WORK PLAN
FOR SOIL AND GROUNDWATER INVESTIGATION
PACIFIC ELECTRIC MOTOR CO.
1009 - 66TH AVENUE
OAKLAND, CALIFORNIA

94621 5/27/97

Submitted to

Alameda County Environmental Health Department

Submitted on behalf of

Pacific Electric Motor Co.

Prepared by

ENVIRON Corporation
Emeryville, California

May 27, 1997
Project No. 03-5991A

ENVIRON

May 27, 1997

Mr. Barney M. Chan
Hazardous Materials Specialist
Alameda County Environmental Health Department
1131 Harbor Bay Parkway
Alameda, 94502-6577

Re: Work Plan for Soil and Groundwater Investigation
Pacific Electric Motor Co., 1009 - 66th Avenue, Oakland, California

Dear Mr. Chan:

On behalf of Pacific Electric Motor Company (PEM), and in response to your April 24, 1997 letter, ENVIRON is hereby submitting this work plan for additional site characterization at the Pacific Electric Motor Co. (PEM) facility located at 1009 - 66th Avenue in Oakland, California (the "Site"). The purpose of the site characterization is to further define the lateral and vertical extent of gasoline constituents in soil and groundwater within the vicinity of a former gasoline UST that was removed on February 16, 1995.

This work plan provides background information concerning previous UST-related activities, and our proposed sampling, analytical, and reporting procedures. This work is being conducted under the jurisdiction of the Alameda County Health Care Service's Environmental Health Department (ACEHD). As discussed during our May 12 meeting at your office, we have reviewed soil boring and groundwater data from nearby sites and used this information in developing this work plan.

BACKGROUND

PEM formerly operated a 2,000-gallon steel gasoline UST located east of the on-site warehouse building that was reportedly removed on February 16, 1995 by W.A. Craig, Inc. (WAC). At the time of removal of the former UST, it was reported that the tank was approximately 20 years old, in good condition, and that no holes were evident. However, free product was encountered on the water surface within the tank excavation pit and elevated concentrations of gasoline constituents (including up to 10,000 mg/kg of TPH as gasoline), were detected in three soil samples collected from the UST excavation and associated piping trenches.

In a report titled *Final Closure Plan for Underground Storage Tank Removal (WAC, March 14, 1995)*, it was recommended that the soil stockpile resulting from the UST removal project be disposed of off-site, that clean material be used to backfill the tank pit, and that petroleum-impacted water from the pit be pumped and disposed of at a licensed disposal facility. In

addition, further soil and groundwater remediation was recommended. In a letter dated April 20, 1995, the ACEHD indicated its awareness of subsequent activities completed by WAC that included enlarging the initial tank pit area through overexcavation and constructing trenches, and requested additional information from PEM concerning these activities.

In a document titled *Subsurface Environmental Investigation (WAC, May 16, 1995)*, it was reported that from April 4 through 11, 1995, approximately 300 cubic yards of gasoline-impacted soils were excavated from the vicinity of the former UST and stockpiled at the Site on plastic sheeting. In addition, it was reported that approximately 18,000 gallons of contaminated water had been pumped from the excavation pit and placed in a Baker tank on-site.

On April 24 and 25, 1995, WAC reportedly performed a geoprobe investigation in an attempt to define the lateral and vertical extent of gasoline constituents. Nine soil borings were advanced to depths between 20 and 30 feet below ground and soil samples were collected above and below the water table. Groundwater samples were not collected during this investigation because the fine-grained soils reportedly did not yield sufficient water.

Based on information provided to ENVIRON by PEM, it is ENVIRON's understanding that additional remedial actions were completed at the Site from August 1995 to November 1995 in accordance with a work plan dated July 5, 1995. These remedial actions reportedly included the removal of approximately 1,500 cubic yards of petroleum hydrocarbon-impacted soil and the treatment/discharge of an estimated 116,000 gallons of petroleum hydrocarbon-impacted groundwater. Other activities reportedly included demolition of the fuel dispensing island, associated product supply lines, and a materials storage structure; installation of a temporary groundwater monitoring well; collection and analysis of excavation sidewall and bottom soil confirmation samples; and collection and analysis of groundwater samples. Attachment A indicates the approximate horizontal and vertical extent of the final soil excavation, as well as confirmation soil sample results.

