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**LETTER OF TRANSMITTAL**

**TO:** Mr. Barney Chan  
Alameda County Department  
of Environmental Health  
1131 Harbor Bay Parkway, #250  
Alameda, California 94502-6577

**DATE:** 31 May 2001  
**PROJ. NO.** 980074.02  
**SUBJECT:** Annual Groundwater  
Monitoring Report

**WE ARE SENDING YOU THE FOLLOWING:**

On behalf of Smooke & Sons Investment Co., we are pleased to present the *Report on the Annual Groundwater Monitoring at the Property Located at 3925 Alameda Avenue.*

*HA 3586*

**COPY TO:**

Richard Smooke, Smooke & Sons  
Vera Nelson, EKI

**Very truly yours,**

**ERLER & KALINOWSKI, INC.**

Anona Dutton

*If enclosures are not as noted, please advise us  
at once at (650) 292-9100.*

31 May 2001

Mr. Barney Chan  
Alameda County Department of Environmental Health  
1131 Harbor Bay Parkway, #250  
Alameda, California 94502-6577

Subject: Report on the Annual Groundwater Monitoring at the  
Property Located at 3925 Alameda Avenue  
Oakland, California  
(EKI 980074.02)

Dear Mr. Chan:

Erler and Kalinowski, Inc. ("EKI") is pleased to present this letter report to the Alameda County Department of Environmental Health ("ACDEH") regarding annual groundwater monitoring performed at the property located at 3925 Alameda Avenue, Oakland, California ("Site", see Figure 1). This report has been prepared on behalf of Smooke & Sons Investment Co. ("Smooke & Sons").

The groundwater monitoring reported herein was performed to address ACDEH requirements for closure of two underground storage tanks that were removed from the Site in 1988. Multiple phases of investigation have been performed at the Site since the USTs were removed. As directed by the ACDEH, the monitoring reported herein has been performed pursuant to EKI's proposal for additional soil and groundwater investigation and for annual monitoring of groundwater from existing monitoring wells, as described in the *Report Regarding the 3925 Alameda Site*, dated 19 January 1999, and addenda dated 1 March and 12 April 1999. The proposed investigations were approved by the ACDEH in a letter dated 19 November 1999. EKI completed the additional soil and groundwater investigation in January and February 2000 and reported the results in the *Report on Additional Investigation and Groundwater Monitoring*, dated 15 March 2000. The first annual groundwater monitoring was performed in March 2000 and reported in the *Report on Annual Groundwater Monitoring at the Property Located at 3925 Alameda Avenue*, dated 31 May 2000.

In this report, the results of the second annual groundwater monitoring and sampling completed in March of 2001 are presented.

## 1.0 INTRODUCTION

### 1.1 Background

Several earlier investigations have been performed at the Site and were previously reported. Results of these investigations indicate that total petroleum hydrocarbons as gasoline



("TPHg"), diesel ("TPH-d"), benzene, toluene, ethylbenzene, and xylenes ("BTEX") are present in groundwater and soil. Based on these results, a Risk-Based Corrective Action ("RBCA") assessment was prepared for the Site. The reports providing the results of these assessments are identified in the list of references at the end of this report.

As reported in EKI's *Report on Additional Investigation and Groundwater Monitoring*, dated 15 March 2000, a soil investigation performed in the railroad tracks area during February 2000 did not identify an on-Site source of a petroleum hydrocarbon release. The results of groundwater sampling during January and March 2000 indicated that petroleum hydrocarbons in groundwater under the railroad tracks adjacent to the property line may have been the result of an off-Site release rather than from the former USTs on-Site. Groundwater sampling results through March 2000 for the existing monitoring wells indicate that petroleum hydrocarbon and BTEX concentrations appear to be stable or decreasing in MW-1 through MW-4 over time, and that biodegradation processes are likely occurring in groundwater.

On 5 April 2000, Ms. Vera Nelson and Mr. Steven Miller of EKI met with Mr. Barney Chan of ACDEH to discuss results of investigations reported in *Report on Additional Investigation and Groundwater Monitoring*, dated 15 March 2000. On the basis of the discussion at this meeting and a follow-up telephone conversation between Mr. Chan and Mr. Steve Miller on 20 April 2000, it was agreed that no further investigation of soil in the railroad tracks areas was warranted, but that annual groundwater monitoring in wells MW-1 through MW-4 should be performed in March 2000 and again in March 2001 to assess whether concentrations of petroleum hydrocarbons and BTEX continued to be stable or decreasing.

## 1.2 Objectives

The objectives of annual groundwater monitoring reported herein were to measure groundwater levels and evaluate trends in BTEX and TPH concentrations and bioattenuation parameters. The trends in BTEX and TPH concentrations were evaluated to verify that the Site groundwater concentrations are stable or decreasing over time as observed based on previous sampling results. The trends in bioattenuation parameters were evaluated to verify that biological degradation processes are occurring in the groundwater.

## 2.0 GROUNDWATER MONITORING

The following sections summarize the results of groundwater level monitoring and sampling performed on 13 March 2001, provide an assessment of trends of petroleum hydrocarbon concentrations detected in groundwater samples collected from on-Site monitoring wells over time, and assess bioattenuation sampling results. Groundwater monitoring was performed at monitoring wells MW-1 through MW-4. The locations of these wells are shown on Figure 2.

## 2.1 Groundwater Level Monitoring

Depths to groundwater in on-Site groundwater monitoring wells MW-1, MW-2, MW-3, and MW-4 were measured on 13 March 2001. The resulting data are summarized in Table 1. These data were used to develop a groundwater contour map for this date, shown on Figure 3, which shows an easterly hydraulic gradient. The groundwater gradient map for the Site in *Report on Annual Groundwater Monitoring at the Property Located at 3925 Alameda Avenue*, dated 31 May 2000 indicated that groundwater flow was in a southerly direction. The apparent variability in gradient direction may be a result of tidal ~~or~~ recharge effects, or groundwater extraction in the area, although the exact cause is unknown.

*Δ in gradient*

## 2.2 Groundwater Sampling

On-Site monitoring wells MW-1 through MW-4 were purged and sampled in conformance with the methods and procedures described in Appendix C of the *Report Regarding the 3925 Alameda Site*, dated 19 January 1999.

Observations during purging and sampling were recorded on field forms, which are included in Appendix A. Bioattenuation parameters including dissolved oxygen, ferrous iron, redox potential, temperature, and pH were recorded during purging of the wells. Purge water was contained in two-55 gallon drums and kept on-Site pending arrangements for proper disposal off-Site.

Chemical analyses of the groundwater samples were performed by K Prime, Inc., Santa Rosa, California. Groundwater samples were analyzed for TPH-g using the DHS LUFT Method, TPH-d using the DHS LUFT Method with silica gel cleanup, BTEX and MTBE using EPA Method 8260A, and nitrate and sulfate using EPA Method 300.0. Laboratory reports from K Prime, Inc. are included as Appendix A.

### 2.2.1 TPH, BTEX and MTBE Concentrations

The results of groundwater sample analyses are summarized in Table 1 and on Figure 2.

Consistent with the results of previous sampling, groundwater samples from well MW-1 had the highest concentrations of TPH-g (16 micrograms per liter "mg/L"), TPH-d (1.85 mg/L), benzene (4.78 mg/L), and ethylbenzene (0.38 mg/L). These concentrations were slightly higher than the 28 March 2000 sampling results at MW-1. The maximum concentrations of toluene (0.0023 mg/L), total xylenes (0.0069 mg/L), and MTBE (0.0073 mg/L) were detected at well MW-4 and were lower than those detected during the previous sampling event. Concentrations were lowest in groundwater samples from well MW-3, which is upgradient from the former UST area and serves as the background well.

Figures B1-1 through B1-4, included in Appendix B, graphically present chemical concentrations and groundwater elevations in each monitoring well as a function of time. As



depicted in these figures, with the exception of MW-4, groundwater concentrations of petroleum hydrocarbons have slightly increased in the wells since the last sampling event in March 2000. However, these concentrations generally fall in the lower end of the range of values detected for groundwater collected from each of these wells over time. Visual inspection of the graphs shows that there may be a relationship between groundwater elevation and chemical concentration, with concentrations increasing with water level. Please note that where the groundwater concentrations were non-detect (see Table 1), one-half of the detection limit was used as the representative groundwater concentration, which may have resulted in some of the apparent concentration increases.

### 2.2.2 Bioattenuation Data

The results of analyses for bioattenuation parameters are summarized in Table 2 for the groundwater samples collected on 13 March 2001. These data include dissolved oxygen, nitrate, sulfate, ferrous iron, redox potential, pH, and temperature.

As indicated in Table 2, dissolved oxygen concentrations measured in samples of groundwater collected from wells MW-1, MW-2, and MW-4, located southwest to southeast of the former USTs, are generally consistent with the last sampling event in May 2000. A slight increase in dissolved oxygen was noted in water from MW-1 and a more significant increase in dissolved oxygen was noted in water from wells MW-3 and MW-4. However, dissolved oxygen measured in MW-3 and MW-4 was not consistent with the measurements of ferrous iron and very negative redox potential.

The oxidation-reduction potentials measured in groundwater samples collected from all the wells have decreased since the last sampling event, with the exception of MW-3. In addition, the oxidation-reduction potentials measured in groundwater samples from wells MW-1, MW-2 and MW-4 are at the minimum 150 millivolts lower than the oxidation-reduction potential level measured in the sample of groundwater collected from well MW-3.

These bioattenuation data indicate that degradation of organic compounds, most likely petroleum compounds, is occurring at the Site.

## **3.0 STATISTICAL ANALYSIS OF GROUNDWATER TRENDS**

The Mann-Kendall test recommended by U.S. Environmental Protection Agency ("EPA") (1998, 1994b) was used to evaluate the statistical significance of potential trends in chemical concentration detected in groundwater at the Site. The Mann-Kendall test determines if a trend in concentrations exists by calculating an indicator statistic, S. If S is a large negative number, measurements taken later in time tend to be smaller than those taken earlier. Similarly, if S is a large positive number, measurements taken in later time tend to be larger (Gilbert, 1987). For the purposes of this analysis the null hypothesis tested was: there is an upward trend in groundwater concentration at a given well. Thus, a statistically relevant upward trend would be

established if the computed value of  $S$  was positive at a significance level less than a given value,  $\alpha$  (i.e., a probability, or confidence level, of an upward trend is  $(100-\alpha \cdot 100)\%$  or greater). If the resultant significance level was greater than the given  $\alpha$ , then the null hypothesis would be rejected, and the alternate hypothesis, that there was no upward trend in groundwater concentration at a given well, would be accepted.

Statistical guidance from the U.S. EPA (1994a) recommends that a significance level of 0.05, which corresponds to a 95% confidence interval, be used as a standard or default value for  $\alpha$  to ensure adequate statistical power, while limiting the number of false positive results. A significance level of 0.05 was used in this case to evaluate trends in groundwater concentrations at the Site.

A minimum of four data points is generally used for statistical analysis using the Mann-Kendall test, as indicated by U.S.EPA (1998), Gilbert (1987), and Hollander and Wolfe (1973). Specifically, U.S. EPA (1986) indicates that a minimum of 4 samples are required for statistical analysis of sample variability.

In this analysis, if multiple groundwater data for gasoline, diesel, and benzene were collected in one year, the data were averaged to obtain a representative concentration for each compound for the year in which data were collected (1995-2001). This averaging method allowed for a consistent time interval between data points with which meaningful statistics could be calculated. Consistent with Gilbert's recommendations, concentrations below the laboratory method reporting limit were assigned a common value equal to the smallest reporting limit for the compound in the data set (Gilbert, 1987).

