ENVIRONMENTAL ENGINEERING, INC.
6620 Owens Drive, Suite A • Pleasanton, CA 94588
TEL (925)734-6400 • FAX (925)734-6401
www.somaenv.com

October 3, 2017

RECEIVED
By Alameda County Environmental Health 2:49 pm, Oct 03, 2017

Mr. Mark Detterman, PG, CEG
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Site Address: 2200 Telegraph Avenue, Oakland, California
Case No. RO0003258

Dear Mr. Detterman:

SOMA's "Workplan to Conduct Additional Soil and Groundwater Investigation" for the subject property has been uploaded to the State's GeoTracker database and Alameda County's FTP site for your review.

Thank you for your time in reviewing our report. Please do not hesitate to call me at (925) 734-6400, if you have questions or comments.

Sincerely,

Mansour Sepehr, Ph.D.,PE
Principal Hydrogeologist

cc: Mr. Mo Mashhoon
Mr. William Mast, PES Environmental, Inc.

WORKPLAN TO CONDUCT ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION AT 2200 TELEGRAPH AVENUE OAKLAND, CALIFORNIA

October 3, 2017

Project 6460

Prepared for

Mr. Mo Mashhoon
Mash Petroleum, Inc.
426 13th Street, 10th Floor
Oakland, California 94612

SOMA ENVIRONMENTAL ENGINEERING, INC.
6620 Owens Drive Suite A Pleasanton CA 94588 Ph: 925.734.6400 F: 925.734-6401 www.somaenv.com

ACKNOWLEDGEMENT STATEMENT

Site Location: 2200 Telegraph Avenue, Oakland, California

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's Geotracker website.

Mr. Mo Mashhoon
Mash Petroleum
428 13th Street, 10th Floor
Oakland, California 94612

CERTIFICATION

This workplan has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Mo Mashhoon, the property owner of 2200 Telegraph Avenue, Oakland, California. This workplan was prepared after discussing it with the Alameda County Health Care Services Agency through an e-mail correspondence dated September 11, 2017.

Mansour Sepehr, Ph.D., P.E.
Principal Hydrogeologist

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

SOMA Environmental Engineering, Inc. has prepared this workplan on behalf of Mr. Mo Mashhoon of Mash Petroleum, Inc. for the site located at 2200 Telegraph Avenue, Oakland, California. This workplan was prepared after informing the Alameda County Department of Environmental Health (ACDEH) through an e-mail dated September 1, 2017.

The subject property is located at 2200 Telegraph Avenue, Oakland, California. Figure 1 shows the location of the site and vicinity. The site is located at the corner of the intersection of Grand Avenue and Telegraph Avenue in a commercial/residential area (Figure 2).

Based on the results of a subsurface investigation conducted by Conestoga-Rover & Associates (CRA), PES (2016) and SOMA (2017) subsurface soils at the site generally consists of poorly graded sand and clayey sands to approximately 7 feet below ground surface (bgs), underlain by silt and clay to a depth of approximately 20 feet bgs. Groundwater was encountered at approximately 11 feet bgs. Groundwater flow at the site and vicinity has been observed to be to the southeast (CRA 2012, SOMA 2017).

In addition, an underground Bay Area Rapid Transit (BART) railway is present beneath the subject property. The BART railway is comprised of three separate and parallel tunnels that run beneath the northwestern to southeastern portions of the site (see Figure 2). The tunnels are about 12 feet deep.

The property has been operated as a vehicle fuel service station since mid 1940s. The site previously operated as a Chevron Station #9-3600 and is currently an active independent gasoline service station under “A&A Gas and Mart”. Currently, there are three 10,000-gallon underground storage tanks (USTs) at the site.

Environmental evaluation of the site began in 1986 when new USTs replaced the older USTs and petroleum contamination was discovered. In 1994 the product lines also were replaced by a new piping system. Between 1986 and 2012, numerous soil and groundwater investigations were conducted at the subject site. Elevated concentrations of total petroleum hydrocarbon as gasoline (TPH-g), benzene, toluene, ethylbenzene and xylenes (BTEX) and methyl tertiary butyl ether (MtBE) were identified in a dissolved groundwater plume migrating to the southeast.

The subsurface analytical data collected at the site was evaluated with respect to the State Water Resources Control Board (SWRCB) Low-Threat Closure Policy

(LTCP). Based on the results of the sampling and monitoring activities and conditions set forth by the LTCP criteria, in a letter dated January 27, 2015 the site received no further action (NFA) status by the RWQCB and Alameda County Department of Environmental Health (ACDEH).