At the present time, four soil stockpiles are located on-site that ENVIRON has identified as Stockpiles 1, 2, 3, and 4 for reference purposes (Figure 1). ENVIRON recently completed a soil stockpile characterization project that was completed in accordance with a work plan dated April 23, 1997 that was approved by the ACEHD in a letter dated April 24, 1997. Results of the soil stockpile characterization effort will be summarized in a separate report following review and assessment of analytical results.

As noted above, the objective of the investigation described in this work plan is to further define the lateral and vertical extent of gasoline constituents in soil and groundwater within the vicinity of a former gasoline UST that was removed on February 16, 1995. Proposed field investigation, chemical analyses, and reporting procedures are described below.

FIELD INVESTIGATION

In order to address project objectives and for the purpose of collecting additional soil and groundwater samples, ENVIRON proposes to advance three soil borings at the locations shown on Figure 2 and to convert the borings to monitoring wells. The fieldwork activities described herein will be supervised by a California Registered Geologist. Additional details concerning sampling and analytical procedures are provided below.

Drilling and Well Construction Procedures

An underground utility location service will be retained to clear each of the soil boring locations prior to drilling. If necessary, a coring device will be used to penetrate surface paving.

Soil borings will be advanced by a drilling subcontractor to a depth of approximately 20 to 25 feet under the direction of an ENVIRON geologist. ENVIRON will be present during drilling activities to obtain samples of subsurface materials, maintain a log of the borings, make observations of the work area conditions, conduct health and safety monitoring of organic vapors during drilling, screen and log soil samples, and provide technical assistance as required.

Upon completion, the borings will be converted to 2-inch diameter monitoring wells to collect groundwater samples and measure groundwater elevations, as discussed below. Based on ENVIRON's review of results from the on-site geoprobe investigation, other site data, and subsurface investigations at the nearby fire station and church, it appears that a coarser-grained unit occurs at a depth of about 18 to 25 feet below ground. Therefore, it is recommended that 20-foot well screens be installed for each of these three monitoring wells, with a screened interval of approximately 5 to 25 feet below ground. Such screened intervals will allow for the detection of any floating product that may be present, as well as any petroleum hydrocarbons migrating within zones of higher hydraulic conductivity. A similar approach was apparently taken at the neighboring fire station, where the monitoring wells were reportedly screened from approximately 6 to 21 feet below ground.

Soil Sampling Methods and Procedures

Field sampling personnel will be responsible for the description, documentation, labeling, packaging, storage, handling, and shipping of samples obtained in the field. These practices are necessary to ensure the integrity of the samples from collection through reporting. Soil samples for chemical analysis and lithologic descriptions will be collected from all borings. The soil samples selected for chemical analysis will be labeled, placed in sealed plastic bags, placed inside a cooled ice chest, and transported under chain of custody to the laboratory for analysis. All other samples will be logged.

Water Level Measurements and Groundwater Sampling

ENVIRON will measure water level elevations, purge the wells of three well casing volumes or until stable water quality conditions have been attained, and collect ground water samples from each of the three wells. A ground water sample will also be collected from the existing well that is located within the former tank area. In addition, ENVIRON will collect an equipment blank for QA/QC purposes and submit a trip blank to the laboratory for analysis. Groundwater samples will be collected into laboratory-supplied sample containers. Following sample collection, the groundwater samples will be sealed, labeled, placed inside a cooled ice chest, and transported under chain of custody to the laboratory for analysis.

