



HAGEMAN-AGUIAR, INC.

Underground Contamination Investigations, Groundwater Consultants, Environmental Engineering

**QUARTERLY
GROUNDWATER SAMPLING REPORT**

(sampled November 15, 1993)

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**QUALITY TUNE-UP
2780 Castro Valley Blvd
Castro Valley, CA**

November 23, 1993

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ATTACHMENT A -- Well Sampling Logs

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I. INTRODUCTION

The site location is the Quality Tune-up facility in Castro Valley, California. The location of the site is shown in Figure 1. In conjunction with a previous service station operation, the site has historically operated four underground fuel storage tanks for a number of years.

In February 1987 the two 7,500 Gasoline tanks and one Waste Oil tank were removed by 4M Construction of Madera, California. Soil and groundwater samples were collected, and were subsequently analyzed by Trace Analysis Laboratory, Inc. Of the seven soil samples collected, only "Extractable Hydrocarbons" were detected in those soil samples collected in the vicinity of the Waste Oil tank location. Analysis of the groundwater sample indicated 26 mg/L (ppm) of Volatile Hydrocarbons, 420 $\mu\text{g/L}$ (ppb) of Benzene, 2,000 $\mu\text{g/L}$ (ppb) of Toluene and 9,400 $\mu\text{g/L}$ (ppb) of Total Xylenes.

On June 11, 1991, the final 8,000-gallon underground storage tank was removed from the site by Minter & Fahy Construction, Inc, Pacheco, California. This underground tank was utilized for Gasoline storage until February 1987, at which time it was converted to Waste Oil storage. At the time of removal, the tank was apparently being utilized for storage of Waste Oil. Soil samples were collected from the tank excavation and were subsequently analyzed by Chromalab Laboratory, Inc., San Ramon, California. The results of laboratory analyses indicated no detectable concentrations of Diesel, Gasoline, Benzene, Oil & Grease, Halogenated Volatile Organics (EPA 8010), or Semi-Volatile Organics (EPA 8270). A groundwater sample was collected from the tank excavation and was subsequently analyzed. The results of laboratory



FIGURE 1.
Site Location Map

analyses indicated no detectable concentrations of Diesel, Gasoline, Benzene, Oil & Grease, Halogenated Volatile Organics (EPA 601), or Extractable Organics (EPA 625). Soil samples collected from the spoils pile indicated the presence of Gasoline at concentrations of up to 1.4 mg/kg (ppm), and Oil & Grease at concentrations of up to 24 mg/kg (ppm).

Subsequent to the underground tank removals, three on-site shallow groundwater monitoring wells were installed by Hageman-Aguiar, Inc., on May 20, 1992. The report of that soil and groundwater investigation was issued on July 17, 1992. The locations of the monitoring wells are shown in Figure 2.

On November 15, 1993, all three of the on-site monitoring wells were sampled for the laboratory analysis for dissolved petroleum constituents. In addition to the monitoring well sampling, other tasks included water level measurements for each monitoring well. This third "round" of groundwater sampling has been conducted as part of the quarterly groundwater monitoring program at the site, as required by the Alameda County Department of Environmental Health and the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region.

II. FIELD WORK

Monitoring Well Sampling

On November 15, 1993, groundwater samples were collected from each of the three on-site monitoring wells (MW-1, MW-2 and MW-3). The locations of the monitoring wells are shown on Figure 2 (site map). Prior to groundwater sampling, each well was purged by bailing several casing volumes of water. Field conductivity, temperature, and pH meters were present on-site during the monitoring well sampling. As the purging process proceeded, the three parameters were monitored. Purging continued until readings appeared to have reasonably stabilized. After the water level in the well had attained 80% or more of the original static water level, a groundwater sample was collected using a clean teflon bailer. The water samples were placed inside appropriate 40 mL VOA vials and 1-litre amber bottles free of any headspace. The samples were immediately placed on ice, then transported under chain-of-custody to the laboratory at the end of the work day.

At the time each monitoring well was sampled, the following information was recorded in the field: 1) depth-to-water prior to purging, using an electrical well sounding tape, 2) identification of any floating product, sheen, or odor prior to purging, using a clear teflon bailer, 3) sample pH, 4) sample temperature, and 5) specific conductance of the sample.

