

# **Xtra** OIL COMPANY

2307 PACIFIC AVENUE  
ALAMEDA, CA 94501  
(510) 865-9503 FAX (510) 865-1889

May 22, 2015

Ms. Karel Detterman  
Alameda County Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502

**RECEIVED**

By Alameda County Environmental Health 1:57 pm, May 27, 2015

**SUBJECT:** SUBSURFACE INVESTIGATION WORK PLAN CERTIFICATION  
(B4A, B8 THROUGH B15, AND SG1)  
County LOP Case Number RO 0002990  
Auto Depot  
4171 Broadway  
Oakland, California

Dear Ms. Detterman:

You will find enclosed one copy of the following draft document prepared by P&D Environmental, Inc. for the subject site

- Subsurface Investigation Work Plan dated May 22, 2015 (document 0398.W2).

I declare under penalty of perjury that the contents and conclusions in the document are true and correct to the best of my knowledge.

Should you have any questions, please do not hesitate to contact me at (510) 865-9506.

Sincerely,

Xtra Oil Company



Keith Simas

Enclosure

0398.L4

# **P&D ENVIRONMENTAL, INC.**

**55 Santa Clara Avenue, Suite 240**

**Oakland, CA 94610**

**(510) 658-6916**

May 22, 2015

Work Plan 0398.W2

Ms. Karel Detterman

Alameda County Environmental Health

1131 Harbor Bay Parkway, Suite 250

Alameda, CA 94502

**SUBJECT:   SUBSURFACE INVESTIGATION WORK PLAN**  
**(B4A, B8 THROUGH B15, and SG1)**  
**County LOP Case Number RO 0002990**  
**Auto Depot/Xtra Oil**  
**4171 Broadway**  
**Oakland, California**

Dear Ms. Detterman:

P&D Environmental, Inc. (P&D) has prepared this subsurface investigation work plan to further evaluate the presence and extent of subsurface petroleum hydrocarbons at the subject site. This work plan is prepared in accordance with recommendations set forth in P&D's September 30, 2014 Subsurface Investigation Report (document 0398.R1) and in response to a request for the work plan during a telephone conversation with the Alameda County Environmental Health Department (ACDEH).

A Site Location Map is attached as Figure 1 and a Site Map showing former UST locations and proposed sample collection locations is attached as Figure 2.

## **BACKGROUND**

The site is presently used for vehicle parking by the adjacent car dealership. The site was previously operated as a retail gasoline station. Review of available documents for the site obtained at the ACDEH Local Oversight Program website, at the GeoTracker website, and in response to a request to the property owner for available documents related to USTs and subsurface investigation has identified the following document related to sample collection following removal of the site USTs.

- December 31, 1986 Removal and Disposal of One Underground Diesel Tank, Five Underground Gasoline Tanks, and One Underground Waste Oil Tank Report prepared by Aqua Science Engineers, Inc. (the report is 3 pages in length, consisting of a narrative, a site map showing sample collection locations, and a laboratory report).

A complete copy of the report is attached with P&D's August 4, 2014 Data Gap Evaluation and Subsurface Investigation Work Plan. The 1986 underground storage tank closure report described soil sample collection from the bottom of each UST pit as follows: two soil samples were collected from both ends of each of the four gasoline and the one diesel UST at a depth of approximately 12.0 feet below the ground surface (bgs), and one soil sample was collected beneath the former waste oil UST at a depth of approximately 8.0 feet bgs. The report does not mention encountering groundwater in any of the excavations, and does not mention sample collection or analysis associated with the UST piping or dispensers, or if the UST piping was removed.

All of the soil samples were analyzed as follows:

- The diesel UST pit soil samples (2) were analyzed for Total Petroleum Hydrocarbons (TPH) as Diesel,
- The gasoline UST pit soil samples (8) were analyzed for TPH as Gasoline (TPH-G), benzene, toluene, and total xylenes,
- The waste oil UST pit soil sample (1) was analyzed for TPH as Motor Oil (TPH-MO).

None of the samples were analyzed for methyl-tert-butyl ether (MTBE) or any other Volatile Organic Compounds (VOCs) including ethylbenzene, or for lead. The sample results are summarized in Table 1 attached with P&D's August 4, 2014 Data Gap Evaluation and Subsurface Investigation Work Plan (document 0398.W1).

On August 19 and 20, 2014 IMX, Inc. of Oakland, California (IMX) personnel used a magnetometer to identify buried pipes. An electrical signal was applied to the exposed piping and a magnetometer was used by to locate accessible UST system piping. A jackhammer was used to remove concrete surface cover material at the curbside fill ports that are located adjacent to Garnet Street, at the dispenser islands, and at several areas identified during the UST piping survey in an effort to identify the locations of underground UST piping. In addition, in areas where the magnetometer was not successful in identifying the pipe trenches, exploratory excavation was performed to evaluate the presence of UST piping at the locations of the former UST piping trenches. The locations of subsurface piping identified during the investigation are shown on Figure 2.

On August 19, 2014 P&D personnel oversaw hand augering using a 3.5-inch outside diameter stainless steel auger to a depth of either 4.0 or 4.5 feet below the ground surface (bgs) at locations F1 (located at the curbside UST fill ports) and D1 through D6 (located at each end of the former pump island dispensers). The hand augered boreholes at the former dispenser islands were hand augered at locations where dispensers were formerly located based on the presence of dispenser-sized rectangular penetrations in the dispenser islands and the presence of piping within the dispenser island penetrations. The locations of the hand augered boreholes are shown in Figure 2. Slight to strong petroleum

hydrocarbon odors were observed in all seven hand augered boreholes and soil discoloration was observed in hand augered boreholes D3 and D4.

