

COMPLIANCE MONITORING PLAN UPDATE

12TH & YESLER REDEVELOPMENT PROPERTY
104-124 12TH AVENUE & 1209 E. FIR STREET
SEATTLE, WASHINGTON 98122

June 21, 2023
Project No. WES-1591



WHITMAN Environmental Sciences

WHITMAN Environmental Sciences

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August 15, 2023

Washington Department of Ecology
Toxics Cleanup Program
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, WA 98008-5452

Attention: Ms. Tamara Welty, LG, LHG

Subject: Request for Opinion
Independent Remedial Action Summary Report
2022-2023 Groundwater Monitoring and
Compliance Monitoring Plan Update
12th & Yesler Redevelopment Property
Seattle, Washington

Dear Ms. Welty:

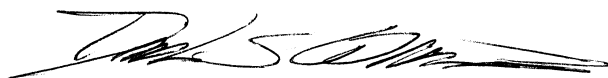
As you are aware, Centric Partners, LLC, has been conducting remedial action and compliance monitoring for the above referenced property. An Independent Remedial Action Summary Report was previously submitted for your review in November 2022. Attached to this letter are two additional site documents; a groundwater monitoring summary report addressing quarterly groundwater monitoring conducted from 2nd Quarter 2022 to 2nd Quarter 2023, and a Compliance Monitoring Plan Update, to address changes to the site monitoring system and outline our intended scope of future monitoring.

The documents show that we have completed cleanup of all previously contaminated soil and groundwater has been in compliance for volatile organic compounds (VOCs) for four consecutive quarterly monitoring events. Groundwater monitoring will be continued in accordance with the extended monitoring program outlined in the Compliance Monitoring Plan Update.

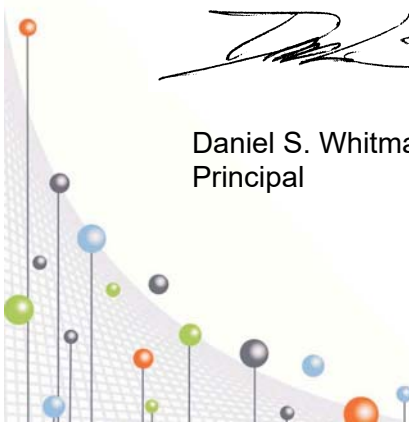
Attached with these documents is a Request for Opinion Form. We would like to request a Partial Sufficiency opinion, as acknowledgment that soil cleanup is complete and that groundwater remediation has effectively reduced VOCs to below MTCA cleanup levels.

Whitman Environmental Sciences has been pleased to have the opportunity to be of service in this matter. If you have any questions regarding the information contained in these reports, or if you need anything further to help with your review, please feel free to contact me.

Respectfully submitted,
Whitman Environmental Sciences



Daniel S. Whitman, L.G.
Principal



Attachments:

2022-2023 Groundwater Monitoring Summary Report
Compliance Monitoring Plan Update



Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

REQUEST FOR OPINION FORM

Use this form to request a written opinion on your planned or completed independent remedial action under the Voluntary Cleanup Program (VCP). Attach to this form the plans or reports documenting the remedial action. Please submit only one form for each request.

Step 1: IDENTIFY HAZARDOUS WASTE SITE

Please identify below the hazardous waste site for which you are requesting a written opinion under the VCP. This information may be found on the VCP Agreement.

Facility/Site Name: TD Auto Body & Repair

Facility/Site Address: 1209 E. Fir St, Seattle, WA and Adjoining Property

Facility/Site No: 2501

VCP Project No.: NW3194

Step 2: REQUEST WRITTEN OPINION ON PLAN OR REPORT

What type of independent remedial action plan or report are you submitting to Ecology for review under the VCP? Please check all that apply.

- Remedial investigation plan
- Remedial investigation report
- Feasibility study report
- Property cleanup* plan (* cleanup of one or more parcels located within the Site)
- Property cleanup* report
- Site cleanup plan
- Site cleanup report
- Other – please specify: Compliance Monitoring Plan, 2022-2023 Groundwater Monitoring Summary Report

Do you want Ecology to provide you with a written opinion on the planned or completed independent remedial action?


Yes No

Please note that Ecology's opinion will be limited to:

- Whether the planned or completed remedial action at the site meets the substantive requirements of the Model Toxics Control Act (MTCA), and/or
- Whether further remedial action is necessary at the site under MTCA.

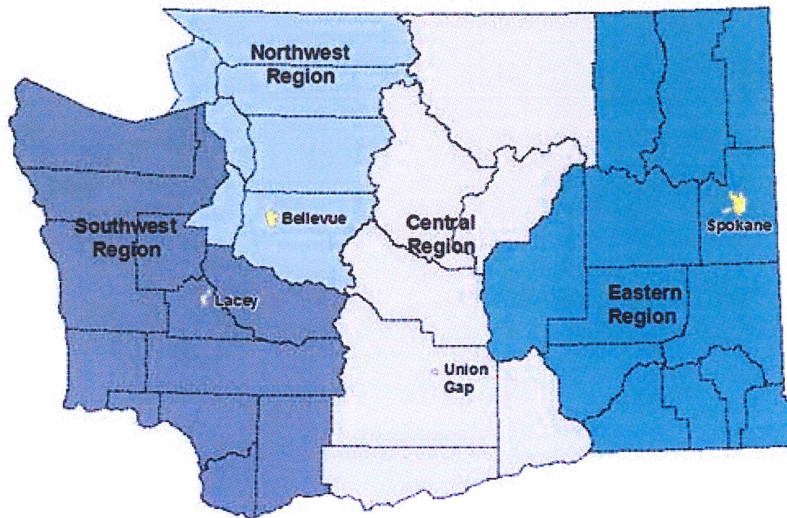
Step 3: REPRESENTATIONS AND SIGNATURE

The undersigned representative of the Customer hereby certifies that he or she is fully authorized to request services from Ecology under the Agreement for this VCP Project.

| | | |
|---|-----------|---------------------------------|
| Name: Daniel Whitman | | Title: Environmental Consultant |
| Signature:  | | Date: 8/2/2023 |
| Organization: Whitman Environmental Sciences | | |
| Mailing address: 6812 16 th Avenue NE | | |
| City: Seattle | State: WA | Zip code: 98115 |
| Phone: 206-523-3505 | Fax: N/A | E-mail: whitenviro@yahoo.com |

Step 4: SUBMITTAL

Please mail your completed form and the independent remedial action plan or report that you are requesting Ecology review to the site manager Ecology assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.