Copies of the well sampling logs are included as Attachment A.

Wastewater Generation

All water removed from the wells during development and purging was drummed and stored on-site until the results of laboratory analyses were obtained. Based upon these results, the water should be sewered (if possible) as a non-hazardous liquid waste in accordance with local sewerage agency permit requirements, or else it should be transported as a hazardous liquid waste under proper manifest to an appropriate TSD facility for treatment and disposal. The disposal of wastewater is the responsibility of the property owner (waste generator), and is beyond the scope of work as described in this report.

III. RESULTS OF WATER LEVEL MEASUREMENTS

Shallow Groundwater Flow Direction.

Shallow water table elevations were measured on November 15, 1993. These measurements are shown in Table 1. Figure 3 presents a contour map for the shallow groundwater table beneath the site. As shown in this figure, the data from these monitoring wells indicate that the shallow groundwater flow beneath the site was in the southerly direction during this most recent round of groundwater sampling.

Shallow Water Table Hydraulic Gradient

Figure 3 presents the contour map for the shallow groundwater table beneath the site. As shown in this figure, the shallow groundwater table through the center of the site appears to have a calculated hydraulic gradient of $dh/dL = 1'/41' = 0.024$.

Historical Water Level Measurements

In addition to the most recent measurement of the shallow water table elevations prior to the groundwater sampling on November 15, 1993, a tabulation of all historical water level measurements for the site has been completed. Table 2 presents the results of all water level measurements collected between May 20, 1992, and the present time.

TABLE 1.

**Shallow Water Table Elevations
November 15, 1993**

Well	Top of Casing Elevation (feet)	Depth to Water (feet)	Water Table Elevation (feet)
MW-1	163.70	10.18	153.52
MW-2	163.33	10.32	153.01
MW-3	163.35	8.48	154.87

Datum is Alameda County Benchmark Anita-CVB.
Standard surveyor brass disc on top-of-curb over drop inlet on Anita Avenue.
Elevation = 168.04 MSL