The resulting averaged data, the Mann-Kendall statistic  $S$ , and the significance level  $\alpha$  are provided in Table 3. As can be seen in Table 3, the significance level  $\alpha$  is greater than 0.05 in each of the cases. In addition, it can be noted that the statistic  $S$  is negative in all cases except one, indicating that the concentrations measured at later times tended to be smaller than or similar to the concentrations collected at earlier times. This result confirms prior analysis presented in the Site report and elsewhere (EKI, 2000b) indicating that groundwater concentrations at the Site are stable or potentially decreasing.

#### 4.0 CONCLUSIONS

The Site is located in an industrial area and groundwater contamination has been identified at several properties in the vicinity of the Site. The presence of elevated concentrations of petroleum hydrocarbons in groundwater in the railroad tracks area may have been from an off-Site release rather than a result of on-Site migration from the former UST locations. However, as discussed in Section 2.1, the groundwater gradient appears to vary, and thus specific contaminant sources are difficult to identify.



EKI conducted an extensive file review that identified several UST release or surface spill sites in the immediate Site vicinity. These nearby release sites may have resulted in groundwater contamination that may pose a current or future threat to the Site groundwater, or at a minimum represent the effective "background" groundwater concentrations in the area. For example, 720 High St. located approximately 2,000 feet Northeast of the Site, 630 High St. located approximately 600 feet East of the Site, and 4200 Alameda Ave. located directly Northeast of the Site are known UST release sites that have BTEX contamination in groundwater above U.S. EPA maximum contaminant levels ("MCLs") for drinking water. Another off-Site source of groundwater contamination exists at 569 High St., located directly southeast of the Site, where several petroleum and oil spills were documented and where benzene was detected in groundwater at concentrations as high as 8.7 mg/L.

Based on the findings of the second annual groundwater monitoring, EKI has concluded that Site groundwater concentrations appear to be stable or decreasing, indicating that there is no continuing on-Site source to groundwater related to the two former USTs. TPH and BTEX are biodegradable chemicals and there are indications that biodegradation is occurring at the Site. In addition, EKI previously calculated the potential health risks due to benzene-impacted soil detected in the vicinity of MW-1 using the ASTM (1995) model for volatilization from subsurface soil sources into outdoor air (EKI, 1999c). The results of the risk-based calculations confirmed conclusions in the Site report that volatilization from benzene from soil into outdoor air at the Site does not pose an unacceptable risk to human health.

*need deed restriction?  
what about residential indoor air?*

EKI proposes that, based on the results of the annual groundwater monitoring discussed above, that a meeting be scheduled with Mr. Barney Chan of ACDEH to review the work completed to date and to discuss moving the Site towards closure.

Please contact us if you have any questions. We will call in the near future to schedule a meeting.

Very truly yours,

ERLER & KALINOWSKI, INC.

Steven G. Miller, P.E.  
Project Engineer

Vera H. Nelson, P.E.  
Project Manager

cc: Smooke & Sons Investment Co.



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- Appendix B Graphical Presentation of Analytical Groundwater Data



## REFERENCES

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U.S. EPA, 1998: U.S. EPA, *Guidance for Data Quality Assessment, Practical Methods for Data Analysis*, EPA QA/G-9, EPA/600/R-96/084, January 1998.

**Table 1**  
**Summary of Analytical Data for Groundwater Samples from Monitoring Wells**

3925 Alameda Avenue, Oakland, California

Date	Elevation (ft msl)	Analytical Data from MW-1 (mg/L)							
		TPHg	Diesel	Kerosene	Benzene	Toluene	Ethylbenzene	Xylene	MTBE
6/21/95 (a)	-0.57	81	9.8	8.2	11	0.72	1.8	3.9	NA (b)
9/22/95 (Q3 '95) (c)	-1.78	11.0	5	3	2.3	0.081	0.390	0.560	NA
12/7/95 (Q4 '95)	-1.59	6	<0.5	<0.5	0.343	0.032	0.133	0.184	NA
3/29/96 (Q1 '96)	-0.85	12	<0.05	4	0.730	0.089	0.300	0.180	0.270
6/26/96 (Q2 '96)	-1.23	7	<0.05	3	2.3	0.062	0.230	0.160	0.093
9/20/96 (Q3 '96)	-0.95	2.2	NA	NA	0.570	0.030	0.110	0.800	0.070
12/11/96 (Q4 '96)	-0.63	8.1	4.0	NA	2.60	0.073	0.300	0.200	0.340
3/24/97 (Q1 '97)	-0.66	11	NA	NA	2.8	0.055	0.34	0.16	0.029
12/17/98	-1.50	6	2.5	NA	2.2	0.046	0.31	<0.04	<0.04
1/20/00	-1.71	5.5	1.00	NA	1.88	0.041	<0.04	0.053	<0.04
3/28/00	-1.03	11.5	1.77	NA	4.09	0.0758	0.44	0.1	<0.05
3/13/01	-0.62	16	1.85	NA	4.78	<0.25	0.38	<0.25	<2.5

Date	Elevation (ft msl)	Analytical Data from MW-2 (mg/L)							
		TPHg	Diesel	Kerosene	Benzene	Toluene	Ethylbenzene	Xylene	MTBE
6/21/95 (a)	-0.47	7.6	5.9	4.9	1.5	0.18	0.072	1.1	NA
9/22/95 (Q3 '95)	-1.27	7.2	3.5	2	1.2	0.560	0.250	1.0	NA
12/7/95 (Q4 '95)	-1.41	8	<0.5	<0.5	0.240	0.200	0.108	0.402	NA
3/29/96 (Q1 '96)	-0.78	6	<0.05	2	0.640	0.300	0.190	0.490	0.078
6/26/96 (Q2 '96)	-1.15	5	<0.05	1	1.0	0.170	0.150	0.290	0.120
9/20/96 (Q3 '96)	-0.92	11.0	NA	NA	2.7	0.600	0.500	1.500	0.370
12/11/96 (Q4 '96)	-0.58	5.2	3.0	NA	2.1	0.340	0.400	1.500	0.170
3/24/97 (Q1 '97)	-0.65	10	NA	NA	3.3	0.44	0.8	2	0.015
12/17/98	-1.43	3.7	1.3	NA	0.9	0.053	0.19	0.46	0.08
1/20/00	-1.61	0.51	0.36	NA	0.275	0.007	0.055	0.039	0.017
3/28/00	-0.98	1.94	0.94	NA	1.28	0.0392	0.155	0.167	0.0441
3/13/01	-0.67	2.79	1.01	NA	1.28	<0.05	0.089	<0.05	<0.5

Date	Elevation (ft msl)	Analytical Data from MW-3 (mg/L)							
		TPHg	Diesel	Kerosene	Benzene	Toluene	Ethylbenzene	Xylene	MTBE
6/21/95 (a)	-0.49	0.14	1.9	<0.5	0.00054	0.00052	0.0017	0.005	NA
9/22/95 (Q3 '95)	-0.62	0.130	1.9	<0.5	0.001	0.001	0.012	0.013	NA
12/7/95 (Q4 '95)	-1.38	<1	<0.5	<0.5	<0.005	<0.005	0.013	0.013	NA
3/29/96 (Q1 '96)	-0.69	0.3	<0.05	0.2	0.002	0.002	0.015	0.009	0.006
6/26/96 (Q2 '96)	-1.59	0.4	<0.05	0.6	0.004	0.004	0.025	0.012	0.009
9/20/96 (Q3 '96)	-0.67	0.37	NA	NA	0.004	<0.0005	0.026	0.013	0.006
12/11/96 (Q4 '96)	-0.40	0.39	0.1	NA	0.003	0.002	0.020	0.012	0.005
3/24/97 (Q1 '97)	-0.62	0.26	NA	NA	0.002	0.0007	0.016	0.008	<0.0005
12/17/98	-1.35	0.15	1.1	NA	0.00071	<0.0005	0.0074	0.0031	<0.0025
1/20/00	-1.52	<0.05	0.22	NA	<0.002	<0.002	<0.002	<0.002	<0.002
1/20/00 (dup)	-1.52	0.063	0.20	NA	<0.002	<0.002	<0.002	<0.002	<0.002
3/28/00	-0.92	0.221	0.79	NA	<0.002	<0.002	0.011	0.0028	<0.002
3/13/01	-0.55	0.076	0.86	NA	<0.0005	<0.0005	0.0013	<0.0005	<0.005

**Table 1**  
**Summary of Analytical Data for Groundwater Samples from Monitoring Wells**  
 3925 Alameda Avenue, Oakland, California

Date	Elevation (ft msl)	Analytical Data from MW-4 (mg/L)							
		TPHg	Diesel	Kerosene	Benzene	Toluene	Ethylbenzene	Xylene	MTBE
9/6/96 (a)	NA	11	330	NA	0.31	0.053	0.47	1.1	0.17
9/20/96 (Q3 '96)	-1.34	12.0	NA	NA	0.890	0.120	1.100	2.000	0.260
12/11/96 (Q4 '96)	-0.98	2.4	2.0	NA	0.390	0.070	0.540	0.840	0.160
3/24/97 (Q1 '97)	-0.99	15	NA	NA	1	0.15	1.6	1.1	0.042
12/17/98	-1.85	2.5	0.88	NA	0.074	0.013	0.18	0.093	0.0046
1/20/00	-2.05	0.77	0.50	NA	0.036	0.006	0.067	0.019	0.006
3/28/00	-1.39	6	0.753	NA	0.242	0.0458	0.944	0.165	<0.0143
3/28/00 (dup)	-1.39	5.3	0.698	NA	0.269	0.0503	1.0	0.173	<0.0143
3/13/01	-0.63	2.37	0.67	NA	0.012	0.0023	0.04	0.0069	0.0073

**Abbreviations:**

TPHg = Total Petroleum Hydrocarbons as Gasoline

MTBE = Methyl Tert Butyl Ether

mg/L = micrograms per liter

ft msl = feet below mean sea level

**Notes:**

- (a) Corresponds to first sampling event after well installation. *Grab sample*
- (b) "NA" indicates the compound was not analyzed or data not obtained.
- (c) Quarterly monitoring reports were prepared by Smith-Emery GeoServices.

**Table 2**  
**Summary of Bioattenuation Data**  
 3925 Alameda Avenue, Oakland, California

Date	Groundwater Sampling of MW-1						
	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Ferrous iron (mg/L)	Oxidation reduction potential (mv)	pH	Temperature °C
12/17/98	1.3	5.9	34	3.3	5.6	6.7	21.1
1/20/00	0.0	<1.0	30.8	1.9	-114	6.8	21.1
3/28/00	NA (a)	<1.0	13.7	2.2	-136	6.8	20.0
5/2/00	0.0	NA	NA	NA	-265	6.7	19.8
3/13/01	2.3	<1	17.7	3.2	-255	7.0	19.9

\*

*\* weren't these also run on 3/13/01 w/ instrument not functioning properly?*

Date	Groundwater Sampling of MW-2						
	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Ferrous iron (mg/L)	Oxidation reduction potential (mv)	pH	Temperature °C
12/17/98	1.9	7.3	39	3	-116	7.0	20.8
1/20/00	0.0	4.03	31.8	0.9	-179	6.8	21.0
3/28/00	NA	<1.0	24.8	0.4	-239	6.9	19.9
5/2/00	0.0	NA	NA	NA	-266	NA	NA
3/13/01	0.0	<1	22	0.8	-247	7.0	19.6

\*

Date	Groundwater Sampling of MW-3						
	Dissolved oxygen (mg/L)	Nitrate (mg/L)	Sulfate (mg/L)	Ferrous iron (mg/L)	Oxidation reduction potential (mv)	pH	Temperature °C
12/17/98	3.1	<1.0	28	3.3	26.0	6.8	19.7
1/20/00	0.2	<1.0	32.6	1	-65	6.8	20.9
3/28/00	NA	<1.0	19.5	1	-56	6.8	19.6
5/2/00	0.0	NA	NA	NA	-106	NA	NA
3/13/01	22.3 (c)	<1	21.1	1.4	-234	6.9	19.5

*erroneous*

Date	Groundwater Sampling of MW-4 (b)						
	Dissolved oxygen (%)	Nitrate (mg/L)	Sulfate (mg/L)	Ferrous iron (mg/L)	Oxidation reduction potential (mv)	pH	Temperature °C
12/17/98	0.8	<1.0	31	3.3	-117	6.6	21.2
1/20/00	0.0	<1.0	24.8	5.2	-152	6.8	20.5
3/28/00	NA	<1.0 (22.1)	26.9 (26.4)	4.8	-173	6.8	19.2
5/2/00	0.0	NA	NA	NA	-261	NA	NA
3/13/01	19 (c)	<1	25.9	4.5	-256	6.9	19.1

**Abbreviations:**

mg/L = micrograms per liter

mv = millivolts

**Notes:**

- (a) "NA" indicates the compound was not analyzed or data not obtained.
- (b) For MW-4 the data that appear in parenthesis indicate results from a duplicate sample.
- (c) Instrument not functioning properly.

