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11:08 am, Mar 19, 2009

Alameda County  
Environmental Health

**WORK PLAN FOR INVESTIGATION OF  
FORMER UST #4 AREA  
PACIFIC SHOPS, INC.  
1815 CLEMENT AVENUE  
ALAMEDA, CALIFORNIA**

*Prepared for:*  
**Pacific Shops, Inc.**

*Prepared by:*  
**AMEC Geomatrix, Inc.**

January 2009

Project 14740.000

**AMEC Geomatrix**



January 27, 2009

Project 14740.000

Mr. Steven Plunkett  
Environmental Health Services  
Alameda County  
Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

**Re: Work Plan for Investigation of Former UST #4 Area**

Pacific Shops, Inc.  
1815 Clement Avenue  
Alameda, California

Dear Mr. Plunkett:

Enclosed please find the *Work Plan for Investigation of Former UST #4 Area* for Pacific Shops, Inc. This work plan was prepared by AMEC Geomatrix, Inc., (AMEC) on behalf of Pacific Shops, Inc.

Please contact me at (510) 663-4139 if you have any questions regarding this Work Plan.

Sincerely yours,  
AMEC GEOMATRIX, INC.

A handwritten signature in cursive script, appearing to read "Darren Croteau".

Darren Croteau, P.G.  
Senior Geologist

DC/jd  
I:\Doc\_Safe\14000s\14740.000\4000 REGULATORY\Work Plan\Text\Transmittal Letter.doc

Enclosure: Work Plan for Investigation of Former UST #4 Area

cc: Mr. Sean Svendsen, Pacific Shops, Inc.

**WORK PLAN FOR INVESTIGATION OF  
FORMER UST #4 AREA**

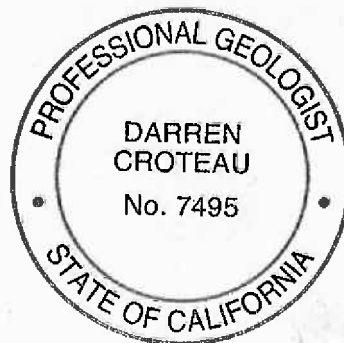
Pacific Shops, Inc.  
1815 Clement Avenue  
Alameda, California

January 27, 2009  
Project 14740.000

This work plan was prepared by AMEC Geomatrix, Inc. under the professional supervision of Darren Croteau. The findings, recommendations, specifications and/or professional opinions presented in this report were prepared in accordance with generally accepted professional geologic practice, and within the scope of the project. There is no other warranty, either express or implied.

A handwritten signature in blue ink, appearing to read "Darren Croteau", written over a horizontal line.

Darren Croteau, P.G.  
Senior Geologist



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## **WORK PLAN FOR INVESTIGATION OF FORMER UST #4 AREA**

Pacific Shops, Inc.  
1815 Clement Avenue  
Alameda, California

### **1.0 INTRODUCTION**

AMEC Geomatrix, Inc. (AMEC) prepared this *Work Plan for Investigation of Former UST#4 Area* (work plan) on behalf of Pacific Shops, Inc. (Pacific Shops) for the property located at 1815 Clement Avenue in Alameda, California (designated herein as the site; Figure 1).

AMEC prepared this work plan following a telephone conversation between Mr. Steven Plunkett of Alameda County Environmental Health (ACEH) and Mr. Darren Croteau of AMEC on January 12, 2009. In this telephone conversation, it was agreed that the investigation would consist of three soil borings in the vicinity of former underground storage tank #4 and that the work plan deadline would be extended to February 28, 2009. The objective of the work described in this work plan is to investigate the extent of petroleum hydrocarbon compounds in groundwater in the vicinity of former underground storage tank (UST) #4 (Figure 2).

### **2.0 BACKGROUND**

In March 2007, Treadwell and Rollo of San Francisco, California oversaw the removal of three USTs (designated as UST#2, UST#3, and UST#4; Figure 2) from the site. The USTs were removed by Technology, Engineering, and Construction, Inc. of South San Francisco, California and overseen by ACEH (Treadwell and Rollo, 2007).

Following removal of the three USTs, soil samples were collected from each UST excavation and a grab groundwater sample was collected from the UST#4 excavation. The grab groundwater sample from the UST#4 excavation appeared to be a combination of groundwater that infiltrated into the excavation and decontamination water generated by cleaning of the removed UST over the tank pit by the contractor [*Removal of Underground Storage Tanks, Pacific Shops Site, Page 12* (Treadwell and Rollo, 2007)]. Anecdotal information from a site contact, present during the excavation activities, also indicated that rain was falling and some of the rainwater may have entered the UST excavation prior to sampling. The grab groundwater sample collected from the UST#4 excavation contained petroleum hydrocarbons quantified as diesel, kerosene, and bunker oil. This grab groundwater sample was determined to not be representative of groundwater conditions and a second sample was collected approximately 7-days later, following purging water from the excavation and allowing

groundwater to recharge (Treadwell and Rollo, 2007). No petroleum hydrocarbons were detected in the second grab groundwater sample.