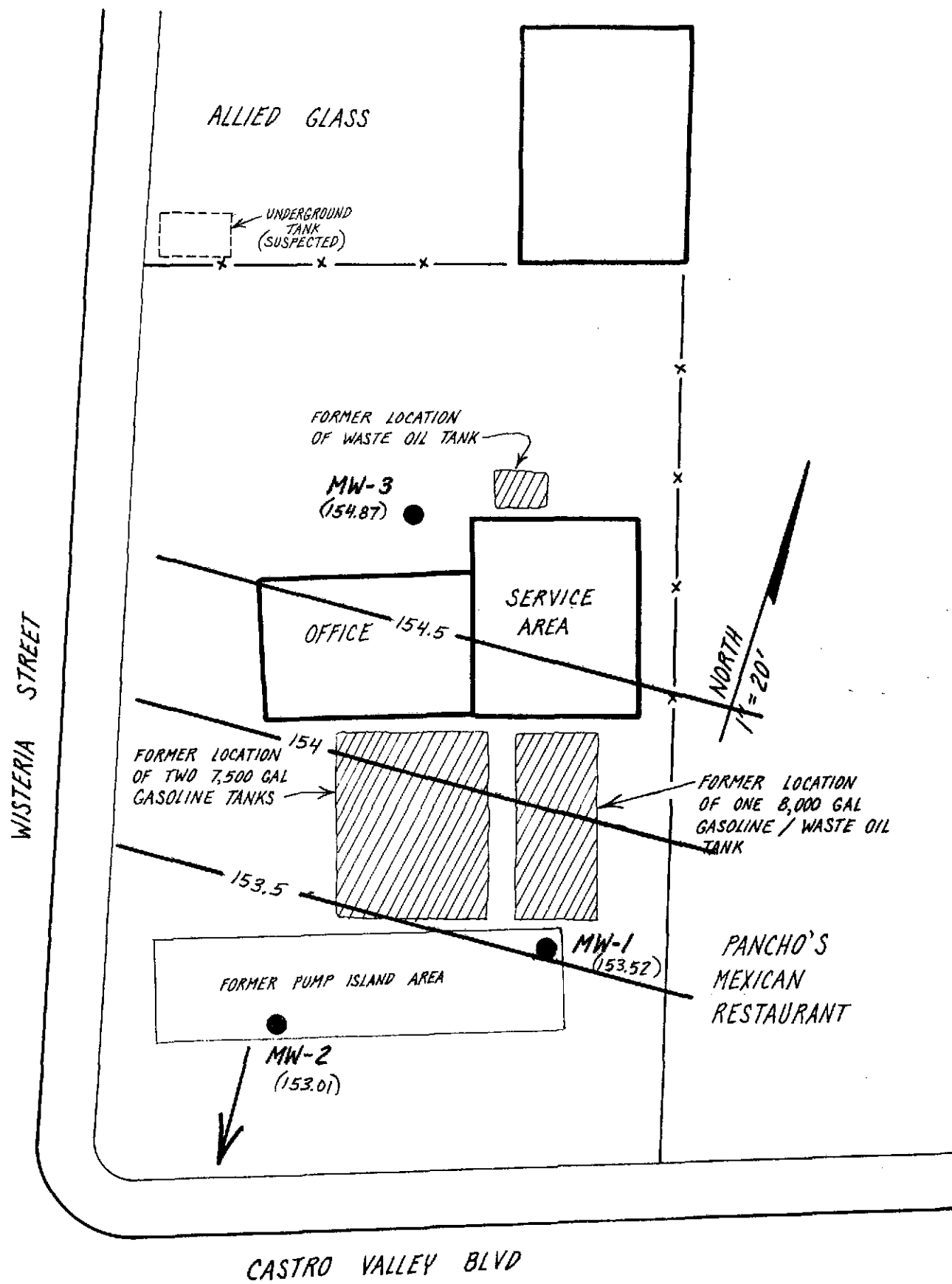


FIGURE 3. Shallow Groundwater Table Contour Map, measured on November 15, 1993.

TABLE 2.

**Historical Water Table Elevations
(feet)**

Well	Date of Measurement								
	5-20-92	8-19-92	11-16-92	3-1-93	5-24-93	8-16-93	11-15-93		
MW-1	152.67	152.64	152.40	154.88	153.27	153.00	153.52		
MW-2	152.65	152.47	151.84	154.23	153.01	152.69	153.01		
MW-3	154.28	154.48	154.05	156.88	154.89	154.48	154.87		
Flow Direction	SE	SE	S	S	S	S	S		
Hydraulic Gradient	0.025	0.029	0.030	0.035	0.027	0.025	0.024		

IV. SHALLOW GROUNDWATER SAMPLING RESULTS

Laboratory Analysis

All analyses were conducted by a California State DOHS certified laboratory in accordance with EPA recommended procedures (Priority Environmental Laboratory, Milpitas, CA).

All shallow groundwater samples were analyzed for 1) total extractable petroleum hydrocarbons (EPA method 8015), 2) total petroleum hydrocarbons as Gasoline (EPA method 8015) and 3) Benzene, Toluene, Ethylbenzene, and Total Xylenes (EPA method 602).

Results of Laboratory Analysis.

Table 3 presents the results of the laboratory analysis of the groundwater samples collected from monitoring wells MW-1, MW-2 and MW-3. For this most recent round of quarterly sampling, dissolved Gasoline was detected in wells MW-1 and MW-3 at concentrations of 780 $\mu\text{g/L}$ (ppb) and 3,000 $\mu\text{g/L}$ (ppb), respectively. In addition, samples collected from wells MW-1, and MW-3 indicated the presence of Benzene at concentrations of 0.6 $\mu\text{g/L}$ (ppb) and 2.4 $\mu\text{g/L}$ (ppb), respectively.

As shown in Table 3, no detectable concentrations of Diesel, Kerosene, or Motor Oil were found in any of the shallow groundwater samples.

A copy of the laboratory certificate for the water sample analyses is included as Attachment B.

TABLE 3.

Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	TPH as Kerosene (ug/L)	TPH as Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Motor Oil (mg/L)
MW-1 (duplicate)	05-20-92	260	ND	ND	ND	ND	4.4	9.0	ND
	08-19-92	ND	ND	ND	ND	ND	ND	ND	ND
	11-18-92	160	ND	ND	0.9	4.0	2.6	9.4	ND
	02-22-93	9,000	ND	ND	15	34	46	91	ND
	05-24-93	540	ND	480	0.5	0.9	2.0	4.5	ND
	05-24-93	--	ND	420	--	--	--	--	ND
	08-16-93	53	ND	ND	ND	ND	1.0	4.7	ND
	11-15-93	780	ND	ND	0.6	0.9	1.1	5.2	ND
MW-2 (duplicate)	05-20-92	ND	ND	ND	ND	ND	ND	ND	ND
	08-19-92	ND	ND	ND	ND	ND	ND	ND	ND
	11-18-92	70	ND	ND	ND	ND	0.9	6.7	ND
	02-22-93	ND	ND	ND	ND	ND	ND	ND	ND
	05-24-93	ND	ND	200	ND	ND	ND	ND	ND
	05-24-93	--	ND	210	--	--	--	--	ND
	08-16-93	ND	ND	ND	ND	ND	ND	ND	ND
	11-15-93	ND	ND	ND	ND	ND	ND	ND	ND
Detection Limit		50	50	50	0.5	0.5	0.5	0.5	0.5

TABLE 3. (continued)

Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	TPH as Kerosene (ug/L)	TPH as Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Motor Oil (mg/L)
MW-3 (duplicate)	05-20-92	4,200	ND	ND	4.5	1.2	18	43	ND
	08-19-92	280	ND	ND	5.3	16	25	61	ND
	11-18-92	4,800	ND	ND	26	27	35	98	ND
	02-22-93	6,200	ND	ND	9.4	15	30	66	ND
	05-24-93	1,100	ND	580	1.5	3.4	4.1	9.9	ND
	05-24-93	—	ND	540	—	—	—	—	ND
	08-16-93	420	ND	ND	2.1	3.0	3.8	23	ND
	11-15-93	3,000	ND	ND	2.4	3.1	4.4	20	ND
Detection Limit		50	50	50	0.5	0.5	0.5	0.5	0.5

ND = Not Detected

Chemical Concentration Contours.

Figures 4 and 5 show lines of equal concentration for Gasoline and Benzene in the shallow groundwater. Since these lines have been drawn based upon relatively limited data (three data points), the plot represents only a small portion of the respective concentration plume. The plot does continue to suggest, however, that the dissolved concentrations are centered somewhere around the rear of the service/office building (vicinity of well MW-3).

Data Analysis

The most recent sampling data continue to suggest the possibility of migration of subsurface contamination from the adjoining Allied Glass property. Its location with respect to the concentration contours is consistent with the measured shallow groundwater flow direction beneath the subject site.

It should be noted that during a previous "round" of groundwater sampling on February 22, 1993, the removal of two underground storage tanks from the Allied Glass property was observed by Hageman-Aguiar, Inc., field staff. Follow-up conversation with Scott Seery, Alameda County Health, indicates that holes in each of the tanks were observed by County personnel during the tank removals. To date, the tank excavations on the Allied Glass property remain open and exposed to infiltration by rain water.

