aqua science engineers inc.

November 30, 1994

Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, CA 94502

ATTENTION: Mr. Barney Chan

SUBJECT: UST REMOVAL PROJECT REPORT
Thorpe Property
2547 East 27th Street
Oakland, CA

Dear Mr. Chan:

Enclosed, please find a copy of the subject report. Our client is anxious to receive your response upon completion of your review of the report.

Should any questions or comments arise, please feel free to give me a call at (510) 820-9391.

Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

David Allen
Project Manager

cc: Mr. John Thorpe
Mr. Richard Hiett, RWQCB, San Francisco Bay Region

WE'VE MOVED TO
2411 OLD CROW CANYON RD. #4
SAN RAMON, CA 94583
510-820-9391

aqua science engineers inc.

August 4, 1995

8-4-95

WORKPLAN
for
SOIL OVEREXCAVATION AND
GROUNDWATER ASSESSMENT, NO. 2784
at
Mr. John Thorpe's Property
2547 East 27th Street
Oakland, California

Submitted by:
AQUA SCIENCE ENGINEERS, INC.
2411 Old Crow Canyon Road, #4
San Ramon, CA 94583
(510) 820-9391

REGISTERED PROFESSIONAL ENGINEER
DAVID M. SCHULTZ
No. 38708
Exp. 4-97
CIVIL
STATE OF CALIFORNIA

INTRODUCTION

This submittal outlines Aqua Science Engineer's, Inc. (ASE) proposed workplan for overexcavation activities and a soil and groundwater investigation at the John Thorpe property located at 2547 East 27th Street in Oakland, California (see Figure 1, Site Location Map). The proposed work has been initiated by the property owner in accordance with letters received from the Alameda County Health Care Services Agency (ACHCSA), dated December 2, 1994, May 23, 1995 and July 6, 1995 as follow up to the August 30, 1994 underground storage tank (UST) removal. Presented below are a site history summary and an outline of ASE's proposed scope of work.

SITE HISTORY

On August 30, 1994, ASE and ICONCO, Inc. removed and disposed of four (4) 500 gallon gasoline USTs and one (1) 100 gallon waste-oil UST. Soil samples collected from below the former USTs indicated elevated concentrations of total petroleum hydrocarbons as gasoline (TPH-G) and hydrocarbons as oil and grease as high as 930 parts per million (ppm) and 120 ppm respectively. The stockpiled soil contained elevated concentrations of TPH-G as high as 860 ppm. The stockpiled soil was temporarily placed back into the excavation after it had been lined with visqueen. This was done as a safety measure due to the proximity of the street in relation to the excavation boundaries.

PROPOSED SCOPE OF WORK (SOW)

Based on the site history and requirements outlined in the ACHCSA's letters, ASE's proposed SOW is as follows:

1. Remove the stockpiled soil that was temporarily backfilled into the former tank pit;

2. Overexcavate all the accessible remaining contaminated soil detected at the bottom of the original excavation;

3. Collect and analyze soil samples from excavation sidewalls/bottom to verify that all hydrocarbon-bearing soil have been removed;

4. Collect soil samples from the new soil stockpile to be composited and analyzed at the laboratory to profile the soil for future disposal;

5. Backfill the excavation with an imported, highly-compactable, granular fill;

6. Offhaul contaminated stockpile to a local recycling facility (Class III or Class II; to be determined later);

7. Resurface the excavation;

8. Obtain all necessary permits from the appropriate agencies for the installation of three monitoring wells;

9. Drill three (3) soil borings at the site in the locations depicted on Figure 2. Collect soil samples for subsurface hydrogeologic description and possible chemical analyses. Analyze at least one soil sample from each borehole for TPH-G, BTEX and oil & grease;

10. Complete the borings as 2-inch diameter groundwater monitoring wells;

11. Develop the wells and collect groundwater samples for analyses;

12. Analyze the groundwater samples for TPH-G, BTEX and oil & grease;

13. Report the subsurface investigation results.

Each of these tasks are described in detail below.

