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ENGINEERING CORPORATION

June 3, 1996

Mr. Dale Kletke
Alameda County Health Agency
Department of Environmental Health
1131 Harbor Way Parkway
Alameda, California 94502

Subject: Work Plan for Phase II Site Characterization Program, 1499 MacArthur Boulevard Underground Storage Site, Oakland, California, CWEC # 20596-001-01

Dear Mr. Kletke:

Century West Engineering has prepared this work Plan on behalf owner of the subject site, Ms. Naomi English of San Leandro, California. This Work Plan summarizes the activities to be performed during Phase II Site Characterization Program for the subject site in Oakland, California. Activities will be conducted in accordance with Alameda County Health Agency, Department of Environmental Health (ACHA-DEH) guidelines, Regional Water Quality Control Board requirements, and with State Underground Storage Tanks Cleanup Fund regulations and requirements.

Background

The subject site is located at 1499 MacArthur Boulevard in the City of Oakland, Alameda County, California (Figure 1). The subject site is the location of a former gasoline dispensing facility, and is currently operating as an automobile service center. Existing structures on the subject site include an auto repair service building and a canopy (Figure 2).

Three underground storage tanks (USTs) were removed from the subject site by others in October 1990, after which subsurface soil sampling was performed. Additionally, a subsurface assessment was conducted by others in 1993, during which three ground water monitoring wells (MW-1, MW-2, and MW-3) were installed at the site. Analytical results of these assessments indicate that soil and ground water beneath the subject site are impacted by petroleum hydrocarbon compounds that may have leaked from the former USTs into the subsurface.

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7950 Dublin Blvd., Suite 203 Dublin, California 94568 Phone: (510) 551-7774 FAX: (510) 551-7776

Project Approach

Based upon the review of available data for the subject site and on our experience with similar sites in Alameda County, we believe that the most likely closure scenario for this site will include: (1) Further assessment of the gasoline-impacted soil and ground water plumes; (2) Cleanup of high levels of gasoline-impacted soils only on the site itself, and not beneath adjacent MacArthur Boulevard, 14th.. Avenue, or Interstate 580; Some limited ground water cleanup in the vicinity of the former USTs, which may include removal of free gasoline product which may be floating on the ground water surface; and (4) Some quarterly ground water monitoring to assess the progress of soil and ground water cleanup.

In order to pursue an expedient and efficient site closure the following steps will be taken:

Step 1: Conduct investigations to adequately characterize the problem. The purpose of this step is to provide an adequate technical basis for a reasonable and well-defined remedial/closure plan for the site.

Step 2: Conduct a feasibility assessment to evaluate an appropriate cleanup option for the site. After assessing the various cleanup options for the site a Corrective Action Plan for the site will be submitted for approval by ACHA-DEH .

Step 3: Implement the approved Corrective Action Plan for the site. Upon approval from ACHA-DEH, the Corrective Action Plan for the site (containing specific goals for the site closure) will be implemented.

Step 4: Conduct verification monitoring to obtain site closure. The extent and duration of this task will depend on the effectiveness of the corrective action. Thus, this task may involve as little as one quarterly monitoring event, or may include additional monitoring to assess the effectiveness of corrective action.

Scope of Work

The current scope includes only Step1 and Step 2 of overall project approach and is described below in Tasks 1 through 6.

- **Task 1: Prefield Activities.** Century West Engineering will arrange for or conduct following prefield activities; Drilling Permit from Alameda County Zone 7 Water Agency; Arrange for a subcontractor to perform underground utilities survey; Notify Mr. Dale Kletke at Alameda County UST Local Oversight Program at least 48 hours prior to drilling; Notify Underground Services Alert at least 48 hours prior to drilling.

Field activities will be performed in accordance with the Site Safety Plan included as Appendix A. Based on the results of initial soil sampling, if deemed necessary monitoring well(s) may be installed on City of Oakland streets. In such case an encroachment permit will be obtained from the City of Oakland by the owner of the subject site.