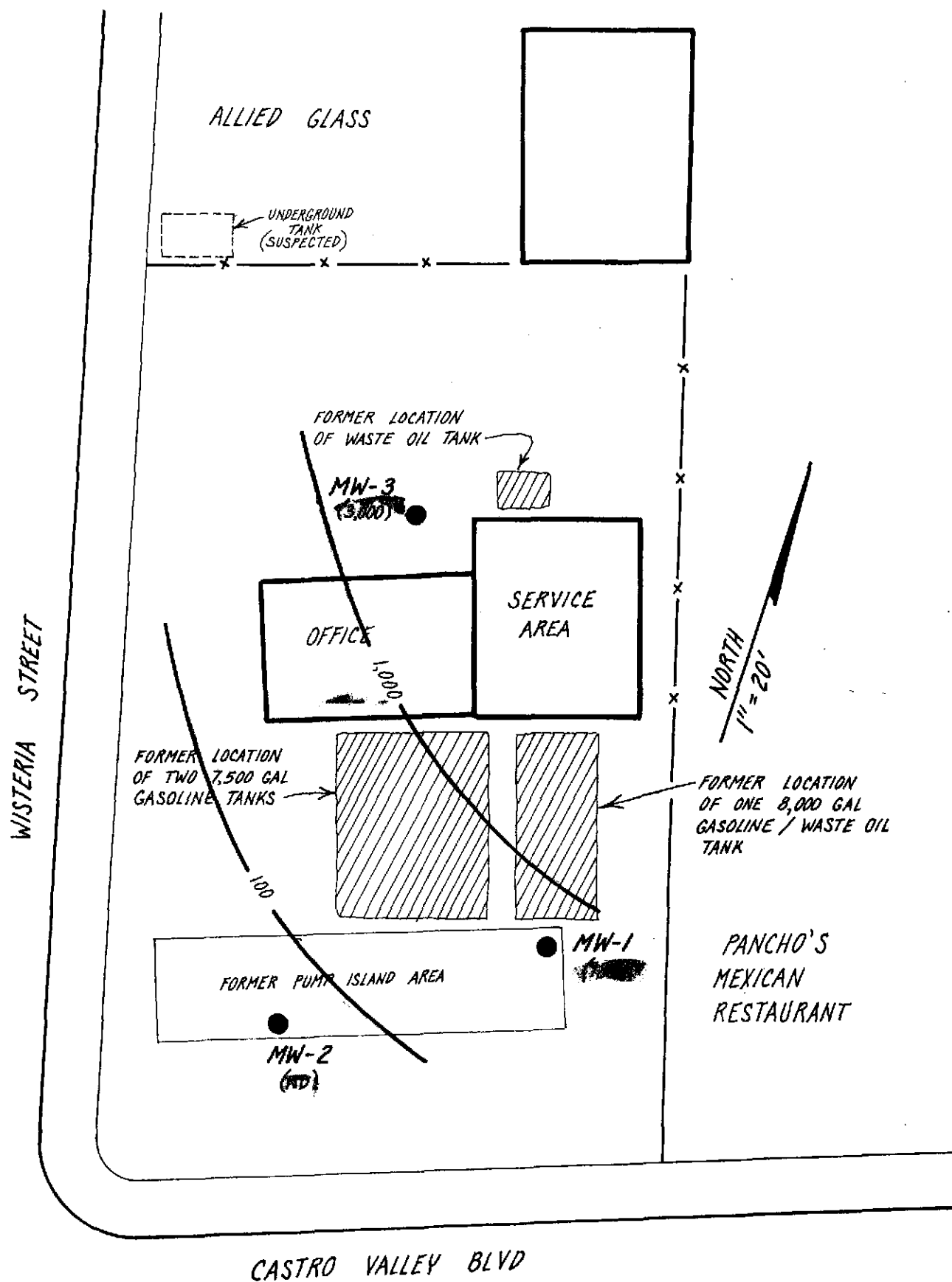


FIGURE 4. Lines of Equal Concentration of Gasoline in ug/L (ppb) in the Shallow Groundwater (11-15-93).

