

ENVIRONMENTAL
PROTECTION
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Erler & Kalinowski, Inc.

Consulting Engineers and Scientists
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LETTER OF TRANSMITTAL

TO: Susan Hugo

DATE: 15 November 1995

Alameda County Dept. of Environmental Health

CONTRACT NO: 940018.03

1131 Harbor Bay Parkway

SUBJECT: Sybase, Inc.

Alameda, CA 94502

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Dated: 15 November 1995

Description: Closure of the Former Underground Tanks at 1410 64th St, Emeryville

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Remarks:

Copy to: John Bruno, Sybase, Inc.

ERLER & KALINOWSKI, INC.

Tom Sullivan, AMB

Susan Lowenberg, Lowenberg Corp.

Bill Wick, Crosby Heafey, Roach & May

Sum Arigala, RWQCB

Ravi Arulanantham, RWQCB

Michelle Kriegman King
by: Michelle Kriegman King

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**Erler &
Kalinowski, Inc.**

Consulting Engineers and Scientists

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EMERGENCY
PROTECTIVE
95 NOV 16 PM 1:30

15 November 1995

Ms. Susan Hugo
Alameda County Department of Environmental Health
Division of Hazardous Materials
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: Closure of the Former Underground Tank Site
1410 64th Street, Emeryville, California
(EKI 940018.03)

Dear Ms. Hugo:

On behalf of Sybase, Inc., Erler & Kalinowski, Inc. ("EKI") has evaluated available soil and groundwater analytical data collected in the vicinity of the underground fuel storage tanks formerly located at 1410 64th Street, Emeryville, California (the "Lowenberg tanks") (Figure 1). Alameda County Department of Environmental Health ("ACDEH") staff have questioned the long-term impact on groundwater quality of total petroleum hydrocarbons quantified as gasoline ("TPHg"), benzene, toluene, ethylbenzene, and xylenes ("BTEX") concentrations measured in soil and groundwater samples collected from wells TMW-1 and TMW-2. On the basis of the available groundwater monitoring data, TPHg and BTEX concentrations are stable or decreasing. Thus, the TPHg and BTEX do not pose a long-term adverse threat to water quality.

BACKGROUND

Two underground fuel storage tanks were removed from the 1410 64th Street property in February 1990. At the time of tank removal operations, the tanks reportedly showed no signs of leakage (ENSR, January 1991). During the tank excavation, water was seeping into the excavation through a conduit created by a utility line running across the gasoline tank (ENSR, January 1991). Groundwater sampled from inside the tank excavation was found to contain total petroleum hydrocarbons quantified as diesel ("TPHd"), TPHg, and BTEX. Approximately 15,000 gallons of water from the excavation was pumped and hauled in a vacuum truck (ENSR, January 1991).

Three groundwater wells were installed near the former Lowenberg tanks. TPH and BTEX were detected in soil samples collected from the excavation sidewalls and borings

installed for monitoring well construction (Table 1; ENSR, 1991). The analytical results of groundwater samples obtained semi-annually from April 1990 to January 1993 and in March 1995 indicate that concentrations of TPHg and BTEX in groundwater samples in wells TMW-1 and TMW-2 are low and have decreased or remained stable (Table 2). TPHg and BTEX have not been detected in downgradient well TMW-3 (Table 2).

EVALUATION OF DATA FOR WELLS TMW-1 AND TMW-2

TPHg and BTEX concentrations measured in a soil sample collected from 5.25 feet below ground surface during construction of well TMW-1 in April 1990 were 3,900 mg/kg, 75 mg/kg, 85 mg/kg, 43 mg/kg and 120 mg/kg, respectively (Table 1). TPHg and BTEX concentrations detected in soil samples from well TMW-2 were significantly lower than those from well TMW-1 (e.g., benzene up to 7.3 mg/kg; Table 1).

Groundwater from wells TMW-1 and TMW-2 has been sampled up to 7 times since the wells were constructed (Table 2). As an example of the data trends, benzene, ethylbenzene, and xylenes concentrations measured in groundwater samples collected from well TMW-1 are plotted on Figure 2. Toluene has never been detected in groundwater samples from wells TMW-1 and TMW-2.

Groundwater data from wells TMW-1 and TMW-2 were statistically analyzed for a trend using the nonparametric Mann-Kendall test. The Mann-Kendall test is useful for detecting trends because the data do not have to be equally spaced in time and do not need to follow a particular distribution. The null hypothesis tested was "**no trend exists**". The alternative hypothesis was "**an upward trend exists**". The test was applied at a significance level equal to 0.05. Statistical guidance from the U.S. Environmental Protection Agency ("U.S. EPA") recommends a significance level of 0.05 to ensure adequate statistical power, while limiting the number of false positive results (U.S. EPA, April 1994).

