Sampling and Analysis Plan for
Utility Rights of Way

Former USPS P&DC Property

715 NW Hoyt Street
Portland, Oregon
ECSI #2183

Prepared for
City of Portland, Bureau of Environmental Services

June 1, 2020
150-007-005/Task 1

HARTCROWSER

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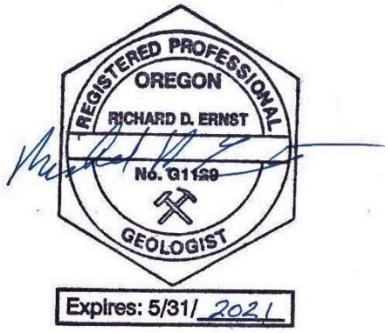
Prepared by
Hart Crowser, Inc.



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Former USPS P&DC Property

715 NW Hoyt Street
Portland, Oregon

1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) presents the scope of work for completing a Level II investigation of subsurface conditions within future rights of way (ROWs) within the former U. S. Postal Service (USPS) Portland Processing and Distribution Center (P&DC) property located at 715 NW Hoyt Street (the "site") in the Broadway Corridor project area of Portland, Oregon (Figure 1). This SAP has been prepared for the City of Portland (City) Bureau of Environmental Services (BES).

1.1 Purpose

The purpose of our proposed activities is to obtain information on subsurface conditions for planning of future utility installations and to support the future redevelopment of the USPS property located at 715 NW Hoyt Street in Portland, Oregon. Samples will be collected and analyzed for chemical contaminants to evaluate: (1) risks to future construction and excavation workers so that appropriate protective measures can be determined; and (2) whether the existing soil in future ROWs meets the clean fill criteria and thus would be suitable as utility corridor fill under City code 17.24.067 for Hazardous Substances (City 2020). Soil samples will also be collected for BES for geotechnical analysis for trench design and stability. Groundwater, if encountered, will also be evaluated for future disposal to the City sanitary sewer should excavation dewatering be necessary. This work is not associated with implementation of the selected remedial action as presented in the Record of Decision for the site (Department of Environmental Quality [DEQ] 2010).

1.2 Scope of Work

To accomplish the above objectives, the scope of work described in this plan will consist of the following general tasks:

- Perform a utility locate to identify subsurface utilities and clear proposed exploration locations.
- Complete 12 push probe explorations for the collection of soil and groundwater samples, as well as geotechnical samples for BES.
- Implement an analytical program to assess for chemical contaminants posing a risk to future workers and for future groundwater disposal within the sanitary sewer system.
- Manage investigation-derived waste (IDW).
- Prepare a Level II Investigation Report discussing the analytical results, assessing risks to future construction and excavation workers, evaluating the suitability of existing soil as utility corridor fill, and evaluating whether groundwater extracted during trenching can be disposed of in the City sewer system.

1.3 Limitations

This SAP has been prepared for BES. Work for this project will be performed in accordance with generally accepted professional practices relating to the nature of work completed at the same or similar localities. It is intended for the exclusive use of the BES for specific application to the site. No other warranty, express or implied, is made.

2.0 BACKGROUND

In 2016, Prosper Portland purchased the 13.4-acre USPS P&DC property for redevelopment as part of the Broadway Corridor project. Redevelopment of the Broadway Corridor area provides an opportunity for high-density employment, mixed-income housing, and signature City attractions and amenities. The Broadway Corridor project also will connect the Old Town/Chinatown and Pearl District neighborhoods, with the goal to maximize community benefits, particularly to those groups that haven't benefited from other urban projects.

The USPS property has undergone environmental investigation for contamination. From the early 1890s through the 1950s, a railroad terminal with freight depots was present on the property (Hart Crowser 2016). A passenger coach cleaning yard with support buildings were built on the west side. A Pintsch manufactured gas plant (MGP) operated on the northwest corner from approximately 1893 until 1934. In the early 1960s, the P&DC for the USPS Portland facility were constructed on the property. Contamination on the property consists of metals, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs) from historical railyard activities, fill materials, MGP operations, and USPS vehicle maintenance and fueling (DEQ 2010). The DEQ has listed the site as Environmental Cleanup Site Information (ECSI) #2183.

BES has requested a subsurface investigation to collect soil and groundwater (if encountered) samples within the future ROW and utility alignments. The results of the sampling will be used to assess subsurface conditions for chemical contamination, and if present, to evaluate the risk to future construction and excavation workers so that appropriate protective measures can be determined. Data will also be used to assess whether existing soil meets DEQ's clean fill criteria (DEQ 2019) and thus could be used for utility corridor fill. BES is also seeking to obtain geotechnical information for trench design and stability. Groundwater also will be evaluated for potential disposal to the City sanitary sewer should future dewatering be needed during utility installation.

