GETTLER-RYAN INC

October 4, 1999

Mr. Bob Cochran
Chevron Products Company
P.O. Box 6004
San Ramon, CA 94583

Subject: Response to Alameda County Environmental Health Services letter dated August 30, 1999 for Former Chevron Station #20-6142, 333 23rd Avenue, Oakland, CA.

Mr. Cochran:

The Alameda County Environmental Health Services (ACEHS) sent a letter dated August 30, 1999, to Chevron Products Company (Chevron) in response to the first 1999 semi-annual monitoring report prepared by Blaine Tech Services, Inc.[1] Gettler-Ryan Inc. (GR) has prepared this response at the request of Chevron. The ACEHS letter made several observations and requests that will be answered below in the order they are presented in the original ACEHS letter.

Point #1. *The concentration of TPHd and TPHg range compounds increased to their highest levels in a long time in this monitoring report.*

Analytical data for wells MW-1 and MW-8 collected during the first semi-annual monitoring event are indeed within the range of the highest concentrations ever reported in these wells. Concentrations in well MW-1 are so far out of proportion when compared with the historical analytical data for this well that the data appear suspect. These high concentrations may actually reflect errors in sample collection, handling, or analysis. We do not believe that these data are truly representative of conditions in well MW-1.

Concentrations in well MW-8 also appear anomalously high compared to recent events, but do fall close to historical concentrations. The ACEHS letter suggests that the recent rise in hydrocarbon concentrations "may be due in part to lower depths to water." While this may be a factor in well MW-1, water levels in well MW-8 were only 0.09 feet lower that the previous event. As in well MW-1, the recent anomalous data from well MW-8 may actually reflect errors in sample collection, handling, or analysis and appears suspect.

We would also like to point out the ACEHS letter assumes "that all samples being run for TPHd are being filtered and passed through a silica gel cleanup step." The laboratory reports attached to Blaine's report do not indicate that TPHd samples are either filtered or subjected to a silica gel cleanup.

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[1] 2nd Quarter 1999 Monitoring at 206142, Blaine report #990624-S-1, dated August 11, 1999.

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Also, GR monitored and sampled wells MW-1 and MW-14 on August 22, 1999. Water in well MW-1 was 1.63 feet higher than was measured in June, the TPHd concentrations was 1,990 parts per billion (ppb), and TPHg or BTEX were not detected in this well. The water in well MW-14 (not measured in June) was within the historic range, and TPHd, TPHg or BTEX were not detected in this well.[2]

Point #2. *Monitoring data indicates that the socks have not been replaced since 1997. Please consider replacing the existing ORC socks.*

GR replaced the ORC socks in wells MW-1 and MW-7 through MW-11on February 21,1999.

Point #3. *Please...relocate and sample the inaccessible wells.*

GR has already made extensive efforts to locate well MW-4. This well has been irretrievably lost and cannot be included in future monitoring events. At the request of Chevron, GR installed well MW-14 as a replacement well to MW-4 in 1997. Prior to the second 1999 semi-annual monitoring and sampling event (scheduled for December 1999), GR will attempt to locate and make accessible all other wells that could not be accessed during the June sampling event (wells MW-5 and MW-14). Wells MW-12 and MW-13 have not been included in the monitoring and sampling program during the last several years, and will not be included in the upcoming December event.

Point #4. *Please have your consultant provide an interpretation of the bio-attenuation parameter results.*

GR evaluated the bio-attenuation parameters collected during the June 1999 event. This evaluation was based on protocols outlined in Buscheck and other (1993)[3], Buscheck and O'Reilly (1995)[4], and Borden and other (1995).[5] The evaluation consisted of comparing chemical indicators from the June 1999 sampling event across the dissolved hydrocarbon plume in a rough north-south transects (B-B', shown on the attached Figure 1). An east-west transect (A-A' on Figure 1) could not be completed at this time due to the inaccessibility of wells MW-5 and MW-14. Bio-attenuation data from Blaine's June 1999 sampling event and hydrocarbon concentrations from GR's September 1999 sampling event are summarized in the attached Table 1.

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[2] Groundwater Monitoring and Sampling Report, GR report #346338.02, dated September 20, 1999.

