FINAL

# Revision 2 Compliance Monitoring Plan /Environmental Media Management Plan

Mercer Island Property
2885 78th Avenue SE
Mercer Island, Washington

Xinghua Group Ltd.
3199 W 44th Avenue
Vancouver, BC V6N3K5

August 19, 2021

CDM Smith

*A Report Prepared For*:

Xinghua Group Ltd.
3199 W 44th Avenue
Vancouver, BC V6N3K5

**REVISION 2 FINAL COMPLIANCE MONITORING PLAN/**
**ENVIRONMENTAL MEDIA MANAGEMENT PLAN**
**MERCER ISLAND PROERTY**
**2885 78TH AVENUE SE**
**MERCER ISLAND, WASHINGTON**

August 19, 2021

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# Section 1
# Introduction

This Compliance Monitoring Plan (CMP) and Environmental Media Management Plan (EMMP) has been prepared to describe the monitoring that will be used during construction and remedial excavation activities to address contaminated soil and groundwater associated with historical activities at the Mercer Island Property (formerly known as the King Property) located at 2885 78th Ave SE, Mercer Island, Washington (site or subject property). The Xinghua Group Ltd. (Xinghua) acquired this property in connection for planned redevelopment into a condominium complex.

## 1.1 Purpose

The CMP was prepared in accordance with the Model Toxics Control Act (MTCA) Washington Administrative Code (WAC) 173-340-410. The plan supports cleanup actions by describing the field methods, analytical methods, data analysis, and protocols that will be used to document three objectives:

- Protection of human health and the environment.
- Achievement of cleanup goals.
- Appropriate disposal of materials impacted by listed dangerous waste (dry cleaner solvents) and petroleum hydrocarbons.

The CMP includes the required elements of a Sampling and Analysis Plan (SAP) in accordance with WAC 173-340-820. The objective of the SAP is to ensure that all field screening, field sampling and laboratory analytical methods and procedures are appropriate, consistent, and reliable to ensure the appropriate evaluation of the cleanup action at the site.

The EMMP aspect of this plan supports the proper management and disposal of wastes generated during construction and remediation activities.

## 1.2 Responsible Parties

The following lists the key entities and representatives involved with the cleanup.

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## 1.3 Report Layout

The following outlines the contents of the remaining sections of this document.

**Section 2 – Site Setting and Background:** This section provides a description of the site, its history and contamination sources, future site use, and the planned remedial action.

**Section 3 – Pre-Excavation Contamination Delineation:** This section provides a description of the field methods that will be used to conduct a test pit investigation to collect soil samples for laboratory analysis. The purpose of the test pit investigation is to delineate the lateral extent of soil, which contains chlorinated volatile organic compounds (cVOCs). The results of the test pit investigation will be used to define the area of contaminated soil that will be excavated and subject to special handling and disposal conditions as a result of excavation during the site redevelopment.

**Section 4 – Compliance Monitoring:** This section provides a description and objectives of the various types of environmental compliance monitoring that will be conducted during the construction, cleanup levels, and how the data will be evaluated.

**Section 5 – Sampling and Analysis Plan**: This section describes the types and methodology of field screening and sample collection during the pre-excavation and excavation phases of construction, including the analytical methods.

**Section 6 – Sample Custody Procedures, Handling and Shipping:** This section describes the sample handling procedures, including chain-of-custody, shipping, and sample identification.

**Section 7 – Equipment Decontamination and Waste Control:** This section details the equipment decontamination and waste control measures to be followed.

**Section 8 – Excavated Material Handling:** This section details the proper handling and disposal requirements for the excavated soil determined contain detectable concentrations of cVOCs and/or petroleum hydrocarbons.

**Section 9 – Reporting:** This section details the closure report that will be completed to document the soil excavation, dewatering, sampling procedures and analytical results and conclusions.

**Section 10 – References:** This section lists the references cited in this document.

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# Section 2

# Site Setting and Background

## 2.1 Site Location and Description

### 2.1.1 Location

The site is located at 2885 78th Avenue SE, Mercer Island, King County, Washington (**Figure 1**). The property is bounded by 78th Avenue SE on the east, followed by a grocery store and apartment buildings, Southeast 29th Street on the south, followed by a gas station and Century Link building, and a McDonald's fast food restaurant on the north. A church occupies the southwest corner of the block immediately adjacent to the site and is not a part of the planned redevelopment and is followed by 77th Avenue SE and a grocery store further to the west.