The Mann-Kendall test was performed on the groundwater monitoring results for TPHg, benzene, ethylbenzene, and xylenes measured in samples from wells TMW-1 and TMW-2. Table 3 displays the groundwater analytical data and the results of the Mann-Kendall test. If concentrations were below the detection limit, then one-half the detection limit was used in the Mann-Kendall test. The calculated "S" statistic is listed in Table 3. According to Gilbert (1987), when S is less than zero, the null hypothesis, **no trend exists**, is accepted. When S is greater than zero, if

the probability associated with S is greater than the significance level of 0.05, the null hypothesis, **no trend exists**, is also accepted (i.e., there is no upward trend).

As shown in Table 3, the S statistic is negative for ethylbenzene in well TMW-1 and xylenes in both wells, indicating that **no trend exists** for these compounds. The S statistic for benzene in well TMW-1 is 3, and the probability value for S=3 and n=7 (i.e., 7 data points) is 0.386 (Table A18, Gilbert, 1987). Because the significance level of 0.05 is less than the probability of 0.386, the null hypothesis, **no trend exists**, is accepted. Similarly, for TPHg in both wells and benzene and ethylbenzene in well TMW-2, the probability values are greater than the significance level of 0.05 (Table 3). Therefore, the null hypothesis, **no trend exists** (i.e., there is no upward trend), is accepted for TPHg, benzene, ethylbenzene, and xylenes in wells TMW-1 and TMW-2.

The fact that results of the Mann-Kendall test indicate no upward trend exists for two monitoring wells and all four analytes (i.e., a total of eight statistical tests) lends strong evidence of stable or improving groundwater conditions in the vicinity of the former Lowenberg tanks. The levels of BTEX compounds detected in soil samples collected in well TMW-1 do not appear to pose a long term threat to groundwater quality at this location. The area is currently capped with asphalt paving. Upon development of the area by Sybase, Inc., the area is planned to be capped with concrete or asphalt paving. Infiltration of rainwater, which could potentially cause leaching of the chemicals to groundwater, will continue to be restricted.

We hope this evaluation will facilitate closure of the former Lowenberg tanks located at 1410 65th Street. If you have any questions, please do not hesitate to call.

Very truly yours,

ERLER & KALINOWSKI, INC.



Michelle Kriegman King, Ph.D.
Project Manager



Theodore G. Erler, P.E.
President

Ms. Hugo
15 November 1995
Page 4

cc: John Bruno, Sybase, Inc.
Tom Sullivan, AMB Corporate Real Estate Advisors
Susan Lowenberg, Lowenberg Corporation
Bill Wick, Crosby, Heafey, Roach & May
Sumadhu Arigala, RWQCB
Ravi Arulanantham, RWQCB

REFERENCES

ENSR Consulting and Engineering, January 1991, *Tank Closure Report, Mission Taylor Properties, San Francisco, California.*

ENSR Consulting and Engineering, 7 June 1991, *Quarterly Groundwater Monitoring Report for 1410 64th Street, Emeryville, California.*

ENSR Consulting and Engineering, 9 October 1991, *Results of Quarterly Groundwater Sampling Conducted on August 16, 1991 at 1410-64th Street Site in Emeryville, California.*

Erler & Kalinowski, Inc., 13 June 1995, *Initial Site Investigation Report for the 64th and 65th Street Properties, Sybase, Inc., Emeryville, California.* ✓

↳ Gilbert, R.O., 1987, *Statistical Methods for Environmental Pollution Monitoring*, Van Nostrand Reinhold, New York.

SEACOR, 21 May 1993, *Groundwater Monitoring, 1410 64th Street, Emeryville, California.*

↳ U.S. Environmental Protection Agency, April 1994, *Statistical Training Course for Ground-water Monitoring Data Analysis, Solid Waste and Emergency Response, EPA 530-R-93-003.*

Table 1
 Summary of Petroleum Hydrocarbon and BTEX Concentrations Detected in Soil Samples
 Collected in the Vicinity of the Former Lowenberg Tanks
 Sybase, Inc., Emeryville, California
 (EKI 940018.03)