3.0 INVESTIGATION ACTIVITIES

Hart Crowser will perform investigation activities to assess subsurface conditions at the site in support of future utility installation for redevelopment of the USPS property. Activities will include completing push probe explorations to collect soil and groundwater samples for chemical analysis.

3.1 Preparatory Activities

Prior to field work, preparatory activities will be performed as discussed below.

Site-Specific Health and Safety Plan. We will prepare a site-specific Health and Safety Plan (HASP) for the proposed investigation activities. The HASP will be prepared in general accordance with the Occupational Safety and Health Act and Oregon Administrative Rules (OARs). In addition, COVID-19 related requirements (State of Oregon Executive Order No. 20-12, BES Health Screening Guidance, and Hart Crowser's protocols) will be included in the HASP. Hart Crowser personnel will have a copy of the HASP for their use during the field activities.

Underground Utility Location. Hart Crowser and BES met at the site on April 2, 2020, to assess possible push probe locations, as shown on Figure 2. Hart Crowser will subcontract with Pacific Geophysics of Portland, Oregon, to have underground utilities located prior to drilling work. We will also contact the Oregon Utility Notification Center for a public locate.

3.2 Push Probe Explorations

Twelve push probe explorations will be completed to assess the soil and groundwater conditions. Hart Crowser will subcontract with Stratus Corporation (Stratus), an Oregon-licensed driller from Gaston, Oregon, to perform the explorations in accordance with Oregon Water Resource Department (OWRD) regulations (OAR 690-240). Hart Crowser and BES geotechnical staff will observe and document the exploration activities, subsurface conditions, and collect samples. Drilling is estimated to take approximately 3 days to complete.

Locations. Proposed push probe locations are shown on Figure 2. Locations are approximate and may be moved based on field conditions and the presence of utilities or other obstacles (as identified by the utility locate). The probes are labeled on Figure 2 as "B-1" through "B-12" for discussion in this SAP. Descriptions of the locations are as follows:

- *Probes B-1 through B-6.* Six push probes will be completed on the north side of the USPS Building within a proposed extension of NW Kearney Street.
- *Probes B-7, B-8, and B-9.* Three push probes will be completed between NW 9th Avenue and the west side of the USPS Building, within a proposed extension of NW Johnson Street.
- *Probes B-10 and B-11*. Two probes will be completed on the north and south sides of the USPS parking garage within a proposed extension of NW Park Avenue.
- *Probe B-12*. One probe will be completed within a parking lot on the east side of the USPS Building, also within a proposed extension of NW Johnson Street.

Soil Sampling. Future utilities could be installed to depths of up to 15 feet bgs. Geotechnical properties of soils will need to be evaluated for an additional 5 feet below this. As such, Stratus complete the push probes to depths of 20 feet below the ground surface using a direct-push drill rig. Soil cores will be obtained continuously from the probes using a 5-foot-long soil sampler. For those probes where geotechnical information is needed, standard penetration tests will be conducted using a drop hammer at 5-foot-depth intervals (thus removing 1.5 feet of the subsequent environmental core interval). Additionally, if loose backfill is present or the borehole is unstable, hollow-stem augers may need to be used to stabilize the borehole.

For each 5-foot-long drive interval, the plastic sleeve from the sampler will be cut open for soil description, field screening, and sampling. Field personnel will use a stainless-steel implement to expose a fresh section along the entire length of recovered core. Soil will also be field screened for contamination through physical observation, using a photoionization detector, and by performing sheen tests. We will document our observations and field screening results on our field forms.

One soil sample will be collected from the core, targeting any soil with apparent contamination based on field observations; if no contamination is apparent, soil will be collected over the entire length of the core. We will first collect samples for gasoline and VOC analyses using U.S. Environmental Protection Agency (EPA) Method 5035: a coring device (e.g., En Core® sampler) will be used to obtain approximately 5 grams of soil for each of two pre-weighed 40-milliliter volatile organic analysis vials, one of which will be preserved with methanol. Soil for other analyses will be transferred into laboratory-supplied sample jars using a stainless-steel spoon, leaving no headspace. Sampling activities will be documented in our field notes and forms.