On August 22, 2104 P&D personnel returned to the site and oversaw drilling at locations B1 through B7 (see Figure 2). Slight to strong petroleum hydrocarbon odors were observed in all seven boreholes and soil discoloration was observed in boreholes B1 and B6.

At the time of groundwater sample collection free product was observed on the sample and strong petroleum odors were detected at borehole B1. In addition, strong odor was detected and sheen was observed during groundwater sample collection at boreholes B2 and B3. In the remaining boreholes no odor was detected and no sheen was observed during groundwater sample collection.

Further discussion including the site geology and soil and groundwater sample results can be found in P&D's Subsurface Investigation Report dated September 30, 2014 (document 0398.R1). Based on the soil and groundwater sample results P&D recommended the collection of additional soil and groundwater samples and one soil gas sample from a temporary soil gas well to fill Low Threat Closure Policy (LTCP) data gaps.

#### SCOPE OF WORK

To evaluate and further define the extent of petroleum hydrocarbons at the subject site and to address LTCP data gaps, P&D will perform the following activities.

- Obtain drilling permits and site access, prepare a health and safety plan (HASP), and mark drilling locations with white paint and notify Underground Service Alert (USA) for underground utility location.
- Observe drilling for soil and groundwater grab sample collection at nine locations.
- Construct a soil gas well and collect a soil gas sample at one location between the depths of 5 and 7 feet bgs, and one duplicate soil gas sample.
- Arrange for sample analysis.
- Prepare a report.

Each of these is discussed below.

#### Permits, Site Access, HASP, and USA,

Permits will be obtained from the Alameda County Public Works Agency for borehole drilling. All necessary permit-related notifications will be made to the permitting agencies prior to drilling. In addition, notification will be provided to the ACDEH of the scheduled drilling dates. Site access will be obtained and arrangements will be made to move vehicles that are presently parked at the property. A health and safety plan will be prepared for the scope of work identified in this work plan. In addition, the drilling

locations will be marked with white paint and Underground Service Alert will be notified for underground utility location.

### Drilling Observation and Sample Collection

Boreholes B4A, and B8 through B15 will be drilled at locations shown in Figures 3 through 5. All of the boreholes will be drilled and groundwater samples collected in accordance with methods and procedures described in P&D's September 30, 2014 Subsurface Investigation Report. All of the boreholes will be continuously cored by Vironex, Inc. of Concord, California (Vironex) using Geoprobe direct-push technology to drive a 2.5-inch outside diameter Geoprobe macrocore lined with transparent PVC sleeves. The soil from the borings will be logged in the field in accordance with standard geologic field techniques and the Unified Soil Classification System. All soil from the boreholes will be evaluated with a PID equipped with a 10.6 eV bulb and calibrated using a 100 ppm isobutylene standard.

Based on the presence of free product in borehole B1 (located in the former diesel UST pit), and based on the previous investigation sample results, P&D proposes the following activities to further evaluate the presence and extent of subsurface petroleum hydrocarbons at the subject site at locations shown on Figures 3, 4, and 5:

- Drilling of borehole B4A adjacent to historical borehole B4 and the former waste oil UST pit to collect soil samples at depths of 4 feet and 9 feet bgs and one groundwater grab sample.
- Drilling of boreholes B8 through B11 at locations surrounding the former diesel UST pit to first-encountered groundwater to evaluate the horizontal extent of free product detected in the former diesel UST pit. If free product is not detected in the boreholes during drilling, the boreholes will be left open overnight and evaluated the following day to determine if free product has accumulated in any of the boreholes. The free product will be evaluated using a steel tape and product-finding paste. Groundwater samples will be collected at proposed locations B8 and B9 to determine if there is evidence of offsite petroleum-impacted groundwater migration.
- Drilling of boreholes B12 and B13 for collection of groundwater grab samples to evaluate the horizontal extent of TPH-D and TPH-G in the vicinity of historical boreholes B6 and B7, and to determine if there is evidence of offsite petroleum-impacted groundwater migration at proposed location B13.
- Drilling of boreholes B14 and B15 for collection of groundwater grab samples to evaluate the horizontal extent of TPH-D and TPH-G in the vicinity of historical boreholes B7 and B3, and to determine if there is evidence of offsite petroleum-impacted groundwater migration at each of the proposed locations.

Soil samples will be retained from boring B4A for laboratory analysis by selecting the interval to be sampled and cutting a 6-inch section of the liner corresponding to the sample collection depth. In addition, soil samples will be collected for laboratory analysis in

boreholes where evidence of contamination is encountered based on odors, PID values, staining, and discoloration. The ends of the tubes will be sequentially capped with aluminum foil and plastic endcaps. The samples will then be labeled and stored in a cooler with ice pending delivery to a State-accredited hazardous waste testing laboratory. Chain of custody procedures will be observed for all sample handling.