Sampling Location (a)	Sampling Date	Sample Depth (ft bgs) (b)	Petroleum Hydrocarbons and BTEX (mg/kg)					
			TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Total Xylenes
Excavation Sidewall Samples								
Trench-1	2/23/90	6	2000	220	0.39	2	<0.19 (c)	5.6
Trench-2	2/23/90	5	1500	270	0.22	1.2	<0.19	6.9
Trench-3	2/23/90	6	740	200	0.37	1.4	0.55	5.4
Trench-4	2/23/90	5	810	77	0.99	0.36	0.83	2
Well TMW-1	4/12/90	1.5	<5	16	0.59	0.11	<0.001	0.73
Well TMW-1	4/12/90	5.25	230	3900	75	85	43	120
Well TMW-2	4/12/90	1.5	<5	19	0.33	0.08	<0.001	0.56
Well TMW-2	4/12/90	5.25	16	220	7.3	8.6	2.7	6.6
Well TMW-3	4/12/90	3.25	<5	<0.05	<0.001	<0.001	<0.001	<0.001
Well TMW-3	4/12/90	5.25	<5	<0.05	<0.001	<0.001	<0.001	<0.001

NOTES:

- (a) Data obtained from ENSR, January 1991.
- (b) "ft bgs" indicates feet below ground surface.
- (c) Less than symbol (" $<$ ") denotes that compound was not present above the laboratory detection limit indicated.

ABBREVIATIONS:

- TPHd = Total Petroleum Hydrocarbons quantified as Diesel
- TPHg = Total Petroleum Hydrocarbons quantified as Gasoline
- BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes

Table 2
 Summary of Petroleum Hydrocarbon and BTEX Concentrations Detected in
 Groundwater Samples Collected in the Vicinity of the Former Lowenberg Tanks
 Sybase, Inc., Emeryville, California
 (EKI 940018.03)

Sampling Location and Date (a)	Petroleum Hydrocarbons and BTEX (ug/L)					
	TPHd	TPHg	Benzene	Toluene	Ethylbenzene	Total Xylenes
Excavation Water (b,c) 2/23/90	410,000	14,000	140	140	140	1,100
Well TMW-1 4/13/90	<100 (d)	560	10	<2	10	30
11/30/90	<50	ND (e)	3.2	<1	3.2	<1
4/12/91	NA	150	3.2	<0.5	2	<0.5
8/16/91	NA	150	4.8	<0.5	3.7	2.6
10/6/92	110	230	6.1	<0.5	3.1	<0.5
1/4/93	NA	430	9.9	<0.5	<0.5	<0.5
3/28/95	330	100	4.8	<0.5	1.8	3.2
Well TMW-2 4/13/90	<100	140	10	<2	2	7
11/30/90	<50	ND	3.8	<1	ND	<1
4/12/91	NA	160	16	<0.5	1.7	<0.5
8/16/91	NA	130	7.7	<0.5	1.3	1.1
10/6/92	90	170	18	<0.5	2.5	<0.5
1/4/93	NA	260	26	<0.5	2	<0.5
Well TMW-3 4/13/90	NA	<50	<2	<2	<2	<2
11/30/90	NA	ND	<1	<1	<1	<1
4/12/91	NA	<50	<0.5	<0.5	<0.5	<0.5
8/16/91	NA	<50	<0.5	<0.5	<0.5	<0.5
10/6/92	NA	<50	<0.5	<0.5	<0.5	<0.5
1/4/93	NA	<50	<0.5	<0.5	<0.5	<0.5

NOTES:

- (a) Data obtained from the following reports: ENSR, January 1991; ENSR, 9 October 1991; ENSR, 7 June 1991; SEACOR, 21 May 1993; EKI, 13 June 1995.
- (b) "Excavation Water" indicates that a grab groundwater sample was collected from the open tank excavation on the date listed.
- (c) Tank excavation pit filled with approximately seven feet of water. Approximately 15,000 gallons of water were pumped and removed with a vacuum truck (ENSR, January 1991).
- (d) Less than symbol (" $<$ ") denotes that compound was not present above the laboratory detection limit indicated
- (e) "ND" indicates that the compound was not detected and the detection limits were not presented in the reports available to EKI.

