CONTRACT NO. UT 031R
TC-8380-01

JANUARY 1991

WORK PLAN

INITIAL SUBSURFACE INVESTIGATION HAYWARD MAINTENANCE CENTER CASTRO VALLEY, CALIFORNIA

PREPARED FOR

OFFICE OF THE STATE ARCHITECT
400 P STREET
SACRAMENTO, CALIFORNIA

PREPARED BY

TETRA TECH, INC.
PASADENA, CALIFORNIA

TETRA TECH

TABLE OF CONTENTS

TABLE OF FIGURES

TETRA TECH, INC.
SITE INVESTIGATION WORK PLAN

for

HAYWARD MAINTENANCE STATION
HAYWARD, CALIFORNIA

January 31, 1991

Prepared by: Tetra Tech, Inc.
670 N. Rosemead Blvd.
Pasadena, CA 91107

Dan Batrack
Project Manager

Devin Thor, R.G.
Project Geologist

REGISTERED GEOLOGIST
Devin R. Thor
No. 4080
Exp 7/92
STATE OF CALIFORNIA

Gordon P. Treweek, Ph.D.
Director, Environmental Services

REGISTERED PROFESSIONAL ENGINEER
GORDON P. TREWEEK
No. C028332
CIVIL
STATE OF CALIFORNIA

1.0 INTRODUCTION

Tetra Tech, Inc. has prepared the following technical work plan for a subsurface site investigation for the Office of the State Architect. The purpose of this subsurface investigation is to further delineate the vertical and lateral extent of diesel and gasoline contaminated soil that may have resulted from leaking underground storage tanks or associated plumbing. The site investigation will be conducted through on-site screening for volatile emissions, soil sampling, and laboratory analysis for total petroleum hydrocarbon and volatile organic compounds.

2.0 SITE LOCATION AND HISTORY

The project site is located at the Department of Transportation's Hayward Maintenance Station, 21195 Center Street, Castro Valley, Alameda County, California. The area of investigation involves the former location of two underground storage tanks and a pumping island.

Based on records provided by the Office of the State Architect (OSA), two underground storage tanks, a 260 gallon tank holding diesel and a 1,000 gallon tank holding leaded gasoline, were removed in January 1989. Three samples were collected from the soil beneath the tanks for analysis. The test results from these samples indicated that some contamination from both gasoline and diesel was present.

In early 1990, Geo/Resource Consultants Inc. performed a preliminary site assessment of the area identified above. The assessment indicates that contamination was found under both storage tanks and under the pumping island, with the most extensive contamination in the vicinity of the pumping island. The report further concluded that contamination had not reached the soil west of the underground storage tanks, but that additional data would be necessary to further define the remaining boundaries of contamination (see Figure 1).

The Alameda County, Health Care Services Agency reviewed the results of the above mentioned Preliminary Site Assessment and requested further investigation of the site to completely define the boundaries of the contamination (see Appendix A).

3.0 PROPOSED SITE INVESTIGATION

The principal objective of this subsurface investigation is to further determine the vertical and lateral extent of diesel, gasoline or other petroleum hydrocarbons that have leaked into the subsoil at the site. The investigation will be focused on areas to the north and east of both the fuel island and the former

tank pits, as indicated by the Health Care Services Agency. Following the site investigation, recommendations will be made regarding additional investigations; or, if the investigation is considered complete, an evaluation of remedial alternatives will be performed.