EXCAVATE THE BACKFILLED MATERIAL FROM THE FORMER TANK PIT

The material that was backfilled into the former tank pit will be removed with a backhoe and will be stockpiled on-site. This material will be combined with the overexcavated soil that will be removed from the "hot-spots" identified beneath several of the former USTs.

OVEREXCAVATE THE REMAINING CONTAMINATED SOIL

Overexcavate the remaining contaminated soil detected at bottom of original excavation. Contaminated soil will be removed with a backhoe. The excavation boundaries will be limited vertically by groundwater and/or saturated soil found during UST removal activities, and horizontally by the adjacent streets. The removed soil will be examined by an ASE geologist or engineer to determine the relative extent of contamination. The soil will be segregated and stockpiled on plastic sheeting based on the relative contamination determined from Organic Vapor Meter (OVM) readings, petroleum- hydrocarbon odor and obvious staining..

COLLECT AND ANALYZE SOIL SAMPLES FROM THE EXCAVATION SIDEWALLS/BOTTOM

After all the accessible, obviously-contaminated soil has been removed from the excavation, ASE will collect soil samples from the sidewalls and/or bottom of the excavation to verify that all hydrocarbon-bearing soil has been removed. These samples will be collected from the backhoe bucket. The samples will be collected into 4 ounce sample jars supplied by the laboratory, labeled and stored on ice in a cooler for delivery to a CAL-EPA certified laboratory for chemical analysis of TPH-G, BTEX and oil & grease.

COLLLECT SOIL SAMPLES FROM THE SOIL STOCKPILES TO PROFILE THE SOIL FOR DISPOSAL

Collect soil samples from the stockpile at a rate of one composited sample (made from 4 discrete samples) per 100 cubic yards of soil. These samples will be collected into 4 ounce sample jars supplied by the laboratory, labeled and stored on ice in a cooler for delivery to a CAL-EPA certified laboratory for chemical analysis. The samples collected from each 100 cubic yards of soil will then be composited into one sample at the laboratory and analyzed for all or a combination of the following: TPH-G, TPH-D, BTEX oil & grease, CAM 17 metals, VOCs and reactivity, corrosivity and ignitability (RCI).

BACKFILL THE EXCAVATION

Backfill the excavation with an imported, highly-compactable, granular fill and compact.

RESURFACE THE EXCAVATION

The excavation(s) will be resurfaced with either asphalt or concrete to match existing specifications.

OBTAIN ALL NECESSARY PERMITS FROM THE APPROPRIATE AGENCIES FOR MONITORING WELL INSTALLATION

ASE will obtain well construction permits from the Alameda County Flood Control and Water Conservation District (Zone 7) and will send a notification card to the California Department of Water Resources (DWR). ASE will also contact Underground Service Alert (USA) to mark all known utilities in the immediate site vicinity. After the wells are completed, ASE will send well completion reports to the DWR as required.

DRILL THREE SOIL BORINGS AND COLLECT SOIL SAMPLES

ASE will drill three (3) soil borings with an 8-inch diameter hollow-stem auger drill rig in the locations depicted on Figure 2 - Proposed Monitoring Well Location Map. The drilling will be directed by a qualified ASE geologist. Undisturbed soil samples will be collected at least every 5-feet bgs, at lithographic changes, and from just above the water table for subsurface hydrogeologic description and possible chemical analysis. The samples will be described by the ASE geologist according to the Unified Soil Classification System. The samples will be collected in brass tubes using a split-barrel drive sampler advanced ahead of the auger tip by successive blows from a 140-lb. hammer dropped 30-inches. The samples will be immediately removed from the sampler, trimmed, sealed with Teflon tape and plastic caps secured with duct tape, labeled, placed into plastic bags and placed on ice for delivery to the analytical laboratory. Soil from the remaining brass tubes in the split-barrel sampler will be removed for hydrogeologic description and will be screened for volatile compounds with an OVM. The soil will be screened by emptying soil from one of the brass tubes into a plastic bag. The bag will be sealed and placed in the sun for approximately 10 minutes. After the hydrocarbons have been allowed to volatilize, the OVM will measure the vapor through a small hole, punched in the bag. These OVM readings will be used to decide which samples to analyze at the analytical laboratory. Soil cuttings will be stockpiled or drummed for later disposal.

