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By Alameda County Environmental Health 9:32 am, Aug 26, 2016



Remediation Management Services Company

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Mobile: (925) 890-5377
charles.carmel@bp.com

Date: August 25, 2016

To: Ms. Karel Detterman, Alameda County Environmental Health

Re: Conceptual Site Model, Sensitive Receptor Survey, and Case Closure
Request Addendum
Former Atlantic Richfield Company Station #596A
1900 Webster Street, Oakland, California
ACEH Case RO0003100

Dear Ms. Detterman:

I am writing you on behalf of Atlantic Richfield Company related to Former Atlantic Richfield Company Station #596A. "I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct."

Sincerely,

A handwritten signature in black ink, appearing to read 'Chuck Carmel', enclosed within a hand-drawn oval.

Chuck Carmel

Operations Project Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Company

August 25, 2016

Project No. 14-90-103

Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583
Submitted via ENFOS

Attn.: Mr. Chuck Carmel

Re: Conceptual Site Model, Sensitive Receptor Survey, and Case Closure Request Addendum,
Former Atlantic Richfield Company Station No. 596-A, 1900 Webster Street, Oakland, Alameda
County, California; ACEH Case No. RO0003100; Geo Tracker Global ID # T10000004348

Dear Mr. Carmel:

On behalf of the Former Atlantic Richfield Company– (ARC, a BP affiliated company) Broadbent & Associates, Inc. (Broadbent) has prepared this *Conceptual Site Model, Sensitive Receptor Survey and Case Closure Request Addendum* (Addendum) for Former Atlantic Richfield Company (ARC) Station No. 596-A (herein referred to as Former Station No. 596-A), located at 1900 Webster Street, Oakland, Alameda County (Site). Broadbent prepared and submitted the May 24, 2016 *Conceptual Site Model, Sensitive Receptor Survey, and Case Closure Request* (CSM, SRS, & CCR). This Addendum was prepared in response to Alameda County Environmental Health’s (ACEH) directive letter dated July 25, 2016 requesting additional data regarding Low-Threat Closure Policy (LTCP) media specific criteria for groundwater and vapor intrusion to indoor air. This Addendum includes discussions on presumed groundwater gradient direction, potential plume lengths, underground components of buildings within the Site vicinity, and additional evaluation of potential vapor intrusion to indoor air.

Site Setting and Background

The Site was a former ARC-branded service station located at the northeastern corner of Webster Street and 19th Street in Oakland, California. Service station operations occurred at the site from the approximately 1940 until 1966. A commercial building currently resides onsite and is occupied by Lake Merritt Dental. The location of the Site is presented in Drawing 1. A Site Plan that shows current and former well locations and borings is provided as Drawing 2.

The Site is located in a commercial area along Webster Street in central Oakland. The Site is bounded by the four-lane Webster Street to the west and two-lane 19th Street to the south. Commercial buildings are situated to both the north and east of the Site. The nearest body of water, Lake Merritt, is located approximately 960 feet to the east of the Site. A detailed Site background was provided in the *Conceptual Site Model, Sensitive Receptor Survey, and Case Closure Request* dated May 24, 2016.

TECHNICAL COMMENT #1: LTCP MEDIA SPECIFIC CRITERIA FOR GROUNDWATER

ACEH requested additional analysis and justification for the characteristics of the groundwater plume lengths and gradient direction. The following sections address these concerns.

1a - Groundwater Flow Direction

ACEH requested that the groundwater flow directions of adjacent sites listed on the State Water Resources Control Board Geotracker database be plotted on a map in order to further identify the likely flow direction at Former Station No. 596A considering the fact that no permanent groundwater monitoring wells exist at the Site. It is important to note that the groundwater gradient and groundwater flow directions are often times the same but should not be assumed to be the same unless sufficient data has been collected. Water levels from wells allows for the calculation of the groundwater gradient and is what we are presenting here.

Drawing 3 provides a map depicting recent groundwater gradient directions at seven adjacent sites and the site addresses. Based on this drawing, the previously inferred groundwater gradient direction towards the north has been slightly adjusted to north-northeast, as justified by the comparable properties within the closest proximity to Former Station No. 596A and Lake Merritt to the east.

1b - GRO Isoconcentration Contour Map

A revised GRO Isoconcentration Contour Map depicting the estimated concentrations offsite in the downgradient direction (north-northeast) is provided as Drawing 4.

1c - Potential Plume Lengths

As requested by ACEH, the potential plume lengths of GRO, benzene, and MTBE as cited in the *Technical Justification for Groundwater Plume Lengths, Indicator Constituents, Concentrations, and Buffer Distances (Separation Distances) to Receptors* (SWRCB, 2011) are presented on Drawings 5, 6, and 7, respectively. It should be noted that MTBE has not been detected in soil or groundwater samples collected at Former Station No. 596A¹, but Drawing 7 has been included per ACEH's request.

1d - Buildings with Underground Facilities in the Site Vicinity

An online search followed by a site visit on August 22, 2016 was completed in order to determine whether or not adjacent buildings within the vicinity of Former Station No. 596A have underground facilities such as basements, half-basements, potential dewatering structures, elevators, and/or parking garages. Drawing 8 presents the results of this evaluation.

TECHNICAL COMMENT #2: LTCP MEDIA SPECIFIC CRITERIA FOR VAPOR INTRUSION TO INDOOR AIR

ACEH requested that potential mechanisms to explain the apparent reverse concentration gradient observed in soil vapor samples collected from onsite vapor point pairs SG-1A/B and SG-2A/B during the investigation conducted in 2015 be further evaluated. An order of magnitude difference in gasoline range organics (GRO) concentrations were observed in soil vapor samples collected from SG-1A (shallow) and SG-1B (deep) but the concentrations observed in SG-2A and SG-2B were comparable. It is

¹ Service station operations occurred at the site from the approximately 1940 until 1966. MTBE was not used as an additive to gasoline during this period of time.

important to note that the soil vapor points at each location were installed within their own boring and not constructed as nested vapor points, leading to greater potential for variation between the shallow and deep samples.

Soil vapor points SG-1A and SG-1B were installed approximately four feet laterally from each other and based on a review of lithology, appear to have been installed within the same lithologic material. These vapor points were also installed in what is believed to be the general source area of the release(s). As mentioned above, the site was operated as a gasoline service station from approximately 1940 to 1966 and very limited information is known about the release, including whether it originated from the underground storage tanks (USTs) and/or from a shallower system component such as product lines or dispensers. Variations in petroleum hydrocarbon concentrations over short distances are not uncommon especially near the source area if the release was from a shallow source and a result of residual impact from a small pocket of soil and not impacts from groundwater.

