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February 27, 2001

Barney M. Chan, Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

#263

MAR 06 2001

Subject: **Workplan**
245 8th Street
Oakland, California
AEI Project No. 4192

Dear Mr. Chan:

This letter is a proposed workplan for your review and approval for further investigation of petroleum hydrocarbon impacted groundwater at the above referenced property. This workplan is in response to your letter dated January 4, 2001 to Mr. Victor Lum. AEI Consultants (AEI) is providing environmental engineering consulting and construction services to Mr. Lum, and is submitting this letter on his behalf.

Please note that a workplan, dated August 1, 1997, was submitted to Ms. Jennifer Eberle; however, the work was not carried out. This workplan is a modified version of the previous workplan that incorporates the change in the location of MW-4 that was discussed during our telephone conversation of February 16, 2001.

This workplan represents the first of two phases of characterization. As we discussed during our telephone conversation on February 16, 2001, it is necessary to determine the hydraulic gradient and flow direction using wells on site prior to selecting offsite locations for additional monitoring wells. Accordingly, this first phase deals only with the installation of two on-site monitoring wells. In addition, free product removal at MW-1 will be revived as you requested.

The second phase, as we discussed, will entail a reconnaissance soil, groundwater, and soil vapor survey by means of push probe technology with the objective of delineating the present location of the free product plume.

1.0 Site Description and Background

The site is located in a commercial zone at the corner of 8th and Alice Streets in Oakland (see Figure 1, Boring Location Map). The topography of the site is relatively flat, with a surface elevation of approximately 32 feet above mean sea level (AMSL). The nearest significant surface water body is Lake Merritt, located approximately 2200 feet to the northeast, and the Alameda Inner Harbor located about 2400 feet to the south southwest. The narrow waterway connecting Lake Merritt with the Inner Harbor lies approximately 2200 feet to the southeast.

One building is located on the property, which contains both an auto repair shop and office for Vic's Automotive Services. A gasoline dispenser island and canopy are located north of the building. The building is surrounded by an asphalt-paved parking lot.

Five underground storage tanks (USTs) were removed from the site in June 1993 by AEI. The USTs consisted of four 1,000-gallon gasoline tanks, and one 250-gallon waste oil tank. Prior to removal, approximately 425 gallons of waste product were pumped from the tanks. Two additional 6,000-gallon gasoline tanks were removed by AEI in August of 1994.

Soils taken from the excavations were found to be contaminated, with as much as 3700 ppm Total Petroleum Hydrocarbons as gasoline (TPH-g) in stockpiled soil, and 160 ppm TPH-g in soils taken from the bottom of one of the excavations. Groundwater was encountered during the removal of the two 6,000 gallon gasoline tanks. Free phase floating product was observed.

AEI drilled two soil borings and converted each boring into groundwater monitoring wells (MW-1, MW-2) on July 14, 1995. Quarterly monitoring of the wells initially occurred on July 21, 1995. The depth to groundwater was measured at approximately 17 feet bgs. Approximately two feet of floating product were discovered in MW-1; therefore, groundwater samples were not collected from the well. Groundwater samples collected from MW-2 indicated that concentrations of 68,000 ppb TPH-g and 480 ppb benzene were present in the groundwater.

The hydraulic gradient was determined using two off-site wells that had been installed for a subsurface investigation at a neighboring site. It was determined that the groundwater flow direction was to the south with a gradient of approximately 0.01 foot per foot.

The removal of free product from MW-1 was initiated in July 1995. The product was removed by manual bailing from July 1995 to October 1996. During this period, a total of 172 gallons of water and product were removed from the well. AEI estimated that at least 45 gallons of free product was removed. In November 1996, AEI installed a skimmer pumping system to remove the free product more efficiently. Since the installation of the pumping system, approximately 900 gallons of product and water were pumped from the well.

On August 8, 1996, AEI advanced three soil borings (SB-1, SB-2, and SB-3) to define the extent of the free product plume (refer to Figure 1 for boring locations). Grab groundwater samples were collected from the soil borings to qualitatively assess the contaminant plume. A sheen was observed on the groundwater sample collected from SB-2, advanced approximately 25 feet west

of MW-1. No sheen was observed on the groundwater samples collected from SB-1 or SB-2, however, significant concentrations of unmodified or weakly modified gasoline, BTEX and MTBE were present in the samples.

1.1 Purpose

The following Scope of Work describes activities for the installation of (3) four-inch groundwater monitoring wells to obtain quantitative groundwater data and to further delineate the groundwater contaminant plume up gradient and down gradient of the subject property.

