

CITY OF PIEDMONT  
CALIFORNIA



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*3:38 pm, Feb 15, 2012*

Alameda County  
Environmental Health

February 7, 2012

Mr. Mark Detterman  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502

SUBJECT: RO0003047- City of Piedmont UST Remediation at 120 Vista Avenue  
Piedmont, California

Dear Mr. Detterman:

Attached please find a copy of the proposed Workplan for the above referenced site. I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Sincerely,

John Wanger  
City Engineer

CC Chester Nakahara – Public Works Director



Aqua Science Engineers, Inc. 55 Oak Court, Suite 220, Danville, CA 94526  
(925) 820-9391 - Fax (925) 837-4853 - [www.aquascienceengineers.com](http://www.aquascienceengineers.com)

February 1, 2012

WORKPLAN  
for a  
SOIL AND GROUNDWATER ASSESSMENT  
at  
City of Piedmont  
120 Vista Avenue  
Piedmont, California

Submitted by:  
AQUA SCIENCE ENGINEERS, INC.  
55 Oak Court, Suite 220  
Danville, CA 94526  
(925) 820-9391



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## **1.0 INTRODUCTION**

This submittal presents Aqua Science Engineer's, Inc. (ASE) workplan for a soil and groundwater assessment at the City of Piedmont property located at 120 Vista Avenue in Piedmont, California (Figures 1 and 2). The proposed site assessment activities were initiated by The City of Piedmont in response to a letter from the Alameda County Health Care Services Agency (ACHCSA) dated June 29, 2011.

## **2.0 BACKGROUND**

The subject site is the City of Piedmont City Hall. The former and current underground storage tanks (USTs) lie in a narrow alley between the Fire Department and Police Department buildings, immediately adjacent to the wall of the Fire Department building.

### 2.1 May 1988 UST Removal

In May 1988, ASE removed three USTs from the site. These USTs consisted of a 285-gallon diesel UST and a 550-gallon gasoline UST in one excavation, and a 1,000-gallon UST in a second excavation. Soil samples collected from the excavation that contained the two smaller USTs contained up to 250 parts per million (ppm) total petroleum hydrocarbons (TPH). Two new 1,000-gallon USTs were installed in the excavation that previously contained the smaller USTs. These new USTs remain in service.

### 2.2 July 1989 Soil and Groundwater Sampling

In July 1989, Aqua Terra Technologies (ATT) drilled six soil borings at the site using a hollow-stem auger (Figure 3). The drill rig experienced refusal in all of the borings except B3 and B4, which were terminated in gravel backfill of the existing USTs. Water in these two borings contained petroleum hydrocarbon odors and sheen. A water sample collected from the tank backfill in B4 contained 650,000 parts per billion (ppb) total petroleum hydrocarbons as gasoline (TPH-G). This sample was not analyzed for benzene, toluene, ethyl benzene, or xylenes (BTEX) or methyl tertiary butyl ether (MTBE). No TPH-G or organic lead was detected in soil samples collected from 10-feet below ground surface (bgs) in boring B1, 5-feet bgs in boring B5 and 4-feet bgs in boring B6, other than 0.013 ppm toluene in B6. These sample depths represent the depth where bedrock was encountered. Refusal was encountered at 2-feet bgs in boring B2, and no soil sample could be collected from this boring. ATT concluded that the water encountered in borings B3 and B4 was in the UST backfill only and that it was unlikely that the contamination extended beyond the UST excavation.

### 2.3 June 2011 Alameda County Health Care Services Agency Request for Workplan

On June 29, 2011, the ACHCSA requested a workplan to assess the extent of soil and groundwater contamination at the site. The letter also requested that an irrigation well located in Piedmont Park, several hundred feet downgradient of the site, be sampled. This workplan was prepared in response to the ACHCSA requirement.