[3] Buscheck, T.E., K.T. O'Reilly, and N.N. Sheldon, 1993, Evaluation Of Intrinsic Bioremediation At Field Sites, in Proceedings of the Conference on Petroleum Hydrocarbons and Organic Chemicals in Ground Water: National Ground Water Association/API, Houston, TX, November 10-12, 1993.

[4] Buscheck, Tim, and Kirk O'Reilly, 1995, Protocol For Monitoring Intrinsic Bioremediation In Groundwater: Chevron Research and Technology Company, Health, Environment, and Safety Group, dated March 1995.

[5] Borden, R.C., C.A. Gomez, and M.T. Becker, 1995, Geochemical Indicators of Intrinsic Bioremediation: Groundwater, vol. 33, no. 2.

TPHg or benzene are not detected in wells MW-1, MW-10, or MW-11. TPHd concentrations ranged from 69 to 1,990 ppb, with the highest concentration detected in well MW-1. These data are consistent with historical data (ignoring the June 1999 data). TPHg or benzene have not been detected in wells MW-10 or MW-11, and the TPHd concentrations previously detected in these wells have been low and sporadic. Well MW-1 has never contained benzene, TPHg has not been detected in this well since 1997, and the TPHd concentrations show a generally decreasing trend.

The attached graphs show the relationship between TPHd concentrations in the wells during the most recent sampling event and the bio-attenuation parameters dissolved oxygen (DO), oxidation-reduction potential (ORP), conductivity, ferrous iron, sulfate, nitrate, and alkalinity. The expected indications of bio-attenuation across the plume would be a relative decrease in DO, ORP, nitrate, and sulfate concentrations with increasing TPHd concentrations. Conversely, ferrous iron and alkalinity concentrations would be expected to increase with increasing concentrations. As shown on the attached graphs, ferrous iron and alkalinity increase with increasing TPHd concentrations, and nitrate and sulfate decrease with increasing TPHd concentrations. These trends suggest ongoing bio-attenuation activity. The DO trend is essentially flat, and the conductivity shows a continual increase from north to south across the plume. These data trends are inconclusive regarding bio-attenuation. ORP increases with increasing TPHd concentration, opposite the expected trend for bio-attenuation.

The dissolved plume configuration is stable, dissolved hydrocarbon concentrations appear to be decreasing, and there are indications that bio-attenuation is occurring at the site.

Point #5. *You are encouraged to review the latest recommended soil and cleanup levels...*

GR spoke with Mr. Chuck Hedley of the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) on June 2, 1999. Mr. Hedley indicated the SFBRWQCB uses the following values to evaluate risk to marine water: TPHg=3,700 ppb and TPHd=640 ppb. Wells within 300 feet of the Bay that contain petroleum hydrocarbons concentrations in excess of these values may require additional work. Mr. Hedley indicated that these concentrations are interim, or draft, and the Board does not plan to issue any formal guidelines based on these numbers. Wells at the subject site are within 300 feet of the Bay. Ignoring the data from the June 1999 sampling event for the reasons discussed above, wells at this site fall below the SFBRWQCB interim values.

Recommendations

The hydrocarbon plume is delineated and appears stable. Dissolved hydrocarbon concentrations are decreasing. Bio-attenuation appears to be responsible for the reduction in dissolved concentrations. Concentrations at this time are below the interim guidelines used by the SFBRWQCB to evaluate sites within 300 feet of the Bay. Additional work at this site does not appear to be warranted, and the site should be considered for closure. However, because of the contradiction between the recent Blaine and GR sampling events, GR recommends that the site be sampled one final time during the regularly scheduled December 1999 event. All wells (except well MW-4) should be sampled for both dissolved hydrocarbons and bioparameters. Following receipt and evaluation of this data, GR may prepare a closure request report for this site.

If you have questions, please call us in Sacramento at 916.631.1300.

Sincerely,
Gettler-Ryan Inc.

