JET KAYO OIL COMPANY
1221 East Main Street Chattanooga, TN 37408-1696
(615) 755-9330

July 28, 1988

Mr. Greg Zentner
San Francisco Bay Region
Regional Water Quality Control Board
1111 Jackson Street, Room 6040
Oakland, CA 94602

RE: Econo Station
44 Lewelling Boulevard
San Lorenzo, CA

Dear Mr. Zentner:

Enclosed is a report prepared by Applied GeoSystems presenting the second quarter 1988 groundwater monitoring results.

The quarter's monitoring results show a decrease in hydrocarbon constituents in MW-2 and an increase in MW-1 and MW-3. The groundwater elevation has dropped approximately one foot and the gradient direction remains toward the northwest.

If you have any questions, please call our Lodi office.

Sincerely,

Joyce Miley

Joyce M. Miley
Coordinator - Environmental Affairs

Lodi Office: 900 S Cherokee Lane
Lodi, CA 95240

Phone: 209/368-2731

JMM/wml

Enclosure

cc: Larry Seto, Alameda County Health Care Services

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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LETTER REPORT
QUARTERLY GROUND-WATER MONITORING
at
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

AGS Job No. 870[illegible]

Applied GeoSystems 43255 Mission Boulevard, Fremont, CA 94539 (415) 651-1906

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July 21, 1988
AGS 87044-4

Mr. Paul Taylor
Kayo Oil Company
900 South Cherokee Lane
Lodi, California 95240

Subject: Letter Report No. 87044-4 regarding quarterly ground-water monitoring at the Econo Gasoline Station, 44 Lewelling Boulevard, San Lorenzo, California.

Mr. Taylor:

This letter report summarizes the results of ground-water monitoring performed by Applied GeoSystems (recommended in our Report No. 87044-3, dated June 23, 1987), as required by the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. The site is located on the south side of Lewelling Boulevard in San Lorenzo. The location of the site is shown on the Site Vicinity Map (Plate P-1). At Kayo Oil Company's request, ground water at the site was analyzed in a laboratory monthly from June to September 1987. A quarterly monitoring schedule began in September 1987 and will continue through June 1988.

A geologist was present at the above-referenced site on June 15, 1988, to collect samples from wells MW-1, MW-2, and MW-3. The locations of the wells are shown on the Ground-Water Potentiometric Surface Map (Plate P-2). An initial sample was collected from each of the wells to check for evidence of hydrocarbon contamination. The samples were collected by gently lowering approximately half of the length of a Teflon bailer past the air/water interface and collecting a sample from the surface of the water in each well. No floating product, sheen, or emulsion were evident in well MW-2. The water samples from wells MW-1 and MW-3 had a slight sheen but no floating product or emulsion. Cumulative results of the subjective analyses are presented in Table 1.

Prior to the subjective analyses, the static water levels were measured using a Solinst water-level indicator. The water-level measurements were used to produce the Ground-Water Potentiometric Surface Map (Plate P-2). The direction of ground-water flow on June 15, 1988, was toward the northwest. The ground-water

gradient calculated from the above measurements is 0.01 (approximately 1 foot vertical distance per 100 feet horizontal distance).

After the subjective analyses, the wells were purged of approximately four well volumes of water and allowed to recover to static conditions. Samples selected for laboratory analyses were then collected with a cleaned Teflon bailer. A sample from each well was collected from a selected depth below the static water level. The samples were transferred to laboratory-cleaned, 40-milliliter glass volatile organic analysis vials. Hydrochloric acid was added to the vials to minimize bacterial degradation of the samples.

The samples were sealed with Teflon-lined caps, stored on ice, and delivered to Trace Analysis Laboratory in Hayward, California. This laboratory is certified by the State of California to perform the analyses requested. A Chain of Custody Record was initiated by the field geologist is enclosed with this report. The samples were analyzed for total petroleum hydrocarbons by Environmental Protection Agency (EPA) Method 8015 (modified for gasoline) and the hydrocarbon constituents benzene, ethylbenzene, toluene, and total xylenes isomers by EPA Method 602. The results of these and previous analyses are presented in Table 2. The most recent analytical results are also presented on the laboratory Analysis Reports enclosed with this report.

The most recent analyses generally show a decrease in total petroleum hydrocarbons and the hydrocarbon constituents constituents benzene, ethylbenzene, and toluene in well MW-2 from those of the analyses of March 1988. Levels of total petroleum hydrocarbons and benzene have increased in wells MW-1 and MW-3 since the last analysis. The concentrations of benzene and total xylene isomers in wells MW-1 and MW-3 and toluene in well MW-3 exceed the maximum limits for drinking water recommended by the California Department of Health Services. Cumulative analytical results are presented graphically to show the trend of total petroleum hydrocarbons and each constituent with time on Plates P-3 through P-6.