Groundwater Sampling. Depending on whether groundwater is encountered and its availability, Hart Crowser will obtain samples from approximately five probes (we will attempt to collect at least one sample from near the former Pintsch MGP). Groundwater samples will be obtained using direct-push tooling or a temporarily PVC well screen and casing. The depth to groundwater will be measured using a water level meter. Groundwater sampling will then be conducted using low-flow sampling techniques. Groundwater in the tooling or temporary well will be purged at a low flow rate using a peristaltic pump connected to disposable tubing dedicated to just one boring.

After purging approximately 1 liter of water, a groundwater sample will be collected using the same equipment used for purging. Groundwater sample containers will be filled directly, and field parameters (e.g., pH, electrical conductivity, oxidation-reduction potential, dissolved oxygen, and temperature) will be measured. If insufficient groundwater is available (i.e., slow recharge), we will attempt to fill as many of the sample containers as possible, with priority given to VOC analysis. We will document our observations and sampling activities in our field notes and forms.

Completion. After sampling activities are completed, each push probe will be located using a GPS unit and by hand-taping to area features (e.g., curb lines). The push probe will be abandoned in accordance with OWRD regulations and will consist of filling the borehole with granular bentonite and hydrating with water. A cold asphalt or concrete patch will complete the surface seal.

3.3 Sample Management

Containers. The City of Portland Water Pollution Control Laboratory (WPCL) in Portland, Oregon, will provide clean sample containers, ready for sample collection. Soil samples for gasoline and VOC analyses will be collected using kits for EPA Method 5035. Other samples will be collected by fully filling sample containers, leaving no headspace. The anticipated number of sample analyses and the specific container and storage requirements for each analysis are listed in Tables 1 and 2, respectively.

Labeling Requirements. A sample label will be affixed to each container before sample collection. All containers will be marked with the project number, a sample number, date and time of collection, sampler's initials, and preservation type. Each sample will have a unique identification number that will be referenced by entry into our notes.

Sample Storage and Shipment. Sample containers will be stored in a cooled ice chest until transport to WPCL or to our office for refrigerated storage (while awaiting transfer to WPCL). Chain of custody will always be maintained and documented. Chain of custody seals will be placed on coolers if not under direct visual possession of Hart Crowser personnel.

3.4 Decontamination

To prevent cross contamination between sampling locations, clean, dedicated sampling equipment (e.g., disposable gloves, groundwater sampling tubing) will be used when possible at each sampling location and discarded after use. Cleaning of non-disposable items will consist of washing in a non-phosphate detergent solution, rinsing with tap water, and rinsing again with deionized water. Drilling equipment will be decontaminated with a detergent solution or high-pressure washing before and after each location. Decontamination water will be collected and handled as IDW, as discussed below.

3.5 IDW Management

IDW will consist of soil cuttings from soil sampling activities, purged groundwater, decontamination water, and personal protective equipment (PPE). PPE will be disposed of as solid waste. Soil and water IDW will be drummed separately in properly labeled Department of Transportation-approved 55-gallon drums. Drums will be temporarily stored at an approved location on the site while awaiting disposal. Soil IDW will be profiled based on the results of associated soil samples. For disposal contingency purposes, one IDW water sample will be collected and retained for possible analysis. Upon receipt of the results, Stratus will pick up, transport, and dispose of the IDW at a permitted disposal or treatment facility.

4.0 ANALYTICAL PROGRAM

Analytical testing will be completed to assess for the presence of contamination at the site and, if present, to provide an initial evaluation of potential risks posed by the contamination, the ability to use existing soil for utility corridor fill, and whether groundwater from dewatering is suitable for disposal in the City sewer system. Hart Crowser will submit samples to WPCL for chemical analysis (geotechnical samples will be turned over to BES for analysis as a separate project). Soil and groundwater testing will be on a standard turnaround time, usually 10 business days.

4.1 Sample Selection and Analysis

Table 1 lists the anticipated sample analyses (as well as follow-up analyses), and Table 2 lists the specific container, storage requirements, and analytical methods to be used. Samples will be analyzed in accordance with EPA and Northwest methodology.

Soil Samples. As indicated in Section 3.2, one soil sample will be collected from each 5-foot core, targeting soil that has apparent contamination based on field observations; if no contamination is apparent, the sample will be collected over the entire core. Contaminants at the site include metals (arsenic, chromium, and lead), TPH, PAHs, and VOCs (the latter by the MGP, electrical utility vault [EUV], and vehicle maintenance building [VMF] shown on Figure 2) (DEQ 2010). Soil samples will be analyzed to screen for potential risks to future construction/excavation workers and assess whether soil meets clean fill criteria and thus is suitable as utility corridor fill.

