EAST BAY
MUNICIPAL UTILITY DISTRICT

RECEIVED
By Alameda County Environmental Health 11:20 am, May 15, 201

May 2, 2017

Mr. Keith Nowell
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Transmittal
Site Conceptual Model
East Bay Municipal District Anderson Building
Oakland, California
Geotracker Global ID: T0600102115

Dear Mr. Nowell:

East Bay Municipal Utility District (EBMUD) is pleased to submit this site conceptual model for EBMUD's Anderson Building leaking underground storage tank site located at 1075 West Grand Avenue in Oakland, California. This report was prepared by Engineering/Remediation Resources Group, Inc. (ERRG) on behalf of EBMUD in compliance with Alameda County Environmental Health directives related to Fuel Leak Case No. RO0000449.

> *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.*

If you have any questions, please contact John Walter of my staff at (510) 986-7524 or via e-mail at john.walter@ebmud.com.

Sincerely,

Chandra Johannesson
Manager of Environmental Compliance

enc: Anderson Building LUFT/SLIC Case, Site Conceptual Model, Fuel Leak Case No. RO0000449, GeoTracker Global ID: T0600100495, 1075 West Grand Avenue, Oakland, CA

cc: Dan Lohr, ERRG
ERRG Project File

ERRG
Engineering/Remediation Resources Group, Inc.
4585 Pacheco Blvd., Suite 200
Martinez, CA 94553
P: 925.969.0750
F: 925.969.0751
www.errg.com

August 10, 2016 Ref.: 20160093

John Walter
East Bay Municipal Utility District
375 11th Street MS 704
Oakland, CA 94607

Anderson Building LUFT/SLIC Case
Site Conceptual Model
Fuel Leak Case No. RO0000449
GeoTracker Global ID: T0600100495
1075 West Grand Avenue, Oakland, CA.

Dear Mr. Walter:

At the request of East Bay Municipal Utility District (EBMUD) and in accordance with Alameda County Environmental Health's (ACEH) directive "Fuel Leak Case No. RO0000449 and GeoTracker Global ID T0600100495, EBMUD, 1075 W Grand Ave, (the Anderson Building – formerly 2130 Adeline Street), Oakland, CA 94607" dated June 24, 2016, Engineering/Remediation Resources Group, Inc. (ERRG) has prepared this Site Conceptual Model and Data Gap Identification (SCM) to address the General and Media Specific criteria of the State Water Resources Control Board's (SWRCB) Low Threat Underground Storage Take Case Closure Policy (LTCP) for the case referenced above (site) (Figure 1).

The SCM presented in Table 1 was developed using available data taken from the following three reports which are believed to contain all relevant site data:

- Universal Engineering Incorporated, 1987. "Final Report Removal of Fuel Storage Tanks Proposal #8719 Schedule III at West Grand and Linden St. and Administration Building West." December 14.
- East Bay Municipal Utilities District, 1988. "Final Report - Two Underground Storage Tanks Removed from Sites Located at West Grand and Linden Streets." July 7.
- GeoPlexus, Inc., 1995. "Preliminary Site Assessment Report, East Bay Municipal Utility District, Adeline Maintenance Facility, 1200 21st Street, Oakland, California." March 2.

A summary of historical soil sample analytical results is presented in Table 2. The approximate locations of the former underground storage tank in question and two borehole field points is shown on Figure 2.

If you have any questions or comments regarding this letter report, please contact me at 415-395-9974 (email: michael.friedman@errg.com) or Erik Oehlschlager at 925-839-2274 (email: erik.oehlschlager@errg.com).