### 2.1.2 Current Site Description

The site covers approximately 1.0 acre of land and is developed with a two-story retail strip mall building constructed in 1962, which totals 12,100 square feet. The site is listed on the King County Assessor's website as Parcel No. 5315101326. Remaining areas of the site consist of paved parking and landscaped areas.

The redevelopment will include a 0.46 acre parcel located adjacent to the west side of the site. This parcel (King County Assess Parcel No. 53510136 is presently occupied by a 7,036 square-foot retail building that is occupied by pet store and a bike shop. No environmental issues have been previously identified for this parcel; therefore, it is not considered part of the "site" as discussed in this CMP/EMMP.

## 2.2 Site History

According to a Phase 1 Environmental Site Assessment (ESA) completed by Farallon Consulting L.L.C (Farallon) in May 2018, the property was first developed in 1949 with a residence that used an oil burner as a source of heat (Farallon, 2018). The residence was replaced in 1962 with the present commercial building that was used for retail, offices, and a restaurant. At the time, the building occupants included the Tiger Garden Chinese Restaurant and Lounge, King Insurance, Q Nails, Goesling Gallery. A+ Cleaners, a dry cleaning facility, operated at the site for approximately 12 years and ceased operations in April 2015. No dry cleaning operations have been conducted onsite since 2015 and the building has been occupied by essentially the same tenants since then.

## 2.3 Prior Environmental Investigations

Various environmental due diligence investigations were conducted at this site between 2012 and 2018 as summarized below.

### 2.3.1 Pacific Crest Environmental (2012)

In June 2012, Pacific Crest Environmental completed a limited subsurface investigation to evaluate recognized environmental conditions (RECs) identified during a Phase 1 Environmental Site Assessment (ESA) they had completed earlier (Pacific Crest Environmental, 2012). These

RECs included the presence of the onsite dry cleaner and potential onsite contamination from offsite sources, including the Shell-branded gas station across the street to the south, a reported release of petroleum hydrocarbons on the southeast adjoining property, nearby dry cleaners, and the fire station. Two borings were drilled at the northwest corner of the building, a third boring at the south side of the building, and fourth boring at the southeast corner of the property. A soil sample was collected from each boring for laboratory analysis. A groundwater sample was also collected from temporary wells installed in each borehole. None of the contaminants analyzed during this limited subsurface investigation were detected, except for 580 milligrams per kilogram (mg/kg) of oil-range total petroleum hydrocarbons (TPH-O) detected in a soil sample collected at a depth between 4 and 5 feet below ground surface (bgs). This concentration of TPH-O is less than the MTCA Method A cleanup level, which is 2,000 mg/kg. Pacific Crest Environmental concluded that the property had not been impacted by the RECs identified in the Phase 1 ESA.

### 2.3.2 ABPB Consulting (2012)

In November 2012, ABPB Consulting completed a Phase 1 ESA and limited Phase 2 ESA for the site (ABPB Consulting, 2012). ABPB drilled and installed three monitoring wells on the south edge of the site to further evaluate the potential for petroleum contamination migration onto the subject property from the adjacent gas station to the south, as well as the presence of chlorinated solvents from onsite dry cleaning operations. Soil samples were analyzed for total gasoline-range petroleum hydrocarbons (TPH-G) and benzene, toluene, ethylbenzene, and xylenes (BTEX). These compounds were all non-detect in the samples analyzed. Groundwater samples were analyzed for TPH-G/BTEX and cVOCs and all these compounds were non-detect. ABPB further concluded that the dry cleaning business uses sealed equipment, appropriate handling of cleaning materials, and adequate measures to prevent possible leaks and spreading of any possible leaks that might occur."

### 2.3.3 Farallon (2013)

Farallon completed a Phase 1 ESA for the site in October 2013. They identified the same RECs as prior consultants had. In September 2013, Farallon conducted its first subsurface investigation which included: 1) sampling four existing monitoring wells installed by others, 2) advancing eight borings (five onsite, and three on the adjacent parcel to the west) to collect soil and groundwater samples for analysis; and 3) collecting and analyzing a sub-slab soil gas sample adjacent to the dry cleaning machine (Farallon, 2013). Trichloroethene (TCE) and *cis*-1,2-dichloroethene (*cis*-DCE) were detected at concentrations of 0.38 and 0.67 micrograms per liter (µg/L) in a groundwater sample collected from one boring. The concentrations of these compounds are less than their respective MTCA Method A/B groundwater cleanup levels by one to two orders of magnitude. These compounds are degradation products of the dry cleaning solvent tetrachloroethene (PCE). No petroleum hydrocarbon or cVOC compounds were detected in any of the soil samples analyzed.