Equipment Decontamination and Waste Containment

In order to minimize the potential for cross contamination, all down-hole drilling and sampling equipment will be thoroughly cleaned using a high pressure steam cleaner or a dilute solution of Alconox prior to and between soil borings. The pressure washing will be performed in a water-tight plastic decontamination station. Between sampling intervals in each individual boring, the soil sampler will be washed using a high pressure steam cleaner or a dilute solution of Alconox and rinsed with potable water.

Soil samples not submitted for chemical testing and fluids generated during equipment decontamination will be contained in 55-gallon drums for subsequent testing and disposal. The disposal method will be determined after analytical results are available.

Quality Assurance/Quality Control Samples

To verify the effectiveness of equipment decontamination, two equipment blanks will be prepared in the field by pouring distilled/deionized water over the decontaminated soil and groundwater sampling equipment described above. These equipment blanks will be placed into appropriate containers provided by the laboratory, preserved, and transported under chain of custody to the laboratory for analysis. All sample containers, preservatives, and distilled/deionized water will be supplied by the laboratory.

Lithologic Logging

Lithologic logging of all boreholes will be conducted on-site by a qualified geologist using soil samples collected during drilling and sampling activities. All information obtained will be recorded on standard boring log forms. Soil samples will be logged and classified according to the Unified Soil Classification System (UCS). Sample color (according to Munsell soil color charts), consistency, moisture, and soil sample OVA (or equivalent) results will also be noted on the boring logs. All boring logs will contain geologic descriptions of the materials encountered, such as degree of induration, roundness and sphericity of clasts, sorting,

mineralogy, etc. In addition, the grain size distribution of the samples will be estimated and recorded on the log. If water is encountered, the depth at which water is encountered while drilling will also be noted on the log.

Surveying

Following completion, the locations and elevations of the soil borings will be surveyed by a licensed land surveyor for horizontal and vertical control. Boring locations will be surveyed to the nearest 0.1 foot, and elevations will be surveyed to the nearest 0.01 foot, relative to a common datum.

CHEMICAL ANALYSES

Laboratory Analyses for Soil and Groundwater Samples

Soil and groundwater samples collected during the above-described field program will be delivered to and analyzed by Chromalab Environmental Services, of Pleasanton, California. Soil samples collected from the three soil borings will be analyzed for total volatile hydrocarbons as gasoline (TVH-G) by USEPA Method 8015 Modified; and benzene, toluene, ethyl benzene, and total xylenes (BTEX) by USEPA Method 8020. Groundwater samples will be analyzed for TVH-G by USEPA Method 8015 Modified, BTEX by USEPA Method 8020, total lead by USEPA Method 6010, and methyl tertiary-butyl ether (MTBE) by USEPA Method 8020 (subject to confirmation by USEPA Method 8240 or 8260).

Laboratory Quality Assurance and Quality Control Procedures

The laboratory analytical report will include a standard batch quality control data package for each analytical method. For TVH-G and BTEX analyses, for example, this will include results of surrogate compound recoveries for each sample, and a method blank sample, a laboratory control sample, and a matrix spike/matrix spike duplicate sample for each sample media and analytical method. For lead analyses, this will include a lab blank, laboratory control sample, and blank spike/blank spike duplicate results. A copy of the signed original chain of custody form will be included in the laboratory report.

ENVIRON will review the field sample log form, and the laboratory analytical and quality control results for quality assurance and quality control (QA/QC) purposes. Any identified QA/QC issues will be discussed and resolved with the laboratory.

Reporting

Upon completion of the above-described soil and groundwater investigation, ENVIRON will develop a summary report describing sample collection methods, analytical methods, and

results that will be submitted to the ACEHD.

