

July 26, 1996

7-284.1

Ms. Juliet Shin
Senior Hazardous Materials Specialist
Alameda County
Health Care Services Agency
Environmental Protection Division
1131 Harbor Bay Parkway, Room 250
Alameda, CA 94502-6577

Re: 2203 and 2227 Mariner Square Loop, Alameda
2nd Quarter 1996 Monitoring and Sampling Report

Dear Ms. Shin:

Hydro-Environmental Technologies, Inc. (HETI) is providing the attached Second Quarter 1996 monitoring and sampling report. The results from three contiguous quarters of sampling and the sampling event performed in 1994 indicate declining concentrations of hydrocarbons in ground water. Based upon these results, we recommend a meeting to discuss options for site closure.

Please call me at (510) 521-2684, if you have any questions.

Sincerely,

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.



Gary Pischke, C.E.G.
Senior Geologist

cc: Mr. Ron Doll
Mr. John Beery

ENVIRONMENTAL
PROTECTION
96 JUL 30 PM 3:13

**QUARTERLY
MONITORING REPORT,
Second Quarter 1996**

2203 and 2227 Mariner Square Loop
Alameda, California 94501

Sampling Dates: June 14, 1996

Prepared for:

Mariner Development Company
2900 Main Street, Suite 100
Alameda, California 94501

Prepared by:

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.
2394 Mariner Square Drive, Suite 2
Alameda, CA 94501
HETI Job No. 7-284.1

July 17, 1996

ENVIRONMENTAL
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1.0 INTRODUCTION

This report presents the results of work conducted in the second quarter of 1996 by Hydro-Environmental Technologies, Inc. (HETI) at the referenced location (Figure 1). All work was performed in accordance with California State Water Resources Control Board and San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) recommended guidelines and procedures. A copy of HETI's standard sampling protocols was previously included in HETI's *Subsurface Investigation Report* dated October 5, 1994.

2.0 BACKGROUND

The subject site is located in Alameda, California in an area of commercial and military usage immediately adjacent to the Alameda Fleet Industrial Supply Center. The site is occupied by Mariner Square Athletic Club which consists of one large building housing a swimming pool, fitness center, dining area and other facilities. A day-care center is also located in the building. Also occupying the site, is a smaller building operated as the Live Bait Cantina, a restaurant and dance club. The site is located approximately 1,300 feet from Oakland Inner Harbor. The local geology consists of fine grained fill over fine grained estuarine and marsh sediments derived from the East Bay Hills and Bay sedimentation. Regional ground water flow is predominantly westerly, towards San Francisco Bay.

The site was reclaimed from marshlands in the late 1920's. Available maps indicate tidal channels present in the former marshland now occupied by the site (Figure 2). From approximately 1930 to 1960, the San Francisco Airdrome hanger occupied the site. The hanger used to serve as an operations base for commercial and privately owned planes. The hanger housed shop facilities, offices and passenger waiting rooms. Transformers and a steam heating plant were located near the west end of the hanger. In 1960, the hanger building was cut in half and reassembled as part of the Navy's Fleet Industrial Supply Center (FISC), Alameda Annex, on property located west of the site.

Discussions with the consultant (Versar) for the FISC indicate the primary contaminants for the solid waste management unit #1 (SWMU) adjacent to the site are benzene, motor oil and naphthalene. According to the Remedial Investigation Report by Versar, sources for these compounds have reportedly been found both in soils at the SWMU and in sediments underlying the FISC and the subject site. Naphthalene and associated polynuclear aromatic compounds have been reported as associated with industrial activity (refineries) operating on the Alameda west end in the late 1800's. These compounds are associated with the former tidal channels which were present prior to filling of the area in the early 1900s.

On June 14, 1994, HETI supervised the installation of four two-inch diameter monitoring wells designated MW-1, MW-2, MW-3, and MW-5. Concrete blocks encountered beneath the surface prevented the completion of boring B-4 into well MW-4. Monitoring well locations are shown on Figure 3, the Site Plan.

Sediments encountered during drilling consisted primarily of gravelly clay and sandy fill material overlying silty to clayey sand fill material. The sand was underlain by fat clay with sandy gravel and shell fragments (bay mud).

Total Petroleum Hydrocarbons as diesel (TPHd) were detected in all soil samples collected from all the borings. Total Petroleum Hydrocarbons as gasoline (TPHg) were detected in the soil sample collected from MW-2 only. Total Recoverable Petroleum Hydrocarbons (TRPH) were detected in the soil samples collected from MW-2 and MW-5. Benzene was not detected in any soil sample.

No PCB's, VOCs nor PNAs were detected in any of the soil samples collected. No CAM 17 metals were detected in any of the soil samples collected in concentrations exceeding typical background levels for the San Francisco Bay Area as defined in U.S.G.S. Professional Paper 1270 for the Conterminous United States. Soil sampling results were presented in the *Subsurface Investigation Report* by HETI dated October 5, 1994.

3.0 FIELD ACTIVITIES

On June 14, 1996 the monitoring wells were gauged for depth to first encountered ground water to the nearest hundredth of a foot using an electronic water sounder. Following gauging, monitoring wells MW-1, MW-2, MW-3 and MW-5 were purged of a minimum of three well volumes while pH, temperature and conductivity measurements were monitored for stabilization. Purged water was stored on-site in a 55-gallon DOT drum with a tight fitting lid. No separate phase product was detected in any of the wells. Gauging and purging data is included in Table 1 and Appendix A.

Following recovery of the water levels to at least 80% of their static level, ground water samples were collected from the monitoring wells using dedicated polyethylene bailers. Samples were then labeled, documented on a chain-of-custody form, and stored in a chilled cooler for transport to the analytical laboratory. Ground water samples were analyzed for total petroleum hydrocarbons as diesel (TPHd), total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene and total xylenes (BTEX) using the California Leaking Underground Fuel Tank (CA LUFT) Manual protocols and polynuclear aromatics (PNAs) by EPA Method 8310. Additionally, the ground water sample collected from wells MW-1 and MW-2 were analyzed for chromium by EPA Method 3010A. Sample analyses were performed by NEI/GTEL Environmental Laboratories, Inc. a state of California DHS-certified laboratory located in Wichita, Kansas.

4.0 RESULTS

4.1 Ground Water Elevation

On June 14, 1996, depth to first encountered ground water in the wells ranged between 1.62 to 4.08 feet below top of well casing. Depth to water measurements and calculated ground water elevations in the wells are presented on Table 1. The depth to water measurements and the wellhead elevation data were used to calculate ground water elevation contours. These contours are shown on Figure 4, the Ground Water Contour Map. Figure 4 shows that a ground water mound appears to exist around well MW-3. Ground water flows towards the northwest, north of well MW-3 with a ground water gradient of 1.07% and southeast, south of well MW-3. These results are consistent with last quarter's.

4.2 Ground Water Sample Analytical Results

Neither TPHd, TPHg nor BTEX compounds were detected above the indicated laboratory method detection limits in the ground water samples collected from wells MW-2, MW-3 and MW-5. Analytical results indicate that dissolved TPHd, TPHg and benzene were present in the ground water sample collected from well MW-1 in concentrations of 1,400 micrograms per liter ($\mu\text{g/L}$), 220 $\mu\text{g/L}$ and 1.1 $\mu\text{g/L}$, respectively. These results are shown on Figure 5, The Hydrocarbon Distribution Map.