Once groundwater is encountered in each borehole, a 1-inch diameter temporary slotted PVC pipe will be placed in each borehole and a groundwater sample will be collected at each location (with the exception of B10 and B11 where groundwater samples will not be collected) using polyethylene tubing and a peristaltic pump. The groundwater samples will be transferred directly from the discharge tubing to 40-milliliter VOA bottles, all of which will be supplied by the laboratory and contain hydrochloric acid preservative. In addition, at borehole B4A groundwater sample will also be collected into non-preserved 1-liter amber glass bottles. The sample bottles will be labeled and placed in a cooler with ice pending delivery to the laboratory. Chain of custody procedures will be observed for all sample handling.

All drilling and sampling equipment will be cleaned by steam cleaning or with an Alconox solution followed by a clean water rinse prior to use in each borehole. Following completion of logging and sample collection activities, the boreholes will be filled with neat cement grout. All soil and water generated during subsurface investigation will be stored in 55-gallon drums at the site and labeled pending characterization and proper disposal.

#### Soil Gas Well Construction and Soil Gas Sample Collection

One permanent soil gas well will be constructed at location SG1 (see Figures 3 through 5) to evaluate the presence of petroleum soil vapor concentrations in the vicinity of the subject site. Installation of soil gas well SG1 will be to a depth of 7 feet bgs with a 6-inch outside diameter hand auger. The soil gas well will be constructed with a 2-foot long filter pack interval and a ¼-inch outside diameter Teflon tube with one end of the tube in the center of the sand pack for evaluation of potential vapor migration associated with benzene detected at location B3.

The soil gas samples will be collected in accordance with procedures set forth in the December 2013 San Francisco Bay Regional Water Quality Control Board User's Guide: Derivation and Application of Environmental Screening Levels, and the following Department of Toxic Substances Control (DTSC) documents:

- October 2011 – Vapor Intrusion Guidance,
- October 2011 – Vapor Intrusion Mitigation Advisory.
- April 2012 Advisory - Active Soil Gas Investigations,
- March 2013 – FAQ for the 2012 Advisory,

Based on the high clay content encountered in boreholes at the site, the soil gas well will be constructed consistent with DTSC soil gas construction methods for low permeability soil conditions. The soil gas well will be constructed by Vironex, Inc. of Concord, California by hand augering to a depth of 7.0 feet bgs using a 4-inch diameter hand auger. A #2/16 Lonestar sack sand will be poured into the borehole to fill the lowermost 12 inches of the borehole with sand. A 0.250-inch outside diameter (0.187-inch inside diameter) Teflon tube with a HDPE filter at the bottom of the tube will be inserted to the top of the sand (a depth of 12 inches above the bottom of the borehole), and additional #2/16 Lonestar sack sand will be poured into the borehole to two feet above the bottom of the borehole (the lowermost two feet of the borehole will be filled with sand with the filter at the end of the tube in the middle of the sand interval). The remaining borehole annular space will be filled with hydrated bentonite slurry. The tubing length will be 7.0 feet. The top of each soil gas well will be enclosed in a well box with a lid that is secured with bolts.

Following construction, the soil gas well will not be sampled for a minimum of 2 weeks. Soil gas samples will not be collected if more than ½ inch of precipitation has occurred during the five days prior to the scheduled sampling date.

A soil gas sampling manifold with a 1-liter Summa canister as the sampling canister for each location (see Figure 6) will be assembled in a shroud consisting of a 35-gallon Rubbermaid bin that has been modified by cutting viewing ports into the sides of the shroud and covering the viewing ports with transparent polycarbonate sheets. A hole measuring approximately two inches square in the bottom of the shroud allows the shroud to cover the soil gas well while still allowing access to the temporary well through the bottom of the shroud. At the time that the sampling manifold is assembled, the vacuum for the sample canister will be verified with a vacuum gauge and recorded.

Prior to sampling the soil gas well, a 10 minute shut-in test of the sampling manifold will be performed by closing the valve located between the filter and the pressure gauge, opening the purge canister valve, and recording the manifold system vacuum (see Figure 6). No purge testing for purge volume determination will be performed in accordance with DTSC Active Soil Gas Investigations Advisory Appendix D procedures. Following successful verification of the manifold shut-in test, a default of 200 milliliters will be purged prior to sample collection in accordance with DTSC Active Soil Gas Investigations Advisory Appendix D procedures. The purge time will be calculated using a nominal flow rate provided by the flow controller of 150 cubic centimeters per minute.

Following completion of the purging of 200 milliliters, a lid will be placed onto the shroud and a tracer gas 1,1-Difluoroethane (DFA) will be sprayed into the shroud interior for one second through a tube connected to a hole in the side of the shroud. Gloves in the lid of the shroud will be used to open the sample canister valve. An air sample will be collected from the shroud atmosphere to quantify the shroud tracer gas concentration while the soil gas sample is being collected. The shroud atmosphere sample will be collected into a Tedlar bag that is placed into a vacuum chamber with the Tedlar bag inlet connected to a new piece of Teflon or polyethylene tubing that is inserted into the shroud atmosphere through a hole in the side of the shroud. Following completion of Tedlar bag

shroud air sample collection the Tedlar bag will be placed in a cooler with the lid closed pending delivery to the laboratory.

Once the vacuum for the sample canister valve has decreased to 5 inches of mercury, the gloves in the lid of the bin will be used to close the sample canister valve. The pressure gage on the inlet side of the flow controller (see Figure 6) will be monitored during sample collection to ensure that the vacuum applied to the soil gas well does not exceed 100 inches of water.

One duplicate soil gas sample will be collected into Summa canisters from the soil gas well using a stainless steel sampling tee for the Summa canisters using methods described above. The soil gas Summa canister samples will be stored in a box and promptly shipped to the laboratory for extraction and analysis.

