FLUOR DANIEL GTI

STID435

June 13, 1996

Ms. Susan Hugo
Senior Environmental Specialist
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Work Plan for Groundwater Monitoring Well Installation
Former Texaco Facility
3810 Broadway
Oakland, California
Project 02070-0324

Dear Ms. Hugo:

This letter was prepared by Fluor Daniel GTI, (Fluor Daniel GTI) on behalf of Mr. Gerald Friedkin to present a work plan for the installation of nine groundwater monitoring wells as part of a continuing environmental assessment at the former Texaco service station located at 3810 Broadway, in Oakland, California (Figure 1). The groundwater monitoring wells will be installed to assess the lateral extent of separate phase hydrocarbons and hydrocarbons dissolved in groundwater. The work will be initiated immediately after this work plan is approved and encroachment permits have been obtained to install wells off site.

Investigations by previous consultants indicate that separate phase hydrocarbons (SPH) are present in at least two on-site wells (MW-2 and MW-3). Because the elevations of the screened intervals of the existing monitoring wells are below the groundwater surface elevation, the thickness of the separate phase hydrocarbons cannot be measured with any consistency or accuracy. Additionally, recovery of separate phase hydrocarbons from the existing wells is not practical without the added cost of groundwater extraction. Similarly, the lateral extent of separate phase hydrocarbons and hydrocarbons dissolved in groundwater has not been defined.

To further the investigation, Fluor Daniel GTI proposes the following:

- Redrill wells MW-1, MW-2 and MW-3 for the purpose of adjusting the well screen intervals. This will allow for accurate measurement of separate-phase hydrocarbon thickness and in the future possible recovery of separate-phase hydrocarbons and/or vapors.
- Install well MW-5 near the retaining wall on the northern edge of the property to assess on- or off-site migration of hydrocarbons.

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- Install wells MW-6 and MW-7 to determine the extent of dissolved petroleum hydrocarbons on the southern and southwestern areas of the site.
- Install well MW-8 to assess the extent of separate-phase hydrocarbons on site and provide a possible future extraction point.
- Install wells MW-9 and MW-10 off site to determine the lateral extent of hydrocarbons.

Figure 2 presents the location of the proposed monitoring wells.

Soil Borings and Sampling

It is anticipated groundwater will be encountered at approximately 30 feet below grade and rise to approximately 20 feet below grade. A truck mounted drilling rig will drill to approximately 35 feet below ground surface using 6-inch-diameter hollow-stem augers. The augers will be steam-cleaned prior to and after drilling operations. Soil samples will be collected at 5 foot intervals and notable lithologic changes using a 2.5-inch outside-diameter (O.D.) California split spoon sampler. Upon collection, soil samples will be immediately covered with aluminum foil, capped, taped, labeled and packed on ice in waterproof plastic bags. Duplicate samples will be field screened for petroleum hydrocarbon constituents using a photo ionization detector. If hydrocarbons are detected by field screening methods, the sealed sample will be sent to a state-certified laboratory under appropriate chain-of-custody manifests for analyses of benzene, toluene, ethyl benzene and xylenes (BTEX), and total petroleum hydrocarbons-as-gasoline (TPH-G) by Environmental Protection Agency (EPA) methods 5030/8015/8020., total petroleum hydrocarbons-as-diesel (TPH-D) by EPA method 8015 and motor oil by EPA 418.1. Soil cuttings will be placed on ice and covered by plastic sheeting. TPH as motor oil

Monitoring Well Installation

The monitoring wells will be constructed using 25 feet of 2-inch-diameter, 0.020-inch-slot, schedule 40 PVC well screen, and 10 feet of 2-inch-diameter blank PVC well casing. A sand pack consisting of number 2 Monterey sand or equivalent will be installed in the annular space from 35 to 8 feet below ground surface with a one foot thick bentonite plug and neat cement slurry completing the wells to the surface. The well heads will be protected by a locking cap and a traffic rated street box with a water-tight bolted lid. Figure 3 is a generalized well construction diagram. Fluor Daniel GTI reserves the right to modify the well construction based on field observations made during drilling.

Well Development, Surveying and Sampling

Subsequent to installation, the monitoring wells will be developed manually using the surge-and-bail technique. Approximately three to five well volumes of water will be extracted from each well by this method. This technique is used to remove the fines left from drilling, to create an even sand pack, and to

rehabilitate the borehole sides for enhanced communication with the aquifer. The fines are drawn through the well screen and bailed from the well. This process is repeated until the water is visibly clear of fines. Subsequent to development, the well will be left undisturbed until water level reaches equilibrium. Prior to groundwater monitoring and sampling, the location and elevation of the wellhead will also be surveyed.

Prior to sampling, all site-related monitoring wells will be gauged using an electronic water level indicator to determine depth to water (DTW), and to check for the presence of separate-phase hydrocarbons. The DTW information will be used to construct a potentiometric surface map and to determine the hydraulic gradient.

