DEPARTMENT OF ECOLOGY
State of Washington

Cleanup Action Plan

Seattle DOT Mercer Parcels Site
Seattle, WA

Facility Site ID: 27913
Cleanup Site ID: 14784

February 8, 2022

Publication and Contact Information

This document is available on the Department of Ecology's Seattle DOT Mercer Parcels website at: https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=14784. Other ways to access this document in electronic or hard copy form can be found at www.ecology.wa.gov.

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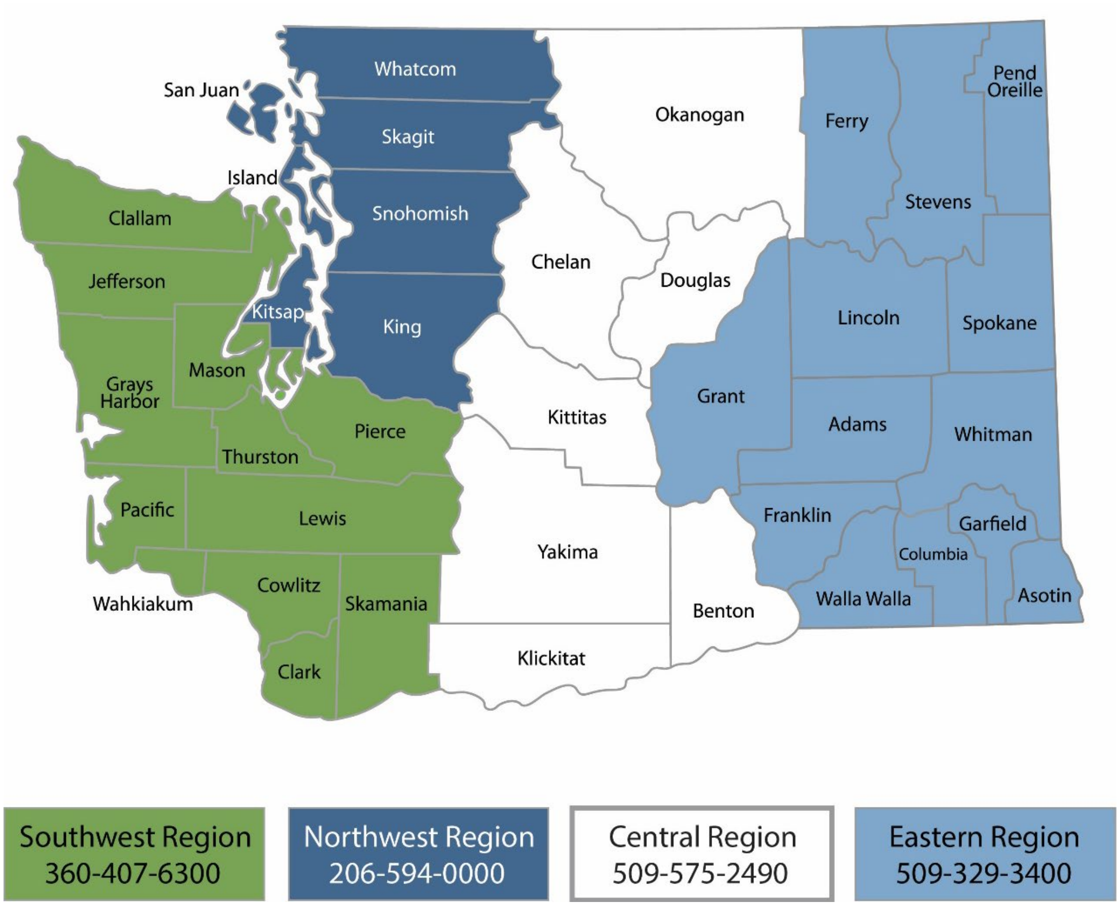

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Cleanup Action Plan

Seattle DOT Mercer Parcels Site
Seattle, WA

Facility Site ID: 27913
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Toxics Cleanup Program

Washington State Department of Ecology

Northwest Regional Office

Shoreline, Washington

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Table of Contents

Page

1.0 Introduction ... 1
1.1 General Facility Information and Site/Property Definitions ... 1
1.2 Purpose ... 1
1.3 Preliminary Determination ... 2
1.4 Project Background and Regulatory Overview ... 2
2.0 Site Description and Background ... 4
2.1 Site Description and History ... 4
2.1.1 Location and Description ... 4
2.1.2 Subsurface Conditions ... 4
2.1.3 Zoning ... 4
2.1.4 Historical Property Use ... 5
2.1.5 Current Property Conditions, Utilities, and Use ... 6
2.1.6 Future Property Use ... 6
2.2 Summary of Investigations ... 7
2.3 Nature and Extent of Contamination ... 8
2.3.1 Constituents of Concern ... 8
2.3.2 COC Sources ... 9
2.3.3 Distribution of COCs in Soil ... 9
2.3.4 Distribution of COCs in Groundwater ... 10
2.3.5 Contaminants from Other Sites ... 10
2.4 Receptors and Exposure Pathways ... 12
3.0 Cleanup Standards ... 13
3.1 Cleanup Levels and Points of Compliance ... 13
3.1.1 Soil ... 13
3.1.2 Groundwater ... 14
3.2 Screening Levels for Other Hazardous Substances ... 15
3.3 Applicable or Relevant and Appropriate Requirements ... 16

4.0 Remedy Selection 20
4.1 Cleanup Action Objectives 20
4.2 Selected Cleanup Action 20
4.2.1 Considerations Related to Other Sites on the Property 21
4.3 Justification for Selected Cleanup Action 22
5.0 Description of Selected Cleanup Action 24
5.1 Excavation and Off-Site Disposal 24
5.1.1 Excavation Dewatering 24
5.2 Compliance Monitoring 25
5.3 Contingency Actions 26
5.3.1 Unanticipated Soil Contamination 26
5.3.2 USTs 27
6.0 Schedule for Implementation 29
7.0 References 30

List of Tables and Figures

Tables

Table 3-1a Soil Cleanup Standards (embedded)
Table 3-1b Groundwater Cleanup Standards (embedded)
Table 3-2a Soil Screening Levels for Other Hazardous Substances (embedded)
Table 3-2b Groundwater Screening Levels for Other Hazardous Substances (embedded)
Table 6-1 Schedule of Deliverables and Activities (embedded)

Figures

Figure 1-1 Vicinity Map
Figure 2-1 Site Conditions Map
Figure 2-2 Historical Property Features and Uses
Figure 2-3 Investigation Locations
Figure 2-4a GRO Distribution in Soil
Figure 2-4b Lead Distribution in Soil
Figure 2-5 GRO, DRO, and Benzene Distribution in Groundwater
Figure 2-6a cPAH Distribution in Soil (Broad Street Fill Site Contaminants)
Figure 2-6b Arsenic Distribution in Soil (Broad Street Fill Site Contaminants)
Figure 2-7a CVOCs Distribution in Soil (American Linen Site Contaminants)
Figure 2-7b CVOCs Distribution in Groundwater, Above 8 ft Elevation
Figure 2-7c CVOCs Distribution in Groundwater, Below 8 ft Elevation
Figure 2-8 Contaminant Sources, Exposure Pathways, and Receptors
Figure 2-9 Generalized Diagrammatic Conceptual Cross Section
Figure 5-1 Selected Cleanup Action
Figure 5-2a Selected Cleanup Action, Cross Section A-A’
Figure 5-2b Selected Cleanup Action, Cross Section B-B’

List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
µg/L	Microgram per liter
ARAR	Applicable or Relevant and Appropriate Requirements
bgs	Below ground surface
CAO	Cleanup action objective
CAP	Cleanup Action Plan
CFR	Code of Federal Regulations
Cis-1,2-DCE	Cis-1,2-dichloroethene
CLARC	Cleanup Levels and Risk Calculation
CMMP	Contaminated Media Management Plan
COC	Constituent of Concern
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbon
cPAH-TEQ	Carcinogenic Polycyclic Aromatic Hydrocarbon Toxic Equivalency
CSO	Combined sewer overflow
CSWGP	Construction Stormwater General Permit
CUL	Cleanup level
CVOC	Chlorinated Volatile Organic Compounds
CWA	Clean Water Act
DCA	Disproportionate Cost Analysis
DDA	Disposition and Development Agreement
DOSH	Division of Occupational Safety and Health
DRO	Diesel-range organics
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FFS	Focused Feasibility Study
GAC	Granular activated carbon
GRO	Gasoline-range organics
KCC	King County Code
MCL	Maximum Contaminant Level
mg/kg	Milligrams per kilogram
MTCA	Model Toxics Control Act
NAVD88	North American Vertical Datum of 1988
NPDES	National Pollutant Discharge Elimination System

Acronym/ Abbreviation	**Definition**
OSHA	Occupational Safety and Health Act
PAH	Polycyclic Aromatic Hydrocarbon
PCE	Tetrachloroethene
POC	Point of Compliance
PPCD	Prospective Purchaser Consent Decree
PPE	Personal protective equipment
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RI	Remedial Investigation
ROW	Right of way
SAP/QAPP	Sampling and Analysis Plan/Quality Assurance Project Plan
SDOT	Seattle Department of Transportation
SEPA	State Environmental Policy Act
SMC	Seattle Municipal Code
TCE	Trichloroethene
U.S.	United States
USC	United States Code
UST	Underground Storage Tank
VC	Vinyl chloride
VCP	Voluntary Cleanup Program
WAC	Washington Administrative Code
WISHA	Washington Industrial Safety and Health Act

1.0 Introduction

This document presents the Cleanup Action Plan (CAP) for the Seattle DOT Mercer Parcels Site (**Site**) located in Seattle, Washington (Figure 1-1).

1.1 General Facility Information and Site/Property Definitions

Site Name:	Seattle DOT Mercer Parcels
Facility Site ID No.:	27913
Cleanup Site ID No.:	14784
Property Address:	800 Mercer Street, Seattle, King County, WA 98109
Parcel Numbers:	224900-0006 and 224900-0055
Owner:	City of Seattle

The Site, as defined under the Model Toxics Control Act (MTCA; Revised Code of Washington [RCW] 70A.305) and its implementing regulations (Washington Administrative Code [WAC] 173-340), is generally defined by where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, or placed, or has otherwise come to be located. The Site includes multiple parcels where hazardous substances were released or have come to be located from historical gasoline service station operations and other property uses.

The two parcels that are associated with the Site are the subject of a Disposition and Development Agreement (DDA) between 800 Mercer, LLC and the City of Seattle (City), the current owner of the parcels. The parcels subject to the DDA are King County Parcel Nos. 224900-0006 and 224900-0055 (Figure 2-1). These parcels are collectively termed the **Property** for purposes of this CAP.

1.2 Purpose

This document is a requirement of MTCA, RCW Chapter 70A.305, and WAC Chapter 173-340. The purpose of the CAP is to identify the proposed cleanup action at the Site; to establish the actions required to achieve a reasonable restoration time frame, including engineered and institutional controls, if necessary; and to identify the necessary requirements of engineering and monitoring plans, as further described in this document.

Specific MTCA requirements for CAPs are set forth in WAC 173-340-380(1). Consistent with these requirements, this CAP provides the following:

- Cleanup standards for each hazardous substance in each medium of concern
- Description of the proposed cleanup action, including justification for selection of the proposed cleanup action

- Implementation schedule
- Restoration time frame
- Applicable state and federal laws
- A preliminary determination that the proposed cleanup action will comply with WAC 173-340-360

In addition, this CAP includes contingency planning requirements.

1.3 Preliminary Determination

Ecology has made a preliminary determination that the cleanup described in this CAP will comply with the requirements for selection of a remedy under WAC 173-340-360. Specifically, these requirements include a cleanup action that will be protective of human health and the environment, attain federal and state requirements that are applicable or relevant and appropriate, comply with cleanup standards, provide for compliance monitoring, use permanent solutions to the maximum extent practicable, provide for a reasonable restoration time frame, and consider public concerns.

1.4 Project Background and Regulatory Overview

Contamination was discovered in soil and groundwater beneath the Property in 2017 during an investigation conducted on behalf of the City of Seattle Department of Transportation (SDOT) to support sale of the Property as part of the City's Mercer Corridor West improvements project. Following the investigation, a release notification was submitted to Ecology and the Site was listed on the Confirmed and Suspected Contaminated Sites list in 2018 with Cleanup Site ID 14784.

Remedial investigation (RI) activities have since been performed at the Property as part of transactional due diligence associated with the DDA. During this process 800 Mercer, LLC enrolled the Site into Ecology's Voluntary Cleanup Program (VCP) to complete the RI and evaluate other feasibility issues associated with cleanup of the Property. Ecology accepted the VCP application on January 27, 2020 and identified the Site as Seattle DOT Mercer Parcels with VCP Project No. NW3258.

Between March 2019 and February 2021, prior to and following enrollment in the VCP, RI activities were conducted by Hart Crowser, a division of Haley & Aldrich (Hart Crowser) on behalf of 800 Mercer, LLC. The work included collection of additional soil and groundwater data to fill data gaps necessary to complete the RI and a Focused Feasibility Study (FFS) for the Property. An initial draft RI Report was submitted by Hart Crowser in July 2020. After identifying and investigating additional data gaps, a final draft RI Report was submitted in June 2021 for public review and comment. An initial draft FFS report was also submitted to Ecology in June 2021 following completion of the RI, and a final draft submitted for public review and comment in July 2021. Both the RI Report and FFS documents were subsequently finalized in February 2022 (Hart Crowser 2022a, 2022b).

In addition to the data collected by Hart Crowser between 2019 and 2021, the RI incorporated data from multiple investigations completed by others in the area around the Property between 1970 and 2020. Those investigations were conducted in support of both geotechnical and environmental studies for surrounding properties/sites, various government road and utility projects, and the Property. Relevant data from those investigations were used for characterizing subsurface conditions and contamination extents at the Site and evaluating potential off-Property sources. Based on the results of the RI, shallow soil and groundwater at the Site are impacted by petroleum-related contamination from a historical gasoline service station that operated on the Property. Lead impacts from unknown sources are also present, to a limited extent but above applicable cleanup standards, in soil at the Site.

Other contamination from off-Site sources was also identified on the Property during the RI. Shallow soil is impacted by contaminated fill material that was utilized for realignments of roads that previously ran through the Property. The contaminated fill is associated with a separate site and is not commingled with the petroleum or lead contamination on the Property. Deeper soil and groundwater beneath the Property are also impacted by chlorinated solvent contamination that migrated from an upgradient off-site source. The deeper chlorinated solvent contamination is not commingled with the shallower contamination on the Property and is associated with a separate site that is being addressed by another party under an Agreed Order with Ecology. Further details of these separate sites are provided in Section 2.3.5.

The RI and FFS documents prepared by Hart Crowser are the technical basis for the cleanup action to be conducted at the Property.

2.0 Site Description and Background

The following sections summarize the Property setting and history and the nature and extent of contamination at the Site. The RI Report prepared by Hart Crowser (Hart Crowser 2022a) includes more detail on the Site background, RI procedures, and analytical results.

2.1 Site Description and History

2.1.1 Location and Description

The Site is located in the South Lake Union neighborhood in Seattle, Washington. The Property consists of two King County tax parcels as noted previously: Parcel No. 224900-0055 comprising the west half and Parcel No. 224900-0006 comprising the east half. The Property encompasses approximately 2.35 acres and is bounded by Roy Street to the north, Mercer Street to the south, Dexter Avenue North to the west, and Ninth Avenue North to the east. The Property is relatively flat on the west side (elevation 58 feet[1]) and generally slopes down toward the east (elevation 36 feet on the east side) (Figure 2-1).

2.1.2 Subsurface Conditions

Soil on the Property consists of fill, glacial deposits, and non-glacial deposits consistent with other studies in the area (SoundEarth Strategies 2013, 2016; PES Environmental 2018, 2019). The fill comprises sand with silt, gravel, and cobbles and brick, concrete, and glass debris. In most areas the fill is 12 to 18 feet deep, but it ranges up to 31 feet in some areas. In areas without fill, silt and/or clay with or without sand are present to a depth of 27 feet below ground surface (bgs). Below that is a layer of silty sand and silty gravel with varying degrees of gravel and cobbles to a depth of 73 feet bgs.

The hydrogeology at the Site is described as four water-bearing zones. The Shallow zone is discontinuous and unconfined in fill, lacustrine deposits, and glacial deposits. The intermediate zone is divided into two depth intervals called Intermediate A (upper, coarser zone) and Intermediate B (deeper, finer zone). The Deep zone consists of materials similar to the intermediate zones. Groundwater generally flows eastward across the property in all four zones. The water table is generally at 25 feet bgs. Water levels at the property have been influenced at times by temporary construction dewatering at nearby properties.

2.1.3 Zoning

The Property is currently zoned for mixed use (Seattle Mixed South Lake Union 175/85-280). Based on the current and proposed redevelopment of the area, the future land use at the Property is reasonably expected to remain mixed use. Based on the mixed-use zoning code, a wide variety of light industrial, residential, and commercial uses are allowed.

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[1] All elevations in this CAP Report are referenced to the North American Vertical Datum of 1988 (NAVD88).

2.1.4 Historical Property Use

As early as 1893, the southern shoreline of Lake Union extended onto the northeast corner of the Property. By 1917, that area had been filled and the shoreline moved northward to its current location. An estimated 17 feet of fill was brought in to raise the ground surface in the northeast corner of the Property to its current elevation.

Residential dwellings were present on the Property from approximately the end of the 19th century to the 1950s. Various rights-of-way (ROWs) divided the Property from approximately the end of the 19th century to 2012. The Property was also used for a variety of commercial businesses from approximately 1917 to 2010. In the 2010s and as recently as 2019, the Property was used for construction staging.

Historical facilities and operations are shown on Figure 2-2 and included the following:

- A gasoline and service station that operated in the northwest corner of the Property from approximately 1929 to 1960
- An automobile repair and service station that operated in the central area of the Property from approximately 1930 to 1955
- Several auto wrecking businesses that occupied a building on the northeast corner of the Property from approximately 1930 to 1955, with a nearby large parking lot covering the southeast corner of the Property for the storage of wrecked cars
- A soap and chemical works facility that operated in the north-central portion of the Property from 1925 to 1940
- Sign painting companies that operated in the north-central portion of the Property between 1925 and 1955
- A sign painting business that operated near the south-central portion of the Property from approximately 1975 to 1996
- Retail painting stores that operated in the southwest quadrant of the Property in 1950

ROWs that historically bisected the Property are also illustrated on Figure 2-2. As early as 1893, Vine Street ran north-south through the center of the Property, connecting Roy and Mercer Streets. By 1905, Vine Street had been renamed Eighth Avenue North, which remained in this configuration until 1958. Sometime between 1917 and 1936 until 1958, the western half of the Property was split diagonally by Broad Street, which ran northeast to southwest along the surface from Eighth Avenue North to Dexter Avenue North. In 1958, Eighth Avenue North and Broad Street were vacated, and a new Broad Street alignment was constructed that again ran diagonally, northeast to southwest, across the surface of the entire Property, from the intersection of Valley Street and Ninth Avenue North to the intersection of Dexter Avenue North and Mercer Street and beyond.

The new Broad Street alignment (herein referred to as the Broad Street 1958-2012 alignment) sloped down about 20 feet to an underpass in the southwest corner of the Property that continued under the intersection of Dexter Avenue North and Mercer Street. Concrete retaining walls were present on the north and south sides of the Broad Street 1958-2012 alignment in the southwest corner of the Property. A secondary street that followed the former Broad Street alignment and connected Roy Street to Dexter Avenue North was also constructed during this time.

From approximately 2012 to 2015, the Broad Street 1958-2012 alignment was filled in to match the existing grades of Mercer Street and Dexter Avenue North, and all roadways within the boundaries of the Property were subsequently vacated as part of the City's Mercer Corridor Project. The Mercer Corridor Project also included widening Mercer Street to its current extent, which moved the Mercer right-of-way northward onto the southeast corner of the Property.

2.1.5 Current Property Conditions, Utilities, and Use

Currently, the Property is vacant and no aboveground structures are present. Portions of the western half of the Property are either paved with asphalt or concrete or are covered with gravel. The eastern portion of the Property is covered with grass and contains two temporary sediment ponds for stormwater collection.

A King County underground combined sewer overflow (CSO) drop structure is located near the center of the northern boundary of the Property, and underground CSO overflow pipes extend west (Central Trunk CSO Pipeline), northeast (South Lake Union CSO Pipeline), and south (Lake Union Tunnel) from the structure. The underground CSO infrastructure also includes a large-diameter tunnel (Mercer Street Tunnel), which extends southwest from the drop structure. The CSO infrastructure is owned by King County via an easement and will remain on the Property after redevelopment. Other utilities on the Property include an abandoned Seattle City Light duct bank and deactivated gas line that extend from north to south across the middle of the Property, as well as several abandoned Seattle Public Utilities drainage structure lines across the Property.

2.1.6 Future Property Use

The Property is planned to be redeveloped with two 13-story towers—one on the western half and one on the eastern half of the Property—separated above grade by the vacated Eighth Avenue North ROW. The two separate towers will share a below-grade parking garage that will underlie the vast majority of the Property footprint. Four levels of below-grade parking are planned, resulting in a uniform lowest finished floor elevation of approximately 10.75 feet (approximately 23 to 48 feet bgs). The foundation for the buildings and garage will consist of a 3-foot to 8-foot thick concrete mat, resulting in a bottom of excavation ranging from elevation 2.75 to 7.75 feet. The buildings will be occupied by biotech and life science companies, with commercial space and public amenities on the ground level. Redevelopment is expected to begin in 2022 and is expected to be completed by late 2024.

2.2 Summary of Investigations

Environmental investigations that have been completed at the Property to characterize the Site are summarized as follows:

- After a Phase I environmental site assessment indicated recognized environmental conditions on the Property (Shannon & Wilson 2018a), a limited Phase II environmental site assessment was performed by Shannon & Wilson in 2017 to evaluate soil and groundwater conditions on the Property to support future redevelopment (Shannon & Wilson 2018b). The investigation included advancement of 11 soil probes (identified as 21417-MB1 through 21417-MB11 on Figure 2-3) and collection and analysis of 15 soil samples and 4 grab groundwater samples from the shallow zone. The investigation results indicated detectable concentrations of various compounds in soil and groundwater, confirming that one or more releases of hazardous substances had occurred on the Property.

- Subsequent remedial investigation activities were performed by Hart Crowser in 2019 and 2020 to further characterize the Site and delineate the extent of contamination that was previously identified on the Property (Hart Crowser 2022a). These activities included installation and sampling of 50 soil borings (identified with prefixes of "MBB," "MBPP," and "MBGW" on Figure 2-3) and 36 monitoring wells (identified with prefix of "HMW" on Figure 2-3), water level monitoring, and hydraulic conductivity testing. A total of 344 soil samples and 80 groundwater samples (grab and well samples) were collected for laboratory analysis.