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### **3.0 PROPOSED SCOPE OF WORK**

The purpose of this assessment is to further define the extent of hydrocarbons related to the former USTs at the site. The specific proposed scope of work is as follows:

- 1) Obtain a drilling permit from the Alameda County Public Works Agency.
- 2) Notify Underground Service Alert (USA) of the drilling and have drilling locations cleared of subsurface utility lines by a private subsurface utility line locating company.
- 3) Drill two soil borings at the site to a depth of approximately 40-feet bgs and collect soil and groundwater samples for analysis.
- 4) Collect groundwater samples from the irrigation well in Piedmont Park.
- 5) Analyze at least three soil and one groundwater sample from each boring, as well as groundwater samples collected from the off-site irrigation well, at a CAL-EPA certified analytical laboratory for TPH-G, total petroleum hydrocarbons as diesel (TPH-D), BTEX, and MTBE by EPA Method 8260B.
- 6) Backfill each boring with neat cement.
- 7) Dispose of all investigation derived waste.
- 8) Prepare a report presenting the methods and findings of this assessment.

Details of the assessment are presented below.

#### *TASK 1 OBTAIN NECESSARY PERMITS*

Prior to drilling, ASE will obtain a drilling permit from the Alameda County Public Works Agency.

#### *TASK 2 NOTIFY USA TO CLEAR DRILLING LOCATIONS OF UNDERGROUND UTILITY LINES*

ASE will mark the proposed boring locations with white paint and will notify Underground Service Alert (USA) to have underground utility lines marked in the site vicinity at least 48-hours prior to drilling. A private underground utility locating company will also be contracted to clear each drilling locations of underground lines prior to drilling.

#### *TASK 3 DRILL TWO SOIL AT THE SITE AND COLLECT SOIL AND GROUNDWATER SAMPLES FOR ANALYSIS*

ASE will drill two soil borings at the site to a depth of approximately 40-feet bgs at the locations shown on Figure 3. These locations are near previous boring B4, where elevated petroleum



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hydrocarbon concentrations were detected in a water sample, and in a downgradient location, based on topographic gradient at the site.

Once through the asphalt surface, each boring will be hand-augered until refusal is met on the bedrock. If groundwater is present in the boring, a groundwater sample will be collected using a disposable bailer. Water will be decanted from the bailer into 40-ml volatile organic analysis (VOA) vials pre-preserved with hydrochloric acid, sealed without headspace, labeled, and placed into an ice chest with wet ice for transport to the analytical laboratory under chain of custody. A soil sample will also be collected at either (a) the capillary zone if water is present in the boring, or (b) the soil at the soil and bedrock interface.

Once bedrock is encountered, drilling will continue using a mud-rotary drill rig. Based on previous refusal depths at this site with a hollow-stem auger, it does not appear that either a hollow-stem auger or Geoprobe will be able to be utilized for this drilling. A qualified ASE geologist will direct the drilling. Drill cuttings will be screened for lithologic description as drilling progresses and undisturbed soil samples will be collected at 5-foot intervals for subsurface hydrogeologic description and possible chemical analysis. The undisturbed samples will be collected every 5-feet by driving a sampler lined with stainless steel tubes into the ground using repeated blow from a 140-pound hammer dropped 30-inches.

Samples to be retained for analysis will be immediately removed from the sampler, trimmed, sealed with Teflon tape and plastic caps, labeled with the site location, sample designation, date and time the sample was collected, and the initials of the person collecting the sample. The samples will be placed into an ice chest containing wet ice for delivery under chain of custody to a state certified analytical laboratory.

Soil from the remaining tubes not sealed for analysis will be removed for hydrogeologic description and will be screened for volatile compounds with a photoionization detector (PID). The soil will be screened by emptying soil from one of the 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 PID will measure the vapor through a small hole, punched in the bag. These PID readings will be used as a screening tool only since these procedures are not as rigorous as those used in an analytical laboratory.

All sampling equipment will be cleaned in buckets with brushes an Alconox solution, then rinsed twice with tap water. Rinsates will be contained on-site in 55-gallon steel drums and stored on-site until off-site disposal can be arranged.

#### *TASK 4 COLLECT GROUNDWATER SAMPLES FROM AN IRRIGATION WELL IN PIEDMONT PARK*

ASE has not been able to inspect this well to determine the best way to collect a sample. If the well has a sampling port, then the pump will be turned on and samples will be collected from the sampling port. If the well does not have a sampling port, but the well can be opened, then a bailer will be lowered to the screened interval and a water sample will be collected with a bailer.



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If the well has no sampling port and can't be opened, then ASE will evaluate the best way to obtain the sample in the field based on the construction of the well and pump system.

The groundwater samples will be contained in 40-ml VOA vials, pre-preserved with hydrochloric acid, labeled, and placed into an ice chest with wet ice for transport to the analytical laboratory under chain of custody.