In addition to collection of Summa canister samples as described above, a sorbent tube sample will be collected as follows. The manifold will be equipped with a tee located downstream from the flow controller. At the time that the manifold is assembled (prior to the shut-in test), a sorbent tube will be connected inside the shroud to the tee that is located downstream from the flow controller with a valve located between the sorbent tube and the tee. The downstream side of the sorbent tube will be connected with a polyethylene tube to a flow meter and a vacuum pump. Following Summa canister sample collection, a dish containing 2-Propanol will be placed in the shroud to be used as a tracer gas for EPA Method TO-17 sample analysis.

The Summa canister will be isolated from the manifold with a valve, and the valve between the manifold and the sorbent tube will be opened. A vacuum pump will be used to apply a vacuum to the sorbent tube and a flow meter will be used to measure the soil gas flow rate at a nominal flow rate of 150 cubic centimeters per minute for collection of a 60 cubic centimeter sample. In addition one replicate sample will be collected. Following collection of the soil gas sample the ends of the sorbent tube will be sealed. During sorbent tube sample collection a Tedlar bag shroud atmosphere sample will be collected using methods described above.

Before and after connection of the sorbent tube to the manifold the sorbent tube will be stored in a cooler with ice. Following soil gas sample collection, a PID will be connected to the Teflon tubing to obtain a preliminary field value for the sample collection location. Chain of custody procedures will be observed for all sample handling. Measurements of vacuums, purging and equilibration time intervals, and PID readings will be recorded on Soil Gas Sampling Data Sheets.

All hand augering equipment will be cleaned with an Alconox solution wash followed by a clean water rinse prior to use at each location. New Teflon tubing and a new filter will be used for soil gas well construction. Clean, unused vacuum gages and a stainless steel sampling manifold will be used at each sample collection location. All soil and water generated during soil gas well construction will be stored in 55-gallon drums at the site and labeled pending characterization and proper disposal.



### Sample Analysis

All of the soil samples will be analyzed for TPH-G using EPA Method 5030B in conjunction with EPA Method 8021B and/or modified EPA Method 8015B, for TPH-D and TPH-MO using EPA Method 3550B in conjunction with EPA Method 8015B, for VOCs (including ethylbenzene, MTBE, other fuel oxygenates, lead scavengers, and naphthalene) using EPA Method 8260B, and lead. Additionally, the soil samples collected from borehole B4A (adjacent to the former waste oil tank) will be analyzed for Semi-Volatile Organic Compounds (SVOCs) including Poly-Aromatic Hydrocarbons (PAHs) using the most recent version of EPA Method 8270.

All of the groundwater samples will be analyzed at McCampbell Analytical, Inc. (McCampbell) in Pittsburg, California for Total Petroleum Hydrocarbons as Gasoline (TPH-G), using EPA Method 5030B in conjunction with EPA Method 8021B and modified EPA Method 8015B, for TPH-D and Total Petroleum Hydrocarbons as Motor Oil (TPH-MO) by EPA Method 3510 in conjunction with EPA Method 8015B, and for VOCs (including ethylbenzene, MTBE, other fuel oxygenates, lead scavengers, and naphthalene) by EPA Method 8260B. Additionally, the groundwater sample collected from borehole B4A (adjacent to the former waste oil tank) will be analyzed for SVOCs including PAHs using the most recent version of EPA Method 8270.

The soil gas sample collected into one-liter Summa canisters will be analyzed for TPH-G and VOCs including MBTEX using EPA Method TO-15 and the soil gas sample collected into the sorbent tube will be analyzed for TPH-D and naphthalene using EPA Method TO-17 in accordance with Department of Toxic Substances Control April 2012 Advisory for Active Soil Gas Investigations.

The Tedlar bag collected from the shroud during Summa canister sample collection will be analyzed for the tracer gas DFA, and the Tedlar bag collected from the shroud during sorbent tube sample collection will be analyzed for the tracer gas 2-Propanol using EPA Method TO-15.

### Report Preparation

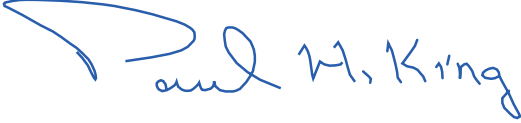
Upon receipt of the laboratory analytical results for the soil and groundwater samples and the soil gas samples, a report will be prepared. The report will document soil and groundwater sample collection procedures and sample results. The report will include a site map showing the drilling locations, tables summarizing the sample results, an updated site conceptual model, recommendations based on the results, and the stamp of an appropriately registered professional. Copies of the report will be uploaded to the County ftp site and to the SWRCB GeoTracker site.

May 22, 2015  
Work Plan 0398.W2

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental, Inc.