At least one soil sample from each borehole will be analyzed at a CAL-EPA certified analytical laboratory for TPH-G, BTEX and oil & grease.

All sampling equipment will be cleaned in buckets with brushes and a TSP or Alconox solution, then rinsed twice with tap water. The drill rig and augers will be steam cleaned on-site before departure. Rinsates will be contained on-site in sealed and labeled Department of Transportation approved 55-gallon (DOT 17H) drums.

COMPLETE THE BORINGS AS MONITORING WELLS

ASE will complete the soil borings as 2-inch diameter groundwater monitoring wells. The wells will be constructed with 2-inch diameter, flush-threaded, schedule 40, 0.020-inch slotted PVC well screen and blank casing. The well casings will be lowered through the augers and #3 Monterey sand will be placed in the annular space between the well casing and the borehole to approximately 2-feet above the screened interval. Approximately 1-2 feet of bentonite pellets will be placed on top of the sand pack and hydrated with deionized water. This bentonite layer will prevent the cement sanitary seal from infiltrating into the sand pack. Cement mixed with 3 to 5 percent bentonite powder by volume will be used to fill the annular space between the bentonite layer and the surface to prevent surface water from infiltrating into the well. The well heads will be protected by a locking well plug and an at-grade, traffic-rated well box.

The wells will be screened to monitor the first water-bearing zone encountered. Wells will typically be screened with 5-feet of screen above the water table and 10-feet of screen below the water table. If a confining layer is encountered below the first water bearing zone, its thickness will be confirmed by sampling with decreasing diameter split barrel samplers. The sampling hole through the underlying confining layer will be sealed with bentonite pellets. ASE will not cross-screen two or more water-bearing zones separated by confining layers.

DEVELOP AND SAMPLE THE MONITORING WELLS

Prior to well development and sampling, the groundwater will be checked for sheen and free product prior to purging and sampling. Free product and sheen will be measured with an acrylic bailer which will be lowered slowly to the groundwater surface and filled about half full for direct observation. ASE will also measure the depth to groundwater in the wells prior to them being purged. The wells will be developed using at least two episodes of surge-block agitation and bailer evacuation. At least ten well casing volumes of water will be removed during the development, and development will continue until the water appears to be reasonably clear.

Groundwater will be collected immediately after development using a disposable polyethylene bailer. Groundwater will be decanted from the bailer into two 40-ml glass volatile organic analysis (VOA) vials and one 1-liter amber glass bottles. These samples will be labeled and stored on wet ice for transport to the analytical laboratory under proper chain of custody procedures. Purged groundwater will be stored on-site in sealed and labeled DOT 17H drums.

The groundwater will be analyzed for TPH-G by Modified EPA Method 8015, BTEX by EPA Method 8020, and oil & grease by Standard Method 5520 E & F.

PREPARE A SUBSURFACE INVESTIGATION REPORT

ASE will submit a subsurface investigation report outlining the methods and findings of this investigation. The report will be submitted under the seal of State Registered Civil Engineer, Mr. David Schultz (#38738). This report will include a summary of the results, the site background and history, the topographic and geologic setting, rational for well placement and design, description of the well construction, development and sampling, tabulated soil and groundwater analytical results, and data collected during the well development and sampling including estimated flow rate, pH, temperature, and electrical conductivity on the initial sampling, conclusions and recommendations. Formal boring logs, analytical reports, and chain of custodies will be included as appendices.

Should you have any questions or comments, please feel free to call us at (510) 820-9391.

