufficient water	--	--	--	--	--	--
08/03/92	274.52	--	--	Insufficient water	--	--	--	--	--	--
10/22/92	274.52	--	--	Insufficient water	--	--	--	--	--	--
01/18/93	274.52	--	--	Insufficient water	--	--	--	--	--	--
04/19/93	274.52	--	--	Insufficient water	--	--	--	--	--	--
07/21,22/93	274.52	--	--	Insufficient water	--	--	--	--	--	--
10/25/93	274.52	--	--	--	--	--	--	--	--	--
01/21/94	274.52	--	--	--	--	--	--	--	--	--
04/18/94	274.52	--	--	--	--	--	--	--	--	--
07/06-07/94	274.52	--	--	--	--	--	--	--	--	--
10/07/94	274.52	--	--	--	--	--	--	--	--	--
10/24/95	274.52	256.63	17.89	--	37,000	11,000	380	1100	3000	--
TRIP BLANK										
01/11/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--
04/24/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--
07/31/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--
10/02/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--

Note: Blaine Tech Services, Inc. began routine monitoring of the groundwater wells at this site on November 1, 1994. Earlier field data and analytical results are drawn from the November 4, 1994 Groundwater Technology, Inc. report.

ABBREVIATIONS:
TPH = Total Petroleum Hydrocarbons
ND = Not detected at or above the minimum quantitation limit. See laboratory reports for minimum quantitation limits.

9-5607 P/T

Table 1: Total Flow Summary
Former Chevron Service Station #9-5607
5269 Crow Canyon Road, Castro Valley, California.

Date of Reading	Totalizer Reading (gallons)	Total Gallons Extracted	Total Flow (gallons)	Number of Days	Average Flow (gal/min)	Comments
26-Mar-90	693	693	693	1	0.481	Start-up date
27-Mar-90	1,040	1,040	347	1	0.241	
29-Mar-90	1,230	1,230	190	2	0.066	
4-Apr-90	1,293	1,293	63	6	0.007	Replace all tower motors
13-Apr-90	3,271	3,271	1,978	9	0.153	
16-Apr-90	3,959	3,959	688	3	0.159	
25-Apr-90	4,363	4,363	405	9	0.031	System on
27-Apr-90	5,250	5,250	886	2	0.308	
28-Apr-90	NM	5,250	NM	1	NM	
29-Apr-90	NM	5,250	NM	1	NM	
30-Apr-90	5,521	5,521	271	1	0.188	
15-May-90	8,044	8,044	2,523	15	0.117	
25-May-90	9,978	9,978	1,934	10	0.134	
8-Jun-90	13,602	13,602	3,624	14	0.18	
20-Jun-90	14,103	14,103	501	12	0.029	System off
26-Jun-90	14,442	14,442	339	1	0.039	System on
27-Jun-90	14,507	14,507	65	1	0.045	
6-Jul-90	14,571	14,571	64	9	0.005	
23-Jul-90	17,160	17,160	2,589	17	0.106	
24-Jul-90	17,167	17,167	7	1	0.005	
30-Jul-90	17,793	17,793	626	6	0.072	
8-Aug-90	18,527	18,527	734	9	0.057	
15-Aug-90	18,550	18,550	23	7	0.002	System off
16-Aug-90	18,564	18,564	14	1	0.01	System on
23-Aug-90	19,105	19,105	541	7	0.054	
27-Aug-90	19,132	19,132	27	4	0.005	System off
2-Nov-90	19,236	19,236	104	67	0.001	System on
6-Nov-90	19,698	19,698	462	4	0.08	System off
7-Nov-90	19,698	19,698	0	1	0	System on
27-Nov-90	21,376	21,376	1,678	20	0.058	
10-Dec-90	22,845	22,845	1,469	13	0.078	
2-Jan-91	24,443	24,443	1,598	23	0.048	
8-Jan-91	24,443	24,443	0	6	0	
29-Jan-91	29,998	29,998	5,555	20	0.192	Install new flowmeter
1-Feb-91	218	30,216	218	3	0.05	Reset flow to new flowmeter
28-Feb-91	2,964	32,962	2,746	27	0.07	
4-Mar-91	3,434	33,432	470	5	0.065	
12-Mar-91	4,722	34,720	1,288	8	0.112	
1-Apr-91	5,845	35,843	1,123	20	0.039	System off
9-Apr-91	8,289	38,287	2,444	7	0.24	System on
3-May-91	9,444	39,442	1,155	23	0.04	
8-May-91	11,424	41,422	1,980	5	0.28	
15-May-91	13,657	43,655	2,233	6	0.26	
28-May-91	14,165	44,163	508	12	0.03	System off - electrical repairs

Table 1: Total Flow Summary
Former Chevron Service Station #9-5607
5269 Crow Canyon Road, Castro Valley, California.

Date of Reading	Totalizer Reading (gallons)	Total Gallons Extracted	Total Flow (gallons)	Number of Days	Average Flow (gal/min)	Comments
13-Jun-91	14,207	44,205	42	15	0.002	System on
18-Jun-91	15,632	45,630	1,425	4	0.25	
29-Aug-91	22,922	52,920	7,290	71	0.07	
9-Sep-91	23,846	53,844	924	10	0.06	Install additional extraction pump
10-Sep-91	24,478	54,476	632	1	0.44	
23-Sep-91	28,881	58,879	4,403	12	0.25	
16-Oct-91	30,703	60,701	1,822	22	0.06	Malfunction in extraction pump
18-Oct-91	30,919	60,917	216	2	0.08	System off
22-Oct-91	30,961	60,959	42	3	0.01	System on
29-Oct-91	32,922	62,920	1,961	6	0.23	
31-Oct-91	33,277	63,275	355	2	0.12	
27-Dec-91	55,335	85,333	22,058	56	0.27	Power accidentally shut off
31-Dec-91	56,843	86,841	1,508	4	0.26	
2-Jan-92	57,429	87,427	586	1.5	0.27	
13-Mar-92	97,409	127,407	39,980	71	0.39	
24-Mar-92	104,749	134,747	7,340	10	0.51	Repair air stripper pump
21-Apr-92	117,512	147,510	12,763	27	0.33	Repair air stripper pump seals
2-May-92	117,512	147,510	0	10	0	Restart system after repairs
8-May-92	118,261	148,259	749	5	0.1	Check system after auto-dialer call
19-May-92	119,404	149,402	1,143	10	0.08	Repair leak at Well C-9
11-Jun-92	130,255	160,253	10,851	22	0.34	
18-Jul-92	141,311	171,309	11,056	36	0.21	Repair broken compressor belt
21-Jul-92	142,699	172,697	1,388	3	0.32	
25-Sep-92	166,158	196,156	23,459	65	0.25	
29-Oct-92	175,190	205,188	9,032	34	0.19	Repair scaling in pumps
7-Nov-92	179,093	209,091	3,903	9	0.30	Repair air stripper pump
19-Dec-92	193,607	223,605	14,514	42	0.24	Repair air stripper blower
20-Jan-93	209,114	239,112	15,507	32	0.34	Repair blower housing and pumps
24-Jan-93	213,562	243,560	4,448	4	0.77	Repair pump and compressor
18-Mar-93	254,898	284,896	41,336	51	0.56	Repair compressor and flow meter
31-Mar-93	267,759	297,902	13,006	13	0.69	Replace air stripper pump
7-Apr-93	274,759	304,757	6,855	7	0.68	Repair pump and piping
14-Apr-93	281,074	311,072	6,315	7	0.63	
21-Apr-93	287,453	317,451	6,379	6	0.74	Replace anti-scaling tank
5-May-93	295,105	325,103	7,652	12	0.44	Replace compressor belt
26-May-93	296,867	326,865	1,762	21	0.06	Repair compressor and pump
25-Jul-93	297,990	327,988	1,123	101	0.008	Repair compressor and two pumps
6-Aug-93	302,730	332,723	4,740	12	0.27	Repair air stripper pumps
25-Aug-93	312,805	342,803	10,075	19	0.37	
10-Sep-93	320,426	350,424	7,621	16	0.33	
29-Sep-93	329,790	359,788	9,364	19	0.34	
27-Oct-93	348,872	378,870	19,082	28	0.47	
4-Nov-93	349,703	379,701	831	7	0.08	Repair air stripper & transfer pumps
8-Nov-93	350,314	380,312	611	4	0.11	System off - order parts for pumps

Table 1: Total Flow Summary
Former Chevron Service Station #9-5607
5269 Crow Canyon Road, Castro Valley, California.

Date of Reading	Totalizer Reading (gallons)	Total Gallons Extracted	Total Flow (gallons)	Number of Days	Average Flow (gal/min)	Comments
7-Dec-93	350,464	380,462	150	29	0.01	Install repaired pumps - system on
16-Jan-94	377,442	407,440	26,978	39	0.48	
31-Jan-94	385,245	415,243	7,803	16	0.34	
28-Feb-94	403,723	433,719	18,476	28	0.46	Repair pump seal
4-Apr-94	426,711	456,707	22,988	35	0.46	Remove pump scale and reseal
25-Apr-94	437,196	467,192	10,485	21	0.35	Clean oil/water separator
31-May-94	443,200	473,196	6,004	36	0.12	Repair compressor pump/Well RW
20-Jun-94	450,335	480,331	7,135	20	0.25	Replace extraction pump/Well RW
15-Jul-94	452,307	482,303	1,972	25	0.05	Repair compressor motor–seized
21-Jul-94	453,106	483,102	799	6	0.09	Repair hose connection
26-Jul-94	454,820	484,816	1,714	5	0.24	Repair extraction pump
2-Aug-94	458,149	488,145	3,329	7	0.33	
5-Oct-94	476,549	506,545	18,400	35	0.37	Replace extraction hose
1-Jan-95	542,502	572,499	65,954	57	0.80	Repair leak in Tower 3
27-Jan-95	572,137	602,134	29,635	26	0.79	Repair anti-scale pump
8-Mar-95	575,302	605,299	3,165	40	0.06	Repair breaker for Well RW
14-Apr-95	608,082	638,079	32,780	37	0.62	Adjust control box
4-May-95	612,907	642,904	4,825	20	0.17	Tower problem-system turned off May 25, 1995

NM Not Measured
Initial start date: March 26, 1990
April 20, 1990: System down - pumps scaled.
June 26, 1990: Replaced all motors damaged by scaling.
August 27, 1990: System turned off to allow for modifications.
September 9, 1991: Additional extraction pump installed in Well C-9.

Reference for Analytical Results and System Operational Data prior to April 1, 1991 - Chemical Processors, Inc., January 11, 1991.
Reference for Analytical Results and System Operational Data after April 1, 1991 - Geraghty & Miller, Inc.

Table 2: **Summary of Groundwater Analytical Results**
Former Chevron Service Station #9-5607
5269 Crow Canyon Road, Castro Valley, California.

Sample Location	Date	TPH (gas) (µg/L) (a)	Benzene (µg/L) (b)	Toluene (µg/L) (b)	Ethyl-benzene (µg/L) (b)	Total Xylenes (µg/L) (b)
Air Stripper Remediation System						
System Influent	26-Mar-90	--	--	--	--	--
	29-Mar-90	--	--	--	--	--
	13-Apr-90	--	--	--	--	--
	27-Apr-90	--	--	--	--	--
	28-Apr-90	--	--	--	--	--
	29-Apr-90	--	--	--	--	--
	30-Apr-90	--	--	--	--	--
	25-May-90	--	--	--	--	--
	27-Jun-90	--	--	--	--	--
	6-Jul-90	--	--	--	--	--
	30-Jul-90	--	--	--	--	--
	27-Aug-90	--	--	--	--	--
	27-Sep-90	--	--	--	--	--
	28-Oct-90	--	--	--	--	--
	2-Nov-90	45,000	21,000	1	1,400	7,000
	10-Dec-90	5,100	2,500	200	140	950
	8-Jan-91	51,000	29,000	1,400	2,000	8,300
	1-Apr-91	75,000	31,000	2,000	1,700	7,900
	18-Jun-91	30,000	6,600	530	390	5,200
	29-Aug-91	51,000	13,000	920	1,300	4,800
	31-Oct-91	5,600	1,400	120	100	640
	2-Jan-92	7,700	1,700	220	130	1,100
	13-Mar-92	50,000	11,000	1,700	2,500	6,200
	21-Jul-92	25,000	4,100	490	790	2,300
	29-Oct-92	57,000	9,200	850	1,100	2,900
	20-Jan-93	32,000	6,200	750	1,000	4,600
	14-Apr-93	17,000	4,000	470	1,100	2,200
	25-Jul-93	22,000	5,600	580	1,100	2,200
	27-Oct-93	1,100	220	22	70	100
	31-Jan-94	6,200	1,400	110	350	640
	25-Apr-94	24,000	550	690	1,600	2,600
	15-Jul-94	39,000	10,000	2,100	2,900	3,900
	5-Oct-94	15,000	4,100	290	820	900
	27-Jan-95	18,000	7,600	520	670	4,600
	4-May-95	13,000	4,400	290	440	2,000

Table 2: **Summary of Groundwater Analytical Results**
Former Chevron Service Station #9-5607
5269 Crow Canyon Road, Castro Valley, California.

Sample Location	Date	TPH (gas) (µg/L) (a)	Benzene (µg/L) (b)	Toluene (µg/L) (b)	Ethyl-benzene (µg/L) (b)	Total Xylenes (µg/L) (b)
Oil/Water Separator Effluent	26-Mar-90	--	--	--	--	--
	29-Mar-90	--	--	--	--	--
	13-Apr-90	--	--	--	--	--
	27-Apr-90	28,000	8,100	11,000	703	6,700
	28-Apr-90	7,700	2,400	250	110	1,500
	29-Apr-90	7,200	2,300	260	100	1,600
	30-Apr-90	4,300	1,400	150	64	830
	25-May-90	3,400	1,200	190	98	780
	27-Jun-90	20,000	10,000	1,600	770	3,300
	6-Jul-90	7,200	2,300	NA	NA	NA
	30-Jul-90	7,800	3,200	250	<25	1,100
	27-Aug-90	--	--	--	--	--
	27-Sep-90	--	--	--	--	--
	28-Oct-90	--	--	--	--	--
	2-Nov-90	51,000	12,000	1,000	660	4,100
	10-Dec-90	1,600	700	35	81	480
	8-Jan-91	48,000	18,000	1,200	1,200	7,000
	1-Apr-91	77,000	31,000	2,800	1,700	11,000
	18-Jun-91	29,000	5,600	300	74	4,800
	29-Aug-91	65,000	14,000	1,400	1,200	6,700
	31-Oct-91	5,700	1,700	140	160	560
	2-Jan-92	40,000	4,900	2,400	1,400	5,700
	13-Mar-92	44,000	7,600	1,900	2,000	6,200
	21-Jul-92	42,000	8,500	500	1,000	3,500
	29-Oct-92	100,000	8,200	5,800	3,100	8,900
	20-Jan-93	45,000	4,400	1,800	1,400	5,400
	14-Apr-93	17,000	3,100	310	400	1,900
	25-Jul-93	17,000	3,500	370	640	1,700
	27-Oct-93	470	92	6.1	11	41
	31-Jan-94	9,200	1,900	150	230	740
	25-Apr-94	22,000	4,400	1100	1,200	2,200
	15-Jul-94	29,000	6,900	850	2,000	2,600
	5-Oct-94	20,000	4,500	400	1,200	1,300
	27-Jan-95	11,000	4,400	270	470	2,400
	4-May-95	14,000	3,800	280	590	1,700

Table 2: **Summary of Groundwater Analytical Results**
Former Chevron Service Station #9-5607
5269 Crow Canyon Road, Castro Valley, California.

Sample Location	Date	TPH (gas) (µg/L) (a)	Benzene (µg/L) (b)	Toluene (µg/L) (b)	Ethyl-benzene (µg/L) (b)	Total Xylenes (µg/L) (b)
System Effluent	26-Mar-90	86	30	1.9	1.5	12
	29-Mar-90	57	13	1.4	ND(<0.5)	5.4
	13-Apr-90	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)
	27-Apr-90	100	3.1	ND(<0.5)	ND(<0.5)	1.6
	28-Apr-90	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)
	29-Apr-90	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	<1.0
	30-Apr-90	--	--	--	--	--
	25-May-90	ND(<50)	ND(<0.3)	1	ND(<0.3)	ND(<0.6)
	27-Jun-90	430	210	22	9	67
	6-Jul-90	ND(<50)	ND(<0.5)	NA	NA	NA
	30-Jul-90	ND(<50)	ND(<0.5)	2.7	ND(<0.5)	5.1
	27-Aug-90	--	--	--	--	--
	27-Sep-90	--	--	--	--	--
	28-Oct-90	--	--	--	--	--
	2-Nov-90	ND(<50)	3.2	ND(<0.5)	ND(<0.5)	1
	10-Dec-90	ND(<50)	2.9	ND(<0.5)	0.6	2
	8-Jan-91	290	59	5.6	6.2	37
	1-Apr-91	270	110	7.4	4.1	26
	18-Jun-91	140	18	0.9	ND(<0.5)	17
	29-Aug-91	190	29	2.9	1.6	14
	31-Oct-91	140	3.8	0.8	ND(<0.5)	2.1
	2-Jan-92	ND(<50)	2.3	1.2	0.9	4.8
	13-Mar-92	390	66	15	16	50
	21-Jul-92	200	30	3.5	6.6	14
	29-Oct-92	120	4.2	3	1.4	6.6
	20-Jan-93	270	36	7.7	9.2	26
	14-Apr-93	160	35	4	4	22
	25-Jul-93	760	220	35	37	78
	27-Oct-93	63	10	1.1	1.1	3.7
	31-Jan-94	210	59	5	6	23
	25-Apr-94	440	140	12	16	68
	15-Jul-94	380	93	12	22	34
	5-Oct-94	1,000	420	27	70	960
	27-Jan-95	2,700	940	62	97	510
	4-May-95	7,300	2,900	200	300	1,200

(a) TPH as gasoline analyzed by USEPA Method 8015, modified
(b) BTEX analyzed by USEPA Method 8020
-- No Data
NA Not Analyzed
ND(<0.5) Not Detected (Detection Limit)

Reference for analytical results from June 19, 1985, to June 3, 1988: Groundwater Technology, Inc.