Because relatively high concentrations of dissolved hydrocarbon constituents are present in the ground water at the site, further work should be undertaken to evaluate the extent of the contamination and the usefulness of the ground water in the vicinity of the site. We recommend that additional ground-water monitoring wells be installed at selected locations offsite and in the downgradient direction to more fully delineate the extent of ground-water impact.

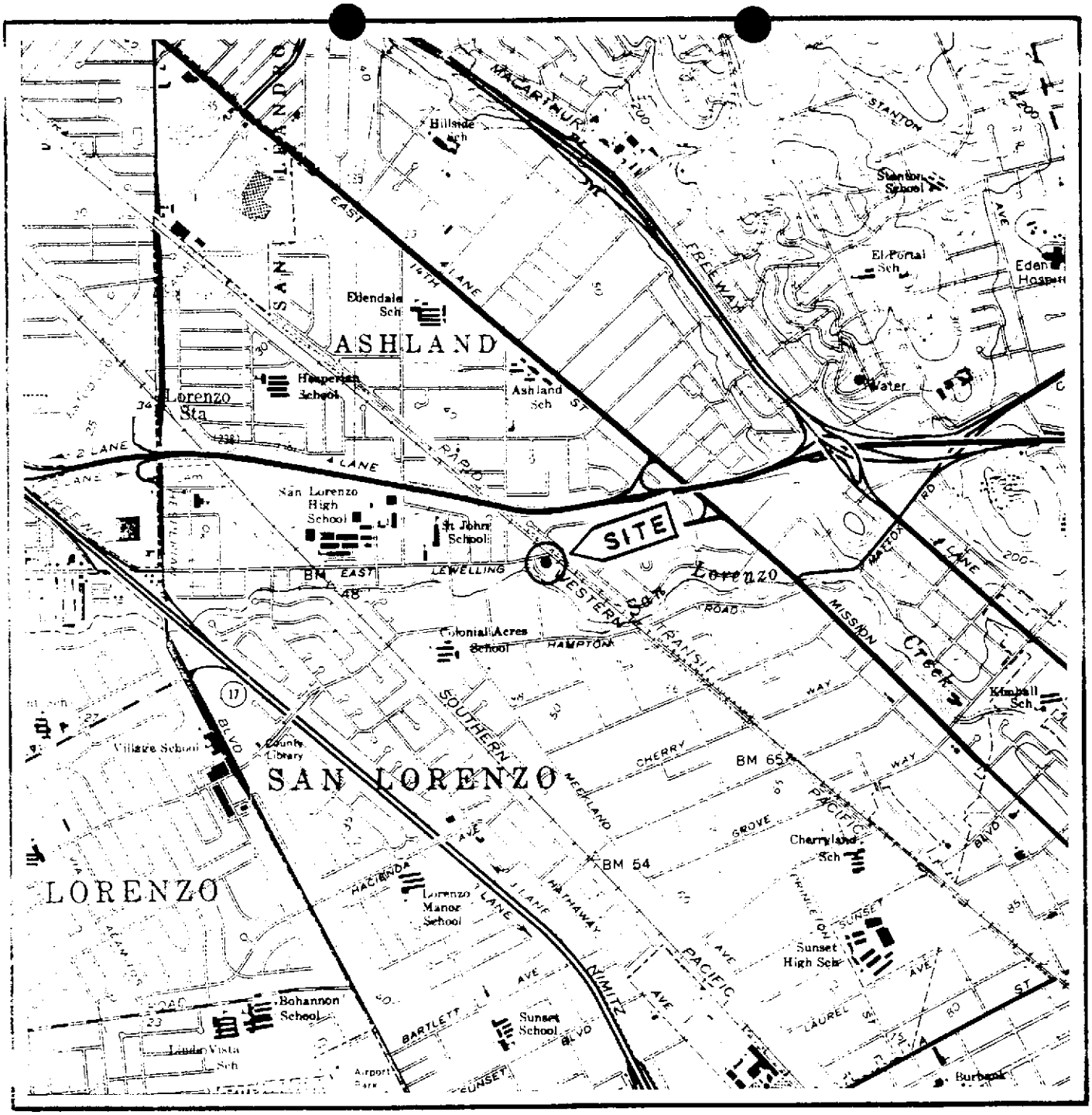
A copy of this report should be forwarded to Mr. Greg Zentner of the California Regional Water Quality Control Board, 1111 Jackson Street, Room 6040, Oakland, California 94607. Please do not hesitate to contact us if you have any questions regarding the contents of this report.

