SOIL & GROUNDWATER INVESTIGATION WORK PLAN

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Site:

1380 Mound Street
Alameda, CA

Prepared For:

Mr. Flavio Barrantes
City of Alameda
Public Works Department
950 West Mall Square, Room 110
Alameda, CA 94501

Prepared By:

ENV America, Inc.
1090 Adams St., Ste D
Benicia, CA 94510
(707) 751-3817

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ENV America, Inc.

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1.0 Introduction

ENV America, Inc. has prepared this Site Investigation Work Plan to further define the vertical and horizontal extent of possible contaminant migration surrounding the closed UST. The Work Plan presents the proposed exploration, sampling, and testing methods to be completed.

2.0 Site Location and Description

The site, located at 1380 Mound Street, is situated in a residential community within the City and County of Alameda (Figure 1). It is comprised of a flat developed lot that currently includes a single family dwelling. It is bounded to the North by Mound Street, the South and West by adjacent residences, and the East by Central Avenue. The site was previously developed by the Alameda Unified School District and served as the former location of Lincoln Middle School, which was demolished in 1977.

3.0 Regional Geology and Hydrogeology

The site is located within the East Bay Plain Groundwater Basin and the Coast Ranges Geomorphic province. The regional geology is composed of Holocene alluvial and fluvial deposits containing unconsolidated and interbedded clays, silts, sands, and gravels underlain by Jurrasic, Cretaceous, and Tertiary-age bedrock units of the Franciscan Complex and Great Valley Sequence (RWQCB 1999)

4.0 Site Geology and Hydrogeology

The site is located along the eastern margin of the San Francisco Bay, at an elevation of approximately 23 feet above mean sea level (USGS 1980). Based on geologic information for the island of Alameda, Bay Mud deposits are likely present beneath the site, with the Bay Mud likely underlain by sedimentary sand deposits (USGS 1997). Previous work performed at the site which have explored the local soil to a depth of 10-feet below grade surface (bgs), have described the predominant lithology of the on-site soils as silty and clayey sand and silty clay. Groundwater at the site has been encountered at 8 feet bgs.

5.0 Background

In March of 2013, local residents observed seeps of a heavy oil or tar like substance upwelling through cracks and fractures in the sidewalk directly in front of the residence located at the subject property. The observation of "oily product" seepage was reported to the City of Alameda and Alameda Fire Department. Subsequently, the Alameda County Department of Environmental Health (ACDEH) and, State of California Water Resources Control Board (SWRCB) were adjoined to the conversation concerning the oil seeps. Review of correspondence between the interested parties indicated that the source of the seeps was not able to be ascertained at that time, but that the possibility of the existence of an UST was relevant. Review of historical documents as far back as the early 1900's by numerous entities indicated that no permits to install an UST were issued by any regulating or governing body for the subject tank at the subject property.

In order to confirm or exclude the presence of an UST, The City of Alameda pursued and completed a Geophysical Investigation of the sidewalk in and around the area of the seeps. The investigation was performed at the site by Advanced Geological Service (AGS) on March 27, 2014. The results of the investigation as presented in the AGS Report dated April 2, 2014, indicated that an anomaly was present which resembled an underground structure approximately 10-feet x 20-feet dimensionally. Further

commentary on the reported structure indicated that the unit may have been a 5,000-gallon metallic tank situated beneath the sidewalk directly adjacent to the property line. The AGS report was shared with the ACDEH, and guidance pertaining to regulatory protocol for UST closure was requested. At that time the ACDEH suggested that the tank should be removed and requested a work plan to complete the work. Due to the proximity of the tank to the street and adjacent utility lines, a petition to close the tank in place was submitted to and approved by the ACDEH.

UST closure activities, which included an in-place closure of the tank by filling it with controlled density fill as well as the collection of soil and groundwater samples from the shallow soil and groundwater located directly adjacent to the tank, were completed in July and August 2014.