It should be noted that GRO is not a soil gas constituent included in the LTCP. Detected concentrations of relevant constituents included in the LTCP (benzene, ethylbenzene, and naphthalene) are below levels presented in the LTCP Scenario 4 for direct measurement of soil gas concentrations with no bioattenuation zone. Furthermore, a bioattenuation zone of five vertical feet has been documented at the site based on the observed concentrations of total petroleum hydrocarbons (TPH) in shallow soil at less than 100 milligrams per kilogram (mg/kg) and oxygen levels greater than or equal to four (4) percent. Therefore, it is believed that vapor intrusion is unlikely to pose a potential risk at the subject property.

DISCUSSION AND RECCOMENDATIONS

Based on additional review of media specific criteria for groundwater and vapor intrusion to indoor air as requested by ACEH, and the previously submitted *Conceptual Site Model, Sensitive Receptor Survey, and Case Closure Request* dated May 24, 2016, this Site appears to meet applicable criteria for case closure under the LTCP. Numerous Site investigations since 2011 have shown that petroleum hydrocarbons associated with the Site have exhibited a decreasing trend. Adequate Site characterization both on- and offsite, evaluation of receptors, historical descriptions and age of release(s), and technical analysis have been performed at the Site and in this and previous documents to support a recommendation for case closure. We hereby recommend that a determination of No Further Action be made for this Site.

Should you have questions or require additional information, please do not hesitate to contact us at (530) 566-1400.

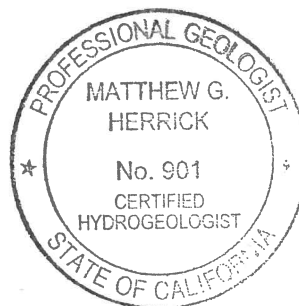
Sincerely,
BROADBENT & ASSOCIATES, INC.



Jason Duda
Senior Scientist



Matt Herrick, P.G., C.HG.
Associate Hydrogeologist

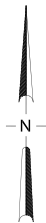
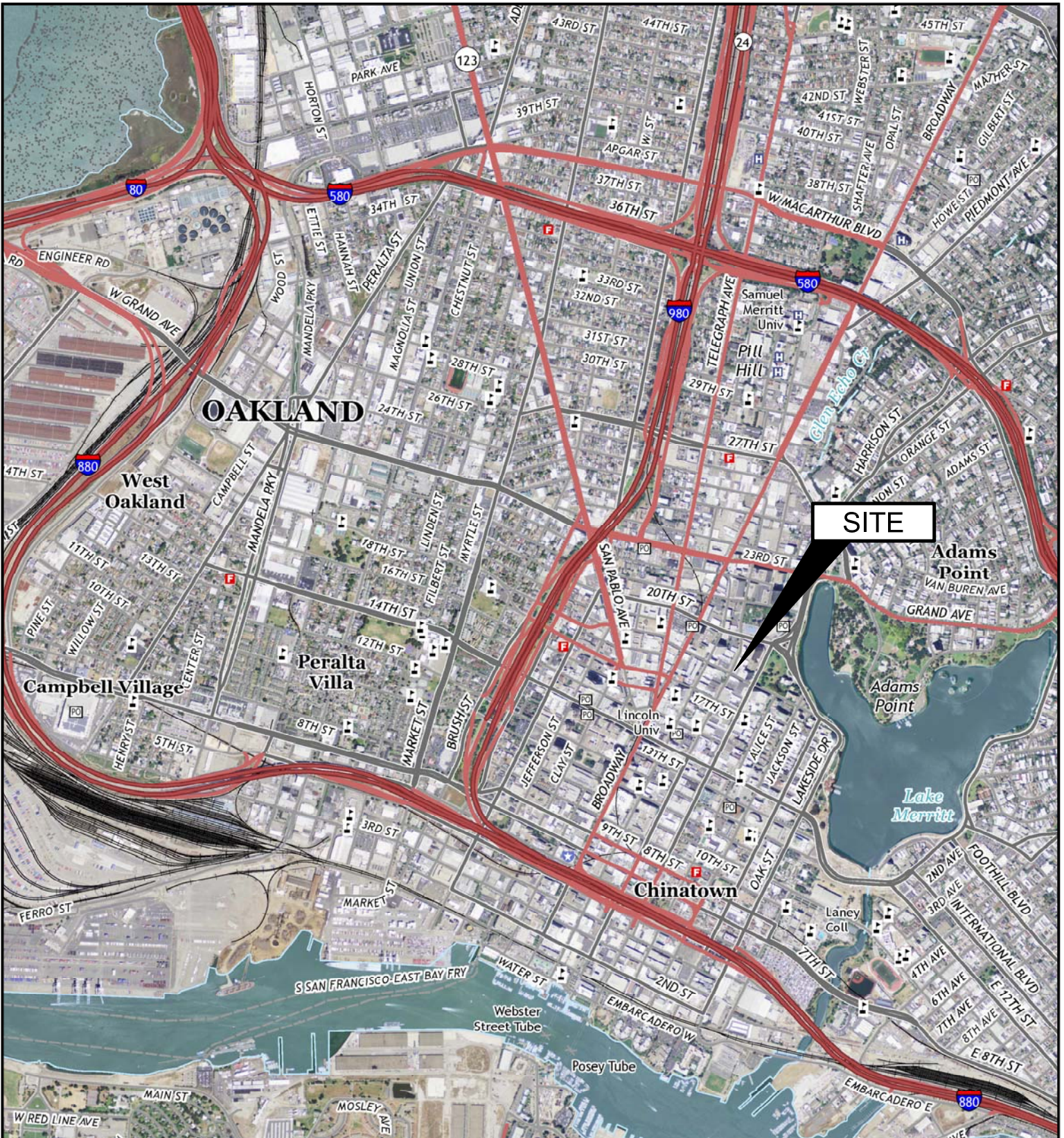


cc: Ms. Karel Detterman, P.G., Alameda County Environmental Health (Submitted via GeoTracker)
Electronic copy uploaded to GeoTracker