#### *TASK 5 ANALYZE THE SOIL AND GROUNDWATER SAMPLES*

At least one soil sample collected from either the capillary zone from each boring (if groundwater is present) or the sediment/bedrock interface (if no water is present) will be selected for analysis. In addition, soil samples collected from approximately 15-foot bgs and 30-foot bgs will be selected for analysis. If there is any indication of contamination based on odors, staining or PID readings, additional soil samples (one per every 5-foot plus samples collected above and below the contaminated zone) will also be analyzed. The samples will be analyzed at a CAL-EPA certified analytical laboratory for TPH-G, BTEX, and MTBE by EPA Method 8260B, and TPH-D (with silica gel cleanup) by EPA Method 8015M. All groundwater samples will be analyzed for these same compounds.

#### *TASK 6 BACKFILL THE BORINGS WITH NEAT CEMENT*

Following collection of the soil samples, the boreholes will be backfilled with neat cement placed by tremie pipe.

#### *TASK 7 DISPOSE OF INVESTIGATION DERIVED WASTE*

All drill cuttings, drilling mud, and steam-cleaning water will be drummed and disposed of off-site at an appropriate landfill or recycling facility based on laboratory data.

#### *TASK 8 PREPARE A SUBSURFACE ASSESSMENT REPORT*

ASE will prepare a report presenting the methods and findings of this assessment. The report will be submitted under the seal of state registered civil engineer or geologist. This report will include a summary of all work completed during this assessment including tabulated soil and groundwater analytical results, conclusions and recommendations. Copies of the analytical report and chain of custody will be included as appendices. The report, analytical data, and boring logs will also be uploaded to the state Geotracker database.

## **4.0 SCHEDULE**

ASE will schedule field activities upon approval of this workplan by the ACHCSA. ASE estimates that the project can be completed in approximately 10-weeks from the workplan approval.



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Should you have any questions or comments, please call us at (925) 820-9391.

Respectfully submitted,

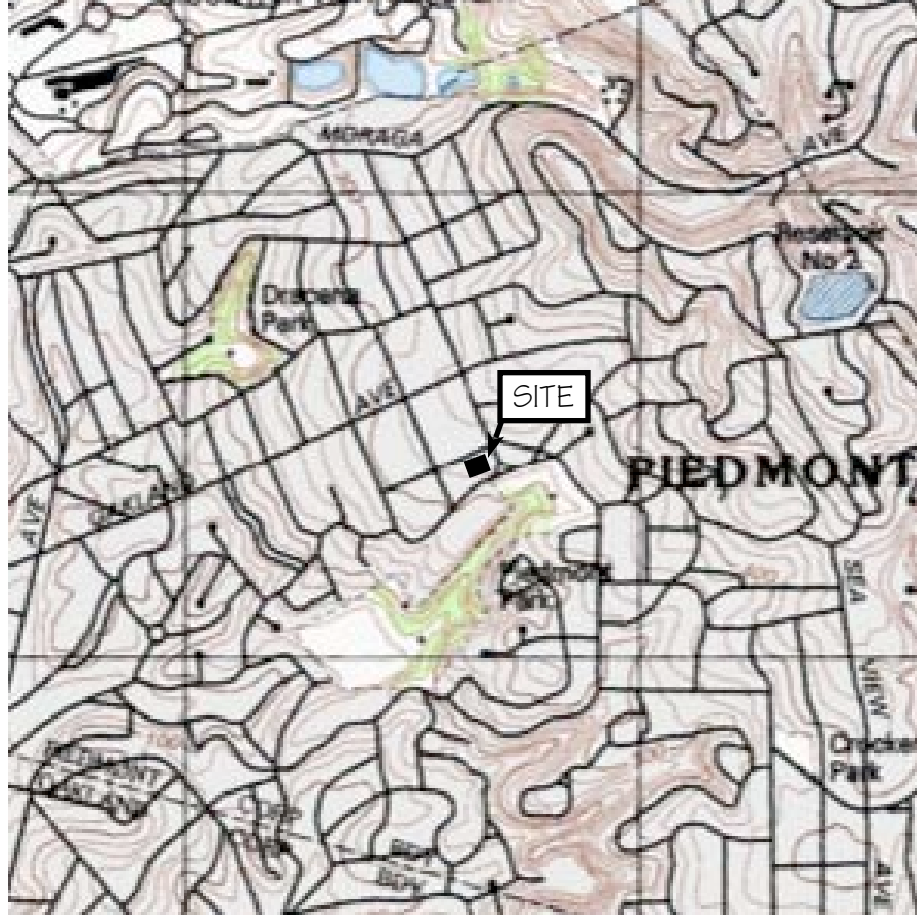
AQUA SCIENCE ENGINEERS, INC.