Data from other investigations conducted on or near the Property for other purposes were also used to supplement the RI data set and confirm the extents of contamination at the Site and evaluate geologic conditions. The supplemental data included more than 170 soil samples and 140 groundwater samples from 31 explorations from the following investigations (locations included on Figure 2-3):

- A comprehensive foundation investigation conducted between 1970 and 1971 by Shannon & Wilson (Shannon & Wilson 1971). This investigation was performed near the east side of the Property and in the north-adjacent and south-adjacent ROWs to support a proposed property redevelopment project. Data collected from four of the soil explorations (borings B-404, B-414, B-432, and B-434) provided relevant information to evaluate subsurface geologic conditions on and near the Property.

- July 1996 HWA Geosciences investigation in ROW north of Property to document conditions in vicinity of the then-planned underground CSO infrastructure (HWA 1998). Data from a deep well (PB-9) provided relevant information to evaluate subsurface geologic conditions on and near the Property.

- A Phase II Environmental Site Assessment conducted in 1997 by Black & Veatch to document environmental conditions in the vicinity of the planned CSO infrastructure on the Property

(Black & Veatch 1998). Soil and groundwater data from three monitoring wells in the vicinity of the Property (BB-5, BB-8, and BB-10) were used to support the RI.

- An environmental investigation conducted in 2012 by Shannon & Wilson to document conditions in the vicinity of the planned Mercer Corridor project (Shannon & Wilson 2012). Soil data from three of the soil explorations advanced in the west-adjacent ROW (borings GP-7, GP-8, and GP-9) were used to support the RI.

- Remedial investigation activities associated with the north-adjacent American Linen Supply Co Dexter Ave site (Cleanup Site ID 12004; herein referred to as the American Linen Site), performed by Dalton, Olmsted & Fuglevand in 2009 (DOF 2009), SoundEarth Strategies in 2012 and 2013 (SoundEarth Strategies 2013), and by PES Environmental from 2017 through 2020 (PES Environmental 2019, 2020). Soil and groundwater data from 13 investigation locations on and surrounding the Property (BB-8A, B-215, MW-105, MW-106, MW-114, MW-117, MW-118, MW-119, MW-140, MW-146, MW-147, MW-148, MW-153, MW-154, MW-155, MW-315, MW-316, MW-325, MW-326) were used to support the RI.

- Remedial investigation activities associated with the east-adjacent AIBS Building Block 43 site (Cleanup Site ID 12637), performed by Farallon Consulting in 2014. Groundwater data from one well (FMW-129) located on the northeast side of the Property was used to support the RI (Farallon 2018).

Additional information about the investigations identified above can be found in the RI Report (Hart Crowser 2022a) and the source documents referenced above.

2.3 Nature and Extent of Contamination

This section summarizes the nature and extent of contamination at the Site based on the results of the RI, which included evaluation of more than 300 soil and 150 groundwater samples collected from the Property and surrounding areas. RI sampling locations are depicted on Figure 2-3 and detailed information and analytical data are presented in the RI Report.

2.3.1 Constituents of Concern

Hazardous substances investigated during the RI were based on Property data and historical operations, and on potential off-Property sources from surrounding sites. Concentrations of detected compounds were compared to screening levels protective of human health and the environment to determine constituents of concern (COCs). Based on the evaluation and on sources of contamination, the following are COCs for the Site:

- Soil COCs:
  - Petroleum hydrocarbons as gasoline-range organics (GRO)
  - Lead
- Groundwater COCs:

- GRO
- Petroleum hydrocarbons as diesel-range organics (DRO)
- Benzene

Other hazardous substances are present in soil and/or groundwater on the Property at concentrations that exceed screening levels protective of human health and the environment but are not considered COCs for the Site. These substances include carcinogenic polycyclic aromatic hydrocarbons (cPAHs), arsenic, and chlorinated volatile organic compounds (CVOCs), and are associated with other listed contaminated sites. The cPAHs and arsenic are impacting shallow soil on the Property and CVOCs are impacting saturated soil and groundwater beneath the Property.

2.3.2 COC Sources

The petroleum impacts (GRO, DRO, and benzene) observed in soil and groundwater are attributed to historical fuel releases from the former gas and auto repair station that operated in the northwest corner of the Property from 1929 to 1960.

Lead impacts in soil on the Property are relatively isolated in small areas and very limited in extent. The source of the isolated lead exceedances in soil is not known, as further explained in Section 2.3.3.

2.3.3 Distribution of COCs in Soil

GRO concentrations in soil that exceed the screening level are limited to an area within the northwest corner of the Property, as illustrated on Figure 2-4a. These impacts are present at depths ranging from 5 to 25 feet below ground surface (bgs), corresponding to elevations between approximately 48.7 and 29.8 feet. The GRO concentrations detected in this area range from 7.3 to 1,200 milligrams per kilogram (mg/kg). The lateral and vertical extents of GRO contamination in soil have been adequately delineated and appear to be fully contained within the Property boundary.

Detections of lead in soil that exceed screening levels are present in two areas of the Property, as illustrated on Figure 2-4b. These impacts appear to be very limited in extent and include:

- A detected lead concentration of 591 mg/kg in fill material within the north-central portion of the Property at a depth of 10 feet bgs, corresponding to an elevation of approximately 40.53 feet; and
- A detected lead concentration of 279 mg/kg in native material near the northeast corner of the Property at a depth of 22 feet bgs, corresponding to an elevation of approximately 17.05 feet.

Lead was also detected in other soil samples throughout the Property, but at concentrations generally consistent with natural background. The isolated occurrence of lead in the fill material was in an area without a known source of lead (e.g., leaded gasoline) and no other exceedances were reported in any other soil samples in the vicinity; therefore, this sample presents an anomalous lead-bearing hot spot within the fill material. The concentration of lead in native material was slightly above the screening level of 250 mg/kg. Neither sample was associated with high concentrations of GRO that might have indicated a leaded-gasoline source. These isolated results do not support the existence of lead contamination in soils throughout the Property, and do not suggest any on-Property sources or releases of lead. The lateral and vertical extents of lead contamination in soil have been adequately delineated and appear to be fully contained within the Property boundary.

2.3.4 Distribution of COCs in Groundwater

Petroleum-related impacts in groundwater that exceed screening levels are limited to an area of GRO, DRO, and benzene contamination in the northwest corner of the Property, as illustrated on Figure 2-5. These impacts are present in the Shallow zone at concentrations detected as high as 1,600 micrograms per liter (µg/L) for GRO, 650 µg/L for DRO, and 34 µg/L for benzene.

The GRO, DRO, and benzene exceedances in the northwest corner of the Property are bounded by groundwater samples within the Property boundary that do not exceed screening levels, indicating that the petroleum-related impacts in groundwater are not migrating off of the Property. The lateral extents of GRO, DRO, and benzene contamination in groundwater have been delineated, as discussed in detail in the RI Report and shown on Figure 2-5.

2.3.5 Contaminants from Other Sites

The cPAH and arsenic impacts in shallow soil on the Property are outside of the area of petroleum contamination and are attributed to contaminated fill that was placed within the former Broad Street 1958-2012 alignment. Based on the data collected during the RI, the contaminated fill was determined to be a separate site and has been listed by Ecology as the Broad Street Alignment Contaminated Fill Site with Cleanup Site ID 15446 (herein referred to as the Broad Street Fill Site). The data collected on the Property have confirmed that the contaminated fill site is not commingled with the Seattle DOT Mercer Parcels Site.

The CVOC impacts in saturated soil and groundwater on the Property are attributed to chlorinated solvent releases from historical laundry and dry-cleaning operations on the American Linen Site (Cleanup Site ID 12004), originating at 700 Dexter Avenue North (Figure 2-1). The chlorinated solvent contamination migrated through the groundwater and has come to be located beneath the Property. The American Linen CVOC plume is being addressed under a separate agreed order with Ecology (Agreed Order No. DE 14302) and includes ongoing remedial investigation and feasibility study activities as well as an ongoing interim cleanup action. The data collected on the Property have confirmed that the CVOC contamination from the American Linen Site is not commingled with the Seattle DOT Mercer Parcels Site.

Based on the determinations that the above contaminants are not commingled and are separate sites pursuant to MTCA, the following areas will not be included in this cleanup action but will instead be remediated pursuant to separate legal agreement(s). For the purposes of this CAP, these contaminants are not included as COCs at this Site.

Broad Street Fill Site. cPAHs in soil at concentrations that exceed the RI screening levels are limited to two areas of the Property, as illustrated on Figure 2-6a. These impacts are present in shallow fill material, primarily within the former Broad Street 1958-2012 alignment, in and near the southwest corner of the Property and within the east-central area of the Property.

- The cPAH toxic equivalency (cPAHs-TEQ) concentrations detected in and near the southwest corner are present at depths ranging from 5 to 25 feet bgs, corresponding to elevations between approximately 53.6 and 33.6 feet. The cPAH-TEQ concentrations detected in this area range from 0.016 to 0.44 mg/kg. Benzo(a)pyrene, which is included in the calculation for determining cPAH-TEQ concentrations, was detected in this area at concentrations ranging from 0.054 to 0.29 mg/kg.

- The cPAH-TEQ concentrations detected in the east-central area of the Property are present at two locations: one at a depth of approximately 5 feet bgs and the other at a depth of approximately 10 feet bgs, both of which correspond to an approximate elevation of 37 feet. The cPAH-TEQ concentrations detected in this area are 0.42 mg/kg and 2.4 mg/kg, with benzo(a)pyrene also detected at concentrations of 0.33 mg/kg and 1.8 mg/kg, respectively.

The lateral and vertical extents of cPAH contamination in soil are adequately delineated within the Property boundary. However, the data indicate that cPAH contamination within the Broad Street 1958-2012 alignment fill material extends beyond the Property boundary to the southwest. The extent of off-Property cPAH contamination within the fill material is unknown.

Arsenic concentrations in soil that exceed the screening level are primarily located within the Broad Street 1958-2012 alignment in the central and southwest portions of the Property, as illustrated on Figure 2-6b. These impacts are present in the fill material at depths ranging from 5 to 30 feet bgs, corresponding to elevations between approximately 53.7 to 28.7 feet. The arsenic concentrations detected in these areas range from 1.1 to 25.6 mg/kg. The lateral and vertical extents of arsenic contamination in soil are adequately delineated within the Property boundary. However, the data suggest that arsenic contamination within the Broad Street 1958-2012 alignment fill material is co-located with cPAH contamination and may also extend beyond the Property boundary to the southwest.

American Linen Site. CVOC contamination in soil from the American Linen plume includes, but is not limited to, tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC). These compounds are present in saturated soil throughout the Property at depths between approximately 25 and 110 feet bgs, corresponding to elevations between approximately 25 feet and -55 feet (Figure 2-7a). Concentrations of PCE, TCE, cis-1,2-DCE, and VC were detected in soil on the Property as high as 8.8 mg/kg, 0.47 mg/kg, 0.26 mg/kg, and 0.0615 mg/kg, respectively. These impacts are all present in saturated soil beneath the other hazardous substances.

CVOC contamination in groundwater from the American Linen plume are present in the shallow, intermediate, and deep zones beneath the Property and surrounding areas (Figures 2-7b and

2-7c). During the 2019-2020 RI activities, dissolved PCE concentrations beneath the Property were detected as high 9,100 µg/L, TCE as high as 660 µg/L, cis-1,2-DCE as high as 420 µg/L, and VC as high as 7,400 µg/L. As noted previously, data confirm that the CVOC plume from the American Linen Site is not commingled with the petroleum hydrocarbon plume at the Seattle DOT Mercer Parcels Site.

2.4 Receptors and Exposure Pathways

Receptors at the Site currently and in the future include construction workers, workers and patrons of commercial and retail facilities, and area residents. Receptors and associated exposure pathways for contamination originating on or from the Property are:

- Any person in contact with contaminated soil.
- Any person that incidentally ingests contaminated soil.
- Any future building occupant breathing potentially contaminated air impacted from volatile compounds in vadose-zone soil and/or shallow groundwater.
- Any person ingesting shallow contaminated groundwater.

Terrestrial ecological receptors are not a concern for the Site based on the planned future land use, as discussed in more detail in the RI Report.

A conceptual site model summarizing sources of contamination, contaminant transport pathways, and current and potential human and ecologic exposure pathways is illustrated in the diagram presented in Figure 2-8. A conceptual cross section illustrating the separation of sites and sources is presented in Figure 2-9.

3.0 Cleanup Standards

Cleanup actions must comply with cleanup standards set forth in WAC 173-340-700 through 173-340-760. Cleanup standards include cleanup levels (CULs) for Site COCs, the location where CULs must be met (i.e., point of compliance), and other regulatory requirements that apply to the Site because of the type of cleanup action and/or location of the Site (i.e., applicable state and federal laws). The CULs and points of compliance (POCs) are presented in Section 3.1, and applicable state and federal laws are presented in Section 3.2.

3.1 Cleanup Levels and Points of Compliance

CULs are concentrations of hazardous substances that are determined by Ecology to be protective of human health and the environment under specified exposure conditions. The MTCA regulations (WAC 173-340-350[9][a]) require that CULs be established for hazardous substances in each medium (soil and groundwater) and for each exposure pathway where a release has occurred. For the Site, CULs have been developed for soil and groundwater COCs (petroleum compounds and lead) to address the exposure pathways identified in Section 2.4.

In general, standard MTCA Method B CULs have been selected for this Site, which are applicable to all sites and are developed with default formulas, assumptions, and procedures (WAC 173-340-705[1] and [2]). The minimum CUL (most protective) for all applicable exposure pathways was selected for each COC identified in Section 2.3.1. Where appropriate, MTCA Method A default values may be used to substitute for Method B CULs.

The POC is the point or location on a site where CULs must be attained and is summarized for each COC in Tables 3-1a and 3-1b below.

3.1.1 Soil

The POC is the point or points where the soil cleanup levels established shall be attained, as outlined in WAC 173-340-740(6)(b-d) and summarized below:

- For CULs based on the protection of groundwater, soils throughout the Site.
- For CULs based on protection from vapors, soils throughout the Site from the ground surface to the uppermost groundwater saturated zone.
- For CULs based on human exposure via direct contact, soils throughout the Site from the ground surface to 15 feet bgs.

The lowest soil CUL (most protective) for the following two exposure pathways was selected:

- Protection of direct contact, using the lower of the CULs calculated using MTCA Equations 740-1 and 740-2 (WAC 173-340-740[3][b][iii][B]).[2]
- Leaching from soil to groundwater protective of a full-time residential user of groundwater as a drinking water source for the appropriate soil zone (saturated or vadose), developed using the fixed parameter three-phase partitioning model in accordance with WAC 173-340-747(4).[3]

The soil CULs for Site COCs, their basis, and associated POCs are listed below in Table 3-1a.

Table 3-1a: Soil Cleanup Standards

COC	CUL (mg/kg)	Basis of CUL	POC
GRO	30[a,b]	Protection of groundwater	Sitewide
Lead	250[a]	Direct contact[c]	0 to 15 feet bgs

Notes:

a. MTCA Method A CUL was used since a MTCA Method B CUL is not available. The MTCA Method A CUL is presented in WAC 173-340-900, Table 740-1.

b. The CUL is calculated according to the procedures in WAC 173-340-747 and assumes benzene is present.

c. The protection of groundwater from saturated soil pathway has an equal or lower CUL but is not applicable because this constituent was either never detected in saturated soil or was detected at a concentration below the screening level protective of the saturated soil-to-groundwater pathway and was not detected in any groundwater samples at concentrations that pose a risk.

3.1.2 Groundwater

The standard POC was selected for groundwater, which is throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site (WAC 173-340-720[8][b]).

The lowest groundwater CUL (most protective) for the following two exposure pathways was selected:

- Protection of drinking water, developed by identifying maximum contaminant levels (MCLs) and calculating levels per MTCA Equations 720-1 and 720-2 (WAC 173-340-720[4][b][iii][A] and -720[4][b][iii][B]) using the toxicity values in Ecology's online cleanup levels and risk calculation (CLARC) database (Ecology 2021a), and adjusting the MCLs as follows:[4]

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[2] Except for GRO, which is based on Ecology's model remedy guidance for sites with petroleum contaminated soil (Ecology 2017).

[3] Except for GRO, which is developed using the four-phase partitioning model in accordance with WAC 173-340-747(6).

[4] Except GRO and DRO, which are based on the MTCA Method A listed values.

  - If the ratio of the minimum MCL to the Equation 720-1 value does not exceed 1, then the hazard quotient associated with the MCL does not exceed 1 and the MCL requires no adjustment.
  - If the ratio of the minimum MCL to the Equation 720-1 value exceeds 1, the MCL is adjusted to the Equation 720-1 value to achieve a hazard quotient of 1.
  - If the ratio of the minimum MCL to the Equation 720-2 value does not exceed 10, then the cancer risk associated with the MCL does not exceed 1E-5 and the MCL requires no adjustment.
  - If the ratio of the minimum MCL to the Equation 720-2 value exceeds 10, the MCL is adjusted to 10 times the Equation 720-2 value to achieve a cancer risk of 1E-5.
  - If an MCL is available but no oral toxicity values are available to evaluate it, the MCL is used without adjustment.
  - If no MCL is available but an oral toxicity value is available, the minimum of the values from Equations 720-1 and 720-2 is used.

- Protection of ambient air, calculated per Ecology guidance (Ecology 2018a and 2018b).

The groundwater CULs for Site COCs, their basis, and associated POCs are listed below in Table 3-1b.

Table 3-1b: Groundwater Cleanup Standards

COC	CUL (µg/L)	Basis of CUL	POC
GRO	800[a,b]	Protection of drinking water	Sitewide
DRO	500[a]	Protection of drinking water	Sitewide
Benzene	2.4[c]	Protection of indoor air	Sitewide

Notes:

a. MTCA Method A CUL was used since MTCA Method B is not available without petroleum fractionation analysis. The MTCA Method A CUL is presented in WAC 173-340-900, Table 720-1.

b. The CUL assumes benzene is present.

c. Based on groundwater screening level protective of vapor intrusion calculated using Equation 1 of Ecology's April 2018 revised *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* (Ecology 2018a).

3.2 Screening Levels for Other Hazardous Substances

The proposed cleanup action for the Site and planned redevelopment of the Property will concurrently address some of the contamination that is present on the Property from the Broad Street Fill Site (cPAHs and arsenic) and the American Linen Site (CVOCs). Such incidental remedial actions associated with those other sites will likely be considered interim actions for the final cleanup action of those sites, as appropriate. For reference, the soil and groundwater screening levels selected for those other hazardous substances and their basis are provided below in Tables 3-2a and 3-2b.

Table 3-2a: Soil Screening Levels for Other Hazardous Substances

Hazardous Substance	Screening Level (mg/kg)	Basis of Screening Level
cPAHs	0.19	Direct contact
Arsenic	7.3[a]	Direct contact, adjusted to practical quantitation limit (PQL)
PCE	0.0028	Saturated soil leaching to groundwater
TCE	0.0015	Saturated soil leaching to groundwater
Cis-1,2-DCE	0.0052	Saturated soil leaching to groundwater
VC	0.0015	Saturated soil leaching to groundwater, adjusted to PQL

Notes:

a. Screening level adjusted in accordance with WAC 173-340-740(5)(c); background value for arsenic from *Natural Background Soil Metals Concentrations in Washington State* (Ecology 1994).

Table 3-2b: Groundwater Screening Levels for Other Hazardous Substances

Hazardous Substance	Screening Level (µg/L)	Basis of Screening Level
PCE	5	Protection of drinking water
TCE	1.4	Protection of indoor air
Cis-1,2-DCE	16	Protection of drinking water
VC	0.29	Protection of drinking water

3.3 Applicable or Relevant and Appropriate Requirements

This section identifies applicable or relevant and appropriate requirements (ARARs) for implementing the cleanup action at the Site. The ARARs focus on local, state, or federal statutes, regulations, criteria, and guidelines. The specific types of ARARs for the cleanup action include contaminant-, location-, and action-specific ARARs, as defined in the following paragraphs. Each type of ARAR was evaluated in the FFS, and applicable ARARs are listed below.

In general, only the substantive requirements of ARARs are applied to MTCA cleanup sites being conducted under a legally binding agreement with Ecology (WAC 173-340-710[9][b]). Thus, cleanup actions under a formal agreement with Ecology are exempt from the administrative and procedural requirements specified in certain state and federal laws.[5] This exemption also applies to permits or approvals required by local governments.

Contaminant-specific ARARs. Contaminant-specific ARARs are usually health- or risk-based numerical values or methodologies that, when applied to site-specific conditions, result in the establishment of numerical contaminant values that regulatory agencies generally recognize as protective of human health and the environment.

Applicable contaminant-specific ARARs include:

- Washington MTCA (RCW 70A.305; Chapter 173-340 WAC) regulating soil and groundwater cleanup levels.

Action-specific ARARs. Action-specific ARARs are pertinent to particular remediation methods and technologies, and to actions conducted to support cleanup. Action-specific ARARs are requirements that may need to be satisfied during the performance of specific cleanup actions because they prescribe how certain activities (e.g., treatment and disposal practices, media monitoring programs) must occur.

Applicable action-specific ARARs include:

- United States (U.S.) Clean Air Act (42 United States Code [USC] § 7401 et seq. and 40 Code of Federal Regulations [CFR] Part 50) and Washington Clean Air Act and Implementing Regulations (RCW 70A.15; Chapter 173-400 WAC) to protect ambient air quality by limiting air emissions and taking reasonable precautions to prevent fugitive dust from becoming airborne, which are applicable since the selected cleanup action involves construction.
- U.S. Resource Conservation and Recovery Act (RCRA) (42 USC § 6901 et seq.), Subtitle D—Managing Municipal and Solid Waste (40 CFR Parts 257 and 258) and Washington Solid Waste Handling Standards (RCW 70A.205; Chapter 173-350 WAC) to establish guidelines and criteria for management of non-hazardous solid waste, which are applicable since the selected cleanup action involves off-site disposal of contaminated soil and/or groundwater designated as non-hazardous waste.
- U.S. Land Disposal Restrictions (40 CFR Part 268) and Washington Land Disposal Restrictions (Chapter 173-303 WAC) to establish guidelines and criteria for disposal of dangerous waste, which are applicable to determine whether listed dangerous wastes disposed of off-site during the planned cleanup action will qualify as “contained-in”.