- **Task 2: Conduct soil boring investigation.** Subsurface soil assessment will be performed by our drilling subcontractor and will be observed by Century West Engineering field personnel. Approximately eight soil borings will be drilled using Geoprobe hydraulically-driven coring tools. Tentative boring locations are shown on Figure 2. Boring locations may be modified in the field, based on-site laboratory results as the work progresses. The Geoprobe rig uses two nested sampling rods driven into the ground simultaneously: small-diameter sampling rods with a core barrel are used to retrieve soil cores, and large-diameter (approximately two-inch diameter) outer rods serve as temporary drive casing to keep the hole from sloughing, allowing coring of undisturbed soil. The advantages of the Geoprobe method over conventional hollow stem auger equipment are: (1) The Geoprobe method is faster, allowing for the drilling of more borings in a single day (usually 8-10 for the Geoprobe versus 5-7 for hollow stem auger); (2) The Geoprobe method generates less soil cuttings than hollow stem auger tools, thus resulting in lower cost for disposal of cuttings; and (3) Geoprobe borings (two-inch diameter) require less cement when abandoning the boring than hollow stem auger borings, thus reducing costs.

  Approximately 10 soil samples and four selected grab ground water samples will be analyzed for Total Petroleum Hydrocarbons as Gasoline (TPH-gas) and Benzene, Toluene, Xylenes, and Ethylbenzene (BTXE) using a California-certified mobile analytical laboratory. The use of a mobile laboratory will provide almost immediate onsite analytical results which will allow boring location adjustments to be made in order to characterize the extent of hydrocarbon-impacted soil and ground water.

- **Task 3: Conduct ground water investigation.** Approximately three ground water monitoring wells will be installed by our drilling subcontractor and will be observed by Century West Engineering field personnel. The actual number and location of ground water monitoring wells will depend on results of the soil boring investigation. Wells will be constructed of two-inch diameter PVC using hollow stem auger equipment in accordance with applicable State and local well installation requirements and guidelines. After allowing cement seal to cure for at least 72 hours, the newly-installed wells, together with the three existing wells, will be purged and sampled in accordance with applicable sampling protocols and guidelines. One soil sample from the well borings and one water sample from each well will be analyzed for TPH-gas and BTXE at a California-certified analytical laboratory.

The wells will be constructed according to their respective, potential usefulness as vapor extraction wells. Therefore wells constructed in areas impacted by high concentrations of hydrocarbons in the vadose zone will be screened an adquate distance above the water table to allow for vapor extraction.

- **Task 4: Conduct ground water slug test.** Century West Engineering will conduct a slug test on three of the newly installed or existing wells to provide a preliminary assessment of hydrogeologic conditions for the purpose of evaluating whether performance of a pumping test is advisable. The assessment of the extent of hydrocarbons in soil and groundwater and slug test results will provide a reasonably inexpensive indication of whether pump and treat technology at the site will be feasible. The slug test will provide data which will indicate the potential effective yield from pumping wells, estimates of hydraulic conductivity, and a rough evaluation of whether the radius of influence of potential pumping wells will be sufficient to support the feasibility of pump and treat technology. In our preliminary opinion, we believe that groundwater pumping and treatment will not be feasible at the subject site.

- **Task 5: Conduct soil vapor extraction performance test (SVEPT).** Century West Engineering will conduct a five day SVEPT test using a VR Systems, 200scfm, V3 internal combustion engine. The SVEPT will consist of applying a vacuum to three selected wells for a specific interval (to be determined in the field), and periodically monitoring vapor extraction flow rate, extraction well vacuum pressure, auxiliary fuel usage, and pressure drop in surrounding wells. Two samples will be collected from each well, one at the beginning and one at the end of each test period. Vapor samples will be analyzed for TPH-G and BTEX by a California-certified analytical laboratory. Extracted vapors during the SVEPT will be burned in the internal combustion engine and thus, not released into the atmosphere. Required permitting will be obtained from Bay Area Air Quality Management District prior to beginning vapor extraction activities.

- **Task 6: Prepare report of findings and Corrective Action Plan.** Century West Engineering will prepare a report of findings for submittal to Alameda County UST Local Oversight Program. This report will document project activities and will describe the results of the soil and ground water investigation, and SVEPT. In addition, this report will include a corrective action plan (CAP) which will provide a detailed workplan for the recommended remediation option. Included in this CAP will be areal and volumetric estimates of hydrocarbon-impacted soils, estimated hydrocarbon mass removal rates, vapor extraction system design specifications (if required), and a verification monitoring plan for the site.