Reference for analytical results from March 26, 1990, to April 1, 1991: Chemical Processors, Inc.

Reference for analytical results after April 1, 1991: Geraghty & Miller, Inc.

FORMER CHEVRON SERVICE STATION #9-5607

CASTRO VALLEY, CALIFORNIA

BENZENE VERSUS DISTANCE

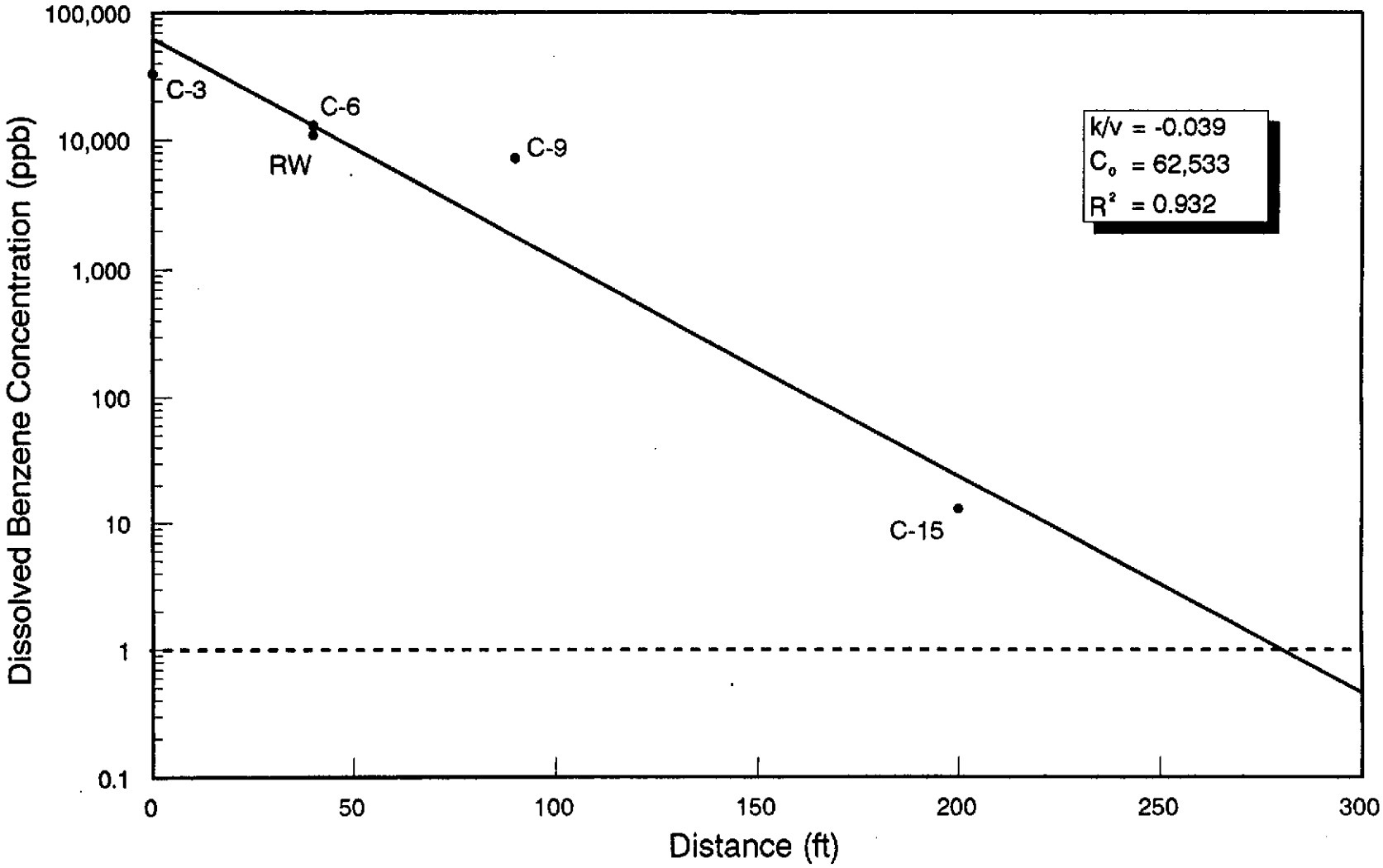
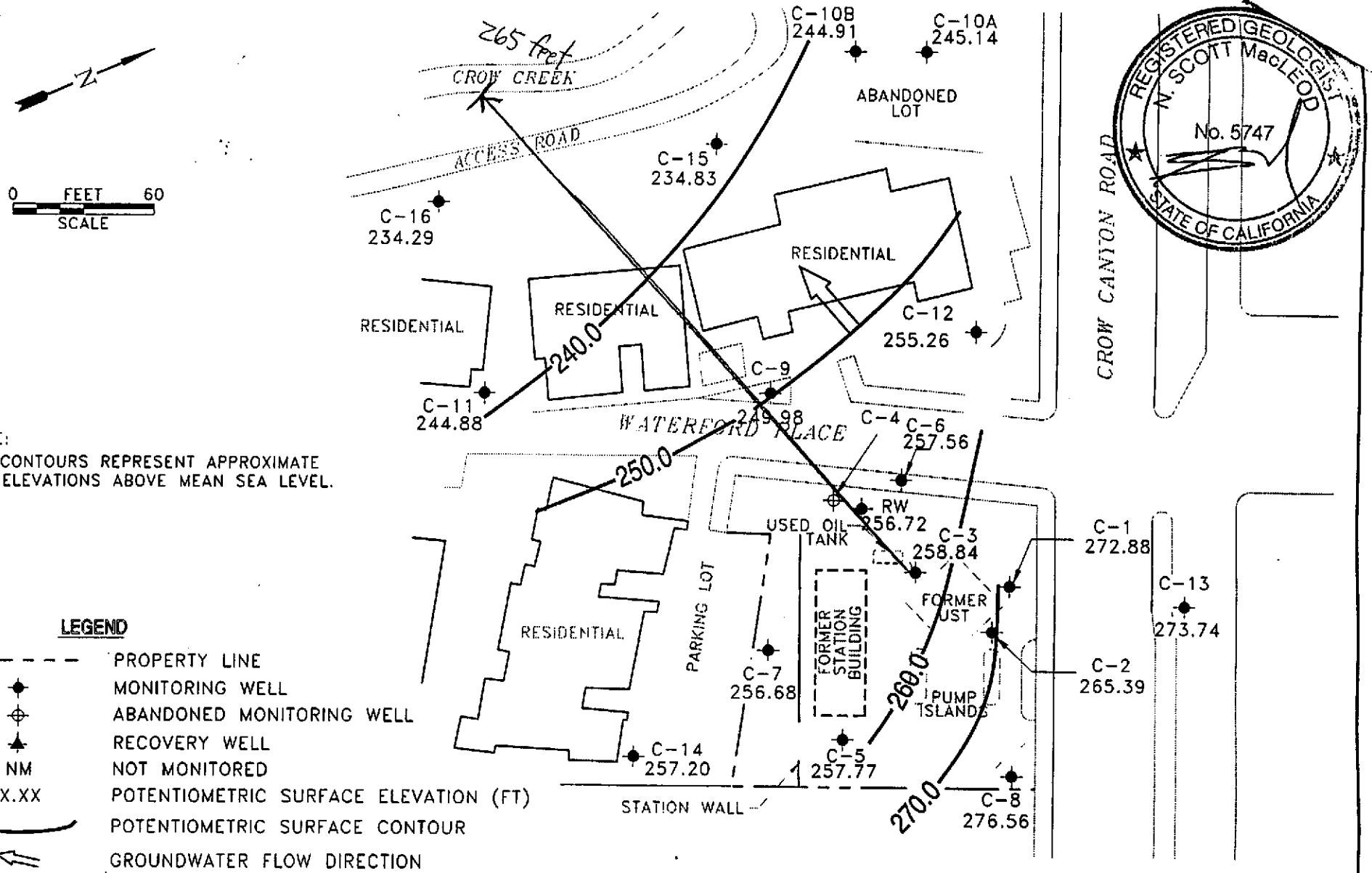


Figure 4



Base Map by Groundwater Technology, Inc.

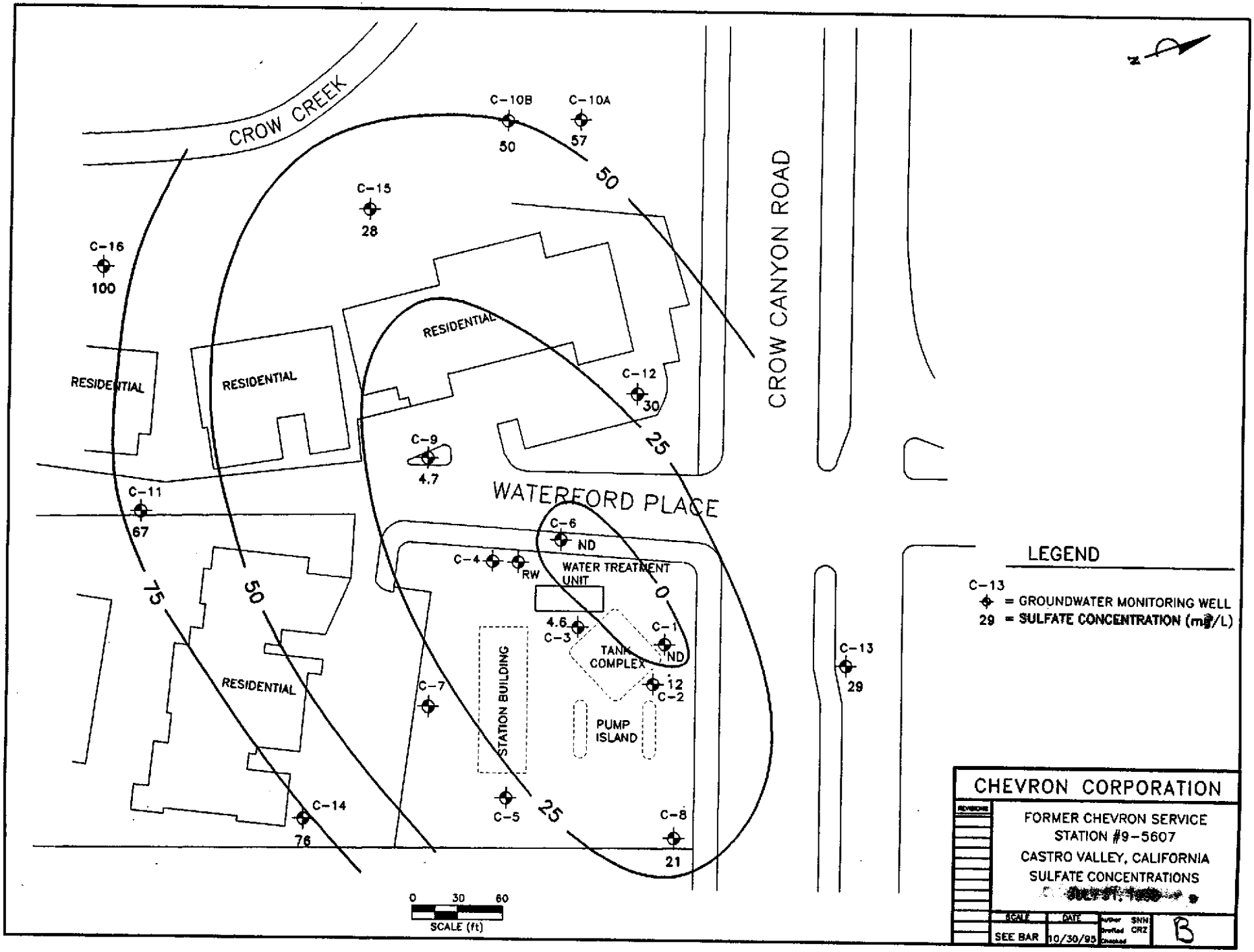
CAMBRIA
Environmental Technology, Inc.

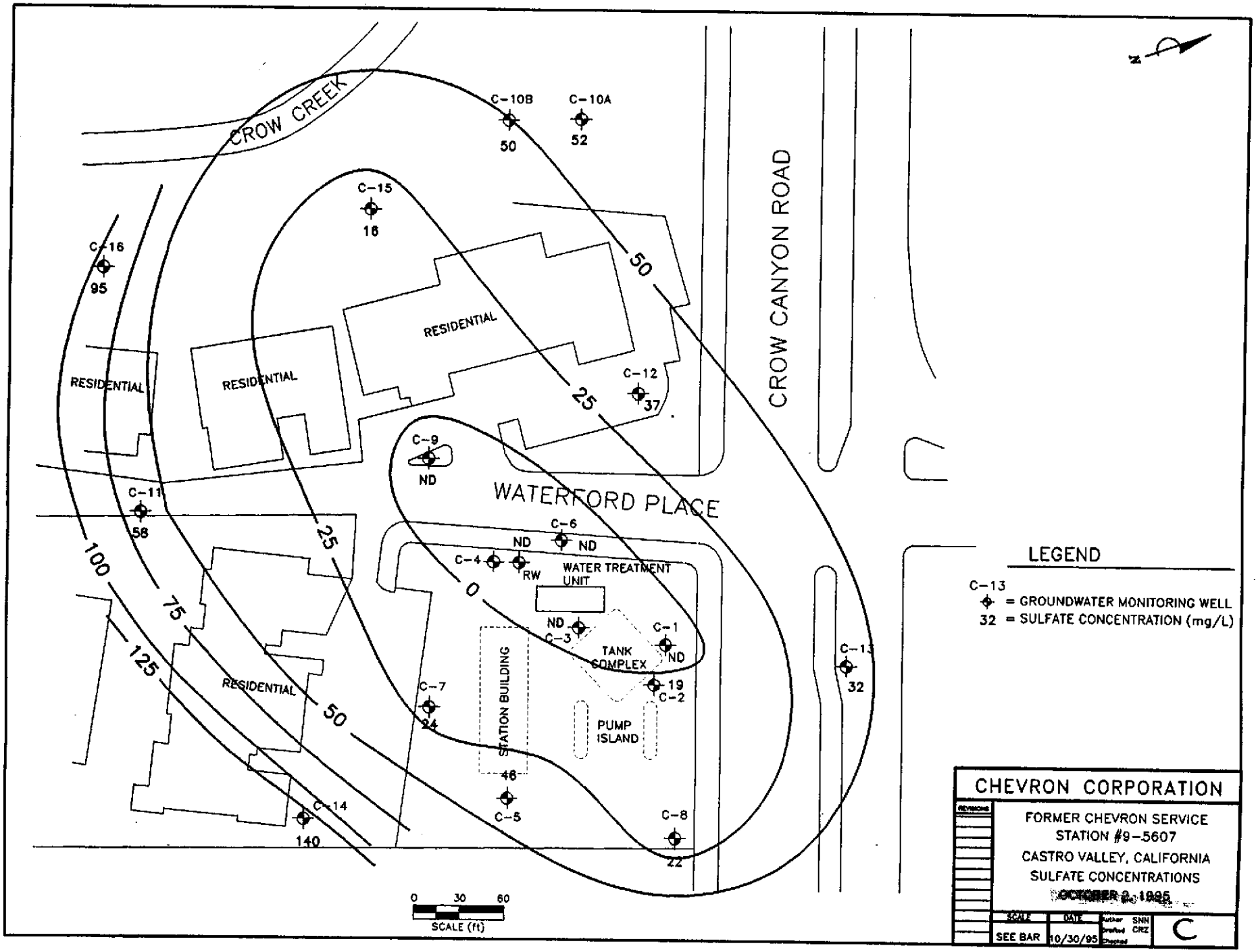
Chevron Station 9-5607
5269 Crow Canyon Road
Castro Valley, California