Stephen J. Carter
Senior Geologist
R.G. 5577

Greg A. Gurss
Senior Project Manager

Attachments: Table 1. Chemical Analytical Data
Figure 1. Site Map
Graphs

cc: Mr. Barney Chan, Alameda County Environmental Health Services, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94503-6577

Table 1. Chemical Analytical Data
Former Chevron Service Station #20-6142/RMC Lonestar
333 23rd Avenue
Oakland, CA

Well No.	Distance[1] (ft.)	TPHd (ppb)	TPHg (ppb)	Benzene (ppb)	Dissolved O_2 (mg/L)	ORP (mV)	Conductivity (µmhos/cm)	Fe^{2+} (ppm)	SO_4^{2-} (ppm)	NO_3^- (ppm)	Alkalinity (ppm)
MW-10	-85	163	<50	<0.5	1.2	11	2200	<0.01	110	9.16	370
MW-1	0	1,990[2]	<50[2]	<0.5[2]	1.2	36	2500	9.2	3.64	<1.0	560
MW-11	85	69	<50	<0.5	1.4	31	2900	<0.01	140	180	290

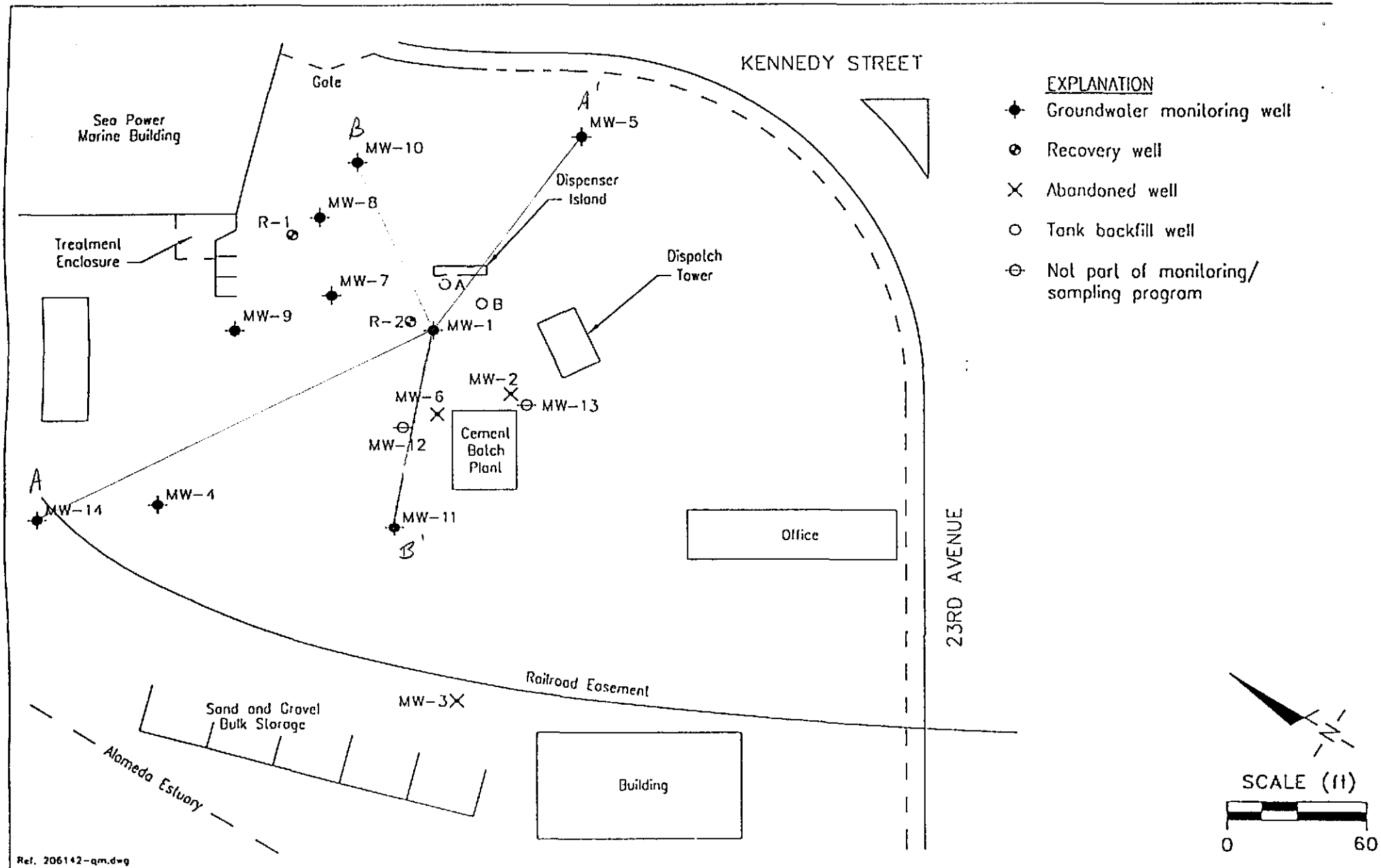
Explanation:

ppm = parts per million
ppb = parts per billion
mg/L = milligrams per liter
mV = millivolts
µmhos/cm = micromhos/centimeter

[1] Distance from Well MW-1.