Paul H. King  
Professional Geologist #5901  
Expires: 12/31/15

Attachments:

- Figure 1 - Site Location Map
- Figure 2 - Site Map Showing Sample Collection Locations
- Figure 3 - Site Map Showing TPH-D Concentrations in Groundwater
- Figure 4 - Site Map Showing TPH-G Concentrations in Groundwater
- Figure 5 - Site Map Showing Benzene Concentrations in Groundwater
- Figure 6 - Typical Soil Gas Sampling Manifold

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0398.W2

# **FIGURES**



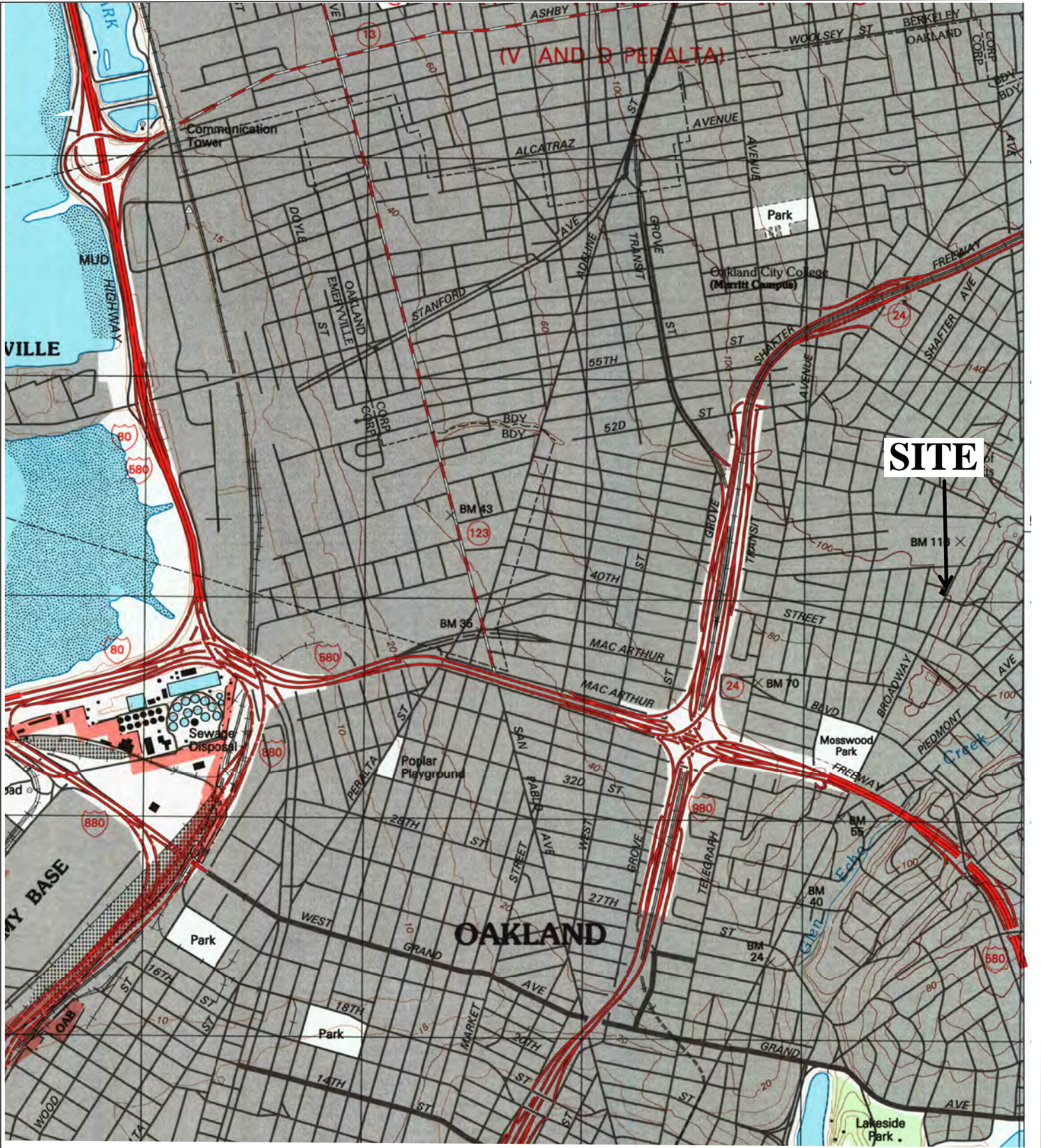
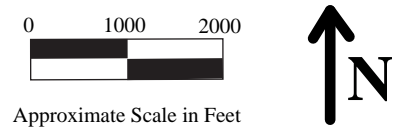