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[5] The exemption applies to the following Washington State laws: Clean Air Act (RCW 70A.15), Solid Waste Management (RCW 70A.205), Hazardous Waste Management (RCW 70A.300), Construction Projects in State Waters (RCW 77.55), Water Pollution Control (RCW 90.48), and Shoreline Management Act (RCW 90.58). Exemption does not apply if Ecology determines that it would result in loss of approval from a federal agency necessary for the state to administer any federal law.

- Washington Contained-in Policy (Ecology memo dated February 19, 1993) to allow for listed dangerous wastes to be exempt from management as dangerous wastes if the concentrations are below risk-based levels, which is applicable since the selected cleanup action involves off-site disposal of listed dangerous wastes at concentrations that would qualify as contained-in.
- U.S. Occupational Safety and Health Act (OSHA) (29 CFR Parts 1904, 1910, and 1926) and Washington Industrial Safety and Health Act (WISHA) (RCW 49.17; Title 296 WAC) to establish site worker and visitor health and safety requirements during implementation of the cleanup action.
- Washington State Environmental Policy Act (SEPA) (RCW 43.21C; Chapter 197-11 WAC) to identify and analyze environmental impacts associated with the selected cleanup action.
- King County Stormwater Runoff and Surface Water and Erosion Control (King County Code [KCC] Chapter 9.04), King County Water Quality (KCC Chapter 9.12), and Seattle Stormwater Code (Seattle Municipal Code [SMC] Title 22, Subtitle VIII) to establish guidelines for erosion control and construction stormwater management, which are applicable since the selected cleanup action involves construction.
- Washington Noise Control (RCW 70A.20; Chapter 173-60 WAC) and Seattle Noise Control (SMC Chapter 25.08) to minimize noise impacts during implementation of the selected cleanup action.
- Seattle Grading Code (SMC Chapter 22.170) to establish guidelines for grading, which is applicable since the selected cleanup action involves an excavation and filling volume greater than 500 cubic yards.
- U.S. Federal Water Pollution Control Act—National Pollutant Discharge Elimination System (NPDES) (Clean Water Act [CWA]; 33 USC § 1342, Section 402) and Implementing Regulations and Washington Waste Discharge General Permit Program (RCW 90.48; Chapter 173-226 WAC) to establish requirements for point source discharges, including stormwater runoff, which are applicable since the selected cleanup action involves point source discharge of stormwater.
- Washington Minimum Standards for Construction and Maintenance of Wells (RCW 18.104; Chapter 173-160 WAC) to establish standards for constructing and decommissioning monitoring wells, which is applicable since the selected cleanup action involves drilling or decommissioning wells.

Location-specific ARARs. Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they are in a specific location. Some examples of special locations include floodplains, wetlands, historic sites, and sensitive ecosystems or habitats.

Applicable location-specific ARARs include:

- U.S. Archaeological and Historical Preservation Act (16 USC § 469, 470 et seq.; 36 CFR Parts 65 and 800) and Washington Archaeological Sites and Resources (RCW 27.44, 27.48, and 27.53; Chapter 25-48 WAC) to establish guidelines to preserve and recover significant artifacts, preserve historic and archaeological properties and resources, and minimize harm to national landmarks. There are no known historic or archaeological sites in the vicinity of the Site, but these regulations may be applicable if archaeological resources are discovered during construction.
- Seattle Clarification of SEPA Historic Preservation Policy for Potential Archaeologically Significant Sites and Requirements for Archaeological Assessments (Director's Rule 2-98; SMC Chapter 25.05.675 H) to provide guidance for the identification, protection, and treatment of archaeological sites on the City of Seattle's shorelines, which is applicable as the Site is within 200 feet of the historical Lake Union shoreline.

4.0 Remedy Selection

This section identifies cleanup action objectives (CAOs), describes the selection process for the cleanup action, and explains how the selected cleanup action meets the minimum MTCA requirements.

4.1 Cleanup Action Objectives

CAOs were developed to identify goals that should be accomplished by the selected cleanup action to meet the minimum requirements of the MTCA regulations and provide adequate protection of human health and the environment. The CAOs for soil and groundwater consider the applicable receptors and exposure pathways for those media (Section 2.4).

The CAOs for the Site COCs and other hazardous substances that are present on the Property are:

1. Prevent any person from direct contact with contaminated soil.
2. Protect groundwater from being contaminated by impacted soil.
3. Mitigate the potential for future building indoor air to be impacted by contaminated soil and groundwater.
4. Prevent any person from ingesting contaminated groundwater.

Each CAO will be achieved by terminating the associated exposure pathway. This objective can be achieved through contaminant removal or treatment to meet constituent- and media-specific cleanup standards (cleanup levels at points of compliance; Section 3.1) that are based on the specific exposure pathways, and preventing any potential residual exposure through containment with associated institutional controls.

4.2 Selected Cleanup Action

The selected cleanup action is described in detail in Section 5.0 and consists of:

- Excavating contaminated soil within the planned redevelopment excavation required for construction of the new buildings to an approximate elevation of at least 7.75 feet (approximately 26 to 51 feet bgs).
- Performing compliance monitoring.

The selected cleanup action is a permanent cleanup action that will address Site COCs as defined in WAC 173-340-200.

4.2.1 Considerations Related to Other Sites on the Property

The cleanup action and Property redevelopment plans take into consideration the ongoing and/or future investigations, cleanup actions, and monitoring related to the Broad Street Fill Site and the American Linen Site so as not to interfere with those efforts. The American Linen CVOC plume is being investigated and cleaned up under an Agreed Order with Ecology by others and therefore is not within the scope of this CAP. If investigation or remediation related activities are required beneath the proposed building footprint at the Property for either of the two sites (other than the incidental actions noted below), those activities will need to be completed prior to the beginning of construction (anticipated in mid-2022). Considerations related to both sites are summarized below:

Groundwater Management. The cleanup action at the Property will address management and disposal of CVOC-impacted groundwater encountered during excavation and associated construction dewatering. The construction dewatering treatment system will be designed to reduce CVOC concentrations in accordance with discharge permit requirements. During construction dewatering, effluent will be evaluated and treated as necessary to comply with the discharge permit.

Additionally, a secant pile wall will be installed along the perimeter of the approximate eastern half of the Property which will serve as the temporary support of excavation and will also reduce construction dewatering flow rates. The secant pile wall will be embedded in the underlying dense glacial till soils to an elevation of approximately -20 feet. Due to the presence of dense low-permeability glacial till soils at a shallower depth within the western portion of the Property, dewatering flow rates are estimated to be minimal; therefore, a conventional soldier pile and lagging wall will serve as the temporary support of excavation wall.

Soil Management. Shallow contaminated fill will be removed from the Property as an interim action for the Broad Street Fill Site. Those fill soils containing elevated cPAHs and arsenic above the screening levels will be managed and disposed of as non-hazardous waste at a Subtitle D landfill. Saturated soils with CVOC detections are expected to be managed and disposed of as non-dangerous solid waste at a Subtitle D landfill under a contained-in designation from Ecology.

Vapor Intrusion Mitigation. An Ecology-approved vapor barrier will be installed beneath the slabs and along the below-grade walls of the new building structures at the Property as a mitigation measure to prevent vapors containing CVOCs from migrating into the buildings.

Environmental Covenant. An environmental covenant will be filed for the Property to place limitations on the use of the Property (i.e., prohibit extraction and use of groundwater) and require that engineering controls (i.e., vapor barrier, protective cap) remain in place and be monitored and maintained appropriately until the American Linen CVOC plume is remediated.

Additional details for managing waste soils and water from the excavation, implementing the vapor barrier, and any other controls to be implemented on the Property in consideration of these other sites will be provided in a Contaminated Media Management Plan (CMMP). The CMMP will be submitted to Ecology for review and approval in conjunction with the Engineering Design Report (EDR) for the cleanup action.

4.3 Justification for Selected Cleanup Action

As described in WAC 173-340-360(2) (and presented in the FFS), four threshold requirements and three other requirements need to be met for a cleanup action to be selected. Additionally, several action-specific requirements—which vary depending on the nature of the Site and the cleanup action being considered—need to be met if applicable. This section describes the minimum MTCA requirements and summarizes how the selected cleanup action meets these criteria, with more detailed information presented in the FFS.

Threshold requirements for cleanup actions are defined in WAC 173-340-360(2)(a) and listed below.

- **Protect human health and the environment.** The selected cleanup action eliminates exposure pathways and provides for overall protection of human health and the environment by removing and disposing of soil and groundwater with COC concentrations above the CULs.
- **Comply with cleanup standards.** The selected cleanup action complies with cleanup standards by removing and disposing of soil and groundwater with COC concentrations above the CULs.
- **Comply with applicable state and federal laws.** The selected cleanup action will attain and comply with all applicable ARARs, which are summarized in Section 3.3.
- **Provide for compliance monitoring.** The selected cleanup action complies with this requirement as it includes varying levels of all three types of compliance monitoring: protection, performance, and confirmational.

Other requirements for cleanup actions are defined in WAC 173-340-360(2)(b) and listed below.

- **Use permanent solutions to the maximum extent practicable.** This requirement involves conducting a DCA when evaluating multiple cleanup action alternatives. Since the selected cleanup action is a permanent cleanup action and is the proposed cleanup action in this CAP, other alternatives do not need to be evaluated and a DCA is not required.
- **Provide for a reasonable restoration time frame.** The restoration time frame for the selected cleanup action is during redevelopment of the Property, approximately two years. This is a reasonable restoration time frame based on the factors listed in WAC 173-340-360(4)(b).
- **Consideration of public concerns.** A draft of this document was presented to the public and stakeholders for public review and comment. The RI Report and FFS were also

presented for public comment. Comments were received, reviewed by Ecology, and addressed in a responsiveness summary. Ecology determined that no changes to any of the documents were required.

Action-specific requirements for cleanup actions are defined in WAC 173-340-360(2)(c-h) and listed below.

- **Groundwater cleanup actions.** The selected cleanup action meets this requirement because it is a permanent cleanup action used to achieve the CULs for Site groundwater COCs at the standard POC.
- **Soil at current or potential future residential areas and childcare centers.** The selected cleanup action complies with this requirement because all soils with concentrations of Site COCs exceeding CULs will be removed and disposed of off-site.
- **Institutional controls.** This requirement is not applicable because the selected cleanup action for Site COCs does not include institutional controls. However, as noted in Section 4.2.1, institutional controls in the form of an environmental covenant on the Property will be implemented to mitigate exposure risks associated with the American Linen Site.
- **Releases and migration.** The selected cleanup action complies with this requirement because releases and migration of hazardous substances are prevented by removing soil and groundwater with concentrations of Site COCs above CULs and any potentially remaining contaminant sources (i.e., underground storage tanks [USTs]), if any are still present on the Property.
- **Dilution and dispersion.** The selected cleanup action meets this requirement because it does not rely at all on dilution and dispersion.
- **Remediation levels.** This requirement is not applicable because the selected cleanup action does not involve use of remediation levels.

5.0 Description of Selected Cleanup Action

As described in more detail below, the selected cleanup action for the Site COCs consists of excavating contaminated soil, hauling the contaminated soil off-site for treatment and/or disposal, and performing compliance monitoring. Implementation of this cleanup action will address the CAOs for the Site (Section 4.1). The conceptual components of the selected cleanup action are shown on Figure 5-1.

5.1 Excavation and Off-Site Disposal

The selected cleanup action includes excavation and off-site disposal of soil containing COC concentrations that exceed the CULs. This will include removal of the GRO-contaminated soil in the northwest corner of the Property and lead-contaminated soil in the central and eastern areas of the Property.

Excavation will continue until the limit of the planned redevelopment excavation required for construction of the new buildings is reached, which will remove all COC-contaminated soil on the Property as well as the portion of the Broad Street Fill Site that exists on the Property. As shown in plan view on Figure 5-1 and in cross-section view on Figures 5-2a and 5-2b, the planned redevelopment excavation extends laterally across the vast majority of the Property, with the exception of the King County sewer overflow infrastructure and small areas in the northwest corner and along the southern Property boundary. The vertical excavation extent is to approximately elevation 7.75 feet (approximately 26 to 51 feet bgs), except for the shear wall cores which will extend to approximately elevation 2.75 feet (approximately 31 to 56 feet bgs).

For purposes of this CAP, it is assumed that excavated COC-contaminated soil can be characterized as non-hazardous and will be sent off-site for disposal at a regulated Subtitle D landfill facility or other permitted landfill or thermal treatment facility. It is assumed that excavated soils containing other hazardous substances associated with the Broad Street Fill Site and the American Linen Site can also be characterized as non-hazardous for disposal at a regulated Subtitle D landfill facility. Erosion control, site stabilization measures, underground utility protection measures, and dewatering (including properly treating and/or disposing of impacted construction dewatering water) will be implemented during construction activities to prevent adverse impact to human health and the environment.

5.1.1 Excavation Dewatering

The planned redevelopment excavation will remove shallow groundwater contamination on the Property (e.g., GRO, DRO, and benzene in the northwest corner) during temporary construction dewatering. The dewatering system is anticipated to include a combination of localized sumps within the excavation footprint, well points, and dewatering wells. The groundwater table will be maintained approximately 2 feet below the bottom of the excavation. As discussed in Section 4.2.1, a secant pile wall will be installed along the perimeter of the eastern portion of the Property to reduce construction dewatering flow rates.

Construction dewatering will be required for the duration of excavation activities and will continue until the foundation and parking garage structure are completed to above the adjacent ground surface. The total estimated duration of temporary construction dewatering is anticipated to be approximately 22 months.

The groundwater from the excavation will be pumped into storage tanks temporarily located on the Property. Excavated groundwater will be considered to be contaminated and will therefore be treated. The treatment system is anticipated to include a sediment filter, granular activated carbon (GAC) vessel(s) (connected in series), and/or air stripping. If air stripping is conducted, associated air stripper vapors will also be collected and treated before discharge to the air, as permitted by the Puget Sound Clean Air Agency. Once treated, the water will be discharged to the storm sewer under the Construction Stormwater General Permit (CSWGP) issued by Ecology. Monitoring ports would be installed after each vessel in order to allow for sampling/testing of the post-treated water for the potential presence of COCs and CVOCs. Treatment, discharge monitoring, and reporting will be conducted in accordance with the CSWGP issued by Ecology.

5.2 Compliance Monitoring

Compliance monitoring will be implemented in accordance with WAC 173-340-410 and includes:

- **Protection monitoring** to confirm that human health and the environment are adequately protected during construction and the operation and maintenance period of the cleanup action. Protection monitoring elements, including dust monitoring and vapor monitoring during excavation, will be addressed in the health and safety plan that will be created for the project.
- **Performance monitoring** to confirm that the cleanup action has attained cleanup standards and other performance standards. Performance monitoring following soil excavation will include collection and analysis of soil samples from the base and walls of the excavation and groundwater samples to confirm that the target CULs have been achieved, or to document the concentration of COCs that remain on the Site. Performance monitoring specifics, including monitoring procedures, locations, frequency, and analyses, will be established in a Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) to be submitted to Ecology for review and approval in conjunction with the EDR.
- **Confirmational monitoring** to confirm the long-term effectiveness of the cleanup action once cleanup standards and other performance standards have been attained. Confirmational monitoring is not anticipated because Site COCs are expected to meet compliance upon completion of remedial construction and Property redevelopment. Final performance sampling results will serve as confirmation of meeting compliance with the CULs.

Results of compliance monitoring will be documented in a Cleanup Action Completion Report for the Site.

5.3 Contingency Actions

Contingency actions may be required if additional risk reduction measures are needed during or after remedy implementation. During excavation, there is the potential for unanticipated discoveries including contaminated soil or other hazardous substances outside of the known areas, and historical USTs and piping from former gas station operations. Details on how the discoveries will be managed are summarized below and will be further discussed in a Contingency Action Plan to be part of the EDR.

5.3.1 Unanticipated Soil Contamination

Unanticipated contaminated soil or other hazardous substances may be encountered outside of the known areas by site workers during the planned excavation activities at the Property. This may include observable evidence of one or more of the following:

- Oily or greasy material with visible oil droplets, film, or sheen
- Tar, chemical sludge, or gummy resinous substance
- Distinct color changes
- Foam, scum, gel, slime, or soapy liquid material
- Fibrous material, particularly white or gray
- Powder, grit, or machine-formed pellets indicative of chemicals
- Abandoned containers such as drums and tanks or pipelines
- Molten slag with glassy, metallic, rock-like, or clinker appearance
- Electrical equipment such as transformers, batteries, or capacitors
- Mist or smoky discharge
- Unnatural color flecks or smears in the soil
- Unusual odors, including gasoline, paint thinner, furniture polish, "magic marker" pen, rotten eggs or skunky spray, mothballs, sewage, or other solvent or chemical-like odors[6]

If suspected hazardous material is discovered outside of the known areas, normal excavation and construction activities in the suspected area will cease, pending evaluation/testing by designated field oversight personnel. The Ecology cleanup site manager will be notified of the discovery of hazardous material outside of the known areas within 24 to 72 hours of its presence being confirmed. The suspected hazardous material will not be further disturbed or touched without

[6] It is not recommended that site personnel smell suspected hazardous substances; doing so could present a health and safety hazard. However, if odors are detected inadvertently, it may indicate potential adverse environmental conditions.

appropriate worker protection (personal protective equipment [PPE] and/or engineering controls) and environmental precautions.

Upon discovery, samples will be collected for chemical analysis of hazardous substances to verify constituent types and concentrations. Soil samples will be analyzed for chemical parameters appropriate to the conditions of the excavation area and Property history in the suspected area. Suspected hazardous material will not be removed from the Property until it is appropriately characterized and the materials are designated for final disposition. Once characterization sample results are received, soil will be excavated and disposed of off-site at an appropriate facility depending on the constituent types and concentrations. Specifics on sampling procedures, frequency, and analyses of unanticipated soil contamination will be outlined in the SAP/QAPP to be submitted to Ecology for review and approval in conjunction with the EDR.

When excavation side wall and bottom field screening measurements (e.g., odors, sheen, photoionization detector) indicate that the impacted soil has been removed (or the limit of the planned redevelopment excavation required for construction of the new buildings is reached), verification soil samples will be collected and analyzed to verify the characteristics of soil remaining in areas where impacted soil or suspected hazardous materials have been excavated. Analytical results will be provided to Ecology and to the Property owner and General Contractor to verify that the excavation has met regulatory and/or disposal facility criteria prior to continued excavation.

5.3.2 USTs

Because of the historical use of the Property, unknown USTs and/or piping may be discovered during excavation and construction activities. If USTs and/or piping are encountered, designated field oversight personnel will notify the Ecology cleanup site manager and will follow UST notification protocol. Ecology requires a 30-day notification period before removal of regulated USTs but may approve expedited closure in emergency situations where product release may be a concern. USTs used for storing heating oil that is used solely for the purpose of heating structures on a property are exempt from the Ecology UST notification requirements.

A licensed UST decommissioner will perform the removal and closure of any discovered USTs and a UST site assessment will be conducted under the oversight of a Washington State certified UST site assessor.

The UST decommissioner will follow the protocols established under the following regulations and guidance documents for removal or closure of USTs:

- UST Regulations (Chapter 173-360A WAC).
- *Site Assessment Guidance for Underground Storage Tank Systems* (Ecology 2021b).
- *Site Check/Site Assessments Checklist for Underground Storage Tanks* (Ecology 2018c).
- International Fire Code 3404.2.13.1.

- Washington Division of Occupational Safety and Health (DOSH) Confined Space Regulations (WAC 296-155-203).

The UST site assessor will collect representative soil samples for chemical analysis to document subsurface conditions per the *Site Assessment Guidance for Underground Storage Tank Systems* (Ecology 2021b). Regardless of whether contamination is present, the UST site assessor will complete the site assessment checklist and the decommissioner will complete the permanent closure checklist, and these documents will be submitted to Ecology within 30 days.

If a release from a UST or its associated piping that poses a threat to human health or the environment is discovered, the release must be reported to Ecology within 24 hours, whether or not the UST is regulated under the UST regulations. If impacts to soils are observed, soil will be excavated and disposed of off-site and verification soil samples will be collected and analyzed in accordance with the protocols to be described in the SAP/QAPP, and a site characterization report will be submitted to Ecology within 90 days.

If no contamination is present, the site assessment sampling report will be submitted to Ecology within 30 days.

6.0 Schedule for Implementation

Implementation of the proposed cleanup action is expected to occur over the next few years in conjunction with Property redevelopment. The following table outlines a generalized schedule for the proposed cleanup action based on the expected chronology of key activities and deliverables.

Table 6-1: Schedule of Deliverables and Activities

Implementation Step or Deliverable	Due Date[a] or Time Frame
Pre-Construction Design Activities	Currently underway
Submit Agency Review Draft EDR	Within 120 days of effective date of Prospective Purchaser Consent Decree (PPCD)
Submit Agency Review Draft CMMP	Concurrent with submittal of Agency Review Draft EDR
Finalize EDR and CMMP	60 days after receipt of Ecology final comments
Acquire Project Permits	Prior to start of remedial action construction
Remedial Action Construction	Initiate within 180 days of Ecology approval of the EDR or after permit acquisition
Submit Agency Review Draft Cleanup Action Completion Report	180 days following completion of cleanup action
Submit Final Cleanup Action Completion Report	60 days after receipt of Ecology's final comments
Submit Monthly Progress Reports	15 days after the end of each month following the effective date of the PPCD[b]

Notes:

a. Schedule is in calendar days.

b. Upon mutual agreement by Ecology and 800 Mercer, LLC, the Progress Reports may be submitted quarterly, depending on the current activities at the Site.