Sincerely,

Michael Friedman, PG
Senior Project Geologist

Enclosure 1: Tables
Enclosure 2: Figures

Enclosure 1. Tables

Table 1. Site Conceptual Model

SCM Element	SCM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	***Geology:*** The hills along the East Bay area of Oakland and along the San Francisco Peninsula, as well as the down-warped Bay plain in between, are part of the central California Coast Range Province. The rock exposed in the hills and underlying the sedimentary deposits of the Bay plain consists of Tertiary-aged sediments and volcanic rock. The uplift of the hills resulted in erosion and deposition of thick alluvial fan deposits on the Bay plain, known as Alameda formation. Approximately 540 feet of tertiary to early quaternary sediments overlies bedrock beneath East Bay. The unconsolidated sedimentary deposits include artificial fill, estuarine deposits known as Bay Mud, the Merritt sand, Yerba Buena Mud, and the Alameda Formation (Engineering-Science, 1988). The closest major fault, the Hayward Fault, is located about 3.5 miles northeast of the property. While the site is located in a seismically active area, it is not within an Alquist-Priolo Special Studies active fault zone, the legislatively defined zone of restricted land use 200 feet around an active fault due to the high probability of ground rupture. ***Hydrogeology:*** Freshwater aquifer beneath Oakland includes most of the porous sands and gravels of the Alameda and Temescal alluvial deposits and the Merritt Sand. The aquifers are recharged by rainfall on exposed areas of the porous formations, primarily between the SP right-of-way and the Oakland Hills to the east. The water flows downgradient toward the bay. The fresh water contacts higher-density saltwater in the vicinity of the bay margin. The regional groundwater flow direction is westward toward the bay, although local variations may occur due to variations in topography and subsurface lithology. The depth to groundwater varies seasonally and has been measured in the site vicinity between 5 to 10 feet bgs (Engineering-Science, 1988) (AEI, 2007).	None	N/A
	Site	***Geology:*** Based on boring logs completed during a 1995 site investigation, the uppermost soil 1 to 2 feet bgs is composed of a gravelly sand base material. Below the base material are siltly clays down to approximately 11 feet bgs where the soil transitions to a clayey sand with gravel extending down to at least 14 feet bgs. No site data exists beyond 14 feet bgs. ***Hydrogeology:*** Shallow groundwater was not reported to have been encountered during the 1995 site investigation. However, a 2009 investigation approximately 600 feet west at an adjacent EBMUD site located at 1200 21st Street, Oakland, California reported the depth to first saturated sediments range from 10 to 13 feet bgs (Alisto, 2009). The groundwater gradient approximately 1,300 feet northwest of the site at 2221 Union Street, Oakland, California was reported to be 0.041 feet per foot in a northwesterly direction in May 2007. Static depth to water measurments at Union Street in 2007 ranged from 5.86 to 9.42 feet bgs (AEI, 2007).	None	N/A
Surface Water Bodies	Regional	The closest surface water body is Lake Merrit, located approximately one mile to the southeast of the site in Oakland, California. The Oakland Outer and Inner Harbors of the San Francisco Bay are approximately 1.25 miles to the northwest and 1.35 miles to the south of the site, respectively (Figure 1).	None	NA
Nearby Wells	Regional	DWR and ACPW radius well searches within the vicinity of the site have not been requested. Radius well searches will identify any agricultural, domestic, and municipal groundwater wells on record.	The presence or absence of any agricultural, domestic, and municipal groundwater wells in the vicinity of the site has not been verified by DWR and ACPW radius well searches.	DWR and ACPW radius well searches have been proposed for an EBMUD LUFT case located adjacent to the site. Well search records from that LUFT case can be used to verify the presence or absence of any agricultural, domestic, and municipal groundwater wells in the vicinity of the site.
Unauthorized Release	Site	On June 11, 1987, an unauthorized petroleum release associated with a UST was discovered on EBMUD property near the intersection of Linden Street and West Grand Avenue in Oakland, California (Figure 2). On June 15, 1987, the release was stopped when a 500 gallon underground storage tank was removed between Linden Street and EBMUD's Anderson Building. The excavation was measured to be 11.75 feet long by 6.5 feet wide. The depth of the 1987 excavation, as well as the backfill material, is unknown. Two composite soil samples were taken during the 1987 excavation and analyzed for Total Volatile Hydrocarbons by EPA Method 8015 and Benzene, Toluene, and Xylene by EPA Method 8020 with one sample having no detections and the other sample having detections of 170 mg/kg, 3.6 mg/kg, 15 mg/kg, and 11 mg/kg, respectively (Table 2). Presumabaly after further excavation activities at the former tank location, a third soil sample was collected on July 7, 1987, and analyzed for Total Fuel Hydrocarbons (140 mg/kg), Benzene (1.2 mg/kg), Toluene (0.5 mg/kg), and Xylene Isomers (1.9 mg/kg) (Table 2) (UEI, 1987). An underground storage tank unauthorized release (leak)/contamination site report documenting that the release had been stopped was submitted by EBMUD and was received by the ACHMD on March 21, 1988. At the request of ACHMD, EBMUD re-excavated the former UST location (Figure 2) on April 25, 1988, until undisturbed clay-sand material was encountered at a depth of 12 feet bgs. The re-excavated hole was reported to have a slight fuel odor and preliminary results indicated that some residual fuel contaminated soil remained in the excavation. Additional soil was removed from the re-excavation on April 25, 1988, until there was no longer a fuel odor and a soil sample was taken for laboratory analysis of Total Fuel Hydrocarbons by EPA Method 602 and BTEX. Total Fuel Hydrocarbons were reported as non-detect less than 10 mg/kg (Table 2). The BTEX sample was lost by the laboratory. Clean fill was used to back fill the re-excavation which was capped with concrete (EBMUD, 1988).	None	NA
Free Product	Site	The final report issued to EBMUD documenting the Anderson Building 500 gallon UST removal makes no mention of free product being found within the excavation. Similarly, the final report documenting the 1988 re-excavation activities at the former UST location did not indicate the presence of free product. Furthermore, Total Fuel Hydrocarbons were not detected in the soil sample that was collected following the 1998 re-excavation.	None	NA