Because historical railyard operations most likely impacted surface soil, soil samples collected from the 0-5 foot bgs interval will be analyzed for TPH as diesel/oil by Northwest Method NWTPH-Dx, PAHs by EPA Method 8270-SIM, and Resource Conservation and Recovery Act (RCRA) 8 metals (arsenic, barium, cadmium, chromium, mercury, lead, selenium, and silver) by EPA Method 6020. Samples from probes near the MGP (B-1 through B-3) will be analyzed for cyanide by Standard Method (SM) 4500-CN E. If field screening indicates VOCs might be present (particularly from probes near the MGP, EUV, and VMF), these samples will also be analyzed for TPH as gasoline by Northwest Method NWTPH-Gx and VOCs by EPA Method 8260.

Samples from depths greater than 5 feet bgs will be first analyzed for hydrocarbon identification (HCID) by Northwest Method NWTPH-HCID and RCRA 8 metals by EPA Method 6020. If HCID results detect gasoline in a sample, that sample will be analyzed for TPH as gasoline by Northwest Method NWTPH-Gx and VOCs by EPA Method 8260. If diesel or oil is indicated in a sample, that sample will be analyzed for TPH as diesel/oil by Northwest Method NWTPH-Dx and PAHs by EPA Method 8270-SIM. Approximately half of the samples from probes near the MGP (B-1 through B-3) will also be analyzed for cyanide by SM 4500-CN E.

Chemical results from the above analyses will be evaluated to determine if further analysis is needed for the following objectives.

- *Clean Fill Determination.* If initial results meet clean fill criteria (DEQ 2019) for probes in an area and/or for same soil type (e.g., fill material, native silt), representative samples will be selected for analysis for Priority Pollutant 13 metals (addition of antimony, beryllium, copper, nickel, thallium, and zinc) by EPA Method 6020, polychlorinated biphenyls (PCBs) as Aroclors by EPA Method 8082, and if not previously conducted, TPH as gasoline by Northwest Method NWTPH-Gx and VOCs by EPA Method 8260. Samples selected will be on those with the highest initial analyte concentrations and/or to provide representative coverage of the soil type.
- *Waste Designation*. If a metal is detected in a soil sample over 20 times of its toxicity characteristic criterion (40 Code of Federation Regulation 261.24), leachable concentrations of that metal could possibly exceed its toxicity characteristic criterion, whereby the soil would be designated as a hazardous waste. In such a sample, analysis for the leachability of that metal will be performed by the Toxicity Characteristic Leaching Procedure per EPA Method 1311/6020.

Groundwater Samples. The purpose of analyzing groundwater is to assess the potential contaminant concentrations that may be generated during future dewatering during utility installation and

redevelopment of the site. As such, groundwater samples will be analyzed for those contaminants listed by the City in their wastewater discharge limitations to the municipal sanitary sewer system. Based on the availability of groundwater at a given location, samples will be analyzed for 10 metals (total concentrations) by EPA Method 200.8, total mercury by WPCL method M-10, cyanide by EPA Method SM 4500-CN E, oil and grease by EPA Method 1664, semivolatile organic compounds by EPA Method 8270, and VOCs by EPA Method 8260. Groundwater pH will be measured with a meter in the field. Up to three groundwater samples will also be analyzed for organochlorine pesticides by EPA Method 8081 and PCBs as Aroclors by EPA Method 8082.

IDW. Soil IDW will be profiled based on the results of associated soil samples. Water IDW will be profiled to the extent possible by analytical results on soil and groundwater samples. Analysis of the IDW water sample may be needed to complete profiling and will focus on those parameters for disposal which may include TPH as gasoline by Northwest Method NWTPH-Gx, TPH as diesel/oil by Northwest Method NWTPH-Dx for diesel- and oil-range hydrocarbons, VOCs by EPA Method 8260, and RCRA 8 metals by EPA Method 200.8/WPCL method M-10.

4.2 Quality Assurance/Quality Control

Because the objective of this Level II investigation is to assess for contamination for future construction projects and not for regulatory closure or risk assessment purposes, we will rely on WPCL analysis of internal quality control samples per the requirements of the analytical method (e.g., spikes and method blanks). During field sampling, disposable or decontaminated sampling equipment will be used to minimize or eliminate cross-contamination; however, for quality assurance/quality control purposes, trip blanks will be prepared for potential analysis should results on primary samples indicate suspected cross-contamination.