[2] From GR's Report #346336.02, dated 9/20/99.

Note: Data collected June 24, 1999, by Blaine Tech Services, Inc., except as noted.



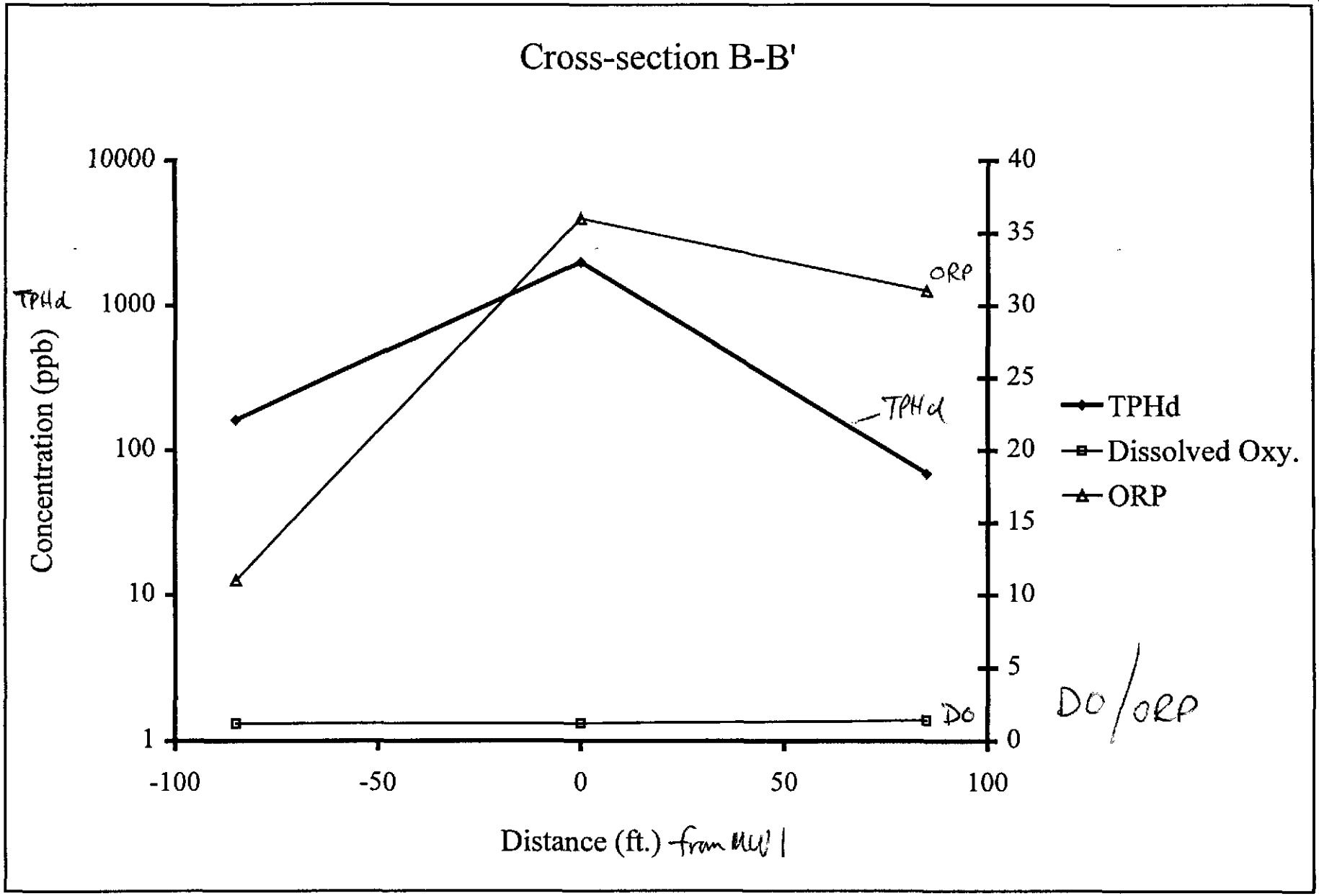
PREPARED BY

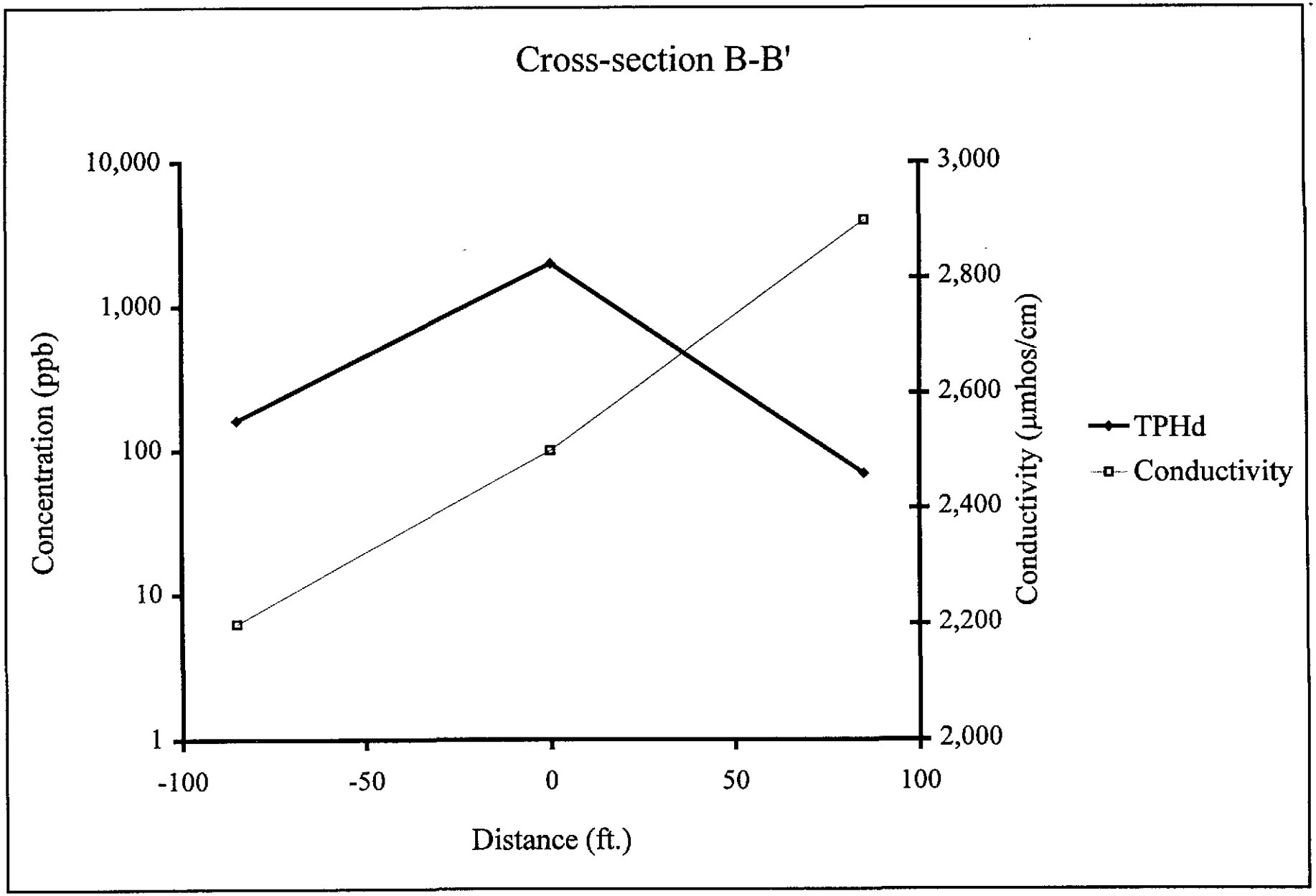
RRM
engineering contracting firm

