HerSchy Environmental

June 5, 1999
Project A51-01.01

Mr. Don Hwang
Alameda County
Health Care Services Agency
Environmental Health Services
Environmental Protection (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Work Plan for Drilling, Sampling, and Monitoring Well Installation, Alaska Gasoline Company, Oakland, California

Dear Mr. Hwang:

HerSchy Environmental is pleased to present this work plan for continued investigation at the above-referenced site. The site is located at 6211 San Pablo Avenue, which is on the northwest corner of San Pablo Avenue and 62nd Street in Oakland, Alameda County, California. This workplan was prepared in response to the April 30, 1999 correspondence from your office requesting a preliminary investigation of soil and groundwater conditions at the site.

Previous work included the drilling, sampling, and laboratory analysis of soil and groundwater from three soil borings (B-1 through B-3), as shown on Figure 1. Details of this investigation is contained in the April 22, 1999 *"Results of Underground Storage Tank (UST) Site Assessment, Alaska Gasoline Company, Oakland, California"*, prepared by HerSchy Environmental. Laboratory analytical results are summarized in Table 1 below. Groundwater was encountered during the initial assessment at a depth of approximately 10 feet. Groundwater gradient and flow direction beneath the site is believed to be to the west. Groundwater was sampled from one of the borings.

Table 1
Laboratory Analytical Results, Alaska Gasoline, Oakland

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
B-1 @ 10'	440	2.3	4.8	7.4	31	3.7
B-1 @ 15'	74	1.4	1.6	1.6	6.3	4.8
B-2 @ 10'	290	3.6	9.0	5.8	24	2.0

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Table 1
(continued)

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
B-3 @ 10'	460	3.8	18	7.6	37	86
B-1, GW	99,000	10,000	4,300	3,100	11,000	48,000

All results expressed in parts per million (ppm)
GW results expressed in parts per billion (ppb)

Significant concentrations of gasoline constituents are present in both soil and groundwater beneath the site. The purpose of this proposed work is to provide additional information regarding the lateral extent of petroleum hydrocarbon-impacted soil and to evaluate groundwater conditions beneath the site.

1.0 Work Plan for Continued Investigation:

1.1 Drilling and Soil Sampling

Drilling will be performed using a truck-mounted drill rig equipped with eight-inch hollow stem augers. Augers will be steam cleaned prior to arriving on site. Three soil borings will be drilled to evaluate subsurface conditions and to install groundwater monitoring wells (MW-1 through MW-3). Monitoring well MW-1 will be installed between the locations of previous borings B-1 and B-2 in an area of significant concentration of petroleum hydrocarbons in soil and groundwater. This location was chosen to evaluate for the possible presence of floating product. Monitoring well MW-2 will be installed at the southwest corner of the property which is the furthest distance from the USTs while still remaining on site. The third monitoring well (MW-3) will be installed in a down gradient location relative the USTs. A fourth soil boring (B-4) will be drilled west of the USTs to gather additional data that will be used for evaluation of remedial alternatives. Location B-4 will not be used for monitoring well installation. Approximate monitoring well and boring locations are presented in the attached Figure 1.

Soil samples will be collected using a California modified split spoon sampler equipped with brass or stainless steel liners. The samples will be collected at five-foot intervals beginning at a depth of five feet each of the four borings. Because of shallow groundwater, sampling intervals will be limited to five feet and at the capillary fringe of groundwater, an approximate depth of ten feet. All eight of the soil samples will be retained for laboratory analysis. Samples will be collected by driving the sampler ahead of the drill bit. The sampler and liners will be cleaned between sampling events.

Soil samples will be field screened using a portable organic vapor analyzer (OVA) for the presence of volatile organic compounds (VOCs). Samples will be maintained in a cooler chest with frozen gel packs ("blue ice"), and maintained at a minimum of four degrees Celsius until delivered to the laboratory. At least three samples

from each boring will be submitted to the laboratory regardless of field screening results under chain of custody documentation. Soil samples and drill cuttings will be described in accordance with the Unified Soil Classification System by a California Registered Geologist. Drill cuttings will be spread on site for aeration and passive bioremediation as directed by the owner. If a suitable area for aeration is not available, then cuttings will be stored in DOT-approved 55-gallon drums, labeled, and stored on site for later handling.