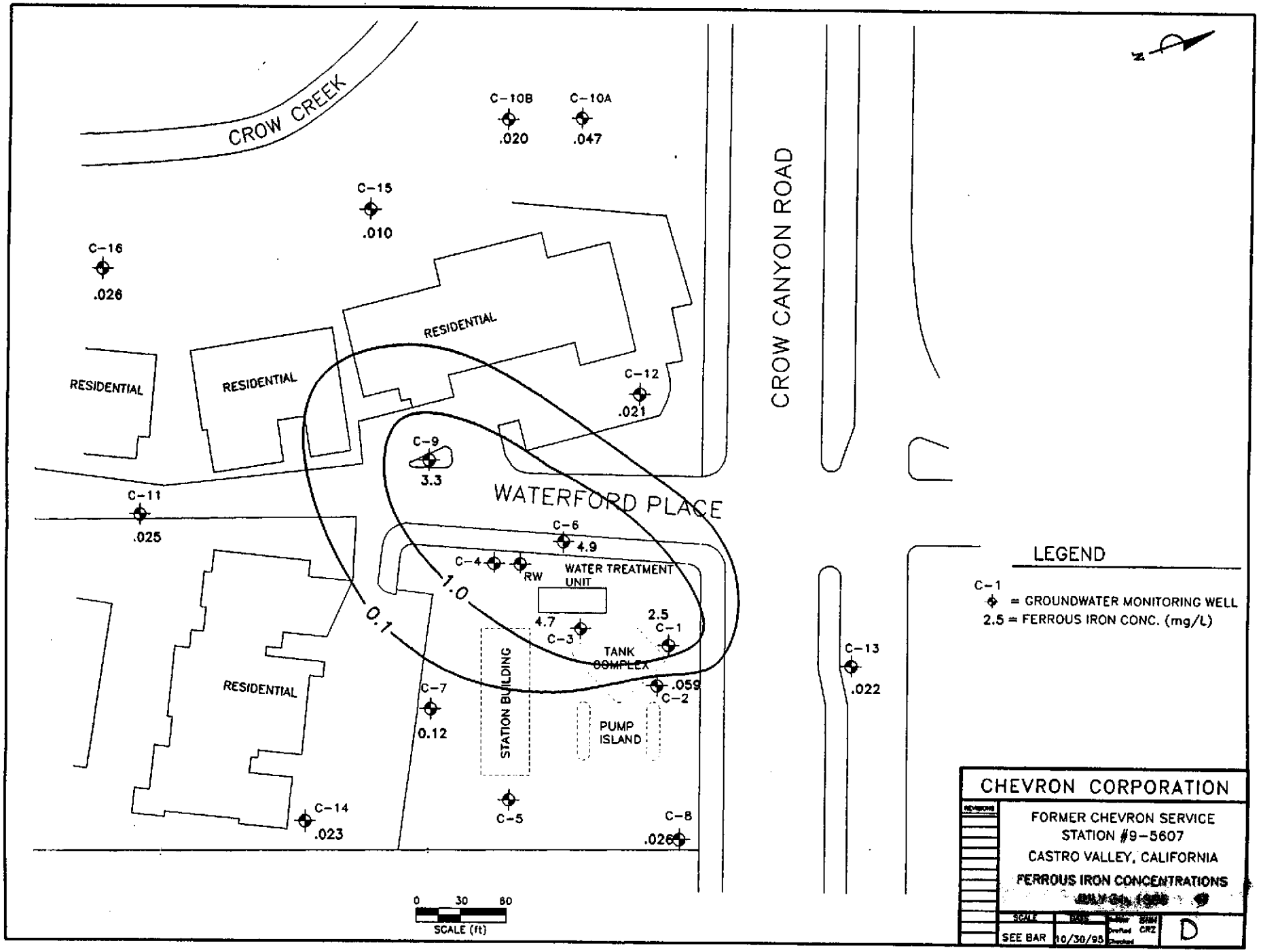
\PROJECT\CHEVRON\9-5607\5607-GM.DWG

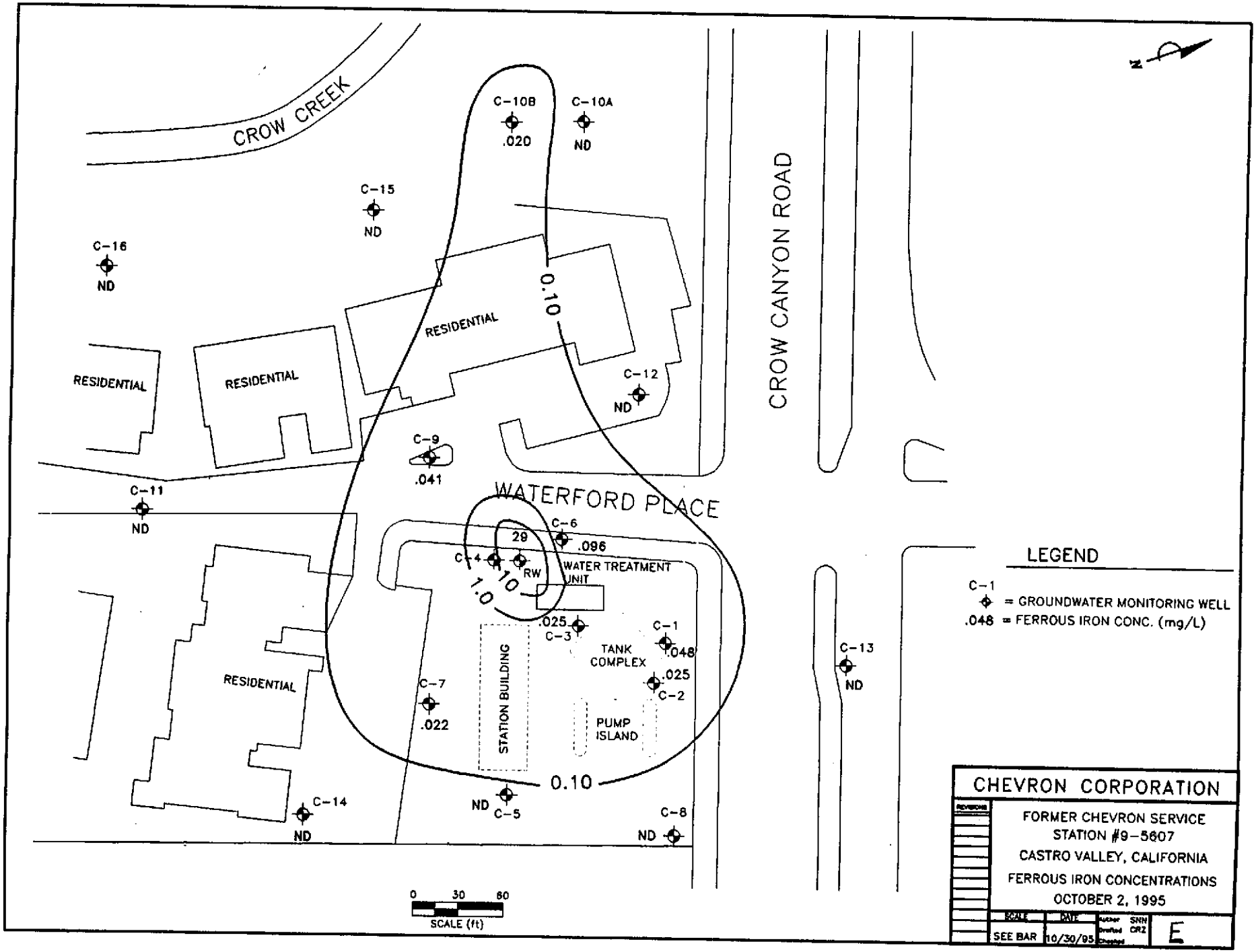
Ground Water Elevations
October 2, 1995

FIGURE
1A


CROW CREEK
C-10B
50
C-10A
57
C-15
28
C-16
100
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
C-12
30
C-9
4.7
C-11
67
WATERFORD PLACE
CROW CANYON ROAD
C-6
ND
C-4
RW
WATER TREATMENT UNIT
4.6
C-3
C-1
ND
TANK COMPLEX
12
C-2
C-13
29
STATION BUILDING
PUMP ISLAND
C-7
RESIDENTIAL
C-14
76
C-5
C-8
21
75
50
25
0
25
0 30 60
SCALE (ft)
LEGEND
C-13 = GROUNDWATER MONITORING WELL
29 = SULFATE CONCENTRATION (mg/L)
CHEVRON CORPORATION
FORMER CHEVRON SERVICE STATION #9-5607
CASTRO VALLEY, CALIFORNIA
SULFATE CONCENTRATIONS
SCALE
SEE BAR
DATE
10/30/95
Drafted SNN
Checked CRZ
B


CROW CREEK
C-10B
50
C-10A
52
C-15
16
C-16
95
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
C-12
37
CROW CANYON ROAD
C-9
ND
WATERFORD PLACE
C-11
58
C-6
ND
ND
C-4
RW
WATER TREATMENT UNIT
ND
C-3
C-1
ND
TANK COMPLEX
C-13
32
C-7
24
19
C-2
STATION BUILDING
PUMP ISLAND
RESIDENTIAL
46
C-5
C-14
140
C-8
22
100
75
125
50
25
0
25
50
0 30 60
SCALE (ft)
N
LEGEND
C-13
= GROUNDWATER MONITORING WELL
32 = SULFATE CONCENTRATION (mg/L)
CHEVRON CORPORATION
FORMER CHEVRON SERVICE STATION #9-5607
CASTRO VALLEY, CALIFORNIA
SULFATE CONCENTRATIONS
OCTOBER 2, 1995
SCALE
SEE BAR
DATE
10/30/95
Author SNN
Drafted CRZ
Checked
C


CROW CREEK
C-10B
.020
C-10A
.047
C-15
.010
C-16
.026
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
C-12
.021
CROW CANYON ROAD
C-9
3.3
WATERFORD PLACE
C-11
.025
C-6
4.9
C-4
RW
WATER TREATMENT UNIT
1.0
0.1
4.7
C-3
2.5
C-1
TANK COMPLEX
C-13
.022
.059
C-2
RESIDENTIAL
C-7
0.12
STATION BUILDING
PUMP ISLAND
C-14
.023
C-5
C-8
.026
0 30 60
SCALE (ft)
LEGEND
C-1
= GROUNDWATER MONITORING WELL
2.5 = FERROUS IRON CONC. (mg/L)
CHEVRON CORPORATION
FORMER CHEVRON SERVICE STATION #9-5607
CASTRO VALLEY, CALIFORNIA
FERROUS IRON CONCENTRATIONS
SCALE
SEE BAR
10/30/95
CRZ
D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C-10B
.020
C-10A
ND
C-15
ND
C-16
ND
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
0.10
CROW CANYON ROAD
C-12
ND
C-9
.041
C-11
ND
WATERFORD PLACE
C-6
.096
29
C-4
RW
WATER TREATMENT UNIT
1.0
1.0
.025
C-3
C-1
.048
TANK COMPLEX
.025
C-2
C-13
ND
RESIDENTIAL
C-7
.022
STATION BUILDING
PUMP ISLAND
0.10
C-14
ND
ND
C-5
C-8
ND
0
30
60
SCALE (ft)
N
LEGEND
C-1
= GROUNDWATER MONITORING WELL
.048 = FERROUS IRON CONC. (mg/L)
CHEVRON CORPORATION
FORMER CHEVRON SERVICE STATION #9-5607
CASTRO VALLEY, CALIFORNIA
FERROUS IRON CONCENTRATIONS
OCTOBER 2, 1995
SCALE
SEE BAR
DATE
10/30/95
Author SNN
Drafted CR2
Checked
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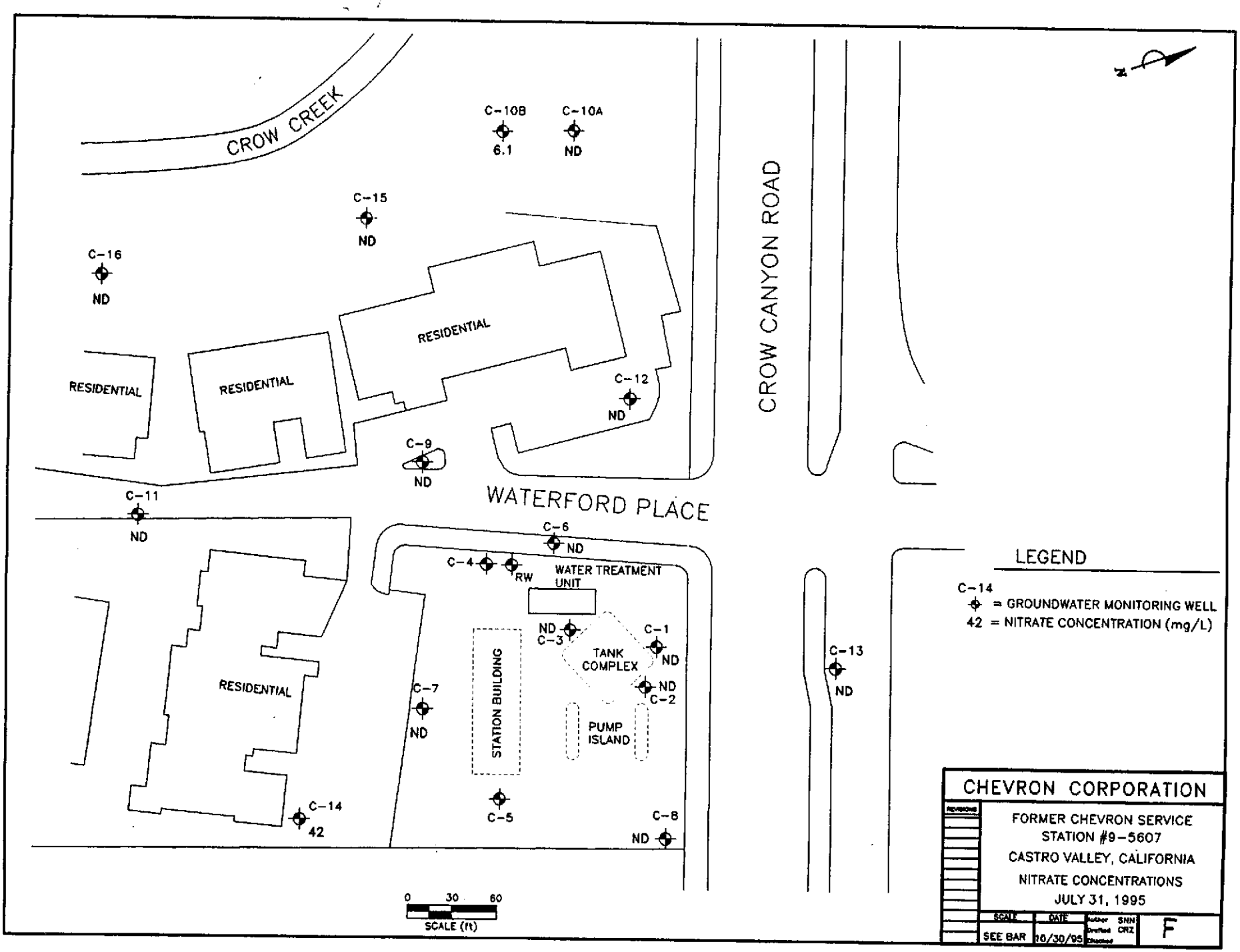
CROW CREEK
C-10B
6.1
C-10A
ND
C-15
ND
C-16
ND
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
C-12
ND
C-9
ND
C-11
ND
WATERFORD PLACE
CROW CANYON ROAD
C-6
ND
C-4
RW
WATER TREATMENT UNIT
ND
C-3
C-1
TANK COMPLEX
ND
ND
C-2
RESIDENTIAL
C-7
ND
STATION BUILDING
PUMP ISLAND
C-13
ND
C-14
42
C-5
C-8
ND
0 30 60
SCALE (ft)
LEGEND
C-14
= GROUNDWATER MONITORING WELL
42 = NITRATE CONCENTRATION (mg/L)
CHEVRON CORPORATION
FORMER CHEVRON SERVICE STATION #9-5607
CASTRO VALLEY, CALIFORNIA
NITRATE CONCENTRATIONS
JULY 31, 1995
SCALE
SEE BAR
DATE
10/30/95
Author SNN
Drafted CRZ
Checked
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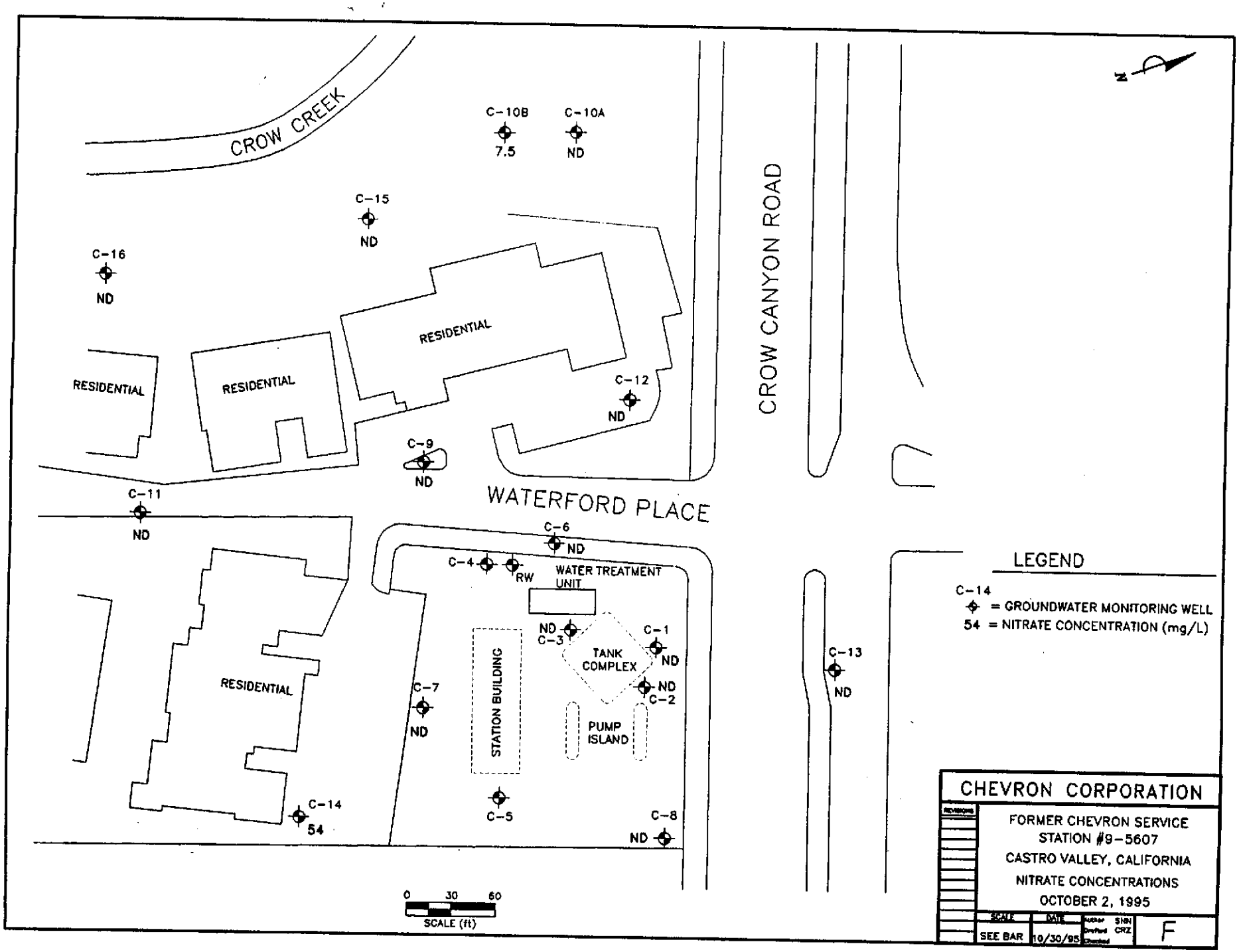
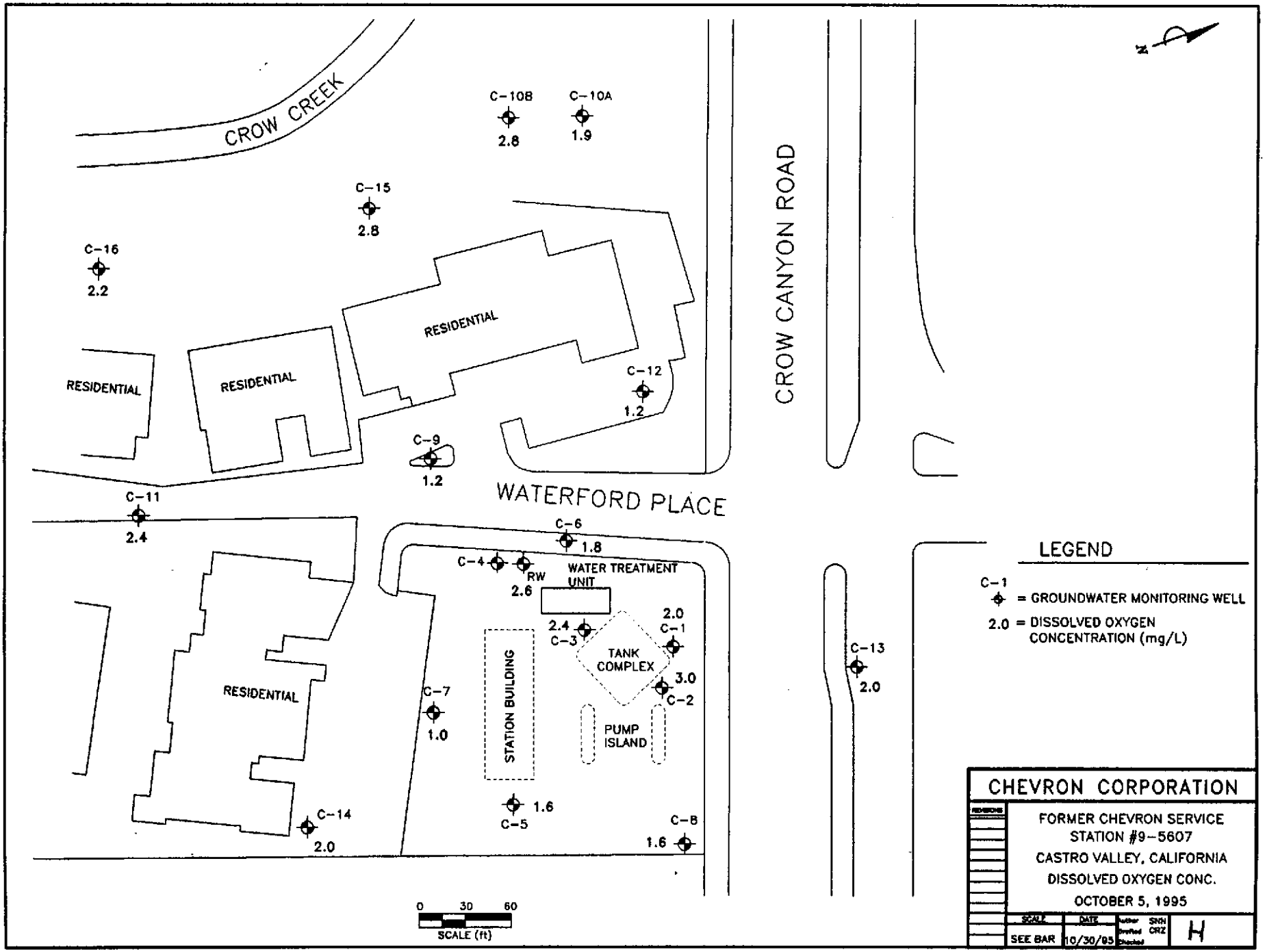