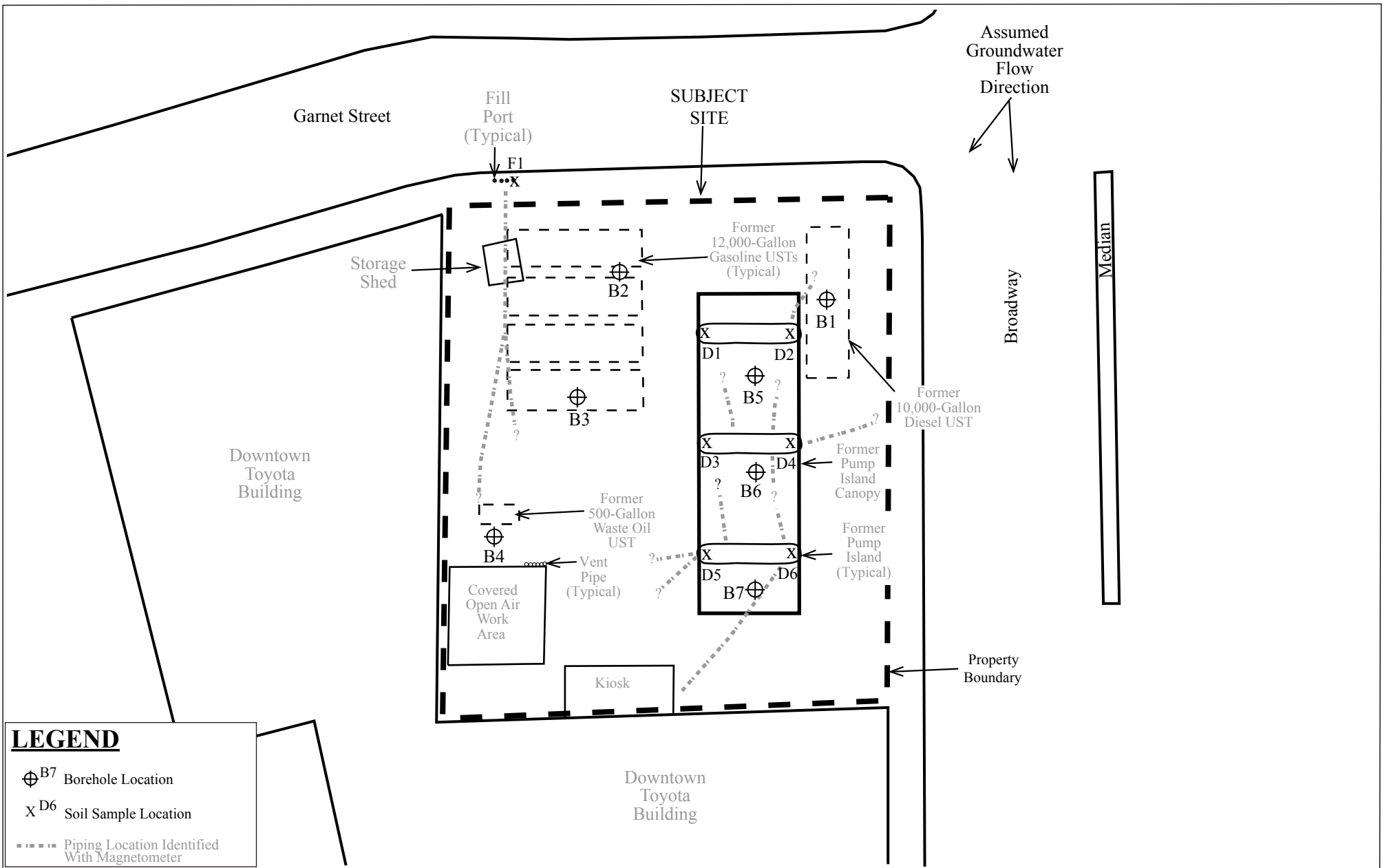
Figure 1  
 Site Location Map  
 Auto Depot  
 4171 Broadway  
 Oakland, California

Base Map From:  
 US Geological Survey Oakland West,  
 California 7.5-Minute Quadrangles  
 Map updated 1996

P&D Environmental, Inc.  
 55 Santa Clara Avenue, Suite 240  
 Oakland, CA 94610

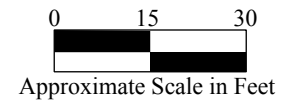






Base Map from:  
 Auqua Science Engineers, Inc., dated 12/31/1986,  
 Google Earth, 2014