| | |
|---|--|
| <p>Northwest Region: Attn: VCP Coordinator 3190 160th Ave. SE Bellevue, WA 98008-5452</p> | <p>Central Region: Attn: VCP Coordinator 1250 West Alder St. Union Gap, WA 98903-0009</p> |
| <p>Southwest Region: Attn: VCP Coordinator P.O. Box 47775 Olympia, WA 98504-7775</p> | <p>Eastern Region: Attn: VCP Coordinator N. 4601 Monroe Spokane WA 99205-1295</p> |

COMPLIANCE MONITORING PLAN UPDATE

12TH & YESLER REDEVELOPMENT PROPERTY 104-124 12TH AVENUE & 1209 E. FIR STREET SEATTLE, WASHINGTON 98122

EXECUTIVE SUMMARY

Whitman Environmental Sciences (WES) has prepared this Compliance Monitoring Plan (CMP) Update as part of the Independent Remedial Action Plan (IRAP) for Property located at 104-124 12th Avenue and 1209 E Fir Street, in Seattle, Washington (Property). This updated plan addresses changes to the groundwater and soil vapor monitoring systems that will be used to demonstrate compliance with Washington State Model Toxics Control Act (MTCA) Regulations of Chapter 173-340 of the Washington Administrative Code.

The Property consists of approximately 47,433 square feet of land (1.09 acres) located on the east side of 12th Avenue, between the intersections with Yesler Way E and E Fir Street, in Seattle, Washington. The Property is being redeveloped as a seven-story mixed-use building with approximately 279 residential units and ground floor commercial spaces.

The cleanup actions have been coordinated with redevelopment and have included large-scale excavation of the western side of the Property for below-grade levels of the building that effectively remediated all conditions in this portion of the site. The southeastern part of the project has been constructed as a slab-on-grade structure with no below grade parking. Cleanup activities in this part of the project have included limited excavation of contaminated soil, in-situ remediation of groundwater and installation of a chemically-resistant soil vapor barrier, soil vapor monitoring points and a potential mitigation system should vapor intrusion into the structure be detected.

Performance and compliance monitoring was conducted during the excavation phase to ensure that soil cleanup standards were met, that waste soils were properly managed and that groundwater and run-off met METRO discharge standards. These efforts were completed under the original Compliance Monitoring Plan for the project, dated March 27, 2020. This work is completed.

Post-treatment groundwater, soil vapor and indoor air monitoring in the southeastern part of the Property will be used to demonstrate compliance with groundwater and indoor air cleanup levels and to determine if additional soil vapor mitigation will be required. This CMP Update summarizes the sampling, analysis, quality assurance and quality control methods and documentation requirements to demonstrate MTCA compliance at the site.

This summary is for introductory purposes only, and should be used only in conjunction with the full text of this report.

COMPLIANCE MONITORING PLAN UPDATE

**12TH & YESLER REDEVELOPMENT PROPERTY
104-124 12TH AVENUE & 1209 E. FIR STREET
SEATTLE, WASHINGTON 98122**

**June 21, 2023
Project No. WES-1591**

**Prepared for:
Centric Partners LLC
c/o Trent Development
1420 Fifth Avenue, Suite 2200
Seattle, WA 98101**

**By:
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6812 16th Avenue NE
Seattle, Washington 98115
(206) 523-3505**

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COMPLIANCE MONITORING PLAN UPDATE

12TH & YESLER REDEVELOPMENT PROPERTY 104-124 12TH AVENUE & 1209 E. FIR STREET SEATTLE, WASHINGTON 98122

1.0 INTRODUCTION

Whitman Environmental Sciences (WES) has prepared this Compliance Monitoring Plan (CMP) Update as part of the Independent Remedial Action Plan (IRAP) for Property located at 104-124 12th Avenue and 1209 E Fir Street, in Seattle, King County, Washington (Figure 1). The plan is prepared on behalf of Centric Partners LLC. This document is part of the Independent Remedial Action Plan (IRAP) for this project. The purpose of this CMP Update is to present a sampling and analysis plan for to demonstrate compliance with groundwater and indoor air standards under Washington's Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 WAC.

The Property (Figure 2) consists of approximately 47,433 square feet of land (1.09 acres) located on the east side of 12th Avenue, between the intersections with Yesler Way E and E Fir Street, in Seattle, Washington. The Property is being redeveloped as a seven-story mixed-use building with approximately 279 residential units and ground floor commercial spaces. Cleanup is being conducted in conjunction with the redevelopment. The site is currently enrolled in Ecology's Voluntary Cleanup Program (VCP) and has been assigned VCP Project Number NW-3194.

1.1 Environmental Conditions

The Property has been the subject of remedial investigations since at least 2016. The Property has previously housed a service station with underground storage tanks, two auto repair operations, and a tenant space that housed both a screen printing shop and dry cleaner for part of its history.

Prior to construction, investigations delineated petroleum contaminated soil and groundwater related to the former gas station, the former auto repair in the basement of the building at 104 12th Avenue, and a floor sump also located in the 104 12th building. Areas of fill soil containing elevated concentrations of lead were identified in the central part of the Property. Soil sampling identified an area adjacent to the King County warehouse with PCE in soil less than five feet below grade that needed to be excavated and managed as dangerous waste.

A plume of vinyl chloride and related chlorinated volatile organic compounds was detected in shallow groundwater in the southeastern portion of the Property. Based on the groundwater gradient, the plume extended from beneath the warehouse on adjacent King County property onto the Property.

Throughout investigations and remedial actions, groundwater has been shown to contain concentrations of arsenic exceeding the MTCA Method A groundwater cleanup level of 5 ug/l. Site-wide, groundwater arsenic concentrations have been found from less than one ug/l to as high as 2,100 ug/l. Some of the arsenic concentrations are likely related to the geochemical interactions

in soils naturally high in organic matter, biodegradation of petroleum in the formerly contaminated areas, or natural background conditions observed throughout Washington State.¹

Studies have shown that the solubility of arsenic is pH dependent or influenced by the oxidation/reduction state of soil and groundwater, which can be influenced by the degradation of organic matter or petroleum. In some monitoring wells, arsenic concentrations increased after remedial injections, suggesting the highly chemically reducing conditions created by the injection of zero valent iron contributed to the release of arsenic from soil to groundwater in the treatment area.

Additional information regarding soil, groundwater and contaminant conditions are in the IRAP, Independent Remedial Action Summary Report and prior Remedial Investigation Reports, which are incorporated by reference.