CROW CREEK
C-10B
7.5
C-10A
ND
C-15
ND
C-16
ND
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
C-12
ND
C-9
ND
C-11
ND
WATERFORD PLACE
CROW CANYON ROAD
C-6
ND
C-4
RW
WATER TREATMENT UNIT
ND
C-3
C-1
TANK COMPLEX
ND
ND
C-2
C-13
ND
RESIDENTIAL
C-7
ND
STATION BUILDING
PUMP ISLAND
C-14
54
C-5
C-8
ND
0 30 60
SCALE (ft)
LEGEND
C-14
= GROUNDWATER MONITORING WELL
54 = NITRATE CONCENTRATION (mg/L)
CHEVRON CORPORATION
FORMER CHEVRON SERVICE STATION #9-5607
CASTRO VALLEY, CALIFORNIA
NITRATE CONCENTRATIONS
OCTOBER 2, 1995
SCALE
SEE BAR
DATE
10/30/95
F


CROW CREEK
C-10B
2.8
C-10A
1.9
C-15
2.8
C-16
2.2
RESIDENTIAL
RESIDENTIAL
RESIDENTIAL
C-12
1.2
C-9
1.2
CROW CANYON ROAD
WATERFORD PLACE
C-11
2.4
C-6
1.8
C-4
RW
2.6
WATER TREATMENT UNIT
2.4
C-3
2.0
C-1
TANK COMPLEX
3.0
C-2
STATION BUILDING
PUMP ISLAND
C-7
1.0
C-13
2.0
RESIDENTIAL
C-14
2.0
C-5
1.6
C-8
1.6
0 30 60
SCALE (ft)
LEGEND
C-1 = GROUNDWATER MONITORING WELL
2.0 = DISSOLVED OXYGEN CONCENTRATION (mg/L)
CHEVRON CORPORATION
FORMER CHEVRON SERVICE STATION #9-5607
CASTRO VALLEY, CALIFORNIA
DISSOLVED OXYGEN CONC.
OCTOBER 5, 1995
SCALE
SEE BAR
DATE
10/30/95
SRN
CRZ
H

EARL TO Amy

MEMORANDUM

Richmond, California
August 13, 1992

Former Chevron Service Station No. 9-5607
5269 Crow Canyon Rd.
Castro Valley, CA.

Mr. C.B. Rogers,

As you requested, I have evaluated the present groundwater remediation system at former Chevron Service Station No. 9-5607 and make the following predictions concerning the fate and transport of dissolved benzene (see Site Map - Figure 1).

Paul Hildebrandt (CRTC) has used a numerical model to predict concentrations of dissolved benzene at the site. Various well placement options were incorporated into the models, to determine the most effective strategy to remediate the dissolve phase BTEX which has migrated off-site.

Benzene was the component considered for the model due to the following characteristics of the compound:

(a) it is considered a carcinogen, and as such is a primary substance to consider for site assessment and remediation activity.

(b) dissolved benzene is the most mobile of the BTEX compounds. As a means of comparison, Table 1, provides a list of pure phase solubility values and the organic carbon partition coefficient (Koc) of the BTEX components. The water solubility is the amount of a chemical that can dissolve in pure water at a specific temperature and pressure. The Koc is a measure of dissolved phase mobility, as the coefficient reflects the affinity of the compound to adsorb onto organic carbon within the sediment matrix.

Therefore, because benzene more readily dissolves in water and adheres less to the soil, it is more mobile than the other BTEX compounds.

Table 1

	Water Solub. (mg/L)	Koc (ml/g)
Benzene	1791	97
Toluene	535	300
Ethylbenzene	152	1100
Xylenes	130	240

Groundwater flow and contaminant fate of dissolved benzene, in the vicinity of the former Chevron facility, was modeled using MODFLOW/MT3D. MODFLOW is a finite difference model, developed by the U.S. Geological Survey for the purpose of simulating groundwater flow. MT3D is a finite difference model, developed in part by Konikow and Bredehoft of the U.S. Geological Survey, which simulates the fate and transport of dissolved compounds. This method of simulating partical movement has survived legal scrutiny at such sites as Rocky Flats, Colorado, and has been readily accepted by various federal and state regulatory agencies.

A finite difference model involves the approximation of the partial derivatives, which describe site conditions, by a series of algebraic expressions. As a result of the approximation, the partial differential equation describing the problem is replaced by a finite number of easier to compute algebraic equations. The values at selected points, the nodes on the finite difference grid (see Section a, below), become the unknowns which are solved by the series of algebraic equations.

The groundwater flow and contaminant fate and transport model presented in this memo is a combined MODFLOW/MT3D simulation. The groundwater flow simulation, using MODFLOW, is constructed first. The MODFLOW results are then stored for access by MT3D, the contaminant fate and transport portion of the model. The contaminant fate and transport model then accesses the groundwater flow data to generate a combined simulation.

The basic parameters used to construct the groundwater flow and contaminant fate model are shown on Tables A and B.

(a) Finite difference grid - The grid spacing represents the nodes used for the algebraic calculations of the model. The grid is constructed of 28 columns and 30 rows, with the nodes separated by 15 foot uniform spacing in the x and y directions.

(b) Specified head boundaries - depth to groundwater at the site is defined as 288 feet above sea level along the bottom row of

the grid (eastern portion of map), and 235 feet above sea level along Crow Creek, at the upper portion of the grid (western portion of the map).

The specified head boundaries define the groundwater gradient, which is based on groundwater elevations regularly measured at monitor wells C-1 to -3, -5 to -8, and -10 to -16. Groundwater elevation data has been unavailable from C-4 since September 24, 1990, as the well has not been located. Groundwater depth measurements are also not available for C-9 and RW-1 since June 18, 1991 and June 12, 1990, respectively, due to groundwater extraction at these wells.

(c) Aquifer thickness - the unconfined saturated thickness of the silts and clays are defined by information contained in the well installation logs. The installation logs are provided by Chevron consultants Groundwater Technology, Inc. (monitor wells C-1 to -9 and RW-1), and Pacific Environmental Group (monitor wells C-10 to -16).

Within the primary area of concern, between Crow Creek and the eastern boundary of the grid, the aquifer thickness is maintained at a constant 20 foot thickness.

(d) Bottom elevation - The bottom of the aquifer (sediment/bedrock interface), along with the measured groundwater elevation, defines the thickness of the aquifer. The depth to bedrock is available from the well installation logs.

(e) Hydraulic conductivity - the hydraulic conductivity is a measurement of the ability of a fluid to pass through a porous medium. The higher the hydraulic conductivity, the greater the ability of the liquid to pass through the medium. In this case, the value reflects the ability of water to flow through the silts and clays characterizing the saturated zone at the site.

The hydraulic conductivity values used in the model (clay - 0.0279 ft/day, = 1.0×10^{-5} cm/sec; silt - 0.2790 ft/day, $=1.0 \times 10^{-4}$ cm/sec) are based on published values for these specific soil types (Table 2.2, Groundwater, Freeze and Cherry, 1979, Prentice Hall).

(f) Specific porosity - the specific porosity reflects the percentage of the sediment composed of interconnected pore space, which will allow groundwater to flow. The value used in the model, 10%, is based on published numbers for silts and clays.

(g) Recharge - The Castro Valley area is characterized as a region of low annual rainfall, and little if any irrigation. Recharge, or net addition of surface water to the aquifer, is therefore neglected for the model.

(h) Evapotransportation - Depth to local groundwater is 20 feet below ground level. At this depth evaporation will be minimal and the factor was therefore not considered for the model.

(i) Source concentration - the presence of liquid phase hydrocarbon (LHC) in on-site groundwater indicates that a continual dissolved benzene source exists at the site.

The benzene source concentration is calculated as the product of the pure phase solubility (1791 mg/l) and the weight percent of benzene in gasoline. The pure phase solubility is a compound specific constant, at specific temperature and pressure conditions, and is readily available in published tables. The weight percent of benzene as a gasoline component has varied over time, and is assumed in this study to constitute 1.3% of the LHC present in on-site groundwater. A 1.3% benzene gasoline component is consistent with the 0.12-3.5% range stated in Appendix G of the California LUFT Manual as the weight percent of benzene in gasoline.

The source concentration is therefore calculated as 1791 mg/l x 0.013 = 24 mg/l (=24 ppm).

(j) Longitudinal dispersion - the dispersivity is an estimate of the degree of heterogeneity of the subsurface. The 15-30 foot values used in the model fall within the published range of clay/silt sediment, based on field studies.

(k) Transverse dispersion - published accounts of field studies suggest that the transverse dispersivity is commonly 0.1-0.2 of the longitudinal dispersion. The transverse dispersivity is a measurement of the subsurface heterogeneity, as it influences groundwater flow moving perpendicular to the gradient direction.

(l) Dry bulk density - a dry bulk density of 1.57 g/cm^3 was used in the calculations of contaminant fate. The 1.57 g/cm^3 is within the range of published values for a silt/clay sediment water bearing zone.

(m) Distribution coefficient - the distribution coefficient, K_d, is defined as the amount of compound (in mg) which will adsorb to 1 mg of soil. The distribution coefficient is calculated as the product of the adsorption coefficient (Koc), described above, and the total organic carbon content (TOC) of the soil.

The adsorption coefficient is a compound specific constant (Koc benzene = 97 ml/g), which is available in published texts. The TOC is estimated to be 0.05% (500 ppm) based on characteristic values for silt and clay sediment.

(n) Biodegradation half-life - the biodegradation half-life estimates the amount of time necessary to degrade 1/2 of the dissolved benzene in groundwater due to biologic activity. The

biodegradation half-life is dependent primarily on the amount of available oxygen in the saturated zone and the nature of the aquifer. In general, the greater the amount of dissolved oxygen and the more permeable the aquifer, the greater the rate of biodegradation and the smaller the half-life value.

Published values of benzene biodegradation half-life vary from approximately 60 to 730 days. The 110 day half-life used in the model is based on calibration of the model to measured dissolved benzene concentrations, and is consistent with published values of benzene half-life in a silt/clay saturated zone.

Results of computer generated model

1) Figure 2 shows the areal grid used to generate the groundwater flow model. Each box within the grid has the dimensions of 15 x 15 feet.

2) Figure 3 is a site map exhibiting the areas characterized as having a hydraulic conductivity of 0.0279 ft/day (unshaded area on map). The hydraulic conductivity of 0.0279 ft/day is consistent with the clay sedimentary matrix observed at the level of the water table at on-site and off-site monitor wells.

The shaded area of the map is calculated as having a hydraulic conductivity of 0.279 ft/day, based on the presence of predominantly silts at the level of the water table, in monitor well C-12. Subsurface sediment data is available in the well installation logs of the site assessment reports prepared for Chevron.

The shape of the shaded (silt) area on the map was varied until simulated benzene concentrations in downgradient monitor wells C-12, -10A and -10B approximated the actual benzene concentration measured from these wells.

3) Figure 4 shows the groundwater flow as simulated by the MODFLOW flow model. The groundwater flow pattern in Figure 4 is based on groundwater elevations measured on-site April 13, 1992.

The anomalous flow pattern near monitor well C-12 is the result of the higher permeable sediment present in this portion of the site, thereby influencing the groundwater flow.

4) The shaded area of Figure 5 represents the initial (1986) area of the site containing liquid phase hydrocarbon (LHC). The areal extent of the LHC is the source area of the dissolved benzene. As stated above, the concentration of dissolved benzene within the source area is 24 ppm.

The extent of the shaded area is based on the measurable presence

of LHC in MW-3 (GTI letter, March 7, 1985), recovery well RW-1 (GTI Update Report, July 31, 1986) and by calibration of the model to groundwater analytical data. The shape of the shaded area was varied slightly, until the simulated areal pattern of dissolved benzene approximated the observed dissolved benzene concentrations measured at the site.

5) Figure 6 represents 1992 dissolved benzene concentrations as predicted by the MODFLOW/MT3D computer generated groundwater flow and fate model. The initiation of the model simulation is 1986, with Figure 6 representing site conditions 6 years after initial site parameters were established (shown in Figure 5).

It should be noted that Figure 6 results assume no groundwater pumping at the site (see Table C for assumptions). A "no-pumping" situation represents a conservative set of parameters, which if anything, will tend to over-represent the downgradient extent of the dissolved benzene plume.

Comparison of the simulated results to actual dissolved benzene concentrations measured from groundwater samples (shown in bold type on Figure 6), provided the mechanism to calibrate the accuracy of the model. Figure 6 calibration was based on a comparison to April 13, 1992 groundwater analytical data.

The model predicts that the 1 ppb dissolved benzene contour does not presently reach Crow Creek. A biodegradation equilibrium front is present several feet downgradient of monitor wells MW-10A and -15. This equilibrium front is where biodegradation removes benzene at a rate which is equivalent to dissolution of benzene in the source area. Simply stated, benzene at the equilibrium front is degraded before it has a chance to migrate further.

6) Figure 7 shows predicted dissolved benzene concentrations 10 years after initial site conditions are established (corresponding to 1996 site conditions). As in Figure 6 results, this interpretation also assumes no groundwater extraction at the site.

The model predicts that under "steady state" conditions there is no net advance of dissolved benzene downgradient. Steady state conditions are defined as no fluctuations in the flow or water table elevations.