2.0 Scope of Work

The scope of work comprises further investigation of hydrocarbon contamination of subsurface soils, construction of groundwater monitoring wells, and free product removal. Procedures are provided in the following sections:

2.1 Soil Boring Advancement

AEI proposes to advance two soil borings using a hollow stem auger-drilling rig. The borings will be advanced at the locations shown on Figure 1 to a depth of approximately 20 feet below ground surface. An AEI geologist will continuously log the soil borings on-site using the Unified Soil Classification System (USCS). Undisturbed soil samples will be taken at 5-foot intervals, starting at 5 feet bgs, with a hammer-driven California modified split spoon sampler. Soil samples will be collected at the capillary fringe as well as 5 feet above the capillary fringe in order to determine if groundwater contamination is due to the former on-site USTs. The sampler will be advanced ahead of the auger tip by successive hammer blows. Samples will be collected for visual classification. Soil samples obtained during drilling will be screened in the field with a portable photo ionization detector (PID). The geologist on-site will determine the soil samples selected for chemical analysis at the time of sampling. A total of two soil samples from each boring will be submitted for chemical analysis. Samples will be stored on wet ice and transported to a State certified laboratory under chain of custody procedures. Samples will be analyzed for TPH-g, benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE) according to EPA method 5030/8015. /8020 / 8260

Cuttings generated during the drilling will be stored on-site in 55-gallon drums. A licensed hauler will be contracted to transport the soils as non-hazardous waste, under appropriate manifests, to a local landfill facility.

2.2 Groundwater Monitoring Well Installation

The two soil borings will be converted to four inch monitoring wells and labeled AEI-MW3 and AEI-MW4. The wells will be constructed of 4-inch flush threaded Schedule 40 PVC casing, with up of 15 feet of .02" factory-slotted well screen. The top of the well screen will extend up to 3 feet above the encountered water table to accommodate seasonal water table fluctuations. The well casing will be inserted through the auger to a point a few inches above the borehole

terminus where it will be secured within the sand pack. Sand (#2 or #3) will be poured through the auger in one- to two-foot lifts up to about two feet above the top of the perforated casing. One to two feet of bentonite pellets will be placed above the sand and activated with tap water. The bentonite seal will be finished up to the surface with tremmied cement/bentonite grout. A locking top cap and a flush-mounted watertight well cover will be installed.

The wells will be developed by bailing water into a 55 gallon drum until the water appears to be reasonably clear with a minimum of 10 well volumes removed. Well development will take place no less than 72 hours after wells have been constructed.

2.3 Groundwater Monitoring

A California registered surveyor will survey the elevations of the tops of casing of the newly installed wells to a nearby benchmark. Distances between wells will be measured. These data will be used to determine the water table gradient and groundwater flow direction. Groundwater level measurements and samples will be collected from all ~~five~~ 4 wells on a quarterly basis. An interface probe will be used in all wells to determine whether free product is present.

Prior to obtaining water samples, stale water in the casing will be purged. Three to five well volumes of water will be bailed from each well. Groundwater samples will be obtained from each well using a disposable bailer. Water will be poured into 40 ml volatile organic analysis (VOA) vials and capped so that no headspace or air bubbles are visible. Water samples will be analyzed for TPH-g, BTEX, and MTBE by EPA method 5030/8015. / 8020/8260

AEI will prepare a report following each quarterly monitoring episode. The report will detail the findings of the sampling episodes and will include sampling data, laboratory analyses, conclusions, and recommendations. Copies of the final report will be submitted to the client and all of the appropriate agencies. (min for off site characterization.

2.4 Free Product Removal

AEI visited the site on January 31, 2001. The thickness of free product in MW-1 was measured with an interface probe and found to be 0.5 ft. AEI will install a skimmer pump in the well and monitor operation.

3.0 Health and Safety

Prior to commencement of field activities, a site safety meeting will be held at a designated command post near the working area. Emergency procedures will be outlined at this meeting. Also, the hazards of the known or suspected chemicals of concern will be explained. Level D personal protection equipment is the anticipated maximum amount of protection required. A site safety plan which conforms to Part 1910.120 (i) (2) of 29 CFR will be on site at all times during the performance of this project.

A working area will be established with barricades and warning tape to delineate the zone where hard hats and steel-toed shoes must be worn, and where unauthorized personnel will not be allowed. If, during drilling, air-monitoring data indicates concentrations above 3 ppm of benzene in the breathing zone, half face respirators with organic vapor cartridges will be worn.

A nearby hospital will be designated in the site safety plan as the emergency medical facility of first choice. A map with a course plotted to the hospital will be on-site.

4.0 Estimated Schedule

Upon approval of this workplan by the Alameda County Health Care Services Agency (ACHCSA), work will commence within 10 business days. The ACHCSA will be given adequate notification of the scheduled day of drilling. Laboratory analytical results will be obtained within two weeks of collection. The final report will be prepared and copies will be delivered to the ACHCSA.