ACDEH conditioned the closure of the site by stating that if a change in land use occurs during site redevelopment, ACDEH must be notified and the case will be re-evaluated upon receipt of approved development plans. In addition the case closure documentation states that excavation or reconstruction activities in areas of residual contamination require planning and implementation of appropriate health and safety procedures. Lastly, the closure documentation states that the former Chevron facility was to be included in the City of Oakland Permit Tracking System due to the residual contamination that remained at the property.

1.1 Summary of Recent Field Investigation Activities

The results of previous site investigation activities revealed the presence of TPH-g and MtBE in off-site areas located hydraulically down-gradient of the site at 2201 Valley Street. Due to the recent economic growth in downtown Oakland, and a significant demand for housing and commercial redevelopment, Mr. Mo Mashhoon, the current site owner has received an acceptable offer to sell his property to a prospective buyer. Due to the past activities at the site and fact that residual levels of petroleum hydrocarbons still remains in the subsurface, in late 2016 the prospective buyer retained PES Environmental, Inc. (PES) to conduct additional site investigation for further delineation of remaining petroleum hydrocarbons in soil and groundwater beneath the site and at 2201 Valley Street properties.

The results of PES investigation showed elevated levels of TPH-g in groundwater which might be indicative of floating product in the subsurface. Subsequently, SOMA installed three 4-inch diameter groundwater remediation wells and three 2-inch diameter observation wells to conduct a multiphase extraction (MPE) pilot test. Prior to conducting the MPE pilot test, SOMA conducted a groundwater monitoring event to evaluate the groundwater chemical plume and confirm the reported groundwater chemical data as reported by PES. Currently, SOMA is in process of conducting MPE pilot test and waiting for the laboratory results on groundwater samples.

2.0 SCOPE OF WORK

Based on our review of the site history, none of the exploratory borings have been completed beyond 25 feet bgs. As such, the hydrogeology of the site and

distribution of chemicals, if any, beyond 25 feet bgs is unknown. To evaluate the vertical extent of petroleum hydrocarbons beneath the site and site stratigraphy up to 60 feet bgs, SOMA is proposing to perform the following tasks:

Task 1: Permit Acquisition and Preparation of a Site Health and Safety Plan
Task 2: Conducting a CPT/MIP Study to Evaluate the Site's Hydrogeology and Extent of Soil and Groundwater Contamination
Task 3: Soil and Groundwater Sampling
Task 4: Laboratory Analysis
Task 5: Report Preparation

The following is a brief description of the above tasks.

2.1 Permit Acquisition and Preparation of Site Health and Safety Plan

Before drilling, the necessary permits will be obtained from the Alameda County Public Works Agency, Water Resources Section.

Prior to commencing field activities, a site-specific health and safety plan will be prepared by SOMA. The health and safety plan (HASP) is designed to address safety provisions during field activities. It provides procedures to protect the field crew from physical and chemical hazards resulting from drilling, well installation, and groundwater monitoring and sampling. The HASP establishes personnel responsibilities, general safe work practices, field procedures, personal protective equipment standards, decontamination procedures, and emergency action plans.

2.2 Conducting a CPT/MIP Study to Evaluate the Site's Hydrogeology and Extent of Soil and Groundwater Contamination

Currently, there are three multiphase extraction wells and three observation wells at the site. Previously, several soil borings were drilled under supervision of PES and Chevron environmental consultants and soil and groundwater samples were collected. The maximum depth of the soil borings or groundwater monitoring wells was about 25 feet bgs. As the data indicates, at 25 feet bgs the presence of petroleum hydrocarbons were detected in the soil and medium to strong odor of petroleum hydrocarbons were reported. In terms of the site's hydrogeology and stratigraphy and vertical extent of chemical contamination, no information is available below 25 feet bgs. Therefore, the site's conceptual model is not well defined at this time.

To evaluate the hydrogeology of the site, SOMA proposes continuously logging the subsurface lithology and stratigraphy up to 60 feet bgs with a cone penetrometer test (CPT) study. CPT is a process whereby subsurface soil characteristics are determined when a cone penetrometer attached to a data acquisition system is pushed into the subsurface using a hydraulic ram. The CPT provides a rapid, reliable and economical means of determining soil stratigraphy, relative density, strength and hydrogeologic information using direct push methodology.