Concentrations of polynuclear aromatics were detected above the indicated laboratory method detection limits in the ground water samples collected from wells MW-1 and MW-2. These results are shown on Figure 6, The Polynuclear Aromatics Distribution Map. Chromium was not detected above the indicated laboratory method detection limit in the water sample collected from well MW-1. Cumulative analytical results are presented in Table 1. The certified laboratory analytical reports and the chain-of-custody for the ground water samples are presented in Appendix B.

5.0 CERTIFICATION

This report was prepared under the supervision of a registered geologist. All statements, conclusions and recommendations are based solely upon field observations and analytical analyses performed by a state-certified laboratory related to the work performed by Hydro-Environmental Technologies, Inc.

It is possible that variations in the soil or ground water conditions exist beyond the points explored in this investigation. Also, site conditions are subject to change at some time in the future due to variations in rainfall, temperature, regional water usage, or other factors.

The service performed by Hydro-Environmental Technologies, Inc. has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

Hydro-Environmental Technologies, Inc. includes in this report chemical analytical data from a state-certified laboratory. These analyses are performed according to procedures suggested by the U.S. EPA and the State of California. Hydro-Environmental Technologies, Inc. is not responsible for laboratory errors in procedure or result reporting.

Prepared by:

Reviewed by:

FRANCES MARONI

Frances Maroni
Staff Engineer

Gary Pischke

Gary Pischke, C.E.G.
Senior Geologist



Table 1

GROUND WATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

Mariner Development
2203 and 2227 Mariner Square Loop
Alameda, CA

Well I.D. #	Sample Date	TOC (feet)	DTW (feet)	GWE (feet)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	TPHd (µg/L)	TRPH (µg/L)	Cr (µg/L)
MW-1	8/11/94	98.43	7.30	91.13	390	2.2	0.91	2.1	7.8	15,000	ND<1,000	---
	12/21/95	98.43	3.80	94.63	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	7,200 (1) (2)	---	ND<30
	3/19/96	98.43	3.88	94.55	270	1.3	<1.0	1.2	3.7	2,700	---	ND<30
	6/14/96	98.43	3.90	94.53	220	1.1	<0.5	1.4	2.5	1,400	---	ND<30
MW-2	8/11/94	96.68	4.59	92.09	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<50	1200	---
	12/20/95	96.68	3.68	93.00	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	390 (1) (2)	---	---
	3/19/96	96.68	3.93	92.75	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	ND<200 (4)	---	ND<30
	6/14/96	96.68	3.04	93.64	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<2.0	ND<50	---	---
MW-3	8/11/94	96.58	2.63	93.95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<50	ND<1,000	---
	12/20/95	96.58	1.91	94.67	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	320 (1) (2)	---	---
	3/16/96	96.58	0.90	95.68	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	ND<150 (4)	---	---
	6/14/96	96.58	1.62	94.96	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<2.0	ND<50	---	---
MW-5	8/11/94	98.78	5.14	93.64	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1.5	ND<50	ND<1,000	---
	12/20/95	98.78	4.29	94.49	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	90 (1) (2)	---	---
	3/16/96	98.78	3.93	94.85	ND<100	ND<0.5	ND<1.0	ND<1.0	ND<2.0	ND<50 (4)	---	---
	6/14/96	98.78	4.08	94.70	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<2.0	ND<50	---	---

Table 1

GROUND WATER ELEVATIONS AND SAMPLE ANALYTICAL RESULTS

Mariner Development
2203 and 2227 Mariner Square Loop
Alameda, CA

Notes:

- TOC : Top of well casing referenced to arbitrary elevation. Benchmark elevation approximately 11 feet above sea level.
- DTW : Depth to water.
- GWE : Ground water elevation.
- TPHg : Total petroleum hydrocarbons as gasoline by EPA Method 8015 (modified).
- BTEX : Benzene, toluene, ethylbenzene and total xylenes by EPA Method 8020.
- TPHd : Total petroleum hydrocarbons as diesel by EPA Method 8015 (modified).
- TRPH : Total Recoverable Petroleum Hydrocarbons by EPA Method 418.1.
- Cr : Chromium by EPA Method 3010A.
- µg/L : Micrograms per Liter.
- ND : Not detected above the indicated laboratory method detection limit.
- (1) : Result is estimated because the surrogate spike recovery is outside of acceptability limits.
- (2) : The material present is qualitatively uncertain. Therefore, all material in the C9 to C22 range was quantified against diesel fuel without respect to pattern.
- (3) : Qualitative identification is uncertain because the material present does not match laboratory standards.
- (4) : Data indicates the presence of hydrocarbon material heavier than diesel fuel.
- : Not analyzed.

Table 2

POLYNUCLEAR AROMATICS SAMPLE ANALYTICAL RESULTS

Mariner Development
2203 and 2227 Mariner Square Loop
Alameda, CA

Well I.D. #	Sample Date	Naphthalene µg/L	Acenaphthalene µg/L	Acenaphthene µg/L	Fluorene µg/L	Phenanthrene µg/L	Anthracene µg/L	Fluoranthene µg/L	Pyrene µg/L
MW-1	12/20/95	390	33	93	57	31	6.1	9.8	7.4
	3/19/96	78	38	88	33	32	3.1	9.6	7.3
	6/14/96	36	13	75	29	30	3.9	8.9	5.2
MW-2	12/20/95	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	0.59
	3/19/96	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	ND<0.5
	6/14/96	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	ND<0.5
MW-3	12/20/95	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	ND<0.5
	3/16/96	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	1.0	1.5
	6/14/96	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	ND<0.5
MW-5	12/20/95	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	ND<0.5
	3/16/96	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	ND<0.5
	6/14/96	ND<2.0	ND<2.0	ND<2.0	ND<2.0	ND<1.0	ND<1.0	ND<0.5	ND<0.5

Table 2

POLYNUCLEAR AROMATICS SAMPLE ANALYTICAL RESULTS

Mariner Development
2203 and 2227 Mariner Square Loop
Alameda, CA

Well I.D. #	Sample Date	Benzo[a]-anthracene µg/L	Chrysene µg/L	Benzo[b]fluor-anthene µg/L	Benzo[k]fluor-anthene µg/L	Benzo[a]-pyrene µg/L	Dibenzo[a,h]-anthracene µg/L	Benzo[g,h,i]-perylene µg/L	Indeno[1,2,3-cd]pyrene µg/L
MW-1	12/20/95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	3/19/96	0.69	ND<0.5	0.57	ND<0.5	0.97	ND<0.5	1.3	1.1
	6/14/96	0.66	ND<0.5	ND<0.5	ND<0.5	0.8	ND<0.5	0.98	0.82
MW-2	12/20/95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	3/19/96	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	6/14/96	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.1	ND<0.5
MW-3	12/20/95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	3/16/96	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	6/14/96	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-5	12/20/95	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	3/16/96	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	6/14/96	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5

Notes:

Well I.D. # : Well identification number used by HETI.