3.1 Boring Locations

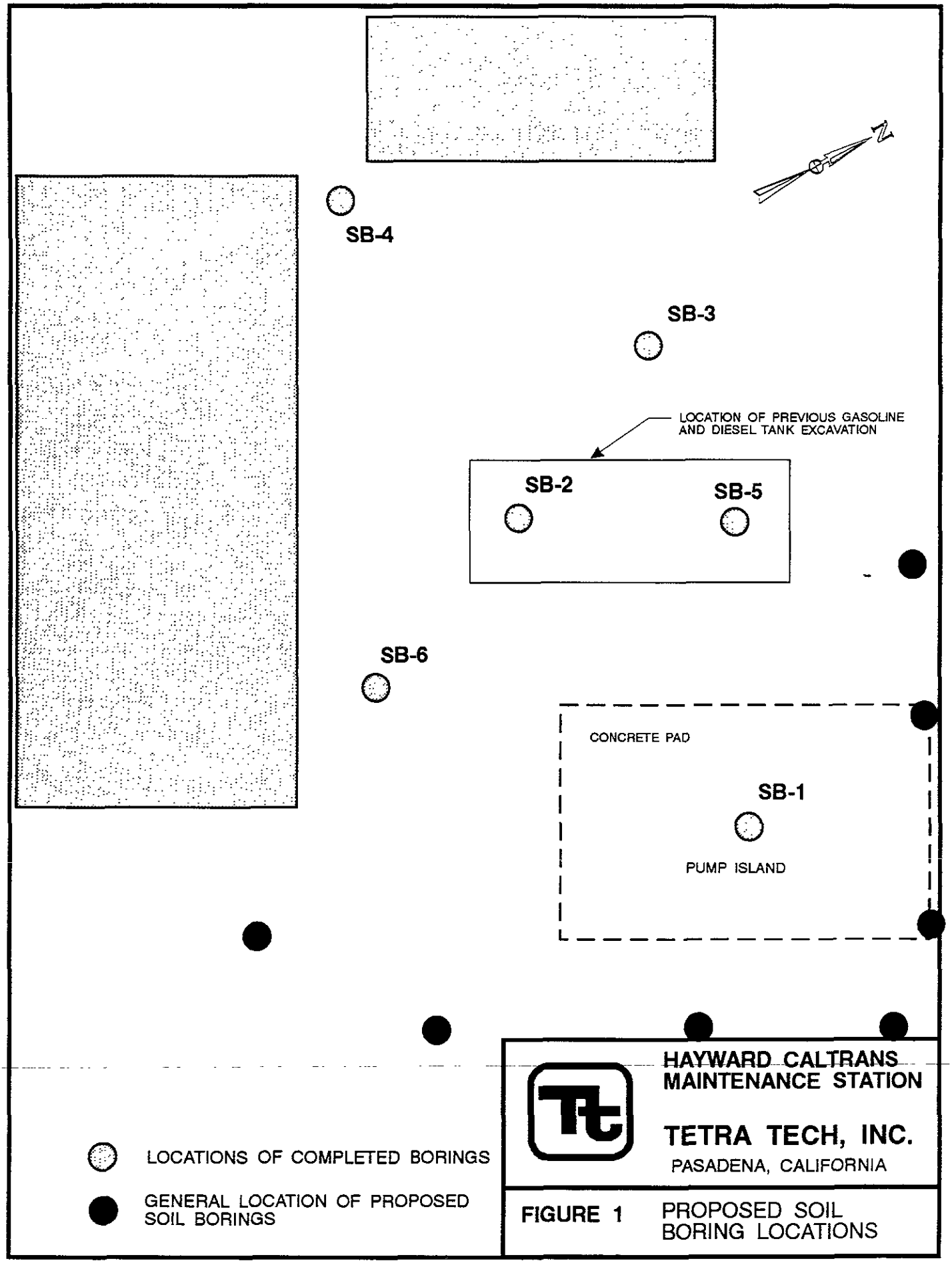
The site investigation will consist of performing up to ten soil borings along the north and east of both the pumping island and the former tank pit (see Figure 1). One boring, a continuous coring will be done for geotechnical testing. The vertical extent of the soil contamination will be determined through boring to a minimum depth of 40 feet or to a depth of 20 feet below any obvious contamination detected with an organic vapor analyzer during soil sampling. As the vertical boundary of contaminated soil is established, the remaining borings will be positioned in an effort to delineate the horizontal extent of soil contamination.

The final location and local elevation of the soil borings will be established with surveying equipment and mapped on the final plot plan.

3.2 Soil Sampling

Drilling and soil sampling activities will be performed utilizing a six or eight inch diameter hollow stem rotary auger. During the completion of each boring, soil samples will be collected at five-foot intervals beginning at five feet below the ground surface. All samples will be collected using a modified California split spoon sampler fitted with brass liners. The sampler will be driven into the soil in front of the drill bit to collect reasonably undisturbed samples. Two samples from each interval will be retained, one for laboratory analysis and the other for soil description and field screening. Preparation of samples for laboratory analysis will involve first covering both ends of the filled sleeve with aluminum foil, and then sealing with plastic caps. The samples will then be appropriately labelled and placed on blue ice. Sample identification numbers will be recorded on Chain-of-Custody forms.

Following the completion of each borehole, a bentonite or concrete slurry will be used as backfill. All drill cuttings and non-retained samples will be placed in 55-gallon drums. The decontamination and steam-cleaning water will also be stored in 55-gallon drums. The drums will be stored on site pending disposal.