Soil sampling will be discontinued upon encountering groundwater, an estimated depth of ten feet. The borings will be advanced to approximately ten feet below first encountered groundwater in preparation for well installation, an approximate total depth of 20 feet.

1.2 Monitoring Well Installation, Development, and Sampling Procedures:

Well construction and annular materials will be installed through the hollow stem augers. Groundwater monitoring wells will be constructed with two-inch schedule 40 PVC well casing with screw joints. The screened intervals will be constructed with 15 feet of 0.020-inch factory slotted screen such that ten feet of the screened interval will be below first encountered groundwater. Blank casing will be installed from the top of the screened interval to surface grade. The monitoring well will be flush with surface grade in a traffic rated well cover with a locking well cap.

Annular materials will consist of #3 sand from the bottom of the boring to approximately two feet above the screened interval, followed by a minimum two-foot bentonite seal, followed by a sand-cement grout to the surface. Monitoring well elevations will be surveyed to the nearest .01 feet after installation. Depth to groundwater measurements will be made to the nearest .01 feet prior to sampling using an electric sounder.

The groundwater monitoring wells will be developed by pumping and surging until the discharge is clear. Well development will be performed using a two-inch submersible pump. Physical characteristics (pH, electrical conductivity, and temperature) will be measured and recorded during well development. If sampling is performed more than 24 hours after well development, a minimum of four casing volumes will be purged from the well prior to sampling. Physical characteristics will be measured before purging and again prior to sampling. Groundwater samples will be stored, transported, and handled in a similar manner as described for soil above. In the absence of floating product, development and purge water will be discharged an appropriate distance from the well head. Monitoring wells that contain floating product will not be sampled.

1.3 Laboratory Analysis:

Soil and groundwater samples will be analyzed for gasoline-range total petroleum hydrocarbons (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE). Analytical methods used will be EPA method 8015 for gasoline-range TPH, and EPA method 8020 for BTEX and MTBE.

1.4 Report Preparation:

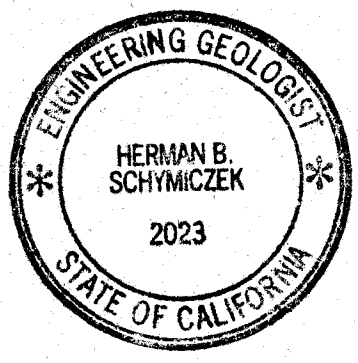
A report will be prepared documenting the results of the investigation. The report will include borings logs, well construction details, certified analytical report, and maps showing the site location, and location of monitoring wells indicating groundwater flow direction and gradient. Based on the results of the investigation, recommendations will be made for additional investigation and/or remediation as appropriate.

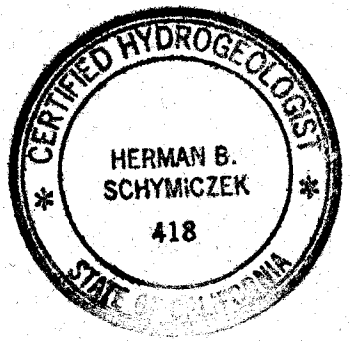
If you have any questions or need additional information, please contact me at the letterhead address or at (559) 641-7320.

