James P. Bowers, PE
R. William Rudolph, Jr., PE

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Ms. Jennifer Eberle
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Work Plan
Additional Groundwater Monitoring Wells
208 Jackson Street
Oakland, California

Dear Ms. Eberle:

Presented herein is a proposed work plan prepared by Subsurface Consultants, Inc. (SCI) to install two (2) groundwater monitoring wells to supplement the existing wells on the site. The purpose of the wells is to determine the lateral extent of the contamination present on site resulting from release(s) from former gasoline and diesel tanks at the site.

Background

Four underground fuel storage tanks, the locations of which are shown on Plate 1 were removed from the site on March 20, 1990 under the direction of Geo-Environmental Technology (GET). Test results indicated diesel and benzene, toluene, ethylbenzene and xylene (BTEX) contamination in the soil from the excavation for Tank 1. The other tank excavations had relatively low concentrations of gasoline, diesel and BTEX. Approximately 125 cubic yards of soil was removed from the vicinity of Tank 1. A tested sample of soil from the base of this overexcavation indicated diesel, toluene and ethylbenzene below detection limits and low benzene and xylene concentrations.

Groundwater samples were obtained and tested from the excavations for Tanks 2 and 3. Water from the excavations for Tank 2 indicated gasoline and BTEX contamination while water from the excavation for Tank 3 indicated diesel and BTEX contamination.

Three test borings were drilled on May 5, 1990 at the approximate locations shown on Plate 1. Groundwater monitoring wells were installed in these borings. Soil samples from the borings were tested for diesel; diesel was detected only in Boring 1 at a at a depth of 3 feet. Samples of groundwater from the wells were also

tested for gasoline, diesel and BTEX. Test results indicate gasoline, diesel and BTEX were present in the water sample from Well MW-1. Gasoline, diesel and BTEX were not present in water samples from MW-2 and MW-3 above detection limits.

SCI sampled groundwater in Wells 2 and 3 (Well 1 was not found) and from the excavation near the previous location of Well 1 and submitted the samples for analytical testing. Tests results indicated that gasoline, diesel and BTEX were not present above detection limits in the wells; diesel and BTEX contamination were identified in the groundwater from the excavation.

Because of the potential for existing contamination along the west side of the site, SCI proposes to install two additional groundwater monitoring wells, as outlined below.

Field Investigation - Test Borings and Monitoring Wells

The monitoring wells will be installed in test borings drilled using truck-mounted, 8-inch-diameter, hollow-stem auger equipment. Proposed test boring locations are presented on the Site Plan. Our engineer will observe drilling operations and prepare detailed logs of the borings. Soil samples will be obtained from the borings using a California Drive Sampler having an outside diameter of 2.5 inches and an inside diameter of 2.0 inches. Soil samples will be obtained at frequent intervals and at major lithologic changes. An organic vapor meter (OVM) will be used to screen all samples obtained from the test borings.

Soil samples will be retained in brass sample liners. Teflon sheeting will be placed on the ends of the liners prior to capping and sealing with tape. Upon sealing and labeling, the samples will be promptly refrigerated on-site in an ice chest. Samples will remain under refrigeration until delivery to the laboratory.

All augers, drill rods, sampling equipment, well casings, etc., that will be placed in the test borings will be cleaned prior to their initial use and prior to each subsequent use to reduce the likelihood of cross-contamination between borings and/or samples. Upon completion of drilling, the borings will be converted to monitoring wells.

The groundwater monitoring wells will be constructed of 2-inch-diameter, Schedule 40 PVC pipe having flush threaded joints. The lower 15 feet of the wells will consist of machine slotted well screen having 0.020 inch slots. The annular space around the screened section will be backfilled with Lonestar #3 sand. A bentonite seal, approximately 12 inches thick, will be placed above

the sand. The annular space above the bentonite seal will be backfilled with cement/bentonite grout. The wells will be finished below grade in a traffic rated utility box and will be secured by a locking cap.

Groundwater levels will be measured in each well prior to development/purging. The new wells will be developed by bailing or pumping, until the water becomes relatively free of turbidity. The existing wells will be purged of approximately 3 well volumes, or until temperature, conductivity and pH have stabilized. When the wells have recharged to at least 80 percent of their original volume, groundwater samples from the two wells will be obtained using disposable, pre-cleaned samplers. Water samples will be placed in pre-cleaned containers and refrigerated until delivery to the analytical laboratory. The soil and water samples will be accompanied by Chain-of-Custody records.

Soil cuttings and water generated during drilling and well development will be placed in steel drums and left on-site for later disposal. A level survey will be performed to determine the elevation of the top of well casings (TOC) in relation to the existing on-site wells. The TOC elevations and groundwater depths will be used to evaluate groundwater flow direction and gradient.

Analytical Testing

Soil and groundwater samples will be analyzed by a California Department of Health Services (DHS) certified analytical laboratory. Selected soil and groundwater samples will be analyzed for:

1. Total volatile hydrocarbons, as gasoline - EPA 5030/8015,
2. Benzene, toluene, ethylbenzene and xylenes, (BTEX) - EPA 8020, and
3. Total extractable hydrocarbons, as diesel - EPA 3550/8015.

Report

Based upon the results of the investigation, SCI will prepare a report recording our conclusions/recommendations regarding:

1. Soil and groundwater conditions;
2. The extent of soil and groundwater contamination;

3. The significance of contaminant levels with respect to local and state criteria; and

4. The scope of subsequent phases of investigation, if required.

The report will include boring logs, analytical test reports and Chain-of-Custody records.

We look forward to your favorable review of our work plan. If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Scott M. Leck
Geotechnical Engineer 2067 (expires 6/30/96)

SML:RWR:sld

1 copy: Mr. Jonathan Redding - Fitzgerald, Abbott and Beardsley

Attachments: Plate 1 - Site Plan