Table 1. Site Conceptual Model

SCM Element	SCM Sub-Element	Description	Data Gap	How to Address
Secondary Source	Site	Laboratory results from soil samples collected following the 1987 UST excavation activities indicate that detectable concentrations of Total Fuel Hydrocarbons and BTX remained in soil where a Benzene concentration of 1.2 mg/kg exceed it's current February 2016 RWQCB Soil ESLs under the Leaching to Groundwater as Drinking Water resource (0.044 mg/kg) (Table 2). Laboratory results from a soil sample collected following the 1988 re-excavation of the former UST location indicates that additional soil removal successfully reduced the Total Fuel Hydrocarbon concentration in soil to less than 10 mg/kg at the former UST location (Table 2). Reduction in BTX concentrations following the 1988 re-excavation at the former UST location cannot be evaluated because the the soil sample submitted for BTEX analysis was lost by the laboratory. During January 1995, soil borings M-1 and M-2 (Figure 2) were advanced in the vicinity of the the former UST location to characterize soil for future redevelopment activities at the site. Although we know these two field points were in relatively close proximity to the former UST location their exact locations are uncertain. At boring location M-1 a strong gasoline odor was reported at 5 to 6 feet bgs and a questionable solvent odor was reported at 9 to 10 feet bgs. A moderate gasoline odor was reported at 10 to 11 feet bgs in boring M-2. Soil samples were collected from all three of these depth intervals for laboratory analysis of TPH-g, BTEX, and VHCs (GeoPlexus, 1995). None of the samples that reported detectable concentrations exceeded current February 2016 RWQCB Soil ESLs under the Leaching to Groundwater as Drinking Water resource scenario for TPH-g (770 mg/kg), Benzene (0.044 mg/kg), Toluene (2.9 mg/kg), Ethylbenzene (1.4 mg/kg), and Xylenes (2.3 mg/kg). For these analytes with reported non-detectable concentations, all laboratory MDLs were below the current leaching to drinking water ESLs, except for Benzene, where the shallow M-1 sample and the M-2 sample had MDLs of 0.05 and 0.2 mg/kg, respectively. VHCs were not detected at or above the laboratory MDLs of 10 µg/kg in any of the M-1 and M-2 soil samples. The lowest leaching to drinking water ESL value for laboratory report listed VHCs was 4.5 µg/kg and is associated with 1,2-Dichloroethane.	No groundwater data exists for the site. Soil and groundwater have not been tested for MTBE. Lateral and vertical extent of soil and groundwater contamination is not known.	Advance soil boring(s) in the vicinity of the former UST location in order to collect discreet soil samples and grab groundwater samples for laboratory analysis. Analyze soil sample(s) for TPH-g, BTEX and MTBE. Analyze groundwater sample(s) for TPH-g, BTEX, MTBE, and Total Dissolved Solids. Compare soil sample results against ESL values in Table S-2: Soil Leaching to Groundwater Screening Levels (Organic Compounds only) (mg/kg), Final Soil Leaching Screening Levels, Drinking Water Resource to determine if results exceed appropriate ESLs. Compare TPH-g, BTEX, MTBE groundwater sample results against values in Table GW-1: Groundwater Direct Exposure Human Health Risk Screening Level Goals (µg/L), MCL Screening Level to determine if results exceed appropriate ESLs. Compare Total Dissolved Solids groundwater sample results against Table 3-5: Water Quality Objectives for Municipal Supply in RWQCB's Basin Plan to determine if shallow groundwater beneath the site is a suitable municipal source of drinking water.
Vapor Intrusion to Indoor Air	Site	No groundwater data exists for the site at this time. Therefore, groundwater data cannot be compared to current February 2016 Groundwater ESLs under the Commercial/Industrial Vapor Intrusion from Shallow Groundwater scenario to determine if vapor intrusion to indoor air is a concern.	Vapor intrusion to indoor air risk has not been evaluated.	Compare groundwater sample results against ESL values in Table GW-3. Groundwater Vapor Intrusion Human Health Risk Screening Levels (Volatile Chemicals Only), Shallow and/or Deep Groundwater, Commercial/Industrial, Final to determine if results exceed appropriate ESLs.
Preferential Pathways	Site	Underground utilities in the vicinity of the former tank location have not been investigated.	Existence of preferential pathways has not been evaluated.	Conduct a geohysical survey to identify location and depth of any potential underground utility corridors in the vicinity of the former UST location.