As presented in the Curtis & Tompkins Report dated August 21, 2014, detectable concentrations of Total Petroleum Hydrocarbon as diesel (TPH-d) were encountered in the soil sample collected from the North (fill pipe) end of tank at 3-feet below grade surface (bgs), and West side of tank at 5-feet bgs. Detectable concentrations of TPH-d were also noted in the groundwater sample collected from the fill pipe location. Total Oil and Grease (O&G) was identified in all samples collected. CAM 17 Metals were also identified, however, when compared to the University of California, Kearney Foundation Report on Background Concentrations of Trace and Major Elements in California Soils data, the uniform and consistent concentrations appear to be considered "background" and naturally occurring for that area. A site plan presenting the location of the UST, product lines, and sample locations is presented on Figure 2.

When comparing the encountered concentrations of the chemicals of concern to the SWRCB Environmental Screening Levels (ESLs) for residential land use, it was established that the concentrations of both TPH-d in groundwater and O&G in soil at the fill pipe location did, in fact, marginally exceed the ESLs. In a letter dated February 27, 2015, the ACDEH requested that the City of Alameda further investigate the shallow soil and groundwater surrounding the closed UST.

6.0 Scope of Work

In accordance with the directives conveyed by the ACDEH, which request the development and implementation of a Site Investigation Work Plan to further define the vertical and horizontal extent of possible contaminant migration, the following on site assessment activities are proposed.

6.1 Prefield Activities

Prior to implementing this work plan, written approval will be obtained from the ACDEH. Also, a soil boring installation permit will be obtained from Alameda County Public Works Agency, and 72-hour notification will be given prior to implementing field activities. In addition, proposed boring locations will be marked with white paint and Underground Services Alert (USA) will be notified at least 48 hours prior to drilling. Also, a private underground utility locator will map below-ground utilities on the Site and on Mound Street and clear proposed boring locations. Prior to initiating drilling activities, a Site Safety Plan will be prepared, and a tailgate safety meeting will be conducted with all site workers.

6.2 Site Investigation Activities

ENV proposes to advance borings into the shallow soil and groundwater surrounding the closed tank in a progressive (i.e. "step out") manner, thus providing an accurate depiction of the vertical and lateral extent of contaminant migration while maintaining the most cost effective program possible. The initial phase of assessment will consist of the advancement of five soil borings at locations extending approximately 10-feet laterally from the previous sample locations. Two of the borings will be sited on the south side of the site, between the former UST location and the residence. The three remaining borings will be drilled on the West, North, and East sides of the former UST location. Proposed sample locations are presented on Figure 3.

Boring activities will be conducted by a State-licensed drilling contractor using both hand auger equipment (borings on residence) and/or direct-push coring equipment (borings on sidewalks/streets). Investigative borings will be drilled to approximately 10 feet in depth (first encountered groundwater is expected at about 8 feet in depth).

Borings on the residential property will be advanced to about 10 feet in depth using a cleaned stainless steel hand auger. After each hand auger bucket is brought to the surface and exposed, the soil will be examined, logged, and field screened for hydrocarbons by a qualified scientist using sight, smell, and an organic vapor monitor (OVM). Subsurface soils will be sampled at approximately five-foot intervals (0 to 5 feet and 5 to 10 feet). After the hand auger bucket is removed from the boring, each sample will be collected using a slide hammer sampler as follows: (1) The slide hammer sampler, which will include a clean brass/stainless steel sleeve, will be driven into native soil at the base of the boring, completely filling the sleeve with undisturbed soil and taking care to minimize excess void in the tube; (2) The sampler will be removed and the sleeve will then be quickly sealed with Teflon sheets and plastic end caps; and (3) The sealed tube will be labeled and immediately placed in cold storage for transport to the analytical laboratory under formal chain-of-custody.

Borings in the City sidewalk and street will be cored to about 10 feet in depth using direct-push hydraulically-driven soil coring equipment. Continuous soil cores will be collected to total depth in a clear plastic acetate tube, nested inside a stainless steel core barrel. After each four-foot core barrel is brought to the surface and exposed, the core will be sliced lengthwise along the length of the acetate tube, allowing full examination and logging of the soil core prior to sampling. Soil samples will then be collected from specific zones of interest in an acetate liner, which will be cut to the desired length (typically four to six inches), capped with Teflon tape and plastic end caps, labeled and placed in cold storage pending transport to a laboratory under formal chain-of-custody. All coring and sampling equipment will be thoroughly cleaned and decontaminated between each sample collection by triple rinsing first with water, then with dilute tri-sodium phosphate solution, and finally with distilled water. Cleaning rinseate will be contained onsite in a sealed drum pending laboratory results.