After installation, all monitoring wells on site will be purged of a sufficient water volume to assure a representative sample. Samples will then be collected using a Teflon sampler which will be cleansed using a triple wash system of detergent (alconox) solution, water, and distilled water. The water samples will be poured from the sampler into appropriate containers, acidified when necessary, labeled and placed on ice in an insulated container for delivery to a State of California-certified laboratory. The samples will be accompanied by a chain-of-custody manifest and will be analyzed for TPH-G and BTEX by modified EPA methods 5030/8020/8015, TPH-D by EPA method 8015, and TPH as MO by EPA method 418.1.

Water generated from well development and sampling will be stored on site in Department of Transportation (DOT)-approved 55-gallon drums that will be appropriately labeled. Based on the laboratory results, the stored water will be transported for disposal or discharged on site with regulatory approval.

Fluor Daniel GTI is anxious to begin work on this project. We will be contacting you within 10 days to resolve any issue which may delay the start of the project.

Please contact our West Sacramento office at (916) 372-4700 if you have comments or require additional information.

Sincerely,
Fluor Daniel GTI, Inc.
Submitted by:

Brian H. Garber
Environmental Geologist
Project Manager

Fluor Daniel GTI, Inc.
Approved by:

James W. Grasty, R.G.
Senior Geologist

c: Ms. Mary Haber, Attorney at Law - San Francisco
Mr. Marvin Katz - Texaco Refining and Marketing, Inc.

Attachment - Figure 1

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Attachment 1

Figures

SOURCE: USGS TOPOGRAPHIC QUADRANGLE
OAKLAND EAST, OAKLAND WEST
7.5 MINUTE SERIES
1959/1980

SITE LOCATION

SCALE 1:24,000

0 2,000 4,000
SCALE FEET

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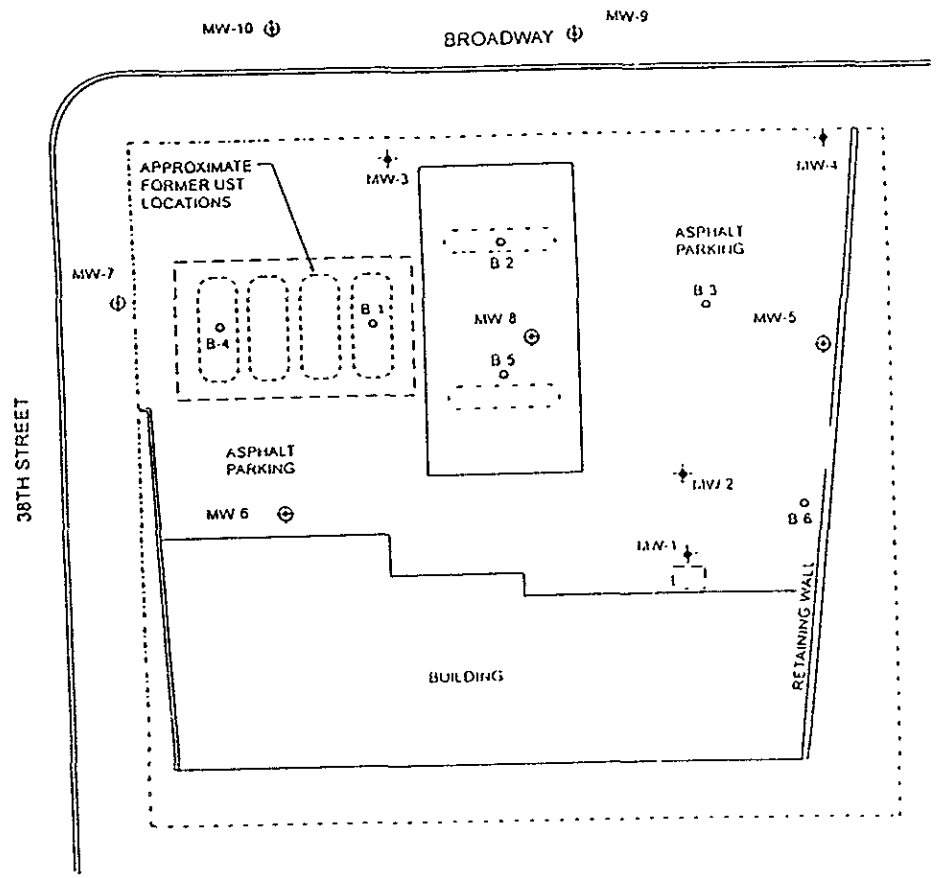
SITE LOCATION MAP

CLIENT: HABER FORMER TEXACO FACILITY	FILE: FILENAME	PROJECT NO: 02070-0317	PM	PE/RG
LOCATION: 3810 BROADWAY AVENUE OAKLAND, CALIFORNIA	RE: 0			FIGURE: 1
	DES: BG	DET: BG	DATE: 6/6/96	

DRAFT



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EXPLANATION

- PROPOSED MONITORING WELL LOCATION
- MW-2 MONITORING WELL
- B 6 SOIL BORING LOCATION
- APPROXIMATE TANK EXCAVATION AREA
- PROPERTY LINE
- APPROXIMATE FORMER PUMP ISLAND LOCATION

N

0 20 40

APPROX. SCALE IN FEET

CLIENT MARY HABER

3810 BROADWAY
OAKLAND, CALIFORNIA
02070 0324

SITE PLAN SHOWING PROPOSED MONITORING WELL LOCATIONS

FIGURE 2

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