AEI requests your approval to proceed with this project. Please let us know if you need additional information and please do not hesitate to call us at (800) 801-3224 if you have any questions.

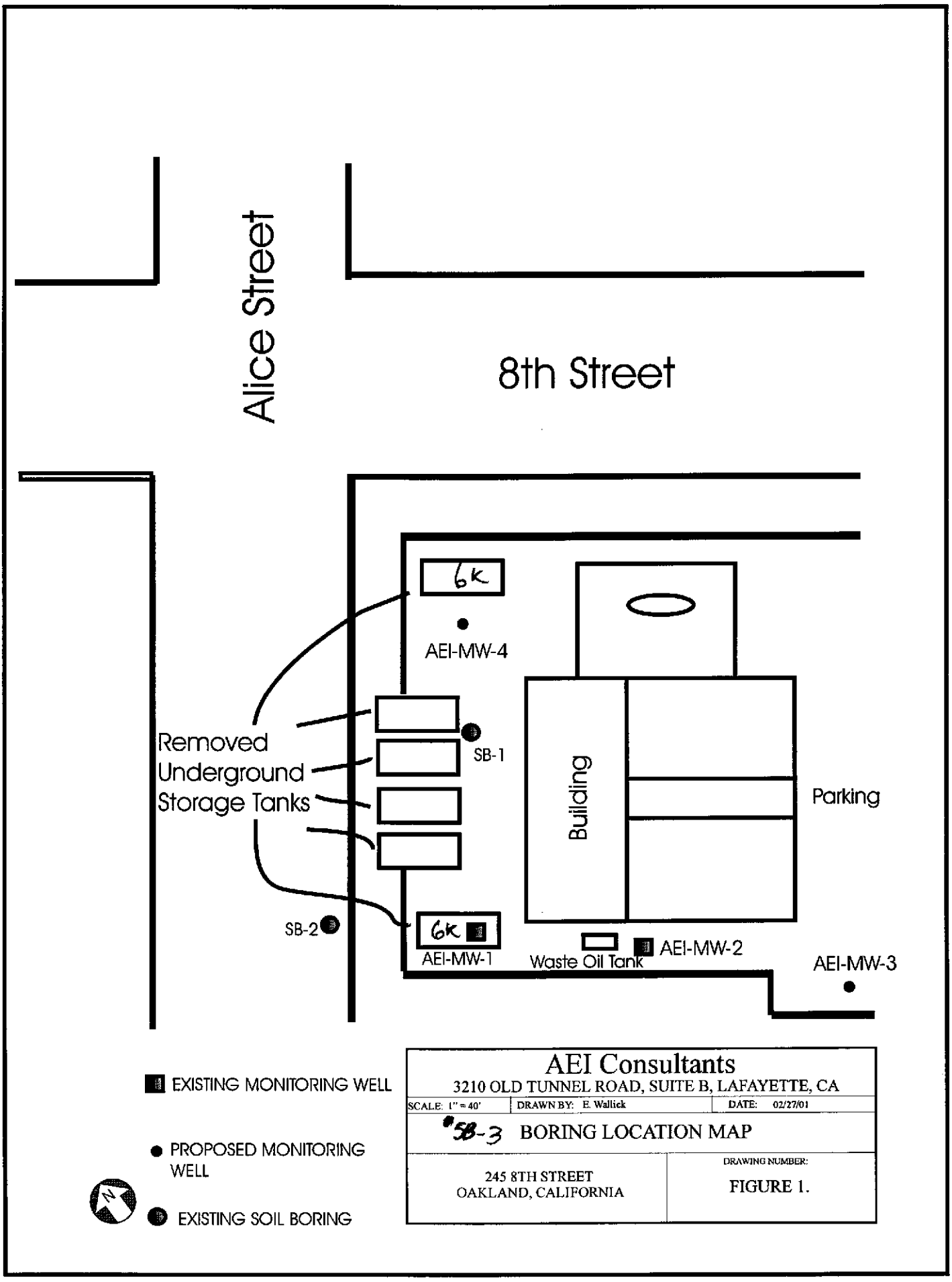
Sincerely,
AEI Consultants

Edward I. Wallick, Ph.D.
Senior Hydrogeologist

Joseph P. Derhake, PE, CAC
Principal

Cc: Mr. Victor Lum, Vic's Automotive

Figures: Figure 1. Boring Location Map



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SCALE: 1" = 40'	DRAWN BY: E. Wallick	DATE: 02/27/01

*SB-3 BORING LOCATION MAP

245 8TH STREET OAKLAND, CALIFORNIA	DRAWING NUMBER: FIGURE 1.

SB3 not shown