One grab groundwater sample will be collected from each boring at first encountered groundwater (expected at approximately 8 feet in depth). Grab groundwater samples will be collected from the open boring after placing 1-1/4-inch diameter well casing in the boring. Groundwater will then be sampled using a clean small diameter bailer, and poured directly into laboratory-supplied containers. Each sample container will then be tightly sealed, labeled, and placed in cold storage for transport to the laboratory under formal chain-of-custody.

Following completion, the investigative borings will be grouted to match existing grade using a cement\sand slurry. Soil cuttings generated during this investigation will be stored onsite in sealed DOT-approved containers.

Approximately 10 soil samples and five groundwater samples from this investigation will be analyzed for the following parameters with standard turn around on results:

- Total Petroleum Hydrocarbons as gasoline (TPH-g) by EPA method 8015M
- Total Petroleum Hydrocarbons as diesel/motor oil (TPH-d/mo) by EPA method 8015M

In addition, at least two soil and two groundwater samples (those with TPH-g and/or TPH-d/mo detections) will be analyzed for the following parameters with standard turn around on lab results:

- Volatile Organic Compounds (VOC) by EPA method 8260B,
- Semi-Volatile Organic Compounds (SVOC) by EPA method 8270

Based on the findings of the analytical results, a second phase of borings may be implemented to fully define the hydrocarbon migration path, and satisfy the requirements of the ACDEH in order to achieve case closure.

All waste soil boring spoils and equipment decontamination waste water will be packaged in 55-gallon steel DOT approved drums, and transported under a non-hazardous waste manifest and current profile to the Potrero Hills Landfill located in Suisun City, CA for disposal.

6.3 Report

Upon completion of site work and receipt of soil and groundwater sampling laboratory results, ENV will prepare a Site Investigation Report. The Report will present the exploration, sampling, and testing methods implemented, as well as findings of the investigation, and presentation of risk evaluations, conclusions and recommendations. The report will also include boring logs which will include detailed lithologic descriptions and depth to water measurements (to be used to assess depth and thickness of the bio-attenuation zone). The Report will be submitted to the City of Alameda in draft form for comment prior to finalization and submittal to the ACDEH.

7.0 Limitations

This Soil & Groundwater Investigation Work Plan was prepared on behalf of and for the use of the City of Alameda, and their respective partners, investors, representatives, successors and assigns, and lenders, for the specific site located at 1380 Mound Street, Alameda, California. Use of this report by any other party shall be at such party's sole risk.

ENV America makes no warranty as to the accuracy of statements made by others which are contained in this Report, nor are any other warranties or guarantees, express or implied, included or intended in the Report with respect to information supplied by outside sources or conclusions or recommendations substantially based on information supplied by outside sources. This Report has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. It is further declared under penalty of perjury, that the information and/or recommendations contained in this Work Plan is true and correct to the best of the knowledge of the preparer.