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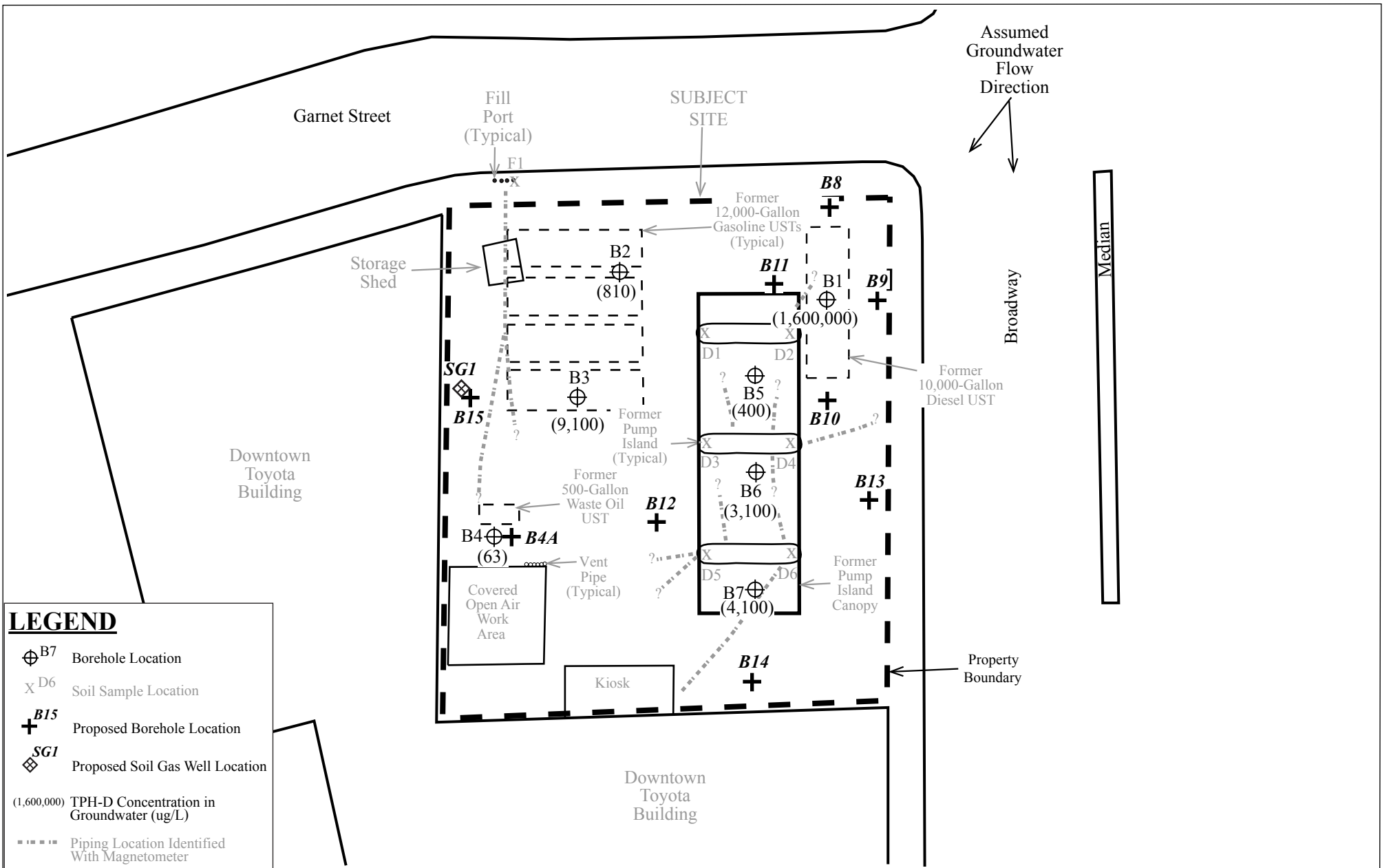
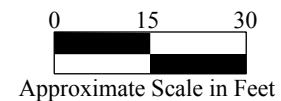
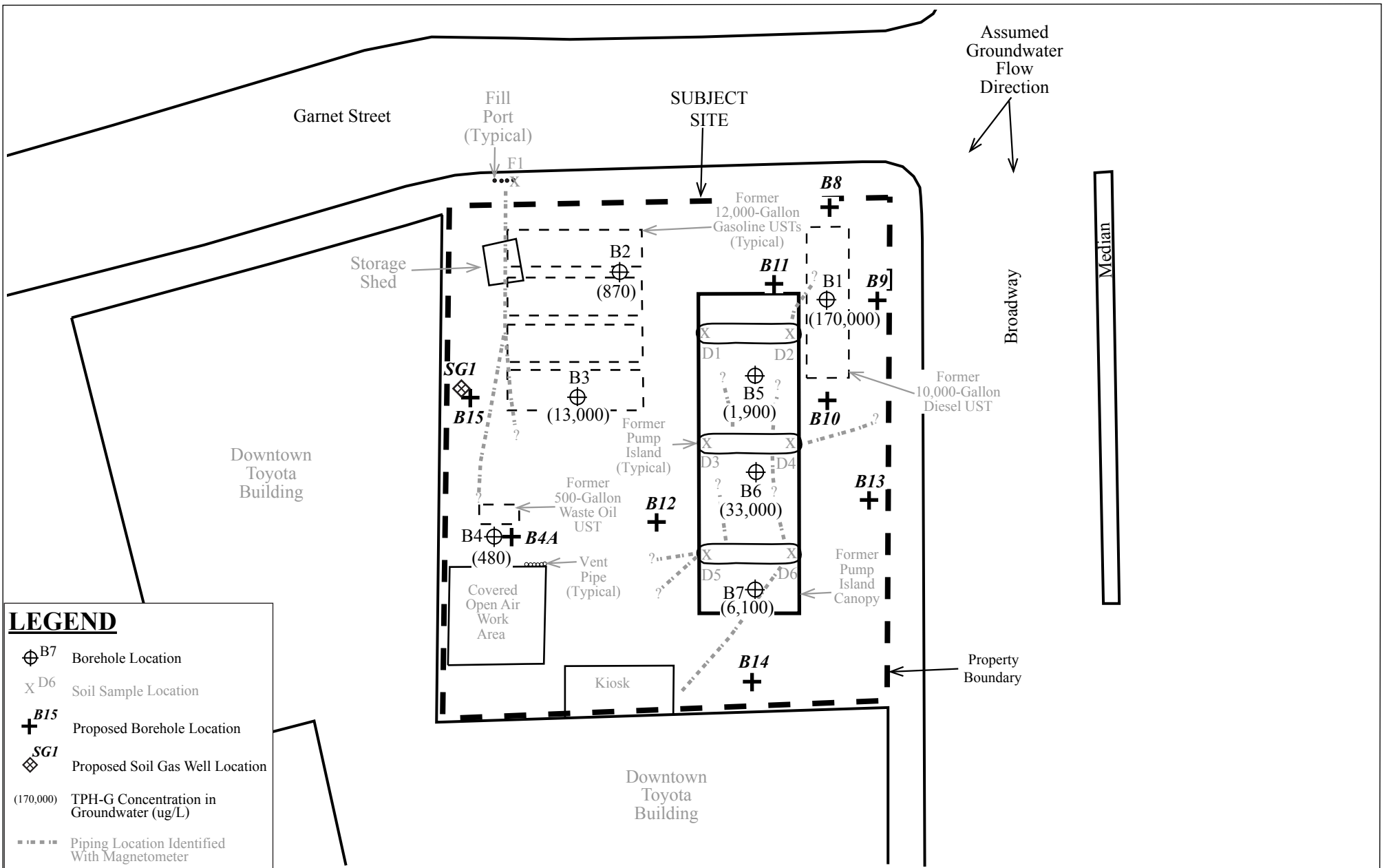