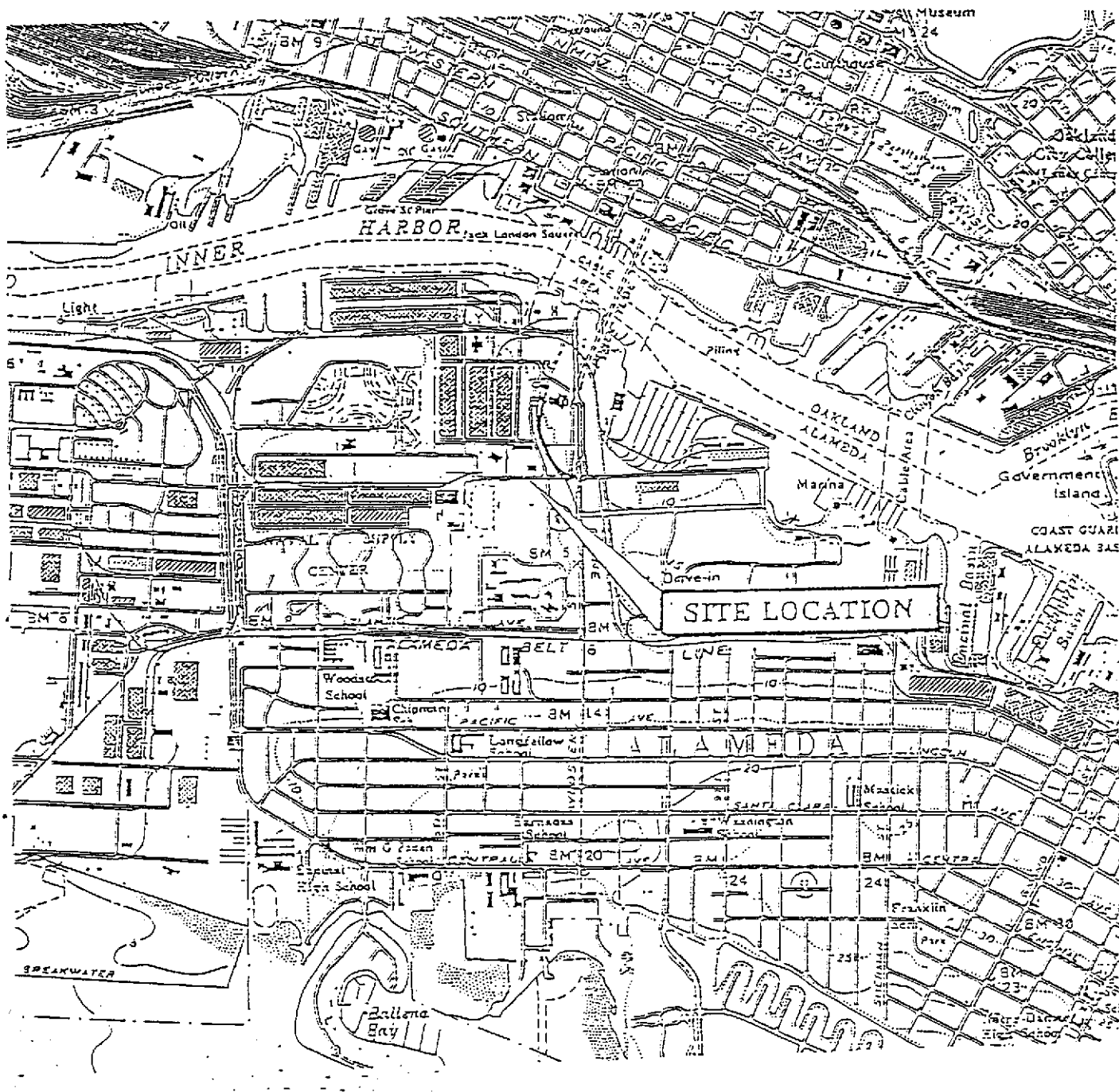
Date: Date ground water sample was collected.

µg/L : Micrograms per liter.

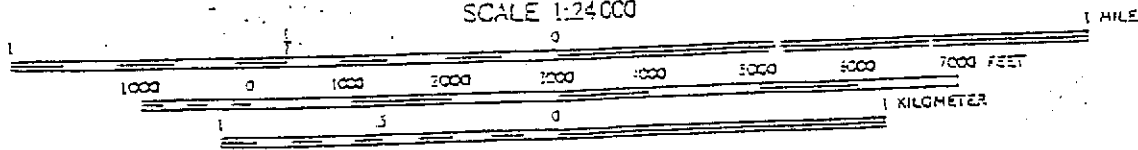
ND : Not detected in concentrations exceeding the laboratory method detection limit.

Polynuclear

Aromatics: Polynuclear Aromatics by EPA Method 8310.