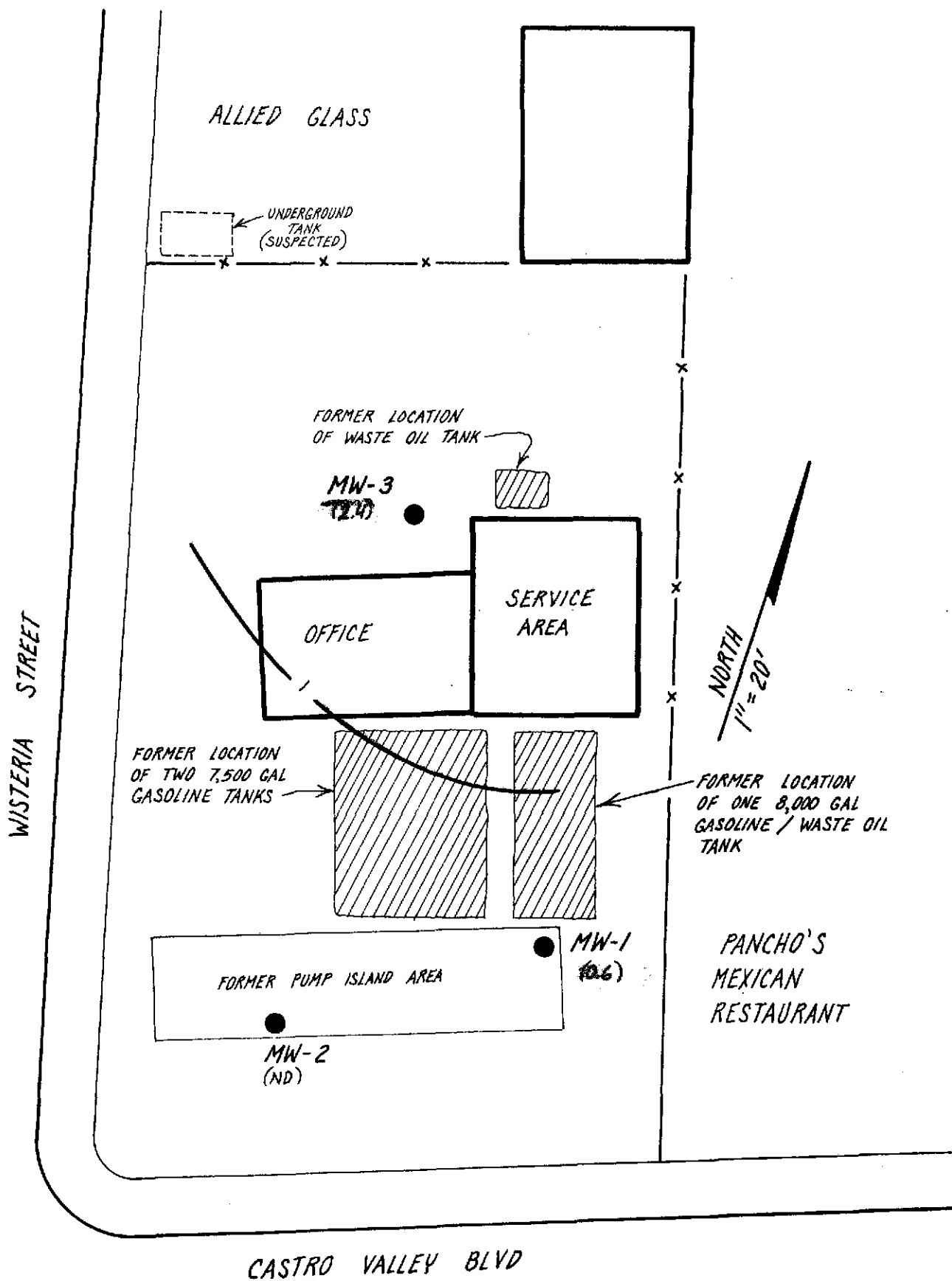
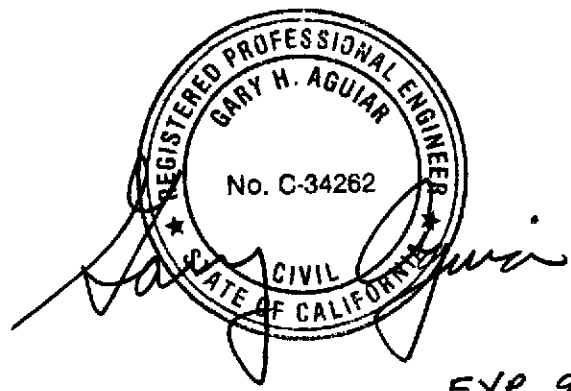


FIGURE 5. Lines of Equal Concentration of Benzene in ug/L (ppb) in the Shallow Groundwater (11-15-93).

QUARTERLY GROUNDWATER SAMPLING REPORT
QUALITY TUNE-UP
2780 Castro Valley Blvd, Castro Valley, CA.