1.2 Remedial Actions

The remedial actions for this site have occurred as two separate operations. Initially, in-situ groundwater treatment was conducted in the southeastern parking lot while it remained unused. In this area, groundwater treatment was accomplished by enhanced reductive dechlorination (ERD) via injections of zero valent iron (ZVI) and a finely particulate activated carbon medium, proprietary products of Regenesis Corporation. These products were initially injected in 2020 throughout the lateral and vertical extent of the plume. A much more concentrated groundwater treatment zone was established along the northern edge of the parking lot through a second round of injections in August 2022. Access to this northern edge of the treatment zone will remain after construction is complete, if additional injections are necessary to maintain the integrity of the treatment zone.

The western part of the Property was remediated separately, by excavation in conjunction with redevelopment. The excavation was conducted to a depth that removed all contaminated soil and the saturated seepage zones that were identified prior to cleanup. Based on the results of performance and confirmation sampling throughout the mass excavation, all petroleum hydrocarbon, lead and PCE impacted soil within the Property has been removed and adequately documented. No further soil compliance monitoring is warranted and the previously investigated groundwater seepage zones have been completely removed.

This CMP Update addresses changes in future groundwater, soil vapor and indoor air monitoring, as the current monitoring network is different than that documented in the original CMP. The western part of the building has been constructed with a sealed “bathtub” foundation below the static groundwater level that cannot be penetrated, so no further groundwater monitoring can be conducted at the former locations of some of the original investigative monitoring wells. Other wells in the groundwater treatment area have been decommissioned or replaced and additional monitoring wells and soil vapor monitoring points have been installed.

¹ Ecology’s study “*Natural Background Groundwater Arsenic Concentrations in Washington State*” (Ecology publication No. 14-09-044), found statewide natural background ranges from 4.9 – 15.4 µg/L. The study found the Puget Sound Basin had a background arsenic threshold value of 8 ug/L, above the MTCA Method A groundwater cleanup level. The data used to establish this background level was from drinking water wells and did not include any samples from within the City of Seattle, so may not represent local conditions.

2.0 COMPLIANCE MONITORING PARAMETERS

Monitoring has been required throughout the work and post-remediation period to demonstrate compliance with applicable regulations and good work practices. This section defines the contaminants of concern that will need to be monitored and the standards that are to be applied to compliance. In particular, numeric cleanup levels (CULs) for individual contaminants of concern have been established under MTCA and the intent of this plan is to demonstrate that these CULs are met.

2.1 Contaminants of Concern

Prior groundwater and soil vapor monitoring has shown that the remaining contaminants of concern (COCs) for monitoring are volatile organic compounds (VOCs) in both groundwater and soil vapor, and dissolved concentrations of arsenic in groundwater.

The only remaining impacted groundwater seepage zone that was not completely removed is within the southeastern part of the Property. Pre-remediation sampling found the volatile organic compounds tetrachloroethene (PCE), trichloroethene (TCE), cis 1,2-dichloroethene (cis 1,2DCE) and vinyl chloride in groundwater samples from this area. In other portions of the Property, benzene, naphthalene and 1,2,4-trimethylbenzene were detected at concentrations above cleanup levels. These areas have been removed, but were upgradient of the groundwater treatment area, so there is a potential that residual concentrations, if any, could eventually reach the remaining monitoring well network. Dissolved arsenic has also been found in prior groundwater sampling throughout the site.

Prior sampling of soil vapor on the Property has detected a variety of volatile organic compounds. During investigations, only naphthalene and vinyl chloride were detected in soil vapors in the southeastern part of the Property at levels that exceeded Ecology's soil vapor screening levels. Other compounds exceeding Sub-Slab Soil Gas Screening Levels were in the portions of the site that has been fully excavated. All of the detected compounds that exceeded screening levels are subject to future monitoring.

Table 1 identifies the list of substances subject to future monitoring.

**Table 1
Contaminants of Concern for Future Monitoring**

| Parameter | Maximum Detected Groundwater Concentration (ug/l) | Maximum Detected Soil Gas Concentration (ug/m³) |
|-------------------------|--|---|
| Arsenic (dissolved) | 2,100 | -- |
| Benzene | 11 | 31 (Below SL) |
| Bromodichloromethane | ND (<5) (Below CUL) | 8.5 |
| Chloroform | 3.8 | 15 |
| cis-1,2- Dichloroethene | 17 | 57 (Below SL) |
| Naphthalene | 8.9 | 18 |
| Tetrachloroethene | 2.1 (Below CUL) | ND (<20) |
| Trichloroethene | 11 | 8.2 (Below SL) |
| 1,2,4 Trimethylbenzene | 180 | 170 (Below SL) |
| Vinyl Chloride | 1.2 | 65 |

Table Notes:

(Below CUL) - Maximum reported value is below MTCA Method A or B Groundwater Cleanup Level from January 2023 CLARC database.

(Below SL) - Maximum reported value is below Ecology's Soil Gas Screening Level from January 2023 CLARC database.

2.2 Model Toxics Control Act Cleanup Levels

Standard Method A groundwater cleanup criteria will be used to determine compliance with MTCA groundwater cleanup standards for vinyl chloride and all other VOCs for which a Method A value has been established. Ecology's Puget Sound Basin natural background threshold of 8 ug/L will be used to determine compliance with MTCA groundwater cleanup standards for arsenic, until a local natural background level can be established, or until further implementation guidance is available from Ecology.

Standard Method B cleanup criteria will be used to determine compliance with MTCA indoor air cleanup levels.

Table 2 summarizes the MTCA Method A, natural background or Method B groundwater and indoor air CULs (where applicable) for the contaminants of concern identified above. Where no Method A cleanup criteria is available, the MTCA Method B direct contact standard formula value or indoor air CUL is included. These values will be used for performance monitoring and final confirmation sampling. Media found to be at or below these concentrations will be considered in compliance with MTCA cleanup standards.

**TABLE 2
Model Toxics Control Act Cleanup Criteria
for Monitored Parameters**

| Parameter | Groundwater Cleanup Criteria (ug/l) | Indoor Air Cleanup Criteria (ug/m³)^B |
|------------------------|--|---|
| Arsenic | 5 ^A / 8 ^{NB} | -- |
| Benzene | 5 ^A | 0.321 |
| Bromodichloromethane | 160 ^B | 0.068 |
| Chloroform | 1.4 ^B | 0.109 |
| cis-1,2-Dichloroethene | 16 ^A | 18.3 |
| Naphthalene | 160 ^A | 0.0735 |
| Tetrachloroethene | 5 ^A | 9.62 |
| Trichloroethene | 5 ^A | 0.334 |
| 1,2,4-Trimethylbenzene | 80 ^B | 27.4 |
| Vinyl Chloride | 0.2 ^A | 0.284 |

Table Notes:

A - MTCA Method A cleanup levels

B - MTCA Method B standard formula values for direct contact and indoor air per WA Dept. of Ecology CLARC database, January 2023.