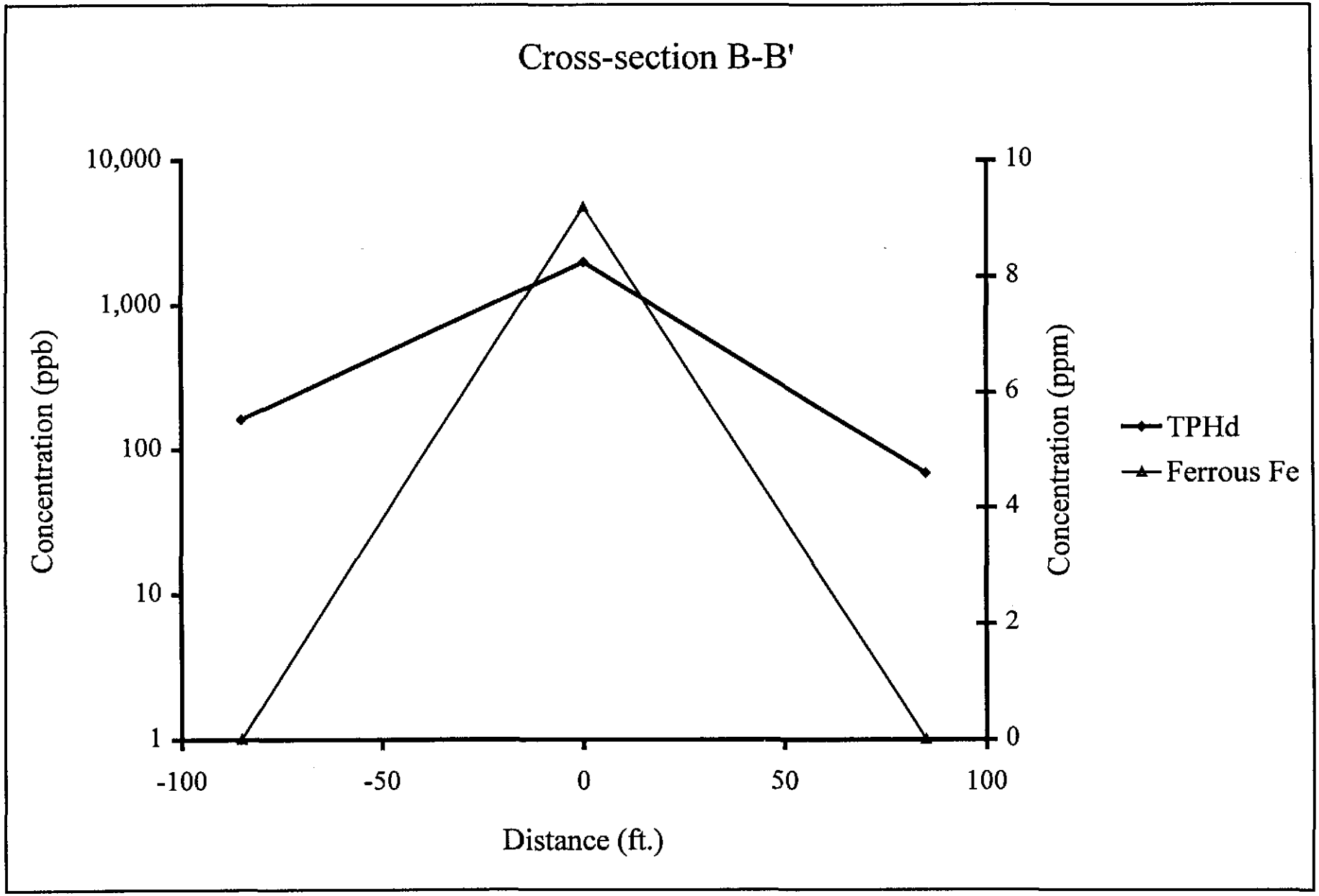
Chevron/RMC Lonestar Facility CPS #206142
333 23rd Avenue
Oakland, California