November 23, 1993



Gary Aguiar

EXP. 9-30-95
RCE 34262

WELL SAMPLING LOG

Project/No. QUALITY TUNE-UP Page 1 of 3
 Site Location CASTRO VALLEY Date 11/15/93
 Well No. MW 1 Time Began 1310
 Weather CLEAR / 70°F Completed 1425

EVACUATION DATA

Description of Measuring Point (MP) WELL BOX AT GRADE
 Total Sounded Depth of Well Below MP 24.76
 - Depth to Water Below MP 10.18 Diameter of Casing 2"
 = Water Column in Well 14.58
 Gallons in Casing 2.3 + Annular Space (x10) = Total Gallons 23
 (30% porosity)
 Gallons Pumped Prior to Sampling 23
 Evacuation Method PVC BAILER

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: NONE DETECTED
 (thickness to 0.1 inch, if any)

	<u>1310</u>	<u>1317</u>	<u>1346</u>	<u>1420</u>
Time				
Gals Removed	<u>0</u>	<u>8</u>	<u>16</u>	<u>23</u>
Temperature	<u>22.4</u>	<u>21.2</u>	<u>21.8</u>	<u>21.5</u>
Conductivity	<u>350</u>	<u>380</u>	<u>350</u>	<u>370</u>
pH	<u>6.8</u>	<u>6.7</u>	<u>6.6</u>	<u>6.6</u>
Color / Odor	<u>CL/ORG</u>	<u>BEN/ORG</u>	<u>GRY/ORG</u>	<u>GRY/ORG</u>
Turbidity	<u>LOW</u>	<u>HIGH</u>	<u>HIGH</u>	<u>HIGH</u>

Comments: NONE

WELL SAMPLING LOG

Project/No. QUALITY TUNE-UP Page 2 of 3
 Site Location CASTRO VALLEY Date 11/15/93
 Well No. MW 2 Time Began 1215
 Weather CLEAR / 70°F Completed 1415

EVACUATION DATA

Description of Measuring Point (MP) WELL BOX AT GRADE
 Total Sounded Depth of Well Below MP 20.90 Diameter of Casing 2"
 - Depth to Water Below MP 10.32
 = Water Column in Well 10.58
 Gallons in Casing 1.7 + Annular Space (x10) = Total Gallons 17
(30% porosity)
Gallons Pumped Prior to Sampling 15
 Evacuation Method PVC BAILER

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: NONE DETECTED
(thickness to 0.1 inch, if any)

Time	<u>1215</u>	<u>1220</u>	<u>1305</u>	<u>1405</u>
Gals Removed	<u>0</u>	<u>5</u>	<u>10</u>	<u>15</u>
Temperature	<u>22.9</u>	<u>22.2</u>	<u>21.1</u>	<u>21.0</u>
Conductivity	<u>400</u>	<u>400</u>	<u>380</u>	<u>400</u>
pH	<u>7.0</u>	<u>6.9</u>	<u>6.7</u>	<u>6.8</u>
Color / Odor	<u>CLR/ORG</u>	<u>BEN/ORG</u>	<u>GRY/ORG</u>	<u>GRY/ORG</u>
Turbidity	<u>LOW</u>	<u>MED</u>	<u>HIGH</u>	<u>HIGH</u>

Comments: SLOW RECHARGE RATE



PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

November 18, 1993

PEL # 9311045

HAGEMAN - AGUIAR, INC.

Attn: Jeffrey Roth

Re: Three water samples for Gasoline/BTEX and TEPH analyses.

Project name: Quality Tune-Up

Project location: Castro Valley Blvd., - Castro Valley, CA.

Date sampled: Nov 15, 1993

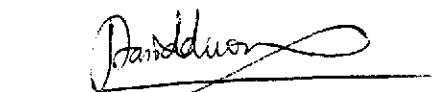
Date submitted: Nov 16, 1993

Date extracted: Nov 16-17, 1993

Date analyzed: Nov 16-17, 1993

RESULTS:

SAMPLE I.D.	Kerosene	Gasoline	Diesel	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Motor Oil	Stoddard Solvent
	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(mg/L)	(ug/L)
MW 1	N.D.	780	N.D.	0.6	0.9	1.1	5.2	N.D.	N.D.
MW 2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
MW 3	N.D.	3000	N.D.	2.4	3.1	4.4	20	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	82.4%	92.7%	91.2%	93.5%	91.2%	97.4%	103.1%	---	94.0%
Duplicate Spiked Recovery	---	88.4%	93.5%	90.9%	87.8%	93.1%	97.6%	---	---
Detection limit	50	50	50	0.5	0.5	0.5	0.5	0.5	50
Method of Analysis	3510 / 8015	5030 / 8015	3510 / 8015	602	602	602	602	3510/ 8015	3510/ 8015


David Duong
Laboratory Director