SCALE 1:24 000



QUADRANGLE LOCATION

SOURCE: USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)
 TITLED: OAKLAND WEST QUADRANGLE
 PHOTO REVISIT 1980

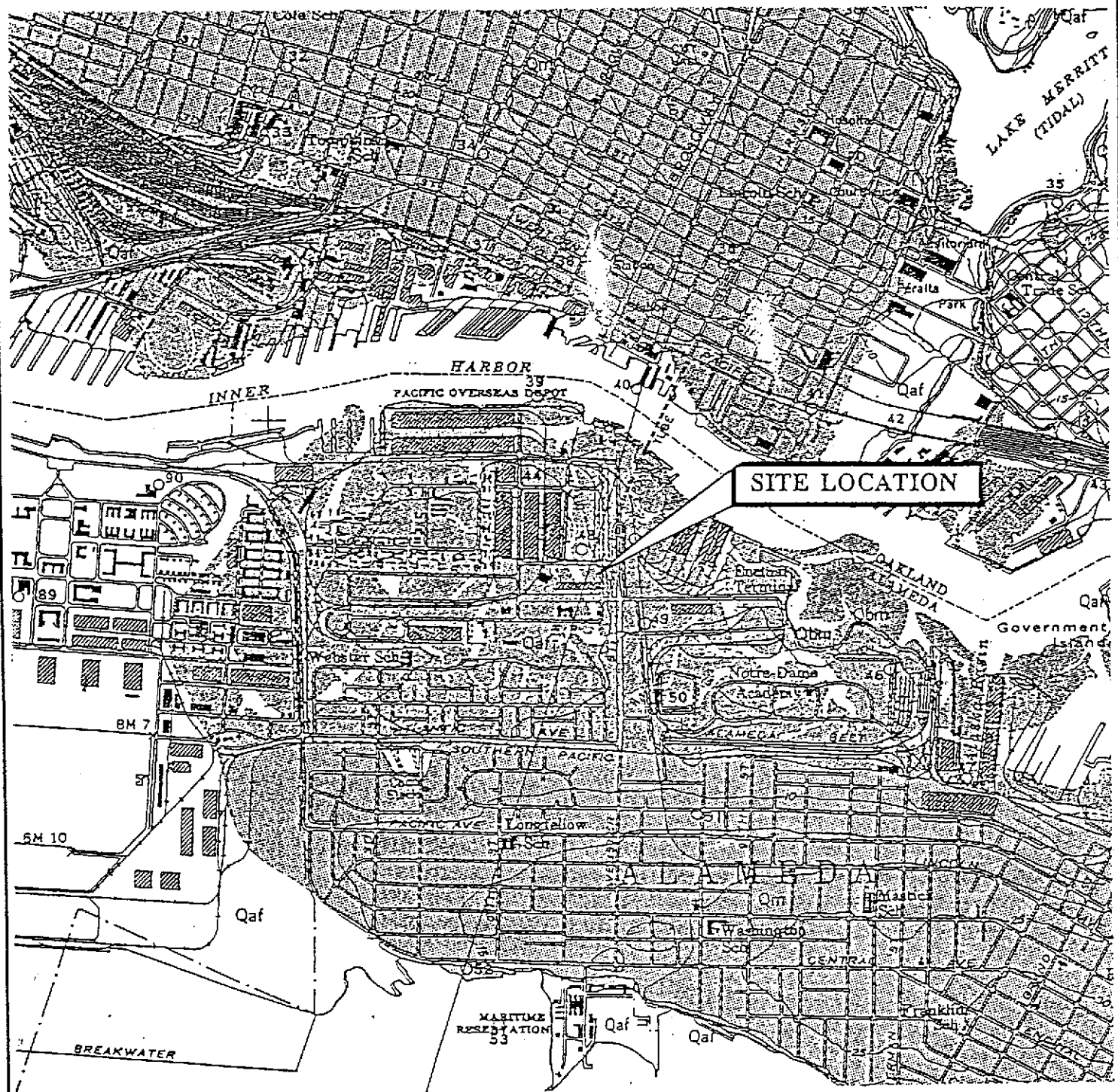
NORTH

HYDR -
 ENVIR NMENTAL
 TECHN LOGIES, INC.

SITE LOCATION MAP
 Mariner Development Company
 2203 and 2227 Mariner Square Loop
 Alameda, California

Figure
 1

7-284 1/94



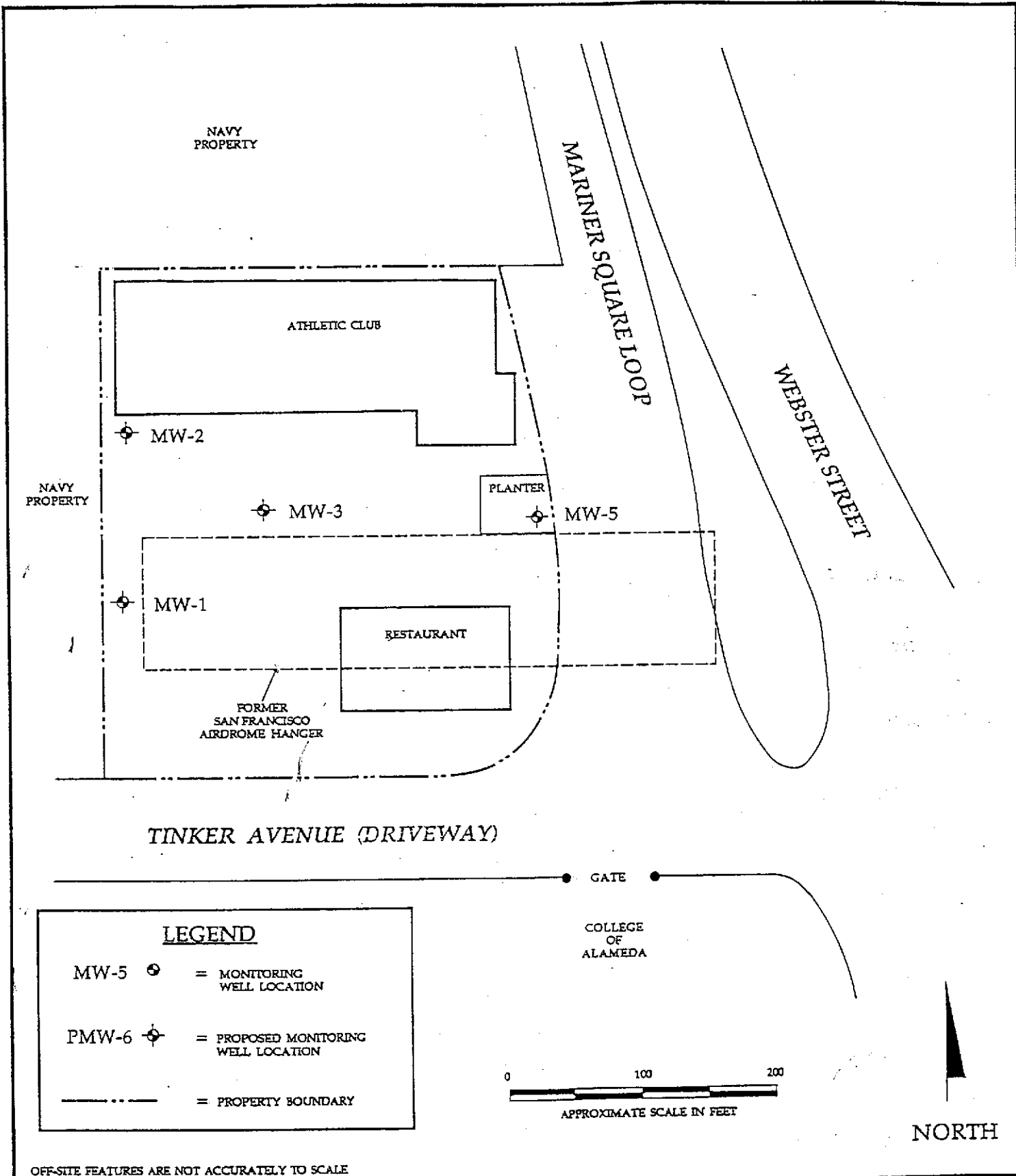
Source: Radbruch, 1957

NORTH

**HYDR -
ENVIRONMENTAL
TECHNOLOGIES, INC.**

FORMER TIDAL CHANNELS MAP
Mariner Development Company
2203 and 2227 Mariner Square Loop
Alameda, California