Investigation Derived Wastes

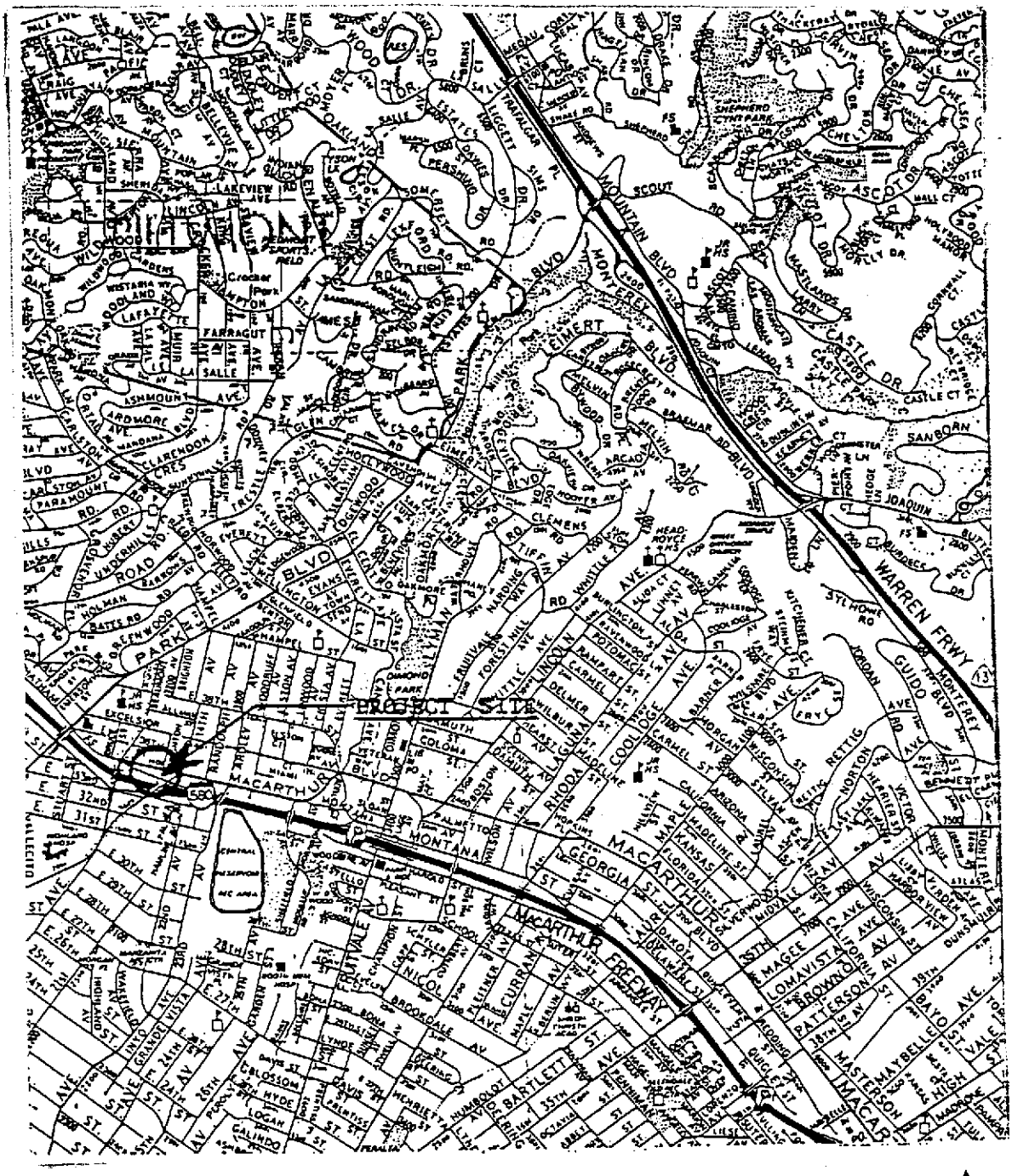
Soils and groundwater generated during the work will be stored on-site in labeled 55-gallon drums. These wastes will remain at the site pending appropriate disposal by the owner of the subject site.

We appreciate the opportunity to present this Work Plan for your review and comments. Please contact us at (510) 551-7774, if you have any questions or require additional information.