5.0 REPORTING

After receipt of analytical results, we will prepare a Level II Investigation Report to present our findings. The report will present general information regarding the site, the investigation activities, the chemical results, and a screening of the chemical results to assess whether unacceptable risks to construction/ excavation workers may be present, existing soil is suitable as utility corridor fill, and water meets the City wastewater discharge limitation. The risk screening will be performed by comparing detected concentrations of chemical constituents to the DEQ risk-based concentrations (DEQ 2018) or EPA Regional Screening Levels (EPA 2020) and DEQ Clean Fill Determinations (DEQ 2019). The report will be prepared in general accordance with the following outline:

Executive Summary

1. Introduction
    a. Purpose
    b. Scope of Work
    c. Limitations

2. Background
   a. Site Location and Description
   b. Geology and Hydrogeology
3. Site Investigation Activities
   a. Preparatory Activities
   b. Push Probe Explorations and Sampling
   c. Decontamination
   d. IDW Management
4. Chemical Analyses and Results
   a. Analyses Performed
   b. Chemical Results
5. Data Screening
6. Conclusions
7. Appendices
   Photograph Log
   Field Methods, Sampling Procedures, and Exploration Logs
   Analytical Laboratory Testing Program and Documentation, including a QA review

The report will initially be prepared as a draft for review by BES. Upon receipt of comments, we will issue the report in final form.

6.0 REFERENCES

City of Portland 2020. City Code 17.24.067 regarding hazardous substances. Available at: https://www.portlandoregon.gov/citycode/article/407821

City of Portland BES 2020. Guidance for Daily COVID-19 Health Screenings at BES Facilities & Work Sites. Implemented: April 20, 2020.

DEQ 2010. Selected Remedial Action Record of Decision for the USPS-P&DC Site, Portland, Oregon. July 14, 2010.

DEQ 2018. Excel® Spreadsheet for Risk Based Concentrations for Individual Chemicals. May 2018.

DEQ 2019. Excel® Spreadsheet for Clean Fill Screening Levels for Province Specific and Background Metals. June 17, 2019.

EPA 2020. Regional Screening Levels. May 2020.

Hart Crowser 2016. Phase I Environmental Site Assessment, USPS Portland P&DC Property, 715 NW Hoyt Street, Portland, Oregon. August 16, 2016.

State of Oregon. 2020. Office of the Governor State of Oregon Executive Order No. 20-12. March 23, 2020.

Table 1 - Anticipated Sample Number and Analyses
Broadway Corridor - Former USPS P&DC Property
Portland, Oregon

Location/Area	Sample Matrix	Analysis	Method	Estimated Number of Samples	
				Initial	Potential Follow-up
All Push Probes (0-5 feet bgs)	Soil	TPH as Diesel/Oil	NWTPH-Dx	12	-
	Soil	PAHs	EPA 8270-SIM	12	-
	Soil	RCRA 8 Metals	EPA 6020	12	-
	Soil	TPH as Gasoline	NWTPH-Gx*	6	-
	Soil	VOCs	EPA 8260*	6	-
All Push Probes (>5 feet bgs)	Soil	Hydrocarbon Identification	NWTPH-HCID	36	-
	Soil	RCRA 8 Metals	EPA 6020	36	
	Soil	TPH as Gasoline	NWTPH-Gx*	-	12
	Soil	VOCs	EPA 8260*	-	12
	Soil	TPH as Diesel/Oil	NWTPH-Dx	-	12
	Soil	PAHs	EPA 8270-SIM	-	12
All Push Probes (Follow-up Analyses Regardless of Depth)	Soil	Priority Pollutant 13 Metals	EPA 6020	-	5
	Soil	PCBs	EPA 8082	-	4
	Soil	TPH as Gasoline	NWTPH-Gx*	-	4
	Soil	VOCs	EPA 8260*	-	5
	Soil	TCLP Metals	EPA 1311/6020	-	4
Probes Near MGP (B-1 to B-3)	Soil (0-5 feet bgs)	Cyanide	SM 4500-CN E	3	-
	Soil (>5 feet bgs)	Cyanide	SM 4500-CN E	4	
Selected Borings	Water	Total Metals	EPA 200.8 / WPCL M-10	5	-
	Water	Cyanide	SM 4500-CN E	5	-
	Water	Oil and Grease	EPA 1664	5	-
	Water	SVOCs	EPA 8270	5	-
	Water	VOCs	EPA 8260	5	-
	Water	Organochlorine Pesticides	EPA 8081	3	-
	Water	PCBs	EPA 8082	3	-
IDW Water	Water	TPH as Gasoline	NWTPH-Gx	-	1
	Water	TPH as Diesel/Oil	NWTPH-Dx	-	1
	Water	VOCs	EPA 8260	-	1
	Water	RCRA 8 Metals	EPA 6020	-	1

Notes:
1. *Sample collected using EPA Method 5035.
2. - = None anticipated.