**Table 3**  
**Results of the Mann-Kendall Test for Evaluating Trends**  
**Utilizing All Groundwater Monitoring Data (a)**  
 3925 Alameda Avenue, Oakland, California

Year	Analytical Data from MW-1 (mg/L)		
	TPHg	Diesel	Benzene
1995	33	5.0	4.5
1996	7.3	1.4	1.6
1997	11	NA (b)	2.8
1998	6	2.5	2.2
2000	8.5	1.4	3.0
2001	16	1.9	4.8
<b>S</b>	<b>-1</b>	<b>-2</b>	<b>5</b>
<b>a</b>	<b>0.50</b>	<b>0.41</b>	<b>0.24</b>
<b>Result</b>	<b>no upward trend</b>	<b>no upward trend</b>	<b>no upward trend</b>

Year	Analytical Data from MW-2 (mg/L)		
	TPHg	Diesel	Benzene
1995	7.6	3.2	0.98
1996	6.8	1	1.6
1997	10	NA	3.30
1998	3.7	1.3	0.90
2000	1.2	0.65	0.8
2001	3	1.01	1.3
<b>S</b>	<b>-9</b>	<b>-4</b>	<b>-3</b>
<b>a</b>	<b>0.07</b>	<b>0.24</b>	<b>0.36</b>
<b>Result</b>	<b>no upward trend</b>	<b>no upward trend</b>	<b>no upward trend</b>

Year	Analytical Data from MW-3 (mg/L)		
	TPHg	Diesel	Benzene
1995	0.11	1.3	0.00068
1996	0.37	0.067	0.0033
1997	0.26	NA	0.0020
1998	0.15	1.1	0.00071
2000	0.11	0.40	0.00017
2001	0.076	0.86	0.0005
<b>S</b>	<b>-8</b>	<b>-2</b>	<b>-8</b>
<b>a</b>	<b>0.12</b>	<b>0.41</b>	<b>0.12</b>
<b>Result</b>	<b>no upward trend</b>	<b>no upward trend</b>	<b>no upward trend</b>

**Table 3**  
**Results of the Mann-Kendall Test for Evaluating Trends**  
**Utilizing All Groundwater Monitoring Data (a)**  
 3925 Alameda Avenue, Oakland, California

Year	Analytical Data from MW-4 (mg/L)		
	TPHg	Diesel	Benzene
1996	8.47	166	0.53
1997	15	NA	1.00
1998	2.50	0.88	0.07
2000	4.02	0.65	0.18
2001	2.37	0.67	0.01
<b>S</b>	<b>-6</b>	<b>-4</b>	<b>-6</b>
<b>a</b>	<b>0.12</b>	<b>0.17</b>	<b>0.12</b>
<b>Result</b>	<b>no upward trend</b>	<b>no upward trend</b>	<b>no upward trend</b>

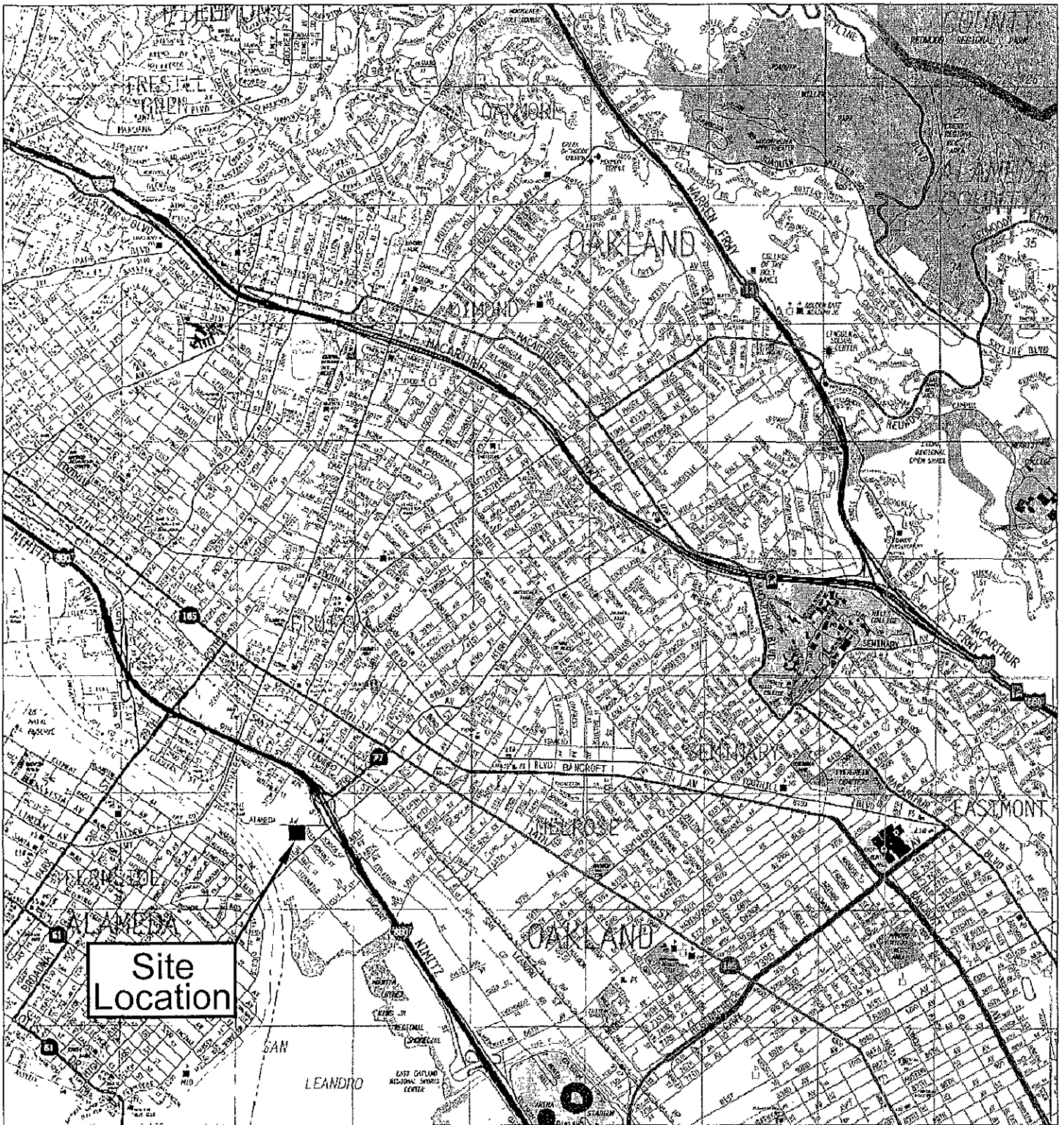
**Abbreviations:**

TPHg = Total Petroleum Hydrocarbons - Gasoline  
 mg/L = micrograms per liter

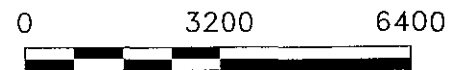
**Notes:**

- (a) The null hypothesis tested for the Mann-Kendall test was: there is an upward trend in groundwater chemical concentration. The alternate hypothesis was: there is no upward trend.
- (b) "NA" indicates the compound was not analyzed or data not obtained.





Basemap source: 1997 Thomas Guide for Alameda/Contra Costa Counties.



(Approximate Scale in Feet)

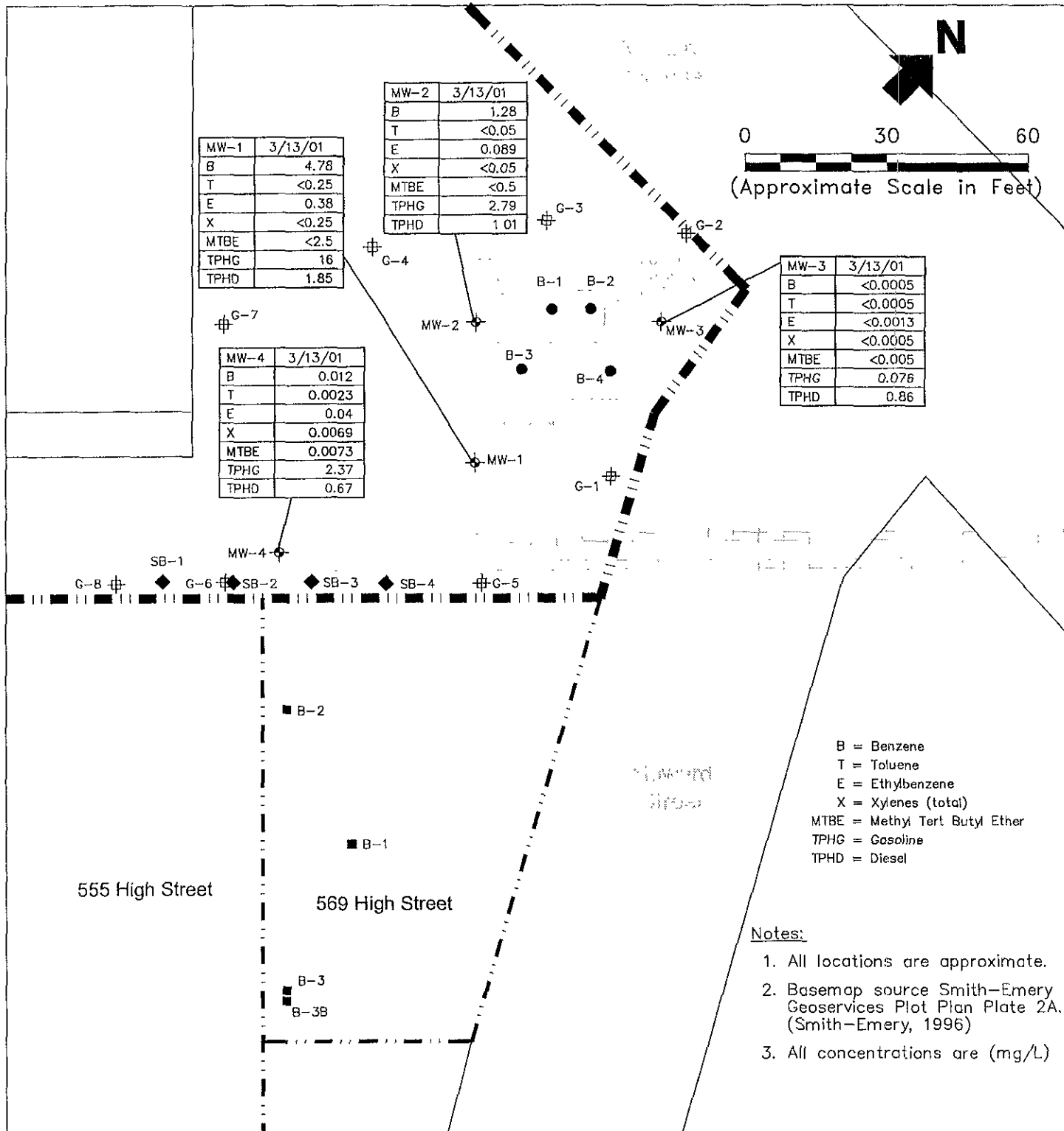
# Erler & Kalinowski, Inc.