Attachments

Drawing 1	Site Location Map
Drawing 2	Site Map with Soil Borings and Soil Vapor Points
Drawing 3	Groundwater Gradient Directions of Adjacent Sites
Drawing 4	GRO Isoconcentration Contour Map
Drawing 5	Potential GRO Plume Lengths Based on LTCP Technical Justification
Drawing 6	Potential Benzene Plume Lengths Based on LTCP Technical Justification
Drawing 7	Potential MTBE Plume Lengths Based on LTCP Technical Justification
Drawing 8	Underground Facilities of Buildings in the Site Vicinity
Table 1	Conceptual Site Model

DRAWINGS



APPROXIMATE SCALE (ft)

IMAGE SOURCE: USGS



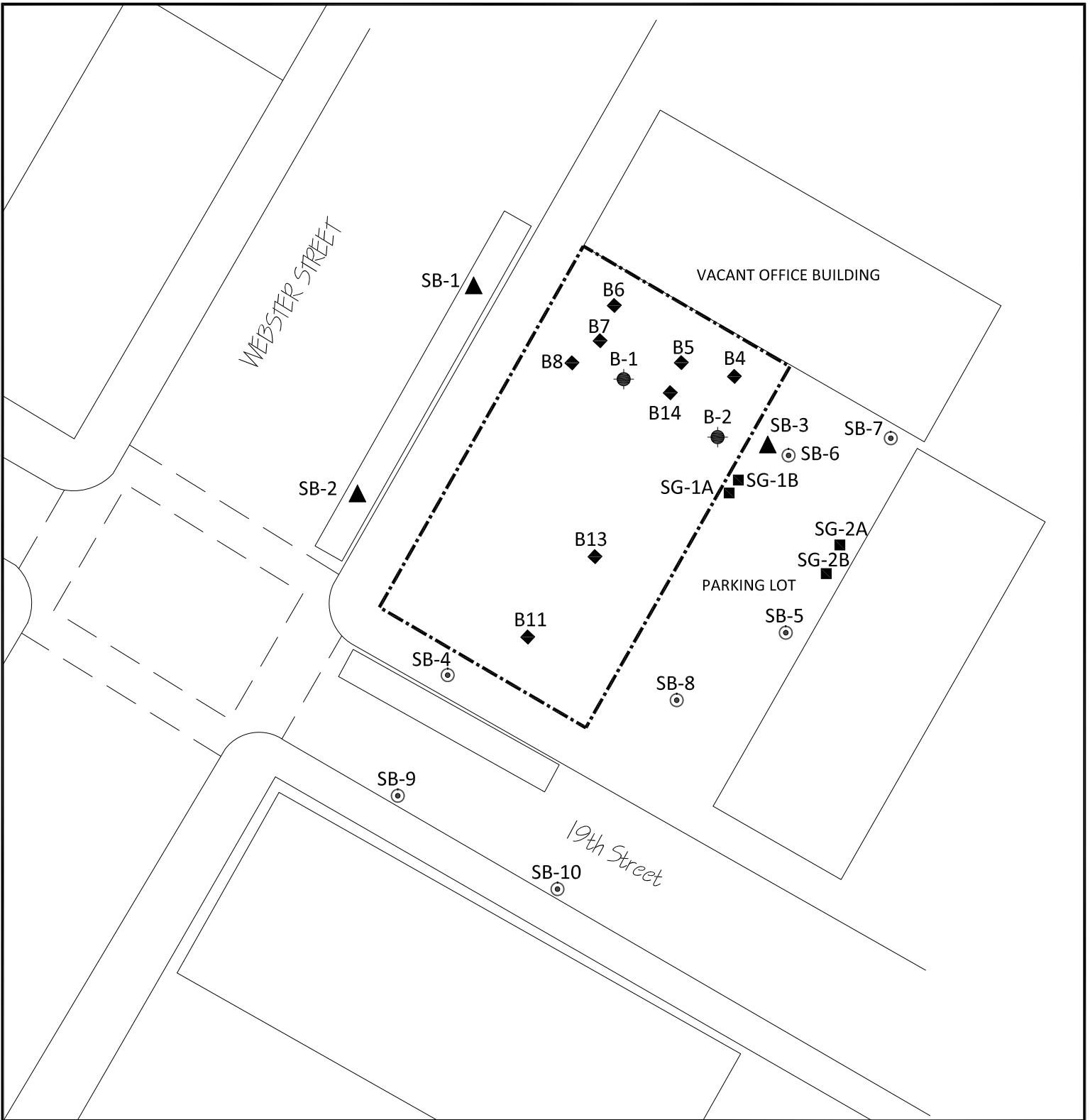
Project No.: 14-10-103 Date: 5/24/2016

Station #596-A
1900 Webster Street
Oakland, California

Site Location map

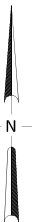
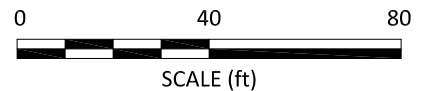
Drawing

1



LEGEND

- ▲ 2011 AEI Soil Boring Locations
- 2012 SCHUTZE Soil Boring Locations
- ◆ 2013 P&D Soil Boring Locations
- ⊙ 2015 Broadbent Soil Boring Locations
- 2015 Broadbent Soil Vapor Point Locations
- ⌞ Subject Property