None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

David C. Solis, JD, PhD, PE
Sr. Project Manager / Principal

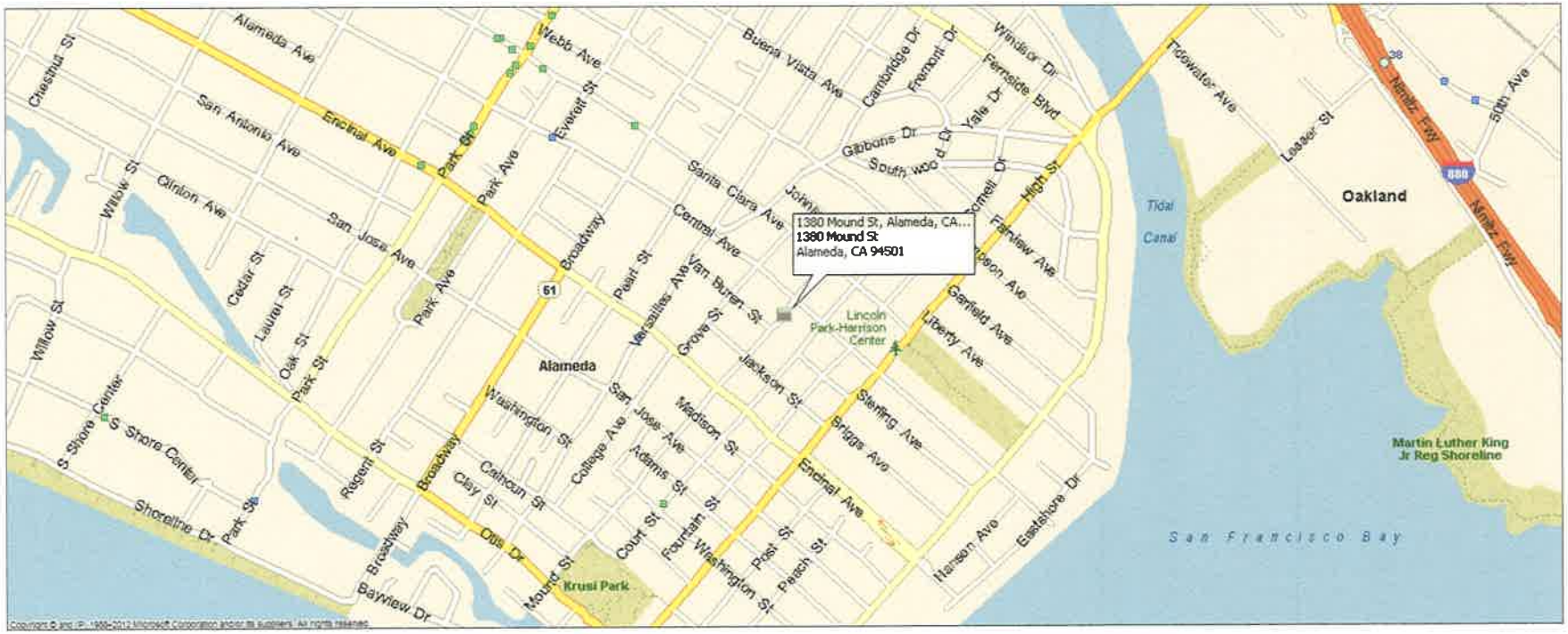
James E. Gribi, PG
Senior Geologist

8.0 References

- Various e-mail correspondence, *March 2013 – May 2013*
- Advanced Geological Service, *Report of Geophysical Investigation Results, 1380 Mound St., Alameda, CA, April 2, 2014*
- ENV America, Inc., *Work Plan and Permit Application for Closure of Underground Storage Tank, 1380 Mound St., Alameda, CA July 30, 2014*
- ENV America, Inc., *Sample Collection and Testing Methodology, August 11, 2014*
- Curtis & Tompkins, Ltd, Analytical Laboratories, *Analytical Report, August 21, 2014*
- ENV America, Inc., *UST Closure Report, September 15, 2014*
- University of California, Kearney Foundation, *Report on Background Concentrations of Trace and Major Elements in California Soils, March 1996*
- State of California Regional Water Quality Control Board, Report on Environmental Screening Levels, December 2013
- State of California Regional Water Quality Control Board, *Low-Threat Underground Storage Tank Case Closure Policy, August 2012*
- Alameda County Environmental Health Services, *Letter, February 27, 2105*