Groundwater elevation contours for the site were developed using the depth-to-water measurements taken from the site monitoring wells on September 17, 2013. The interpreted groundwater flow direction in the groundwater-bearing zone was east-southeast, with an estimated horizontal hydraulic gradient of approximately 0.0075 foot per foot.

PCE was detected in the soil gas sample at a concentration of 2,000 micrograms per cubic meter (µg/$m^3$) and TCE was detected at a concentration of 5.2 µg/$m^3$. Farallon reported that the PCE and TCE concentrations in the soil gas sample exceed the MTCA Method B screening levels for soil gas in a residential setting, and that PCE exceeded its screening level in a commercial setting. It should be noted that the Washington State Department of Ecology's (Ecology) current Cleanup Levels and Risk Calculations (CLARC) tables indicate that the Method B sub-slab screening level for TCE (11 µg/$m^3$) was not exceeded. While the sub-slab Method B screening level for PCE (320 µg/$m^3$) was exceeded, the Method C sub-slab screening level (3,200 µg/$m^3$) was not. Furthermore, this is a very preliminary analysis, based on a single sub-slab sample collected next to an operating dry cleaning machine and does not prove the presence of vapor intrusion.

In December 2013, Farallon conducted additional investigation to further evaluate cVOC impacts associated with onsite dry cleaning operations (Farallon, 2014a). Their second subsurface investigation consisted of extending four additional borings; three inside the dry cleaner's unit and one inside the nail salon just east of the dry cleaning machine. PCE was detected in all three groundwater samples at concentrations ranging from 0.3 to 1.6 µg/L – all less than the MTCA Method A cleanup level of 5 µg/L. PCE was detected in soil samples at concentrations ranging between 0.011 to 0.051 mg/kg. One soil sample exceeded its Method A cleanup level of 0.05 mg/kg by 0.001 mg/kg (approximately 1 part per billion). This sample was collected within about a foot of the dry cleaning machine at a depth of 2.5 feet bgs. PCE concentrations in the three samples collected below this declined with depth. In one other sample, collected from a boring (B-13) outside the building in the parking lot a soil sample collected at a depth of 0.5-foot bgs was reported to contain TPH-O at a concentration of 5,600 mg/kg, which exceeds the Method A cleanup level of 2,000 mg/kg. The TPH-O concentration at 4 feet bgs in this boring was only 81 mg/kg.

### 2.3.4 Farallon 2014

Farallon conducted an additional subsurface investigation in September and October 2014 (Farallon, 2014b). This investigation included extending 10 additional borings to further refine the nature and extent of PCE in soil and groundwater and TPH-O in soil in a localized area on the southern portion of the property. One of the borings was advanced in the parking lot south of the former dry cleaner and extended at a 60 degree angle to facilitate deeper soil sampling beneath the dry cleaning equipment area. This boring was also converted to a monitoring well (MW5). Groundwater samples were collected as grab samples from the other borings.

Groundwater elevation contours were developed using depth-to-water measurements obtained from the groundwater monitoring wells. Groundwater contours indicated a groundwater flow direction in the shallow groundwater-bearing zone to the southwest at an estimated horizontal hydraulic gradient of approximately 0.009 foot per foot, consistent with the September 2013 event. Of the soil samples analyzed for cVOCs, PCE was detected in only one sample, collected at a depth of 1 foot bgs from a boring advanced in the unit to the east of the dry cleaner. The PCE concentration, at 0.0056 mg/kg, was an order of magnitude less than the Method A cleanup level. PCE was detected at a concentration of 0.37 µg/L in a groundwater sample collected from one of the borings. PCE was not detected in MW5.

TPH-O was detected at concentrations of 1,200 mg/kg, 100 mg/kg, and 94 mg/kg in soil samples collected at depths of 0.5, 3, and 5 feet bgs, respectively, in one boring advanced to the west the earlier boring B-13. TPH-O was detected at a concentration of 190 mg/kg in a soil sample collected at a depth of 0.5 feet bgs from a boring advanced to the east of B-13. TPH-O was not detected in deeper samples, or in the boring to the south of B-13.

### 2.3.5 Farallon (2018)

In May 2018 Farallon conducted another Phase 1 ESA for the property (Farallon, 2018). This report also included the results of groundwater monitoring events conducted in 2017 and 2018 whereby two of the existing monitoring wells onsite, MW3 and MW5, were purged and sampled. MW3 is downgradient of the former dry cleaning facility. MW5 was installed in an angle boring that extends underneath the former dry cleaning machine. Concentrations of PCE and its degradation products were all less their method reporting limits in both samples during both sampling events, which was consistent with historical data.