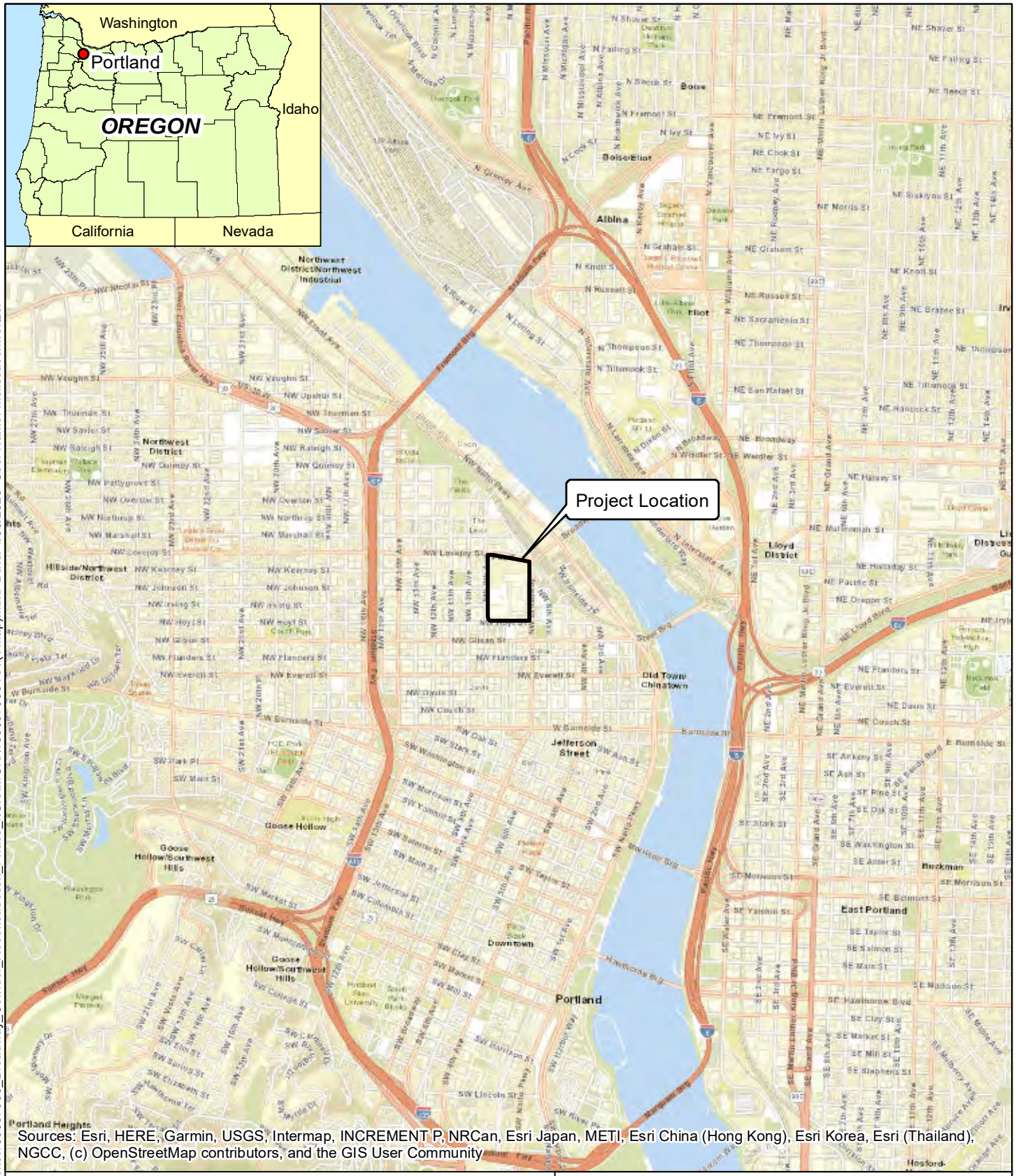
Acronyms:
Dx = Diesel-range
EPA = Environmental Protection Agency
Gx = Gasoline-range
HCID = Hydrocarbon identification
NWTPH = Northwest total petroleum hydrocarbons
PAHs = Polycyclic aromatic hydrocarbons
PCBs = Polychlorinated biphenyls
SIM = Selective ion monitoring
SM = Standard Method
SVOCs = Semivolatile organic compounds
TCLP = Toxicity characteristic leaching procedure
TPH = Total petroleum hydrocarbons
VOCs = Volatile organic compounds
WPCL = Water Pollution Control Laboratory