Site Location Map

3925 Alameda Ave.  
Oakland, CA

April 2001  
EKI 980074.02

Figure 1



**LEGEND**

- Approximate Site Boundary
- Railroad Tracks
- ⊕ On-Site Monitoring Well Location
- ⊕ On-Site Geoprobe Location
- On-Site Soil Boring Location Collected at Former USTs in 1994
- Off-Site Soil Boring/Grab Groundwater Location
- ◆ On-Site Soil Boring/Grab Groundwater Location February 2000

**Erler & Kalinowski, Inc.**

**Groundwater Sampling Results for March 2001**

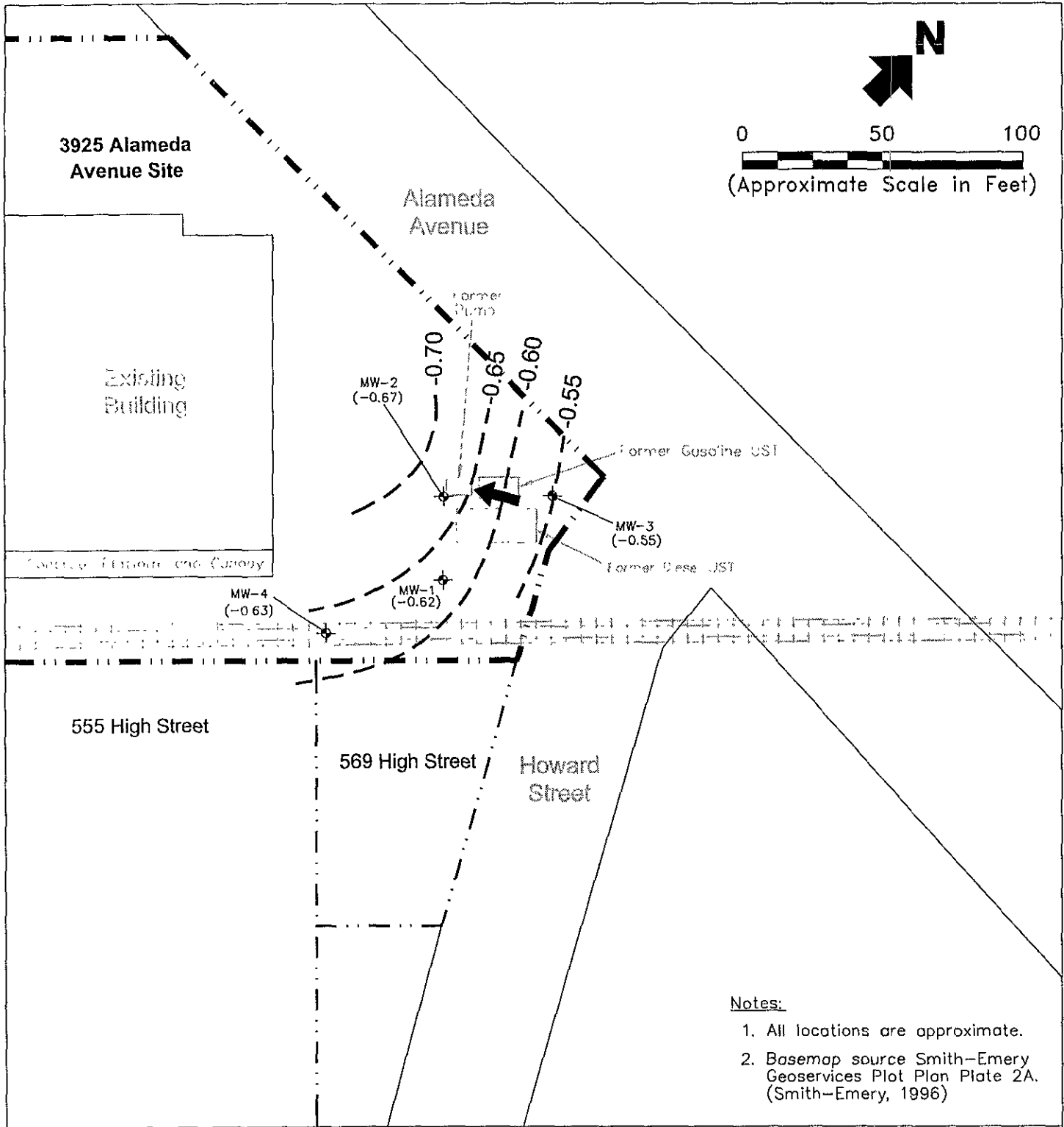
3925 Alameda Ave.  
Oakland, CA

April 2001  
EKI 980074.02

**Figure 2**



0 50 100  
 (Approximate Scale in Feet)



**Notes:**

1. All locations are approximate.
2. Basemap source Smith-Emery Geoservices Plot Plan Plate 2A. (Smith-Emery, 1996)

**LEGEND**

- Approximate Site Boundary
- Railroad Tracks
- On-Site Monitoring Well Location
- Groundwater Elevation Contour (feet msl)
- Groundwater Elevation (feet msl) Measured on 13 March 2001
- Approximate Groundwater Gradient Direction

**Erler &  
Kalinowski, Inc.**

**Groundwater Elevation  
Contour Map**

3925 Alameda Ave.  
Oakland, CA  
April 2001  
EKI 980074.02  
Figure 3

Daily Inspection Report No: \_\_\_\_\_

Sheet:	1	of	_____
Date:	13 MARCH 2001		
Project:	3925 ALANCOA DR.		
EKI Job No.:	980074.00		

Contractor: \_\_\_\_\_

EKI Staff On-site: ROGER LION

Weather: CLEAR

Temperature: \_\_\_\_\_ F Max \_\_\_\_\_ F Min

Work Hours: 09:05 to 14:15 Memos Issued: \_\_\_\_\_

Photos: \_\_\_\_\_

Special Conditions, Delays, Changes: \_\_\_\_\_

Accidents, Damage: \_\_\_\_\_

Sampling, Testing: PURGE/SAMPLE WELLS

Visitors to Site: \_\_\_\_\_

Work Report (Work done, Personnel/Equipment working): I ARRIVED ON SITE AND OPENED WELLS

WELL	MW-1	MW-2	MW-3	MW-4
TIME OPENED	09:27	09:29	09:19	09:29
TIME MEASURED	09:48	09:47	09:43	09:51
DEPTH TO WATER	9.35	9.10	9.84	9.40

09:58 AFTER CALIBRATING FIELD INSTRUMENTS, I STARTED PURGING MW-3 WITH A PERISTALTIC PUMP AND DEDICATED TUBING. SAMPLES WERE COLLECTED FROM THE PUMP DISCHARGE. THE PROCESS WAS REPEATED AT WELLS MW-2, MW-1 AND MW-4. BY LEAP-FROGGING AHEAD WITH A SECOND PUMP, I WAS ABLE TO REDUCE TIME SPENT ON SITE.

PURGE WATER WAS PLACED IN A DRUM NEAR MW-4 THERE ARE 2 DRUMS W/ SOIL AND 7 DRUMS CONTAINING WATER ON SITE.

Distribution: Project Inspection File (orig)  
Project Manager

By: Roger Lion

3925 Alameda Avenue  
GROUNDWATER PURGE FORM

PROJECT NAME: 3925 Alameda Avenue  
PROJECT NUMBER: 980074.00

DATE: 13 MARCH 2001  
PERSONNEL: R.D. Lion

WELL NAME: MW-1

WELL VOLUME CALCULATION:

Depth of Well (ft.) 19.70 - Depth to Water (ft.) 9.35 = Water Column (ft. below) 10.35 \* Multiplier (below) 0.64 = Casing Vol. (gallons) 6.62

Multiplier for 4-inch casing diameter = 0.64

PURGE METHOD: PERISTALTIC Pump

PUMP INLET DEPTH: \_\_\_\_\_

START TIME: 11:47 END TIME: 12:58

TOTAL GALLONS PURGED: 19.4

NOTES/SAMPLES COLLECTED:  
MW-1 @ 13.01

INSTRUMENT CALIBRATION

Instrument	Field measure	Standard measure
Specific Conductance		
pH		
pH		(SEE MW-3)
Turbidity		
ORP		
Temperature		
Depth Probe		

Time	Volume Purged (gallons)	Temperature (C)	Specific Conductance, mS/cm	Oxidation Reduction Potential, mv	pH	Turbidity (NTU)	Depth to water (feet)	Purge Rate (gpm)	Casing Volumes removed	Dissolved Oxygen	mg/L Ferrous Iron
12:18	8.0	19.6	1.248	-230	7.03	1.06	9.51	0.26	1.21	0.0%	
12:30	11.8	19.8	1.247	-254	7.02	0.99	9.50	0.17	1.78	6.0%	3.2
12:38	14.0	19.8	1.240	-255	7.01	0.73	9.50	0.28	2.11	0.0%	
12:45	16.2	19.9	1.240	-255	7.01	0.91	9.50	0.31	2.45	2.3%	3.2
12:53	18.3	19.9	1.239	-254	7.00	0.64	9.50	0.26	2.76	—	2.6
12:58	19.4	—	—	—	—	—	—	0.22	2.93	—	—

3925 Alameda Avenue  
GROUNDWATER PURGE FORM

PROJECT NAME: 3925 Alameda Avenue DATE: 13 MARCH 2001  
PROJECT NUMBER: 980074.00 WELL NAME: MW-2 PERSONNEL: RDL/lin

WELL VOLUME CALCULATION:  
 Depth of Well (ft.)      Depth to Water (ft.)      Water Column (ft. (below))      Multiplier (below)      Casing Vol. (gallons)  
 19.92 - 9.10 = 10.82 \* 0.64 = 6.92  
 Multiplier for 4-inch casing diameter = 0.64

PURGE METHOD: PERISTALTIC PUMP  
 PUMP INLET DEPTH: 12.2  
 START TIME: 10:36 END TIME: 11:50  
 TOTAL GALLONS PURGED: 16.0  
 NOTES/SAMPLES COLLECTED: 12:03  
 DUPLICATE SAMPLES  
 MW-2 & MW-2 DUPE

INSTRUMENT CALIBRATION

Instrument	Field measure	Standard measure
Specific Conductance		
pH		
pH	(SEE MW-3)	
Turbidity		
ORP		
Temperature		
Depth Probe		

Time	Volume Purged (gallons)	Temperature (C)	Specific Conductance, mS/cm	Oxidation Reduction Potential, mv	pH	Turbidity (NTU)	Depth to water (feet)	Purge Rate (gpm)	Casing Volumes removed	Dissolved Oxygen	Ferrous Iron
11:12	8.7	19.5	1.293	-255	6.96	—	9.19	0.24	1.26	0.0%	—
11:22	10.3	19.5	1.293	-273	6.95	3.97	9.17	0.16	1.49	—	0.9
11:33	12.4	19.6	1.286	-274	6.94	4.40	9.25	0.19	1.79	0.0%	—
11:41	14.3	19.6	1.258	-248	6.94	—	9.25	0.24	2.07	0.0%	—
11:50	16.0	19.6	1.251	-247	6.95	0.77	9.25	0.19	2.31	0.0%	0.8