Notes:

µg/L = micrograms per liter
ACHMD = Alameda County Hazardous Materials Division
ACPW = Alameda County Public Works Agency
ACPWA = Alameda County Public Works Agency
bgs = below ground surface
BTEX = benzene, toluene, ethylbenzene, xylenes
BTX = benzene, toluene, xylenes
DWR = California Department of Water Resources
EBMUD = East Bay Municipal Utility District
EPA = United States Environmental Protection Agency
ESL = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board, Feb. 2016 (Rev.3)
LNAPL = light non-aqueous phase liquid
LUFT = leaking underground fuel tank
µg/L = micrograms per liter
MTBE = Methyl Tertiary Butyl Ether
N/A = not applicable
SCM = site conceptual model
SP = Southern Pacific Railroad
TPH-d = total petroleum hydrocarbons as diesel
TPH-g = total petroleum hydrocarbons as gasoline
TPH-total petroleum hydrocarbons as motor oil
UST = underground storage tank
UST = underground storage tank
VHCs = volatile Halocarbon Compounds

Engineering-Science, 1988. "Site Characterization Report for Soil and Groundwater Contamination at 1600-63rd Street Site, Emeryville, California." February 1.

Alisto Engineering Group, 2009. "Site Investigation Report, East Bay Municipal Utility District, Adeline Maintenance Facility, 1200 21st Street, Oakland, California." May.

Universal Engineering Incorporated, 1987. "Final Report Removal of Fuel Storage Tanks Proposal #8719 Schedule III at West Grand and Linden St. and Administration Building West." December 14

East Bay Municipal Utilities District, 1988. "Final Report - Two Underground Storage Tanks Removed from Sites Located at West Grand and Linden Streets." July 7.

GeoPlexus, Inc., 1995. "Preliminary Site Assessment Report, East Bay Municipal Utility District, Adeline Maintenance Facility, 1200 21st Street, Oakland, California." March 2.

Table 2. Summary of Historical Soil Sample Analytical Results

Sample Name	Sample Description	Date	VHC (µg/kg)	TFH (mg/kg)	TPH-g (mg/kg)	VH (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
	ESL [1]		*4.5 [2]*	*570 [3]*	*770*	*770 [4]*	*0.044*	*2.9*	*1.4*	*2.3*
No. 1, Fuel Tank, W. Grand & Linden	Composite	6/15/1987	--	--	--	<3	<0.08	<0.1	--	<0.1
No. 2 Fuel Tank, Grand & Linden	Composite	6/15/1987	--	--	--	**170**	**3.6**	**15**	--	**11**
Soil Linden Tank	Grab	7/7/1987	--	**140**	--	--	**1.2**	**0.5**	--	**1.9**
MISC 880425130	Grab	4/25/1988	--	<10	--	--	--	--	--	--
M-1 S1	Discreet, 5-6 feet bgs	1/20/1995	**<10**	--	**78**	--	**<0.05**	<0.05	**0.063**	**0.32**
M-1 S2	Discreet, 9-10 feet bgs	1/20/1995	**<10**	--	**120**	--	<0.005	**0.014**	<0.005	**0.53**
M-2 S1	Discreet, 10-11 feet bgs	1/20/1995	**<10**	--	**460**	--	**<0.2**	**0.35**	**0.66**	**2.0**

1 = Environmental Screening Levels, San Francisco Bay Regional Water Quality Control Board, Feb. 2016 (Rev.3), Table S-2: Soil Leaching to Groundwater Screening Levels (Organic Compounds only) (mg/kg), Final Soil Leaching Screening Levels, Drinking Water Resource

2 = ESL for 1,2-Dichloroethane is the lowest ESL for all volatile halocarbon listed on the laboratory report, ESL of 0.0045 mg/kg converted to 4.5 µg/kg