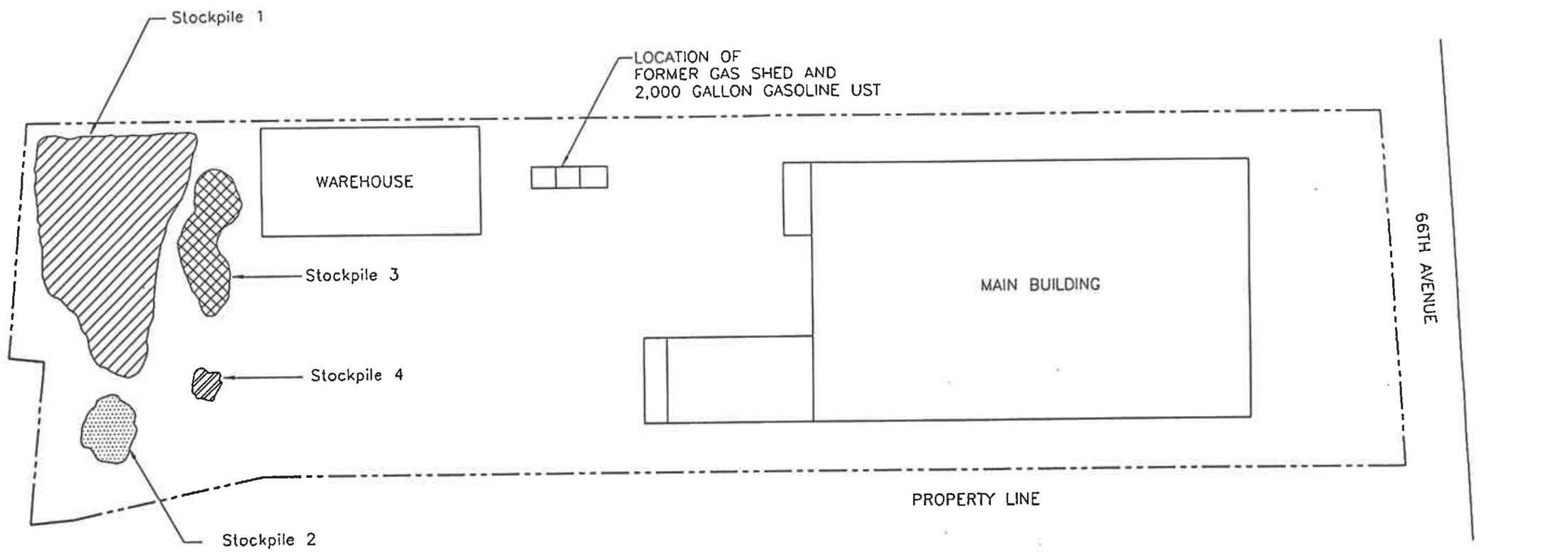
We look forward to receiving your review comments on this work plan so we can proceed with this investigation. Please call us at (510) 655-7400 if you have any questions or concerns regarding this proposed approach.

Sincerely,

John H. Schroeter, P.E., R.E.A.
Manager

JHS:am
a:pemwkpln.wpd

Enclosures:
Figure 1 - Site Plan
Figure 2 - Proposed Monitoring Well Locations



Note: Boundaries of existing soil stockpiles shown on this drawing are approximate and based on recent field observations.

EXPLANATION

- Approximate Extent of Stockpiled Soil from Previous UST Excavation Activities
- Approximate Extent of Clean Backfill Stockpile
- Approximate Extent of Excavated Soil Overlying Former UST
- Approximate Extent of Other Soil Stockpile