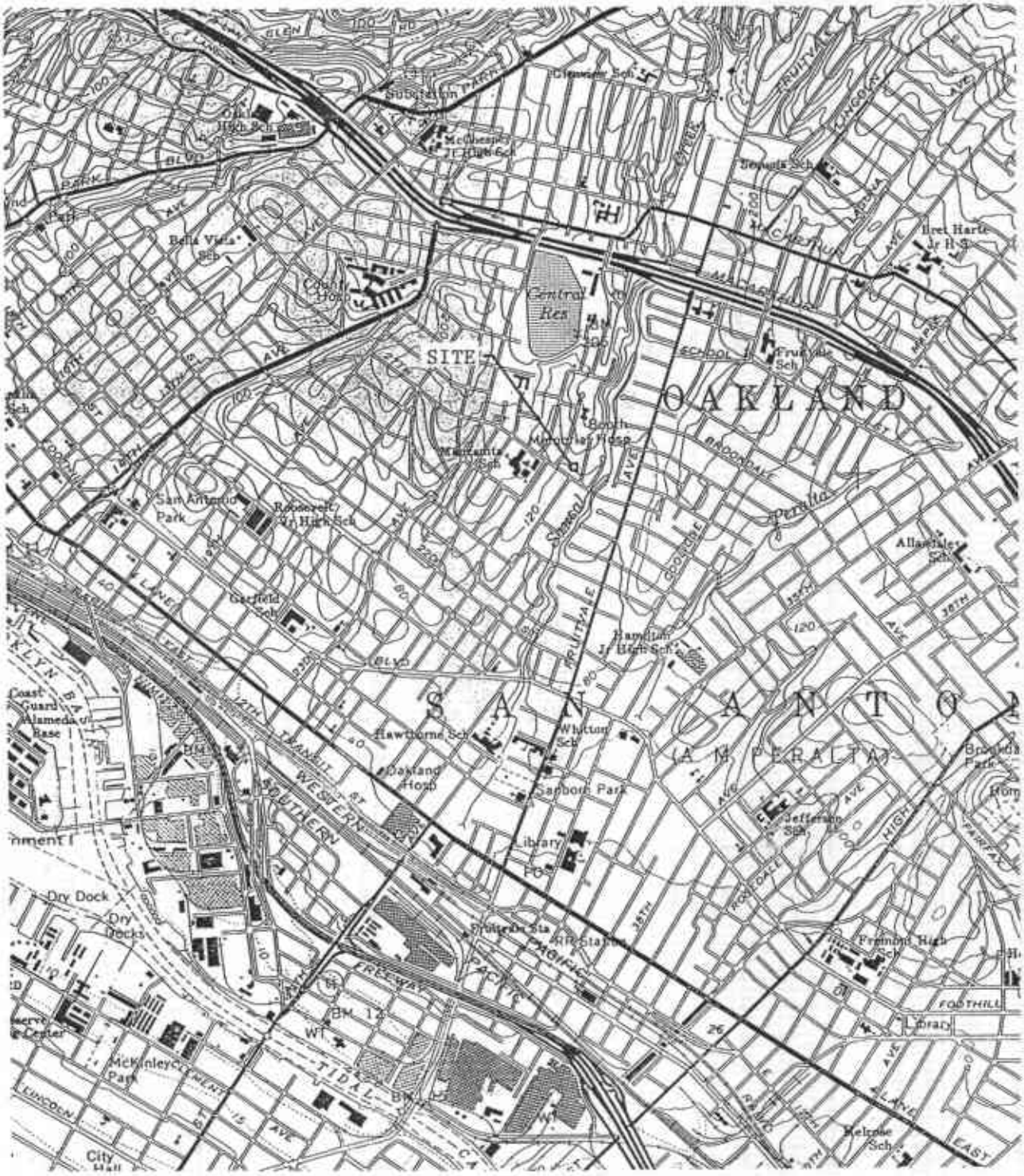
Respectfully submitted,

AQUA SCIENCE ENGINEERS, INC.

David Allen
Project Manager, R.E.A.