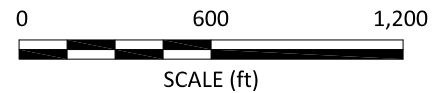




LEGEND

- Station #596-A
- Adjacent Sites
- ➔ Historic Groundwater Gradient Direction

IMAGE SOURCE: GOOGLE EARTH



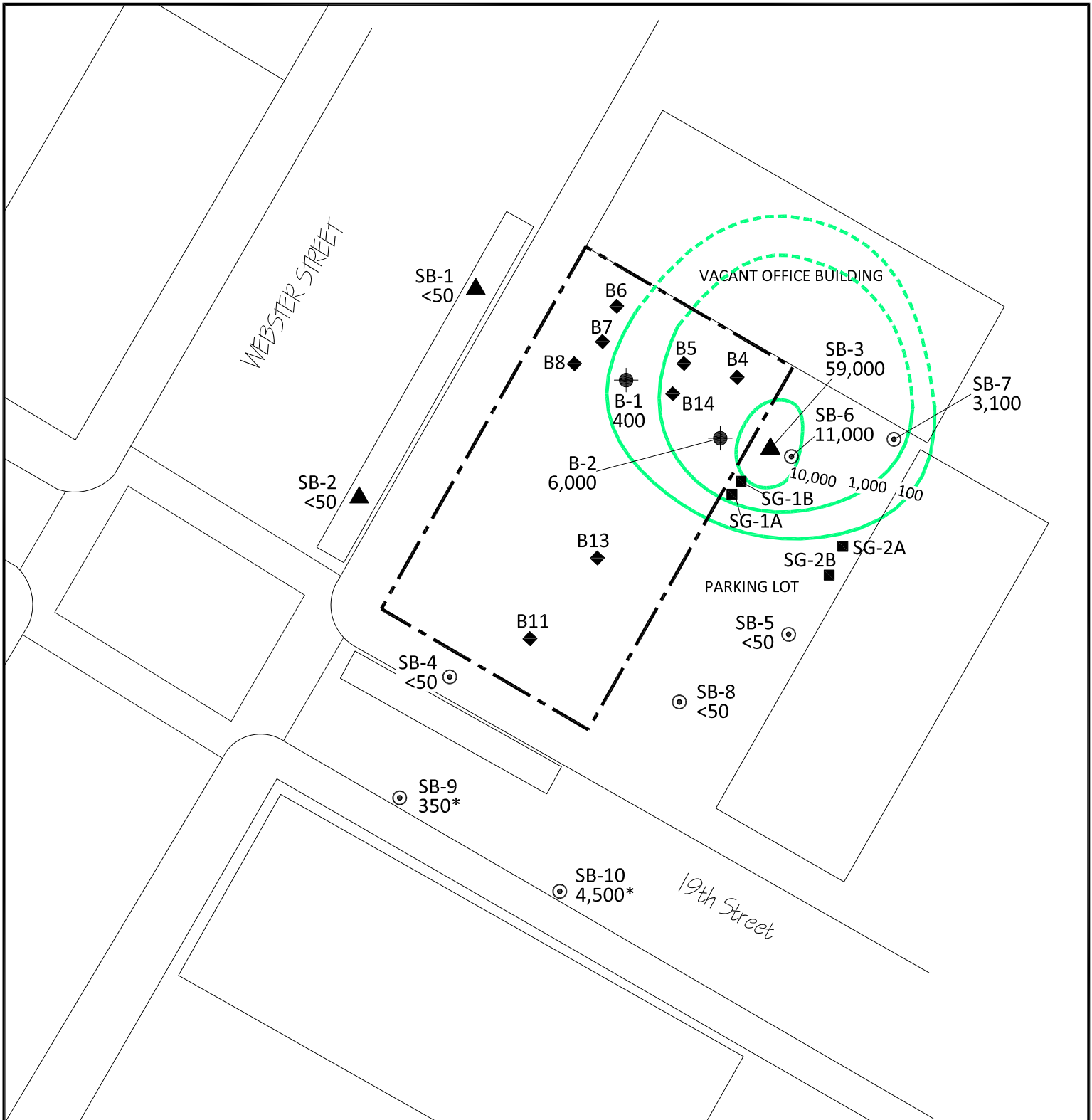
Project No.: 14-10-103 Date: 8/16/2016

Station #596-A
1900 Webster Street
Oakland, California

Groundwater Gradient Direction