ABBREVIATIONS:

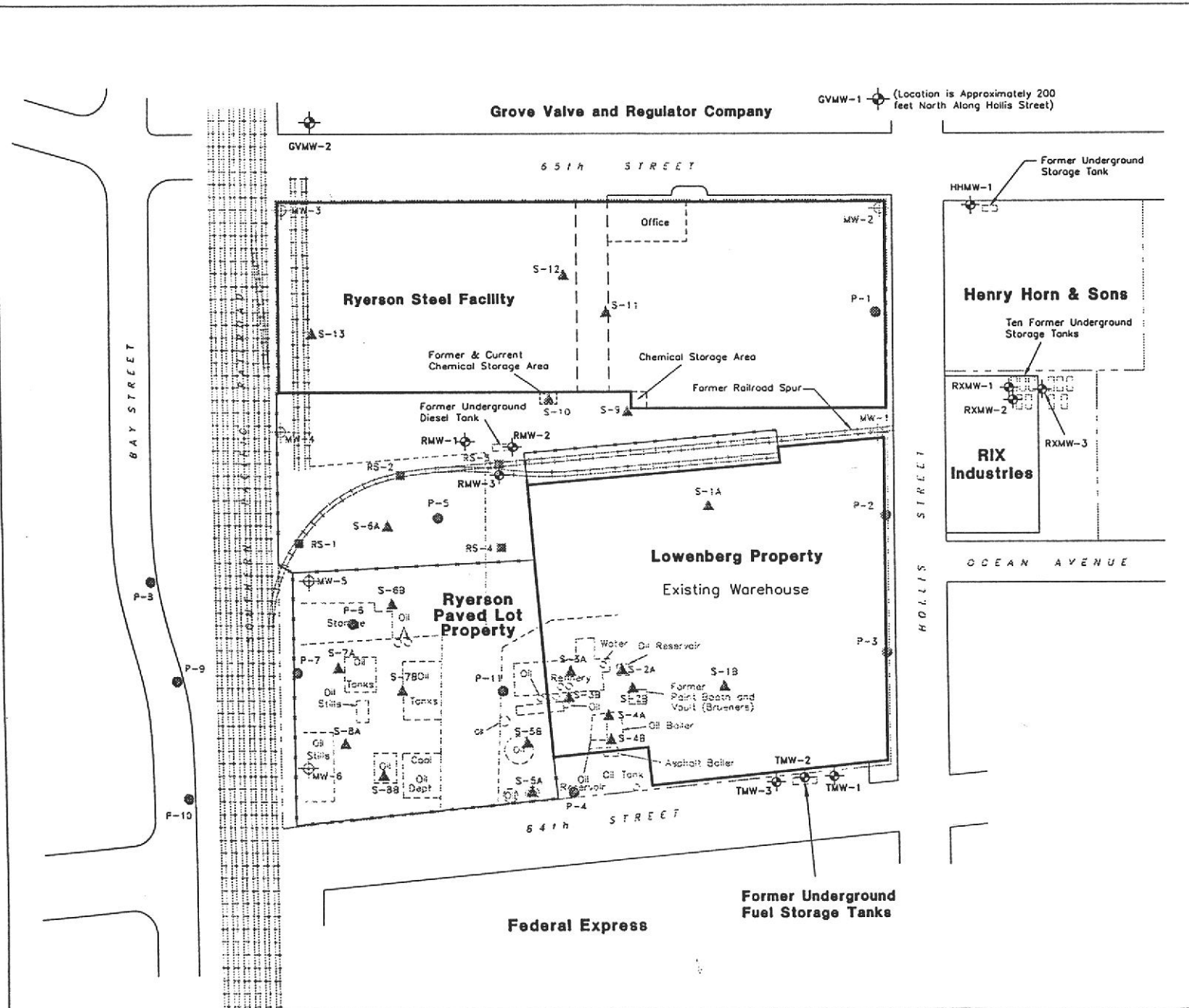
- TPHd = Total Petroleum Hydrocarbons quantified as Diesel
- TPHg = Total Petroleum Hydrocarbons quantified as Gasoline
- BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes

Table 3
 Results of Trend Analysis for Groundwater Data from Wells TMW-1 and TWM-2
 Using the Mann-Kendall Test
 Sybase, Inc., Emeryville, California
 (EKI 940018.03)

Sampling Date and Statistical Parameter	Well TMW-1				Well TMW-2			
	TPHg (ug/L)	Benzene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	TPHg (ug/L)	Benzene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
Groundwater Data								
4/13/90	560	10	10	30	140	10	2	7
11/30/90	<50 (25) (a)	3.2	3.2	<1 (0.5)	<50 (25)	3.8	<1 (0.5)	<1 (0.5)
4/12/91	150	3.2	2	<0.5 (0.25)	160	16	1.7	<0.5 (0.25)
8/16/91	150	4.8	3.7	2.6	130	7.7	1.3	1.1
10/6/92	230	6.1	3.1	<0.5 (0.25)	170	18	2.5	<0.5 (0.25)
1/4/93	430	9.9	<0.5 (0.25)	<0.5 (0.25)	260	26	2	<0.5 (0.25)
3/28/95	100	4.8	1.8	3.2	- (b)	-	-	-
Statistical Parameters								
n (c)	7	7	7	7	6	6	6	6
S (d)	0	3	-4	-13	9	9	4	-8
Mann-Kendall Probability (e)	0.577	0.386	NA (f)	NA	0.068	0.068	0.30	NA
Significance Level (g)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Result (h)	No trend	No trend	No trend	No trend	No trend	No trend	No trend	No trend