3925 Alameda Avenue  
GROUNDWATER PURGE FORM

PROJECT NAME: 3925 Alameda Avenue DATE: 13 MARCH 2001  
PROJECT NUMBER: 980074.00 WELL NAME: MW-3 PERSONNEL: R. D. Lion

WELL VOLUME CALCULATION:  
Depth of Well (ft.) 19.95 - Depth to Water (ft.) 9.84 = Water Column (ft.) 10.11 \* Multiplier 0.64 = Casing Vol. (gallons) 6.47  
Multiplier for 4-inch casing diameter = 0.64

PURGE METHOD: PERISTALTIC Pump  
PUMP INLET DEPTH: \_\_\_\_\_  
START TIME: 09:58 END TIME: 11:00  
TOTAL GALLONS PURGED: 18.4  
NOTES/SAMPLES COLLECTED: @ 11:00

INSTRUMENT CALIBRATION		
Instrument	Field measure	Standard measure
Specific Conductance	1.048	1.000
pH	4.03	4.01
pH	7.01	7.01
Turbidity	0.02	0.02
D.O. % sat	101.7%	101.7%
D.O. O.	0.0%	0.0%
ORP, mV (EDEL SENS)	223 @ 12.5%	247 @ 12.5%
Temperature		
Depth Probe		

Time	Volume Purged (gallons)	Temperature (C)	Specific Conductance, mS/cm	Oxidation Reduction Potential, mV	pH	Turbidity (NTU)	Depth to water (feet)	Purge Rate (gpm)	Casing Volumes removed	Dissolved Oxygen %	Ferrous Iron #
10:06	2.1	19.4	1.428	<del>-199</del>	6.83	1.79	10.2	0.26	0.32	0.0%	
10:15	5.0	19.5	1.414	-227	6.88	0.86	10.40	0.32	0.7%	27.5%	
10:30	9.	19.6	1.402	-232	6.87	0.47	10.41	0.27	1.39	24.4%	
10:41	12.1	19.6	1.395	-229	6.89	0.31	10.42	0.28	1.87	5.2	1.5
10:50	14.8	19.5	1.390	-233	6.88	0.29	-	0.30	2.29	25.6%	
10:56	16.3	19.5	1.391	-234	6.88	0.51	10:30	0.25	2.52	22.3%	1.4
11:00	18.4	-	-	-	-	-	10.3	0.53	2.84	-	

3925 Alameda Avenue  
GROUNDWATER PURGE FORM

PROJECT NAME: 3925 Alameda Avenue DATE: 13 MARCH 2001  
 PROJECT NUMBER: 980074.00 WELL NAME: MW-4 PERSONNEL: R.D. Lyon

WELL VOLUME CALCULATION:

Depth of Well (ft.)	Depth to Water (ft.)	Water Column (ft.)	Multiplier (below)	Casing Vol. (gallons)
19.73	9.40	10.33	* 0.64	6.61
Multiplier for 4-inch casing diameter = 0.64				

PURGE METHOD: Peristaltic Pump

PUMP INLET DEPTH: \_\_\_\_\_

START TIME: 12:50 END TIME: 13:36

TOTAL GALLONS PURGED: 14.6

NOTES/SAMPLES COLLECTED:  
MW-4 @ 13:40

INSTRUMENT CALIBRATION

Instrument	Field measure	Standard measure
Specific Conductance		
pH		
pH		
Turbidity	(SEE MW-3)	
ORP		
Temperature		
Depth Probe		

Time	Volume Purged (gallons)	Temperature (C)	Specific Conductance, mS/cm	Oxidation Reduction Potential, mv	pH	Turbidity (NTU)	Depth to water (feet)	Purge Rate (gpm)	Casing Volumes removed	Dissolved Oxygen %	Ferrous Iron
13:17	9.7	18.9	0.898	280	6.88	1.24	9.40	0.36	1.47	29.7%	
13:27	13.3	19.1	1.102	-252	6.88	0.32	—	0.36	2.01	4.1%	5.0
13:32	14.4	19.1	—	-254	6.88		—	0.22	2.18	20.6%	4.5
13:36	14.6	19.1	1.121	-256	6.88	0.29	9.40	0.05	2.21	19.	



CHAIN OF CUSTODY / SAMPLE ANALYSIS REQUEST

Erler & Kalinowski, Inc. Page 1 of 1  
 Project Number: EKI 980074.01  
 Project Name: 3925 Alameda Avenue  
 Source of Samples: groundwater monitoring wells  
 Location: Oakland, CA

*K-PRIME*  
 Analytical Laboratory: ~~Erler & Kalinowski~~  
 Date Sampled: 13 MARCH 2001  
 Sampled By: R-D Lion  
 Report Results To: Steve Miller  
 Phone Number: 650) 578-1172

Lab Sample I D	Field Sample I D	Sample Type	Number and Type of Containers	Time Collected	Analyses Requested (EPA Method Number)	Results equired By Date/Time)
	MW-1	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	13:01	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
	MW-2	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	12:03	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
	MW-3	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	11:00	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
	MW-4	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	13:40	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
	MW-2 dupe <i>2</i>	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	12:03	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
	ERB	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic		HOLD	

Special Instructions:

Relinquished By:			Received By:		
Name / Signature	Affiliation	Date	Time	Name / Signature	Affiliation
<i>R-D Lion</i>	EKI	13 MAR 01	15:18	<i>(HELD for courier)</i>	

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.  
Santa Rosa CA 95403  
Phone: 707 527 7574  
FAX: 707 527 7879

TRANSMITTAL

RECEIVED

MAR 30 2001

ERLER & KALINOWSKI, INC.

DATE: 03/30/01

TO: Mr. Steve Miller  
Erler & Kalinowski, Inc.  
1730 S. Amphlett Blvd. Suite 320  
San Mateo, CA 94402

ACCT: 9115  
PROJ: EKI 980074.01

Phone: (650) 578-1172  
Fax: (650) 578-9131

FROM: Richard A. Kagel, Ph.D. *RAK 3/30/01*  
Laboratory Director

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT EKI 980074.01

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	KPI LAB #
MW-1	WATER	03/13/01	31278
MW-2	WATER	03/13/01	31279
MW-3	WATER	03/13/01	31280
MW-4	WATER	03/13/01	31281
MW-2 DUPE	WATER	03/13/01	31282

The above listed sample group was received on 03/14/01 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.  
Thank you for this opportunity to be of service.

**K PRIME, INC.**  
**LABORATORY REPORT**

K PRIME PROJECT: 9115  
CLIENT PROJECT: EKI 980074.01

METHOD: BTEX + MTBE  
REFERENCE: EPA 8260/8021

SAMPLE ID: MW-1  
LAB NO: 31278  
SAMPLE TYPE: WATER  
DATE SAMPLED: 03/13/01  
TIME SAMPLED: 13:01

DATE ANALYZED: 3/21/01  
UNITS: µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
BENZENE	71-43-2	250	4,780
TOLUENE	108-88-3	250	ND
ETHYLBENZENE	100-41-4	250	380
M-&P-XYLENE	1330-20-7	250	ND
O-XYLENE	95-47-6	250	ND
MTBE	1834-04-4	2,500	ND

**NOTES:**

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT  
NA - NOT APPLICABLE

APPROVED BY: *MM*  
DATE: 3/22/01

**K PRIME, INC.**  
**LABORATORY REPORT**

K PRIME PROJECT: 9115  
CLIENT PROJECT: EKI 980074.01

METHOD: BTEX + MTBE  
REFERENCE: EPA 8260/8021

SAMPLE ID: MW-2  
LAB NO: 31279  
SAMPLE TYPE: WATER  
DATE SAMPLED: 03/13/01  
TIME SAMPLED: 12:03

DATE ANALYZED: 3/21/01  
UNITS: µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
BENZENE	71-43-2	50	1,280
TOLUENE	108-88-3	50	ND
ETHYLBENZENE	100-41-4	50	89.1
M-&P-XYLENE	1330-20-7	50	ND
O-XYLENE	95-47-6	50	ND
MTBE	1634-04-4	500	ND

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT

NA - NOT APPLICABLE

APPROVED BY:                                   
DATE:                                 

*RAM*  
                                  
3/28/01

**K PRIME, INC.**  
**LABORATORY REPORT**

**K PRIME PROJECT: 9115**  
**CLIENT PROJECT: EKI 980074.01**

**SAMPLE ID: MW-3**  
**LAB NO: 31280**  
**SAMPLE TYPE: WATER**  
**DATE SAMPLED: 03/13/01**  
**TIME SAMPLED: 11:00**

**METHOD: BTEX + MTBE**  
**REFERENCE: EPA 8260/8021**

**DATE ANALYZED: 3/21/01**  
**UNITS: µg/L**

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
BENZENE	71-43-2	0.500	ND
TOLUENE	108-88-3	0.500	ND
ETHYLBENZENE	100-41-4	0.500	1.34
M-&P-XYLENE	1330-20-7	0.500	ND
O-XYLENE	95-47-6	0.500	ND
MTBE	1634-04-4	5.00	ND

**NOTES:**

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT  
NA - NOT APPLICABLE

APPROVED BY: AM  
DATE: 3/28/01

K PRIME, INC.  
LABORATORY REPORT

K PRIME PROJECT: 9115  
CLIENT PROJECT: EKI 980074.01

METHOD: BTEX + MTBE  
REFERENCE: EPA 8260/8021

SAMPLE ID: MW-4  
LAB NO: 31281  
SAMPLE TYPE: WATER  
DATE SAMPLED: 03/13/01  
TIME SAMPLED: 13:40

DATE ANALYZED: 3/22/01  
UNITS: µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
BENZENE	71-43-2	0.500	11.9
TOLUENE	108-88-3	0.500	2.3
ETHYLBENZENE	100-41-4	0.500	40.1
M-&P-XYLENE	1330-20-7	0.500	6.85
O-XYLENE	95-47-6	0.500	0.520
MTBE	1634-04-4	5.00	7.27

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT  
NA - NOT APPLICABLE

APPROVED BY: MAC  
DATE: 3/28/01

**K PRIME, INC.**  
**LABORATORY REPORT**

**K PRIME PROJECT: 9115**  
**CLIENT PROJECT: EKI 980074.01**

**SAMPLE ID:** MW-2 DUPE  
**LAB NO:** 31282  
**SAMPLE TYPE:** WATER  
**DATE SAMPLED:** 03/13/01  
**TIME SAMPLED:** 12:03

**METHOD: BTEX + MTBE**  
**REFERENCE: EPA 8260/8021**

**DATE ANALYZED:** 3/21/01  
**UNITS:** µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
BENZENE	71-43-2	50.0	1,240
TOLUENE	108-88-3	50.0	ND
ETHYLBENZENE	100-41-4	50.0	80.0
M-&P-XYLENE	1330-20-7	50.0	ND
O-XYLENE	95-47-6	50.0	ND
MTBE	1634-04-4	500	ND