Sincerely,

Rajeev Cherwoo
Project Engineer

Matthew L. Bromley, RG
Senior Geologist



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Site Location

Source:Thomas Brothers Maps

DATE: MAY 31, 1996

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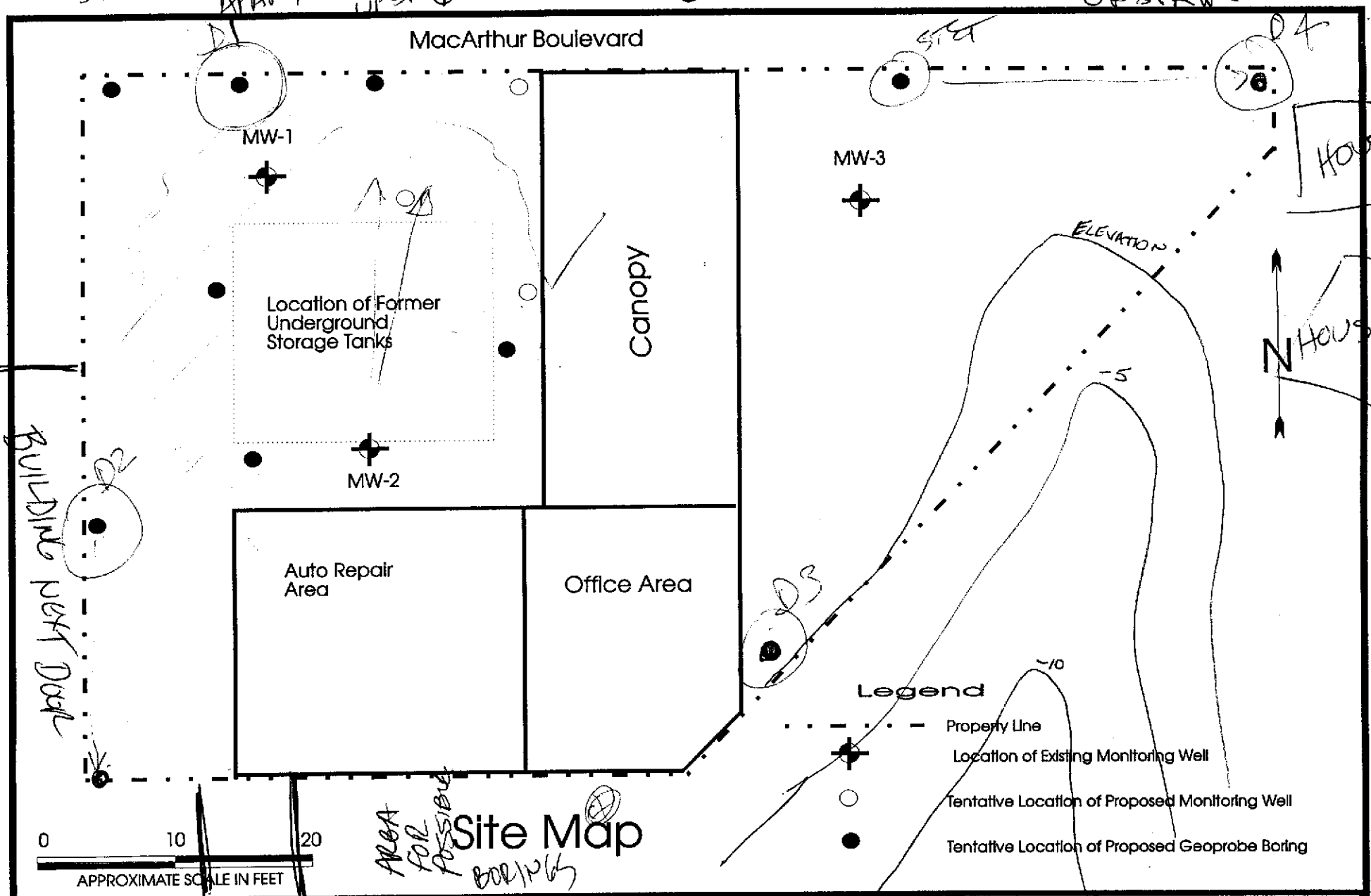
HOOSHI'S AUTOMOTIVE
1499 MacAurther Boulevard
Oakland, California
CWEC 20596-001-01

Figure 1



Site Map

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HOOSHI'S AUTOMOTIVE
1499 MacAurther Boulevard
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Figure 2

Site Safety Plan

This site safety plan has been developed as a guideline to promote safe working conditions for personnel working at 1499 MacArthur Boulevard, Oakland, California, during Phase II Site Characterization Program which may involve hazardous materials. These guidelines are recommendations; each contractor is responsible for the health and safety of its own employees. No unauthorized personnel will be allowed within the site area during this work. The site safety manager for this job will be Matthew L. Bromely of Century West Engineering (510) 551-7774.