3 = TPH-d ESL of 570 mg/kg used because it is less than TPH-g ESL of 770 mg/kg

4 = TPH-g ESL

Blue = analyte detected above ESL

-- = not analyzed

Bold = analyte detected at or above laboratory detection limit or laboratory detection limit is above analyte ESL

bgs = below ground surface

ESL = environmental screening level

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

TFH = Total Fuel Hydrocarbons

TPH-g = Total Petroleum Hydrocarbons as Gasoline

VH = Volatile Hydrocarbons

VHC = Volatile Halocarbon Compounds

Enclosure 2. Figures

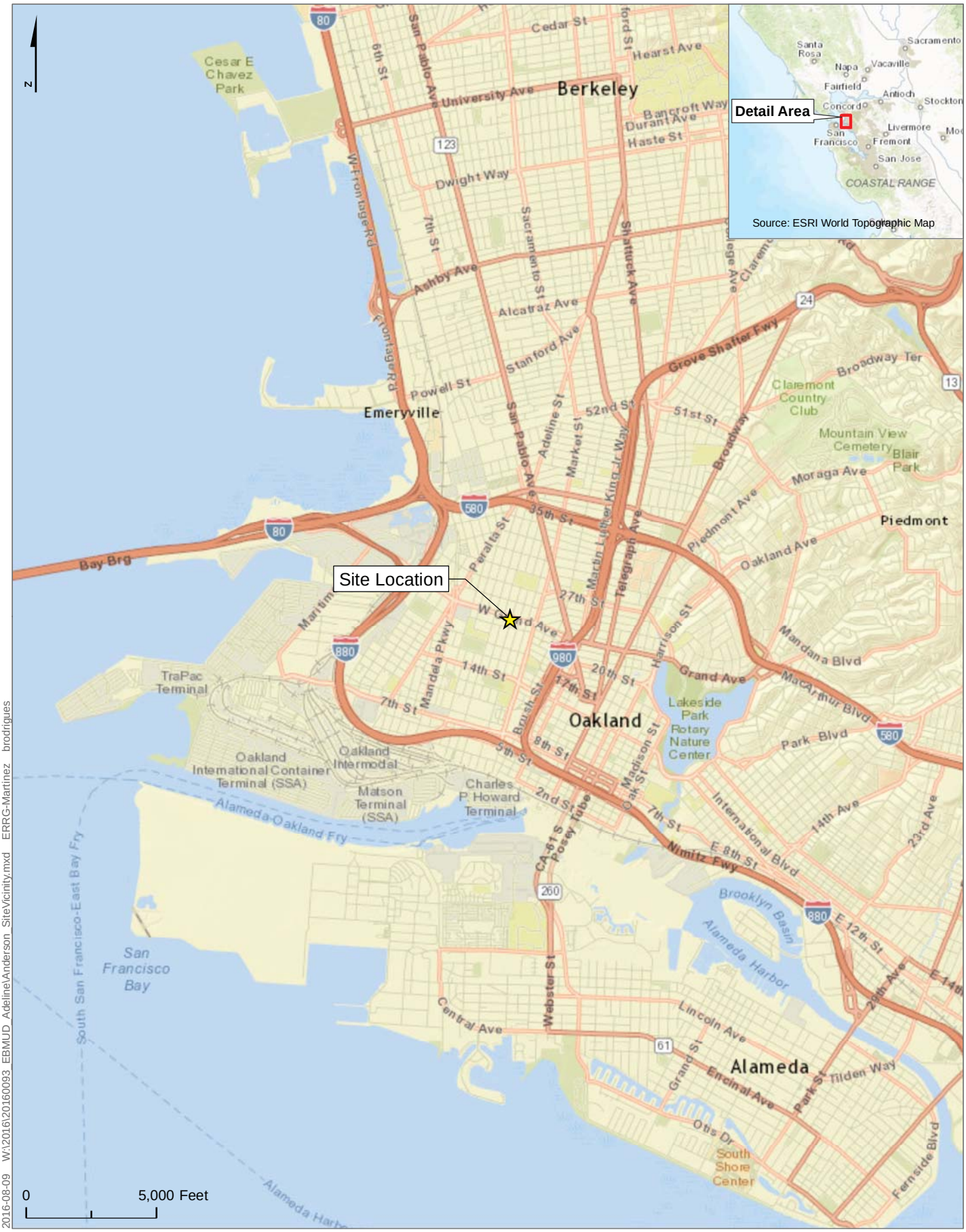
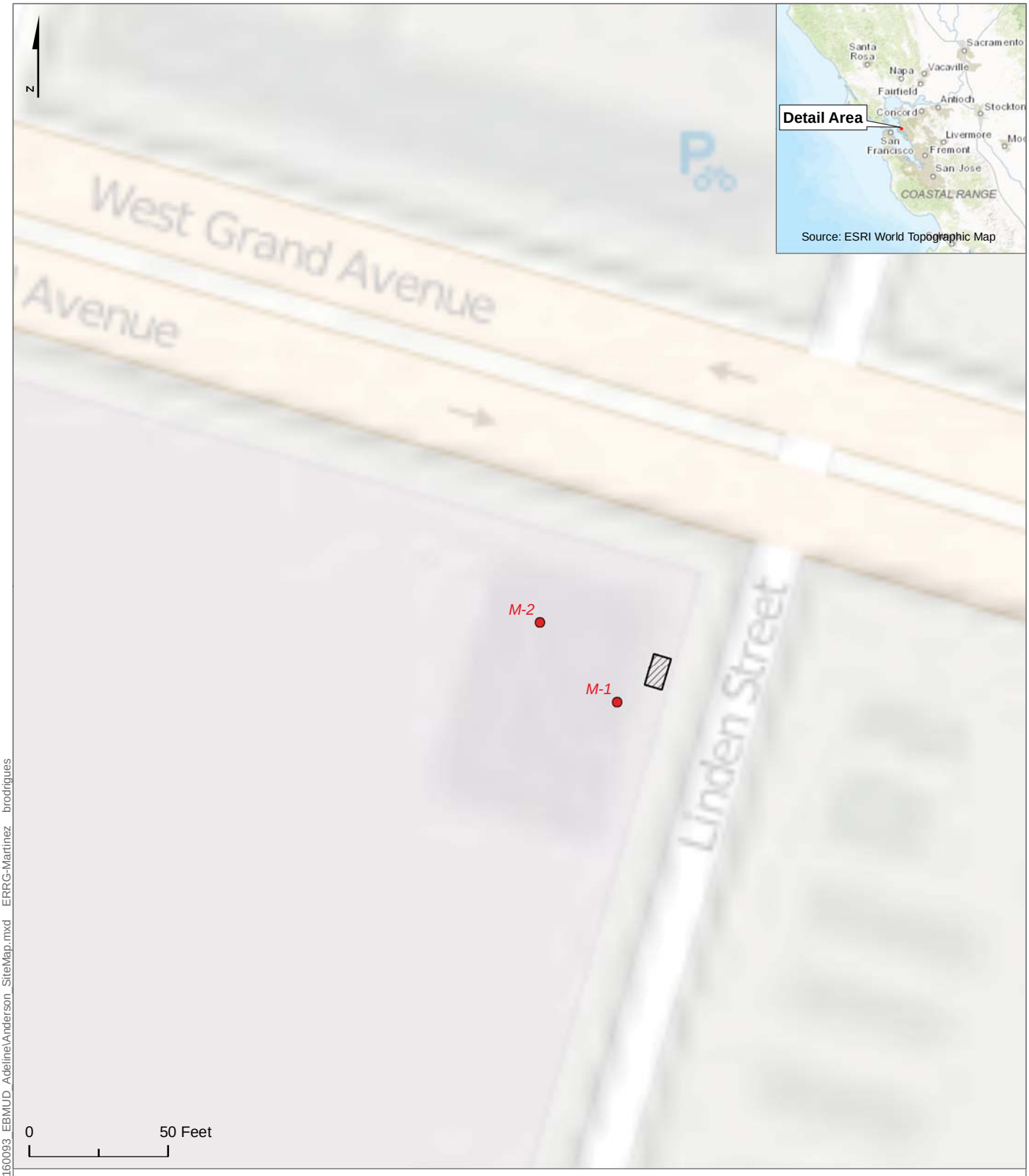


Figure 1. Site Vicinity Map
EBMUD – Anderson Building Site
Oakland, California

ERRG



Estimated Soil Boring Location

Approximate Excavation Hole Location of 500 gallon Tank (11.75' x 6.5')

Source:
Universal Engineering Inc., DWG NO. U.E.SK-1001, 1987

Basemap:
ESRI - World Light Gray Canvas Base
ESRI - OpenStreetMap

2016-08-09 W:\2016\20160093_EBMUD_AdelineAnderson_SiteMap.mxd ERRG-Martinez brodrigues

Figure 2. Site Plan
EBMUD – Anderson Building Site
Oakland, California

ERRG