**NOTES:**

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT  
NA - NOT APPLICABLE

APPROVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

*[Signature]*  
3/28/01

**K PRIME, INC.**  
**LABORATORY METHOD BLANK REPORT**

**METHOD BLANK ID:** MBLK032101  
**SAMPLE TYPE:** WATER

**METHOD:** VOLATILE ORGANIC COMPOUNDS  
**REFERENCE:** EPA 8260

**DATE ANALYZED:** 3/21/01  
**UNITS:** µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
DICHLORODIFLUOROMETHANE	75-71-8	0.500	ND
CHLOROMETHANE	74-87-3	0.500	ND
VINYL CHLORIDE	75-01-4	0.500	ND
BROMOMETHANE	74-83-9	0.500	ND
CHLOROETHANE	75-00-3	0.500	ND
TRICHLOROFLUOROMETHANE	75-69-4	0.500	ND
1,1-DICHLOROETHENE	75-35-4	0.500	ND
METHYLENE CHLORIDE	75-09-2	2.50	ND
TRANS-1,2-DICHLOROETHENE	156-60-5	0.500	ND
1,1-DICHLOROETHANE	75-34-3	0.500	ND
CIS-1,2-DICHLOROETHENE	156-59-2	0.500	ND
2,2-DICHLOROPROPANE	594-20-7	0.500	ND
BROMOCHLOROMETHANE	74-97-5	0.500	ND
CHLOROFORM	67-66-3	0.500	ND
1,1,1-TRICHLOROETHANE	71-55-6	0.500	ND
CARBON TETRACHLORIDE	56-23-5	0.500	ND
1,1-DICHLOROPROPENE	563-58-6	0.500	ND
BENZENE	71-43-2	0.500	ND
1,2-DICHLOROETHANE	107-06-2	0.500	ND
TRICHLOROETHENE	79-01-6	0.500	ND
1,2-DICHLOROPROPANE	78-87-5	0.500	ND
DIBROMOMETHANE	74-95-3	0.500	ND
BROMODICHLOROMETHANE	75-27-4	0.500	ND
TRANS-1,3-DICHLOROPROPENE	10061-02-6	0.500	ND
TOLUENE	108-88-3	0.500	ND
CIS-1,3-DICHLOROPROPENE	10061-01-5	0.500	ND
1,1,2-TRICHLOROETHANE	79-00-5	0.500	ND
TETRACHLOROETHENE	127-18-4	0.500	ND
1,3-DICHLOROPROPANE	142-28-9	0.500	ND
DIBROMOCHLOROMETHANE	124-48-1	0.500	ND
1,2-DIBROMOETHANE	106-93-4	0.500	ND
CHLOROBENZENE	108-90-7	0.500	ND
1,1,1,2-TETRACHLOROETHANE	630-20-6	0.500	ND
ETHYLBENZENE	100-41-4	0.500	ND
XYLENE (M+P)	1330-20-7	0.500	ND
XYLENE (O)	1330-20-7	0.500	ND
STYRENE	100-42-5	0.500	ND
BROMOFORM	75-25-2	0.500	ND
ISOPROPYLBENZENE	98-82-8	0.500	ND
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.500	ND
BROMOBENZENE	108-86-1	0.500	ND
1,2,3-TRICHLOROPROPANE	96-18-4	0.500	ND
N-PROPYLBENZENE	103-65-1	0.500	ND
2-CHLOROTOLUENE	95-49-8	0.500	ND



**K PRIME, INC.**  
**LABORATORY METHOD BLANK REPORT**

**METHOD BLANK ID:** MBLK032101  
**SAMPLE TYPE:** WATER

**METHOD:** VOLATILE ORGANIC COMPOUNDS  
**REFERENCE:** EPA 8260

**DATE ANALYZED:** 3/21/01  
**UNITS:** µg/L

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
1,3,5-TRIMETHYLBENZENE	108-67-8	0.500	ND
4-CHLOROTOLUENE	106-43-4	0.500	ND
TERT-BUTYLBENZENE	98-06-6	0.500	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.500	ND
SEC-BUTYLBENZENE	135-98-8	0.500	ND
1,3-DICHLOROBENZENE	541-73-1	0.500	ND
4-ISOPROPYLTOLUENE	99-87-6	0.500	ND
1,4-DICHLOROBENZENE	106-46-7	0.500	ND
N-BUTYLBENZENE	104-51-8	0.500	ND
1,2-DICHLOROBENZENE	95-50-1	0.500	ND
1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	0.500	ND
1,2,4-TRICHLOROBENZENE	120-82-1	1.00	ND
HEXACHLOROBUTADIENE	87-68-3	1.00	ND
NAPHTHALENE	91-20-3	1.00	ND
1,2,3-TRICHLOROBENZENE	87-61-6	1.00	ND

SURROGATE RECOVERY	%
DIBROMOFLUOROMETHANE	115
TOLUENE-D8	93
4-BROMOFLUOROBENZENE	111

**NOTES:**

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT  
NA - NOT APPLICABLE OR AVAILABLE

**K PRIME, INC.**  
**LABORATORY QC REPORT**

**SAMPLE ID: LCS032101**  
**DUPLICATE ID: LCSD032101**

**METHOD: VOLATILE ORGANIC COMPOUNDS**  
**REFERENCE: EPA 8260**

**SAMPLE TYPE: WATER**  
**UNITS: µg/L**

**ACCURACY (MATRIX SPIKE)**

PARAMETER	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVER (%)	LIMITS (%)
1,1 DICHLOROETHENE	10.0	ND	11.47	115	60-140
BENZENE	10.0	ND	12.71	127	60-140
TRICHLOROETHENE	10.0	ND	10.17	102	60-140
TOLUENE	10.0	ND	11.26	113	60-140
CHLOROBENZENE	10.0	ND	11.15	112	60-140

**PRECISION (SPIKE DUPLICATE)**

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
1,1 DICHLOROETHENE	0.500	11.5	11.64	1.47	±20
BENZENE	0.500	12.7	12.43	2.23	±20
TRICHLOROETHENE	0.500	10.17	9.97	1.99	±20
TOLUENE	0.500	11.26	11.36	0.88	±20
CHLOROBENZENE	0.500	11.15	11.25	0.89	±20

**NOTES:**

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT  
 NA - NOT AVAILABLE OR APPLICABLE

**K PRIME, INC.  
LABORATORY REPORT****K PRIME PROJECT: 9115  
CLIENT PROJECT: EKI 980074.01****METHOD: TPH-G  
REFERENCE: EPA 8015M****UNITS: mg/L**

SAMPLE ID	LAB NO.	SAMPLE TYPE	DATE SAMPLED	TIME SAMPLED	DATE ANALYZED	MRL	SAMPLE CONC
MW-1	31278	WATER	03/13/01	13:01	3/16/01	0.0500	16.0
MW-2	31279	WATER	03/13/01	12:03	3/21/01	0.0500	2.79
MW-3	31280	WATER	03/13/01	11:00	3/16/01	0.0500	0.076
MW-4	31281	WATER	03/13/01	13:40	3/16/01	0.0500	2.37
MW-2 DUPE	31282	WATER	03/13/01	12:03	3/16/01	0.0500	3.15

**NOTES:**

ND - NOT DETECTED AT OR ABOVE THE STATED METHOD REPORTING LIMIT  
NA - NOT APPLICABLE OR AVAILABLE  
MRL - METHOD REPORTING LIMIT

APPROVED BY:           VAC            
DATE:           3/28/01

**K PRIME, INC.**  
LABORATORY METHOD BLANK REPORT

METHOD BLANK ID: MBLK031601  
SAMPLE TYPE: WATER

METHOD: TPH-G  
REFERENCE: EPA 8015M

DATE ANALYZED: 3/16/01  
UNITS: mg/L

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
TPH-G	0.0500	ND

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT  
NA - NOT APPLICABLE

**K PRIME, INC.**  
**LABORATORY METHOD BLANK REPORT**

**METHOD BLANK ID:** MBLK032101  
**SAMPLE TYPE:** WATER

**METHOD:** TPH-G  
**REFERENCE:** EPA 8015M

**DATE ANALYZED:** 3/21/01  
**UNITS:** mg/L

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
TPH-G	0.0500	ND

**NOTES:**

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT  
NA - NOT APPLICABLE

**K PRIME, INC.**  
LABORATORY QC SUMMARY REPORTSAMPLE ID: LCS031601  
DUPLICATE ID: LCSD031601METHOD: TPH-G  
REFERENCE: EPA 8015M/CA DHS LUFTSAMPLE TYPE: WATER  
UNITS: mg/L

## ACCURACY (MATRIX SPIKE)

COMPOUND NAME	REPORTING LIMIT	SAMPLE RESULT	SPIKE ADDED	SPIKE RESULT	% RECOVERY
TPH-G	0.0500	ND	0.250	0.242	97

## PRECISION (DUPLICATES)

COMPOUND NAME	REPORTING LIMIT	SAMPLE RESULT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)
TPH-G	0.0500	ND	0.242	0.255	5.2

## NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT.  
NA - NOT AVAILABLE OR APPLICABLE.

**K PRIME, INC.**  
**LABORATORY REPORT**

**K PRIME PROJECT: 9115**  
**CLIENT PROJECT: EKI 980074.01**

**METHOD: TPH D**  
**REFERENCE: EPA 8015M**

**UNITS: mg/L**

SAMPLE ID	LAB NO.	SAMPLE TYPE	DATE SAMPLED	EXTRACT DATE	DATE ANALYZED	MRL	SAMPLE CONC	TPH D PATTERN*
MW-1	31278	WATER	03/13/01	03/20/01	03/22/01	0.050	1.85	6A
MW-2	31279	WATER	03/13/01	03/20/01	03/22/01	0.050	1.01	6A+1C
MW-3	31280	WATER	03/13/01	03/20/01	03/22/01	0.050	0.855	1C+9D
MW-4	31281	WATER	03/13/01	03/20/01	03/22/01	0.050	0.670	6A+9B+1C
MW-2 DUPE	31282	WATER	03/13/01	03/20/01	03/22/01	0.050	1.03	6A+1C

**NOTES:**

ND - NOT DETECTED AT OR ABOVE THE STATED METHOD REPORTING LIMIT

NA - NOT APPLICABLE OR AVAILABLE

MRL - METHOD REPORTING LIMIT

\* REFER TO TPH D GC/FID PATTERN KEY FOR TYPE AND RANGE DESCRIPTIONS

APPROVED BY: *[Signature]*  
DATE: 3/28/01

K PRIME, INC.  
LABORATORY METHOD BLANK REPORT

METHOD BLANK ID: MBLK032001  
SAMPLE TYPE: WATER

METHOD: TPH-D  
REFERENCE: EPA 8015M

DATE EXTRACTED: 03/20/01  
DATE ANALYZED: 30/20/01

UNITS: mg/L

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
TPH-D*	0.0500	ND

NOTES:

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT  
NA - NOT APPLICABLE OR AVAILABLE  
REFER TO TPH D GC/FID PATTERN KEY FOR TYPE AND RANGE DESCRIPTIONS

\* PATTERN TYPE AND RANGE

NA



K PRIME, INC.  
 LABORATORY BATCH QC REPORT

SAMPLE ID: LCS032001  
 DUPLICATE ID: LCSD032001

METHOD: TPH-D  
 REFERENCE: EPA 8015M/CA DHS LUFT

SAMPLE TYPE: WATER  
 UNITS: mg/L

ACCURACY (MATRIX SPIKE)

COMPOUND NAME	REPORTING LIMIT	SPIKE ADDED	SPIKE RESULT	% RECOVERY
TPH-D	0.0500	1.00	0.981	98

PRECISION (DUPLICATES)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)
TPH-D	0.0500	0.981	0.970	1.1

K PRIME, INC.  
TPHD GC/FID PATTERN KEY

TPHD CHROMATOGRAPHIC PATTERN, COMPOSED OF A TYPE AND RANGE, ARE PROVIDED ON TPHD LABORATORY REPORTS TO HELP DESCRIBE THE TYPE(S) OF MATERIALS DETECTED. MORE THAN ONE PATTERN MAY BE PRESENT IN A SAMPLE. PRODUCT TYPES ARE PROVIDED AS EXAMPLES OF POSSIBLE PATTERN TYPE AND RANGE COMBINATIONS.