7.0 References

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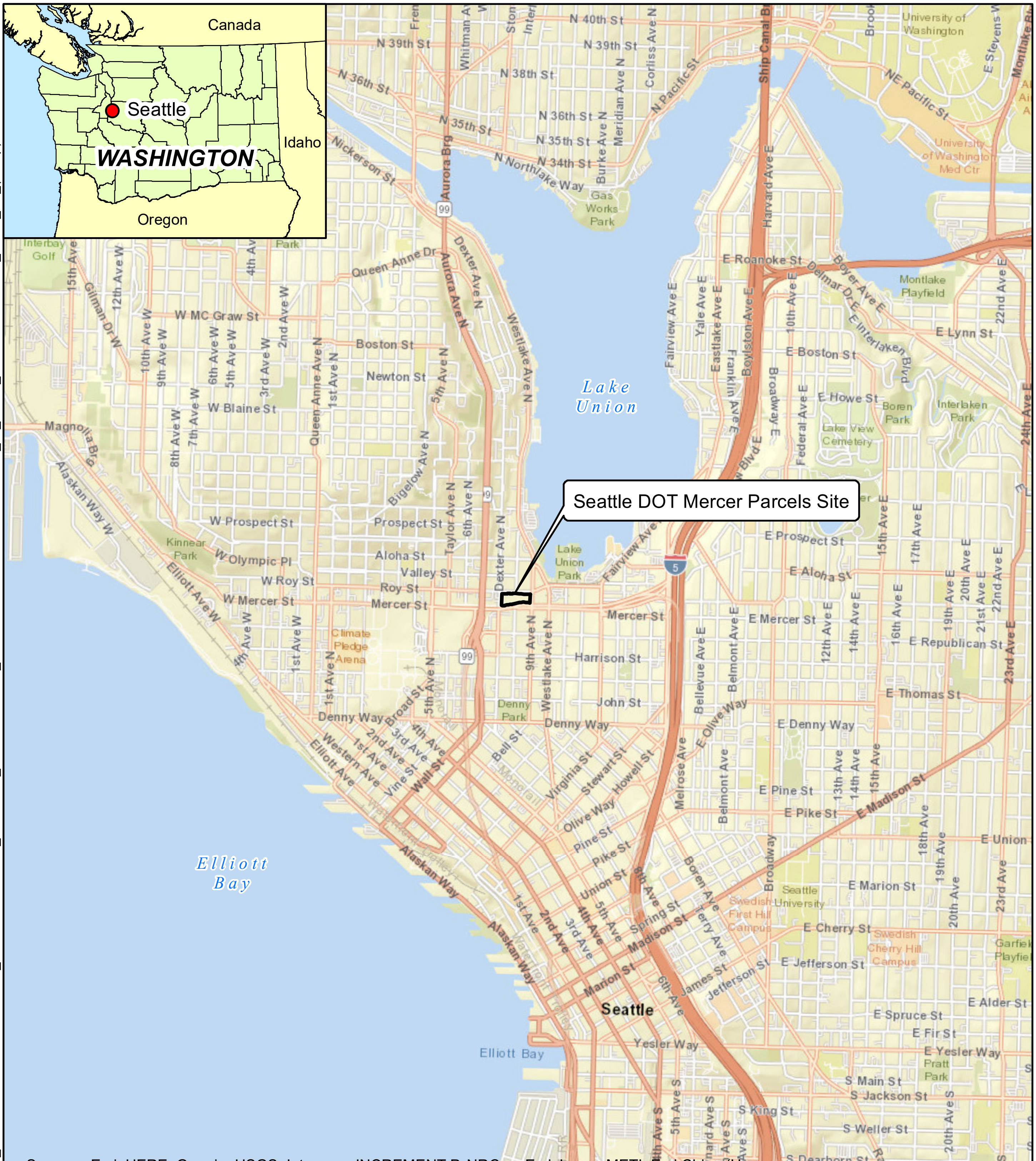
Figures



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

0 0.25 0.5 1 Miles

N

Seattle DOT Mercer Parcels Site
Seattle, Washington

Vicinity Map

19409-04 10/21

HARTCROWSER
A division of Haley & Aldrich

Figure
1-1

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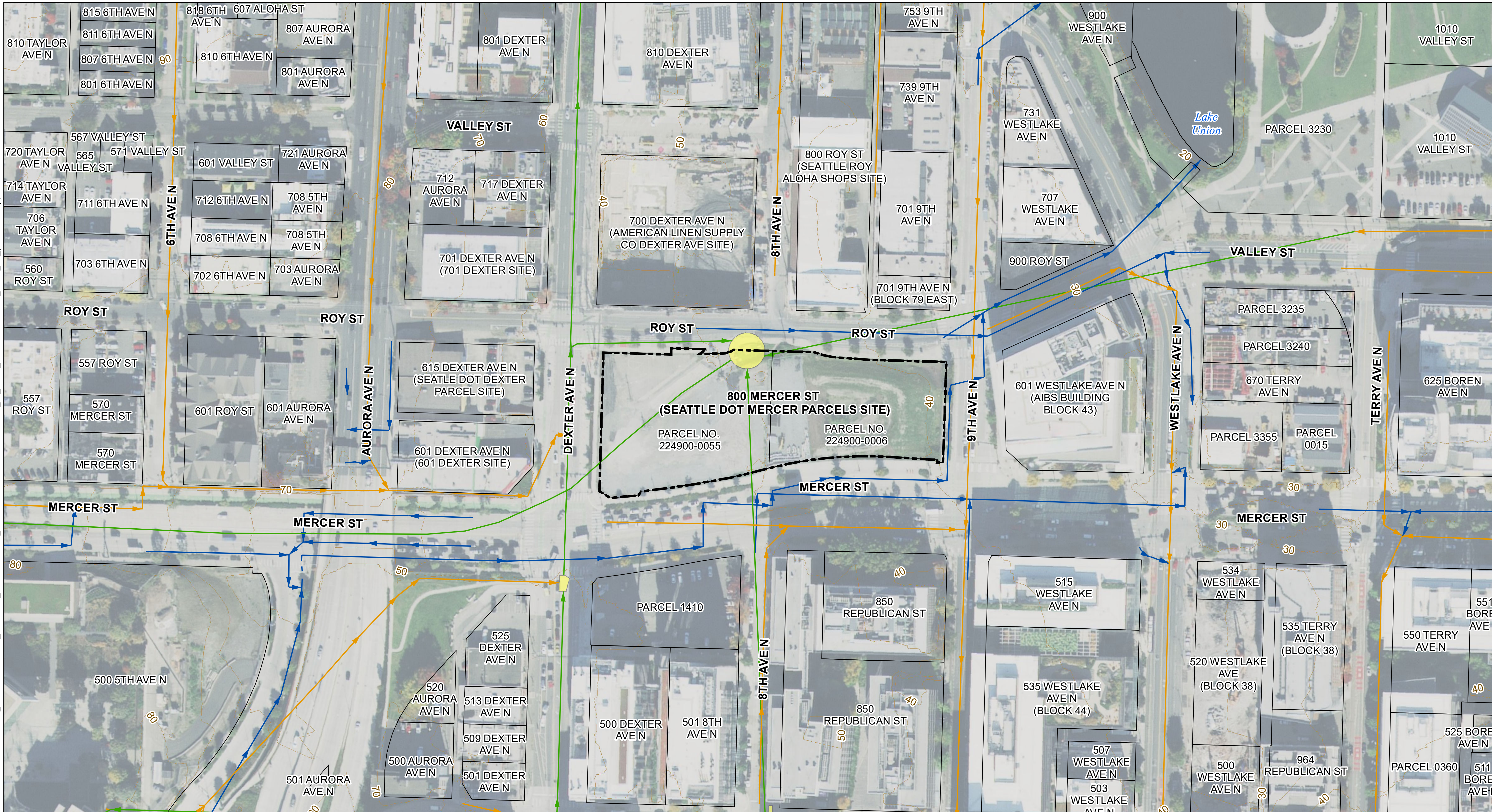

Legend

- Other Parcel Boundary
- Property Boundary

Underground Sewer Lines

- King County Main
- SPU Drainage Main
- SPU Combined Main

- King County Main Facility Structures
- Elevation Contour (King County LiDAR, 2016)

0 75 150 300 Feet

N

Sources: Aerial photograph provided by Hexagon Imagery Program Data. Address information obtained from King County GIS Open Data portal's Parcel Address Area shapefile, published April 4, 2019. Stormwater line data obtained from City of Seattle ArcGIS Online data, published August 6, 2019.

Seattle DOT Mercer Parcels Site
Seattle, Washington

Site Conditions Map

19409-04 10/21

HARTCROWSER
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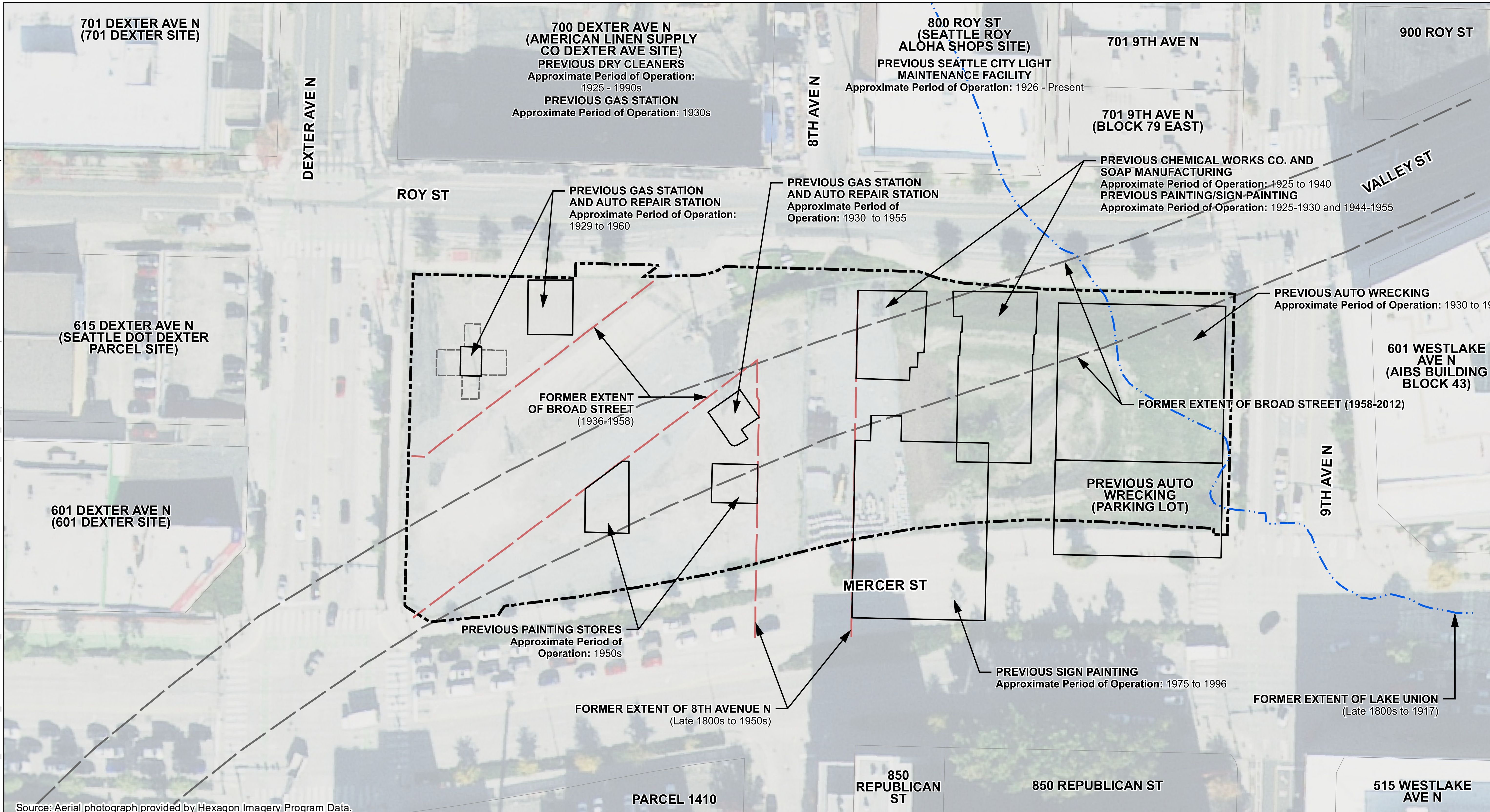
Figure **2-1**



Source: Aerial photograph provided by Hexagon Imagery Program Data.

Legend

- Other Parcel Boundary
- Property Boundary
- Former Edge of Lake Union (1905 Sanborn)
- Former Street Alignment
- Pre-1958 Street Alignment

0 25 50 100 Feet

Note: Feature locations are approximate.

N

Seattle DOT Mercer Parcels Site
Seattle, Washington

Historical Property Features and Uses

19409-04 10/21

HARTCROWSER
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Figure
2-2

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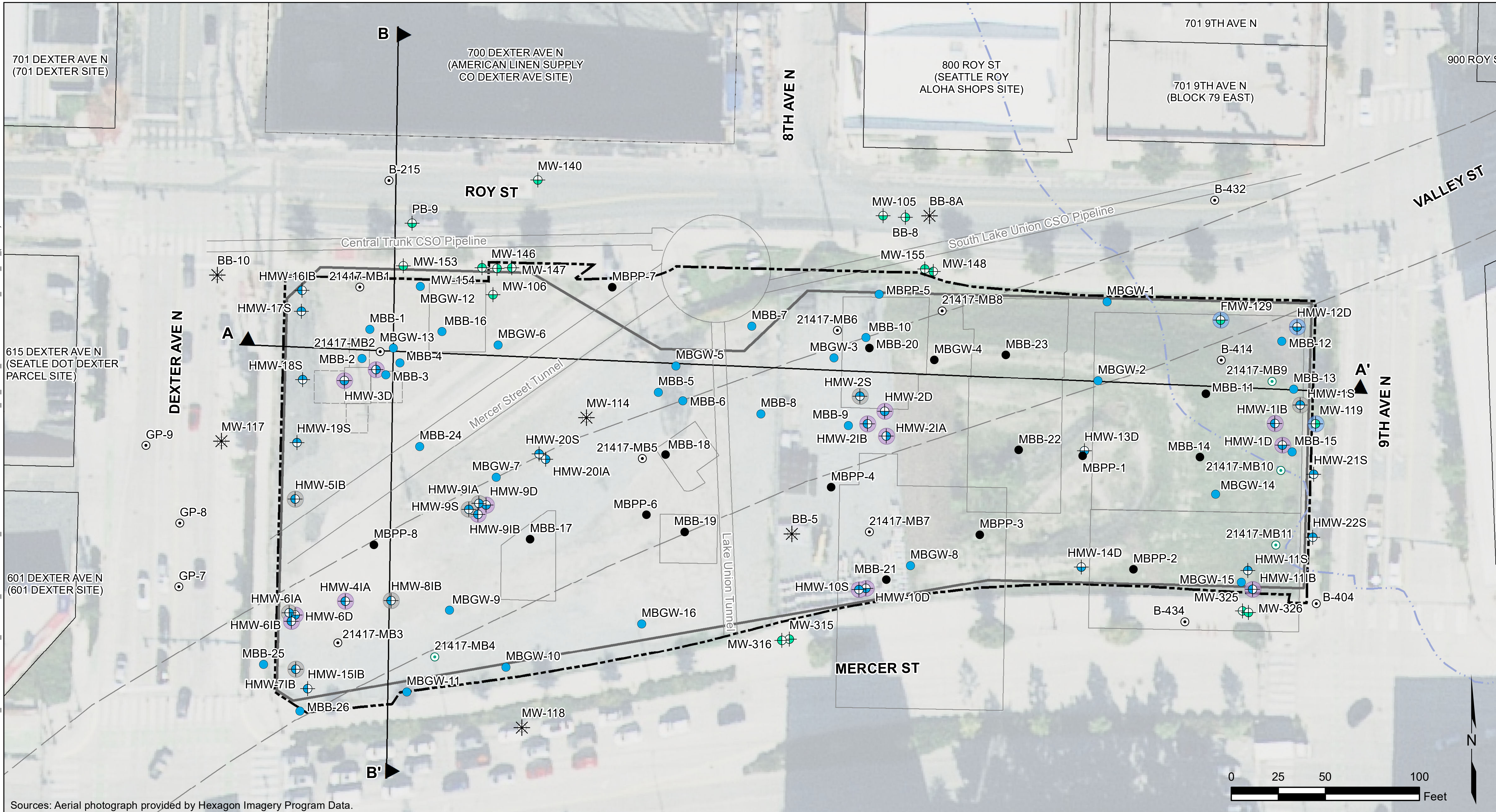

Sources: Aerial photograph provided by Hexagon Imagery Program Data.

Legend

RI Investigations

- Soil Boring
- Soil Boring with Grab Groundwater Sample
- Shallow Zone Monitoring Well
- Intermediate A Zone Monitoring Well
- Intermediate B Zone Monitoring Well
- Deep Zone Monitoring Well
- Slug Test Performed
- Slug Test Performed & Transducer/Datalogger Deployed
- Transducer/Datalogger Deployed
- Potential Historical Contaminant Source

Other Investigations

- Soil Boring
- Soil Boring with Grab Groundwater Sample
- Shallow Zone Monitoring Well
- Intermediate A Zone Monitoring Well
- Intermediate B Zone Monitoring Well
- Deep Zone Monitoring Well

- Abandoned or Decommissioned Monitoring Well
- Cross Section
- Excavation Limits (Shoring Permit Plans by NBBJ dated 12/17/2020)
- King County Main Facility Structures
- Other Parcel Boundary
- Property Boundary

Seattle DOT Mercer Parcels Site
Seattle, Washington

Investigation Locations

19409-04 10/21

HARTCROWSER
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Figure
2-3

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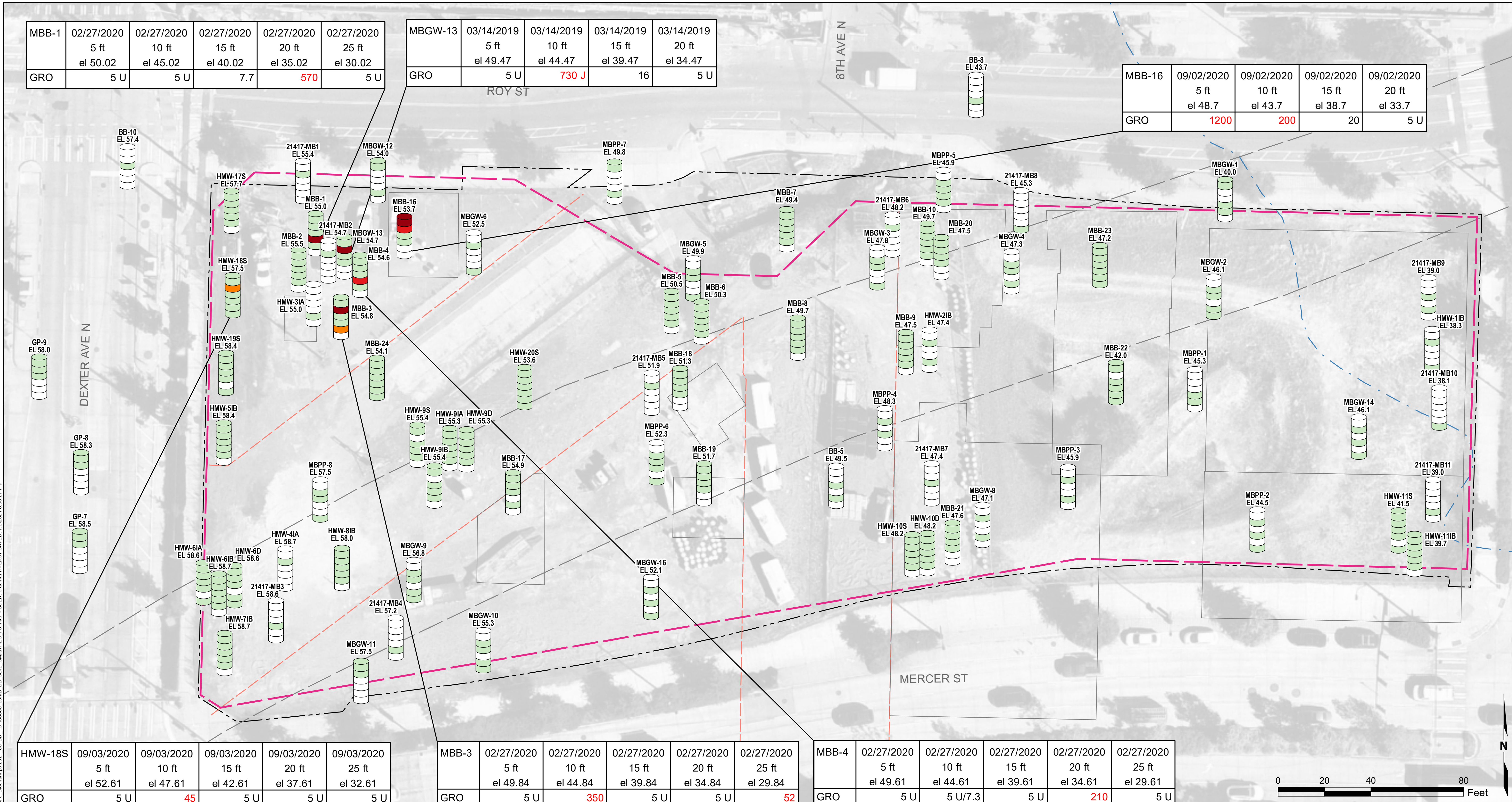

MBB-1	02/27/2020 5 ft el 50.02	02/27/2020 10 ft el 45.02	02/27/2020 15 ft el 40.02	02/27/2020 20 ft el 35.02	02/27/2020 25 ft el 30.02
GRO	5 U	5 U	7.7	570	5 U

MBGW-13	03/14/2019 5 ft el 49.47	03/14/2019 10 ft el 44.47	03/14/2019 15 ft el 39.47	03/14/2019 20 ft el 34.47
GRO	5 U	730 J	16	5 U

MBB-16	09/02/2020 5 ft el 48.7	09/02/2020 10 ft el 43.7	09/02/2020 15 ft el 38.7	09/02/2020 20 ft el 33.7
GRO	1200	200	20	5 U

HMW-18S	09/03/2020 5 ft el 52.61	09/03/2020 10 ft el 47.61	09/03/2020 15 ft el 42.61	09/03/2020 20 ft el 37.61	09/03/2020 25 ft el 32.61
GRO	5 U	45	5 U	5 U	5 U

MBB-3	02/27/2020 5 ft el 49.84	02/27/2020 10 ft el 44.84	02/27/2020 15 ft el 39.84	02/27/2020 20 ft el 34.84	02/27/2020 25 ft el 29.84
GRO	5 U	350	5 U	5 U	52

MBB-4	02/27/2020 5 ft el 49.61	02/27/2020 10 ft el 44.61	02/27/2020 15 ft el 39.61	02/27/2020 20 ft el 34.61	02/27/2020 25 ft el 29.61
GRO	5 U	5 U/7.3	5 U	210	5 U

GRO IN SOIL (mg/kg)

- ≥ 300
- ≥ 60 TO 300
- ≥ 30 TO 60
- ND/0 TO < 30
- NO DATA

SAMPLE DEPTH INTERVALS

- ≤ 5 FT BELOW GROUND SURFACE (BGS)
- 5 TO 10
- 10 TO 15
- 15 TO 20
- 20 TO 25
- > 25

- EXCAVATION LIMITS; TO BE EXCAVATED DOWN TO ELEVATION 8 FT OR LOWER
- POTENTIAL HISTORICAL CONTAMINANT SOURCE
- PROPERTY BOUNDARY
- FORMER LAKE UNION SHORELINE
- FORMER BROAD STREET AND 8TH AVENUE N, THROUGH 1950s
- FORMER BROAD STREET 1958-2012