Table 2 - Analytical Methods, Sample Containers, Preservation, and Holding Times
Broadway Corridor - Former USPS P&DC Property
Portland, Oregon

Analysis	Analytical Method	Container	Preservative	Storage Temperature	Holding Time
Soil Samples					
Hydrocarbon Identification	NWTPH-HCID	4-oz wide-mouth glass	None	0 to 6°C	14 Days
TPH as Gasoline	NWTPH-Gx	1 coring device with a 40 ml pre-weighed VOA vial	Methanol	0 to 6°C	14 Days
TPH as Diesel/Oil	NWTPH-Dx	4 oz wide-mouth glass	None	0 to 6°C	14 Days to Extraction 40 days to Analysis
VOCs	EPA 8260	1 coring device with a 40 ml pre-weighed VOA vial	Methanol	0 to 6°C	14 Days
PAHs	EPA 8270-SIM	4 oz wide-mouth glass	None	0 to 6°C	14 Days to Extraction 40 days to Analysis
Metals except Mercury	EPA 6020	4 oz wide-mouth glass	None	0 to 6°C	6 Months
Mercury	EPA 6020	4 oz wide-mouth glass	None	0 to 6°C	28 Days
Cyanide	SM 4500-CN E	4 oz wide-mouth glass	None	0 to 6°C	14 Days
PCBs	EPA 8082	4 oz wide-mouth glass	None	0 to 6°C	1 Year
Water Samples					
Total Metals except Mercury	EPA 200.8	500 ml HPDE bottle	None	4°C	6 Months
Mercury	WPCL M-10	500 ml HPDE bottle	None	4°C	28 Days
Cyanide	SM 4500-CN E	500 ml HPDE bottle	NaOH	4°C	14 Days
Oil and Grease	EPA 1664	1 L wide-mouth glass	None	4°C	14 Days
SVOCs	EPA 8270	500 ml amber	None	4°C	7 Days to Extraction 40 days to Analysis
VOCs	EPA 8260	4 - 40 ml VOA vials	None / HCl, pH<2	4°C	14 Days
TPH as Gasoline	NWTPH-Gx	4 - 40 ml VOA vials	None / HCl, pH<2	4°C	14 Days
TPH as Diesel/Oil	NWTPH-Dx	500 ml amber	HCl, pH<2	4°C	7 Days to Extraction 40 days to Analysis
Organochlorine Pesticides	EPA 8081	1 L amber	None	4°C	7 Days to Extraction 40 days to Analysis
PCBs	EPA 8082	1 L amber	None	4°C	7 Days to Extraction 40 days to Analysis

Notes:
1. The number of required sample containers will be determined and supplied by the analytical laboratory. Some analytical sample aliquots may be collected from the same container.
2. Holding times are from date of sample collection. For organic analyses where extraction is needed, the analysis time listed as the number of days between sample extraction and sample analysis.
3. Total metals for groundwater samples will consist of arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, and zinc.

Acronyms:
°C = Degrees Celsius
Dx = Diesel-range
EPA = Environmental Protection Agency
Gx = Gasoline-range
HCID = Hydrocarbon identification
HCl = Hydrochloric acid
HDPE = High-density polyethylene
L = Liter
ml = Milliliter
NaOH = Sodium hydroxide
NWTPH = Northwest Total Petroleum Hydrocarbons
oz = Ounce
PAHs = Polycyclic aromatic hydrocarbons
PCBs = Polychlorinated biphenyls
RCRA = Resource Conservation and Recovery Act
SIM = Selective ion monitoring
SM = Standard Method
SVOCs = Semivolatile organic compounds
TPH = Total petroleum hydrocarbons
VOA = Volatile organic analysis
VOCs = Volatile organic compounds
WPCL = Water Pollution Control Laboratory



0 1,000 2,000 4,000 Feet

Note: Feature locations are approximate.