NB - Puget Sound Basin Natural Background Concentration per Ecology Publication No. 14-09-044, 2022

The cleanup actions described in the IRAP and Summary Report resulted in complete removal of all contaminated soil and treatment of all volatile organic contaminants of concern in groundwater exceeding these cleanup criteria. With removal and treatment of these sources, on-site generation of soil vapors will be minimized. However, the contaminants beneath the adjacent King County warehouse will remain as a potential source for vapor intrusion for the foreseeable future. Vapor intrusion barriers have been installed as part of the remedial actions. Sub-slab soil vapor monitoring points and indoor air monitoring locations have been established as part of this CMP.

Arsenic in groundwater has not been fully remediated and continued monitoring is anticipated as part of remedial investigations. Arsenic is not volatile, so is not a parameter to be measured in soil vapor or indoor air.

2.3 Points of Compliance

The point of compliance is the location where the enforcement limits will be measured and cannot be exceeded (Chapter 173-200-060 WAC). Once the CULs have been attained at the defined points of compliance, any residual impacts will no longer be considered a threat to human health or the environment.

2.3.1 Point of Compliance for Groundwater

In accordance with WAC 173-340-720(8)(a)(b), the point of compliance for groundwater is defined as the uppermost level of the saturated zone extending vertically to the lowest depth that could potentially be impacted by the contaminants of concern. The monitoring well network bounds the formerly impacted groundwater conditions on-site and in the downgradient direction.

Because some of the original source areas in the western part of the Property were fully excavated, they can no longer be directly monitored. The method of construction of the building precludes installing monitoring wells near the original locations. Monitoring wells downgradient of this portion of the site will need to be used as conditional points of compliance. MW-13, MW-18 and GEO B-7 are in the positions most immediately downgradient of the excavated areas.

2.3.2 Point of Compliance for Indoor Air

In accordance with WAC 173-340-750(6), the point of compliance will be the ambient air throughout the Property. For monitoring purposes, indoor air quality in the completed structure will be considered ambient air. This Compliance Monitoring Plan Update outlines performance and compliance sampling to demonstrating ambient air conditions on the Property.

3.0 GROUNDWATER MONITORING NETWORK

During demolition and site preparations, all well locations in the western part of the Property were excavated to a depth that completely removed the full depth of the well and monitored water-bearing soil unit. Figure 3 shows the current groundwater monitoring network.

Most wells around the groundwater treatment area were decommissioned during construction due to interference with foundations or below ground structures. This included MW-1, MW-1S, MW-1D, MW-2, MW-4, MW-5, MW-11, MW-12, MW-15, MW-16, GEO B-7 and GEO B-9, as shown in Figure 2. Six of the wells were subsequently replaced at locations as near as possible to the original wells, at locations where they did not interfere with construction. These new replacement wells were designated MW-1R, MW-5R, MW-12R, MW-15R, GEO B-7R and GEO B-9R. Three additional wells have been installed, including two off-site wells downgradient of the treatment area (MW-17 and MW-18) and an upgradient well off-site to the north of the Property along E. Fir Street (MW-19).

All monitoring wells on the project site are currently monitored on a quarterly basis. Table 3 outlines the confirmational monitoring program. Once sampling demonstrates four consecutive quarters with no volatile organic compounds exceeding cleanup levels, monitoring for VOCs will be conducted on a more limited set of wells on a semi-annual basis as part of the extended compliance monitoring program discussed below.

Arsenic will be monitored quarterly in all wells to demonstrate long-term trends and develop a data set that can be used to evaluate the site and surrounding area natural background concentrations. Sampling may be suspended from wells that demonstrate at least four consecutive quarter with arsenic concentrations below the Puget Sound Basin Natural Background threshold value of 8 ug/l, a more site-specific natural background calculation, or a site specific Method B cleanup level, if established in the future.

3.1 Groundwater Monitoring Methods

Each monitoring event consists of opening the selected well, measuring the depth to water from a reference point on the top of the well casing, and sampling the well. Water level measurements are taken using a decontaminated electronic water level indicator after allowing the water level to equilibrate.

Groundwater well sampling is performed using a combination of passive diffusion bag samplers (PDBs) and purging and sampling with a peristaltic pump and dedicated polyethylene tubing. PDB samplers are used to collect samples in and around the groundwater treatment area for volatile organic compound analyses. Purging and sampling with a peristaltic pump is conducted to sample for dissolved arsenic, and may be used for VOC sampling of those wells not in or around the treatment area, such as MW-13 and MW-19.

The groundwater treatment included injection of very finely milled activated carbon, which adsorbs organic compounds from the groundwater onto the carbon particles. These particles eventually settle from the groundwater and adhere to soil grains. However, if groundwater sampling disturbs the carbon and include it in the sample, the analyses may detect organic contaminants that are held on the carbon grains, rather than the concentration dissolved in groundwater. PDB samplers avoid this inclusion of carbon by depending on diffusion to equilibrate contaminant concentrations in the surrounding groundwater with a volume of purified water inside the bag.

The bag is constructed of low density polyethylene that acts as a semi-permeable membrane that allows chlorinated volatile organic compounds to pass through it. The sampler is filled with laboratory-prepared de-ionized water, sealed and suspended in the well near the middle of the

water column for a period of at least 21 days. Volatile organic compounds in the groundwater diffuse across the membrane into the bag until equilibrium is established between the groundwater and the de-ionized water. For sample preparation, the sampler is removed from the well, unsealed and the contents placed in standard 40-ml septum-sealed vials for transportation to the laboratory.

PDB samplers cannot be used to sample for dissolved metals. Groundwater samples for metals analyses are collected by purging the well using a peristaltic pump until temperature, pH, oxidation-reduction potential (ORP), specific conductance, and concentrations of total dissolved solids and dissolved oxygen have stabilized. These field parameters are measured and recorded during sampling. Typically purging will remove approximately three standing water volumes of the well before stabilization occurs. If the monitoring well is completely dewatered during purging, samples will be collected when the groundwater in the well has recovered to at least 80 percent of the pre-purge casing volume.

Samples collected for dissolved arsenic analyses are field filtered through single-use 0.45 micron filters, then placed in preserved laboratory-prepared bottles appropriate for the analyses.

3.2 Groundwater Sample Analyses

Groundwater samples are submitted to an Ecology-accredited analytical laboratory. Groundwater performance and confirmation samples are analyzed for VOCs by EPA Method 8260C and dissolved arsenic by EPA Method 6020. Analyses are conducted with reporting limits appropriate for direct comparison to regulatory criteria. The results will be compared to the groundwater CULs outlined in Table 2 of this CMP Update.