SOME SAMPLING LOCATIONS MAY HAVE BEEN SLIGHTLY OFFSET ON THIS MAP TO REDUCE SYMBOL OVERLAP

RED TEXT INDICATES EXCEEDANCE OF PROTECTIVE OF GROUNDWATER SCREENING LEVELS

SCREENING LEVELS PROVIDED BY ECOLOGY (NOVEMBER 17, 2020)

CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)

DEPTH IN FEET BELOW GROUND SURFACE (BGS)

ELEVATION IN FEET (NAVD 88); EL. = GROUND SURFACE ELEVATION

U = NON-DETECT AT DETECTION LIMIT AS INDICATED
J = ESTIMATED VALUE
/ = MULTIPLE RESULTS INDICATE THAT A FIELD DUPLICATE WAS TAKEN

AERIAL IMAGERY SOURCE: EAGLEVIEW

SCREENING LEVELS FOR GASOLINE RANGE ORGANICS (GRO) IN SOIL (mg/kg)

ZONE	PROTECTIVE OF GW
Vadose (0 to 25 ft bgs) and Saturated (>25 ft bgs)	30

Seattle DOT Mercer Parcels Site
Seattle, Washington

GRO Distribution in Soil

19409-04 10/21

HARTCROWSER A division of Haley & Aldrich

Figure **2-4a**

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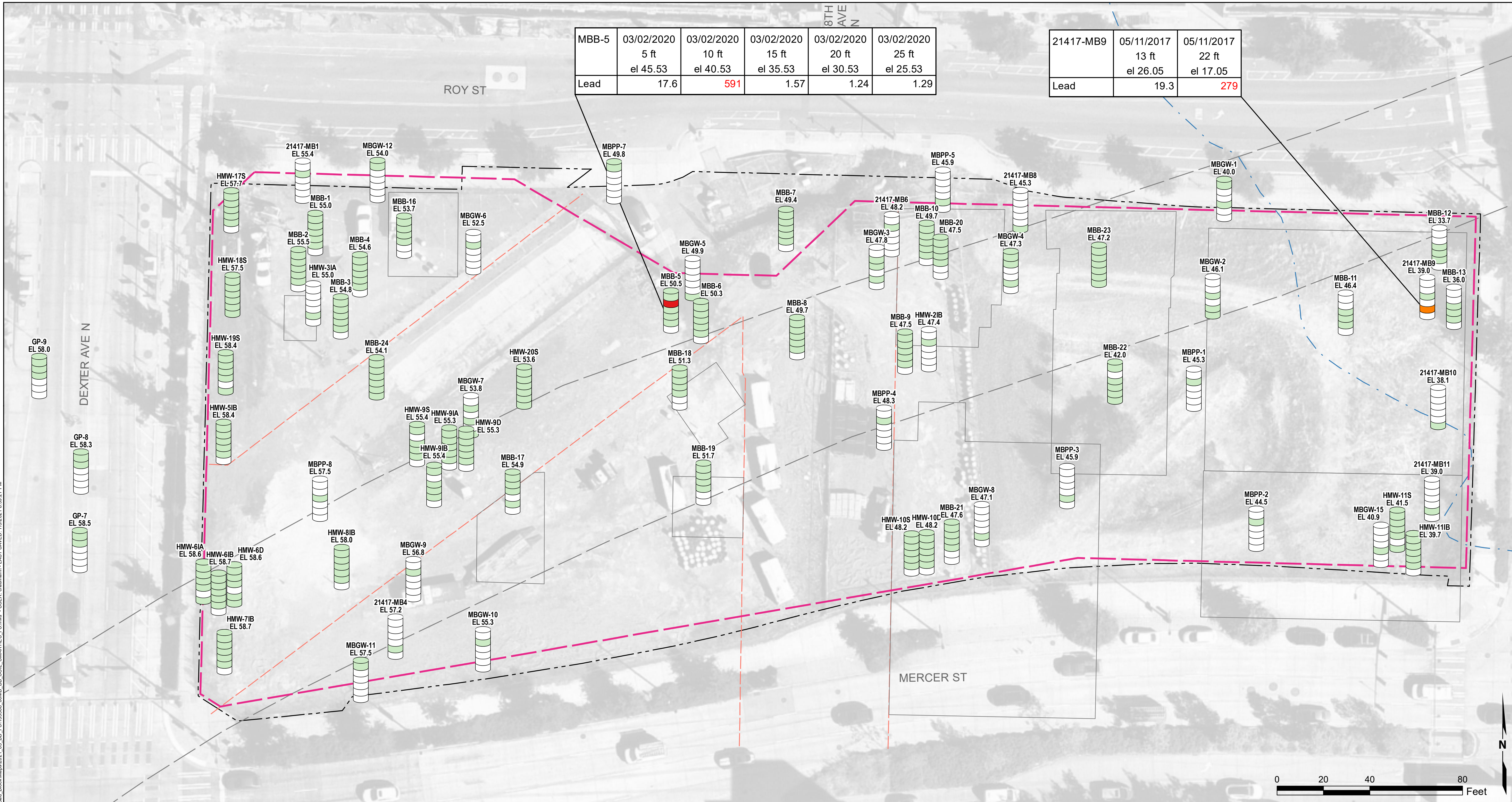
MBB-5	03/02/2020 5 ft el 45.53	03/02/2020 10 ft el 40.53	03/02/2020 15 ft el 35.53	03/02/2020 20 ft el 30.53	03/02/2020 25 ft el 25.53
Lead	17.6	591	1.57	1.24	1.29

21417-MB9	05/11/2017 13 ft el 26.05	05/11/2017 22 ft el 17.05
Lead	19.3	279



LEAD IN SOIL (mg/kg)

- ≥ 2,500
- ≥ 500 TO 2,500
- ≥ 250 TO 500
- ND/0 TO < 250
- NO DATA

SAMPLE DEPTH INTERVALS

- ≤ 5 FT BELOW GROUND SURFACE (BGS)
- 5 TO 10
- 10 TO 15
- 15 TO 20
- 20 TO 25
- > 25

- EXCAVATION LIMITS; TO BE EXCAVATED DOWN TO ELEVATION 8 FT OR LOWER
- POTENTIAL HISTORICAL CONTAMINANT SOURCE
- PROPERTY BOUNDARY
- FORMER LAKE UNION SHORELINE
- FORMER BROAD STREET AND 8TH AVENUE N, THROUGH 1950s
- FORMER BROAD STREET 1958-2012

SOME SAMPLING LOCATIONS MAY HAVE BEEN SLIGHTLY OFFSET ON THIS MAP TO REDUCE SYMBOL OVERLAP

RED TEXT INDICATES EXCEEDANCE OF DIRECT CONTACT OR PROTECTIVE OF GROUNDWATER SCREENING LEVELS

SCREENING LEVELS PROVIDED BY ECOLOGY (NOVEMBER 17, 2020)

CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)

DEPTH IN FEET BELOW GROUND SURFACE (BGS)

ELEVATION IN FEET (NAVD 88); EL. = GROUND SURFACE ELEVATION

U = NON-DETECT AT DETECTION LIMIT AS INDICATED
J = ESTIMATED VALUE
/ = MULTIPLE RESULTS INDICATE THAT A FIELD DUPLICATE WAS TAKEN

AERIAL IMAGERY SOURCE: EAGLEVIEW

SCREENING LEVELS FOR LEAD (mg/kg) IN SOIL		
ZONE	DIRECT CONTACT	PROTECTIVE OF GW
Vadose (0 to 25 ft bgs)	250	3000
Saturated (>25 ft bgs)	250	150

Seattle DOT Mercer Parcels Site
Seattle, Washington

Lead Distribution in Soil

19409-04 10/21

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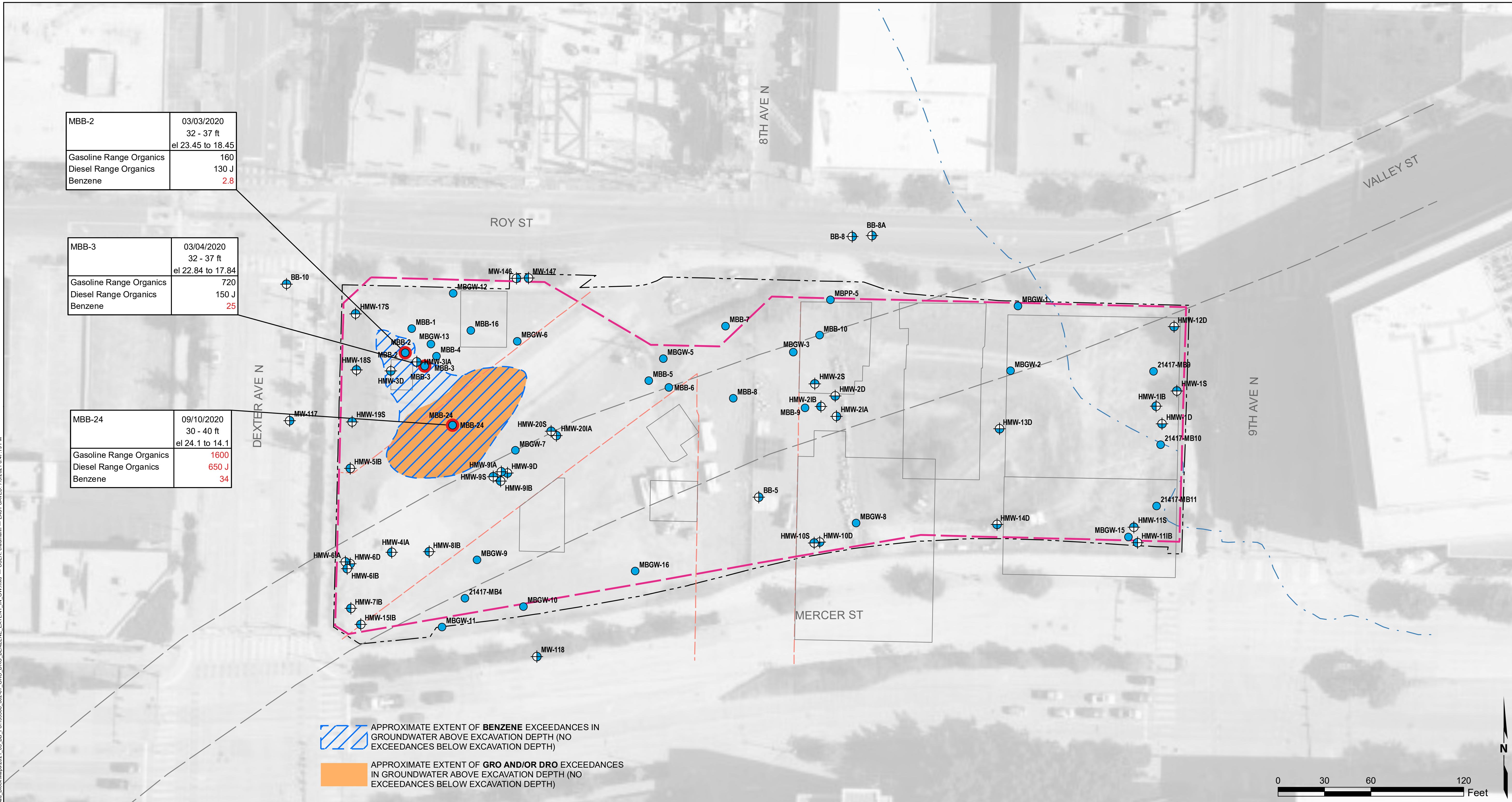
Figure **2-4b**



SAMPLE LOCATIONS ANALYZED FOR GRO, DRO, AND BENZENE (ALL LOCATIONS SHOWN HERE WERE SAMPLED FOR ALL THREE COMPOUNDS)

- SHALLOW ZONE MONITORING WELL
- INTERMEDIATE A ZONE MONITORING WELL
- INTERMEDIATE B ZONE MONITORING WELL
- DEEP ZONE MONITORING WELL
- SOIL BORING WITH GRAB GROUNDWATER SAMPLE
- GROUNDWATER SAMPLE LOCATION WITH EXCEEDANCE

- EXCAVATION LIMITS; TO BE EXCAVATED DOWN TO ELEVATION 8 FT OR LOWER
- POTENTIAL HISTORICAL CONTAMINANT SOURCE
- PROPERTY BOUNDARY
- FORMER LAKE UNION SHORELINE
- FORMER BROAD STREET AND 8TH AVENUE N, THROUGH 1950s
- FORMER BROAD STREET 1958-2012

RED TEXT INDICATES EXCEEDANCE OF PROTECTIVE OF DRINKING WATER OR PROTECTIVE OF INDOOR AIR SCREENING LEVELS

CONCENTRATIONS IN MICROGRAMS PER LITER (μg/L)

SCREENING LEVELS WERE PROVIDED BY ECOLOGY (NOVEMBER 17, 2020)

DEPTH IN FEET BELOW GROUND SURFACE (BGS)

ELEVATION IN FEET (NAVD 88)

U = NON-DETECT AT DETECTION LIMIT AS INDICATED
J = ESTIMATED VALUE
- = ANALYTE WAS NOT ANALYZED/NOT APPLICABLE
/ = MULTIPLE RESULTS INDICATE THAT A FIELD DUPLICATE WAS TAKEN

AERIAL IMAGERY SOURCE: EAGLEVIEW

SCREENING LEVELS FOR GRO, DRO, AND BENZENE IN GROUNDWATER (μg/L)

CONSTITUENT	PROTECTIVE OF DRINKING WATER	PROTECTIVE OF INDOOR AIR
Gasoline Range Organics (GRO)	800	-
Diesel Range Organics (DRO)	500	-
Benzene	5	2.4

Seattle DOT Mercer Parcels Site
Seattle, Washington

GRO, DRO, and Benzene Distribution in Groundwater

19409-04 10/21

HARTCROWSER
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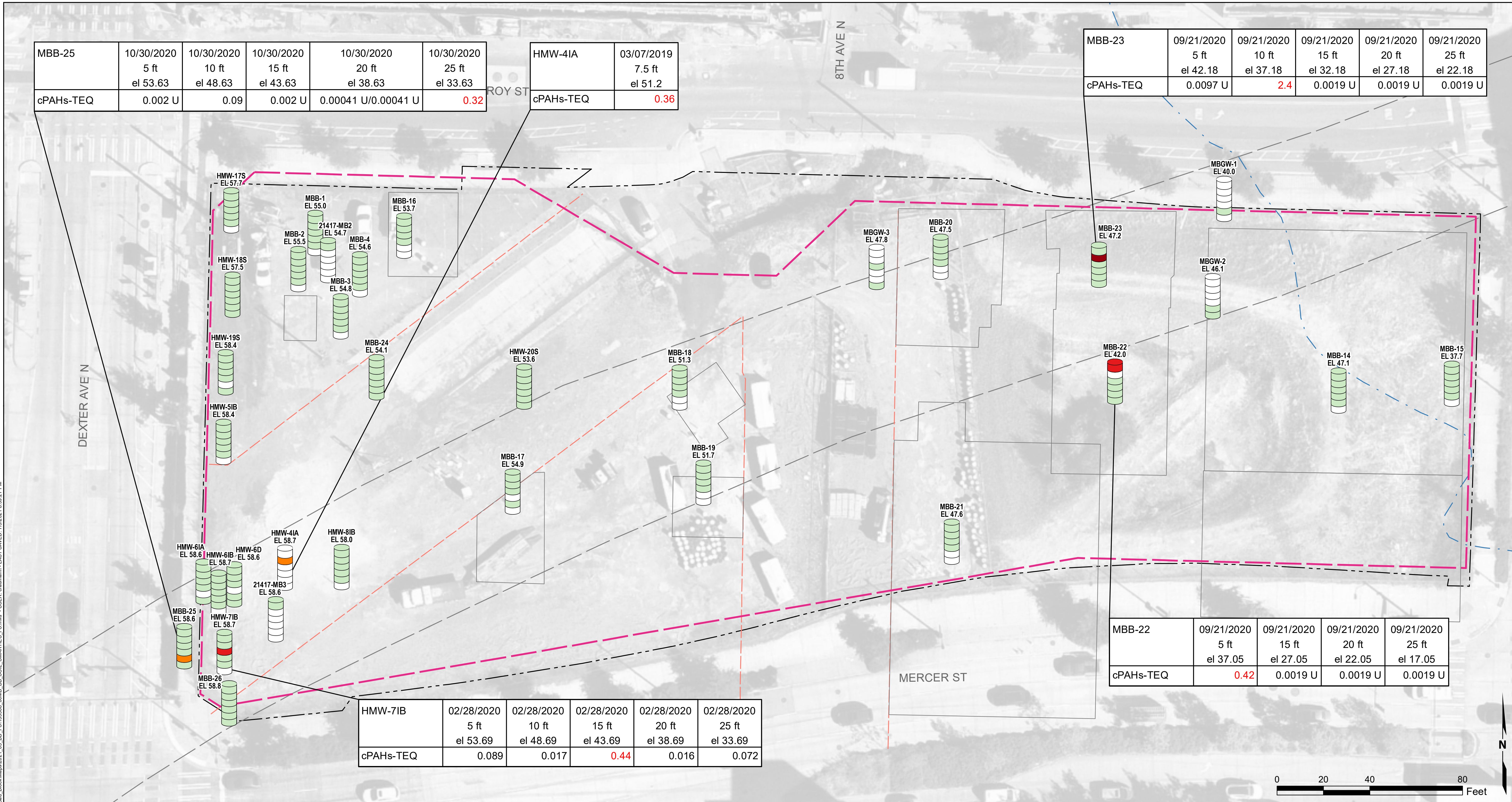
Figure
2-5



MBB-25	10/30/2020 5 ft el 53.63	10/30/2020 10 ft el 48.63	10/30/2020 15 ft el 43.63	10/30/2020 20 ft el 38.63	10/30/2020 25 ft el 33.63
cPAHs-TEQ	0.002 U	0.09	0.002 U	0.00041 U/0.00041 U	0.32

HMW-4IA	03/07/2019 7.5 ft el 51.2
cPAHs-TEQ	0.36

MBB-23	09/21/2020 5 ft el 42.18	09/21/2020 10 ft el 37.18	09/21/2020 15 ft el 32.18	09/21/2020 20 ft el 27.18	09/21/2020 25 ft el 22.18
cPAHs-TEQ	0.0097 U	2.4	0.0019 U	0.0019 U	0.0019 U

MBB-22	09/21/2020 5 ft el 37.05	09/21/2020 15 ft el 27.05	09/21/2020 20 ft el 22.05	09/21/2020 25 ft el 17.05
cPAHs-TEQ	0.42	0.0019 U	0.0019 U	0.0019 U

HMW-7IB	02/28/2020 5 ft el 53.69	02/28/2020 10 ft el 48.69	02/28/2020 15 ft el 43.69	02/28/2020 20 ft el 38.69	02/28/2020 25 ft el 33.69
cPAHs-TEQ	0.089	0.017	0.44	0.016	0.072

cPAHs-TEQ IN SOIL (mg/kg)

- ≥ 1.90
- ≥ 0.38 TO 1.90
- ≥ 0.19 - 0.38
- ND/0 TO < 0.19
- NO DATA

SAMPLE DEPTH INTERVALS

- ≤ 5 FT BELOW GROUND SURFACE (BGS)
- 5 TO 10
- 10 TO 15
- 15 TO 20
- 20 TO 25
- > 25

- EXCAVATION LIMITS; TO BE EXCAVATED DOWN TO ELEVATION 8 FT OR LOWER
- POTENTIAL HISTORICAL CONTAMINANT SOURCE
- PROPERTY BOUNDARY
- FORMER LAKE UNION SHORELINE
- FORMER BROAD STREET AND 8TH AVENUE N, THROUGH 1950s
- FORMER BROAD STREET 1958-2012

SOME SAMPLING LOCATIONS MAY HAVE BEEN SLIGHTLY OFFSET ON THIS MAP TO REDUCE SYMBOL OVERLAP

RED TEXT INDICATES EXCEEDANCE OF DIRECT CONTACT OR PROTECTIVE OF GROUNDWATER SCREENING LEVELS

SCREENING LEVELS PROVIDED BY ECOLOGY (NOVEMBER 17, 2020)

CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)

DEPTH IN FEET BELOW GROUND SURFACE (BGS)

ELEVATION IN FEET (NAVD 88); EL. = GROUND SURFACE ELEVATION

U = NON-DETECT AT DETECTION LIMIT AS INDICATED
J = ESTIMATED VALUE
/ = MULTIPLE RESULTS INDICATE THAT A FIELD DUPLICATE WAS TAKEN

AERIAL IMAGERY SOURCE: EAGLEVIEW

SCREENING LEVELS FOR cPAHs-TEQ IN SOIL (mg/kg)

ZONE	DIRECT CONTACT	PROTECTIVE OF GW
Vadose (0 to 25 ft bgs)	0.19	0.45
Saturated (>25 ft bgs)	0.19	0.022

Seattle DOT Mercer Parcels Site
Seattle, Washington

cPAH Distribution in Soil (Broad Street Fill Site Contaminants)