Figure
2
7-284.1 3/96



LEGEND

MW-5 = MONITORING WELL LOCATION

PMW-6 = PROPOSED MONITORING WELL LOCATION

= PROPERTY BOUNDARY

GATE

COLLEGE OF ALAMEDA

0 100 200

APPROXIMATE SCALE IN FEET

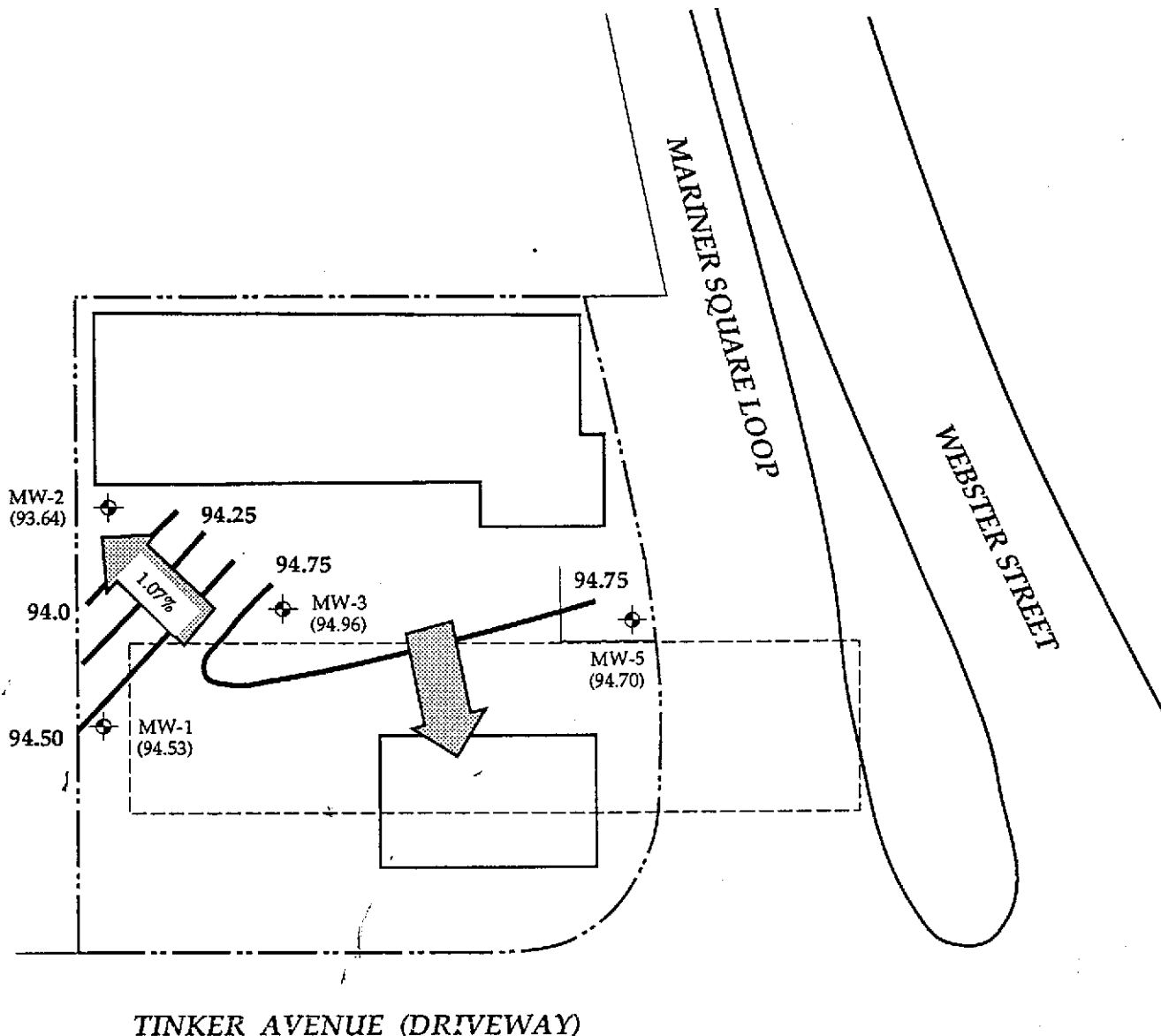


OFF-SITE FEATURES ARE NOT ACCURATELY TO SCALE



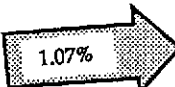
HYDR **-**
ENVIR **NMENTAL**
TECHN **LOGIES, INC.**

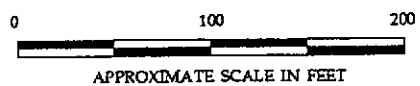
SITE PLAN
 Mariner Development Company
 2203 and 2227 Mariner Square Loop
 Alameda, California

Figure
3
 7-284.1 12/95



LEGEND

- MW-5  = MONITORING WELL LOCATION.
- (94.53) = GROUND WATER ELEVATION - IN FEET.
- 94.50  = INFERRED GROUND WATER ELEVATION CONTOUR - IN FEET.
-  = APPROXIMATE GROUND WATER FLOW DIRECTION AND GRADIENT.



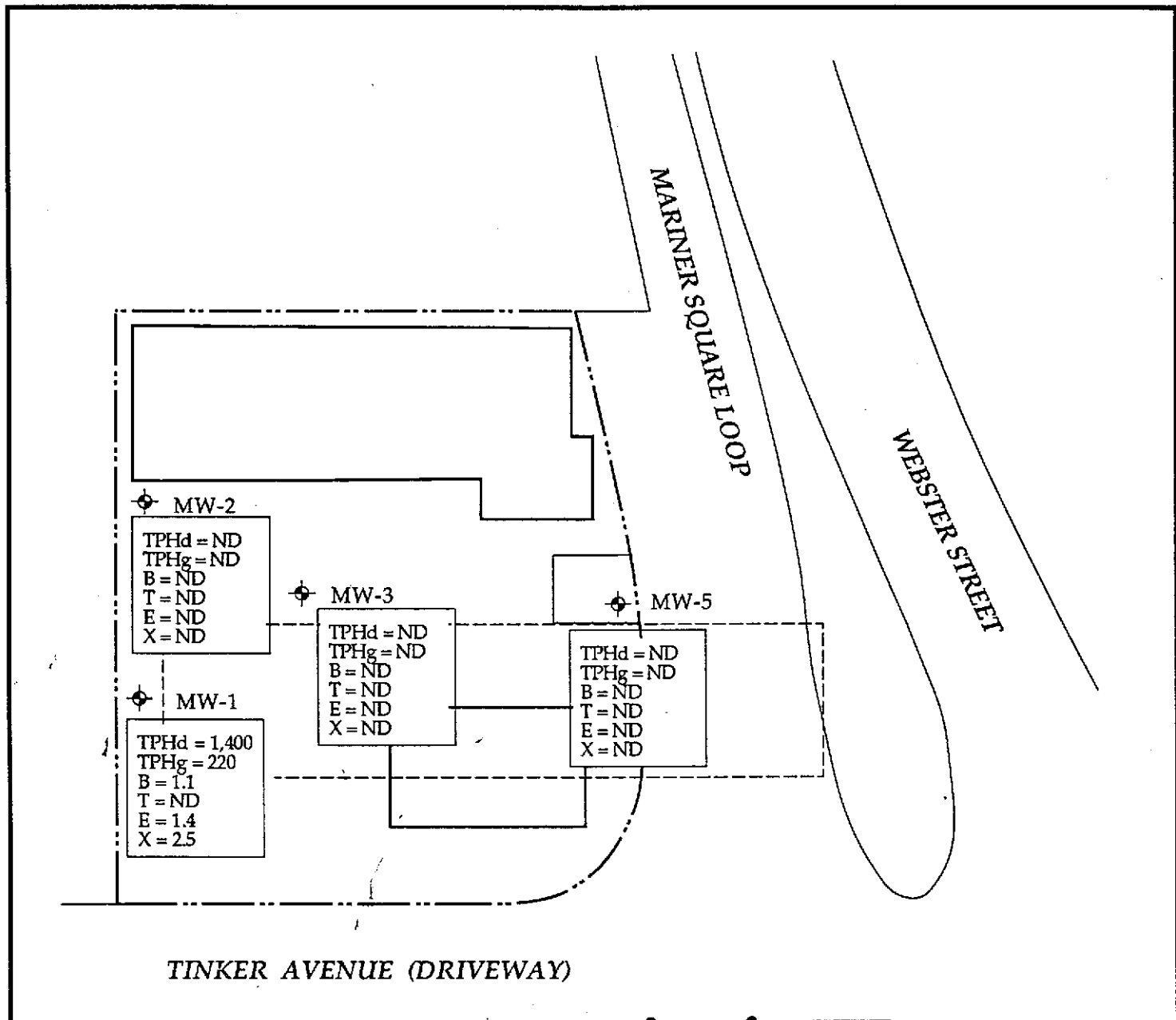
OFF-SITE FEATURES ARE NOT TO SCALE

BASED ON DATA COLLECTED ON JUNE 14, 1996

HYDR  -
ENVIR  **NMENTAL**
TECHN  **LOGIES, INC.**

GROUND WATER CONTOUR MAP
 Mariner Development Company
 2203 and 2227 Mariner Square Loop
 Alameda, California