4.0 SOIL VAPOR AND INDOOR AIR MONITORING

Soil vapor and indoor air monitoring will be conducted to demonstrate that cleanup has been protective for the interior spaces of the building. Soil vapor sampling is considered performance sampling, useful to evaluate whether or not sub-slab venting is warranted. Indoor air sampling is considered compliance confirmational sampling for regulatory purposes.

Soil vapor and indoor air monitoring events will be conducted beginning once the first floor of the slab-on-grade portion of the building has been enclosed to the degree that interior spaces represent the conditions that will be present during occupancy. Sampling will be conducted in summer and winter, approximately six-months apart, to assess seasonal variation within the vapor pathway. Sampling will be continued until two consecutive sampling events demonstrate compliance with MTCA Method B Indoor Air Cleanup Levels and Sub-slab Soil Gas Screening Levels for the identified COCs listed in Table 1.

The sub-slab vapor monitoring points will remain in place and future samples may be collected as part of the extended compliance monitoring program, if groundwater concentrations of VOCs rebound to concentrations that exceed Ecology's Vapor Intrusion Groundwater Screening Levels as published in the current CLARC database at the time of sampling. Table 5 outlines the sub-slab monitoring program.

Once indoor air compliance is established, indoor air monitoring for VOCs will be conducted at 15 month intervals until a five-year review is conducted, to account for potential seasonal variations.

As part of the extended compliance monitoring program discussed below, additional samples will be taken any time that groundwater or sub-slab vapor concentrations suggest VOC rebound is occurring to a degree that could influence indoor air concentrations.

4.1 Soil Vapor Monitoring Methods

Soil vapor performance monitoring is conducted from three dedicated vapor monitoring points installed beneath the slab-on-grade portion of the building that overlies the groundwater treatment area. The monitoring points are shown in Figure 3. These monitoring points consist of one-inch long porous metal collectors attached to teflon tubing that extends out to the perimeter of the building. The tubing is protected inside sealed PVC conduits extending from the vapor monitoring point to the sampling port. These sampling points are purged using a peristaltic pump to draw sub-slab vapors the length of the tubing before connecting to a one liter laboratory-prepared SUMMA canister for sampling. The canisters are equipped with a flow controller calibrated by the laboratory for soil vapor sampling. The date, time, initial and final canister vacuum and duration of sampling will be recorded. The samples will be handled following appropriate chain of custody procedures.

4.2 Indoor Air Monitoring Methods

Indoor air confirmational monitoring will be conducted using six-liter laboratory-prepared SUMMA canisters in two interior locations above the groundwater cleanup area and one outdoor background location. The indoor air monitoring points are shown in Figure 3. The canisters will be equipped with an individually certified flow controller calibrated by the laboratory for a 24-hour sample collection. The SUMMA canister intakes will be placed at the approximate height of an average adult's breathing zone. The units or rooms where sampling is conducted will remain generally closed during the sampling period, but no other special preparations, sealing or ventilation will be conducted prior to or during the tests.

The date, time, initial and final canister vacuum and duration of sampling will be recorded. The samples will be handled following appropriate chain of custody procedures.

4.3 Sub-slab and Indoor Air Sample Analyses

After collection, the samples will be submitted to an Ecology-accredited analytical laboratory for analysis by EPA Method TO-15 for the volatile organic compounds in Table 1. Analyses will be conducted with reporting limits appropriate for direct comparison to sub-slab soil vapor screening levels and MTCA Method B air cleanup levels, respectively. Ambient outdoor air concentrations detected in the background sample will not be attributed to soil vapor intrusion and can be subtracted from any reported concentrations in the indoor air samples. Resultant concentrations will be compared to the indoor air CULs outlined in Table 2 of this CMP Update.

5.0 EVALUATING CONFIRMATIONAL MONITORING DATA

To confirm that CULs have been achieved, the concentrations of the COCs will be compared to their respective CULs. MTCA requires that regardless of the data analysis methods used, no single sample concentration be greater than two times the established site cleanup level, and less than 10 percent of samples may exceed the established site cleanup levels.

MTCA requires that if CULs are based on short-term or acute toxic effects on human health or the environment, an upper percentile concentration shall be used to evaluate compliance. For CULs based on chronic or carcinogenic threats, the true mean concentration shall be used to evaluate compliance with ground water CULs. Compliance with groundwater CULs are determined for each ground water monitoring well.

If applicable, the data may be evaluated in accordance with the Ecology's *Statistical Guidance for Ecology Site Managers* (Ecology Publication 92-54). As detailed in the guidance, confirming whether the Property has met cleanup standards is based on a comparison of the 95th percent upper confidence limit on the mean (UCL95) with the defined CUL. If statistical methods are used, the confirmational data will be tested for conformance with distributional assumptions (normal versus lognormal) and the UCL95 calculated based on the methods described in Ecology's guidance document. The Property is considered remediated when the UCL95 for each indicator contaminant of concern is less than its respective CUL.

6.0 EXTENDED CONFIRMATIONAL MONITORING

An extended monitoring period can be used to demonstrate whether or not contaminants are located adjacent to or migrating onto the Property from an off-site source. Separate extended groundwater monitoring programs are planned for sampling of VOCs and dissolved arsenic. Extended indoor air monitoring will also be conducted.

Once groundwater compliance has been demonstrated for VOCs, a limited subset of wells will be monitored semi-annually for a period of five years. Additional monitoring beyond that will be conditioned on the findings of a periodic review. For this extended monitoring, wells MW-1R, MW-5R, MW-12R, MW-15R, MW-18, and GEO B-7(Figure 3) will be sampled to demonstrate whether or not VOC contaminants are breaching the treatment zone or extending beyond the Property boundary point of compliance.

Quarterly compliance monitoring for dissolved arsenic may extend beyond the time when VOCs have been demonstrated to be in compliance. Once arsenic is demonstrated to be in compliance with cleanup standards, wells MW-1R, MW-5R, MW-12R, MW-15R, MW-18, MW-19 and GEO B-7(Figure 3), will also be sampled semi-annually for dissolved arsenic during the extended confirmational monitoring period. Table 4 outlines the extended confirmational monitoring program for groundwater.

Once indoor air compliance is established, indoor air monitoring for VOCs will be conducted at 15 month intervals until a five-year review is conducted, to account for potential seasonal variations. Additional samples will be taken any time that groundwater concentrations suggest VOC rebound is occurring to a degree that could influence indoor air concentrations. Table 5 outlines the extended confirmational monitoring program for indoor air.

7.0 QUALITY ASSURANCE/QUALITY CONTROL

Field and laboratory activities must be conducted in such a manner that the results be valid and meet the quality objectives for this project. Guidance for QA/QC is derived from the protocols

developed for the cited methods within EPA's 1986 multi-volume document, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (also known as SW846), and the current EPA Functional Guidelines for Organic Data Quality Review.