19409-04 10/21

HARTCROWSER
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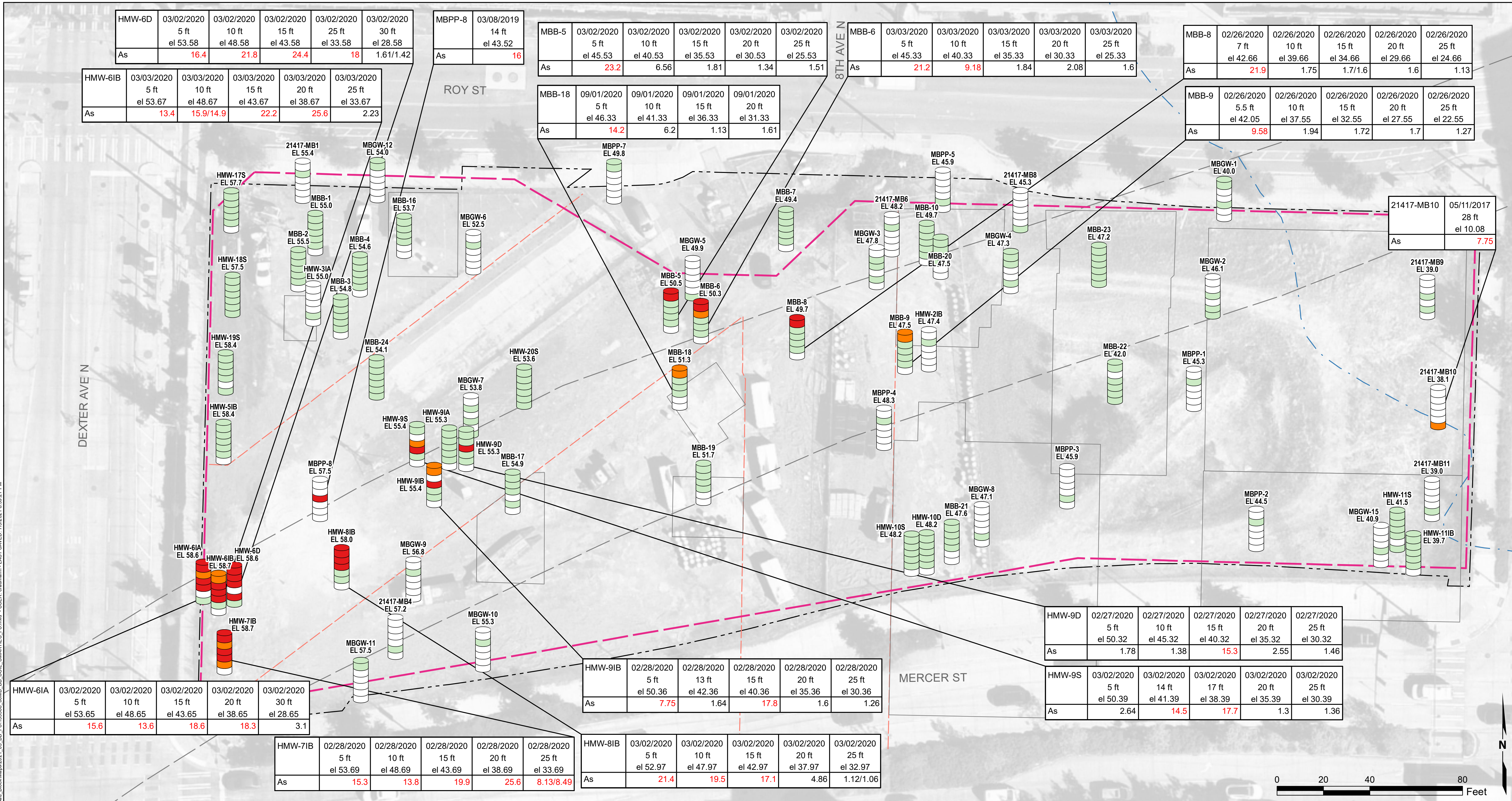
Figure
2-6a



HMW-6D	03/02/2020 5 ft el 53.58	03/02/2020 10 ft el 48.58	03/02/2020 15 ft el 43.58	03/02/2020 25 ft el 33.58	03/02/2020 30 ft el 28.58
As	16.4	21.8	24.4	18	1.61/1.42

MBPP-8	03/08/2019 14 ft el 43.52
As	16

HMW-6IB	03/03/2020 5 ft el 53.67	03/03/2020 10 ft el 48.67	03/03/2020 15 ft el 43.67	03/03/2020 20 ft el 38.67	03/03/2020 25 ft el 33.67
As	13.4	15.9/14.9	22.2	25.6	2.23

MBB-5	03/02/2020 5 ft el 45.53	03/02/2020 10 ft el 40.53	03/02/2020 15 ft el 35.53	03/02/2020 20 ft el 30.53	03/02/2020 25 ft el 25.53
As	23.2	6.56	1.81	1.34	1.51

MBB-18	09/01/2020 5 ft el 46.33	09/01/2020 10 ft el 41.33	09/01/2020 15 ft el 36.33	09/01/2020 20 ft el 31.33
As	14.2	6.2	1.13	1.61

MBB-6	03/03/2020 5 ft el 45.33	03/03/2020 10 ft el 40.33	03/03/2020 15 ft el 35.33	03/03/2020 20 ft el 30.33	03/03/2020 25 ft el 25.33
As	21.2	9.18	1.84	2.08	1.6

MBB-8	02/26/2020 7 ft el 42.66	02/26/2020 10 ft el 39.66	02/26/2020 15 ft el 34.66	02/26/2020 20 ft el 29.66	02/26/2020 25 ft el 24.66
As	21.9	1.75	1.7/1.6	1.6	1.13

MBB-9	02/26/2020 5.5 ft el 42.05	02/26/2020 10 ft el 37.55	02/26/2020 15 ft el 32.55	02/26/2020 20 ft el 27.55	02/26/2020 25 ft el 22.55
As	9.58	1.94	1.72	1.7	1.27

21417-MB10	05/11/2017 28 ft el 10.08
As	7.75

HMW-9D	02/27/2020 5 ft el 50.32	02/27/2020 10 ft el 45.32	02/27/2020 15 ft el 40.32	02/27/2020 20 ft el 35.32	02/27/2020 25 ft el 30.32
As	1.78	1.38	15.3	2.55	1.46

HMW-9S	03/02/2020 5 ft el 50.39	03/02/2020 14 ft el 41.39	03/02/2020 17 ft el 38.39	03/02/2020 20 ft el 35.39	03/02/2020 25 ft el 30.39
As	2.64	14.5	17.7	1.3	1.36

HMW-9IB	02/28/2020 5 ft el 50.36	02/28/2020 13 ft el 42.36	02/28/2020 15 ft el 40.36	02/28/2020 20 ft el 35.36	02/28/2020 25 ft el 30.36
As	7.75	1.64	17.8	1.6	1.26

HMW-8IB	03/02/2020 5 ft el 52.97	03/02/2020 10 ft el 47.97	03/02/2020 15 ft el 42.97	03/02/2020 20 ft el 37.97	03/02/2020 25 ft el 32.97
As	21.4	19.5	17.1	4.86	1.12/1.06

HMW-6IA	03/02/2020 5 ft el 53.65	03/02/2020 10 ft el 48.65	03/02/2020 15 ft el 43.65	03/02/2020 20 ft el 38.65	03/02/2020 30 ft el 28.65
As	15.6	13.6	18.6	18.3	3.1

HMW-7IB	02/28/2020 5 ft el 53.69	02/28/2020 10 ft el 48.69	02/28/2020 15 ft el 43.69	02/28/2020 20 ft el 38.69	02/28/2020 25 ft el 33.69
As	15.3	13.8	19.9	25.6	8.13/8.49

ARSENIC IN SOIL (mg/kg)
- ≥ 14.6 TO 73
- ≥ 7.3 TO 14.6
- ND/0 TO < 7.3
- NO DATA

SAMPLE DEPTH INTERVALS
- ≤ 5 FT BELOW GROUND SURFACE (BGS)
- 5 TO 10
- 10 TO 15
- 15 TO 20
- 20 TO 25
- > 25

- EXCAVATION LIMITS; TO BE EXCAVATED DOWN TO ELEVATION 8 FT OR LOWER
- POTENTIAL HISTORICAL CONTAMINANT SOURCE
- PROPERTY BOUNDARY
- FORMER LAKE UNION SHORELINE
- FORMER BROAD STREET AND 8TH AVENUE N, THROUGH 1950s
- FORMER BROAD STREET 1958-2012

SOME SAMPLING LOCATIONS MAY HAVE BEEN SLIGHTLY OFFSET ON THIS MAP TO REDUCE SYMBOL OVERLAP

RED TEXT INDICATES EXCEEDANCE OF PROTECTIVE OF GROUNDWATER SCREENING LEVELS ADJUSTED UP TO NATURAL BACKGROUND

SCREENING LEVELS PROVIDED BY ECOLOGY (NOVEMBER 17, 2020)

CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)

DEPTH IN FEET BELOW GROUND SURFACE (BGS)

ELEVATION IN FEET (NAVD 88); EL. = GROUND SURFACE ELEVATION

U = NON-DETECT AT DETECTION LIMIT AS INDICATED
J = ESTIMATED VALUE
/ = MULTIPLE RESULTS INDICATE THAT A FIELD DUPLICATE WAS TAKEN

AERIAL IMAGERY SOURCE: EAGLEVIEW

SCREENING LEVELS FOR ARSENIC IN SOIL (mg/kg)

All levels adjusted up to natural background

ZONE	PROTECTIVE OF GW
Vadose (0 to 25 ft bgs) and Saturated (>25 ft bgs)	7.3

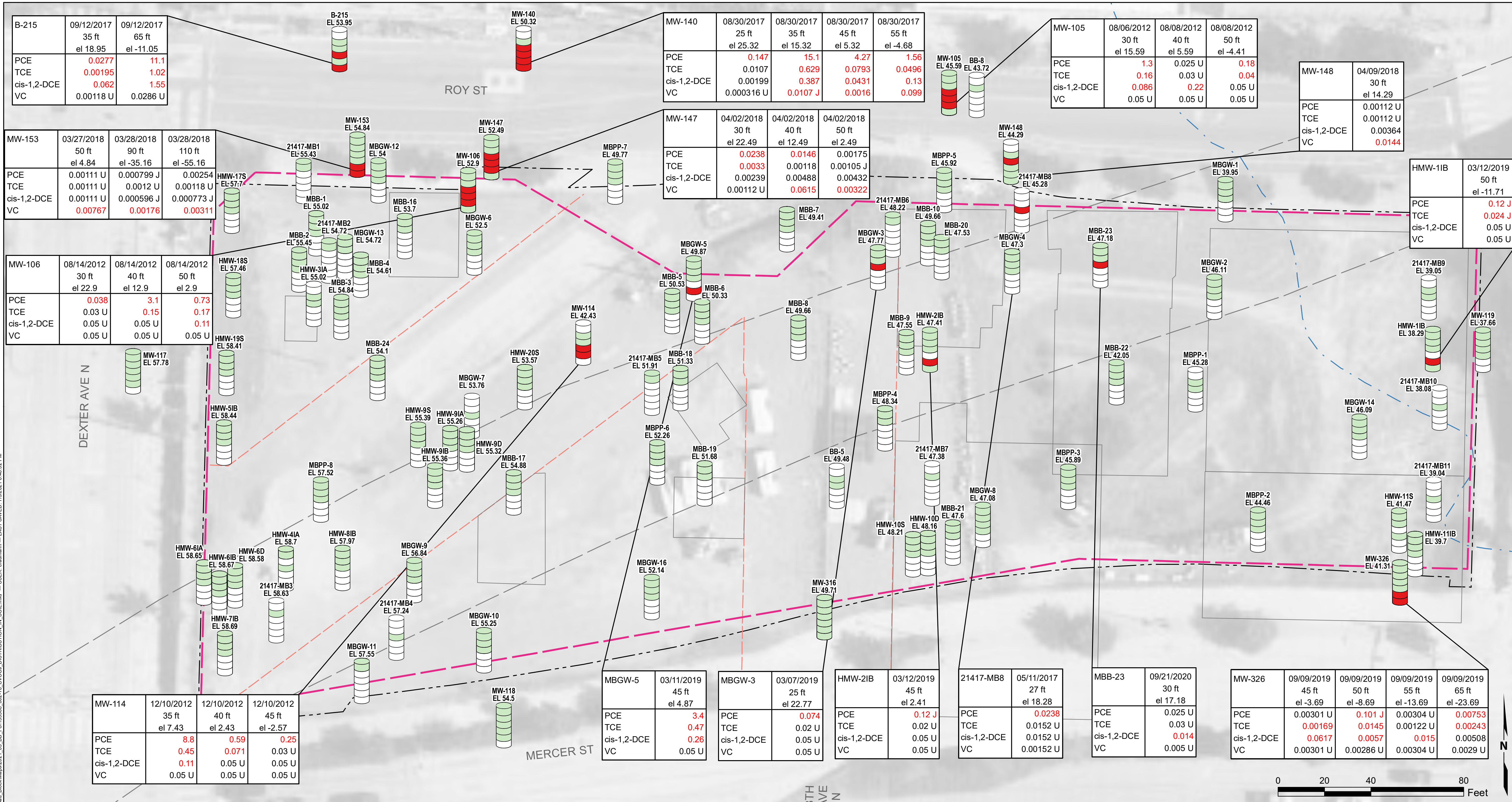
Seattle DOT Mercer Parcels Site
Seattle, Washington

Arsenic Distribution in Soil (Broad Street Fill Site Contaminants)

19409-04 10/21

HARTCROWSER
A division of Haley & Aldrich

Figure
2-6b



B-215	09/12/2017 35 ft el 18.95	09/12/2017 65 ft el -11.05
PCE	0.0277	11.1
TCE	0.00195	1.02
cis-1,2-DCE	0.062	1.55
VC	0.00118 U	0.0286 U

MW-140	08/30/2017 25 ft el 25.32	08/30/2017 35 ft el 15.32	08/30/2017 45 ft el 5.32	08/30/2017 55 ft el -4.68
PCE	0.147	15.1	4.27	1.56
TCE	0.0107	0.629	0.0793	0.0496
cis-1,2-DCE	0.00199	0.387	0.0431	0.13
VC	0.000316 U	0.0107 J	0.0016	0.099

MW-105	08/06/2012 30 ft el 15.59	08/08/2012 40 ft el 5.59	08/08/2012 50 ft el -4.41
PCE	1.3	0.025 U	0.18
TCE	0.16	0.03 U	0.04
cis-1,2-DCE	0.086	0.22	0.05 U
VC	0.05 U	0.05 U	0.05 U

MW-148	04/09/2018 30 ft el 14.29
PCE	0.00112 U
TCE	0.00112 U
cis-1,2-DCE	0.00364
VC	0.0144

MW-153	03/27/2018 50 ft el 4.84	03/28/2018 90 ft el -35.16	03/28/2018 110 ft el -55.16
PCE	0.00111 U	0.000799 J	0.00254
TCE	0.00111 U	0.0012 U	0.00118 U
cis-1,2-DCE	0.00111 U	0.000596 J	0.000773 J
VC	0.00767	0.00176	0.00311

MW-147	04/02/2018 30 ft el 22.49	04/02/2018 40 ft el 12.49	04/02/2018 50 ft el 2.49
PCE	0.0238	0.0146	0.00175
TCE	0.0033	0.00118	0.00105 J
cis-1,2-DCE	0.00239	0.00488	0.00432
VC	0.00112 U	0.0615	0.00322

HMW-11B	03/12/2019 50 ft el -11.71
PCE	0.12 J
TCE	0.024 J
cis-1,2-DCE	0.05 U
VC	0.05 U

MW-106	08/14/2012 30 ft el 22.9	08/14/2012 40 ft el 12.9	08/14/2012 50 ft el 2.9
PCE	0.038	3.1	0.73
TCE	0.03 U	0.15	0.17
cis-1,2-DCE	0.05 U	0.05 U	0.11
VC	0.05 U	0.05 U	0.05 U

MW-114	12/10/2012 35 ft el 7.43	12/10/2012 40 ft el 2.43	12/10/2012 45 ft el -2.57
PCE	8.8	0.59	0.25
TCE	0.45	0.071	0.03 U
cis-1,2-DCE	0.11	0.05 U	0.05 U
VC	0.05 U	0.05 U	0.05 U

MBGW-5	03/11/2019 45 ft el 4.87
PCE	3.4
TCE	0.47
cis-1,2-DCE	0.26
VC	0.05 U

MBGW-3	03/07/2019 25 ft el 22.77
PCE	0.074
TCE	0.02 U
cis-1,2-DCE	0.05 U
VC	0.05 U

HMW-2IB	03/12/2019 45 ft el 2.41
PCE	0.12 J
TCE	0.02 U
cis-1,2-DCE	0.05 U
VC	0.05 U

21417-MB8	05/11/2017 27 ft el 18.28
PCE	0.0238
TCE	0.0152 U
cis-1,2-DCE	0.0152 U
VC	0.00152 U

MBB-23	09/21/2020 30 ft el 17.18
PCE	0.025 U
TCE	0.03 U
cis-1,2-DCE	0.014
VC	0.005 U

MW-326	09/09/2019 45 ft el -3.69	09/09/2019 50 ft el -8.69	09/09/2019 55 ft el -13.69	09/09/2019 65 ft el -23.69
PCE	0.00301 U	0.101 J	0.00304 U	0.00753
TCE	0.00169	0.0145	0.00122 U	0.00243
cis-1,2-DCE	0.0617	0.0057	0.015	0.00508
VC	0.00301 U	0.00286 U	0.00304 U	0.0029 U

CVOCs in SOIL

- EXCEEDANCE OF PCE, TCE, cis-1,2-DCE, OR VINYL CHLORIDE
- NO EXCEEDANCE
- NO DATA

SAMPLE DEPTH INTERVALS

- ≤ 10 FT BELOW GROUND SURFACE (BGS)
- 10 TO 20
- 20 TO 30
- 30 TO 40
- 40 TO 50
- > 50

- EXCAVATION LIMITS; TO BE EXCAVATED DOWN TO ELEVATION 8 FT OR LOWER
- POTENTIAL HISTORICAL CONTAMINANT SOURCE
- PROPERTY BOUNDARY
- FORMER LAKE UNION SHORELINE
- FORMER BROAD STREET AND 8TH AVENUE N, THROUGH 1950s
- FORMER BROAD STREET 1958-2012

SOME SAMPLING LOCATIONS MAY HAVE BEEN SLIGHTLY OFFSET ON THIS MAP TO REDUCE SYMBOL OVERLAP

RED TEXT INDICATES EXCEEDANCE OF PROTECTIVE OF GROUNDWATER SCREENING LEVELS

SCREENING LEVELS PROVIDED BY ECOLOGY (NOVEMBER 17, 2020)

CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)

DEPTH IN FEET BELOW GROUND SURFACE (BGS)

ELEVATION IN FEET (NAVD 88); EL = GROUND SURFACE ELEVATION

U = NON-DETECT AT DETECTION LIMIT AS INDICATED
J = ESTIMATED VALUE
/ = MULTIPLE RESULTS INDICATE THAT A FIELD DUPLICATE WAS TAKEN

AERIAL IMAGERY SOURCE: EAGLEVIEW

SCREENING LEVELS FOR CVOCs SATURATED ZONE SOIL (> 25 FT BGS) (mg/kg)

CONSTITUENT	PROTECTIVE OF GW SATURATED ZONE
Tetrachloroethene (PCE)	0.0028
Trichloroethene (TCE)	0.0015
cis-1,2-Dichloroethene (cis-1,2-DCE)	0.0052
Vinyl chloride (VC)	0.0015 (adjusted to PQL)

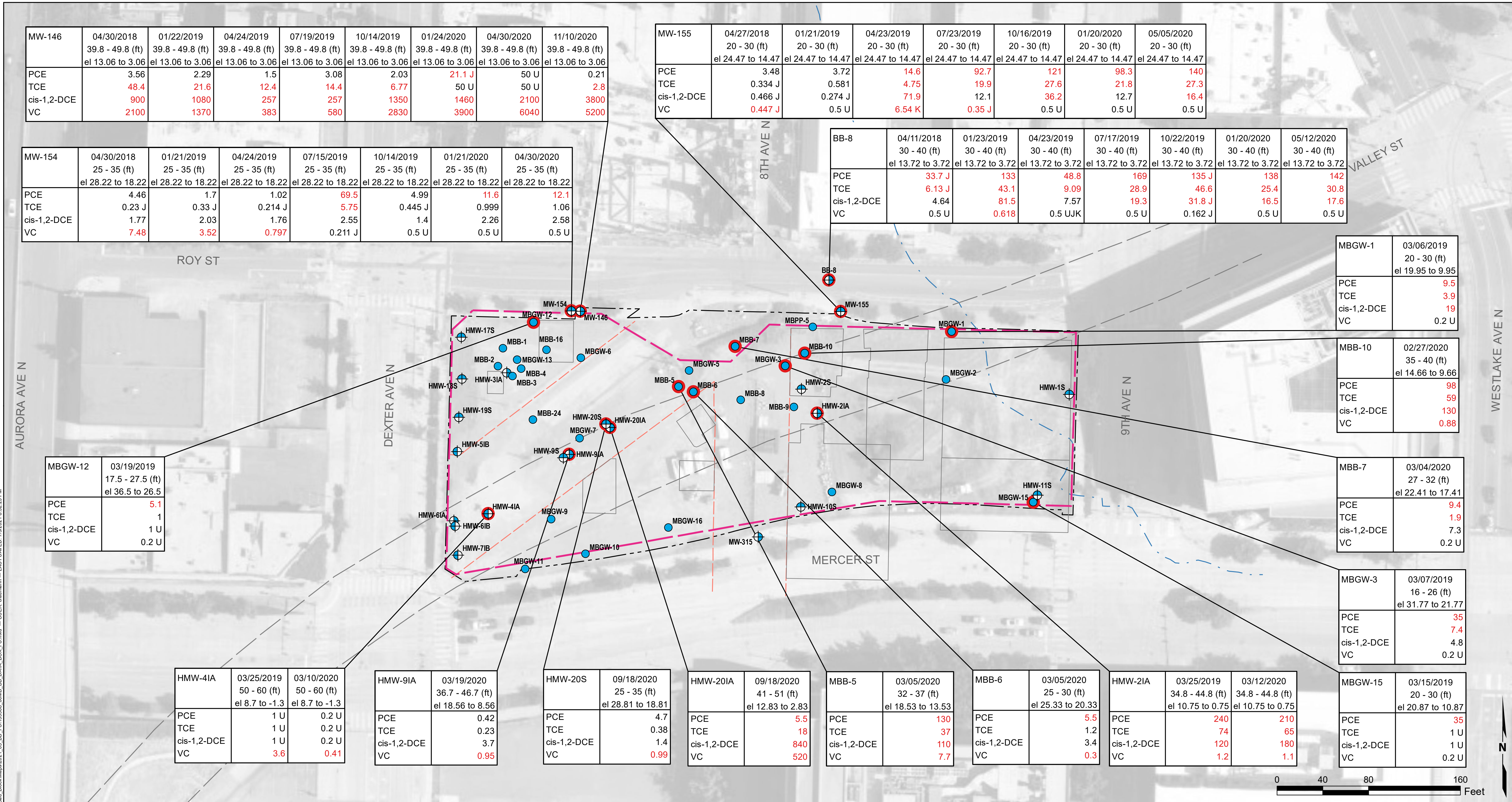
Seattle DOT Mercer Parcels Site
Seattle, Washington

CVOCs Distribution in Soil (American Linen Site Contaminants)