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Broadway Corridor – Former USPS P&DC Property
Portland, Oregon

Vicinity Map

150-007-005 04/20

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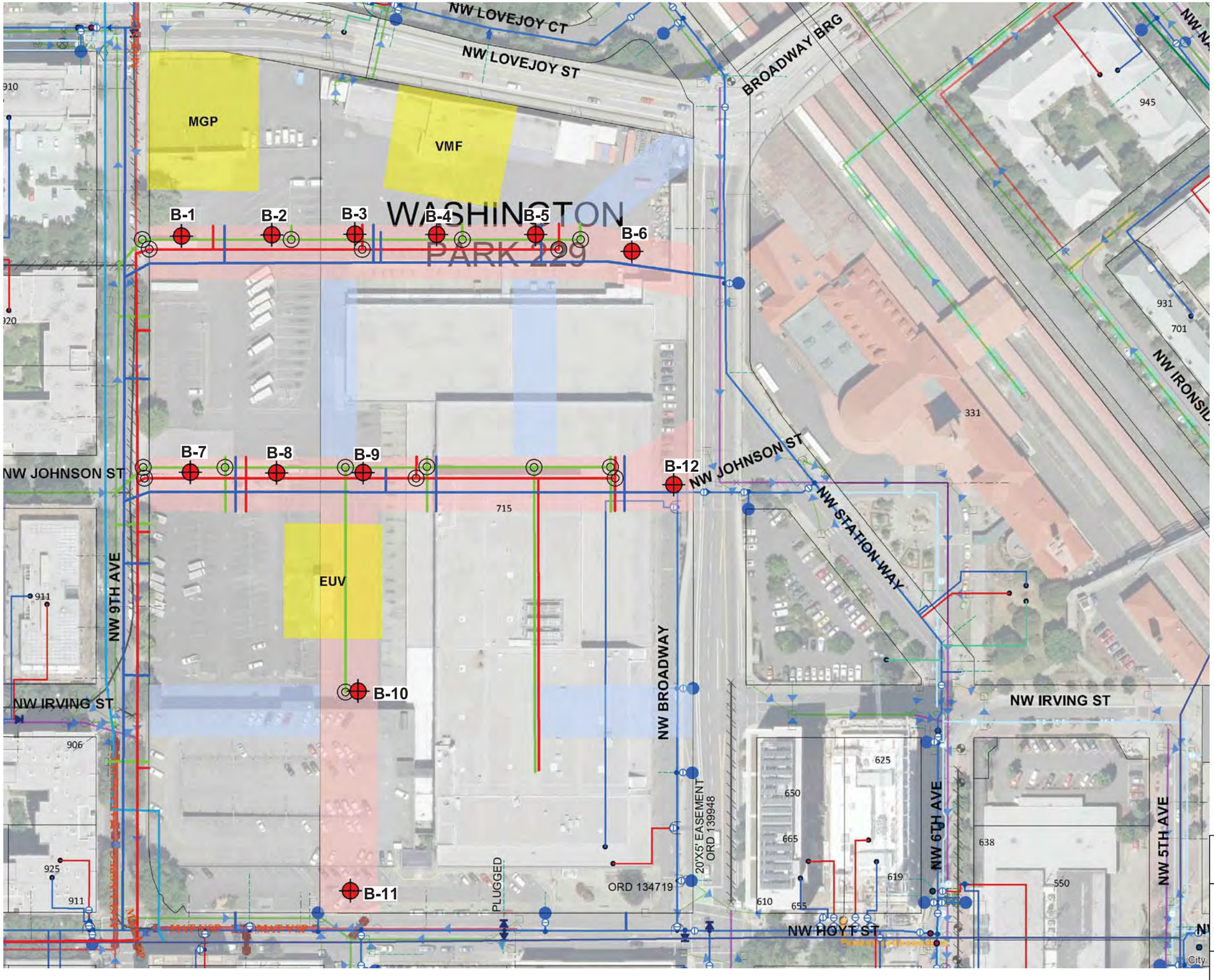
Figure 1

Document Path: \\Pdxsrv\data\Notebooks\150007005_Broadway_Corridor_Reconstruction_Phase_II\GIS\MGIS\150007005-AA (VMap).mxd Date: 4/30/2020 User Name: melissaschweitzer



Legend

- Deep Boring Onsite
- Proposed Water
- Proposed Sanitary
- Proposed Storm
- Future Easement
- Early Action Areas
- Future ROW

Note: Early Action Areas will be addressed separately by others. These include:
MGP = Manufactured Gas Plant
VMF = Vehicle Maintenance Facility
EUV = Electrical Utility Vault

N

0 100 200

Approximate Scale in Feet

Source: Base map prepared from PDF file "USPS-Broadway Onsite Boring Locations.pdf."

Broadway Corridor – Former USPS P&DC Property
Portland, Oregon

Proposed Push Probe Explorations

150-007-005 04/20

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Figure 2

File: \\Pdxsrv\data\Notebooks\150007005_Broadway_Corridor_Reconstruction_Phase_II\CAD\150007005-001 (SPlan).dwg Layout:11x17 - H Date: 04-30-2020 Author: melissaschweitzer