QA/QC duplicate samples will be collected randomly during performance and confirmational sampling, at a rate of approximately one duplicate per 25 samples. All QA/QC samples will be assigned a unique sample identifier and number not readily identifiable as a duplicate to laboratory personnel.

QA/QC documentation provided by the laboratory will be reviewed for each sample set. Any data flags or out of control conditions will be evaluated to determine whether or not the reporting meets the data quality objectives. Flagged data may be considered estimates. Estimated data may be used for confirmational monitoring if the reported result is at least 50% above or below a site CUL. Otherwise, the analysis or sampling may need to be repeated to determine actual compliance.

QA/QC documentation will be included with all laboratory reports in the documentation of this project.

8.0 DOCUMENTATION REQUIREMENTS

The documentation generated for the project will be presented in cleanup action summary reports prepared upon completion of sampling. The Independent Remedial Action Summary Report (November 5, 2022) documents the full soil sampling, contaminated materials management and compliance status for soils throughout the Property, as well as the groundwater remedial actions and initial groundwater performance monitoring. Compliance monitoring of groundwater and indoor air will be similarly documented in future reports.

The reports will include:

- A summary of all sampling and analytical results for groundwater, soil vapor and indoor air samples;
- Documentation of any changes to the groundwater monitoring network, including a summary of any destroyed wells, replacement wells and any new wells added to demonstrate compliance;
- WES' conclusions pertaining to the cleanup action;
- WES' recommendations for continued monitoring of indoor air and groundwater throughout the extended confirmational monitoring period.

All current and future groundwater and indoor air compliance data will be entered into Ecology's Environmental Information Management (EIM) system, as required under the VCP.

8.1 Subsequent Reporting

Future reports will consist of brief confirmational monitoring reports addressing each indoor air and groundwater sampling event. Each will contain a summary of all air and groundwater monitoring to that date, along with any recommendations for future confirmational monitoring.

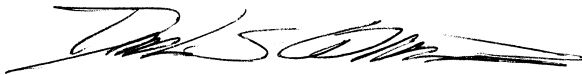
8.2 Documentation Management

A document control system to be implemented during the cleanup action includes the following elements, as appropriate: Field Report Forms, Photo Documentation Files, Material Import and Export Summary Forms, Groundwater Purge and Sample Forms, Sample Summary Forms and Sample Chain of Custody Forms. Disposal manifests for the waste generated on the Property will be maintained and submitted with the project documentation. All project documentation will be retained in WES files for a minimum of 10 years after completion of the cleanup action.

9.0 CLOSURE

Whitman Environmental Sciences has been pleased to be of service in this matter. If you have any questions regarding the information contained in this report, or if we may be of any further assistance, please feel free to contact me.

Respectfully submitted,
Whitman Environmental Sciences



Daniel S. Whitman, LG
Principal



DANIEL S. WHITMAN

10.0 REFERENCES

WES (2019a), Whitman Environmental Sciences, *Independent Remedial Action Plan, Proposed Redevelopment Property, 104-124 12th Avenue & 1209 E. Fir Street, Seattle, Washington*, Project No. WES-1591, April 2, 2019

WES (2019b), Whitman Environmental Sciences, *Remedial Investigation Summary Report, Potential Redevelopment Property, 104-124 12th Avenue & 1209 E. Fir Street, Seattle, Washington* Project No. WES-1591, October 26, 2019

WES (2020), Whitman Environmental Sciences, *Source Investigation Summary Report, Proposed Redevelopment Property, 104-124 12th Avenue & 1209 E. Fir Street, Seattle, Washington* Project No. WES-1591, October 26, 2019

WES (2022), Whitman Environmental Sciences, *2020-2022 Groundwater Monitoring Summary 104-124 12th Avenue & 1209 E. Fir Street, Seattle, Washington* Project No. WES-1591, May 10, 2022

WES (2022), Whitman Environmental Sciences, *Independent Remedial Action Summary Report, 12th & Yesler Redevelopment Project, 104-124 12th Avenue & 1209 E. Fir Street, Seattle, Washington* Project No. WES-1591, November 5, 2022

Washington State Department of Ecology (Ecology), *Model Toxics Control Act Regulation and Statute, Chapter 173-340 WAC*, Revised 2013.

Ecology, *Guidance for Remediation of Petroleum Contaminated Sites*, Publication No. 10-09-057, November 2001, Revised June 2016.

Ecology, *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, Publication No. 09-09-47. (Draft) October, Revised Feb. 2016 and April 2018. with Vapor Intrusion Table Update, April 6, 2015

Ecology, *Cleanup Levels and Risk Calculation (CLARC)*, January 2023 Update.

TABLES

TABLE 3
Summary of Required Groundwater Performance and Confirmational Sampling
104 - 124 12th Avenue & 1209 E. Fir Street, Seattle, Washington

| GROUNDWATER PERFORMANCE AND CONFIRMATION MONITORING SCHEDULE | | | | | | | |
|--|----------------------------|-------------------|-------------------|---|----|--------------|-----------------------|
| Until four consecutive quarters show all wells in compliance for VOCs | | | | | | | |
| Monitoring Wells | Minimum Sampling Frequency | Required Analyses | | Field Parameters to Measure for Stabilization | | | |
| | | VOCs | Dissolved Arsenic | Dissolved Oxygen | pH | Conductivity | Redox Potential (ORP) |
| MW-1R | Quarterly | X | X | X | X | X | X |
| MW-5R | | X | X | X | X | X | X |
| MW-10 | | X | X | X | X | X | X |
| MW-12R | | X | X | X | X | X | X |
| MW-13 | | X | X | X | X | X | X |
| MW-15R | | X | X | X | X | X | X |
| MW-17 | | X | X | X | X | X | X |
| MW-18 | | X | X | X | X | X | X |
| MW-19 | | | X | X | X | X | X |
| GEO B-7R | | X | X | X | X | X | X |
| GEO B-9R | | X | X | X | X | X | X |

VOC and Dissolved Arsenic compliance is determined separately.

Sampling for VOCs can enter Extended Confirmation Monitoring Program after four consecutive clean quarters are obtained.

If VOCs exceed Cleanup Level in any sample, resume quarterly performance sampling of the well which exceeded cleanup level and at least two adjacent or downgradient wells until four consecutive clean quarters are obtained in all sampled wells.

Dissolved Arsenic performance sampling continues until data set allows calculation of site specific natural background condition or modified Method B groundwater cleanup level.

Dissolved arsenic compliance evaluated based on Puget Sound Basin threshold value of natural background level, site specific natural background or modified Method B cleanup level calculation.