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SCALE IN FEET

ENVIRON

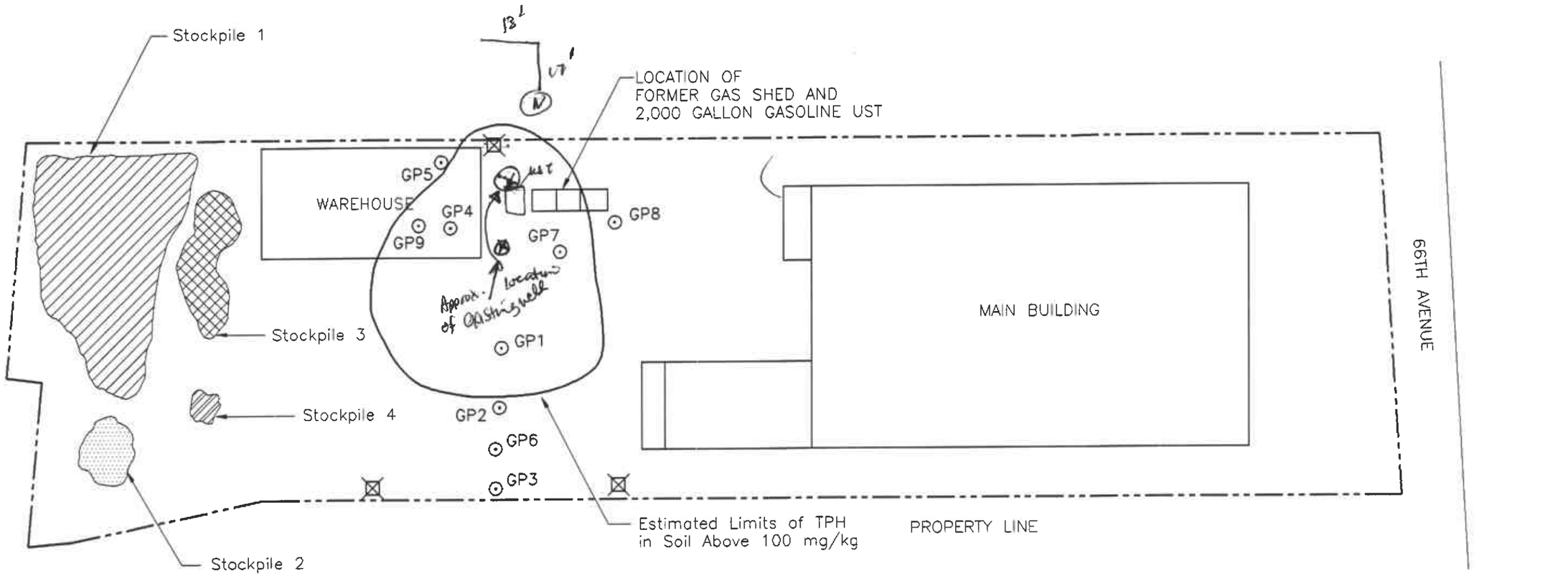
5820 Shellmound Street, Suite 700, Emeryville, California 94608

Site Plan
Pacific Electric Motor Co.
1009–66th Avenue
Oakland, California

C:\03591A\SITE

DATE	CONTRACT NUMBER	FIGURE
4/23/97	03-5991A	1
DRAWN: WJN	APPROVED: JHS	REVISED:

Source: Pacific Electric Motor Co. Drawing No. A-5029-D January 8, 1986



EXPLANATION

- Approximate Extent of Stockpiled Soil from Previous UST Excavation Activities
- Approximate Extent of Clean Backfill Stockpile
- Approximate Extent of Excavated Soil Overlying Former UST
- Approximate Extent of Other Soil Stockpile
- GP1 Geoprobe Locations (WAC, May 1995)
- Proposed Monitoring Well

Notes: 1) Boundaries of existing soil stockpiles shown on this drawing are approximate and based on recent field observations.

2) Estimated Limits of TPH in Soil above 100 mg/kg as reported in "Subsurface Environmental Investigation" (WAC, May 1995).

Source: Pacific Electric Motor Co. Drawing No. A-5029-D January 8, 1986

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0 50 100

SCALE IN FEET

ENVIRON

5820 Shellmound Street, Suite 700, Emeryville, California 94608

Monitoring Well Locations
Pacific Electric Motor Co.
1009-66th Avenue
Oakland, California

DATE:	CONTRACT NUMBER:		FIGURE
5/27/97	03-5991A		2
DRAFTER: RS	APPROVED:	REVISED:	

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