Figure
4
 7-284.1 6/96

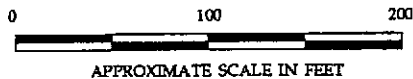


LEGEND

MW-5 = MONITORING WELL LOCATION

TPHd = ND
 TPHg = ND
 B = ND
 T = ND
 E = ND
 X = ND

= CONCENTRATIONS OF: TOTAL PETROLEUM HYDROCARBONS AS DIESEL (TPHd), TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPHg), BENZENE (B), TOLUENE (T), ETHYLBENZENE (E), AND TOTAL XYLENES (X) DISSOLVED IN WATER SAMPLES COLLECTED FROM MONITORING WELL - IN µg/L.



OFF-SITE FEATURES ARE NOT ACCURATELY TO SCALE

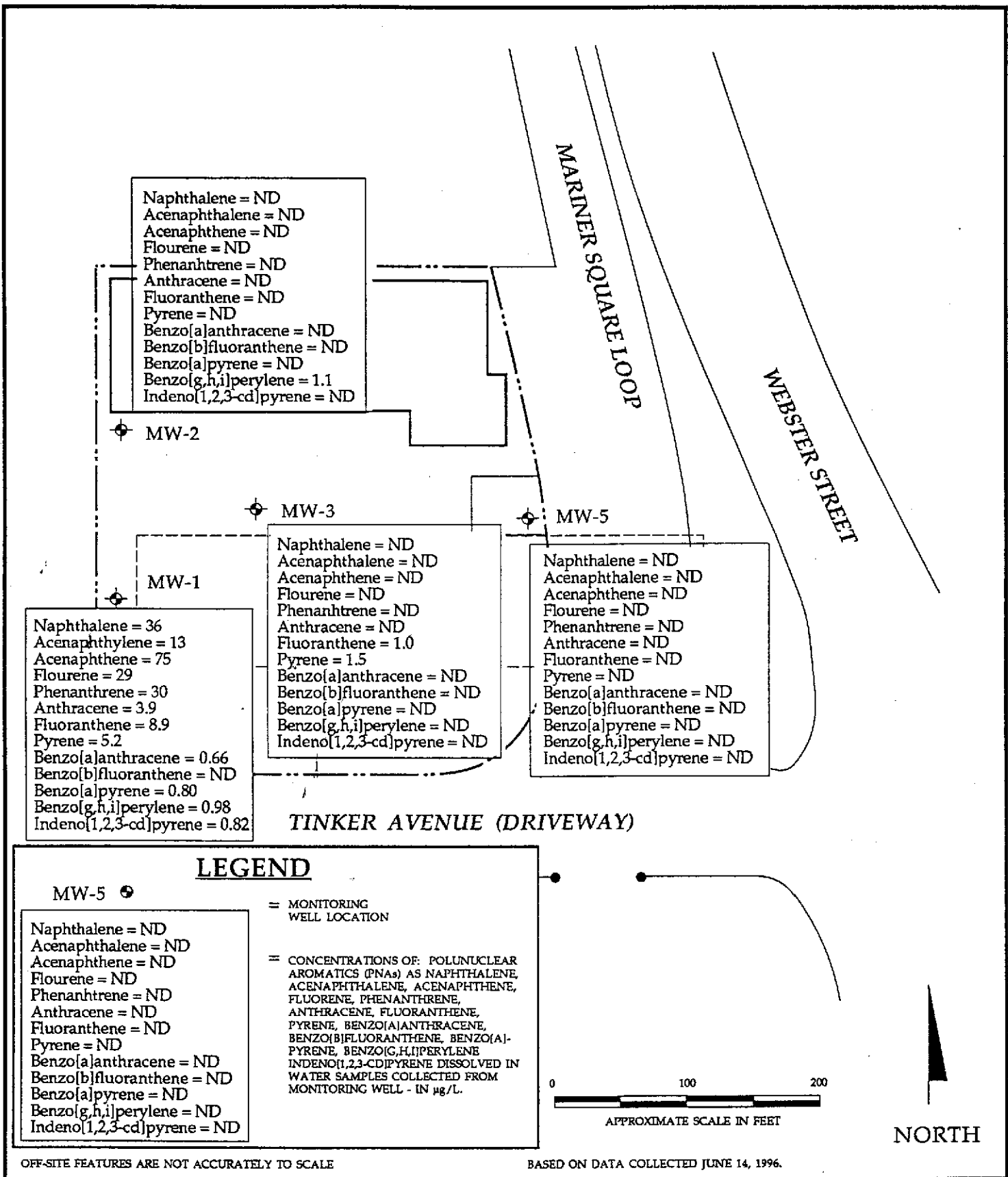
BASED ON DATA COLLECTED JUNE 14, 1996.

HYDR -
ENVIR **NMENTAL**
TECHN **LOGIES, INC.**

**HYDROCARBON DISTRIBUTION
 MAP**
 Mariner Development Company
 2203 and 2227 Mariner Square Loop
 Alameda, California

Figure
 5

7-284.1 7/96



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POLYNUCLEAR AROMATICS DISTRIBUTION MAP
 Mariner Development Company
 2203 and 2227 Mariner Square Loop
 Alameda, California

Figure 6

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PURGED/SAMPLED BY: EM DATE: 6-14-90

GAUGING DATA:

Depth to bottom: 14.14 ft.
 Depth to water: 3.9 ft.
 Saturated Thickness: 10.24 ft.

Conversion	
diam.	gals/ft.
2 in.	<u>x 0.16</u>
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.64 gallons
 # volumes to purge x 3 vols.
 *Total volume to purge = 4.97 gallons
 * unless chemical parameters stabilize earlier

PURGING DATA:

Purge method: PVC bailer Submersible pump Suction lift pump/ _____
 (circle one)

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
1420	0	—	—	—
1425	2.5	77.2	11.44	8.66
1535	5.0	74.8	11.17	8.80

Color: GRY-BROWN Turbidity: SLIGHT
 Recharge: POOL SPP: _____ ft.

SAMPLING DATA:

Sampling method: Dedicated bailer /

- Sample for: (circle)
- IPH/STEX METALS TOG 8010
 - IPHd C-Pb TEL 8020
 - IPH mo Total Pb EDB 8240
 - 601 602 Nitrate 8260 8270
 - Other: PHAS, DISSOLVED C

HYDRO-
 ENVIRONMENTAL
 TECHNOLOGIES, INC.

MONITORING WELL PURGE/SAMPLE SHEET
 WELL # MW-1
 LOCATION MARINE SQ DEVELOP

Job No.
7-284-1
 SHEET
 1 of 1

PURGED/SAMPLED BY: EM

DATE: 06-14-90

GAUGING DATA:

Depth to bottom: 14.13 ft.