Following submittal of the May 16, 2007 report entitled *Removal of Underground Storage Tanks, Pacific Shops Site* (Treadwell and Rollo, 2007) to ACEH, Mr. Steven Plunkett of ACEH issued a letter to Mr. Sean Svendsen of Pacific Shops dated July 9, 2007. This letter cited the petroleum hydrocarbon concentrations from the first UST#4 excavation pit grab groundwater sample and requested additional soil and groundwater sampling. This work plan fulfills ACEH's request.

### **3.0 FIELD INVESTIGATION**

Three soil borings will be advanced at the site to investigate the extent of petroleum hydrocarbons in groundwater in the vicinity of former UST#4. The approximate proposed soil boring locations are shown on Figure 2.

The field methods and laboratory methods for this investigation are presented below.

#### **3.1 FIELD METHODS**

Prior to conducting the field work, AMEC will obtain a soil boring permit from Alameda County Public Works Agency. Additionally, AMEC will mark the proposed boring locations with white paint, contact Underground Service Alert, and contract with a private utility locator to clear boring locations for underground utilities.

##### **3.1.1 Soil Borings**

The soil borings will be advanced using Geoprobe™ dual-tube direct-push technology by a licensed drilling contractor under the supervision of AMEC field personnel. Soil borings will be advanced at the approximate locations shown on Figure 2 to approximately 2 feet below first encountered groundwater, which is assumed to occur at approximately 6 feet below ground surface (bgs).

A continuous core of soil will be collected at each soil boring location for lithologic logging. Lithology will be described by an AMEC field geologist, under the supervision of an AMEC California Professional Geologist, using the visual-manual procedures of the American Society for Testing and Materials (ASTM) Standard D 2488 for guidance, which is based on the Unified Soil Classification System (USCS). Recovered soil will be screened for the presence of volatile organic compounds using a photoionization detector (PID) by placing soil in a resealable bag, agitating the soil, and introducing the PID probe into the headspace area of the bag after several minutes have elapsed. The PID readings will be recorded on the lithologic logs prepared for each boring.

### **3.1.2 Soil Sampling**

Because soil conditions in the tank pit were evaluated by sampling performed at the time of the tank removal, and because the planned investigation is intended to evaluate groundwater quality beyond the tank pit, no soil samples for laboratory analysis will be collected from the borings.

### **3.1.3 Groundwater Sampling**

Once each soil boring is completed, temporary 1-inch diameter polyvinyl chloride (PVC) casing with a 0.01-inch slotted screen will be installed in each boring to facilitate collecting a grab groundwater sample. Prior to collecting the groundwater sample, the casing will be purged to decrease turbidity in the sample. Following purging, a new disposable polyethylene bailer will be used to collect the grab sample from each boring.

The groundwater samples will be placed in laboratory provided glassware and stored in an ice chilled cooler pending transport to the analytical laboratory under chain of custody procedures.

Following completion of sampling, the borings will be backfilled from total depth to ground surface with cement bentonite grout.

### **3.1.4 Investigation Derived Waste**

Investigation-derived waste, including drill cuttings, purge water, and equipment wash water, will be stored at the site in 55-gallon drums pending disposal by Pacific Shops.

## **3.2 LABORATORY ANALYTICAL METHODS**

The grab groundwater samples will be analyzed TPH in the diesel (TPH diesel) and bunker oil (TPH bunker oil) ranges using EPA Method 8015 with a silica gel preparation procedure in accordance with EPA Method 3630B. Prior to analyzing the grab groundwater samples for TPH diesel and TPH bunker oil, the laboratory will filter the samples with a 0.7 micron glass fiber filter to remove suspended sediment that may bias the TPH analyses.

## **4.0 REPORTING**

AMEC will prepare a report that documents the results of this investigation for submittal to ACEH. The report will include a data summary table, figures and copies of the analytical laboratory reports and sample chain of custody records.

## **5.0 SCHEDULE**

We anticipate that field work will commence within four weeks of approval of this work plan by ACEH, pending subcontractor availability. We anticipate the field investigation can be

performed in one day. A report documenting the results will be submitted to the ACEH approximately six weeks following the receipt of final laboratory data.

## **6.0 REFERENCES**

Treadwell and Rollo, 2007, Removal of Underground Storage Tanks, Pacific Shops Site, 1815 Clement Avenue, Alameda, California, May 16.