With best regards,

Herman Schymiczek
CHG #418, CEG #2023

pc: Mr. Pritpaul Sappal, Alaska Gasoline Company
Mr Hernan Gomez, Oakland Fire Services Agency





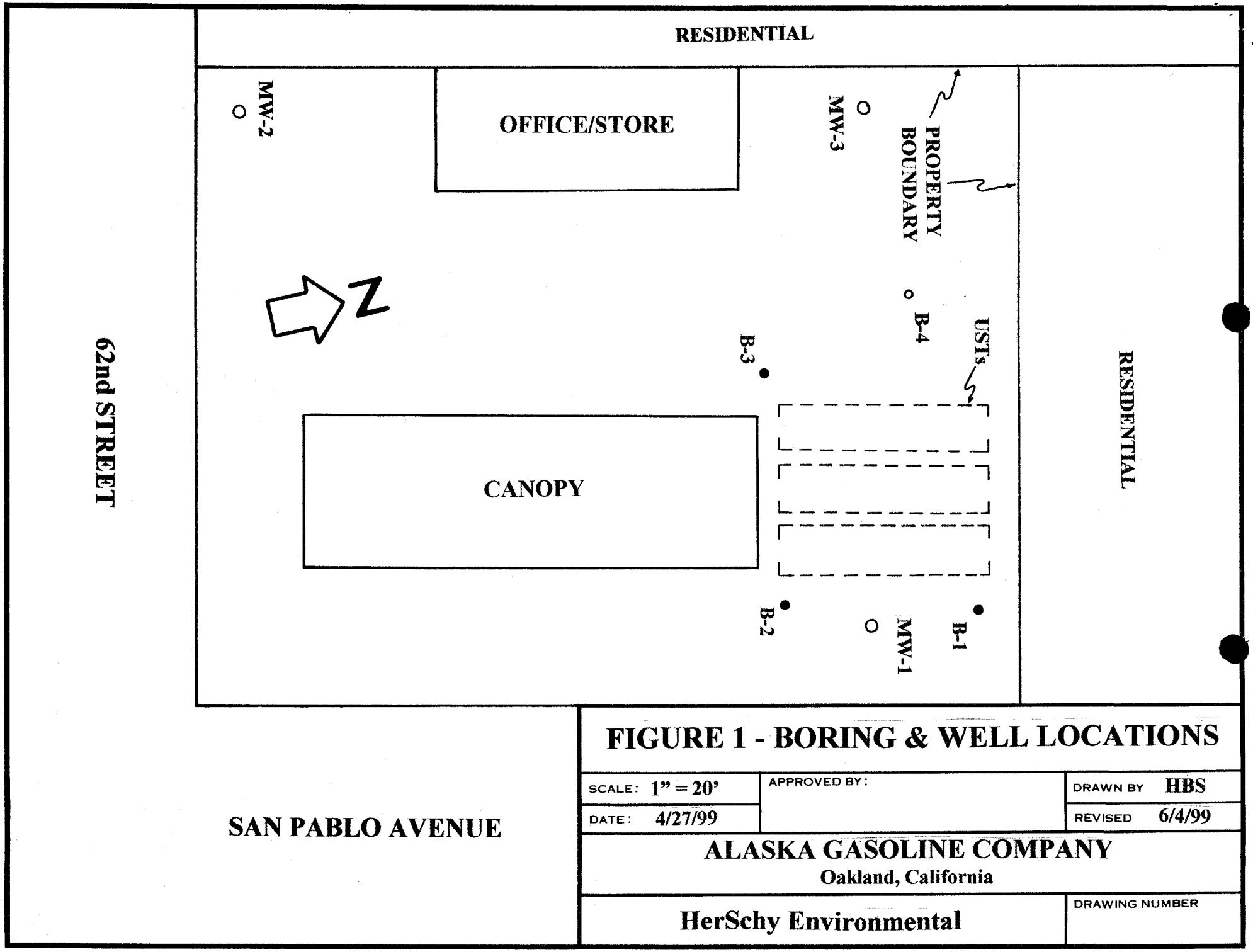


FIGURE 1 - BORING & WELL LOCATIONS

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY HBS
DATE: 4/27/99		REVISED 6/4/99

ALASKA GASOLINE COMPANY
Oakland, California

HerSchy Environmental

DRAWING NUMBER