APPENDIX A

FIGURES



ENV America, Inc			
City of Alameda UST Closure Site Location Map			
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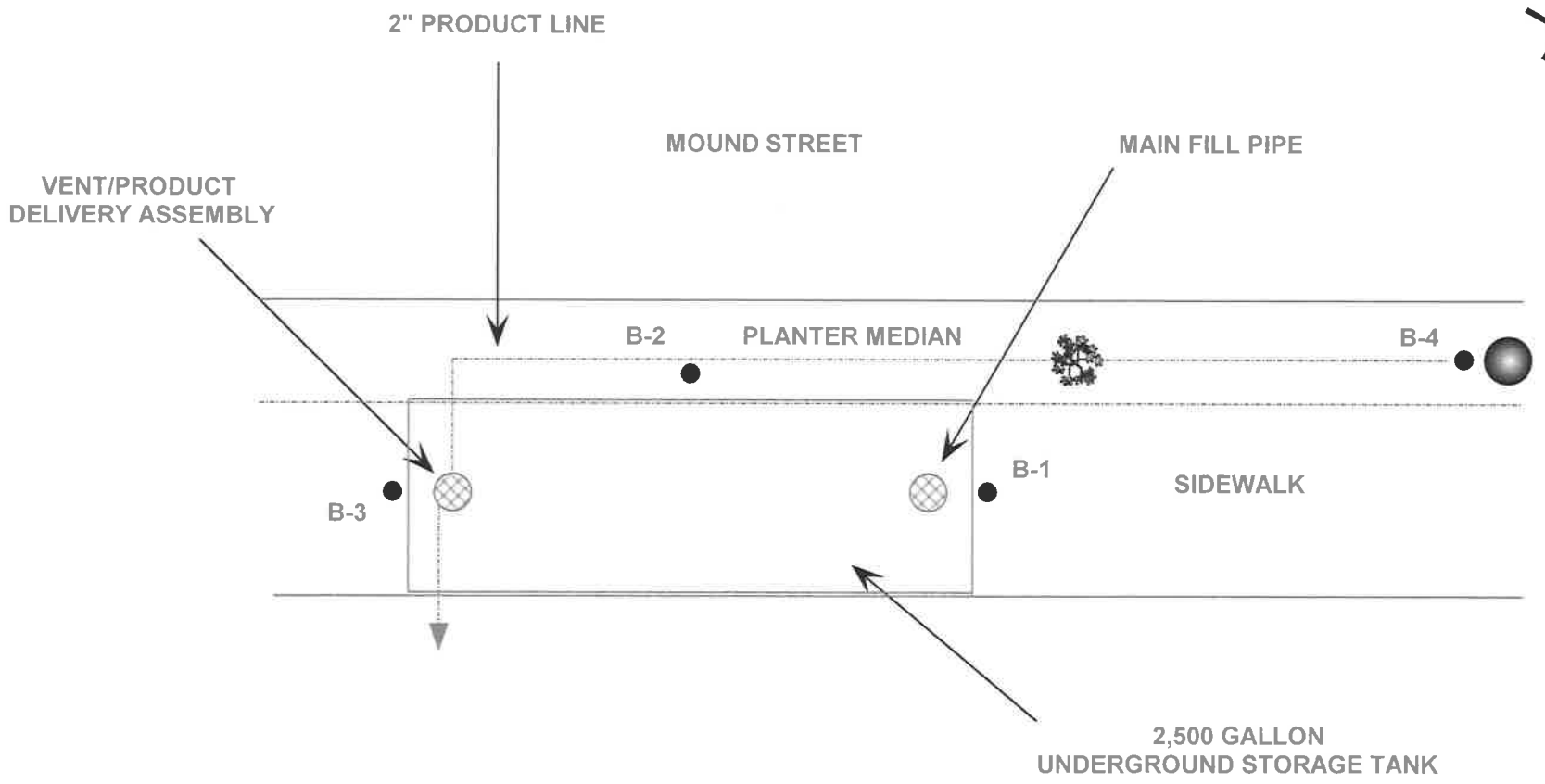
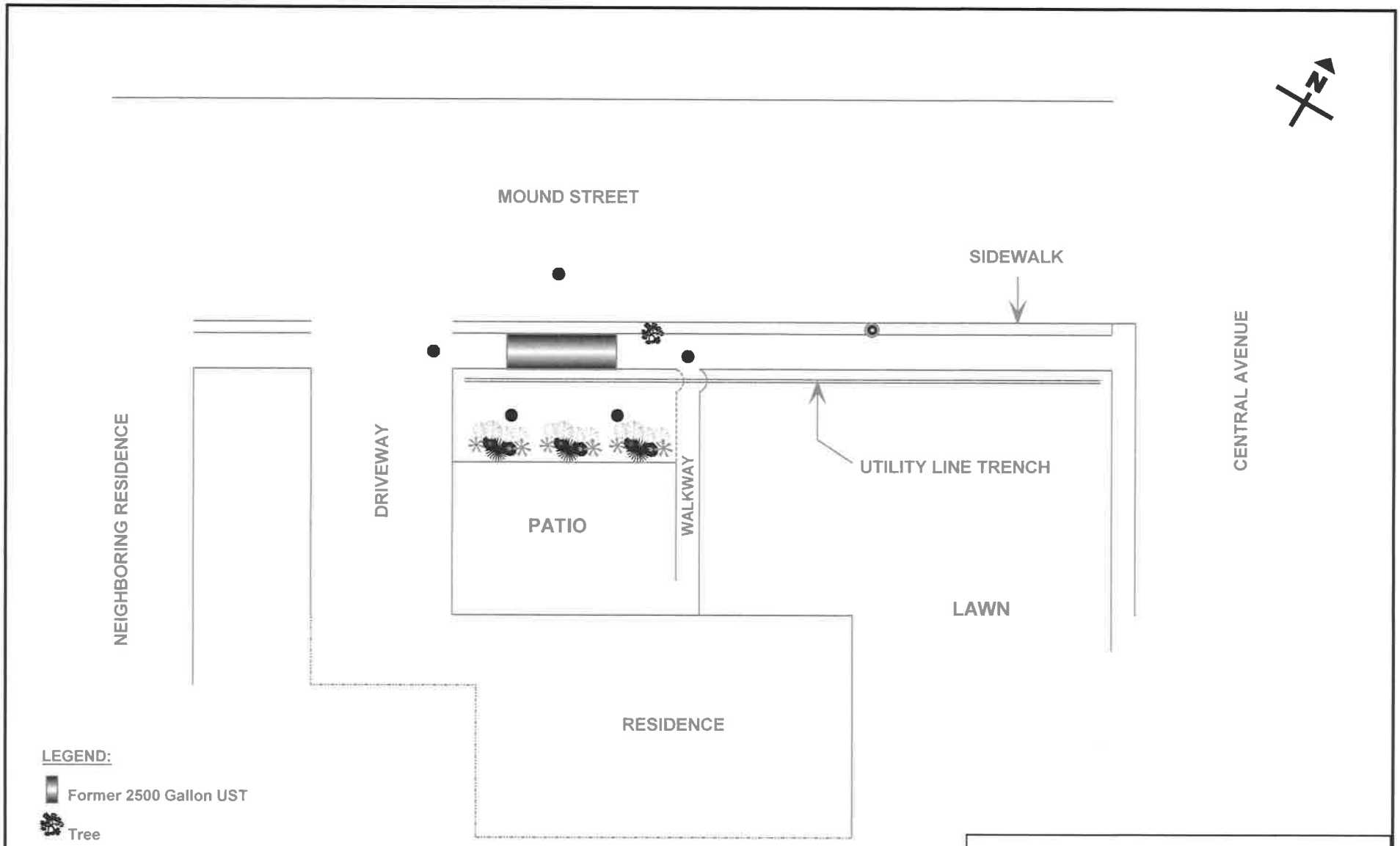


LEGEND

- Soil Sample Location
- Utility Pole
- Tree

Scale: None

ENV America, Inc.			
Site Plan w/UST, Product Line, and Previous Sample Locations			
DRAWN	SITE	DATE	DRAWING NO.
DCS	1380 Mound St. Alameda, Ca	8-22-14	2



LEGEND:

- Former 2500 Gallon UST
- Tree
- Utility Pole
- Proposed Soil Boring Location

Scale: 1" = 20'

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Site Plan w/Proposed Soil Boring Locations

DRAWN	SITE	DATE	DRAWING NO.
DCS	1380 Mound St. Alameda, CA	5-8-15	3