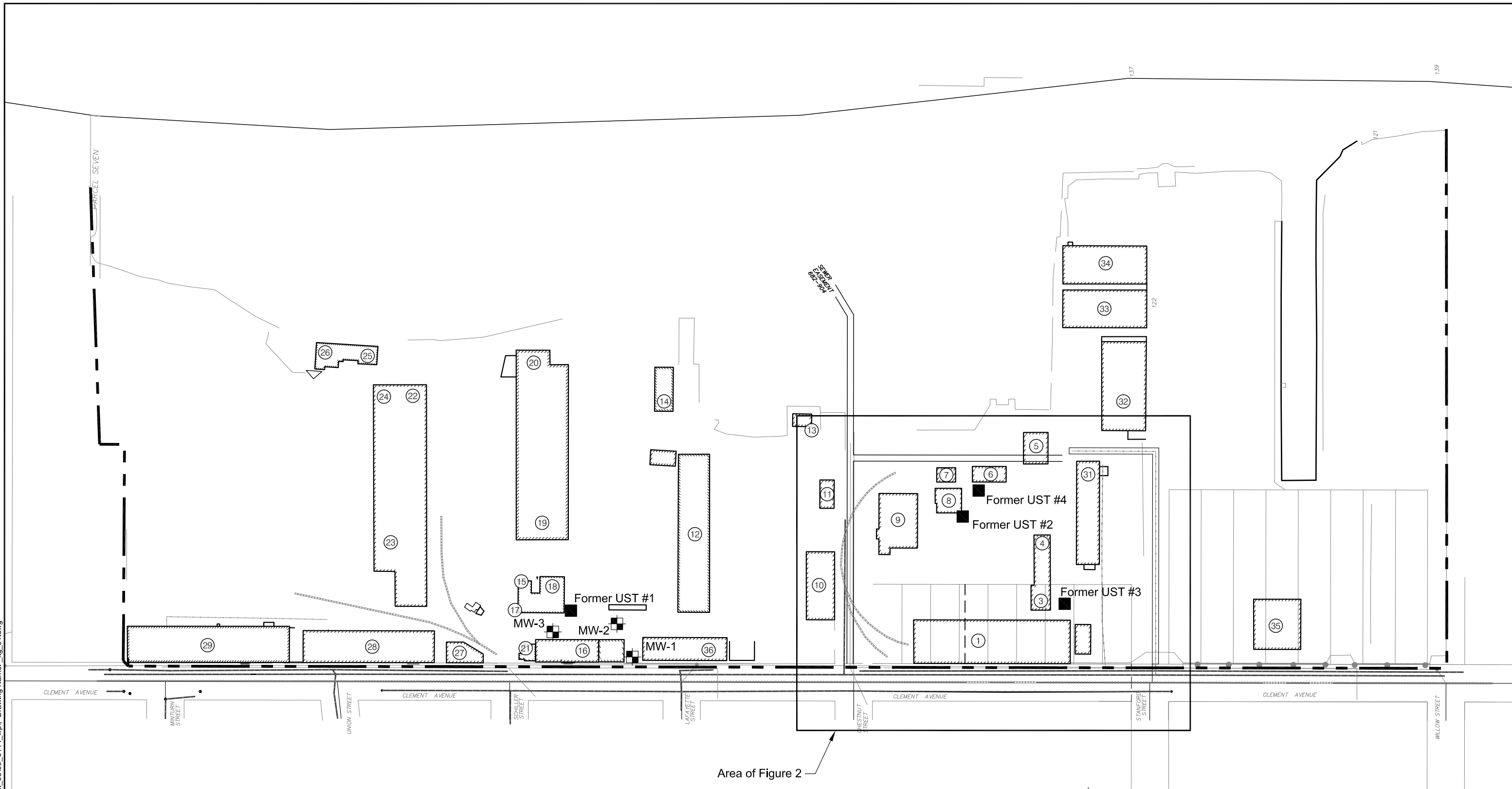
United States Environmental Protection Agency (U.S. EPA), 1996, Closed-System Purge and Trap and Extraction for Volatile Organics in Soil and Waste Samples. Online reference: <http://www.epa.gov/sw-846/pdfs/5035.pdf>



**FIGURES**

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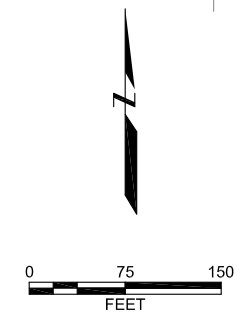
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Area of Figure 2

**EXPLANATION**

- Approximate location of Former UST
- ⑩ Building Number
- MW-2 ■ Approximate location and identification of monitoring well
- - - Site boundary



<b>SITE PLAN</b> Pacific Shops, Inc. 1731-2041 Clement Avenue Alameda, California		
By: DC	Date: 01/22/09	Project No. 14740.000
<b>AMEC Geomatrix</b>		Figure 1

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