N
SB-4
SB-3
LOCATION OF PREVIOUS GASOLINE AND DIESEL TANK EXCAVATION
SB-2
SB-5
SB-6
CONCRETE PAD
SB-1
PUMP ISLAND
LOCATIONS OF COMPLETED BORINGS
GENERAL LOCATION OF PROPOSED SOIL BORINGS
HAYWARD CALTRANS MAINTENANCE STATION
TETRA TECH, INC.
PASADENA, CALIFORNIA
FIGURE 1
PROPOSED SOIL BORING LOCATIONS

3.3 Field Monitoring for Volatile Organic Compounds (VOCs)

Field monitoring of soil samples for petroleum hydrocarbons will be conducted using a Foxboro Model 128 GC organic vapor analyzer (OVA). The OVA will be calibrated at the beginning of each day and zeroed periodically throughout to insure consistent measurements. Calibration of the OVA will be achieved by zeroing the instrument in hydrocarbon-free air and then setting the span to 15.6 ppm with toluene. This calibration will serve to give qualitative estimates of total petroleum hydrocarbon concentrations. According to the manufacturer, the OVA can detect 0.1 ppm as methane.

Additional field screening will be conducted with an Hnu Systems Model PI 101 Photoionization Detector with 10.3 eV lamp. Calibration will be accomplished by zeroing in hydrocarbon-free air and then spanning to 33.5 ppm with 54 ppm isobutylene (i.e., correcting for the relative photoionization sensitivities of xylene and isobutylene per manufacturer's specifications). The manufacturer claims that when properly calibrated, the Hnu can detect 0.1 ppm benzene.

Actual field screening of soil samples will proceed according to the following procedure: The second of the samples retrieved at a given depth will be covered with foil and capped at one end, emptied of half its contents to provide headspace, and then covered at the other end with foil. After allowing approximately 15 minutes for any hydrocarbons to volatilize into the headspace, the probe of the OVA or Hnu will be poked through the foil cap to make the measurement.

3.4 Laboratory Analysis of Soil Samples

Since the contaminants are assumed to have originated from the underground fuel tanks, each of the soil samples will be analyzed for Total Petroleum Hydrocarbons (TPH - EPA analytical method 8015 modified); Total Recoverable Petroleum Hydrocarbons (TRH - EPA method 418.1); and Aromatic Volatile Organic Compounds (AVOC - EPA method 8020).

All samples will be analyzed by a State Certified laboratory. The laboratory will analyze matrix and spike QC samples as part of the internal QA/QC program. All laboratory QC sample analysis results will be included in the final report for this project.

4.0 FIELD QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

Field quality assurance/quality control QA/QC procedures include recording all samples in both the sampler's log book and the field geologist's boring logs; recording all samples on a chain of custody form that will accompany the samples to the laboratory; and several actions that will minimize cross-contamination:

- o soil augers will be steam cleaned prior to the start of each new boring;
- o the split-spoon sampler will be washed in a solution of TSP and clean tap water, rinsed in clean tap water and final rinsed in distilled water between each sample.
- o clean brass sleeves will be used for each sample.

In addition to a field notebook, which will be used to record the daily log of site activities, the following forms will be used to record the data generated in the field.

1. Inspector's Daily Record of Work Progress: This form will be used to record the names of project personnel on site, equipment on site, materials delivered to the site, items of work installed and a daily construction summary;

2. Request for Analysis: Each shipment of soil samples to the analytical laboratory will be accompanied by this form so that there will be no confusion regarding what analyses to be performed on each sample;

3. Chain of Custody Record: This form will also accompany each shipment of samples to the laboratory to insure accountability for the samples from the time of collection to the time they are analyzed;

4. Core Description Log: The field geologist will use this form to record soil types and other relevant data for each boring;

5. Tailgate Safety Meeting: This form is used to record all safety issues that are discussed by the Site Safety Officer with all personnel prior to work. These issues include hazards that may be encountered during work, preventive health and safety measures, and emergency hospital routes.

5.0 GROUNDWATER

Groundwater is not expected to be encountered during the proposed investigation. However, if a saturated zone is encountered during the boring program, drilling will be terminated and the boring backfilled with a bentonite slurry to prevent vertical migration of contaminants through the boring. In the unlikely event that groundwater is encountered, OSA/Tetra Tech will contact the Health Care Services Agency and submit a revised scope of work prior to the installation of groundwater monitoring wells.