Sincerely,
Applied GeoSystems

John T. Lambert
Project Geologist

Gillian Holmes
G.E. 2023

Enclosures: Site Vicinity Map, Plate P-1
Ground-Water Potentiometric Surface Map, Plate P-2
Cumulative Subjective Analyses, Table 1
Cumulative Analytical Results, Table 2 (2 pages)
Cumulative TPH Concentration Graph, Plate P-3
Cumulative BETX Concentration Graph, Plates P-4 through P-6
Chain of Custody Record
Analysis Report



Source: U.S. Geological Survey
7.5-Minute Quadrangle
Hayward, California
San Lorenzo, California
Photorevised 1980

N

Approximate Scale

2000 1000 0 2000 4000

feet

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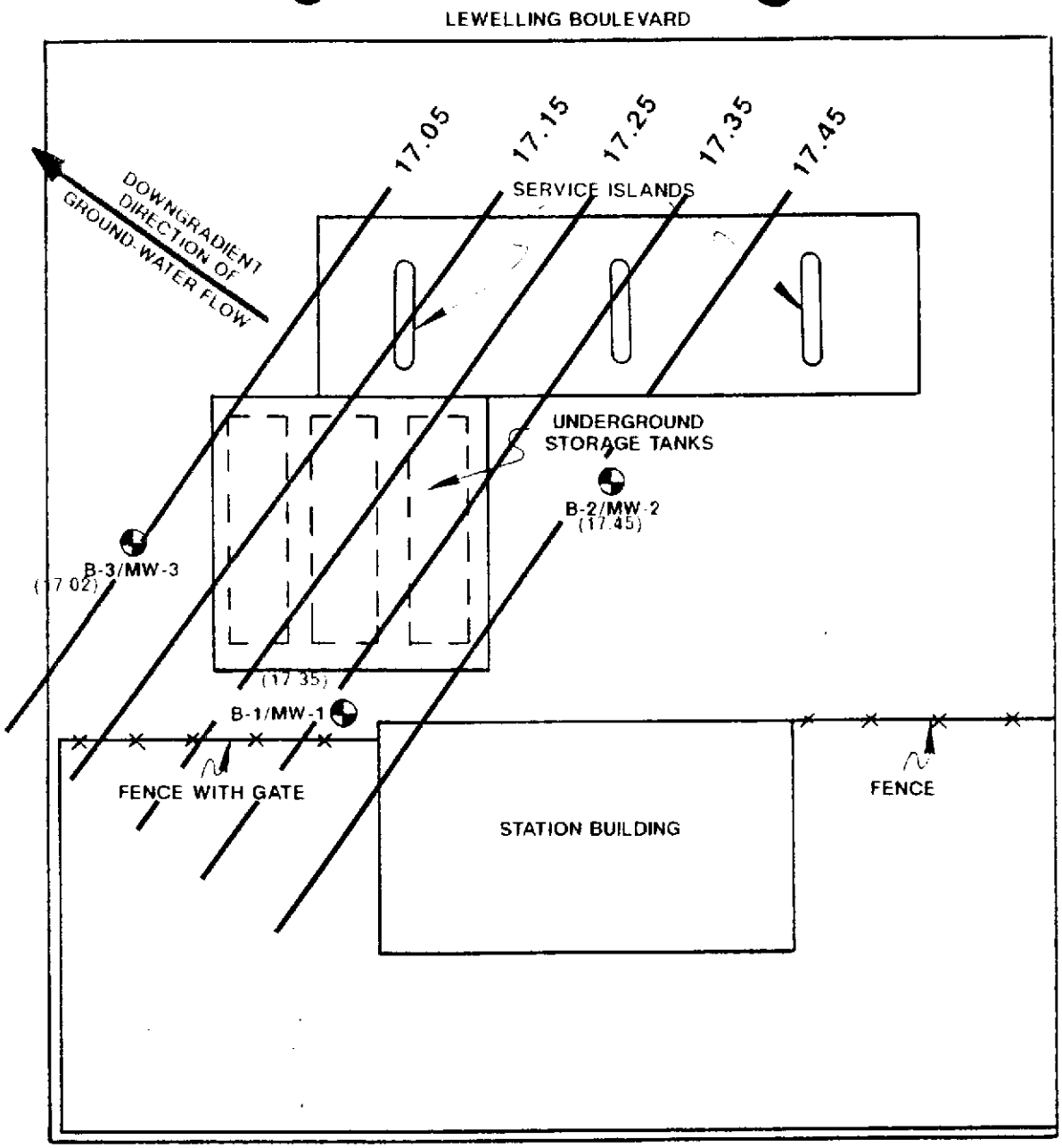
PROJECT NO. 87044-4