of Adjacent Sites

Drawing

3



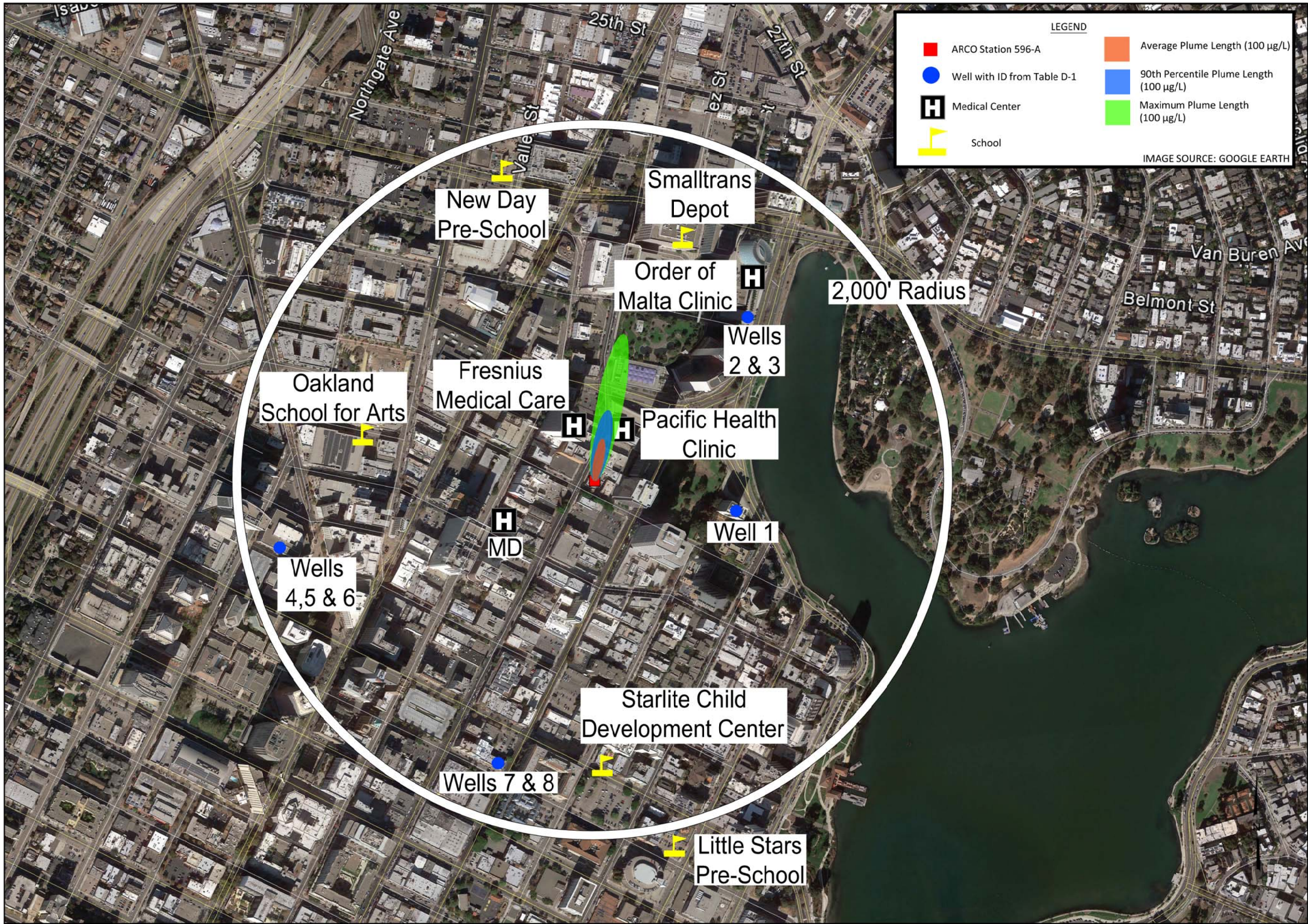
LEGEND

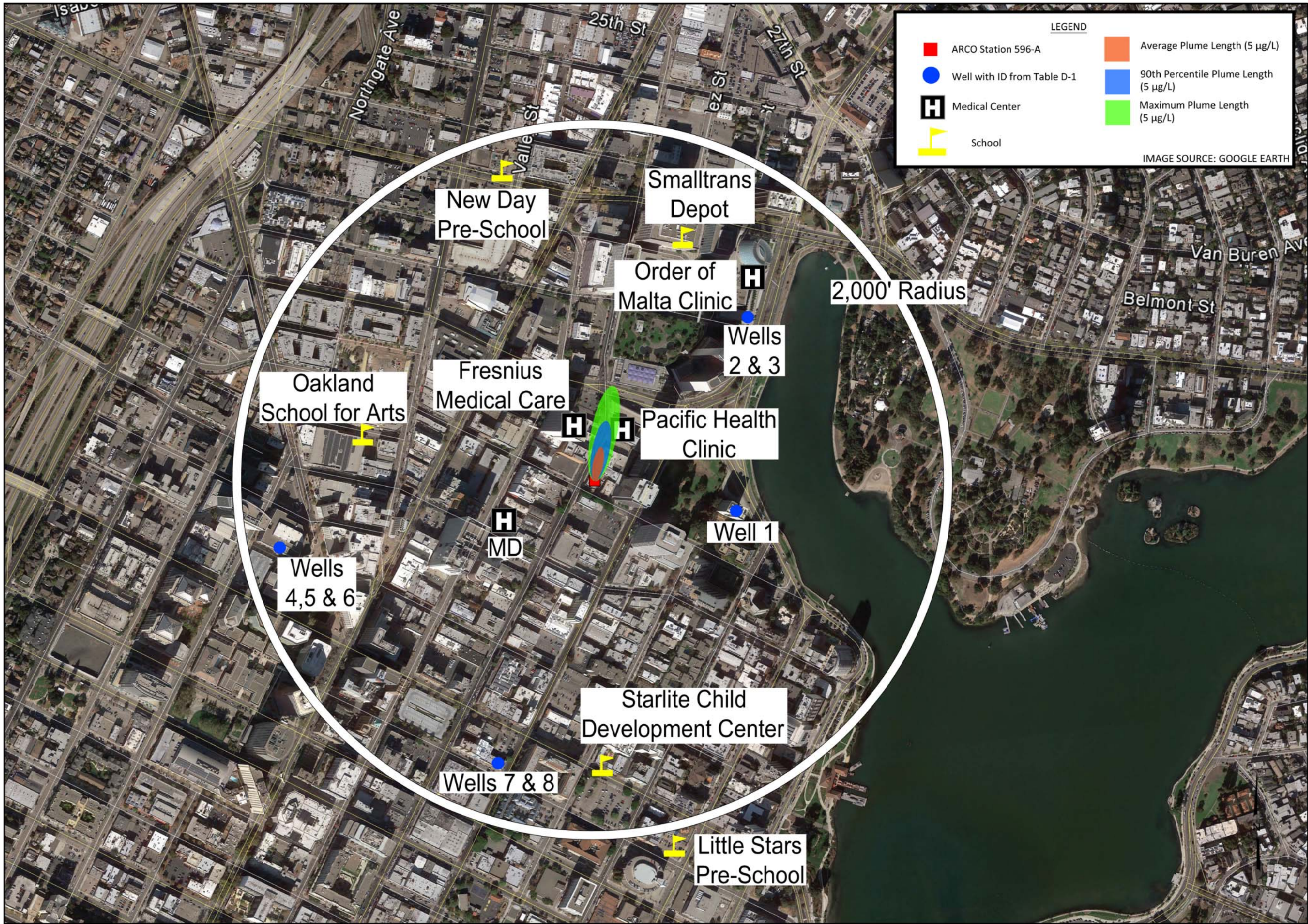
- ▲ 2011 AEI Soil Boring Locations
- 2012 SCHUTZE Soil Boring Locations
- ◆ 2013 P&D Soil Boring Locations
- ⊙ 2015 Broadbent Soil Boring Locations
- 2015 Broadbent Soil Vapor Point Locations