The image shows a handwritten signature in black ink that reads "Robert E. Kitay". To the right of the signature is a circular professional seal. The seal has a double-line border. The outer ring contains the text "PROFESSIONAL GEOLOGIST" at the top and "STATE OF CALIFORNIA" at the bottom, with two small stars on either side. The inner circle contains the name "ROBERT E. KITAY" and the number "No. 6586".

Robert E. Kitay, P.G., R.E.A.  
Senior Geologist

## **FIGURES**





SITE LOCATION MAP

City of Piedmont  
120 Vista Avenue  
Piedmont, California

DATE: 02/02/12

AQUA SCIENCE ENGINEERS, INC.

FIGURE 1

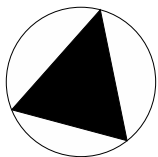


## SITE LOCATION MAP

City of Piedmont  
 120 Vista Avenue  
 Piedmont, California

Aqua Science Engineers

Figure 2



NORTH

NOT TO SCALE

SIDEWALK



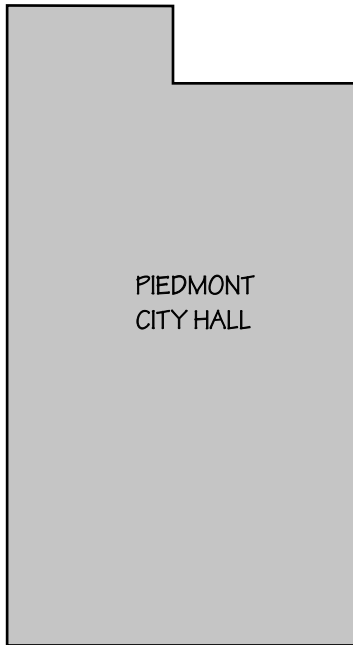
NORTH

VISTA AVENUE

SCALE

1" = 30'

AREA OF  
FORMER AND  
CURRENT USTs



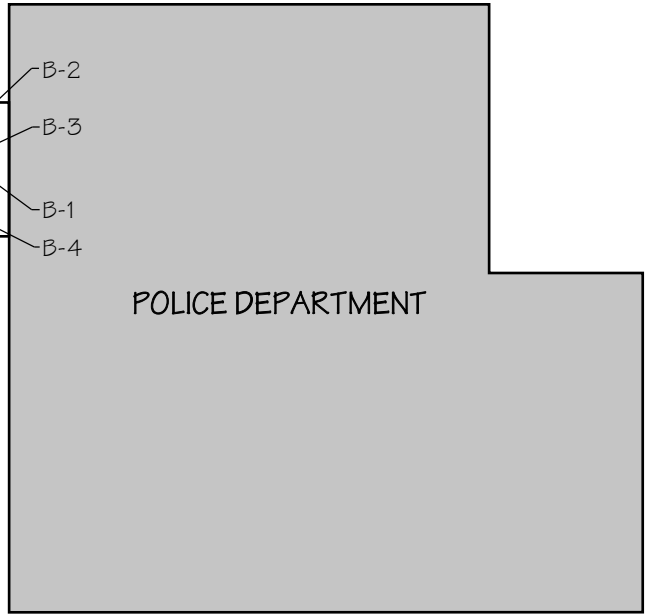
PIEDMONT  
CITY HALL



FIRE DEPARTMENT



DRIVEWAY



POLICE DEPARTMENT

B-2

B-3

B-1

B-4

B-5

B-6

SIDEWALK

MAGNOLIA AVENUE

LEGEND

B-6  
● PREVIOUS SOIL BORING  
DRILLED BY ATT IN 1989

⊕ PROPOSED SOIL BORING

PROPOSED SOIL BORING  
LOCATION MAP

City of Piedmont  
120 Vista Avenue  
Piedmont, California

DATE: 02/02/12

AQUA SCIENCE ENGINEERS, INC.

FIGURE 3