Dissolved benzene concentrations in downgradient monitor wells MW-10A, -10B and -15 have remained virtually unchanged since sampling began on these wells on March 7, 1990; further supporting these modeled results.

7) The data shown on Figure 8 represents the projected dissolved benzene concentrations in 1996, incorporating the effect of groundwater pumping from RW-1 and C-9 (see Table D). A pumping rate of 0.05-0.1 gpm is calculated into the model to simulate actual

site conditions. Groundwater extraction data are routinely supplied to Chevron by the consultant, Geraghty and Miller.

As stated on Table D, the model begins at Time = 0, corresponding to 1986. Extraction well RW-1 begins pumping 1490 days into the model (1990) at a rate of 0.1 gpm. At 1830 days (1991), the pumping rate of RW-1 is reduced to 0.05 gpm. Extraction well C-9 begins pumping at 1990 days (1991) at a rate of 0.1 gpm. At 2330 days (1992), the pumping rate is reduced to 0.05 gpm.

The variable pumping rates used in the model reflect the changing pumping rates observed on-site.

The total run time of the results displayed in Figure 8 corresponds to Time = 3650 days (1996).

The model suggests that the present groundwater extraction configuration, utilizing wells RW-1 and C-9, will have a minimal effect on reducing the downgradient benzene concentration over the next 4 years.

8) Figures 9 and 10 show model simulated groundwater elevation contour lines in response to pumping 1 and 2 wells, respectively (see Table D). Figure 9 contains only the groundwater extraction effect of pumping RW-1 at 0.1 gpm for 1 year. Figure 10 shows the effect of pumping RW-1 for 2 years (at 0.1 gpm - year 1, 0.05 gpm - year 2), and C-9 for 1 year at 0.1 gpm.

The estimated groundwater capture radius, based on model simulations, is 20-25 feet.

9) Figure 11 presents the groundwater elevation contour pattern in response to pumping RW-1, C-9 and C-6 (see Table E).

Figure 11 represents site conditions simulated for 1995, with RW-1, C-9 and C-6 pumping at 5, 4 and 3 years, respectively. The pumping rates of the 3 wells are listed on Table E. The pumping rates are shown to decrease with time due to the simulated dewatering effect that groundwater extraction has on the relatively low permeable aquifer.

10) Figure 12 shows model simulated groundwater elevation contour lines in response to pumping RW-1, C-9, RW-2 and C-6 (see Table F). RW-2 is located along the western property boundary, 40 feet from RW-1. Figure 12 represents site groundwater conditions in 1995, with RW-1, C-9, RW-2 and C-9 pumping 5, 4, 3 and 3 years, respectively. The pumping rates of the 4 wells are shown on Table F.

11) Figures 13 and 14 display the simulated dissolved benzene concentrations in response to pumping RW-1, C-9 and C-6. The pumping rates and other conditions concerning these figures are

presented on Table E. Figures 13 and 14 simulate conditions for 1994 and 1996, respectively.

It is apparent from the data presented in Figures 13 and 14 that the effect of pumping RW-1, C-9 and C-6, along with the biodegradation process, will reduce the concentration of downgradient hydrocarbons and "shrink" the dissolved hydrocarbon plume. The 3 pumping wells provide a partial barrier to off-site benzene migration as observed in the decreasing concentrations in the downgradient portion of the modeled area. The upgradient portion of the area, near the source, will still likely be characterized by elevated concentrations of dissolved benzene.

12) Figures 15 to 16 show simulated dissolved benzene concentrations in response to pumping RW-1, C-9, C-6 and RW-2. The pumping rates and other conditions concerning these wells are present in Table F. Figures 15 and 16 simulate site conditions for 1994 and 1996, respectively.

The simulations presented in Figures 15 and 16 indicate that the 4 pumping well model establishes a more effective benzene migration barrier than the previously discussed 3 pumping well model (compare Figures 14 and 15). Downgradient benzene concentrations are further reduced due to the more effective inhibition of off-site benzene migration.

It should be noted, however, that upgradient concentrations will still be elevated. The low attainable pumping rates, due to the relatively low permeability of the soil, make it difficult to establish a truly effective migration barrier.

In both the 3 and 4 pumping well cases, it is apparent that the potential impact of dissolved benzene on Crow Creek will be eliminated.

Summary

The MODFLOW/MT3D computer generated groundwater flow and contaminant fate model indicates the following:

(A) Dissolved benzene, originating from a source at the former Chevron facility, will not apparently impact Crow Creek. A no impact simulation is shown regardless of whether groundwater is pumped or not (Figures 6, 7 and 8).

(B) The present groundwater extraction system (RW-1 and C-9) does not provide sufficient capture to effectively limit the off-site migration of dissolved benzene (Figure 7 and 8).

(C) The 4 year simulation of a 3 pumping well situation indicates that the off-site migration of dissolved benzene is

reduced, as observed in the decreased concentrations in the downgradient portion of the modeled area. Upgradient concentrations, near the source, are still elevated.

The effect of the additional pumping well (C-6) is observed by comparing the pair of 1996 simulations presented in Figure 8 (pumping wells RW-1 and C-9) and Figure 14 (pumping wells RW-1, C-9 and C-6).

(D) The 4 year simulation of a 4 pumping well situation indicates that the off-site dissolved benzene migration is further inhibited by the addition of a hypothetical pumping well (RW-2). The effect of the various pumping configurations may be observed by comparing the 1996 simulations in Figures 8 (pumping wells RW-1 and C-9), Figure 14 (pumping wells RW-1, C-9 and C-6), and Figure 16 (pumping wells RW-1, C-9, C-6 and RW-2).

If you wish to discuss this site further, please contact me at CTN 242-1383.

Sheldon N. Nelson

cc: T.E. Buscheck
P.L. Hildebrandt
J.L. Pease
J.W. Hartwig

Table A **Title: GROUNDWATER FLOW MODEL PARAMETERS**

Flow Model	MODFLOW
Transport Model	MT3D
Problem Statement (Flow Model)	
Finite difference grid	28 columns by 30 rows
Grid spacing	15 foot uniform spacing in the x and y directions
Specified head boundaries	Constant head defined as 288 feet above sea level along the bottom row (east) and 235 feet above sea level along Crow Creek, at the top of the grid (west)
Layers	1 (unconfined aquifer)
Aquifer thickness	Set to 20 feet in transport model
Bottom elevation	Set at 268 feet along bottom row; thereafter, each successive row is set 2 feet less than the preceeding row
Hydraulic conductivity	Clay-0.0279 ft/d ($1x10^{-5}$ cm/sec) Silt-0.2790 ft/d ($1x10^{-4}$ cm/sec)
Porosity	10%
Recharge	Neglected
Evapotranspiration	Neglected

Table B Title: Benzene Fate Model Parameters

Problem Statement (Transport Model)	
Source concentration	24 ppm benzene
Dispersion (longitudinal)	15 feet (30 feet for first run w/no source removal)
Dispersion (transverse)	1.5 feet
Dry bulk density of soil	1.57 g/cm^3
K_d (distribution coefficient)	0.0485
K_{oc} (benzene)	97 ml/g
TOC (total organic carbon)	0.05% (500 ppm)
Biodegradation half-life ($t_{1/2}$)	110 days

Table C Title: Benzene Concentrations With No Pumping Simulation #1

Simulation #1

Assumptions

No pumping wells

Total run time is 10 years (1986-1996)

Constant benzene source (no source removal)

Area of source constant from start to finish

No change in constant head elevations

Table D Title: Benzene Concentrations Including Effect of Pumping Simulation #2

Simulation #2

Assumptions

Two pumping wells

	RW-1	C-9
Begin	1490 days (1990) 0.1 gpm	1990 days (1991) 0.1 gpm
Change in pumping rate	1830 days (1991) 0.05 gpm	2330 days (1992) 0.05 gpm

Total run time is 10 years, time = 0-3650 days (1986-1996)

Constant benzene source (no source removal)

Area of source constant from start to finish

No change in constant head elevations

Table E Benzene Concentrations Including Effect of Pumping Simulation #3

Simulation #3

Assumptions

Three pumping wells

	RW-1	C-9	C-6
Begin	1990 0.1 gpm	1991 0.1 gpm	1992 0.04 gpm
Change in pumping rate	1991 0.05 gpm	1992 0.05 gpm	1995 0.03 gpm
	1992 0.04 gpm	1995 0.045 gpm	
	1995 0.035 gpm		

Total run time is 13 years (1986-1999)

Constant source (no source removal)

Area of source constant from start to finish

No change in constant head elevations

Table F Benzene Concentrations Including Effect of Pumping Simulation #6

Simulation #6

Assumptions

Four pumping wells (add RW-2 as pumping well at same time as C-6).

	RW-1	C-9	RW-2	C-6
Begin	1990 0.1 gpm	1991 0.1 gpm	1992 0.04 gpm	1992 0.03 gpm
Change in pumping rate	1991 0.05 gpm	1992 0.05 gpm	1995 0.02 gpm	1995 0.02 gpm
	1992 0.04 gpm	1995 0.045 gpm		
	1995 0.035 gpm			

Total run time is 13 years (1986-1999)

Constant source (no source removal)

Area of source constant from start to finish

No change in constant head elevations

Figure 1

Title: SITE PLAN

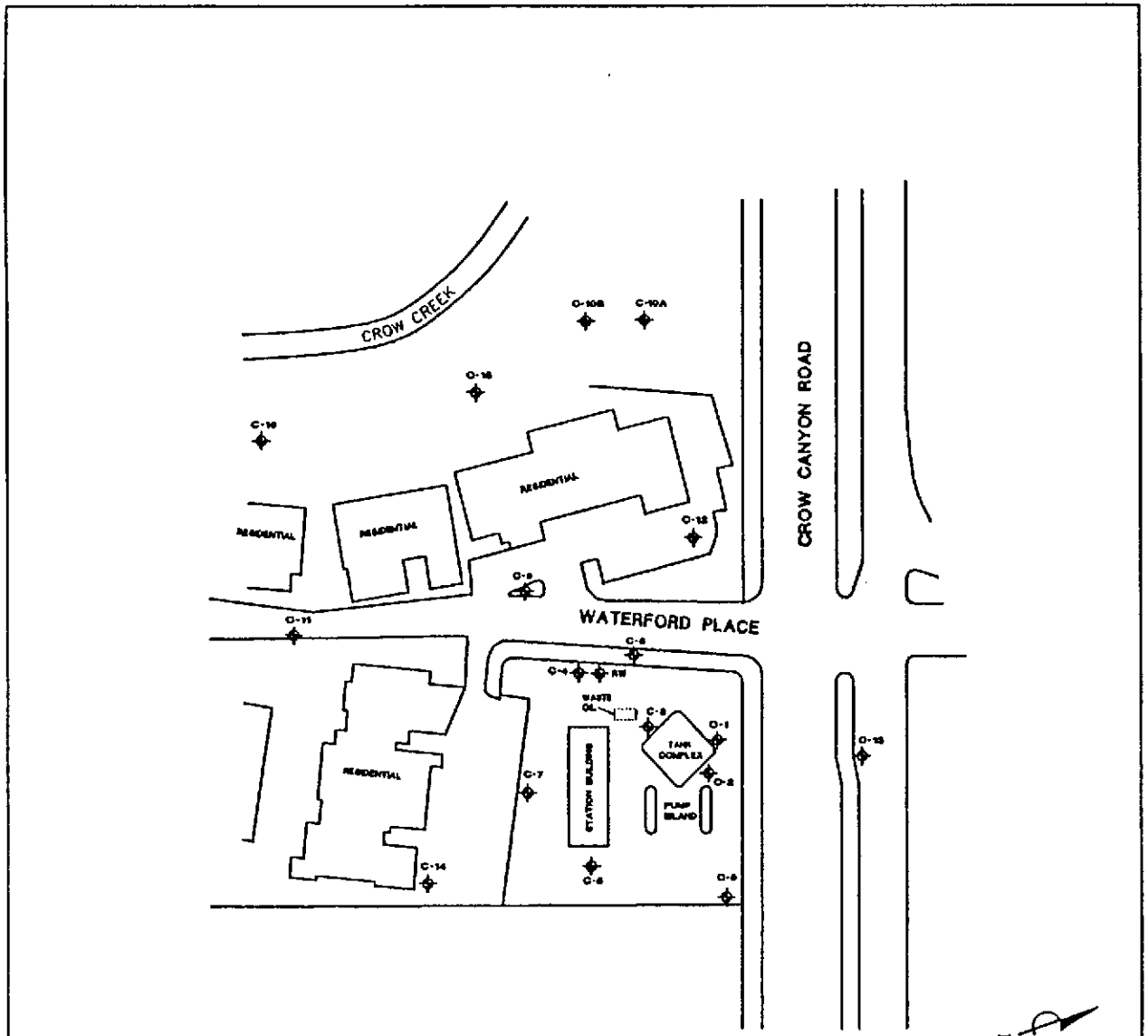


Figure 2.

Title: AREAL GRID USED FOR MODEL

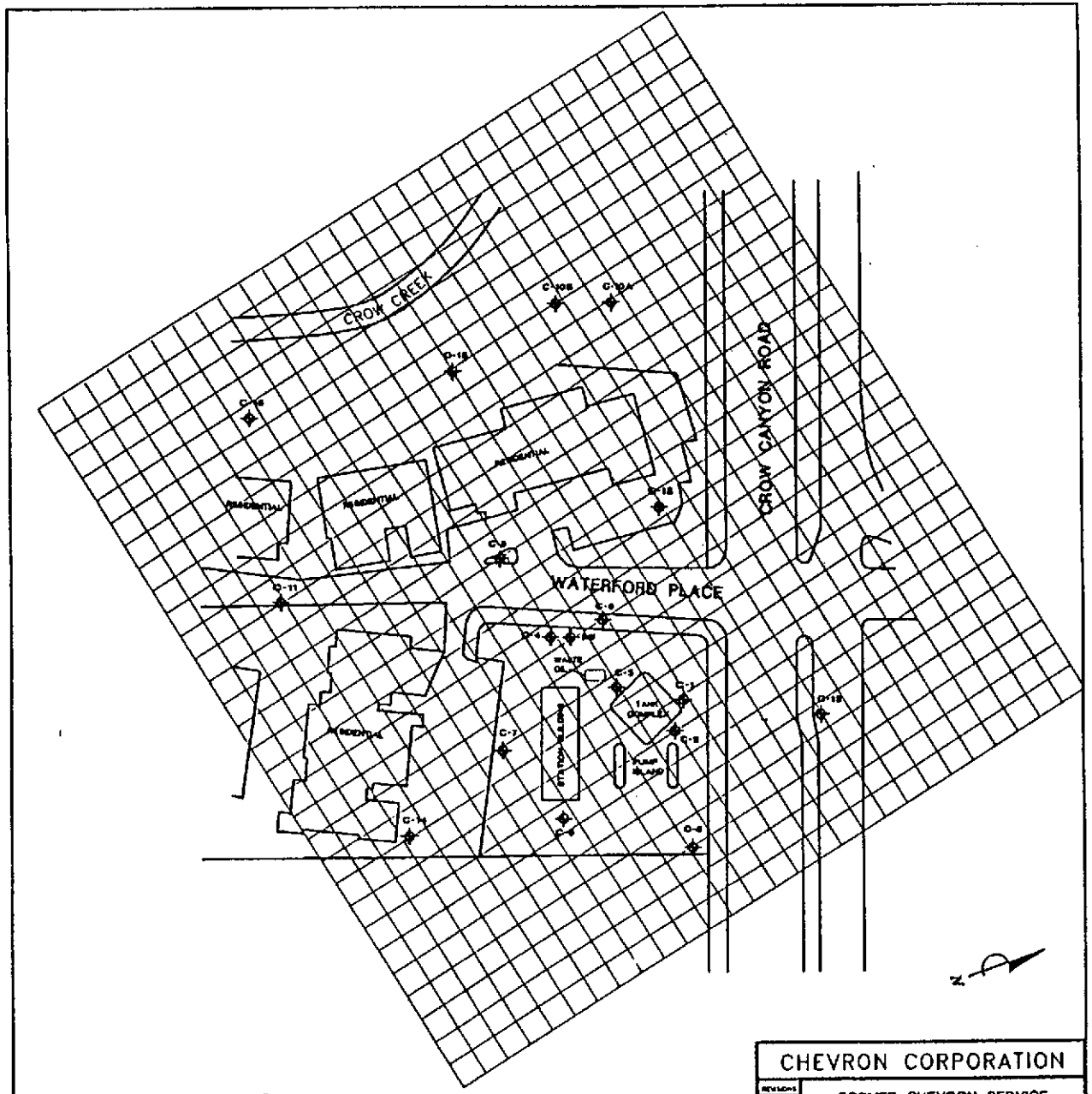


Figure 3.