PATTERN TYPE

- 1 BROAD UNRESOLVED
- 2 BROAD POORLY RESOLVED
- 3 BROAD PARTIALLY RESOLVED
- 4 BROAD HIGHLY RESOLVED
- 5 NARROW UNRESOLVED
- 6 NARROW PARTIALLY RESOLVED
- 7 NARROW HIGHLY RESOLVED
- 8 SEVERAL FULLY RESOLVED PEAKS
- 9 ONE FULLY RESOLVED PEAK

PATTERN RANGE

- A MUCH LIGHTER THAN DIESEL
- B SOMEWHAT LIGHTER THAN DIESEL
- C DIESEL
- D SOMEWHAT HEAVIER THAN DIESEL
- E MUCH HEAVIER THAN DIESEL

EXAMPLE PRODUCT TYPES:

FRESH GASOLINE (HEAVY END)	6A
DEGRADED GASOLINE (HEAVY END)	6A+1B
STODDARD SOLVENT	6A
MINERAL SPIRITS	6A
KEROSENE	3B
DIESEL FUEL	3C
DEGRADED DIESEL FUEL	1C
MOTOR OIL	2D
DEGRADED MOTOR OIL	1E
HYDRAULIC FLUID	2D
DEGRADED HYDRAULIC FLUID	1E
BUNKER C	1E+3B
DEGRADED BUNKER C	1E
LIGHT CRUDE OIL	3B+3C+3D
HEAVY CRUDE OIL	3D+3E

**K PRIME, INC.**  
**LABORATORY REPORT**

**K PRIME PROJECT: 9115**  
**CLIENT PROJECT: EKI 980074.01**

**METHOD: ANIONS**  
**REFERENCE: EPA 300**

**SAMPLE ID:** MW-1  
**LAB NO:** 31278  
**SAMPLE TYPE:** WATER  
**DATE SAMPLED:** 03/13/01  
**TIME SAMPLED:** 13:01

**DATE ANALYZED:** 3/21/01  
**UNITS:** mg/L

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
NITRATE - NITROGEN	1.00	ND
SULFATE	2.00	17.7

APPROVED BY: *MJK*  
DATE: 3/28/01

**K PRIME, INC.**  
LABORATORY REPORT

K PRIME PROJECT: 9115  
CLIENT PROJECT: EKI 980074.01

METHOD: ANIONS  
REFERENCE: EPA 300

SAMPLE ID: MW-2  
LAB NO: 31279  
SAMPLE TYPE: WATER  
DATE SAMPLED: 03/13/01  
TIME SAMPLED: 12:03

DATE ANALYZED: 3/21/01  
UNITS: mg/L

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
NITRATE - NITROGEN	1.00	ND
SULFATE	2.00	22.0

APPROVED BY:           *MTC*            
DATE:           3/28/01

**K PRIME, INC.**  
**LABORATORY REPORT**

**K PRIME PROJECT: 9115**  
**CLIENT PROJECT: EKI 980074.01**

**METHOD: ANIONS**  
**REFERENCE: EPA 300**

**SAMPLE ID: MW-3**  
**LAB NO: 31280**  
**SAMPLE TYPE: WATER**  
**DATE SAMPLED: 03/13/01**  
**TIME SAMPLED: 11:00**

**DATE ANALYZED: 3/21/01**  
**UNITS: mg/L**

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
NITRATE - NITROGEN	1.00	ND
SULFATE	2.00	21.1

APPROVED BY: AK  
DATE: 3/25/01

**K PRIME, INC.**  
LABORATORY REPORT

K PRIME PROJECT: 9115  
CLIENT PROJECT: EKI 980074.01

METHOD: ANIONS  
REFERENCE: EPA 300

SAMPLE ID: MW-4  
LAB NO: 31281  
SAMPLE TYPE: WATER  
DATE SAMPLED: 03/13/01  
TIME SAMPLED: 13:40

DATE ANALYZED: 3/21/01  
UNITS: mg/L

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
NITRATE - NITROGEN	1.00	ND
SULFATE	2.00	25.9

APPROVED BY: AK  
DATE: 3/28/01

**K PRIME, INC.**  
LABORATORY REPORT

K PRIME PROJECT: 9115  
CLIENT PROJECT: EKI 980074.01

METHOD: ANIONS  
REFERENCE: EPA 300

SAMPLE ID: MW-2 DUPE  
LAB NO: 31282  
SAMPLE TYPE: WATER  
DATE SAMPLED: 03/13/01  
TIME SAMPLED: 12:03

DATE ANALYZED: 3/21/01  
UNITS: mg/L

COMPOUND NAME	REPORTING LIMIT	SAMPLE CONC
NITRATE - NITROGEN	1.00	ND
SULFATE	2.00	20.6

APPROVED BY: \_\_\_\_\_  
DATE: 3/28/01

CHAIN OF CUSTODY / SAMPLE ANALYSIS REQUEST

Erler & Kalinowski, Inc. Page 1 of 1  
 Project Number: EK1 980074.01  
 Project Name: 3925 Alameda Avenue  
 Source of Samples: groundwater monitoring wells  
 Location: Oakland, CA

*Y-PRIME*

Analytical Laboratory: ~~Erler & Kalinowski~~  
 Date Sampled: 13 MARCH 2001  
 Sampled By: R-D-Lion  
 Report Results To: Steve Miller  
 Phone Number: 650) 578-1172

Lab Sample I D	Field Sample I D	Sample Type	Number and Type of Containers	Time Collected	Analyses Requested (EPA Method Number)	Results required By Date/Time
31278	MW-1	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	13:01	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
31279	MW-2	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	12:03	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
31280	MW-3	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	11:00	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
31281	MW-4	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	13:40	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
31282	MW-2 dupe <i>2</i>	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic	12:03	EPA 8260 for BTEX & MTBE only EPA 8015M for TPHg & TPHd, nitrate & sulphate	10 day TAT
	ERB	water	4-VOAs +HCl 1-1 L. amber glass, 1-1 L. plastic		HOLD	

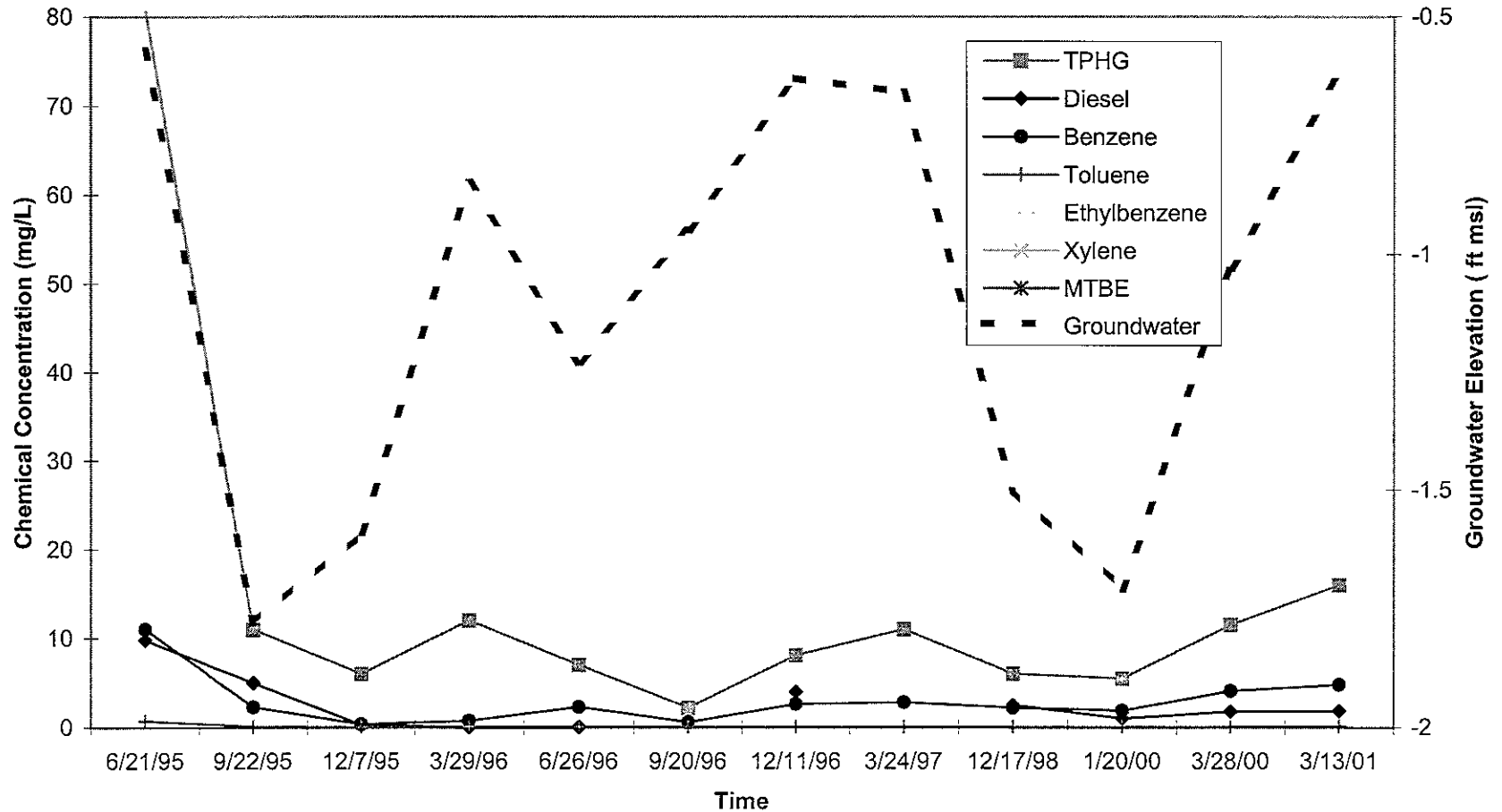
Special Instructions:

Relinquished By:				Received By:		
Name / Signature	Affiliation	Date	Time	Name / Signature	Affiliation	
<i>R-D-Lion</i>	<i>Erler &amp; Kalinowski</i>	13 MAR 01	15:18	<i>(HELD for courier)</i>	<i>U Prime</i>	
<i>Bill Paton</i>	<i>U Prime</i>	14 MAR	14:31	<i>Bill Paton</i>	<i>U Prime</i>	