19409-04 10/21

HARTCROWSER
A division of Haley & Aldrich

Figure
2-7a



MW-146	04/30/2018 39.8 - 49.8 (ft) el 13.06 to 3.06	01/22/2019 39.8 - 49.8 (ft) el 13.06 to 3.06	04/24/2019 39.8 - 49.8 (ft) el 13.06 to 3.06	07/19/2019 39.8 - 49.8 (ft) el 13.06 to 3.06	10/14/2019 39.8 - 49.8 (ft) el 13.06 to 3.06	01/24/2020 39.8 - 49.8 (ft) el 13.06 to 3.06	04/30/2020 39.8 - 49.8 (ft) el 13.06 to 3.06	11/10/2020 39.8 - 49.8 (ft) el 13.06 to 3.06
PCE	3.56	2.29	1.5	3.08	2.03	21.1 J	50 U	0.21
TCE	48.4	21.6	12.4	14.4	6.77	50 U	50 U	2.8
cis-1,2-DCE	900	1080	257	257	1350	1460	2100	3800
VC	2100	1370	383	580	2830	3900	6040	5200

MW-155	04/27/2018 20 - 30 (ft) el 24.47 to 14.47	01/21/2019 20 - 30 (ft) el 24.47 to 14.47	04/23/2019 20 - 30 (ft) el 24.47 to 14.47	07/23/2019 20 - 30 (ft) el 24.47 to 14.47	10/16/2019 20 - 30 (ft) el 24.47 to 14.47	01/20/2020 20 - 30 (ft) el 24.47 to 14.47	05/05/2020 20 - 30 (ft) el 24.47 to 14.47
PCE	3.48	3.72	14.6	92.7	121	98.3	140
TCE	0.334 J	0.581	4.75	19.9	27.6	21.8	27.3
cis-1,2-DCE	0.466 J	0.274 J	71.9	12.1	36.2	12.7	16.4
VC	0.447 J	0.5 U	6.54 K	0.35 J	0.5 U	0.5 U	0.5 U

MW-154	04/30/2018 25 - 35 (ft) el 28.22 to 18.22	01/21/2019 25 - 35 (ft) el 28.22 to 18.22	04/24/2019 25 - 35 (ft) el 28.22 to 18.22	07/15/2019 25 - 35 (ft) el 28.22 to 18.22	10/14/2019 25 - 35 (ft) el 28.22 to 18.22	01/21/2020 25 - 35 (ft) el 28.22 to 18.22	04/30/2020 25 - 35 (ft) el 28.22 to 18.22
PCE	4.46	1.7	1.02	69.5	4.99	11.6	12.1
TCE	0.23 J	0.33 J	0.214 J	5.75	0.445 J	0.999	1.06
cis-1,2-DCE	1.77	2.03	1.76	2.55	1.4	2.26	2.58
VC	7.48	3.52	0.797	0.211 J	0.5 U	0.5 U	0.5 U

BB-8	04/11/2018 30 - 40 (ft) el 13.72 to 3.72	01/23/2019 30 - 40 (ft) el 13.72 to 3.72	04/23/2019 30 - 40 (ft) el 13.72 to 3.72	07/17/2019 30 - 40 (ft) el 13.72 to 3.72	10/22/2019 30 - 40 (ft) el 13.72 to 3.72	01/20/2020 30 - 40 (ft) el 13.72 to 3.72	05/12/2020 30 - 40 (ft) el 13.72 to 3.72
PCE	33.7 J	133	48.8	169	135 J	138	142
TCE	6.13 J	43.1	9.09	28.9	46.6	25.4	30.8
cis-1,2-DCE	4.64	81.5	7.57	19.3	31.8 J	16.5	17.6
VC	0.5 U	0.618	0.5 UJK	0.5 U	0.162 J	0.5 U	0.5 U

MBGW-1	03/06/2019 20 - 30 (ft) el 19.95 to 9.95
PCE	9.5
TCE	3.9
cis-1,2-DCE	19
VC	0.2 U

MBB-10	02/27/2020 35 - 40 (ft) el 14.66 to 9.66
PCE	98
TCE	59
cis-1,2-DCE	130
VC	0.88

MBB-7	03/04/2020 27 - 32 (ft) el 22.41 to 17.41
PCE	9.4
TCE	1.9
cis-1,2-DCE	7.3
VC	0.2 U

MBGW-3	03/07/2019 16 - 26 (ft) el 31.77 to 21.77
PCE	35
TCE	7.4
cis-1,2-DCE	4.8
VC	0.2 U

MBGW-12	03/19/2019 17.5 - 27.5 (ft) el 36.5 to 26.5
PCE	5.1
TCE	1
cis-1,2-DCE	1 U
VC	0.2 U

HMW-4IA	03/25/2019 50 - 60 (ft) el 8.7 to -1.3	03/10/2020 50 - 60 (ft) el 8.7 to -1.3
PCE	1 U	0.2 U
TCE	1 U	0.2 U
cis-1,2-DCE	1 U	0.2 U
VC	3.6	0.41

HMW-9IA	03/19/2020 36.7 - 46.7 (ft) el 18.56 to 8.56
PCE	0.42
TCE	0.23
cis-1,2-DCE	3.7
VC	0.95

HMW-20S	09/18/2020 25 - 35 (ft) el 28.81 to 18.81
PCE	4.7
TCE	0.38
cis-1,2-DCE	1.4
VC	0.99

HMW-20IA	09/18/2020 41 - 51 (ft) el 12.83 to 2.83
PCE	5.5
TCE	18
cis-1,2-DCE	840
VC	520

MBB-5	03/05/2020 32 - 37 (ft) el 18.53 to 13.53
PCE	130
TCE	37
cis-1,2-DCE	110
VC	7.7

MBB-6	03/05/2020 25 - 30 (ft) el 25.33 to 20.33
PCE	5.5
TCE	1.2
cis-1,2-DCE	3.4
VC	0.3

HMW-2IA	03/25/2019 34.8 - 44.8 (ft) el 10.75 to 0.75	03/12/2020 34.8 - 44.8 (ft) el 10.75 to 0.75
PCE	240	210
TCE	74	65
cis-1,2-DCE	120	180
VC	1.2	1.1

MBGW-15	03/15/2019 20 - 30 (ft) el 20.87 to 10.87
PCE	35
TCE	1 U
cis-1,2-DCE	1 U
VC	0.2 U

SHALLOW ZONE MONITORING WELL

INTERMEDIATE A ZONE MONITORING WELL

INTERMEDIATE B ZONE MONITORING WELL

SOIL BORING WITH GRAB GROUNDWATER SAMPLE

GROUNDWATER SAMPLING LOCATION WITH EXCEEDANCE

EXCAVATION LIMITS; TO BE EXCAVATED DOWN TO ELEVATION 8 FT OR LOWER

POTENTIAL HISTORICAL CONTAMINANT SOURCE

PROPERTY BOUNDARY

FORMER LAKE UNION SHORELINE

FORMER BROAD STREET AND 8TH AVENUE N, THROUGH 1950s

FORMER BROAD STREET 1958-2012

RED TEXT INDICATES EXCEEDANCE OF PROTECTIVE OF DRINKING WATER OR PROTECTIVE OF INDOOR AIR SCREENING LEVELS

DATA SHOWN IS FROM 2018-2020; CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)

SCREENING LEVELS PROVIDED BY ECOLOGY (NOVEMBER 17, 2020)

DEPTH IN FEET BELOW GROUND SURFACE (BGS)

ELEVATION IN FEET (NAVD 88)

U = NON-DETECT AT DETECTION LIMIT AS INDICATED
J = ESTIMATED VALUE
- = ANALYTE WAS NOT ANALYZED/NOT APPLICABLE
/ = MULTIPLE RESULTS INDICATE THAT A FIELD DUPLICATE WAS TAKEN
K = REPORTED RESULT WITH UNKNOWN BIAS

AERIAL IMAGERY SOURCE: EAGLEVIEW

SCREENING LEVELS FOR CVOCs IN GROUNDWATER (µg/L)

CONSTITUENT	PROTECTIVE OF DRINKING WATER	PROTECTIVE OF INDOOR AIR
Tetrachloroethene (PCE)	5	24
Trichloroethene (TCE)	4	1.4
cis-1,2-Dichloroethene (cis-1,2-DCE)	16	-
Vinyl chloride (VC)	0.29	0.35

Seattle DOT Mercer Parcels Site
Seattle, Washington

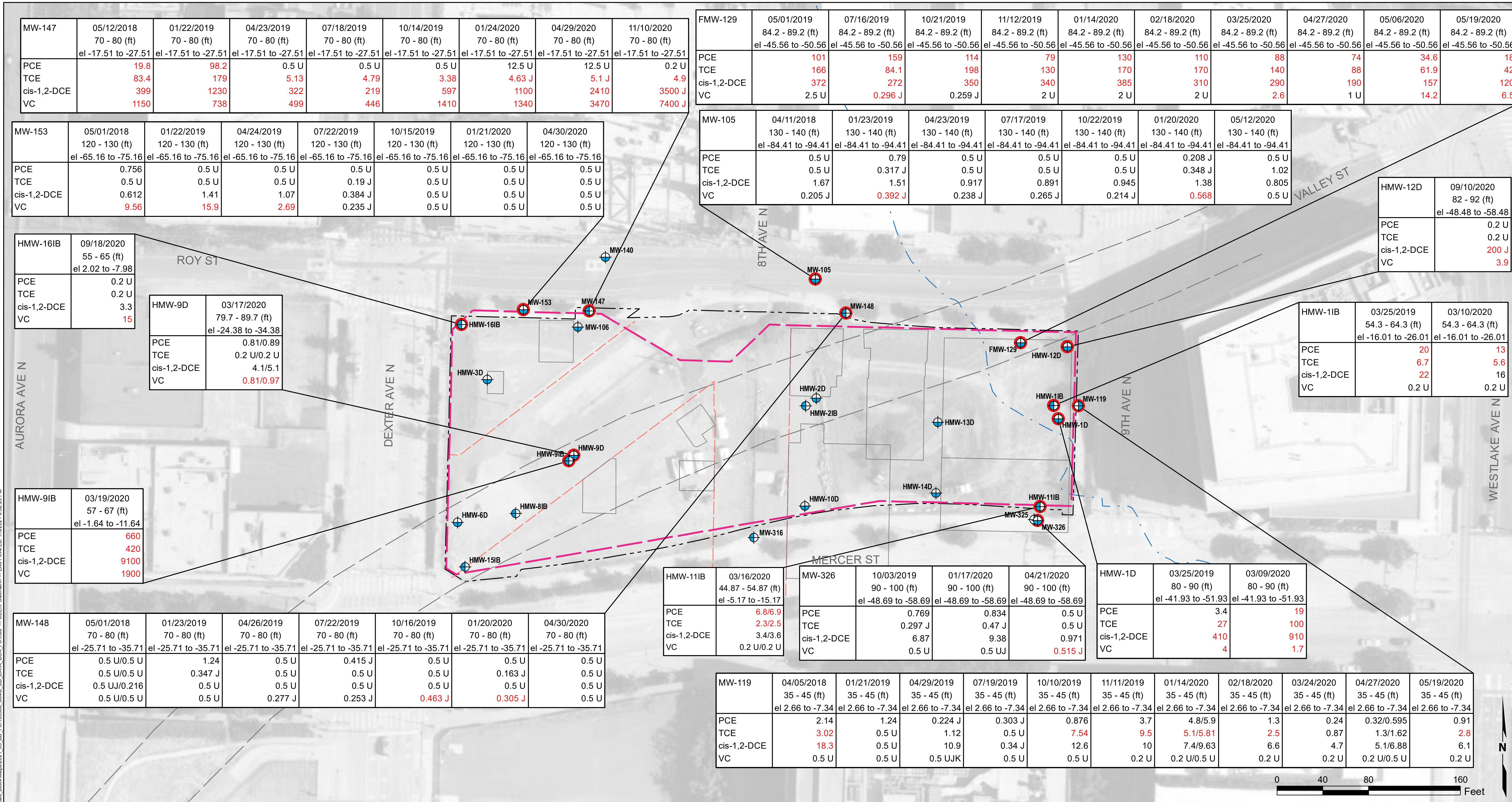
CVOCs Distribution in Groundwater, Above 8 ft Elevation

19409-04 10/21

HARTCROWSER
A division of Haley & Aldrich

Figure
2-7b

GIS FILE PATH: C:\Users\craumann\Desktop\LOCAL_DATA\135568_Broad_Block\Maps\2021_05_BB_FS\135568_00MB_BB_DATA_BOX_FS.mxd — USER: craumann — LAST SAVED: 7/5/2021 8:52:23 PM



MW-147	05/12/2018	01/22/2019	04/23/2019	07/18/2019	10/14/2019	01/24/2020	04/29/2020	11/10/2020
	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)
	el -17.51 to -27.51	el -17.51 to -27.51	el -17.51 to -27.51	el -17.51 to -27.51	el -17.51 to -27.51	el -17.51 to -27.51	el -17.51 to -27.51	el -17.51 to -27.51
PCE	19.8	98.2	0.5 U	0.5 U	0.5 U	12.5 U	12.5 U	0.2 U
TCE	83.4	179	5.13	4.79	3.38	4.63 J	5.1 J	4.9
cis-1,2-DCE	399	1230	322	219	597	1100	2410	3500 J
VC	1150	738	499	446	1410	1340	3470	7400 J

FMW-129	05/01/2019	07/16/2019	10/21/2019	11/12/2019	01/14/2020	02/18/2020	03/25/2020	04/27/2020	05/06/2020	05/19/2020
	84.2 - 89.2 (ft)	84.2 - 89.2 (ft)	84.2 - 89.2 (ft)	84.2 - 89.2 (ft)	84.2 - 89.2 (ft)	84.2 - 89.2 (ft)	84.2 - 89.2 (ft)	84.2 - 89.2 (ft)	84.2 - 89.2 (ft)	84.2 - 89.2 (ft)
	el -45.56 to -50.56	el -45.56 to -50.56	el -45.56 to -50.56	el -45.56 to -50.56	el -45.56 to -50.56	el -45.56 to -50.56	el -45.56 to -50.56	el -45.56 to -50.56	el -45.56 to -50.56	el -45.56 to -50.56
PCE	101	159	114	79	130	110	88	74	34.6	18
TCE	166	84.1	198	130	170	170	140	88	61.9	42
cis-1,2-DCE	372	272	350	340	385	310	290	190	157	120
VC	2.5 U	0.296 J	0.259 J	2 U	2 U	2 U	2.6	1 U	14.2	6.5

MW-153	05/01/2018	01/22/2019	04/24/2019	07/22/2019	10/15/2019	01/21/2020	04/30/2020
	120 - 130 (ft)	120 - 130 (ft)	120 - 130 (ft)	120 - 130 (ft)	120 - 130 (ft)	120 - 130 (ft)	120 - 130 (ft)
	el -65.16 to -75.16	el -65.16 to -75.16	el -65.16 to -75.16	el -65.16 to -75.16	el -65.16 to -75.16	el -65.16 to -75.16	el -65.16 to -75.16
PCE	0.756	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TCE	0.5 U	0.5 U	0.5 U	0.19 J	0.5 U	0.5 U	0.5 U
cis-1,2-DCE	0.612	1.41	1.07	0.384 J	0.5 U	0.5 U	0.5 U
VC	9.56	15.9	2.69	0.235 J	0.5 U	0.5 U	0.5 U

MW-105	04/11/2018	01/23/2019	04/23/2019	07/17/2019	10/22/2019	01/20/2020	05/12/2020
	130 - 140 (ft)	130 - 140 (ft)	130 - 140 (ft)	130 - 140 (ft)	130 - 140 (ft)	130 - 140 (ft)	130 - 140 (ft)
	el -84.41 to -94.41	el -84.41 to -94.41	el -84.41 to -94.41	el -84.41 to -94.41	el -84.41 to -94.41	el -84.41 to -94.41	el -84.41 to -94.41
PCE	0.5 U	0.79	0.5 U	0.5 U	0.5 U	0.208 J	0.5 U
TCE	0.5 U	0.317 J	0.5 U	0.5 U	0.5 U	0.348 J	1.02
cis-1,2-DCE	1.67	1.51	0.917	0.891	0.945	1.38	0.805
VC	0.205 J	0.392 J	0.238 J	0.265 J	0.214 J	0.568	0.5 U

HMW-12D	09/10/2020
	82 - 92 (ft)
	el -48.48 to -58.48
PCE	0.2 U
TCE	0.2 U
cis-1,2-DCE	200 J
VC	3.9

HMW-16IB	09/18/2020
	55 - 65 (ft)
	el 2.02 to -7.98
PCE	0.2 U
TCE	0.2 U
cis-1,2-DCE	3.3
VC	15

HMW-9D	03/17/2020
	79.7 - 89.7 (ft)
	el -24.38 to -34.38
PCE	0.81/0.89
TCE	0.2 U/0.2 U
cis-1,2-DCE	4.1/5.1
VC	0.81/0.97

HMW-1IB	03/25/2019	03/10/2020
	54.3 - 64.3 (ft)	54.3 - 64.3 (ft)
	el -16.01 to -26.01	el -16.01 to -26.01
PCE	20	13
TCE	6.7	5.6
cis-1,2-DCE	22	16
VC	0.2 U	0.2 U

HMW-9IB	03/19/2020
	57 - 67 (ft)
	el -1.64 to -11.64
PCE	660
TCE	420
cis-1,2-DCE	9100
VC	1900

HMW-11IB	03/16/2020
	44.87 - 54.87 (ft)
	el -5.17 to -15.17
PCE	6.8/6.9
TCE	2.3/2.5
cis-1,2-DCE	3.4/3.6
VC	0.2 U/0.2 U

MW-326	10/03/2019	01/17/2020	04/21/2020
	90 - 100 (ft)	90 - 100 (ft)	90 - 100 (ft)
	el -48.69 to -58.69	el -48.69 to -58.69	el -48.69 to -58.69
PCE	0.769	0.834	0.5 U
TCE	0.297 J	0.47 J	0.5 U
cis-1,2-DCE	6.87	9.38	0.971
VC	0.5 U	0.5 UJ	0.515 J

HMW-1D	03/25/2019	03/09/2020
	80 - 90 (ft)	80 - 90 (ft)
	el -41.93 to -51.93	el -41.93 to -51.93
PCE	3.4	19
TCE	27	100
cis-1,2-DCE	410	910
VC	4	1.7

MW-148	05/01/2018	01/23/2019	04/26/2019	07/22/2019	10/16/2019	01/20/2020	04/30/2020
	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)	70 - 80 (ft)
	el -25.71 to -35.71	el -25.71 to -35.71	el -25.71 to -35.71	el -25.71 to -35.71	el -25.71 to -35.71	el -25.71 to -35.71	el -25.71 to -35.71
PCE	0.5 U/0.5 U	1.24	0.5 U	0.415 J	0.5 U	0.5 U	0.5 U
TCE	0.5 U/0.5 U	0.347 J	0.5 U	0.5 U	0.5 U	0.163 J	0.5 U
cis-1,2-DCE	0.5 UJ/0.216	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
VC	0.5 U/0.5 U	0.5 U	0.277 J	0.253 J	0.463 J	0.305 J	0.5 U

MW-119	04/05/2018	01/21/2019	04/29/2019	07/19/2019	10/10/2019	11/11/2019	01/14/2020	02/18/2020	03/24/2020	04/27/2020	05/19/2020
	35 - 45 (ft)	35 - 45 (ft)	35 - 45 (ft)	35 - 45 (ft)	35 - 45 (ft)	35 - 45 (ft)	35 - 45 (ft)	35 - 45 (ft)	35 - 45 (ft)	35 - 45 (ft)	35 - 45 (ft)
	el 2.66 to -7.34	el 2.66 to -7.34	el 2.66 to -7.34	el 2.66 to -7.34	el 2.66 to -7.34	el 2.66 to -7.34	el 2.66 to -7.34	el 2.66 to -7.34	el 2.66 to -7.34	el 2.66 to -7.34	el 2.66 to -7.34
PCE	2.14	1.24	0.224 J	0.303 J	0.876	3.7	4.8/5.9	1.3	0.24	0.32/0.595	0.91
TCE	3.02	0.5 U	1.12	0.5 U	7.54	9.5	5.1/5.81	2.5	0.87	1.3/1.62	2.8
cis-1,2-DCE	18.3	0.5 U	10.9	0.34 J	12.6	10	7.4/9.63	6.6	4.7	5.1/6.88	6.1
VC	0.5 U	0.5 U	0.5 UJK	0.5 U	0.5 U	0.2 U	0.2 U/0.5 U	0.2 U	0.2 U	0.2 U/0.5 U	0.2 U

INTERMEDIATE A ZONE MONITORING WELL
INTERMEDIATE B ZONE MONITORING WELL
DEEP ZONE MONITORING WELL
GROUNDWATER SAMPLING LOCATION WITH EXCEEDANCE

EXCAVATION LIMITS; TO BE EXCAVATED DOWN TO ELEVATION 8 FT OR LOWER
POTENTIAL HISTORICAL CONTAMINANT SOURCE
PROPERTY BOUNDARY
FORMER LAKE UNION SHORELINE
FORMER BROAD STREET AND 8TH AVENUE N, THROUGH 1950s
FORMER BROAD STREET 1958-2012

RED TEXT INDICATES EXCEEDANCE OF PROTECTIVE OF DRINKING WATER OR PROTECTIVE OF INDOOR AIR SCREENING LEVELS
DATA SHOWN IS FROM 2018-2020; CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)
SCREENING LEVELS PROVIDED BY ECOLOGY (NOVEMBER 17, 2020)
DEPTH IN FEET BELOW GROUND SURFACE (BGS)
ELEVATION IN FEET (NAVD 88)
U = NON-DETECT AT DETECTION LIMIT AS INDICATED
J = ESTIMATED VALUE
- = ANALYTE WAS NOT ANALYZED/NOT APPLICABLE
/ = MULTIPLE RESULTS INDICATE THAT A FIELD DUPLICATE WAS TAKEN
K = REPORTED RESULT WITH UNKNOWN BIAS
AERIAL IMAGERY SOURCE: EAGLEVIEW

SCREENING LEVELS FOR CVOCs IN GROUNDWATER (µg/L)

CONSTITUENT	PROTECTIVE OF DRINKING WATER	PROTECTIVE OF INDOOR AIR
Tetrachloroethene (PCE)	5	24
Trichloroethene (TCE)	4	1.4
cis-1,2-Dichloroethene (cis-1,2-DCE)	16	-
Vinyl chloride (VC)	0.29	0.35