NOTES:

- (a) Concentration less than the detection limit indicated. Value in parentheses is one-half the detection limit, which was used in the Mann-Kendall analysis.
- (b) Well TMW-2 was not sampled in March 1995 because it was obstructed by dirt.
- (c) "n" is the number of sampling events.
- (d) "S" is the Mann-Kendall statistic calculated using the methodology in Gilbert (1987).
- (e) Mann-Kendall probability is related to value of S and n and is obtained from Table A18 in Gilbert (1987).
- (f) A negative S indicates that the data are clearly decreasing and a Mann-Kendall Probability is not applicable ("NA").
- (g) A significance level of 0.05 is recommended in U.S. EPA, 1994.
- (h) A negative S value or a Mann-Kendall Probability greater than the significance level indicates that there is no upward trend in the data (Gilbert, 1987).



LEGEND

- Railroad Tracks
- Approximate Property Boundary
- Historical Site Features (1911 Sanborn Map)
- Monitoring Well Installed by EKI
- Shallow Soil Boring Installed by EKI
- Monitoring Well Installed by Others
- Soil and Grab Groundwater Sampling Location Collected by Others
- Soil/Grab Groundwater Sampling Location Collected by EKI, July 1995

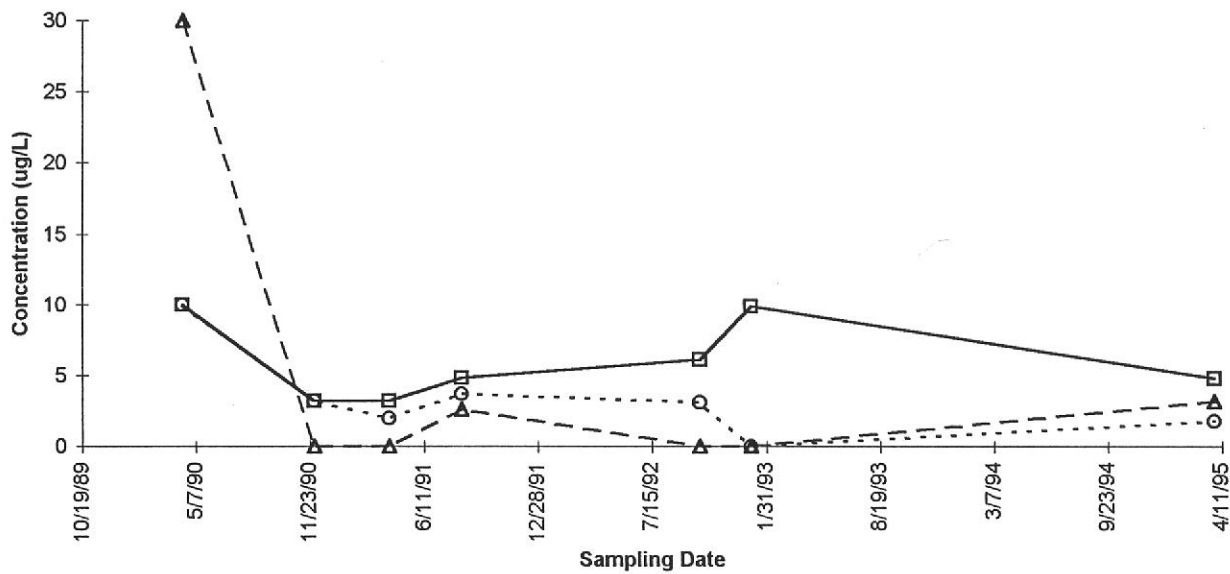
Notes:

1. All locations are approximate.
2. Basemap taken from Sanborn maps dated 1911 and 1967.

Erler & Kalinowski, Inc.

Site Plan

64th & 65th Street Properties
 Emeryville, CA
 November 1995
 EKI 940018.03
 Figure 1



LEGEND

- Benzene
- - ○ - - Ethylbenzene
- - ▲ - - Xylenes

Notes:

1. Data presented in Table 2.

**Erler &
Kalinowski, Inc.**

**Benzene, Ethylbenzene, and Xylenes
Concentrations in Well TMW-1**

64th & 65th Street Properties
Emeryville, California
November 1995
EKI 940018.03

Figure 2