Depth to water: 3.04 ft.

Saturated Thickness: 11.09 ft.

Conversion	
diam.	gals/ft.
2 in.	<u>x 0.16</u>
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.77 gallons

volumes to purge x 3 vols.

*Total volume to purge = 5.31 gallons

* unless chemical parameters stabilize earlier

PURGING DATA:

Purge method: PVC bailer/ Submersible pump Suction lift pump/ _____
(circle one)

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
12:10	0	—	—	—
12:13	2	72.6	14.40	7.59
12:35	4	71.8	14.43	7.24
13:30	5.5	71.2	14.40	7.11

Color: LT. BROWN

Turbidity: SLIGHT

Recharge: POOR

SPP _____ ft.

SAMPLING DATA:

Sampling method: Dedicated bailer / _____

Sample for: (circle)

- IPHA/BTEX METALS TOG 8010
- IPHA O-Pb TEL 8020
- IPH-mo Total Pb EDB 8240
- 601 602 Nitrates 8260 8270
- Other: PAAS

HYDRO-
ENVIRONMENTAL
TECHNOLOGIES, INC.

MONITORING WELL PURGE/SAMPLE SHEET
WELL # MW-2
LOCATION MARINER SQ DEVELOP

Job No.
7-284-1
SHEET
1 of 1

PURGED/SAMPLED BY: FM DATE: 0-14-96

GAUGING DATA:

Depth to bottom: 14.08 ft.
 Depth to water: 1.02 ft.
 Saturated Thickness: 12.40 ft.

Conversion	
diam.	gals/ft.
2 in.	<u>x 0.16</u>
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.99 gallons
 # volumes to purge x 3 vols.
 *Total volume to purge = 6 gallons
 * unless chemical parameters stabilize earlier

PURGING DATA:

Purge method: PVC bailer / Submersible pump / Suction lift pump / _____
 (circle one) Hydro

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
10:20	0	74.3	6.01	6.50
10:22	2	72.6	6.30	5.95
10:28	4			
10:52	6	73.0	7.20	6.70

Color: LT. BROWN Turbidity: SLIGHT
 Recharge: FAIR POOR SPP: _____ ft.

SAMPLING DATA:

Sampling method: Dedicated bailer / _____

- Sample for: (circle)
- TPH_g/BTEX
 - TPH_d
 - TPH_{no}
 - METALS
 - O-Pb
 - Total Pb
 - TOC
 - TEL
 - EDS
 - Nitrates
- 8010
8020
8240
8260 8270
- Other: PLAS

**HYDRO-
 ENVIRONMENTAL
 TECHNOLOGIES, INC.**

MONITORING WELL PURGE/SAMPLE SHEET
 WELL # MW-3
 LOCATION MARINER SQ DEVELOP

Job No. 7-284-1
 SHEET
 1 of 1

PURGED/SAMPLED BY: EM

DATE: 6-14-90

GAUGING DATA:

Depth to bottom: 14.00 ft.
Depth to water: 4.80 ft.
Saturated Thickness: 9.20 ft.

Conversion	
diam.	gals/ft.
2 in.	<u>x 0.16</u>
4 in.	x 0.65
6 in.	x 1.44

Well casing volume 1.47 gallons
volumes to purge x 3 vols.
*Total volume to purge = 4.42 gallons
* unless chemical parameters stabilize earlier

PURGING DATA:

Purge method: PVC bailer / (Submersible pump) / Suction lift pump / _____
(circle one) HYDAC #1

Time	Volume (gallons)	Temp. (°F)	Conductivity (mS/cm)	pH
11:07	0	—	—	—
11:10	2.25	71.5	6.17	7.42
11:48	4.50	72.3	10.25	7.50

Color: LT. BROWN Turbidity: SLIGHT
Recharge: FAIR-POOR SPP — ft.

SAMPLING DATA:

Sampling method: Dedicated bailer

- Sample for: (circle)
- IPHg/BTEX METALS TOC 8010
 - IPHA O-Pb TEL 8020
 - TPH and Total Pb EDB 8240
 - 601 602 Nitrates 8260 8270
- Other: PNAS

HYDRO-
ENVIRONMENTAL
TECHNOLOGIES, INC.

MONITORING WELL PURGE/SAMPLE SHEET
WELL # MW-5
LOCATION MARINECO DEVELOP.

Job No.
7-284-1
SHEET
(of 1

RECEIVED JUL 01 1996

7-28 4.1
125



Midwest Region

4211 May Avenue
Wichita, KS 67209
(316) 945-2624
(800) 633-7936
(316) 945-0506 (FAX)

June 26, 1996

Gary Pischke
HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC
2394 Mariner Square Dr.
Suite 2
Alameda, CA 94501

RE: GTEL Client ID: HYE01HYE01
Login Number: W6060302
Project ID (number): 7-284.1
Project ID (name): HYDRO-ENVIRONMENTAL/ALAMEDA/CA

Dear Gary Pischke:

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 06/18/96.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes. This report is to be reproduced only in full.

NEI/GTEL is certified by the California Department of Health Service under Certification Number 1845.

If you have any questions regarding this analysis, or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,
GTEL Environmental Laboratories, Inc.

Terry R. Loucks
Laboratory Director

ANALYTICAL RESULTS
Total Petroleum Hydrocarbons By GC

GTEL Client ID: HYE01HYE01
 Login Number: W6060302
 Project ID (number): 7-284.1
 Project ID (name): HYDRO-ENVIRONMENTAL/ALAMEDA/CA

Method: GC
 Matrix: Aqueous

GTEL Sample Number	W6060302-01	W6060302-02	W6060302-03	W6060302-04
Client ID	MW-1	MW-2	MW-3	MW-5
Date Sampled	06/14/96	06/14/96	06/14/96	06/14/96
Date Prepared	06/19/96	06/19/96	06/19/96	06/19/96
Date Analyzed	06/20/96	06/20/96	06/21/96	06/21/96
Dilution Factor	1.00	1.00	1.00	1.00

Analyte	Reporting		Concentration:		
	Limit	Units			
TPH as Diesel	50	ug/t	1400	< 50	< 50

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

GC:

Extraction by EPA Method 3510 (liquid/liquid). ASTM Method D3328(modified) is used for qualitative identification of fuel patterns. The method has been modified to include quantitation by applying calibration and quality assurance guidelines outlined in "Test Methods for Evaluating Solid Waste. Physical/Chemical Methods", SW-846, Third Edition including promulgated Update 1. Extracts were cleaned with silica gel as per Florida PRO. Rev: 1 Nov.1, 1996. The procedure was modified to include a solvent rinse step of the silica gel. This method is equivalent to California State Water Resources Board LUFT Manual protocols, May 1988 revision.

W6060302-01:

Qualitative identification is uncertain because the material present does not match laboratory standards.