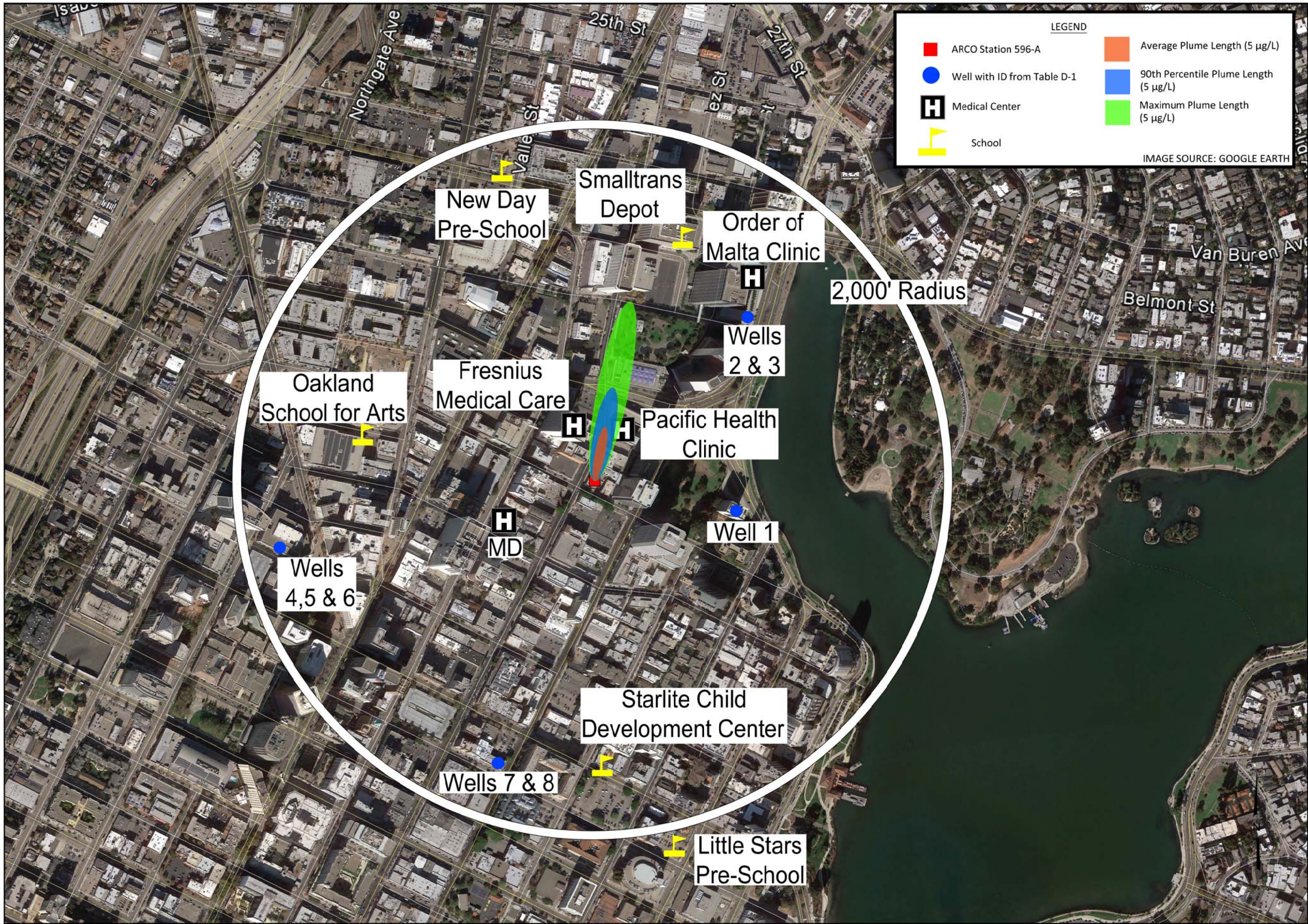
- 100 — GRO Isoconcentration Contour
- - - - - Inferred Isoconcentration Contour
- 3,100 GRO Concentration in µ/L
- ⊞ Subject Property

* Concentrations not utilized for contouring purposes due to association with upgradient source

SCALE (ft)







LEGEND

- ARCO Station 596-A
- Well with ID from Table D-1
- H** Medical Center
- 🚩 School
- Average Plume Length (5 µg/L)
- 90th Percentile Plume Length (5 µg/L)
- Maximum Plume Length (5 µg/L)

IMAGE SOURCE: GOOGLE EARTH



LEGEND

- ① Commercial Building (Elevator)
- ② Commercial Building (Parking Garage)
- ③ Commercial Building (No Underground Facilities Observed)
- ④ Commercial Building (Elevator)
- ⑤ Commercial Building (No Underground Facilities Observed)
- ⑥ Commercial Building (No Underground Facilities Observed)
- ⑦ Commercial Building (Parking Garage)
- ⑧ Commercial Building (Parking Garage)
- ⑨ Commercial Building (No Underground Facilities Observed)
- ⑩ Commercial Building (No Underground Facilities Observed)
- ⑪ Commercial Building (No Underground Facilities Observed)
- Station #596-A

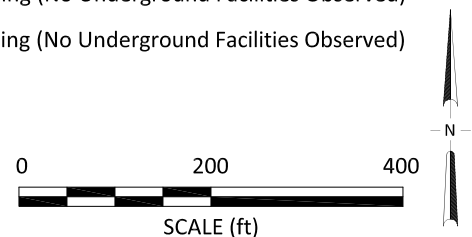


IMAGE SOURCE: GOOGLE EARTH



1370 Ridgewood Dr., Suite 5
Chico, CA 95973

Project No.: 14-10-103 Date: 8/16/2016

Station #596-A
1900 Webster Street
Oakland, California

Underground Facilities of Buildings
in the Site Vicinity

Drawing

8

TABLES

TABLE 1
 CONCEPTUAL SITE MODEL
 Former ARC Station No. 596-A
 1900 Webster Street
 Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	<p>According to the United States Geological Survey (USGS) San Francisco Bay Quadrangle Geologic Map, the area surrounding the subject property is underlain by Holocene era alluvium which is commonly characterized by light-grey to grayish-brown or yellowish-brown gravel, sand, silt and clay. Texture varies from cobble gravel to clay, mixed or interbedded laterally and vertically in places (AEI, 2011). Based on a review of the USGS Oakland West, CA Quadrangle Topographic Map, the Site property is situated approximately 27 feet above mean sea level, and the local topography slopes to the north-northeast (AEI, 2011).</p> <p>According to the <i>East Bay Plain Groundwater Basin Beneficial Use Evaluation Report</i> (California Regional Water Quality Control Board – San Francisco Bay Region/SFRWQCB, June 1999), the Site is located within the Oakland Sub-Area of the East Bay Plain of the San Francisco Basin. The Oakland Sub-Area contains a sequence of alluvial fan deposits. The alluvial fill thickness ranges from 300 to 700 feet deep and there are no well-defined aquitards such as estuarine muds. The largest and deepest wells in this sub-area have historically pumped one to two million gallons per day at depths greater than 200 feet. Overall, sustainable yields are low due in part to low recharge potential. The Merrit sand in West Oakland was an important part of the early water supply for the City of Oakland. It is shallow (up to 60 feet), but before the turn of the last century, septic systems contaminated the water supply wells.</p> <p>Throughout most of the Alameda County portion of the East Bay Plain, from Hayward north to Albany, water level contours show that the general direction of groundwater flow is from east to west or from the Hayward Fault to the San Francisco Bay. Groundwater flow direction generally correlates to topography. Flow direction and velocity are also influenced by buried stream channels that typically are oriented in an east to west direction.</p>	None	NA
	Site	<p>Based on the reports by AEI and SCHUTZE, groundwater was encountered at an approximate depth range of 13.5 bgs in B-1 to 21.36 bgs in SB-3. The groundwater gradient direction associated with the Site has been inferred to flow to the north-northeast due to both the topography of the area and adjacent sites with established groundwater monitoring well networks. Based on review of geologic boring logs by AEI, encountered soil beneath the Site consisted of fine to medium grained poorly graded sand, clayey sands, sandy silt and clay. First-encountered groundwater was in the clayey silt layer located approximately 15 bgs. Broadbent conducted a soil and groundwater investigation from February 2-4, 2015 and the resulting boring logs are consistent with the lithology that AEI, SCHUTZE, and P&D encountered. First-encountered groundwater was between 16 ft bgs to 20 ft bgs, consistent with the previous investigations. Cross Sections of the Site are depicted in Drawings 6 and 7 (CSM, SRS, & CCR, May 2016).</p>	None	NA