Figure 3  
 Site Map Showing Sample Collection Locations and TPH-D Concentrations in Groundwater  
 Auto Depot  
 4171 Broadway  
 Oakland, California

Base Map from:  
 Auqua Science Engineers, Inc., dated 12/31/1986,  
 Google Earth, 2014

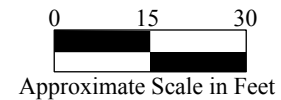
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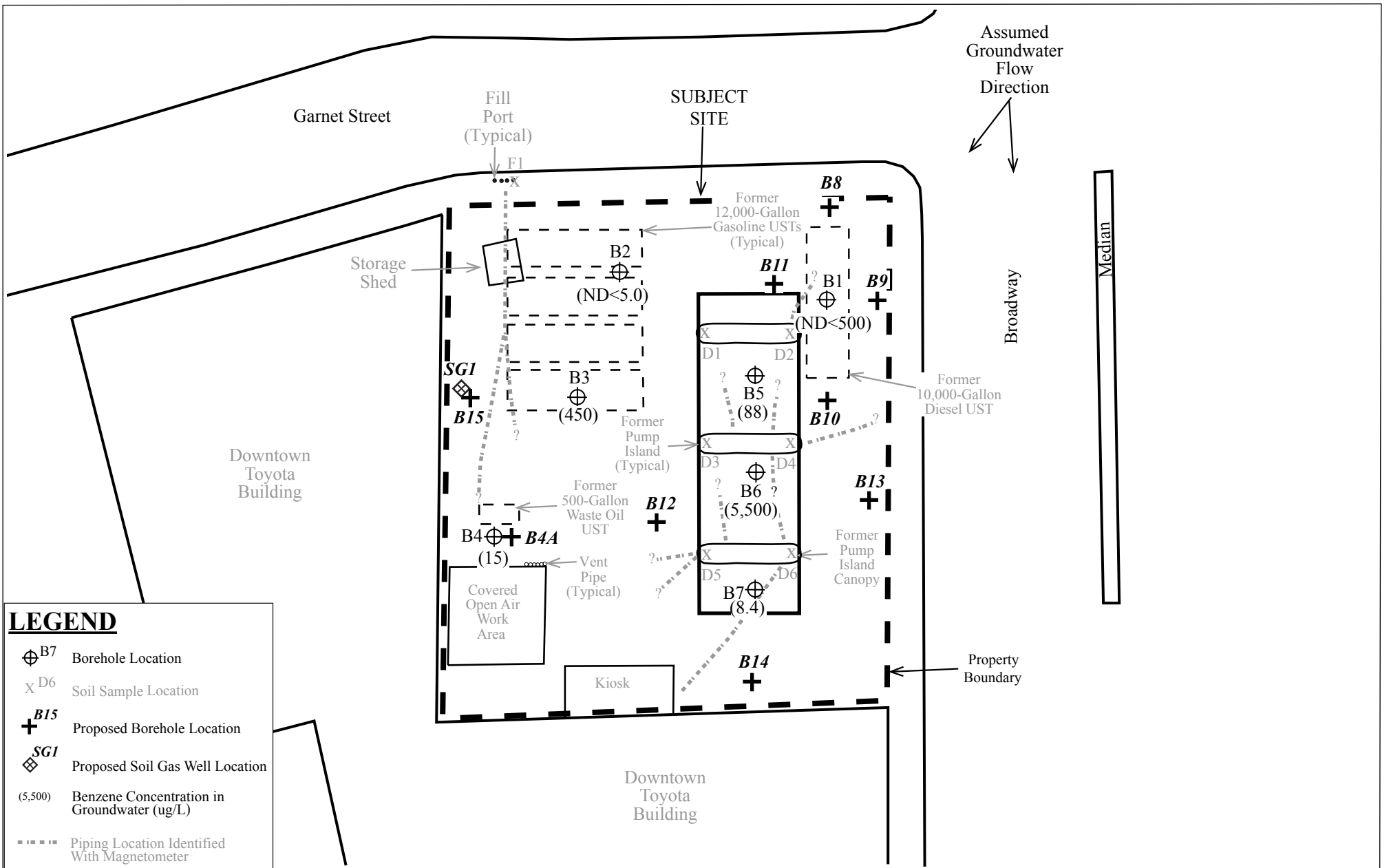




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**LEGEND**

- ⊕ B7 Borehole Location
- X D6 Soil Sample Location
- + B15 Proposed Borehole Location
- ◇ SG1 Proposed Soil Gas Well Location
- (5,500) Benzene Concentration in Groundwater (ug/L)
- - - - Piping Location Identified With Magnetometer

**Figure 5**  
**Site Map Showing Sample Collection Locations and Benzene Concentrations in Groundwater**  
**Auto Depot**  
**4171 Broadway**  
**Oakland, California**

Base Map from:  
 Auqua Science Engineers, Inc., dated 12/31/1986,  
 Google Earth, 2014

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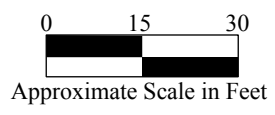






Figure 6  
Typical Soil Gas Sampling Manifold  
Auto Depot  
4171 Broadway  
Oakland, California

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55 Santa Clara Ave., Suite 240  
Oakland, CA 94610