SITE VICINITY MAP
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

PLATE

P - 1



= Monitoring well location

17.45 = Potentiometric surface depth measured in feet below top of casing of MW-1 on June 15, 1988

(17.45) = Depth of water below top of casing of MW-1 on June 15, 1988

Approximate Scale

20 10 0 20 40

feet

Source: Measured by tape and compass

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PROJECT NO. 87044-4

GROUND-WATER POTENTIOMETRIC SURFACE MAP (June 1988)
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

PLATE

P - 2

TABLE 1
CUMULATIVE SUBJECTIVE ANALYSES
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

Well Number	Date	Depth to Water	Floating Product	Sheen	Emulsion
MW-1	6/87	16.27	NONE	SLIGHT	NONE
	7/87	16.96	NONE	NONE	NONE
	8/87	17.28	NONE	NONE	NONE
	9/87	17.62	NONE	NONE	NONE
	12/87	17.54	NONE	NONE	NONE
	3/88	17.12	NONE	NONE	NONE
	6/88	18.05	NONE	SLIGHT	NONE
MW-2	6/87	15.62	NONE	STRONG	NONE
	7/87	16.23	NONE	NONE	NONE
	8/87	16.58	NONE	NONE	NONE
	9/87	16.93	NONE	NONE	NONE
	12/87	16.71	NONE	NONE	NONE
	3/88	16.43	NONE	NONE	NONE
	6/88	17.35	NONE	NONE	NONE
MW-3	6/87	15.89	NONE	SLIGHT	NONE
	7/87	16.48	NONE	NONE	NONE
	8/87	16.80	NONE	NONE	NONE
	9/87	17.13	NONE	NONE	NONE
	12/87	16.90	NONE	NONE	NONE
	3/88	16.68	NONE	NONE	NONE
	6/88	17.59	NONE	SLIGHT	NONE

Depth to water measured in feet below top of casing.

TABLE 2
CUMULATIVE ANALYTICAL RESULTS
OF GROUND-WATER SAMPLES
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California
(page 1 of 2)

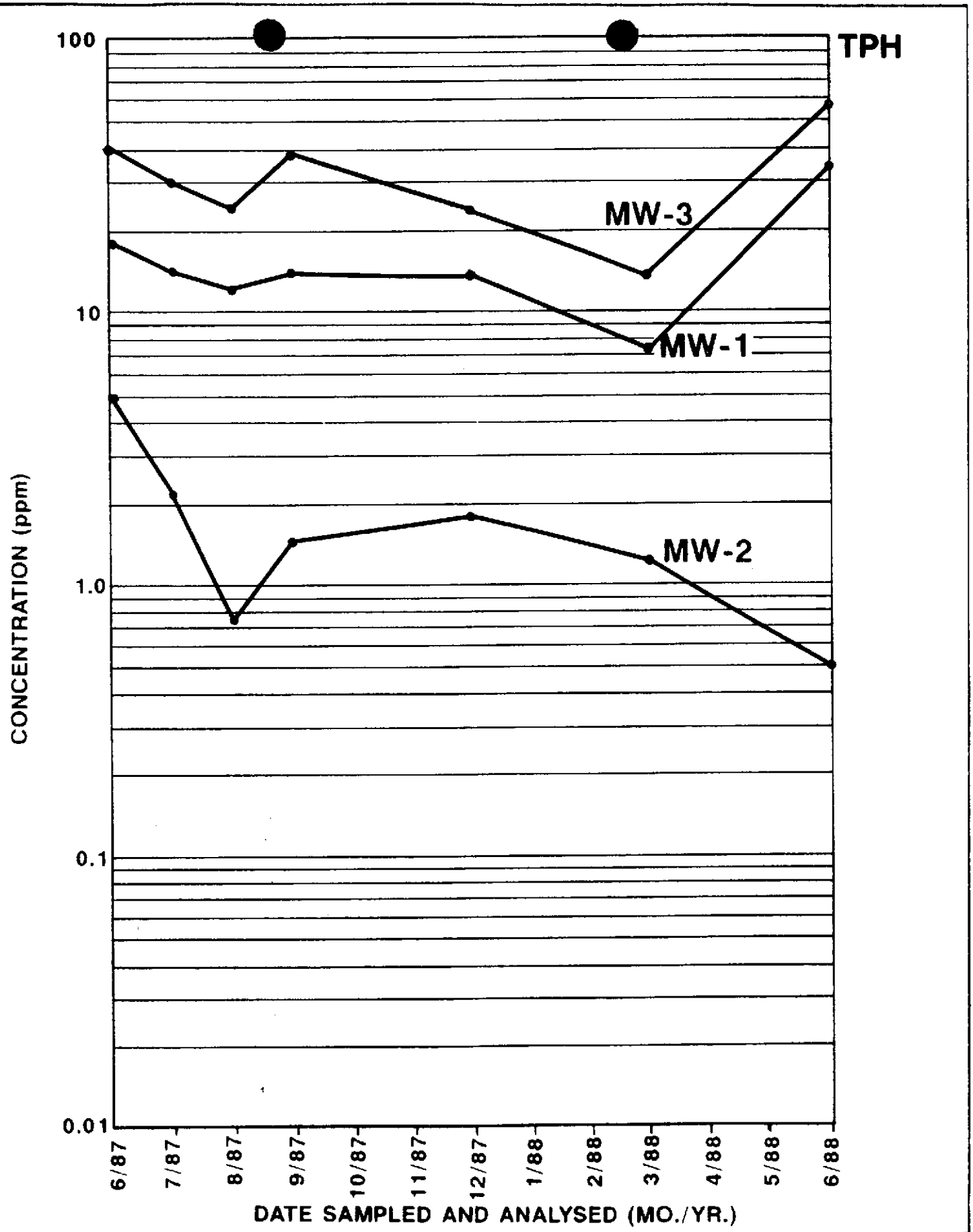
Date	Sample No.	TPH	B	T	E	X
Well MW-1						
6/87	W-25-MW1	18.05*	0.49	0.93	0.15	3.79
7/87	W-20-MW1	14.75*	0.56	0.95	0.12	0.27
8/87	W-26-MW1	12.86*	0.63	0.32	0.04	1.13
9/87	W-18-MW1	14.269*	0.558	0.562	0.084	1.942
12/87	W-20-MW1	14.00	0.200	0.273	0.138	0.777
3/88	W-19-MW1	7.3	0.07	0.34	0.04	0.94
6/88	W-19-MW1	34.0	0.29	<0.010	0.33	0.79
Well MW-2						
6/87	W-25-MW2	4.870*	0.113	0.046	0.014	0.058
7/87	W-20-MW2	2.207*	0.103	0.034	0.025	0.048
8/87	W-26-MW2	0.7560*	0.0376	0.0082	0.0109	0.0111
9/87	W-18-MW2	1.4825*	0.0753	0.0164	0.0142	0.0276
12/87	W-20-MW2	1.80	0.0280	0.0381	0.0406	0.1003
3/88	W-18-MW2	1.20	0.0092	0.0073	0.0031	0.0026
6/88	W-18-MW2	0.50	<0.0009	<0.001	0.0022	0.0057