TABLE 1
 CONCEPTUAL SITE MODEL
 Former ARC Station No. 596-A
 1900 Webster Street
 Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Surface Water Bodies		The nearest surface water is Lake Merritt, located approximately 960 feet east of the property. The next nearest surface water is the San Francisco Bay, which is approximately 1 mile to the southwest from the Site.	None	NA
Nearby Wells		A Sensitive Receptor Survey was conducted by Broadbent in February and March of 2016. The closest well to the Site is an irrigation well located approximately 900 to the east-southeast. Two wells are located in a downgradient direction (north-northeast) but are over 1,500 feet from the Site. The remaining wells identified within the 2,000 foot radius are located either upgradient or cross-gradient and at distances near the 2,000 foot radius boundary. Additional sensitive receptor data is provided in Appendix C (CSM, SRS, & CCR, May 2016).	None	NA
Constituents of Concern	Light-Non Aqueous Phase Liquids (LNAPL)	LNAPL has not been observed during the investigations conducted on the Site.	None	NA
	Gasoline Range Organics (GRO)	<p>GRO in soil has been detected in samples collected from five borings (SB-3, B7, B14, SB-6, and SB-7), with B7 yielding the highest concentration of 500 mg/kg. For groundwater, GRO has been detected in samples collected from borings SB-3, B-1, B-2, B-5, SB-6, SB-7, SB-9, and SB-10, with boring SB-3 yielding the highest concentration of 59,000 µg/L. Soil borings SB-9 and SB-10, however, were located offsite and in an upgradient direction in order to assess the potential hydrocarbon plume associated with 1732 Webster Street. It was concluded that the offsite source was unlikely impacting the site based on non-detectable concentrations observed in borings SB-4, SB-5 and SB-8 onsite (downgradient from SB-9 and SB-10).</p> <p>Based on recent and historical data, the GRO plume has been defined to the extent practicable and appears to be restricted mainly to the north-northeast portion of the Site with the potential of some remaining residual concentrations beneath the offsite property immediately north of the Site. Although downgradient delineation has not been fully conducted, the presence of multiple commercial buildings in the downgradient direction prohibits further investigations downgradient. In addition, the observed decrease in concentrations between SB-6 and SB-7, the plume does not appear to extend much further offsite than SB-7, as depicted in Drawing 3 (CSM, SRS, & CCR, May 2016) . When measuring the plume from the presumed source area (vicinity of SB-6) to the inferred boundary, its length is less than 100 feet. A GRO Isoconcentration Contour Map is presented as Drawing 3 (CSM, SRS, & CCR, May 2016). Tabulated soil and groundwater analytical results from the recent investigation can be located in Tables 2 and 3 (CSM, SRS, & CCR, May 2016), respectively. Historical soil and groundwater results are located in Appendix A (CSM, SRS, & CCR, May 2016).</p>	None	NA

TABLE 1
 CONCEPTUAL SITE MODEL
 Former ARC Station No. 596-A
 1900 Webster Street
 Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
	Benzene	Benzene has historically been detected in groundwater in boring SB-3 at a concentration of 89 µg/L. Benzene has also been observed at a depth of 19 feet bgs in soil boring SB-10 at a concentration of 0.0025 mg/kg. However, as previously discussed, impacts observed at this location are suspected to originate from an offsite, upgradient source. Additionally, this sample was likely collected below the groundwater table and was affected by concentrations within the groundwater. Based on current concentrations in both soil and groundwater, Benzene appears to be below laboratory reporting limits onsite. Utilizing historic data, the Benzene plume was isolated within the vicinity of previous boring SB-3 and does not extend offsite as depicted on Drawing 4 (CSM, SRS, & CCR, May 2016). The plume is far less than 100 feet in length and restricted completely onsite. A Benzene Isoconcentration Contour Map is presented as Drawing 4 (CSM, SRS, & CCR, May 2016). Tabulated soil and groundwater analytical results from the recent investigation can be located in Tables 2 and 3 (CSM, SRS, & CCR, May 2016), respectively. Historical soil and groundwater results are located in Appendix A (CSM, SRS, & CCR, May 2016).	None	NA
	MTBE	MTBE has not been detected in the soil and groundwater samples collected during Site investigations.	None	NA
Potential Sources	Offsite	During Broadbent's soil and groundwater investigation, two soil borings (SB-9 and SB-10) were installed across 19 th Street to determine if there was potential contamination from the upgradient petroleum hydrocarbon source located at 1732 Webster Street. According to the groundwater analytical data, elevated concentrations of GRO were detected in borings SB-9 and SB-10 and elevated Benzene was also detected in SB-10. However, groundwater samples collected from onsite borings SB-4, SB-5, and SB-8 (downgradient of SB-9 and SB-10) were non-detect for hydrocarbon constituents; therefore suggesting it is unlikely that the upgradient petroleum hydrocarbon source from 1732 Webster Street is impacting the Site.	None	NA
	Onsite	The main source of contamination onsite was presumably from the USTs. According to the report by P&D, the subject property was historically occupied by a gasoline service station from approximately 1940 until 1966 and there were no records on file at the Oakland Building Department, Environmental Health Services Department, or Oakland Fire Department regarding the removal of formerly utilized fuel USTs from the Site. (P&D, 2014). However, without details pertaining to the previous Site layout including the locations of the USTs, product lines, or dispensers, it is difficult to pinpoint the onsite source area. Based on historic and current petroleum concentrations observed in groundwater, it appears that the source area resides within the vicinity of boring SB-3 and SB-6 in the north-northeastern portion of the property.	None	NA