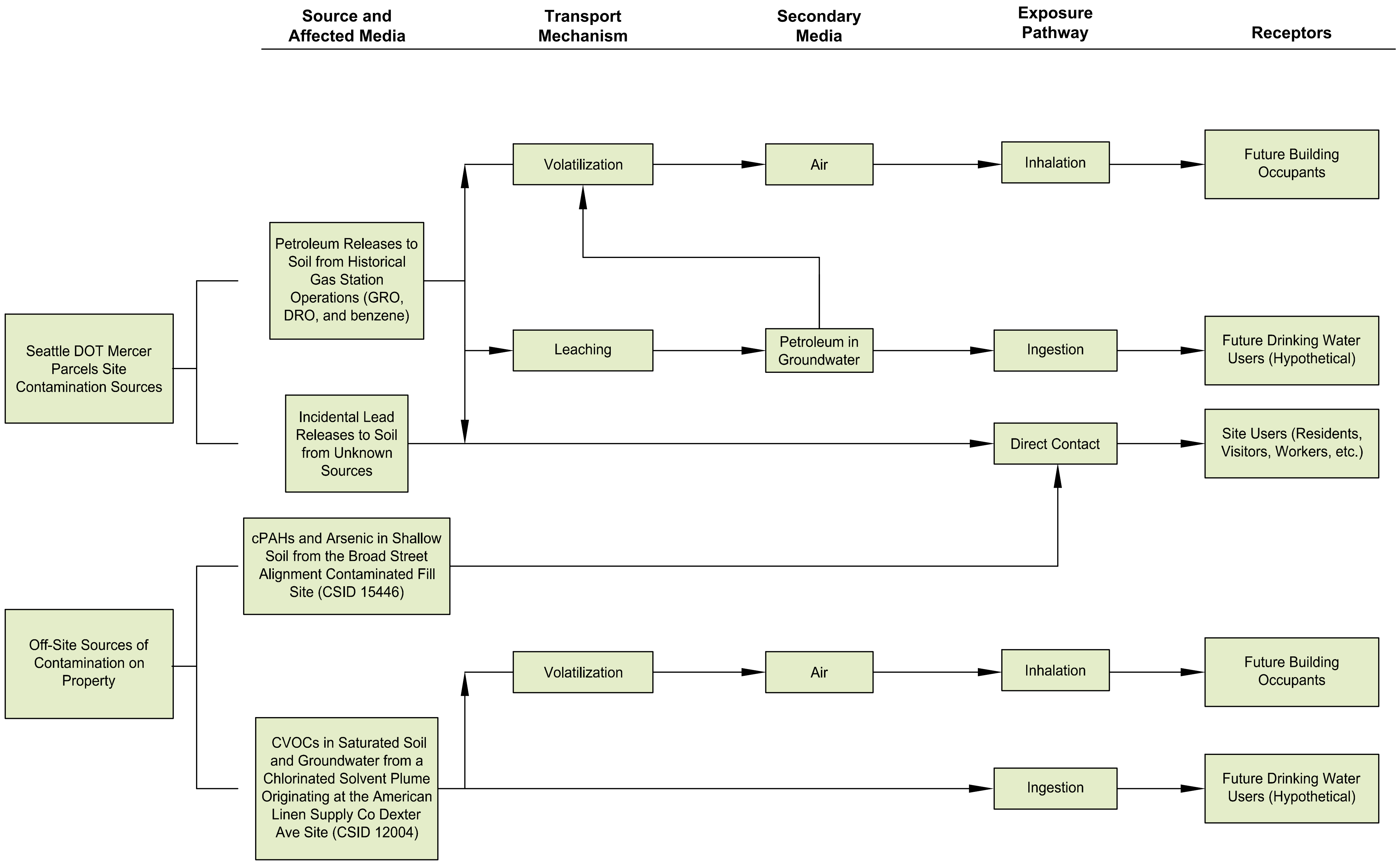
Seattle DOT Mercer Parcels Site
Seattle, Washington

CVOCs Distribution in Groundwater, Below 8 ft Elevation

19409-04 10/21

HARTCROWSER
A division of Haley & Aldrich

Figure
2-7c



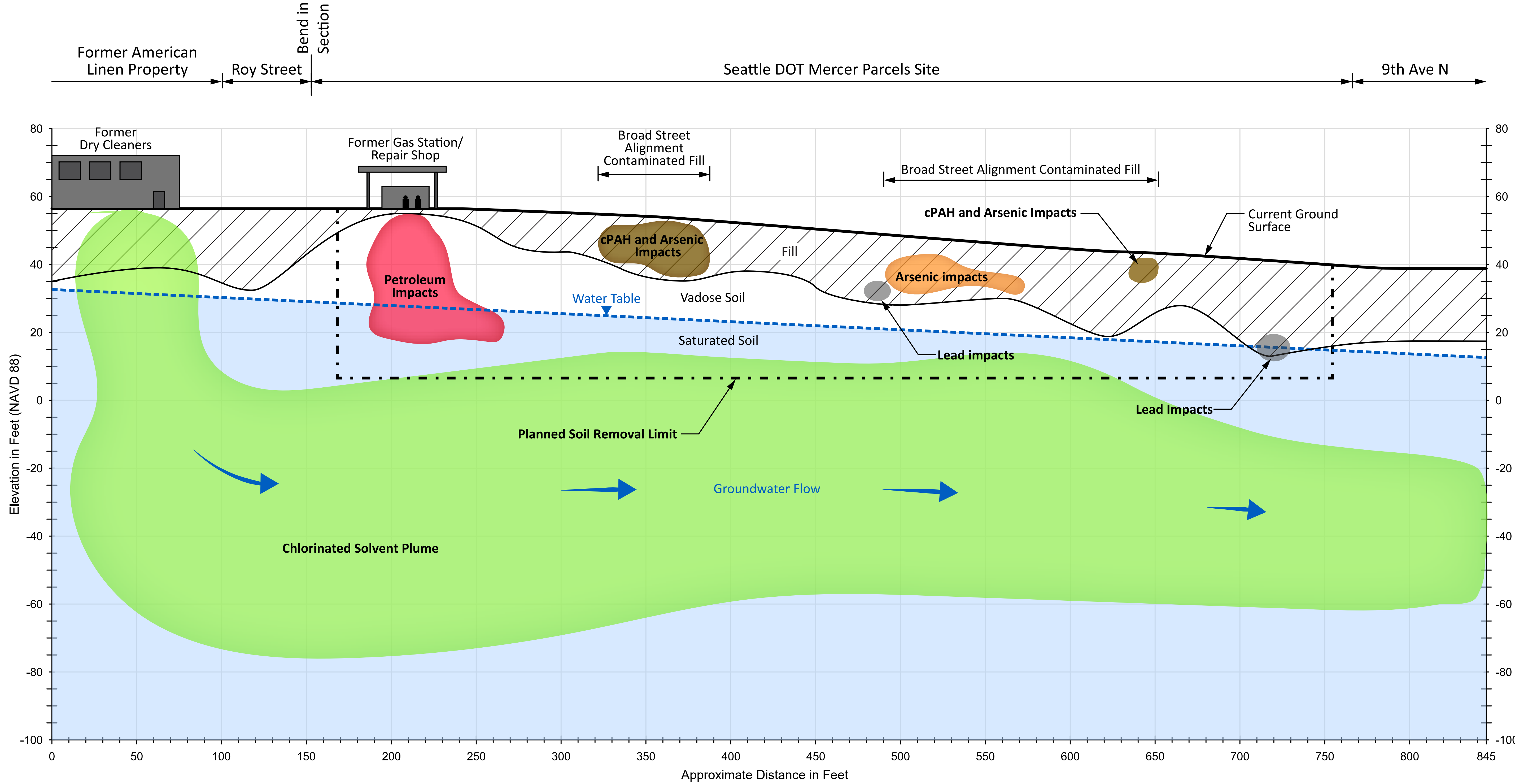
Seattle DOT Mercer Parcels Site
Seattle, Washington

Contaminant Sources, Exposure Pathways, and Receptors

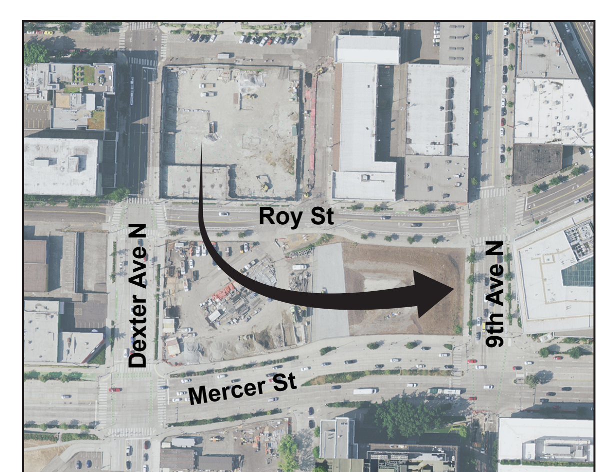
19409-04 10/21

HARTCROWSER
A division of Haley & Aldrich

Figure
2-8



Note
This cross section does not represent a single snapshot in time. Rather, it graphically depicts general groundwater flow directions over time that have led to the migration of contaminants observed in the Remedial Investigation.



Seattle DOT Mercer Parcels Site
Seattle, Washington

Generalized Diagrammatic Conceptual Cross Section

19409-04 01/22

HARTCROWSER
A division of Haley & Aldrich

Figure
2-9

Original figure prepared by Hart Crowser; modified by Ecology.

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LEGEND

- SOIL BORING
- SOIL BORING WITH GRAB GROUNDWATER SAMPLE
- SHALLOW ZONE MONITORING WELL
- INTERMEDIATE A ZONE MONITORING WELL
- INTERMEDIATE B ZONE MONITORING WELL
- DEEP ZONE MONITORING WELL
- ESTIMATED AREA OF COC-CONTAMINATED SOIL TO BE EXCAVATED AND DISPOSED OF OFF-SITE (COC = CONSTITUENT OF CONCERN)

TESTING RESULTS

- SOIL TESTED, WITHOUT EXCEEDANCE OF CLEANUP LEVEL
- SOIL TESTED, WITH EXCEEDANCE OF CLEANUP LEVEL
- GROUNDWATER TESTED, WITHOUT EXCEEDANCE OF CLEANUP LEVEL
- GROUNDWATER TESTED, WITH EXCEEDANCE OF CLEANUP LEVEL
- EXCAVATION LIMITS; TO BE EXCAVATED DOWN TO ELEVATION 8 FT OR LOWER AND VAPOR BARRIER AREA
- PROPERTY BOUNDARY
- FORMER BROAD STREET 1958-2012

TESTING RESULTS ARE SHOWN FOR THESE CONSTITUENTS	SOIL (mg/kg)	GROUNDWATER (µg/L)
COCs	CLEANUP LEVEL	CLEANUP LEVEL
Gasoline Range Organics (GRO)	30	800
Lead	250	-
Diesel Range Organics (DRO)	-	500
Benzene	-	2.4

0 20 40 80 Feet

N

AERIAL IMAGERY SOURCE: NEARMAP, AUGUST 28, 2020

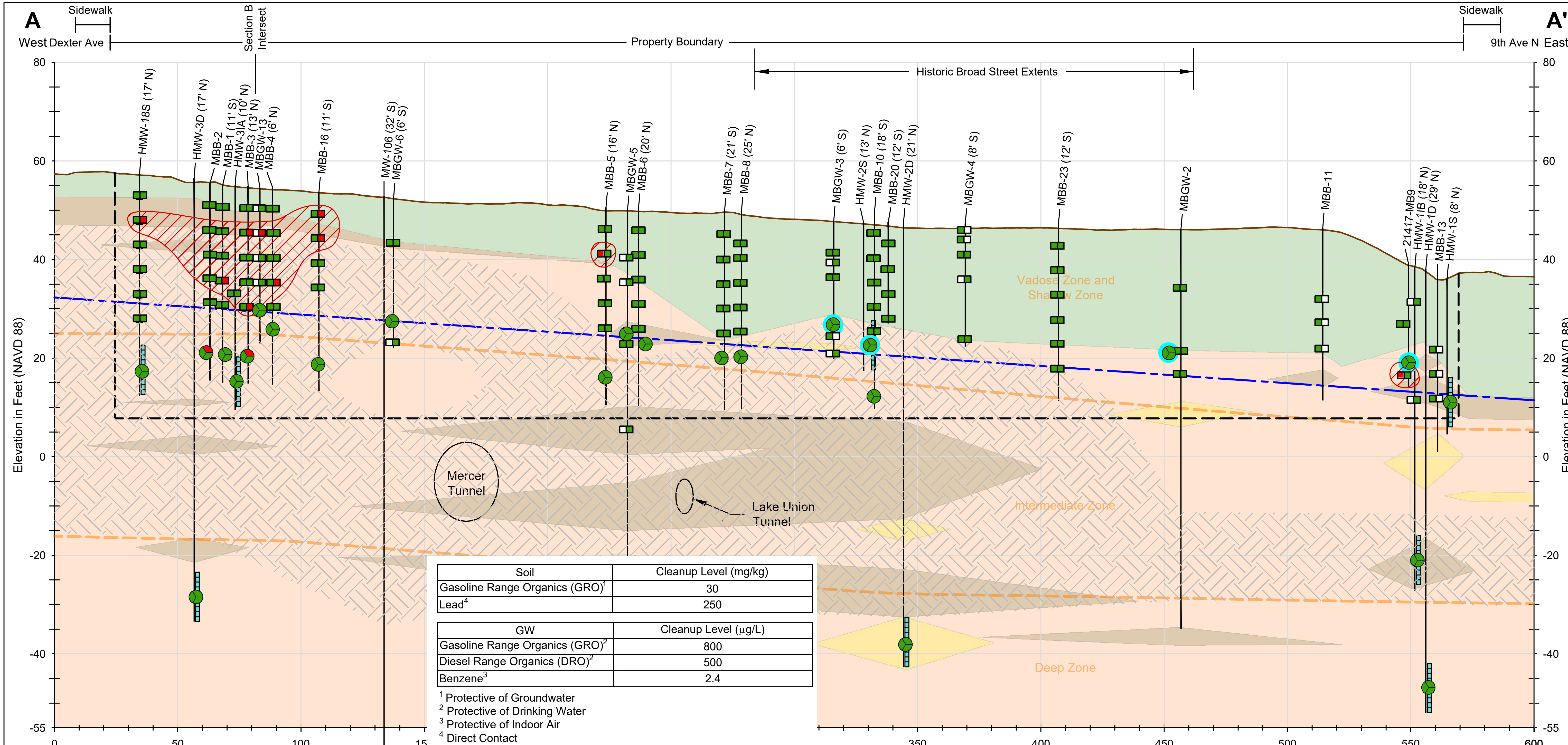
Seattle DOT Mercer Parcels Site
Seattle, Washington

Selected Cleanup Action

19409-04 11/21

HARTCROWSER
A division of Haley & Aldrich

Figure
5-1



Soil	Cleanup Level (mg/kg)
Gasoline Range Organics (GRO)[1]	30
Lead[4]	250

GW	Cleanup Level (µg/L)
Gasoline Range Organics (GRO)[2]	800
Diesel Range Organics (DRO)[2]	500
Benzene[3]	2.4

[1] Protective of Groundwater
[2] Protective of Drinking Water
[3] Protective of Indoor Air
[4] Direct Contact

green = Constituent(s) below cleanup level

red = Constituent(s) above cleanup level

white = Constituent(s) not tested

Sample results shown from the most recent sampling event.

Horizontal Scale in Feet 0 40 80

Vertical Scale in Feet 0 20 40

Vertical Exaggeration x 2

Legend

Boring Name with Offset — MW-1(15' W)

Boring Location

Approximate Average Water Table (25ft bgs)

Inferred Groundwater Zone Boundary

Screen Interval

Geologic Units (Predominant Component)

Fill

Clean Sand and/or Gravel

Till

Silty Sand and Silty Gravel

Silt and/or Clay with or without Sand

Approximate Limits of Proposed Excavation and Vapor Barrier Area at Seattle DOT Mercer Parcels Site ("Schematic Design, ARE Mercer Blocks," NBBJ, 04/20/2020)

GROUNDWATER SAMPLE

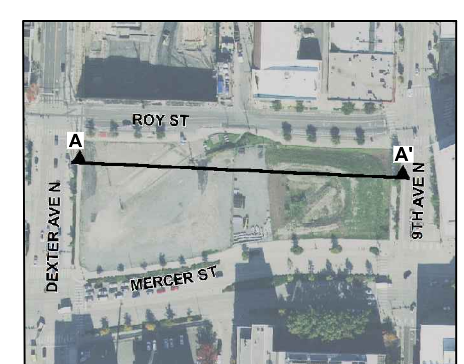
DRO — Benzene — GRO

SOIL SAMPLE

Lead — GRO

= Estimated area of constituent of concern (COC)-contaminated soil to be excavated and disposed of off-site

= Perched groundwater



INSET MAP

Explorations MBB-1, MBB-2, MBB-4, MBGW-13, HMW-2S and MBB-20 have been shifted horizontally for visual clarity.

Seattle DOT Mercer Parcels Site
Seattle, Washington

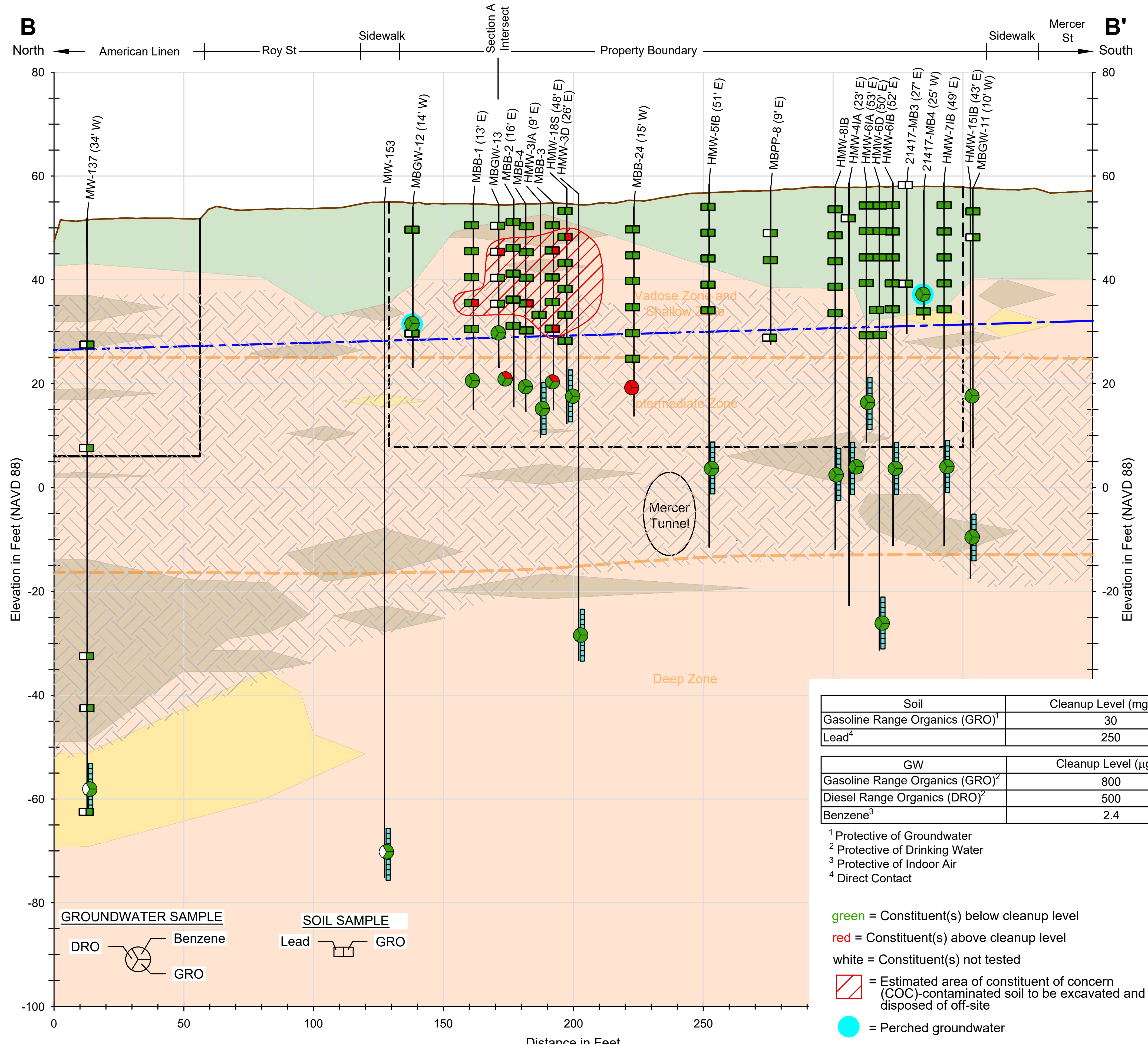
Selected Cleanup Action Cross Section A-A'

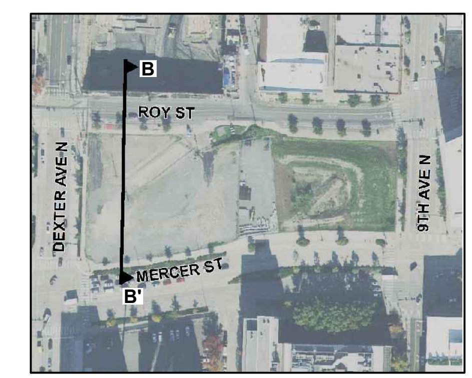
19409-04 11/21

HARTCROWSER A division of Haley & Aldrich

Figure **5-2a**

Original figure prepared by Hart Crowser; modified by Ecology.





INSET MAP

Soil	Cleanup Level (mg/kg)
Gasoline Range Organics (GRO)[1]	30
Lead[4]	250

GW	Cleanup Level (µg/L)
Gasoline Range Organics (GRO)[2]	800
Diesel Range Organics (DRO)[2]	500
Benzene[3]	2.4

[1] Protective of Groundwater
[2] Protective of Drinking Water
[3] Protective of Indoor Air
[4] Direct Contact

green = Constituent(s) below cleanup level
red = Constituent(s) above cleanup level
white = Constituent(s) not tested
= Estimated area of constituent of concern (COC)-contaminated soil to be excavated and disposed of off-site
= Perched groundwater

Sample results shown from the most recent sampling event.

Explorations MBB-4, HMW-3IA, MBB-3, HMW-18S, HMW-3D, HMW-8IB, HMW-6D, and HMW-6IB have been shifted horizontally for visual clarity.

Seattle DOT Mercer Parcels Site
Seattle, Washington

Selected Cleanup Action
Cross Section B-B'

19409-04 11/21

HARTCROWSER
A division of Haley & Aldrich

Figure
5-2b

Original figure prepared by Hart Crowser; modified by Ecology.

File: \\haleyaldrich.com\share\sea_projects\Notebooks\1940904_Mercer_Mega_Block_Remedial_Investigations\CAD\1940904-015 DCAP (XSec-Mercer).dwg Layout:DCAP-SEC_BroadB (COCs) Date: 11-04-2021 Author: mschweitzer