Title: ILLUSTRATION OF HETEROGENEOUS HYDRAULIC CONDUCTIVITY IN SUBSURFACE

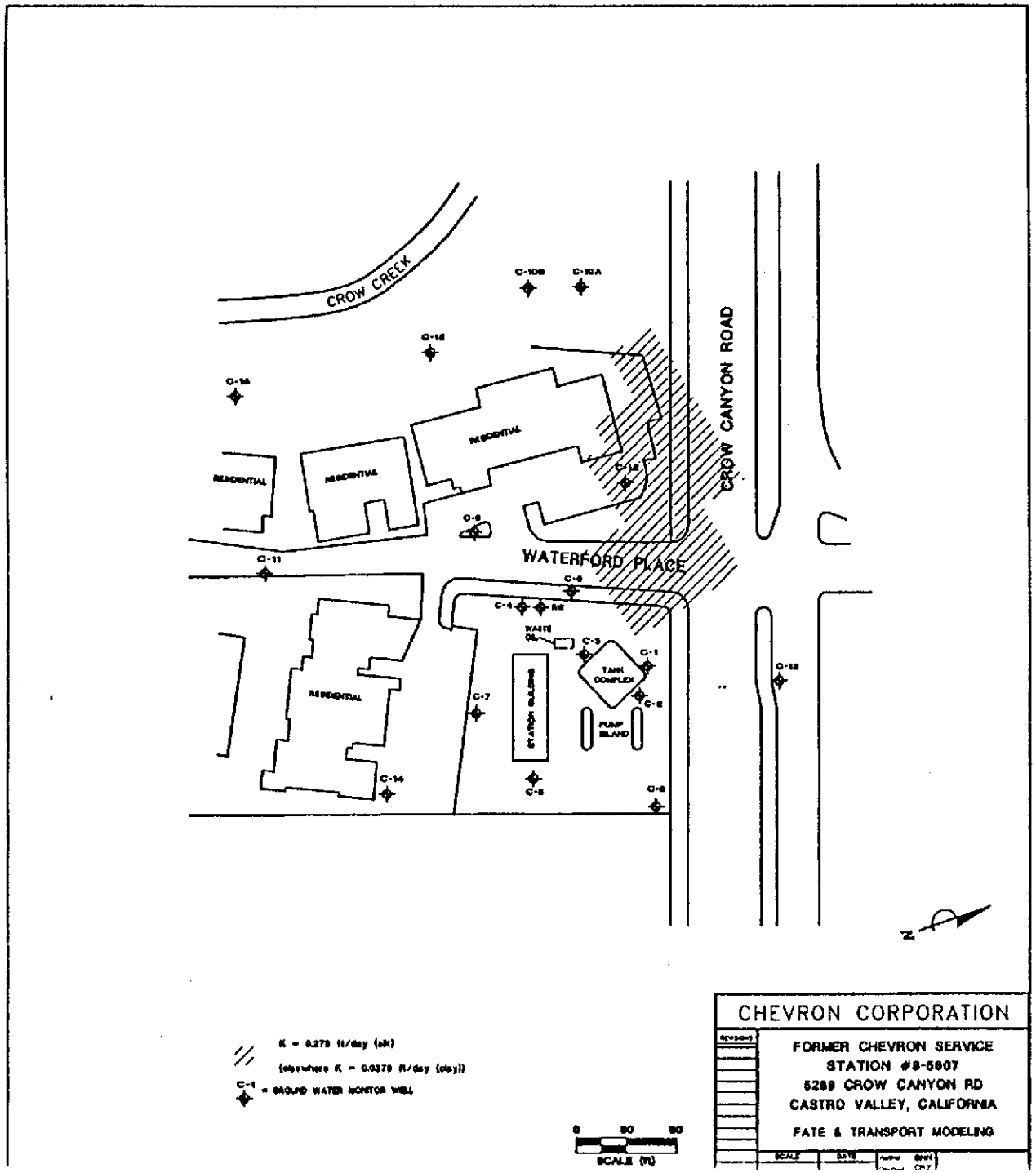


Figure 4

Title: GROUNDWATER ELEVATION CONTOURS - MODELED FROM 1992 FIELD DATA

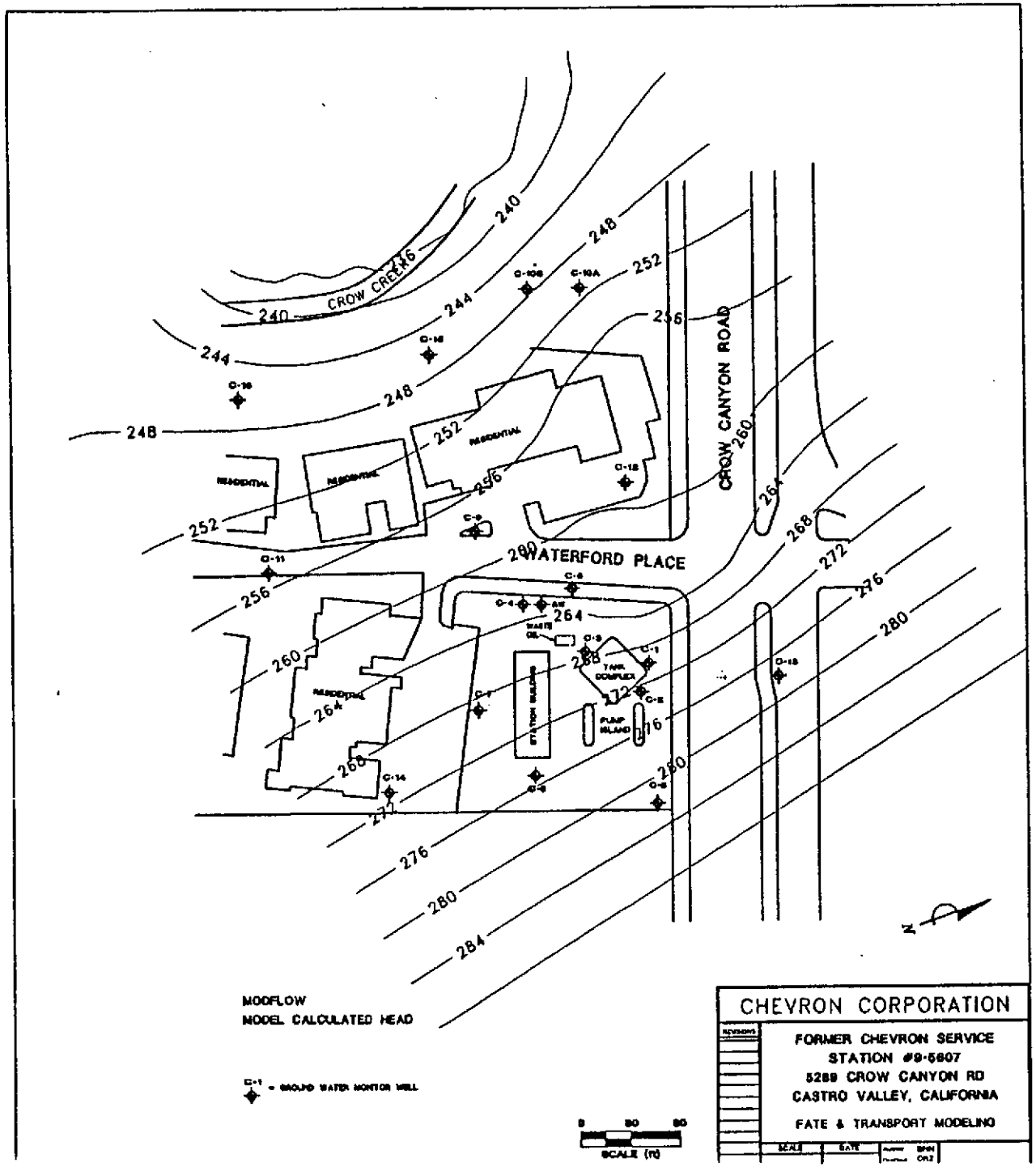


Figure 5.

Title: INITIAL LIQUID PHASE HYDROCARBON SOURCE AREA - 1986

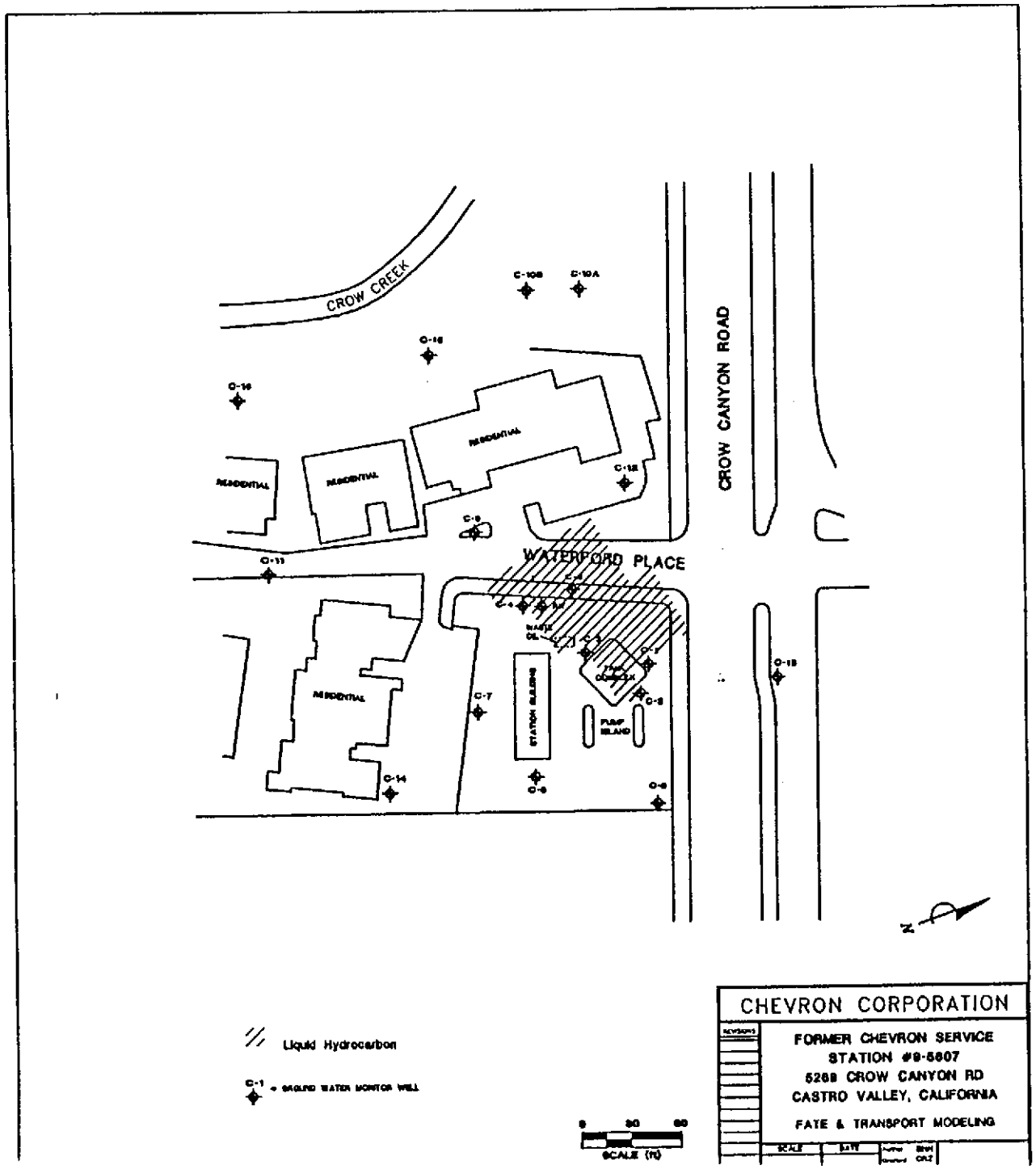
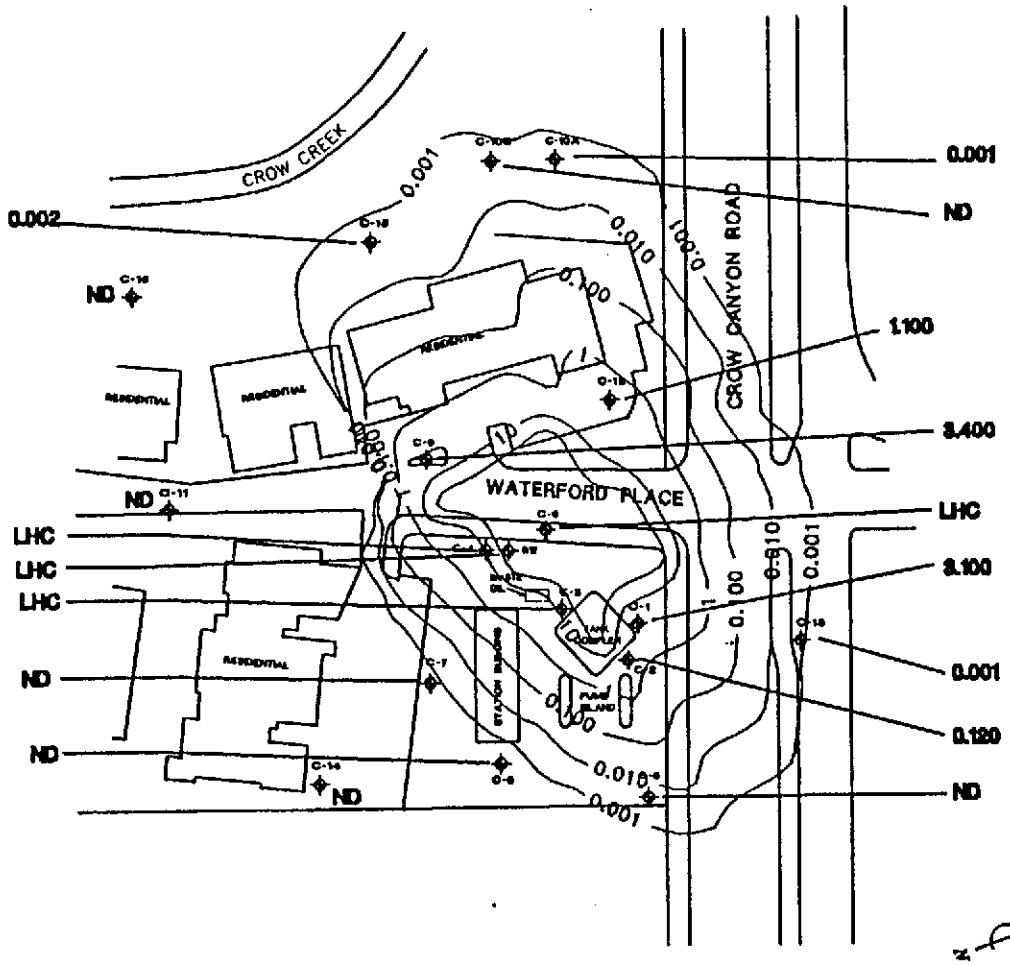


Figure 6.

Title: DISSOLVED BENZENE CONCENTRATIONS - 1992
[illegible] - STATION #1



MODFLOW/MT3D MODELS
CONSTANT SOURCE (24 PPM)
HALF LIFE = 110 DAYS
TIME = 8 YEARS

C-1 = GROUND WATER MONITOR WELL

3.100 - BENZENE CONCENTRATION (PPM)
4/13/92

0 80 160
SCALE (ft)