TABLE 1
 CONCEPTUAL SITE MODEL
 Former ARC Station No. 596-A
 1900 Webster Street
 Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Migration Pathways	Potential Conduits	A potential transmissive utility conduit study has not been conducted for the Site. However, underground utilities tend to be shallow, above 10 feet bgs. Historical depth-to-groundwater has been observed between approximately 14 and 21 feet bgs, which is well below the anticipated depth of utilities within the area. Therefore, potential migration of contaminants along underground conduits does not pose a concern at the Site.	None	NA
Potential Receptors	Onsite	No onsite water supply wells or surface water exists. The only potential onsite receptor would be onsite workers exposed to gasoline vapors or impacted soil during construction activities. Based on the results of the 2015 investigation conducted by Broadbent, shallow soil concentrations were non-detect for each constituent analyzed and soil vapor concentrations detected in the four vapor probes installed onsite were well below Tier 1 ESLs. This data demonstrates that little to no risk is present for onsite workers potentially exposed to soil vapor or in direct contact with shallow soils onsite. Recent soil and soil vapor data is summarized on Tables 2 and 4 (CSM, SRS, & CCR, May 2016).	None	NA
Potential Receptors (Cont.)	Offsite	A Sensitive Receptor Survey was conducted by Broadbent in 2016. The nearest potential surface water body appears to be Lake Merritt, located approximately 960 feet east of the Site. Five wells of unknown use, two irrigation wells, and one domestic well were identified within the 2,000-foot search radius. The nearest well is an irrigation well located approximately 900 feet east-southeast (cross-gradient) of the Site. Two wells, one irrigation and one domestic well, are located in the downgradient direction but at a distance greater than 1,500 feet. The remaining wells identified during the search are located either cross-gradient or upgradient and at distances close to the 2,000-foot boundary. Since the plume appears to be limited in extent and almost isolated onsite, these offsite receptors are not anticipated to be affected. Sensitive receptor data including a map depicting locations is provided in Appendix C (CSM, SRS, & CCR, May 2016).	None	NA

TABLE 1
 CONCEPTUAL SITE MODEL
 Former ARC Station No. 596-A
 1900 Webster Street
 Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nature and Extent of Environmental Impacts	Extent in Soil	Based on the soil analytical results from Broadbent’s 2015 investigation and the soil analytical results from previous investigations, soil impacts appear to be absent within shallow soils (0 to 10 feet bgs), which satisfies the LTCP criteria listed in Table 1 of the policy (SWRCB, 2012). Residual impacts have been observed in deeper soil samples collected, with the majority at depths greater than 13 feet bgs. However, these samples were likely near or below the groundwater table and potentially impacted by concentrations present within groundwater. Based on the results from investigations conducted at the Site, the vertical and lateral extent of soil contamination has been defined.	None	NA
	Extent in Groundwater	Based on recent and historical investigations, depth-to-groundwater at the Site has ranged between approximately 14 and 21 feet bgs. According to the recent and historical groundwater analytical results, the highest elevated concentrations of GRO are situated around soil borings B-2, SB-3, and SB-6, with the highest concentration observed in SB-3 at a concentration of 59,000 µg/L. Benzene has been detected in boring SB-3 at 89 µg/L. MTBE has not been detected in samples collected from borings associated with the Site. Isoconcentration Drawings 3 and 4 show the extent of GRO and Benzene, respectively. Based on these drawings, the extent of the residual petroleum compounds is predominantly limited around the north-northeastern area of the Site, presumably the former location of the USTs. The plume does not appear to extend much further downgradient than SB-7 based on the decrease in concentration observed between SB-6 (11,000 µg/L) and SB-7 (3,100 µg/L), over a distance of less than 40 feet. Additionally, further downgradient investigation is not possible due to the presence of multiple commercial buildings. LNAPL has not been observed during the investigations associated with the Site. Due to the limited extent of the groundwater plume and accessibility issues further downgradient, the lateral and vertical extent of groundwater contamination appears to be defined to the extent practicable.	None	NA
	Extent in Soil Vapor	<p>In 2015, Broadbent installed four soil vapor probes at two locations. SG-1A and SG-1B were located along the eastern side of the Site building and SG-2A and SG-2B were located adjacent to the building east of the Site across the parking lot. GRO concentrations in soil vapor ranged between 4,200 µg/m³ in SG-2B and 22,000 µg/m³ in SG-1A. MTBE was only detected in SG-1A at a concentration of 16 µg/m³ and Total Xylenes were detected in each soil vapor probe with SG-1A containing the highest concentration of 200 µg/m³. Toluene was detected above laboratory reporting limits in SG-1A at a concentration of 16 µg/m³ and Ethylbenzene was detected in SG-1A and SG-1B at concentrations of 55 µg/m³ and 22 µg/m³, respectively.</p> <p>An order of magnitude difference in gasoline range organics (GRO) concentrations were observed in soil vapor samples collected from SG-1A (shallow) and SG-1B (deep) but the concentrations observed in SG-2A and SG-2B were comparable. It is important to note that the soil vapor points at each location were installed within their own boring and not constructed as nested vapor points, leading to greater potential for variation between the</p>	None	NA

TABLE 1
 CONCEPTUAL SITE MODEL
 Former ARC Station No. 596-A
 1900 Webster Street
 Oakland, California

		<p>shallow and deep samples.</p> <p>Soil vapor points SG-1A and SG-1B were installed approximately four feet laterally from each other and based on a review of lithology, appear to have been installed within the same lithologic material. These vapor points were also installed in what is believed to be the general source area of the release(s). As mentioned above, the site was operated as a gasoline service station from approximately 1940 to 1966 and very limited information is known about the release, including whether it originated from the underground storage tanks (USTs) and/or from a shallower system component such as product lines or dispensers. Variations in petroleum hydrocarbon concentrations over short distances are not uncommon especially near the source area if the release was from a shallow source and a result of residual impact from a small pocket of soil and not impacts from groundwater.</p> <p>It should be noted that GRO is not a soil gas constituent included in the LTCP. Detected concentrations of relevant constituents included in the LTCP (benzene, ethylbenzene, and naphthalene) are below levels presented in the LTCP Scenario 4 for direct measurement of soil gas concentrations with no bioattenuation zone. Furthermore, a bioattenuation zone of five vertical feet has been documented at the site based on the observed concentrations of total petroleum hydrocarbons (TPH) in shallow soil at less than 100 milligrams per kilogram (mg/kg) and oxygen levels greater than or equal to four (4) percent. Therefore, little to no risk for soil vapor intrusion appears to be present onsite or at the offsite properties in the downgradient direction.</p>		
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Notes:

bgs = below ground surface
 GRO = Gasoline Range Organics
 DRO = Diesel Range Organics
 MTBE = Methyl tert-butyl Ether
 BTEX = benzene, toluene, ethylbenzene, xylenes
 µg/L = micrograms per liter
 mg/Kg = milligrams per kilogram

ESLs = Tier 1 Environmental Screening Levels
 µg/m³ = micrograms per cubic meter
 LTCP = Low Threat Closure Policy
 SWRCB = State Water Regional Control Board