ANALYTICAL RESULTS
Volatile Organics

GTEL Client ID: HYE01HYE01
 Login Number: W6060302
 Project ID (number): 7-284.1
 Project ID (name): HYDRO-ENVIRONMENTAL/ALAMEDA/CA

Method: EPA 8020A
 Matrix: Aqueous

GTEL Sample Number	W6060302-01	W6060302-02	W6060302-03	W6060302-04
Client ID	MW-1	MW-2	MW-3	MW-5
Date Sampled	06/14/96	06/14/96	06/14/96	06/14/96
Date Analyzed	06/25/96	06/25/96	06/25/96	06/25/96
Dilution Factor	1.00	1.00	1.00	1.00

Analyte	Reporting		Concentration:			
	Limit	Units	W6060302-01	W6060302-02	W6060302-03	W6060302-04
Benzene	0.5	ug/L	1.1	< 0.5	< 0.5	< 0.5
Toluene	0.5	ug/L	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.5	ug/L	1.4	< 0.5	< 0.5	< 0.5
Xylenes (total)	0.5	ug/L	2.5	< 0.5	< 0.5	< 0.5
TPH as Gasoline	50	ug/L	220	< 50	< 50	< 50

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 8020A:

Gasoline range hydrocarbons (TPH) quantitated by GC/FID with purge and trap and modified EPA Method 8015. "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods". SW-846, Third Edition including promulgated Update II.

ANALYTICAL RESULTS
Metals

GTEL Client ID: HYE01HYE01
Login Number: W6060302
Project ID (number): 7-284.1
Project ID (name): HYDRO-ENVIRONMENTAL/ALAMEDA/CA

Method: EPA 6010A
Matrix: Aqueous

GTEL Sample Number	W6060302-01	--	--	--
Client ID	MW-1	--	--	--
Date Sampled	06/14/96	--	--	--
Date Prepared	06/20/96	--	--	--
Date Analyzed	06/21/96	--	--	--
Dilution Factor	1.00	--	--	--

Analyte	Reporting Limit	Units	Concentration:
Chromium	30	ug/L	< 30

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 6010A:

Digestion for Total Metals by EPA Method 3010A. "Test Methods for Evaluating Solid Waste. Physical/Chemical Methods". SW-846. Third Edition including Update 2.

W6060302-01:

The sample was filtered as per client request. The results indicate dissolved metals at the time of filtration.

ANALYTICAL RESULTS
Polynuclear Aromatics

GTEL Client ID: HYE01HYE01
 Login Number: W6060302
 Project ID (number): 7-284.1
 Project ID (name): HYDRO-ENVIRONMENTAL/ALAMEDA/CA

Method: EPA 8310
 Matrix: Aqueous

GTEL Sample Number	W6060302-01	W6060302-02	W6060302-03	W6060302-04
Client ID	MW-1	MW-2	MW-3	MW-5
Date Sampled	06/14/96	06/14/96	06/14/96	06/14/96
Date Prepared	06/19/96	06/19/96	06/19/96	06/19/96
Date Analyzed	06/21/96	06/21/96	06/21/96	06/21/96
Dilution Factor	1.00	1.00	1.00	1.00

Analyte	Reporting		Concentration:			
	Limit	Units	W6060302-01	W6060302-02	W6060302-03	W6060302-04
Naphthalene	2.0	ug/L	36.	< 2.0	< 2.0	< 2.0
Acenaphthylene	2.0	ug/L	13.	< 2.0	< 2.0	< 2.0
Acenaphthene	2.0	ug/L	75.	< 2.0	< 2.0	< 2.0
Fluorene	2.0	ug/L	29.	< 2.0	< 2.0	< 2.0
Phenanthrene	1.0	ug/L	30.	< 1.0	< 1.0	< 1.0
Anthracene	1.0	ug/L	3.9	< 1.0	< 1.0	< 1.0
Fluoranthene	0.50	ug/L	8.9	< 0.50	< 0.50	< 0.50
Pyrene	0.50	ug/L	5.2	< 0.50	< 0.50	< 0.50
Benzo[a]anthracene	0.50	ug/L	0.66	< 0.50	< 0.50	< 0.50
Chrysene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[b]fluoranthene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[k]fluoranthene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[a]pyrene	0.50	ug/L	0.80	< 0.50	< 0.50	< 0.50
Dibenzo[a,h]anthracene	0.50	ug/L	< 0.50	< 0.50	< 0.50	< 0.50
Benzo[g,h,i]perylene	0.50	ug/L	0.98	1.1	< 0.50	< 0.50
Indeno[1,2,3-cd]pyrene	0.50	ug/L	0.82	< 0.50	< 0.50	< 0.50

Notes:

Dilution Factor:

Dilution factor indicates the adjustments made for sample dilution.

EPA 8310:

Extraction by EPA Method 3510 (liquid/liquid). "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition including Update 2.

W6060302-01:

The sample matrix spike and sample matrix spike duplicate have several compound recoveries and RPD values outside of control limits due to high sample concentration and sample inhomogeneity. However, the LCS and LCSD have recoveries and RPD values within acceptability limits for all compounds, therefore demonstrating method control. The qualitative identification for Acenaphthylene is uncertain due to matrix interferences.

CHAIN OF CUSTODY RECORD

SAMPLER

Printed Name:

FRANCES MARONI

Signature:

FRANCES MARONI

DELIVER TO: GTEL

ATTENTION: BRUCE THRUOP

HETICAL JOB No.: 7-284.1

SEND RESULTS TO:

HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC.
2365 MARINER SQUARE DR., SUITE 200

ALAMEDA, CA 94501
(510) 521-2684, (FAX) 521-5078

ATTENTION: GARY PISCHKE

SEND INVOICE TO:

HETI

ATTN: GARY PISCHKE

702 650 8775

Released by: (Signature)	Received by: (Signature)	Date	Time
<u>FRANCES MARONI/HETI</u>	<u>[Signature]/HETI</u>	<u>9/14/96</u>	<u>5:29 PM</u>
<u>[Signature]</u>	<u>Joel Weber</u>	<u>9/17/96</u>	<u>11:18 AM</u>
<u>Joel Weber</u>	<u>[Signature]</u> LABORATORY	<u>9/18/96</u>	<u>0830</u>

PROJECT NAME:

PAGE 1 OF 1

Sample Number	DATE & TIME	No. & Type Container	Analysis Requested					Lab Remarks
			THIOL BTX (D15 mod)	THIOL D15 mod	Organic Lead	PLUMBIUM	CHROMIUM	
3 ✓ MW-1	09-14-96	3 VOLS W/HCL	X				01	* Reference
1 ✓ MW-1		2 L AMBER W/HCL		X			01	Quote # QW960121
2 ✓ MW-1		2 L GLASS			X		01	unit price discount
1 ✓ MW-1		1 L PLASTIC				X	01	
3 ✓ MW-2		3 VOLS W/HCL	X				03	
2 ✓ MW-2		2 L AMBER W/HCL		X			01	
2 ✓ MW-2		2 L GLASS			X		01	
3 ✓ MW-3		3 VOLS W/HCL	X				03	
1 ✓ MW-3		2 L AMBER W/HCL		X			01	
1 ✓ MW-3		2 L GLASS			X		01	1 st Seal absent
3 ✓ MW-5		3 VOLS W/HCL	X				04	
1 ✓ MW-5		2 L AMBER W/HCL		X			01	
1 ✓ MW-5		2 L GLASS			X		01	

309-06-0302

Special Instructions:

CLEAN-UP
USE SILICA GEL

Turnaround:

- 5 DAY
- 10 DAY
- 72 HOURS
- 24 HOURS