TABLE 4
Summary of Extended Groundwater Confirmational Sampling
104 - 124 12th Avenue & 1209 E. Fir Street, Seattle, Washington

| EXTENDED CONFIRMATION MONITORING SAMPLES | | | | | | | |
|--|---|-------------------|-------------------|---|----|--------------|-----------------------|
| From four consecutive quarters with all wells in compliance for VOCs to 5-Year Periodic Review | | | | | | | |
| Monitoring Wells | Minimum Sampling Frequency | Required Analyses | | Field Parameters to Measure for Stabilization | | | |
| | | VOCs | Dissolved Arsenic | Dissolved Oxygen | pH | Conductivity | Redox Potential (ORP) |
| MW-1R | Semi-Annual, rotating ½ sampled in Summer and Winter, 2nd ½ sampled Spring and Fall | X | X | X | X | X | X |
| MW-5R | | X | X | X | X | X | X |
| MW-12R | | X | X | X | X | X | X |
| MW-15R | | X | X | X | X | X | X |
| MW-17 | | X | X | X | X | X | X |
| MW-18 | | X | X | X | X | X | X |
| GEO B-7 | | X | X | X | X | X | X |
| If VOCs exceed Cleanup Level in any sample, return to quarterly performance sampling until four consecutive clean quarters are obtained in all wells. Conduct soil vapor sampling if concentrations exceed groundwater screening levels. | | | | | | | |

Table Notes:

VOCs- Volatile Organic Compounds by EPA Method 8260C

Dissolved Arsenic by EPA Method 6020, on field filtered samples passed through 0.45 u filter media

Dissolved Oxygen - by field meter compliant with EPA Science and Ecosystem Support Division (SESD) PROC-106-R4

pH - by field meter compliant with EPA SESD PROC-100-R3

Conductivity - by field meter compliant with EPA SESD PROC-101-R6

ORP - Oxidation Reduction Potential by field meter compliant with EPA SESD PROC-113-R2

TABLE 5
Summary of Sub-slab Soil Vapor & Indoor Air
Performance and Confirmational Sampling
104 - 124 12th Avenue & 1209 E. Fir Street, Seattle, Washington

| SUB-SLAB PERFORMANCE SAMPLING - Until two consecutive sampling events are obtained with all samples in compliance | | |
|--|---|---|
| <i>Sampling Point</i> | <i>Minimum Sampling Frequency</i> | <i>Monitored Parameters</i> |
| VP-1 | Summer and Winter | Benzene Bromodichloromethane* Chloroform* cis-1,2- Dichloroethene Naphthalene Tetrachloroethene Trichloroethene 1,2,4 Trimethylbenzene Vinyl Chloride |
| VP-2 | | |
| VP-3 | | |
| Resume sub-slab sampling if groundwater VOCs rebound above groundwater screening levels | | |
| INDOOR AIR CONFIRMATIONAL SAMPLES - Until two consecutive sampling events are obtained with all samples in compliance | | |
| <i>Ground Floor Indoor Air Sampling Points</i> | <i>Minimum Sampling Frequency</i> | <i>Monitored Parameters</i> |
| IA-1 | Summer and Winter | Same as Above |
| IA-2 | | |
| Outdoor Ambient Air | | |
| INDOOR AIR EXTENDED CONFIRMATIONAL SAMPLING | | |
| IA-1 | 15 month intervals until 5-year review | Same as Above |
| IA-2 | | |
| Outdoor Ambient Air | | |
| Resume indoor air sampling if groundwater VOCs rebound above groundwater screening levels | | |

Table Notes:

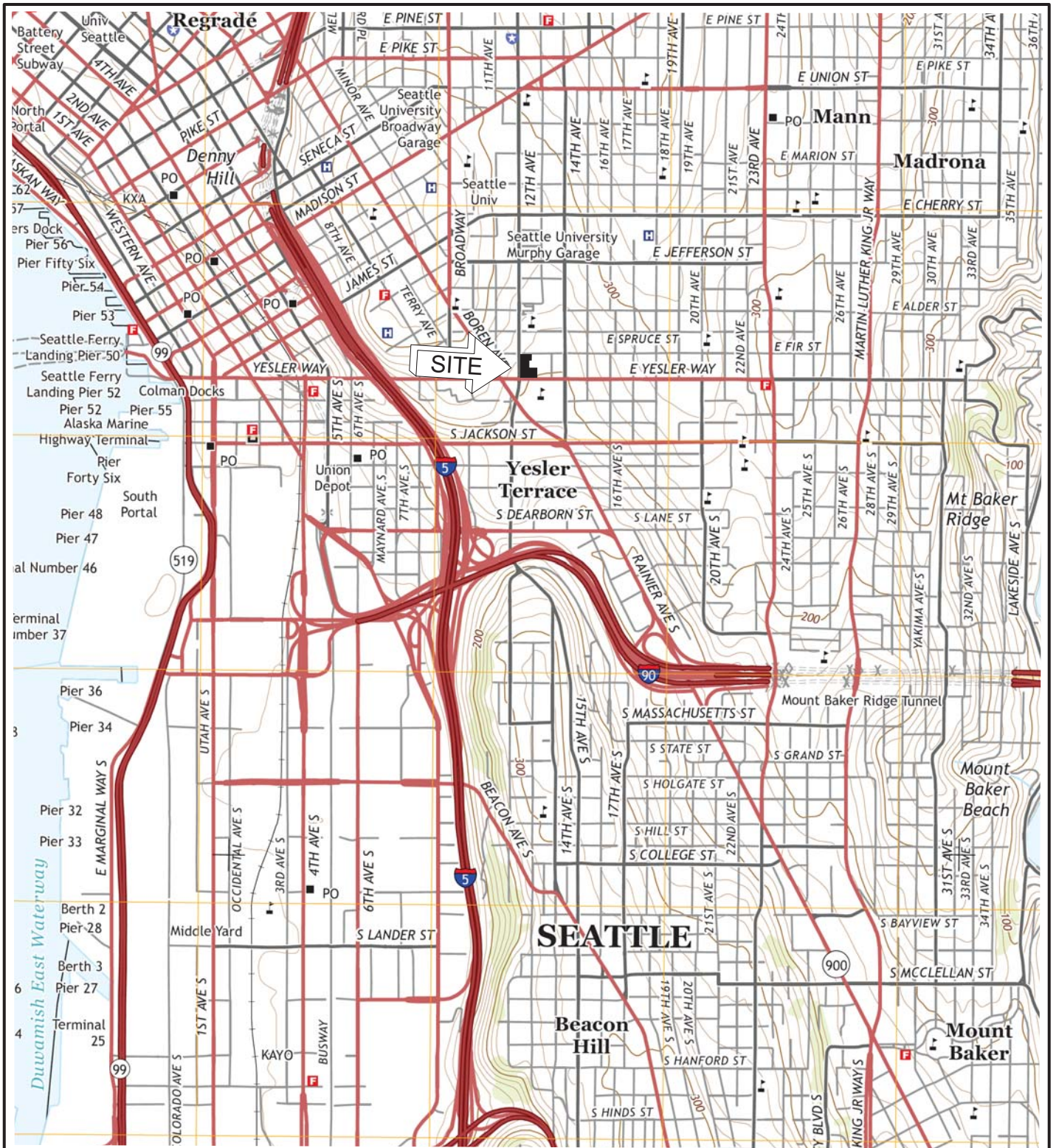
Performance and Confirmational sampling begins once the building envelope is enclosed.