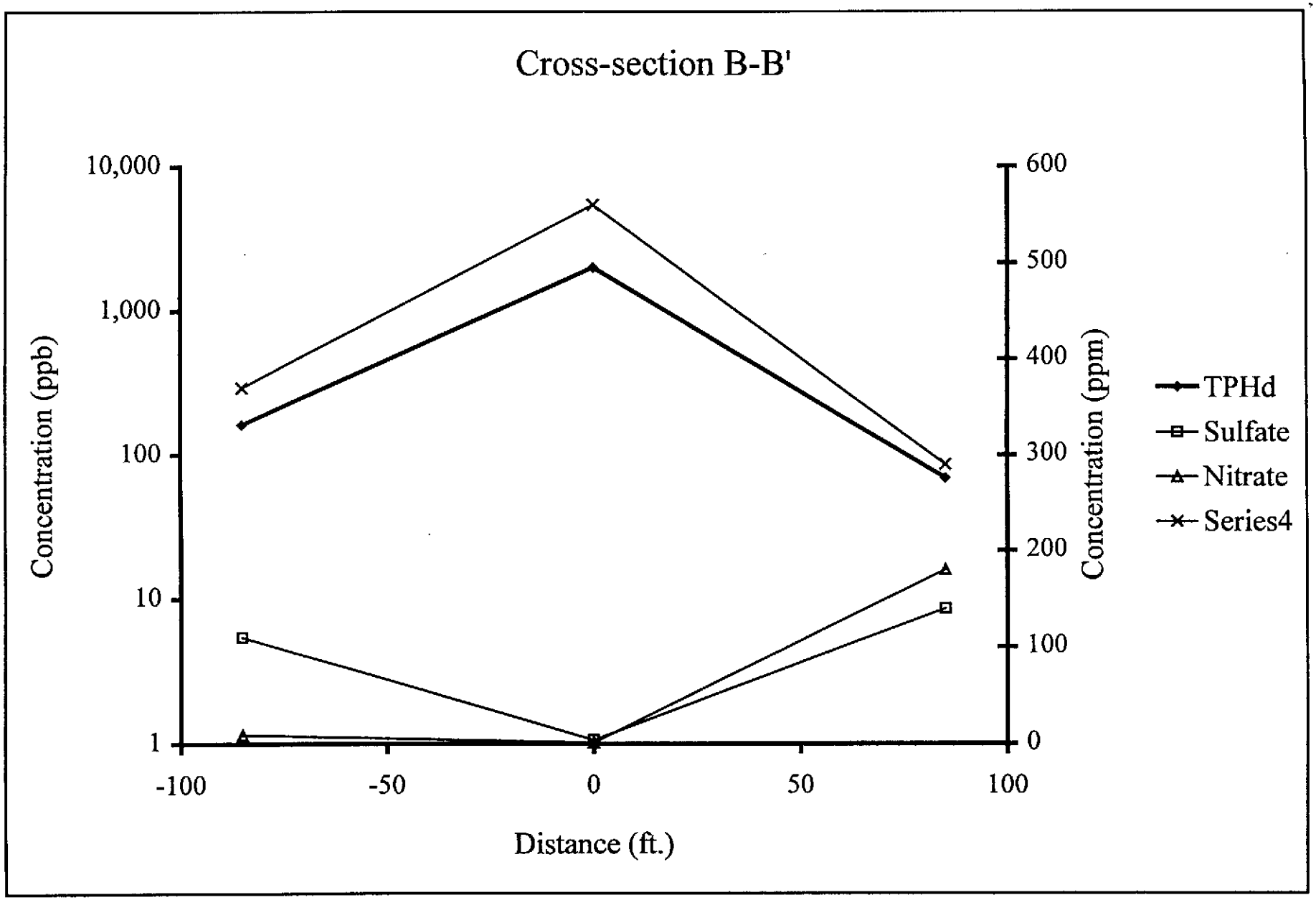
SITE MAP

FIGURE
1


Cross-section B-B'
10000
1000
100
10
1
Concentration (ppb)
TPHd
40
35
30
25
20
15
10
5
0
ORP
TPHd
DO
TPHd
Dissolved Oxy.
ORP
DO/ORP
-100
-50
0
50
100
Distance (ft.) from MW 1


Cross-section B-B'
10,000
1,000
100
10
1
Concentration (ppb)
3,000
2,800
2,600
2,400
2,200
2,000
Conductivity (µmhos/cm)
-100
-50
0
50
100
Distance (ft.)
TPHd
Conductivity


Cross-section B-B'
10,000
1,000
100
10
1
Concentration (ppb)
10
8
6
4
2
0
Concentration (ppm)
-100
-50
0
50
100
Distance (ft.)
TPHd
Ferrous Fe


Cross-section B-B'
10,000
1,000
100
10
1
Concentration (ppb)
600
500
400
300
200
100
0
Concentration (ppm)
-100
-50
0
50
100
Distance (ft.)
TPHd
Sulfate
Nitrate
Series4