Chemical Hazard Potential

It is possible that soil and ground water encountered during the Phase II Site Characterization Program may contain concentrations of gasoline and its dissolved constituents. Table 1 summarizes the known chemical hazard potential at the project site.

TABLE 1
CHEMICAL HAZARD POTENTIAL

Chemical Name	*Maximum Concentration Identified*	*Health & Safety Standards*	*Routes of Exposure*	*Symptoms of Acute Exposure*
Benzene	Soils: Unknown GW: 21.7 ppm	PEL=1ppm 50 ppm ceiling (10 minute)	Inhalation, dermal, carcinogen	Headache, dizziness
Toluene	Soils: Unknown GW: 25 ppm	PEL=100 ppm, IDLH=2,000 ppm	Inhalation, dermal	Headache, dizziness
Xylenes	Soils: Unknown GW: 15.3 ppm	PEL=100 ppm, IDLH=1,000 ppm	Inhalation, dermal	Headache, dizziness
Ethylbenzene	Soils: Unknown GW: 2.1 ppm	PEL=100 ppm, IDLH=2,000 ppm	Inhalation, dermal	Headache, dizziness

Physical Hazards

Possible physical hazards include: (1) Fire and explosion (primarily gasoline); (2) Heavy equipment; (3) Heavy equipment noise; and (4) Open excavation.

Personal Protection Equipment

Level D personal protection should be worn during the performance of this work. Level D protection for this project will consist of one piece disposable tyvek suits, neoprene boots, and neoprene gloves. Hardhats and steel-toed boots are required for this job. Should strong odors be encountered by site workers and air monitoring equipment indicate significant concentrations of hydrocarbons in the breathing zone, personnel will be required to take measures to avoid exposure to vapors. This may be accomplished by moving upwind, evacuating the area, or by using an appropriately equipped and fitted air purifying respirator.

Decontamination

Before leaving the site, protective clothing must be removed and discarded. Decontamination can be performed by washing all equipment with soap and water before removal. This procedure should be performed so that all wash and rinse water is retained on site. Discarded clothing can be disposed of on site in the hazardous materials temporary storage area.

Training

Individual contractors shall be responsible for providing occupational hazard training to all employees prior to the commencement of work. Training documentation, if requested, shall be made available to Century West Engineering.

Health Requirements

Smoking and eating is not allowed on site. Upon exiting the site, site personnel will wash their hands and face with soap or a mild detergent, and also before smoking or eating.

Air Monitoring

Century West Engineering field personnel will perform monitoring of the breathing zone using a portable photo ionization detector (PID). Note that the PID is calibrated to a specific volatile compound, such as isobutylene, and does not read actual levels of diesel or gasoline or constituent compounds. PID readings in the breathing zone of greater than 5 parts per million will constitute the need for measures to avoid exposure as described above.

Mr. Dale Kletke
Work Plan for Site Characterization
Hooshi's Automotive
June 3, 1996

In the event that medical attention becomes necessary during the project, the nearest hospital to the subject site is the Highland Hospital, located at 1411 East 31st. Street in Oakland. The telephone number is (510) 437-4800. The shortest route to the hospital is North on MacArthur Boulevard, east on 14th. Avenue, and North on 31st. Street. In case of emergency call 911.

Highland Hospital	(510) 437-4800
Emergency	911

Cheryl Gordon
(916) 227-4539

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Engineers and Scientists

FACSIMILE TRANSMITTAL

Date: 06/19/96 File No.: 20516-001-01

To: DALE KLETKE / (510) 337 9335 FAX
Alameda County Heath Agency, Dept. of Env. Health

From: RAJEEV CHERWOO

FAX (510) 551-7776

Number of Pages (including this transmittal): TWO

Comments:

Following site Plan shows "revised proposed boring locations" for 1919 MacArthur Boulevard, Oakland, CA, Hoshi Automotive Site. These revisions have been made as per our discussion and agreement during the site visit yesterday. Field program is scheduled for June 24 and June 25, your experimental approval will be appreciated. In case you have questions please call me at (510) 551 7771.