In addition to CPT, SOMA is proposing to utilize a membrane interface probe (MIP) to evaluate the vertical extent of the petroleum hydrocarbons. The actual depth of the borehole will be dependent upon the extent of the petroleum hydrocarbons, as indicated by the MIP study. By calibrating the MIP device, residual levels of petroleum hydrocarbons that may exist at different depth intervals can also be identified.

The additional site characterization data will be used to construct accurate geologic cross-sections in order to address the Site's conceptual hydrogeologic model, as discussed in SOMA's previous workplan dated August 15, 2017. SOMA has extensive experience in conducting CPT and MIP studies at various sites to evaluate and understand the site's conceptual model.

In order to calibrate the CPT readings, SOMA proposes drilling a 60-feet deep stratigraphy borehole using a hollow stemmed auger (HSA) adjacent to the CPT hole. This borehole may be continuously sampled and logged throughout the entire depth of the hole. The data will then be compared with the CPT readings for calibration purposes. The geological information gathered upon conducting this task will be used to identify different water-bearing zones, aquitards, as well as different lenses of clay layers beneath the Site. Figure 3 shows the proposed locations of the HSA, CPTs and MIPs.

2.3 Collect Soil and Groundwater Samples

Once the Site's stratigraphy, the locations of the "hot spots", and number of water-bearings zones are determined, soil and groundwater sampling will be performed. Data generated by the MIP study will indicate the location and depth intervals of any petroleum hydrocarbons that may exist beyond the currently known depths in the subsurface. Using direct push technology (DPT), a sampling rod lined with plastic sleeves will be hydraulically advanced in to the MIP-identified soil layers. SOMA field personnel will seal the ends of the sample with Teflon foil and plastic end caps and label the soil-filled sleeve. The sample will then be placed into a chilled cooler with the appropriate chain of custody documentation.

To collect groundwater samples at different depth intervals, additional boreholes will be advanced with a Geoprobe™ Dual Tube DT-21 groundwater profiler and soil sampler. This sampling system is ideal for water-bearing zones with low hydraulic head because the sampling chamber can be decontaminated downhole. The CPT data will reveal whether or not the water-bearing zone is under low/high hydraulic head. However, water-bearing zones with high hydraulic head will flood the sampling chamber and cross-contaminate subsequent samples and water–bearing zones. Decontaminating the DT-21 profiler under these conditions is awkward, time consuming, and inefficient. For water-bearing zones under elevated hydraulic pressure, the Geoprobe™ SP-15 groundwater sampling system would be more feasible. The SP-15 sampler can conveniently be withdrawn with the groundwater samples and, after decontamination, replaced inside the same borehole.

The results of the groundwater sampling will define the vertical extent of the groundwater contamination. Per SOMA's experience, groundwater sampling from several water-bearing zones can be accomplished within one borehole. Because the lead cone and rods are the same diameter, the sampling system does not create an annulus to allow for aquifer cross-contamination. With this sampling system, soil and contaminant residuum from overlying soil units is easily squeezed off the smooth outside probe surface by lateral confining pressures. The groundwater sampling chamber will also be over-purged, the entire probe will be retrieved, and the sampling chamber will be decontaminated. After groundwater sampling, the boreholes will be tremie grouted from the bottom up, to further reduce the potential for cross-contaminating different water-bearing zones, if any.

In order to define the vertical extent of the chemical plumes, the location of the groundwater sampling will be around the USTs and in the downgradient direction. Since the groundwater flow direction is known, the locations of the CPT and MIPs have been aligned along the groundwater flow direction (see Figure 3). Additional CPT and MIPs boreholes in an east to west direction have been proposed to not only construct a longitudinal cross-section, but to construct transverse cross-sections to better define the Site's conceptual model.

2.4 Laboratory Analysis

Soil and groundwater samples will be analyzed for:

- Total petroleum hydrocarbons as diesel (TPH-d) using EPA Method 8015M
- Total petroleum hydrocarbons as gasoline (TPH-g) and as motor oil (TPH-mo) using EPA Method 8015M
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) and Methyl tertiary

Butyl Ether (MtBE) using EPA Method 8260B.