All results in parts per million (ppm)
TPH: Total petroleum hydrocarbons (by EPA Method 8015
BETX: Benzene, ethylbenzene, toluene, and total xylene isomers
*: Total volatile hydrocarbons (by EPA Method 602)
<: Less than the detection limit for method of analysis

TABLE 2
CUMULATIVE ANALYTICAL RESULTS
OF GROUND-WATER SAMPLES
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California
(page 2 of 2)

Date	Sample No.	TPH	B	T	E	X
Well MW-3						
6/87	W-25-MW3	40.3*	5.4	1.7	3.9	5.2
7/87	W-20-MW3	30.32*	6.88	1.58	7.08	4.77
8/87	W-26-MW3	25.62*	5.93	1.24	4.18	3.37
9/87	W-18-MW3	38.21*	8.54	1.02	6.66	3.74
12/87	W-20-MW3	25.00	4.24	0.89	2.53	1.86
3/88	W-18-MW3	13.4	3.21	0.94	0.95	0.95
6/88	W-18-MW3	54.0	5.90	7.60	0.45	4.60

All results in parts per million (ppm)
TPH: Total petroleum hydrocarbons (by EPA Method 8015)
BETX: Benzene, ethylbenzene, toluene, and total xylene isomers
*: Total volatile hydrocarbons (by EPA Method 602)
<: Less than the detection limit for method of analysis