Attachments: Figures 1 & 2

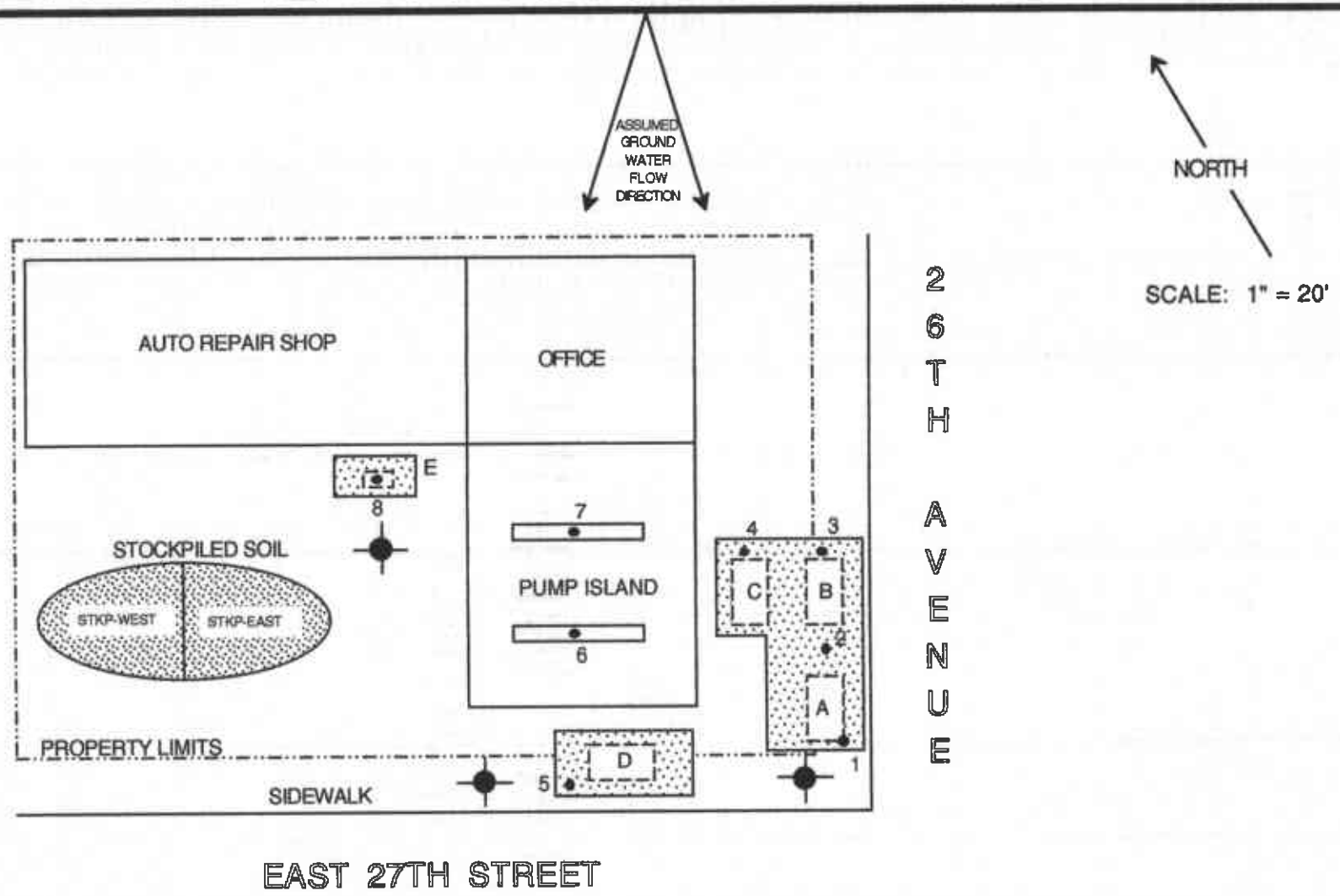
cc: Mr. John Thorpe
Mr. Barney M. Chan, ACHCSA



SITE LOCATION MAP

Thorpe Property
2547 East 27th Street
Oakland, California

Aqua Science Engineers | Figure 1



LEGEND

- PROPOSED MONITORING WELL
- 5 SOIL SAMPLE LOCATION
- EXCAVATION BOUNDARIES
- A LOCATION OF FORMER USTs

PROPOSED MONITORING WELL LOCATION MAP

THORPE PROPERTY
2547 EAST 27TH STREET
OAKLAND, CALIFORNIA

AQUA SCIENCE ENGINEERS | Figure 2