IHR-30-2001 FRI 04-18 PM 8 FAXLINE INC FAX NO. 707 521 1819 P. 23



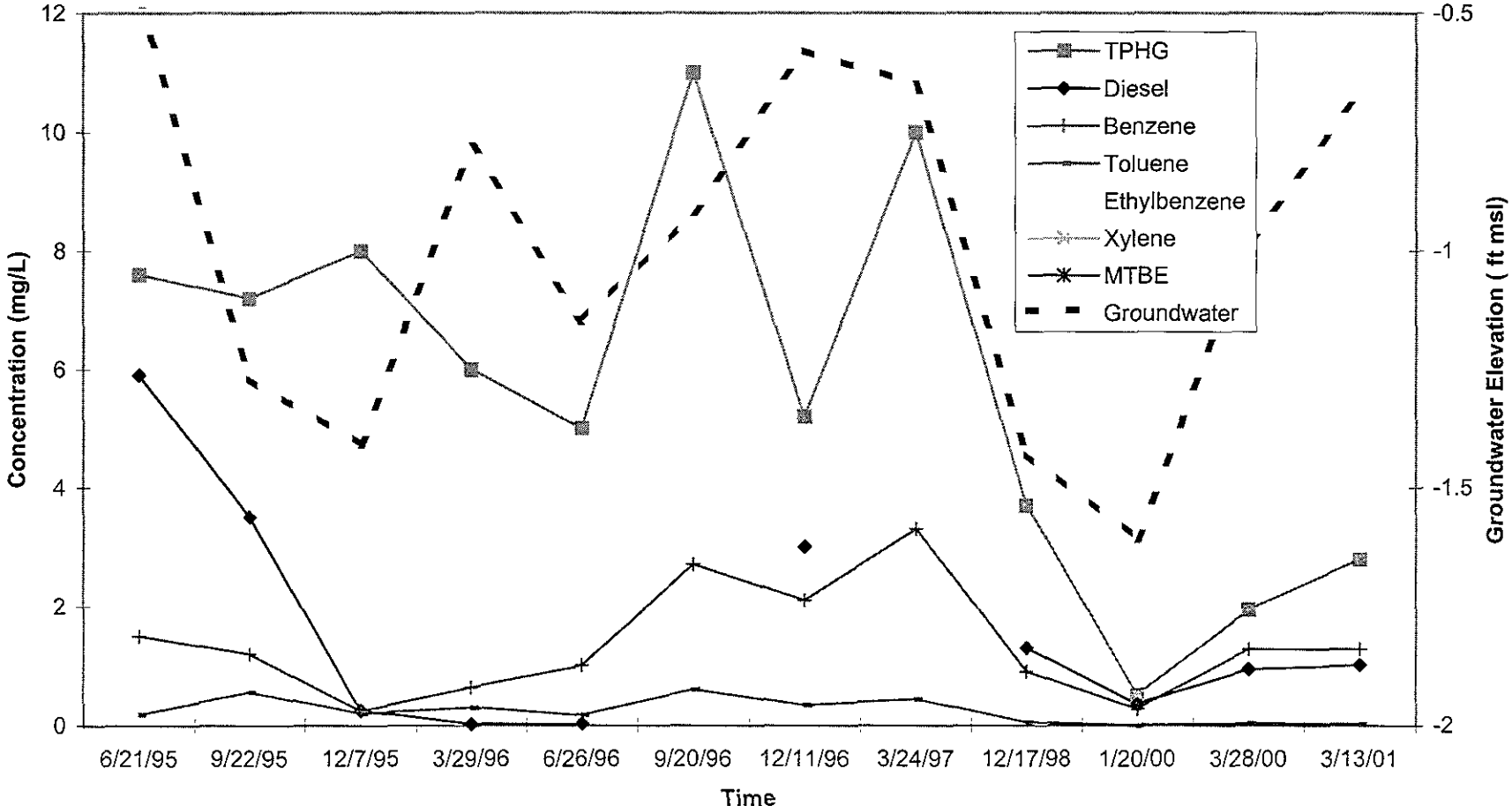
**B1-1**  
**Chemical Concentrations in Groundwater and Groundwater Elevations as a**  
**Function of Time in MW-1 (a) (b)**



**Notes:**

- (a) When the data values were non-detect, one-half of the detection limit was used as the representative concentration.
- (b) The dashed line represents groundwater elevation data in feet below mean sea level.

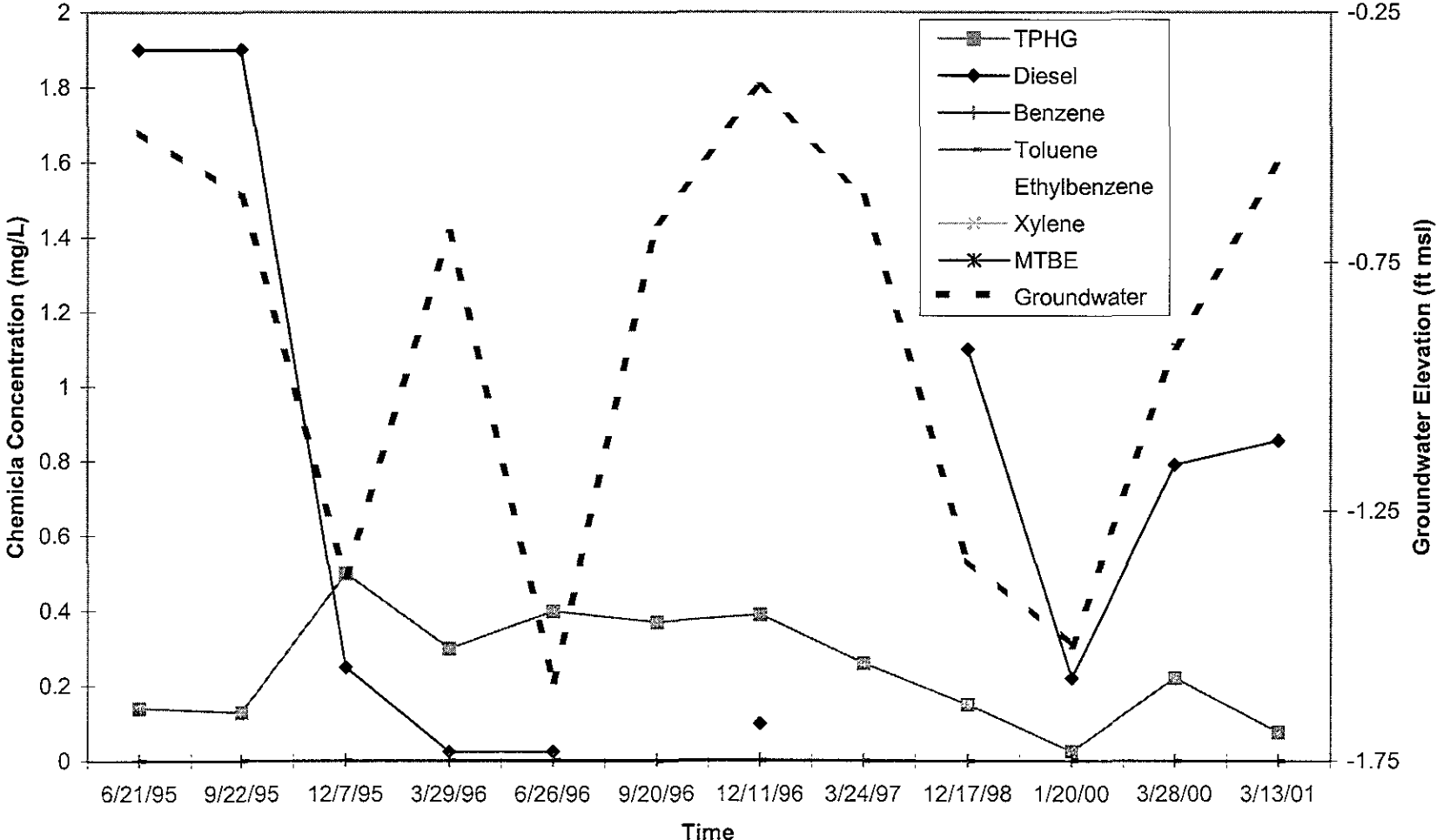
**B1-2**  
**Chemical Concentrations in Groundwater and Groundwater Elevations as a**  
**Function of Time in MW-2 (a) (b)**



**Notes:**

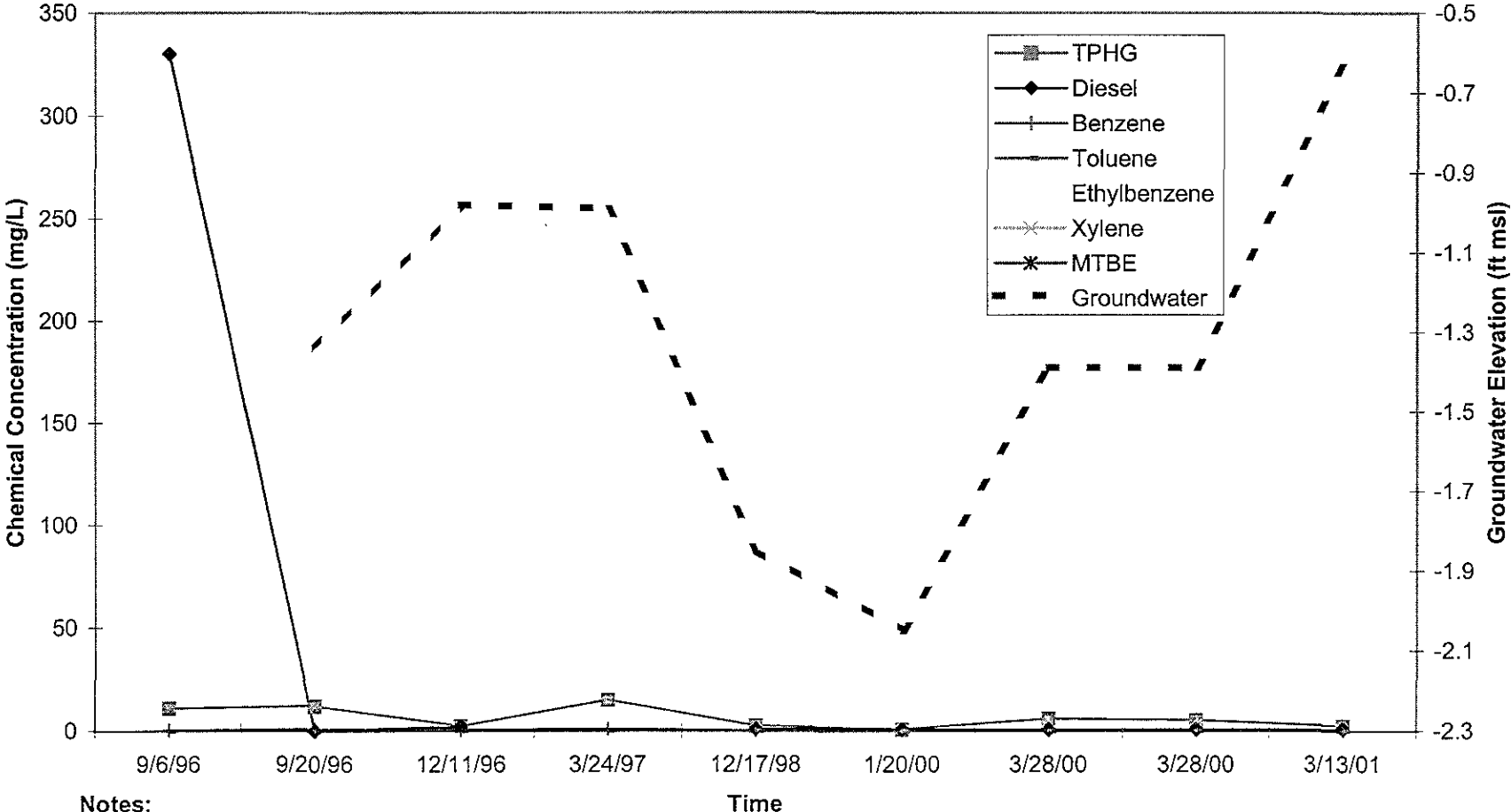
- (a) When the data value was non-detect, one-half of the detection limit was used as the representative concentration.
- (b) The dashed line represents groundwater elevation data in feet below mean sea level.

B1-3  
Chemical Concentrations in Groundwater and Groundwater Elevations as a  
Function of Time in MW-3 (a) (b)



**Notes:**  
(a) When the data value was non-detect, one-half of the detection limit was used as the representative concentration.  
(b) The dashed line represents groundwater elevation data in feet below mean sea level.

B1-4  
Chemical Concentrations in Groundwater and Groundwater Elevations as a  
Function of Time in MW-4 (a) (b)



Notes:  
(a) When the data value was non-detect, one-half of the detection limit was used as the representative concentration.  
(b) The dashed line represents groundwater elevation data in feet below mean sea level.