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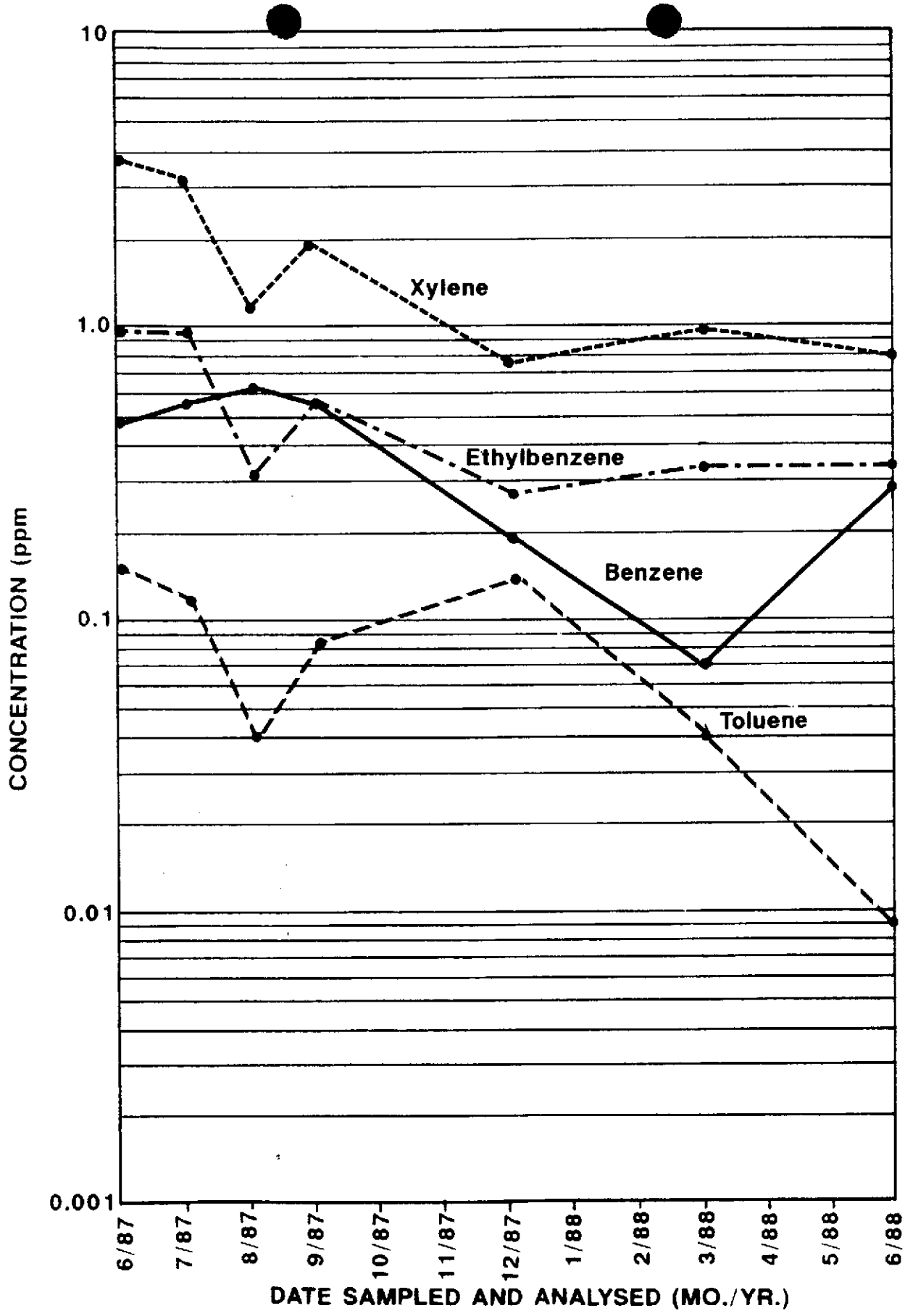
CUMULATIVE TPH CONCENTRATION GRAPH
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