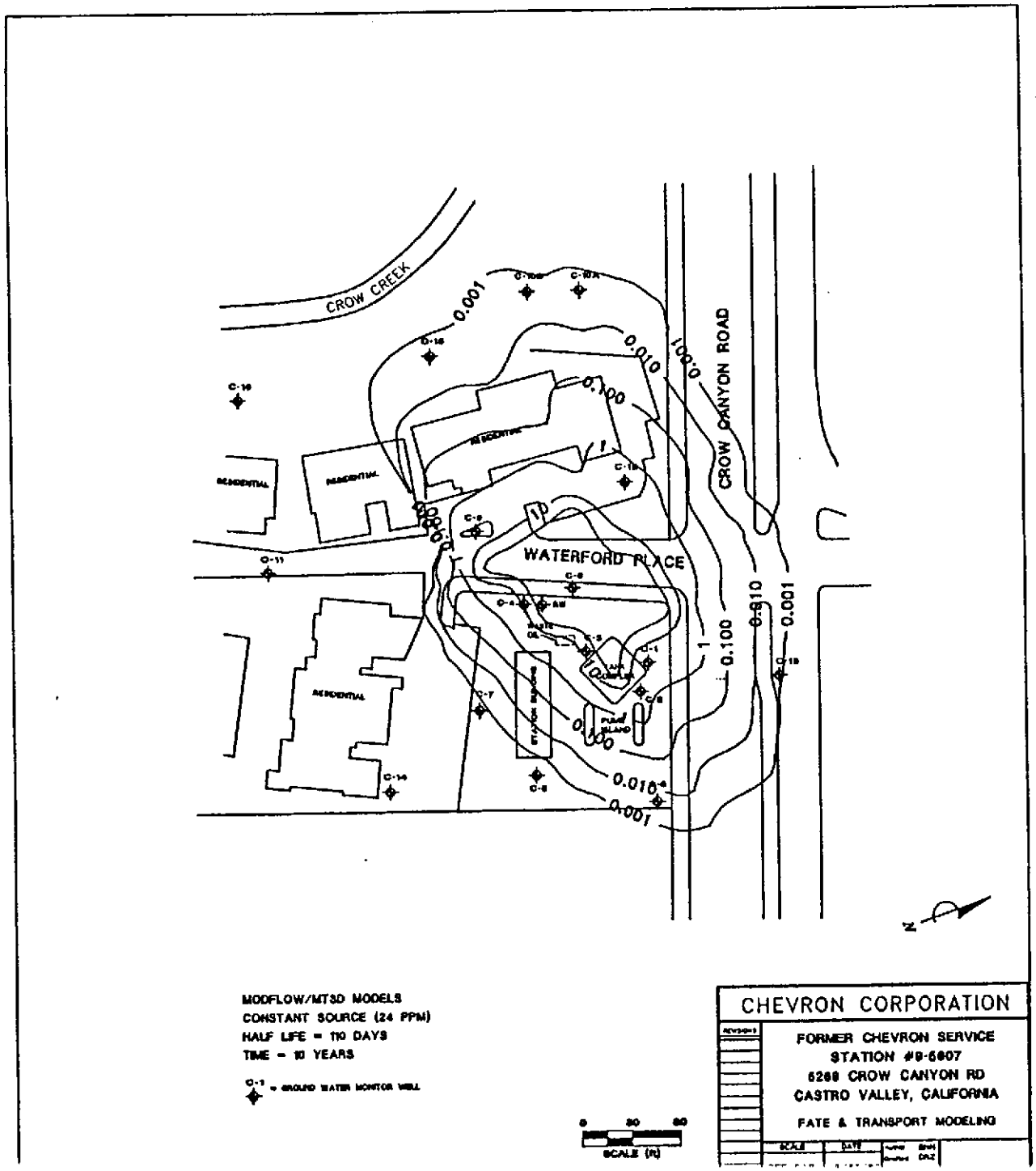
CHEVRON CORPORATION

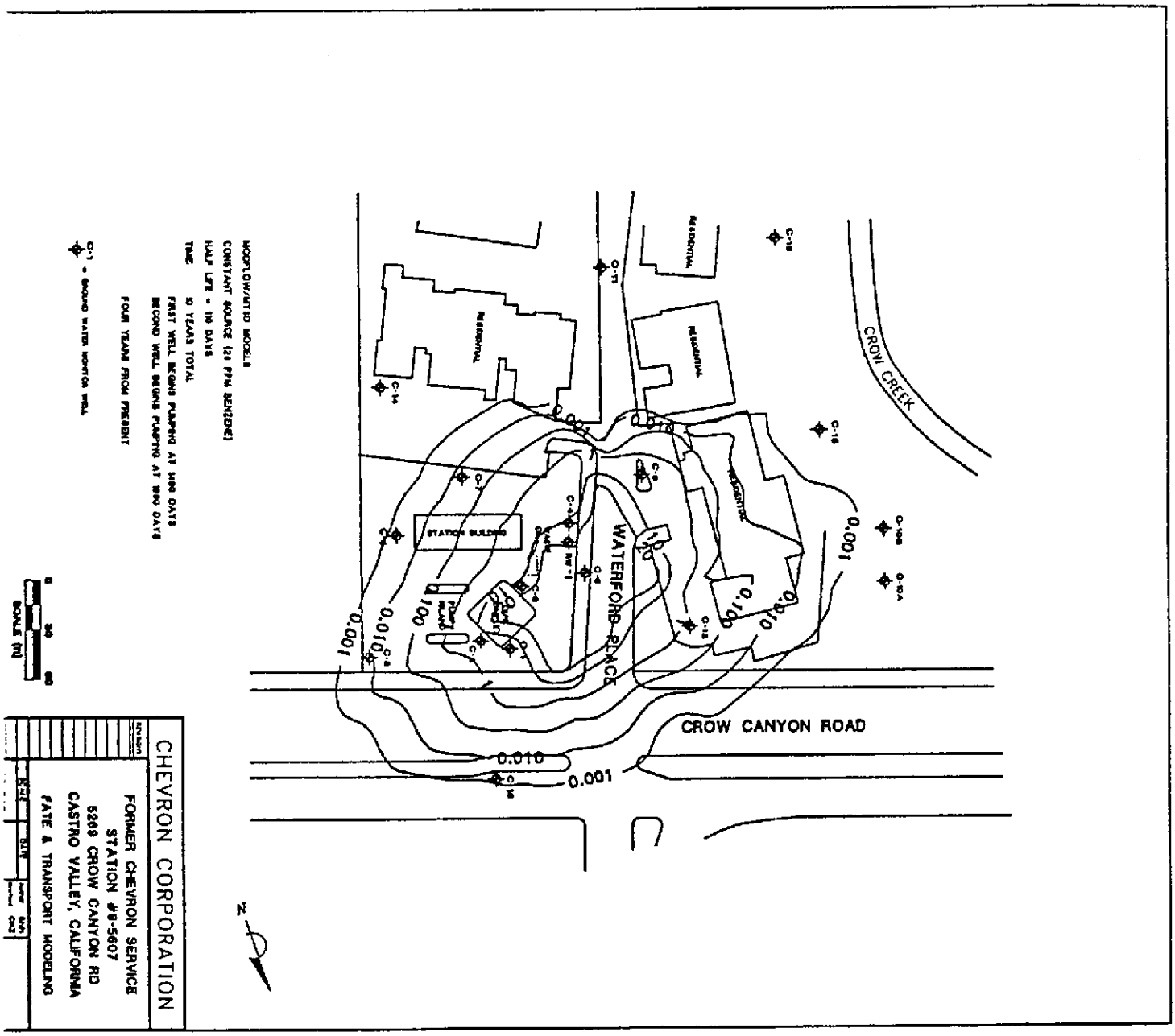
FORMER CHEVRON SERVICE
STATION #9-5607
5269 CROW CANYON RD
CASTRO VALLEY, CALIFORNIA

FATE & TRANSPORT MODELING

Figure 7.

Title: DISSOLVED BENZENE CONCENTRATIONS - 1996
NO PUMPING WELLS - SIMULATION #1





Title: DISSOLVED BENZENE CONCENTRATIONS - 1996
2 PUMPING WELLS (RW-1 AND C-9) - SIMULATION #2

Figure 8.

Figure 9.

Title: GROUNDWATER ELEVATION CONTOURS
EFFECT OF ONE PUMPING WELL (RW-1)

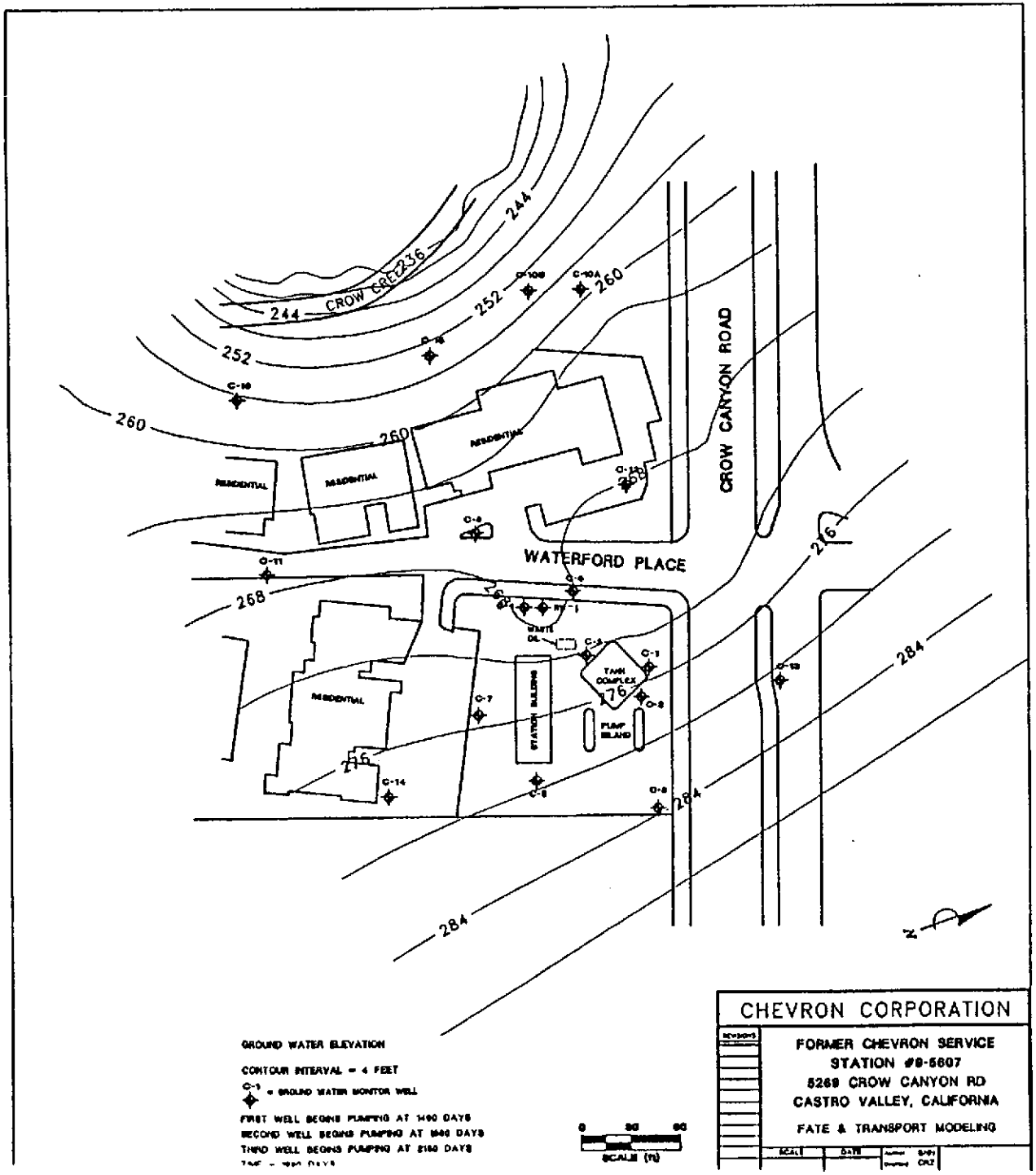


Figure 10.

Title: GROUNDWATER ELEVATION CONTOURS
EFFECT OF TWO PUMPING WELLS (RW-1 AND C-9)

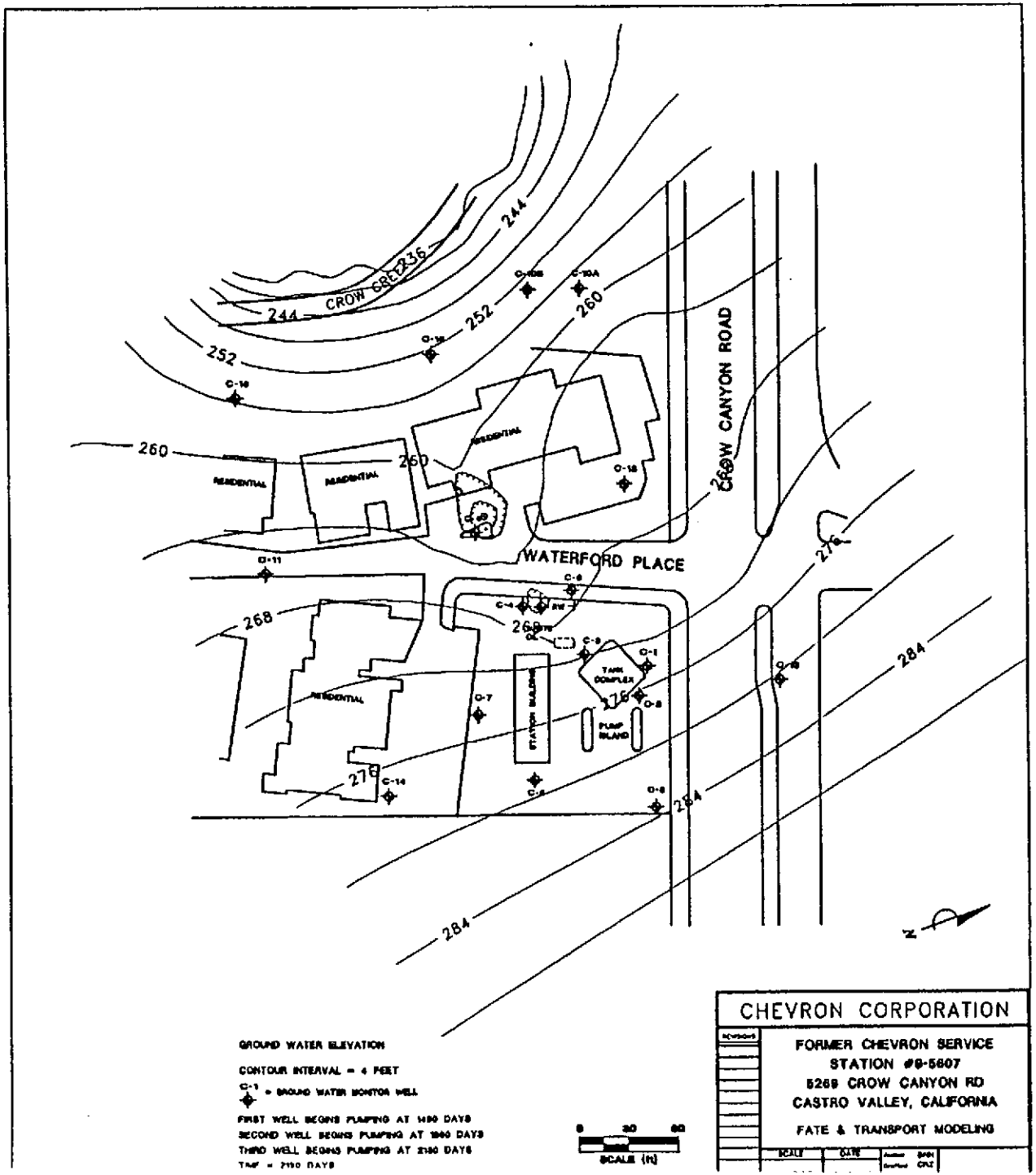
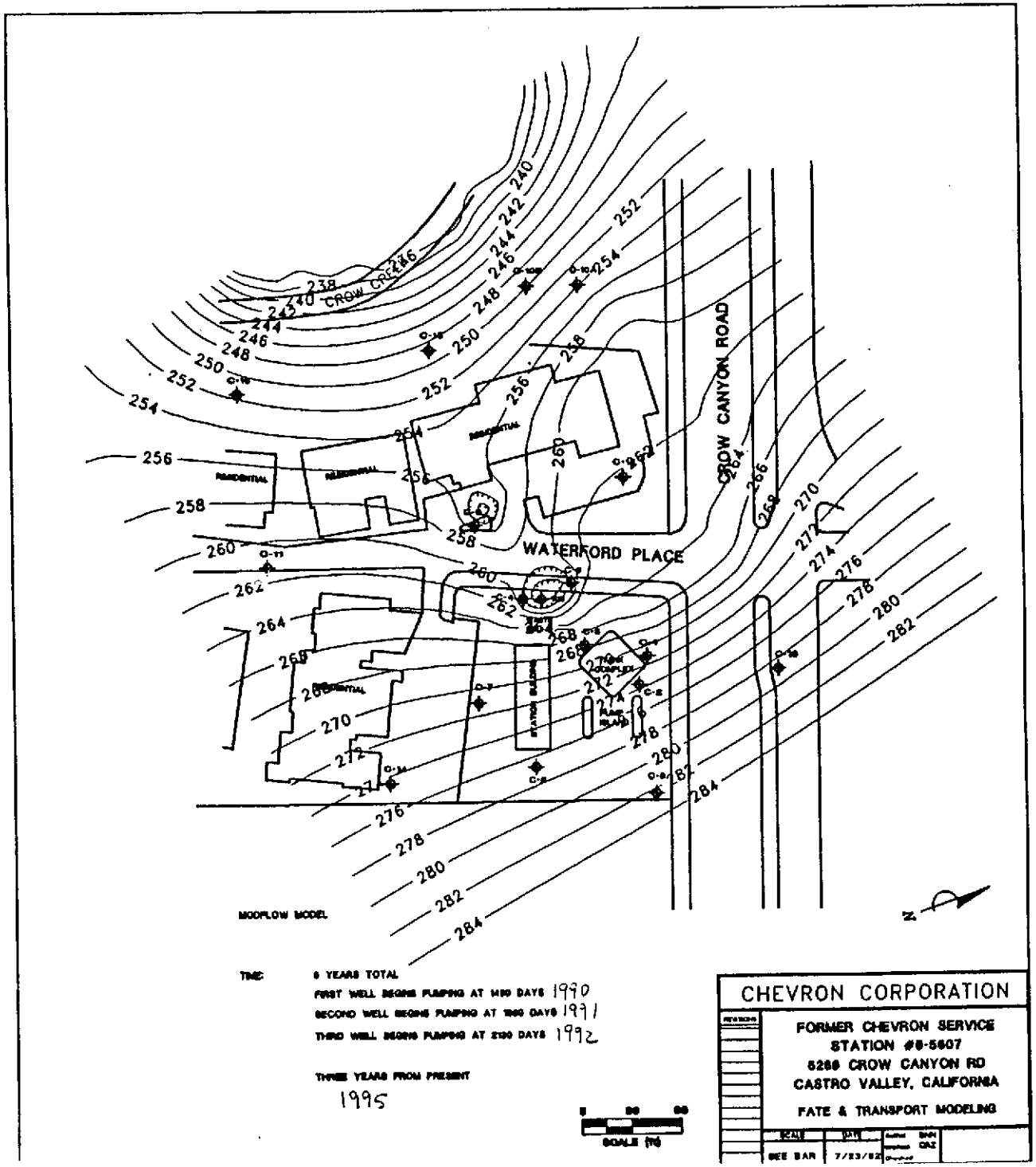
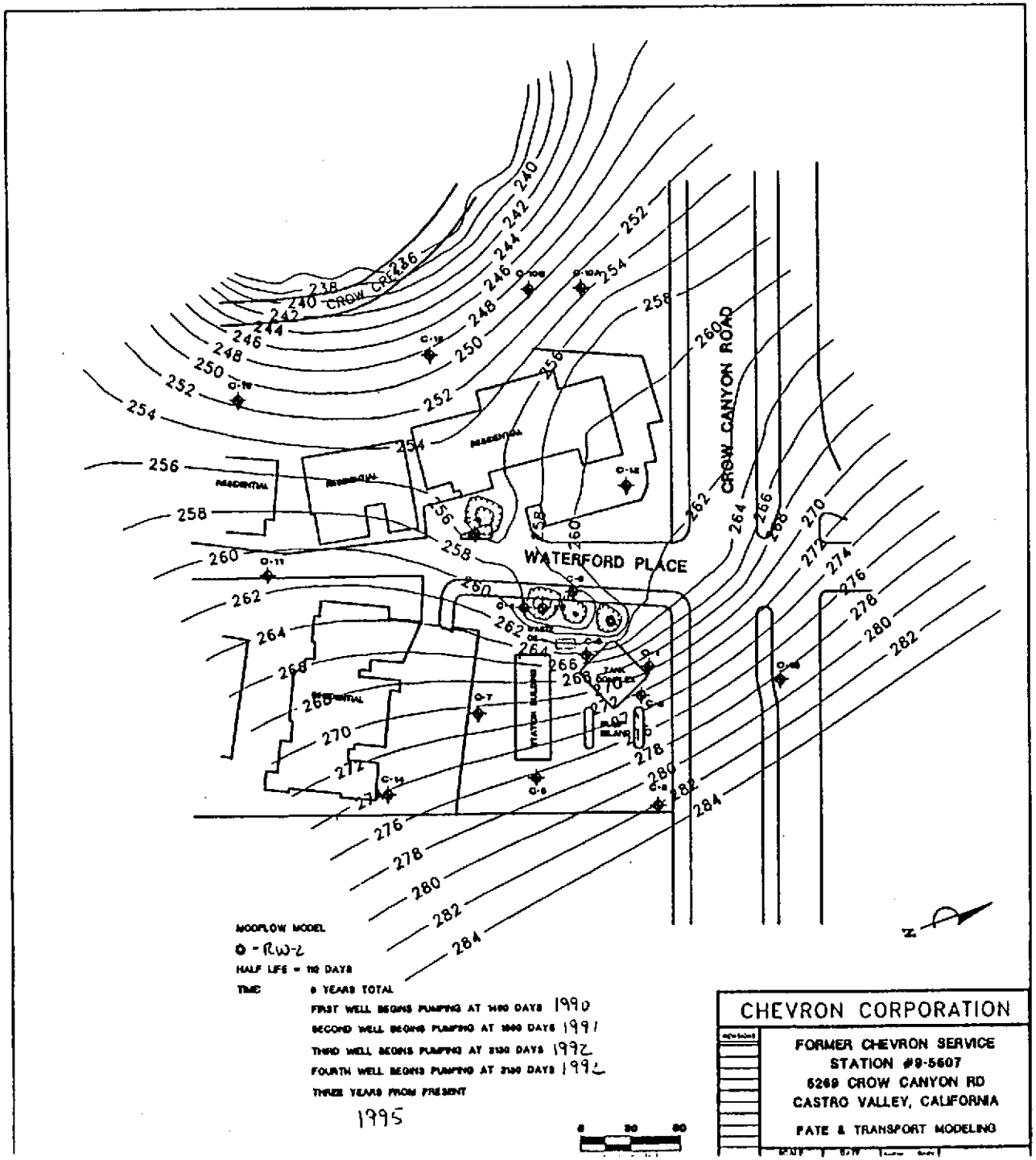