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

Certified Mailer #P 062 128 096

September 21, 1990

Mr. Michael Golden
Office of the State Architect
Department of General Services
400 P Street, 5th Floor
Sacramento, CA 95814

RE: RESULTS OF PRELIMINARY SITE ASSESSMENT; DEPARTMENT OF TRANSPORTATION, HAYWARD MAINTENANCE STATION, 21195 CENTER STREET, CASTRO VALLEY, ALAMEDA COUNTY

Dear Mr. Golden:

This Department is in receipt and has completed review of the March 14, 1990 Geo/Resource Consultants, Inc. (GRC) Preliminary Site Assessment (PSA) report, as submitted under OSA cover dated March 26, 1990. This report documents the results of a subsurface investigation conducted during January 1990 at the noted Cal Trans facility.

The report identifies the presence of soils contaminated by significant concentrations of total petroleum hydrocarbons, characterized as both diesel and gasoline (TPH-D/G), and the volatile constituents benzene, toluene, xylene, and ethylbenzene (BTXE) in native soils sampled in borings at depths ranging from 4.0 to 31.0 feet below grade (BG). In SB-1, for example, 790 ppm of TPH-G and 950 ppm of TPH-D were detected at a depth of 21.5 feet BG, and 2,400 ppm of TPH-D was found at 31.0 feet BG. Other significant levels of TPH-G or TPH-D found in samples from this and other borings ranged between 260 and 860 ppm.

Ground water was not encountered in any of the borings and, hence, monitoring wells were not constructed. However, boring logs indicate that soils were moist from a depth of approximately 5 feet BG to the bottom of all borings except for SB-6, where moist soils were not encountered until approximately 15 feet BG. The boring logs also identify aquifer materials (e.g., sands and gravels) in all borings from a depth of approximately 12 feet BG to bedrock, reached at 30-32 feet BG.

As is expressed by GRC in the March 14 report, the State's current drought condition has likely contributed to a substantial decline in the rate of ground water recharge in the Castro Valley subbasin. This reduction in ground water recharge, as compared to that consistent with years of normal precipitation, may explain the absence of ground water in borings advanced at this site, even though soils were comprised of aquifer-type materials. It is clear, however, that such high levels of subsurface contamination will be a continued potential source of contamination for ground water downgradient of the site.

The results of this PSA clearly identify the need to assess further the extent of fuel hydrocarbon contamination in soils to the north and east of both the fuel island and the former tank pit; the present investigation is limited in its scope. Consequently, you are requested to perform additional investigative work at this site to completely define the extent of the problem. Further, once the vertical and lateral extent of contamination is known, a plan to remediate the site must be formulated.

In order to continue with the site investigation, you should obtain the services of a reputable environmental/geotechnical consultant. Your responsibility is to have the consultant submit for review a proposal outlining plans to comply with criteria broadly outlined in the San Francisco Bay Regional Water Quality Control Board (RWQCB) Staff Recommendations for the Initial Evaluation and Investigation of Underground Tanks, and State Water Resources Control Board Leaking Underground Fuel Tank (LUFT) Manual.

This proposal is due for submittal within 45 days of the date of this letter, **or by November 4, 1990.** Once this plan has been approved by this Department, work should commence no later than 30 days following the date of its approval.

A report is to be submitted within 30 days following the completion of this phase of work at this site. This report should describe in detail the results of all work performed; records of field observations and field logs; cross sections; tabulated and original laboratory reports; chain-of-custody forms; and, interpretations and recommendations for additional work, among others. Further, this report should outline viable options for the remediation of the affected soils and any ground water encountered.

All reports and proposals are to be submitted under seal of a California-Registered Geologist, -Certified Engineering Geologist, or -Registered Civil Engineer. Please include a statement of qualifications for each lead professional involved in this project.

Please be advised that this is a formal request for technical reports pursuant to California Water Code Section 13267(b). Failure to respond or a late response may result in the referral of this case to the RWQCB for enforcement, possibly subjecting the responsible party to civil penalties to a maximum of $1,000 per day. Any extensions to stated deadlines, or modifications of the required tasks, must be confirmed in writing by either this agency or the RWQCB.

Should you have any questions regarding the content of this letter, please call me at 415/271-4320.

Sincerely,

Scott O. Seery
Hazardous Materials Specialist

cc: Rafat A. Shahid, Assistant Agency Director, Environmental Health
Edgar Howell, Chief, Hazardous Materials Division
Gil Jensen, Alameda County District Attorney's Office
Lester Feldman, RWQCB
Howard Hatayama, DHS
Bob Bohman, Castro Valley Fire Department
Eva Vanek, Geo/Resource Consultants, Inc.
files