PLATE
P - 3



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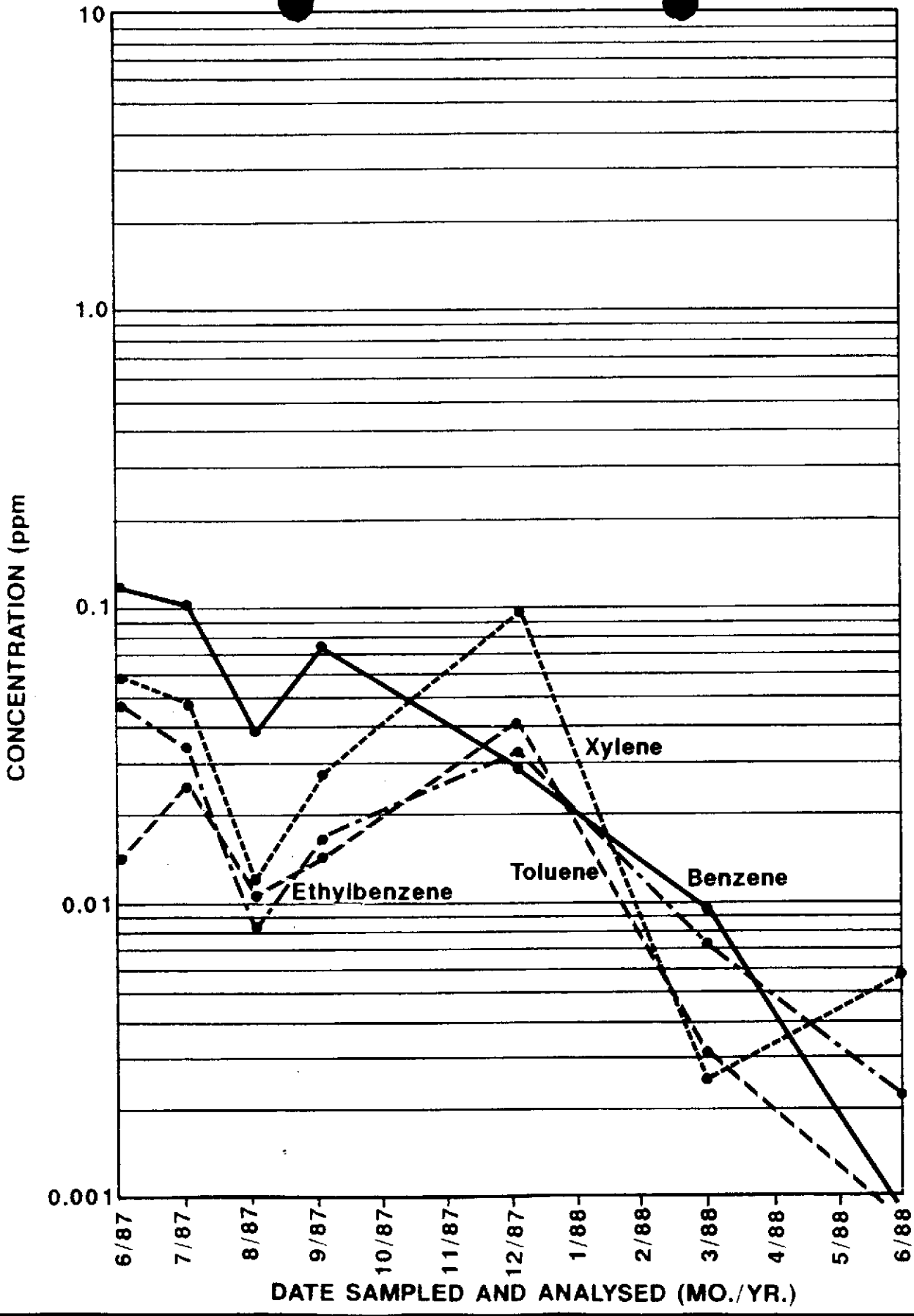
PROJECT NO. 87044-4

CUMULATIVE BETX CONCENTRATION GRAPH MW-1
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

PLATE
P - 4



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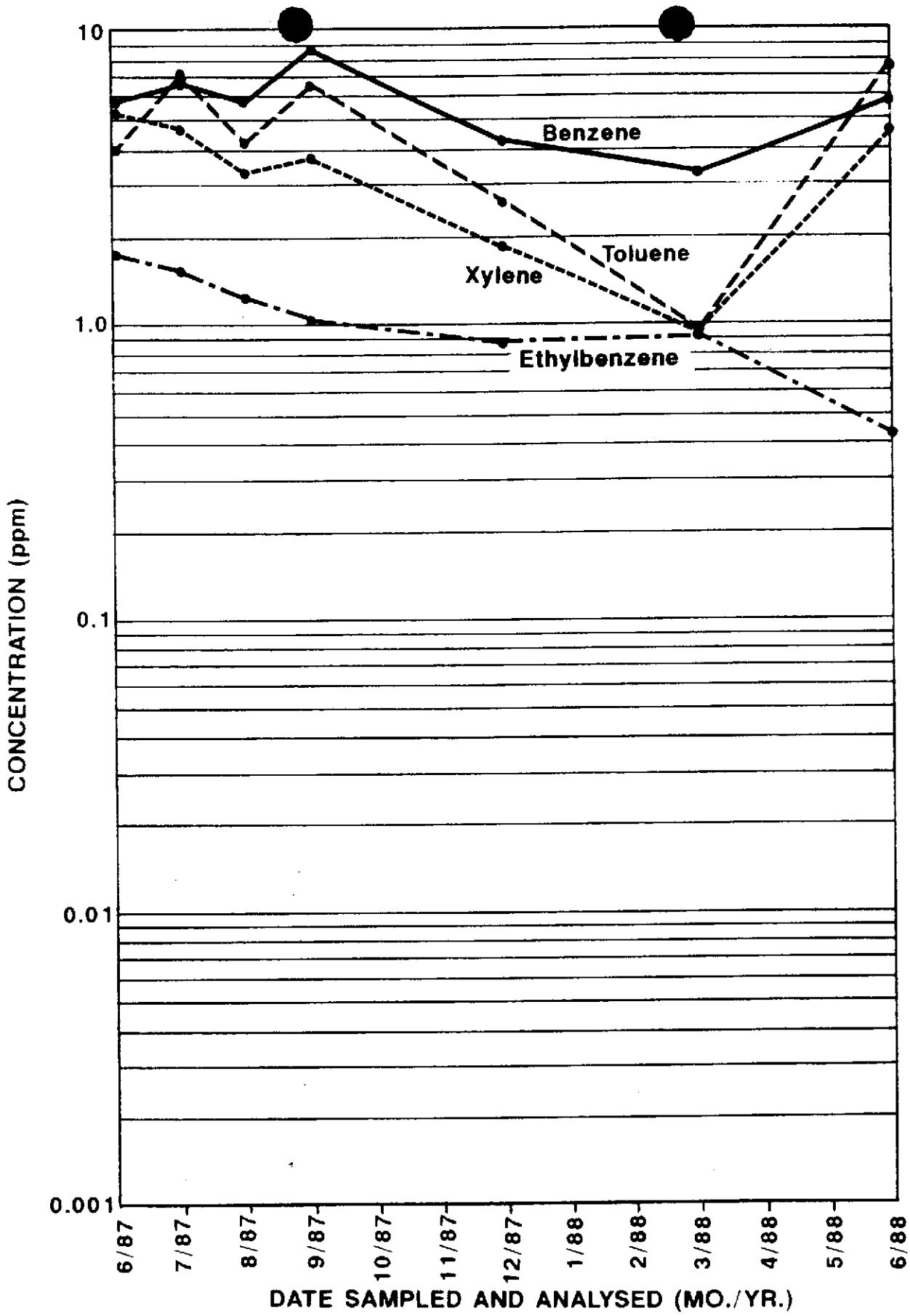
CUMULATIVE BETX CONCENTRATION GRAPH MW-2
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