Thanks for
Rajeev

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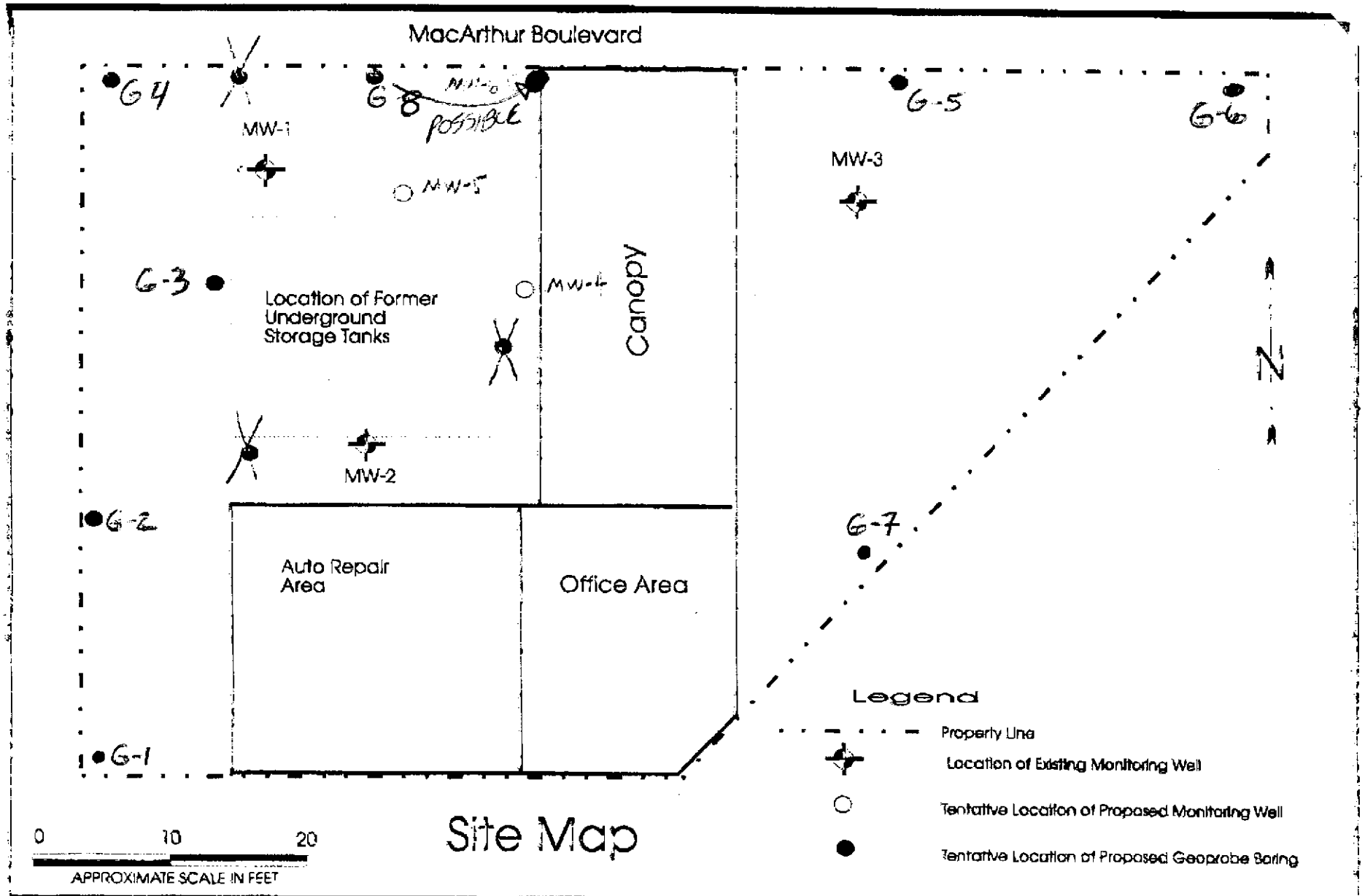

Site Map

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Figure 2