Figure 11.

Title: GROUNDWATER ELEVATION CONTOURS
EFFECT OF THREE PUMPING WELLS (RW-1, C-9 AND C-6)
1995



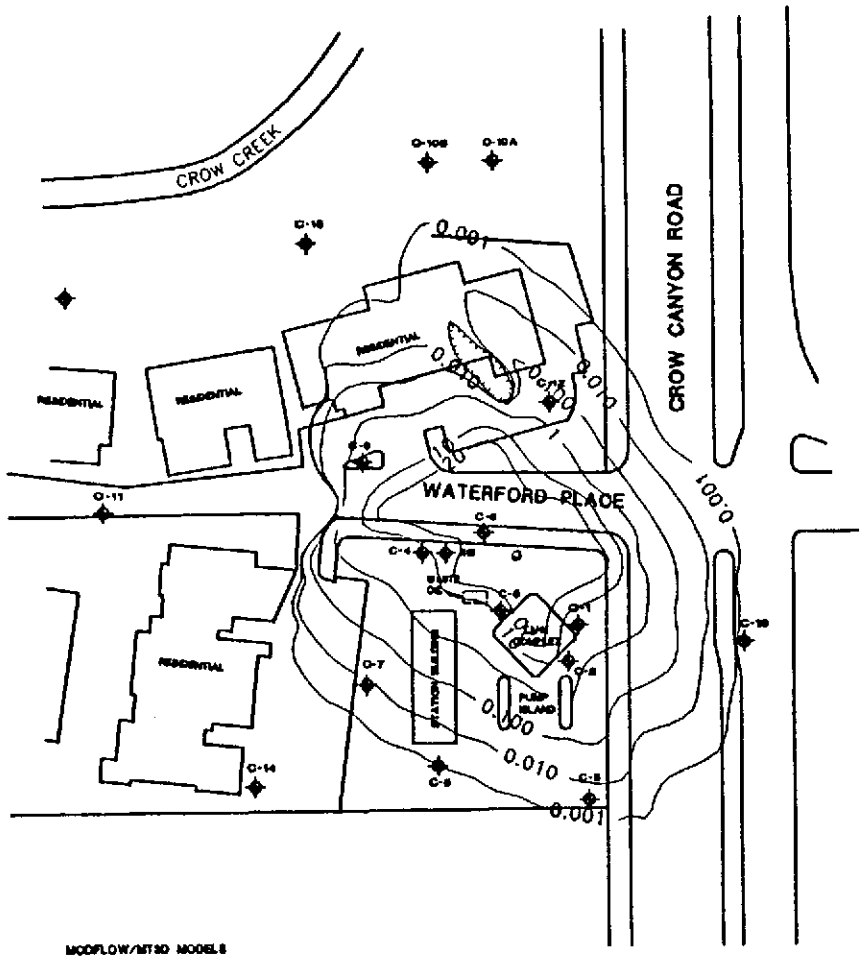


Title: GROUNDWATER ELEVATION CONTOURS

Figure 17

Figure 13

**Title: DISSOLVED BENZENE CONCENTRATIONS
THREE PUMPING WELLS (RW-1, C-9 AND C-6)
1994**



MODFLOW/MT3D MODELS
CONSTANT SOURCE (24 PPM BENZENE)
HALF LIFE = 70 DAYS
TIME: 6 YEARS TOTAL
FIRST WELL BEGINS PUMPING AT 1460 DAYS 1990
SECOND WELL BEGINS PUMPING AT 1825 DAYS 1991
THIRD WELL BEGINS PUMPING AT 2190 DAYS 1992.

TWO YEARS FROM PRESENT

1994

SCALE (ft)

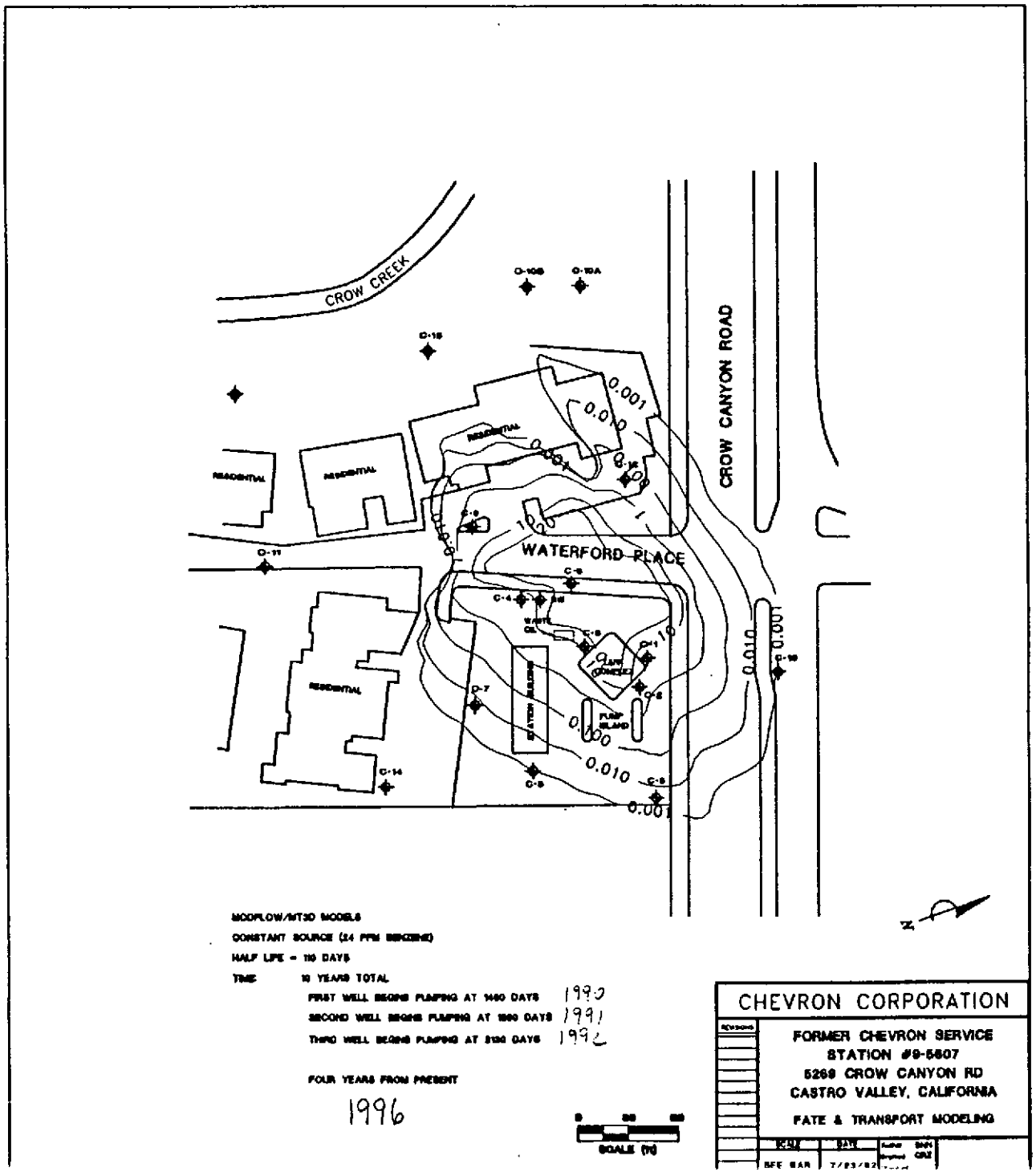
CHEVRON CORPORATION

FORMER CHEVRON SERVICE
STATION #9-5607
5269 CROW CANYON RD
CASTRO VALLEY, CALIFORNIA

FATE & TRANSPORT MODELING

SCALE: SEE BAR
DATE: 7/23/92

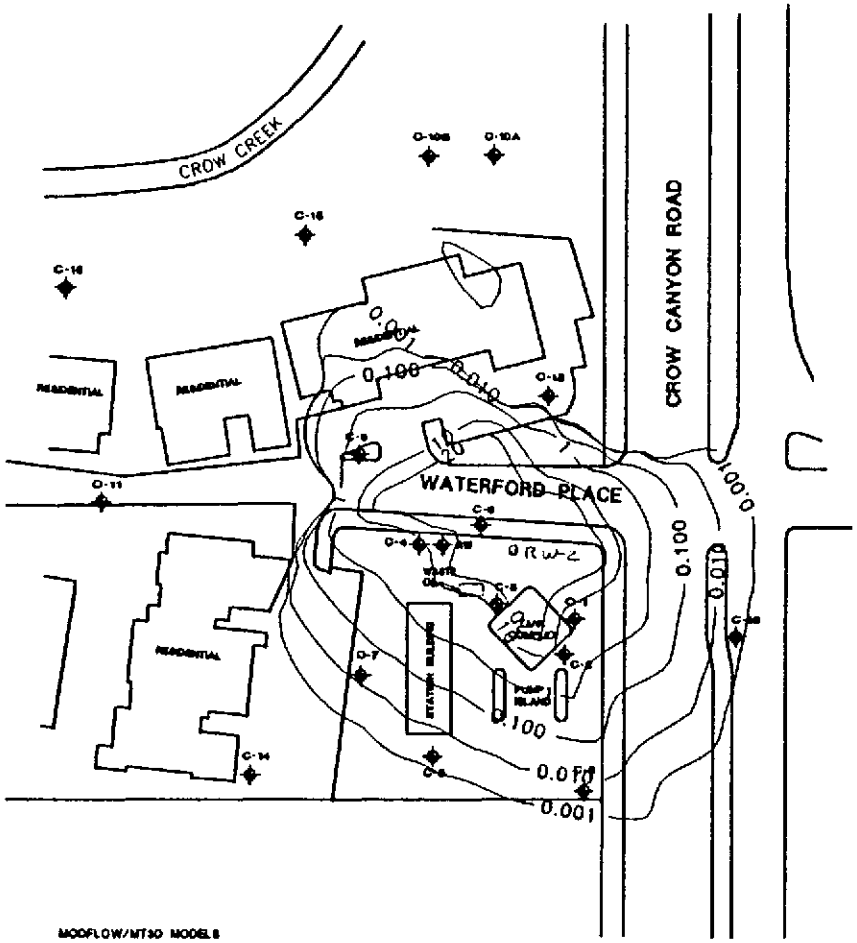
Figure 14.



Title: DISSOLVED BENZENE CONCENTRATIONS
THREE PUMPING WELLS (RW-1, C-9 AND C-6)
1996

Figure 15.

Title: DISSOLVED BENZENE CONCENTRATIONS
FOUR PUMPING WELLS (RW-1, C-9, RW-2 AND C-6)
1994



MODFLOW/MT3D MODELS
CONSTANT SOURCE (24 PPM BENZENE)
HALF LIFE = 110 DAYS
TIME: 9 YEARS TOTAL
FIRST WELL BEGINS PUMPING AT 1460 DAYS (1992)
SECOND WELL BEGINS PUMPING AT 1825 DAYS (1993)
THIRD WELL BEGINS PUMPING AT 2190 DAYS (1994)
FOURTH WELL BEGINS PUMPING AT 2190 DAYS (1994)
TWO YEARS FROM PRESENT
1994

SCALE (ft)

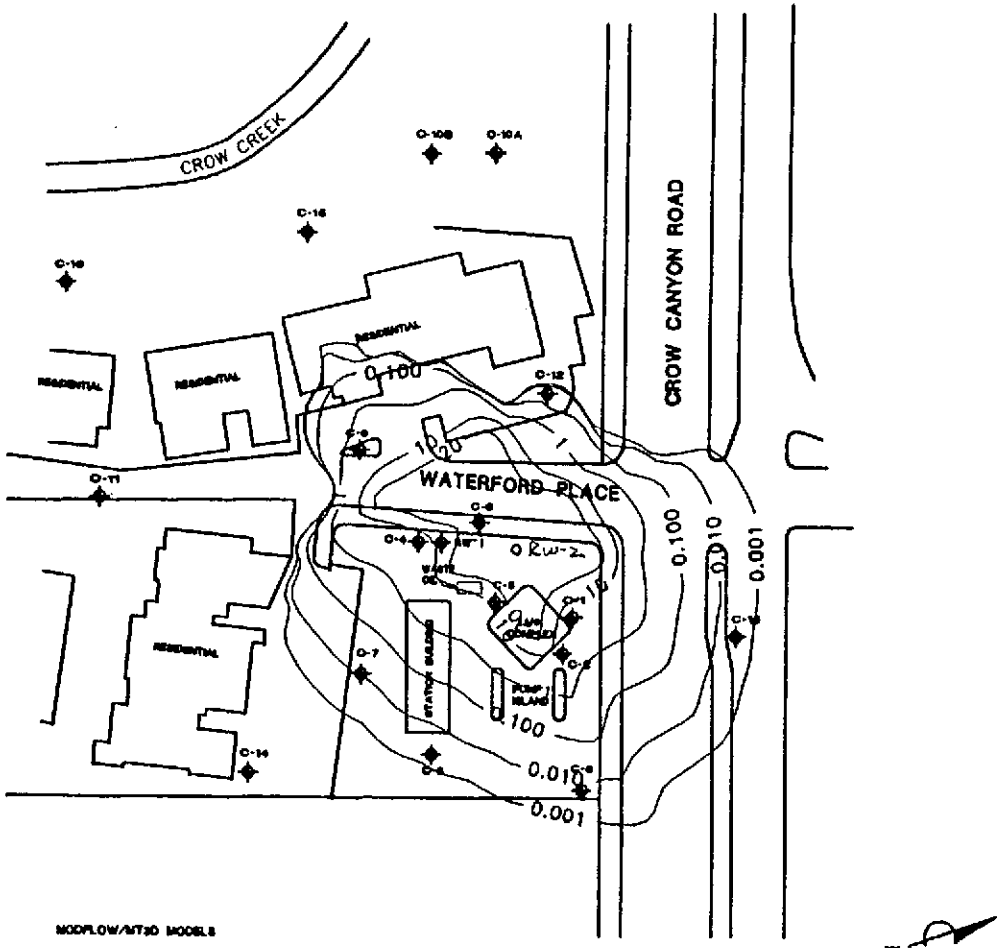
CHEVRON CORPORATION

FORMER CHEVRON SERVICE
STATION #9-5607
5266 CROW CANYON RD
CASTRO VALLEY, CALIFORNIA

FATE & TRANSPORT MODELING

Figure 16

Title: DISSOLVED BENZENE CONCENTRATIONS
FOUR PUMPING WELLS (RW-1, C-9, RW-2 AND C-6)
1996



MODFLOW/MT3D MODELS
CONSTANT SOURCE (24 PPM BENZENE)
HALF LIFE = 110 DAYS
TIME: 10 YEARS TOTAL
FIRST WELL BEGINS PUMPING AT 1460 DAYS 1990
SECOND WELL BEGINS PUMPING AT 1825 DAYS 1991
THIRD WELL BEGINS PUMPING AT 2190 DAYS 1992
FOURTH WELL BEGINS PUMPING AT 2700 DAYS 1992
FOUR YEARS FROM PRESENT

1996

SCALE (ft)

CHEVRON CORPORATION

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