PLATE
P - 5



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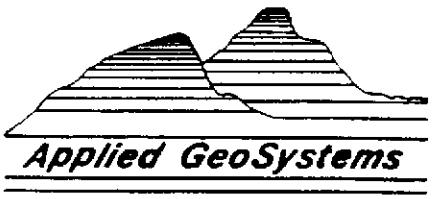
CUMULATIVE BETX CONCENTRATION GRAPH MW-3
Econo Gasoline Station
44 Lewelling Boulevard
San Lorenzo, California

PLATE
P - 6

CHAIN OF CUSTODY RECORD

6099 W



43255 Mission Blvd Suite B Fremont, CA 94539 (415) 651-1906

SAMPLER (signature): Dan Kirkman

Phone: 651-1906

LABORATORY: TAL

TURNAROUND TIME: 2 week

Project Leader: John Lambert

Phone No. 651-1906

SHIPPING INFORMATION:

Shipper

Address

Date Shipped

Service Used

Airbill No. Cooler No.

Relinquished by: (signatures)	Received by: (signatures)	Date	Time
Dan Kirkman		15 June 88	1000
	John C. Abbott 6/15/88 1500		
	Received for laboratory by:		

LABORATORY SHOULD SIGN UPON RECEIPT AND RETURN A COPY OF THIS FORM WITH THE LABORATORY RESULTS

Sample No.	Site Identification	Date Sampled	Analyses Requested	Sample Condition Upon Receipt
W-19-MW1	87044-4	6-14-88	TPH + BETX	iced / 4 ea 40ml
W-18-MW2	87044-4	6-14-88	TPH + BETX	iced / 4 ea 40ml
W-19-MW3	87044-4	6-14-88	TPH + BETX	iced / 4 ea 40ml

SUBCONTRACTED

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545 *(415) 783-6960*

TAL

DATE: 6/30/88

LOG NO.: 6099

DATE SAMPLED: 6/14/88

DATE RECEIVED: 6/15/88

CUSTOMER: Kayo Oil Company
c/o Applied Geosystems

REQUESTER: John Lambert

PROJECT: No. 87044

Sample Type: Water

Method and Constituent	Units	W-18-MW2 Concentration	W-18-MW2 Detection Limit	W-19-MW1 Concentration	W-19-MW1 Detection Limit	W-19-MW3 Concentration	W-19-MW3 Detection Limit
DHS Method:							
Total Petroleum Hydrocarbons as Gasoline	ug/l	500	80	34,000	800	54,000	9,000
Modified EPA Method 8020:							
Benzene	ug/l	< 0.9	0.9	290	9	5,900	100
Toluene	ug/l	< 1	1	< 10	10	7,600	100
Xylenes	ug/l	5.7	3	790	30	4,600	300
Ethyl Benzene	ug/l	2.2	1	330	10	450	100

Due to high levels of certain constituents in samples, a reduced sample size causes an increase in detection limits.

Hugh R. McLean
Supervisory Chemist

HRM:mln