2.5 Report Preparation

Upon completing the above-mentioned tasks, SOMA will prepare a written report containing a detailed description of the procedures, present the results of the field investigation, and discuss our recommendations for further studies, including the installation of additional groundwater extraction/monitoring wells, if warranted. The report will include tables and figures to help explain the results of the investigation.

FIGURES

Image Provided By EDR Aerials

SOMA
ENVIRONMENTAL ENGINEERING, INC.
6620 Owens Drive, Suite A ◦ Pleasanton, CA 94588
TEL (925)734-6400 ◦ FAX (925)734-6401

Figure 1: SITE MAP

2200 Telegraph Avenue
Oakland CA 94612

PREPARED FOR:
PROJ. MGR:
DRAWN BY: Ruchi Mathur

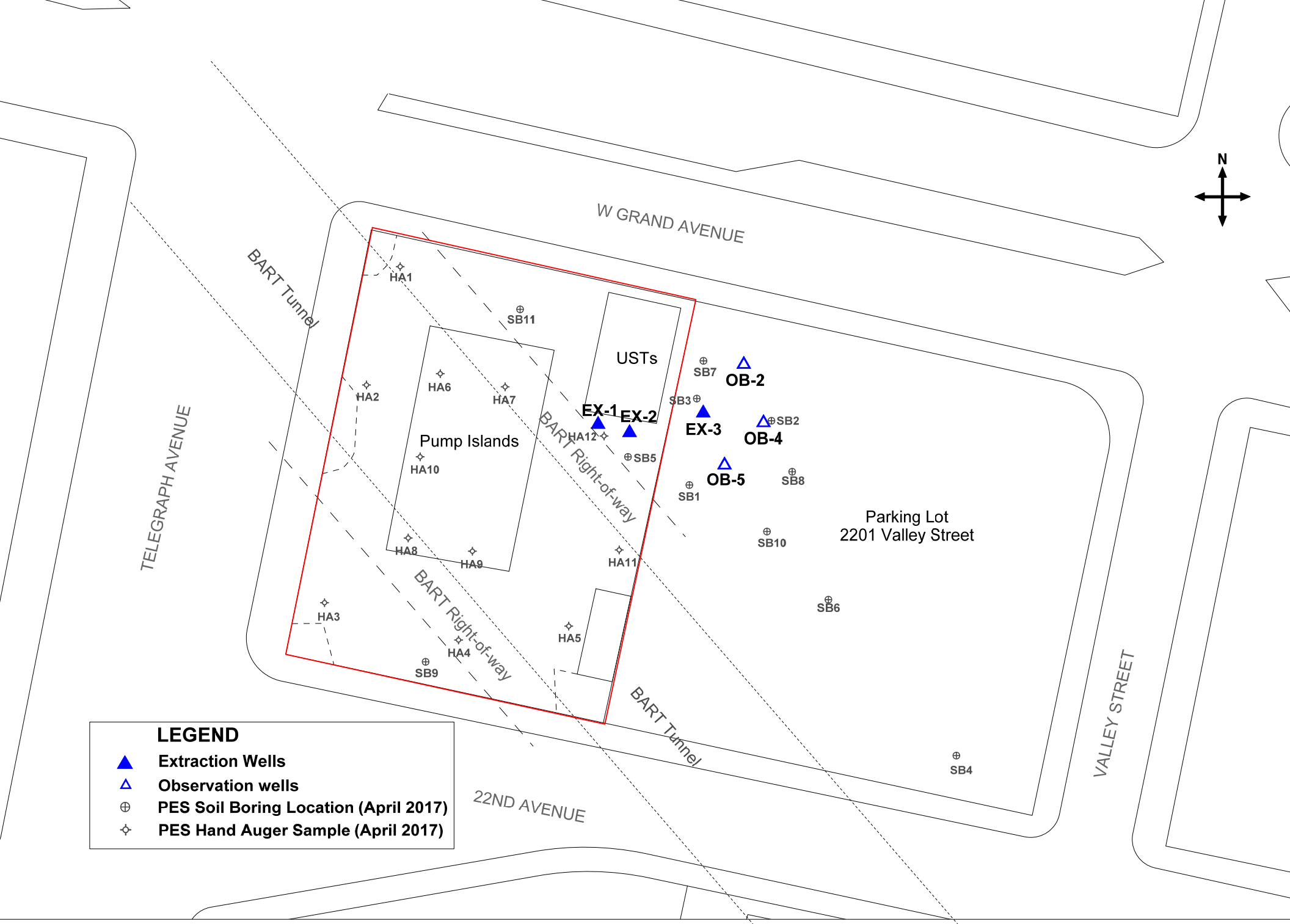

Figure 2: Site Map with Extraction and Observation Well Locations
2200 Telegraph Avenue, Oakland

ENVIRONMENTAL ENGINEERING, INC.