Laboratory analyses of indoor air samples by EPA Compendium Method TO-15.

Reported concentrations in outdoor ambient air subtracted from reported indoor air concentrations for comparison to compliance criteria.

* Chloroform and bromodichloromethane are likely generated from treated municipal water and were originally detected in deep soil gas, not associated with other site contaminants. Four consecutive quarterly samples will be tested during the performance monitoring period. If not detected above CUL, testing for these parameters will be suspended.

FIGURES



North



Scale 1 : 24,000

From USGS

Figure 1 - Site Map

104-124 12th Avenue & 1209 E. Fir Street
Seattle, Washington 98122

Project No. WES - 1591

Date June 11, 2017

File ID. 1591F1

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Legend

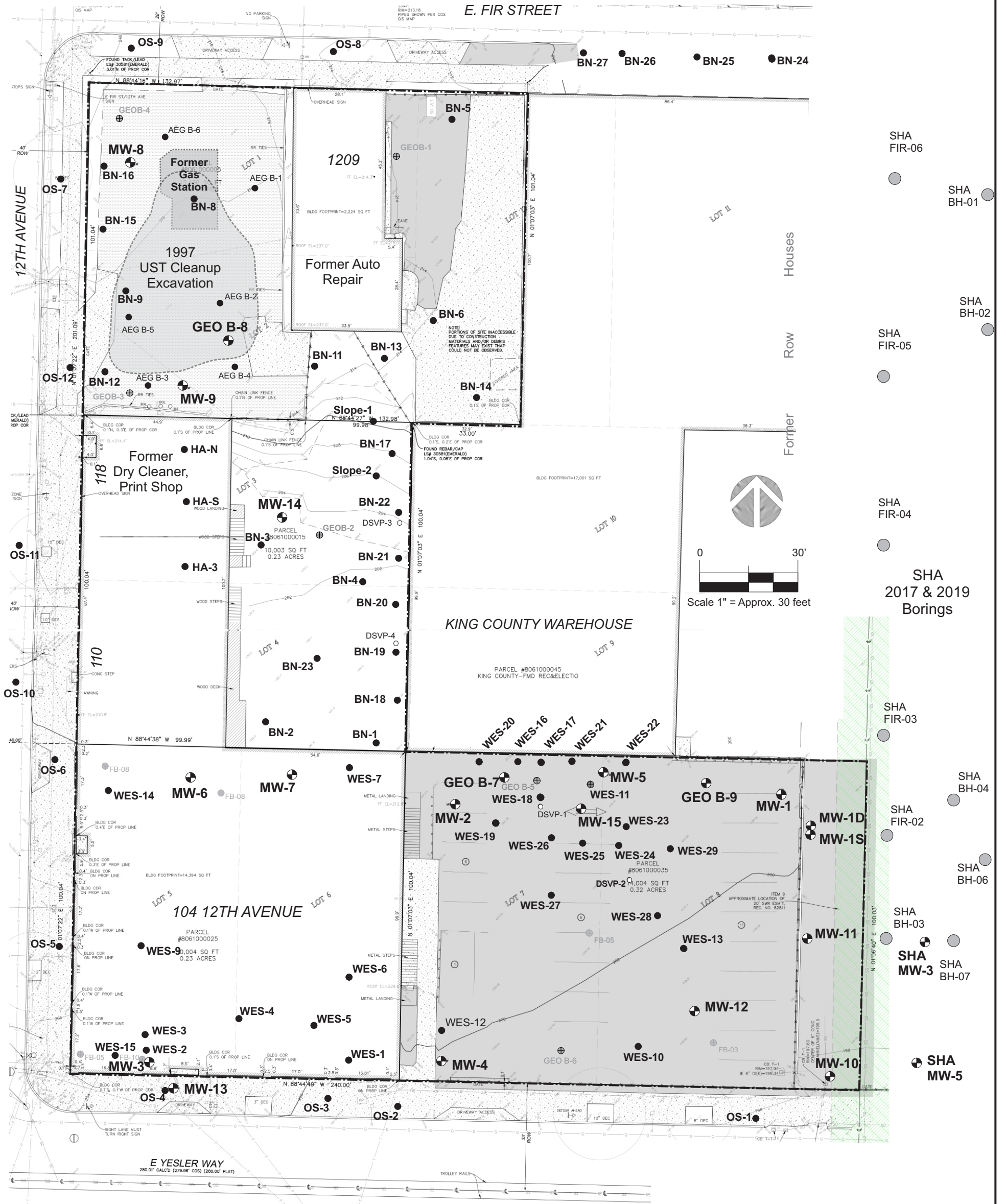
- ⊕ Approximate Location of Monitoring Well
- Approximate Location of Soil Borings (2016 -2020)
- Approximate Location of Soil Vapor Probe
- ⊕ Approximate Location of Geotechnical Soil Borings (Soil Descriptions Only)
- Approximate Location of 2016 Farallon Soil Borings (No Data or Soil Descriptions, Locations Estimated)

Figure 2 - Site Plan

Proposed Redevelopment Property
104-124 12th Avenue & 1209 E. Fir Street
Seattle, WA

| | |
|-------------|--------------|
| Project No. | WES - 1591A |
| Date | Mar 20, 2020 |
| File ID. | 1591F2 |

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Legend




-  Approximate Location of Monitoring Well
-  Approximate Location of Sub-Slab Vapor Monitoring Point Under New Construction
-  Approximate Location of Indoor Air Samples

Figure 3 - Monitoring Well, Vapor Point & Indoor Air Sampling Location Plan

12th & Yesler Redevelopment Property
 104-124 12th Avenue & 1209 E. Fir Street
 Seattle, WA

| | |
|-------------|--------------|
| Project No. | WES - 1591A |
| Date | June 5, 2023 |
| File ID. | 1591F3 |

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