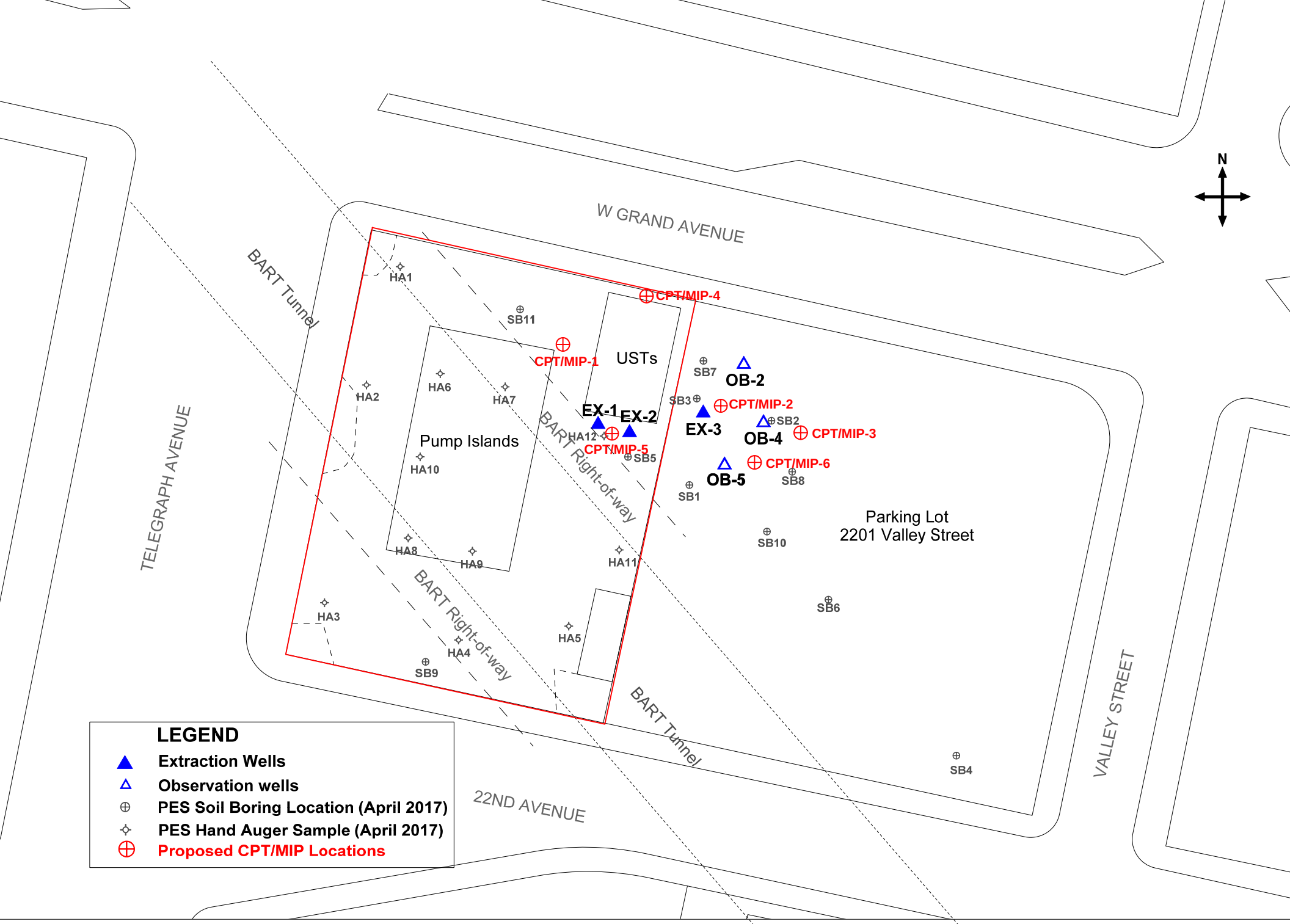

Figure 3: Site Map Showing Proposed CPT/MIP Locations

ENVIRONMENTAL ENGINEERING, INC.