### 2.3.6 Summary

Based on all of the data collected during the various environmental investigations completed at this site, it is not a MTCA site because:

- There were no exceedances of MTCA cleanup levels in groundwater.
- The single PCE cleanup level exceedance in soil (by 0.001 mg/kg) is not significant. The multitude of soil data available for the site passes the Department of Ecology's (Ecology) own *Statistical Guidance for Ecology Site Managers* (Publication 92-54). These criteria are: 1) no sample is greater than 2 times the cleanup level; 2) less than 10 percent of the samples exceed the cleanup level; and 3) statistically, the concentrations are less than the MTCA cleanup level.
- The data indicate that the TPH-O in soil is nothing more than from surficial staining.
- With regard to the sub slab sample exceeding the Method B vapor screening level for PCE, it was just screening level data. It does not prove that vapor intrusion existed. CDM Smith has seen PCE concentrations higher than this in sub slab samples that do not equate to an exceedance of PCE in indoor air. Furthermore, the groundwater data do not indicate that cVOCs presented a risk of vapor intrusion because neither PCE nor TCE concentrations exceeded their respective vapor intrusion groundwater screening levels of 24 µg/L and 1.4 µg/L. This sample was collected next to an operating dry cleaning machine – a worst case example – and was likely biased high.

Based on this, the driver for remedial action at this site is the planned redevelopment whereby soil impacted by PCE and TPH that is excavated during redevelopment will require special handing during excavation and subsequent disposal in a landfill.

## 2.4 Future Site Use

The Xinghua Group plans to demolish the existing building on the site, and the adjacent commercial building occupied by the pet and bike stores and redevelop it into a mixed-use

residential apartment building. Underground parking will extend one level below grade. Site work to allow for the redevelopment will include the removal of asphalt paving, removal of concrete foundations and sidewalks, and excavation of soil.

## 2.5 Planned Remedial Action

An important component of the soil excavation at the site will be the identification and separation of impacted soil from clean soil, which does not contain detectable concentrations of contaminants. PCE and petroleum-impacted soils will be segregated and excavated separately from soils that are otherwise considered clean. The impacted soil will be appropriately tested and disposed of to facilitate the construction of the planned redevelopment. The remediation itself will generally involve:

- decommissioning of existing monitoring wells:
- conducting a pre-excavation investigation to further refine the extent of cVOC-impacted soil;
- obtaining a contained-in determination (CID) from Ecology for disposal of cVOC-impacted soil; a CID is the conclusion of an approval process from Ecology for soil lightly contaminated by cVOCs. This process allows the soil, which would otherwise be considered a dangerous waste to be disposed of in a Resource Conservation and Recovery Act (RCRA) Subtitle D landfill (nonhazardous solid waste), as opposed to a Subtitle C landfill (hazardous solid waste); conducting soil waste profiling and providing the data to the receiving landfill to obtain approval for landfill disposal;
- excavation of TPH and PCE-impacted soils and appropriate offsite disposal;
- collection of soil samples from the excavation limits for laboratory analysis; and
- construction dewatering and sampling.

The construction contractor, R. Miller, Inc., will be responsible for the construction tasks necessary to complete this remediation, including installation of erosion control and site security measures; installation of shoring; excavation of soil; soil stockpile management; transport of excavated contaminated soil; dewatering and disposal of groundwater removed from the excavation; and backfilling the excavation. CDM Smith will observe the work, conduct waste profile and protection and performance monitoring, and advise on compliance.

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# Section 3

# Pre-Excavation Contamination Delineation

Following demolition of the building and prior to beginning the main excavation for redevelopment construction, a test pit investigation will be conducted to collect soil samples in the area of known soil impacts at the location of the former dry cleaner. The purpose of the test pit investigation is to aid in refining the estimated volume of cVOC-impacted soil to be removed during the source removal excavation by defining the lateral extent of cVOC-impacted soils that will be managed under the CID. The vertical extent of contaminated soil containing PCE at concentrations exceeding the MTCA Method A cleanup level in the immediate vicinity of the former dry cleaning machine has been delineated by data obtained during previous investigations. Delineation of petroleum hydrocarbon-impacted soil is not proposed as part of this pre-excavation contamination delineation. Handling and disposal of petroleum hydrocarbon impacted soil is discussed further in Section 5 and Section 8.

Once demolition of the buildings is complete, the contractor plans to begin shoring activities along the perimeter of the adjacent property (Parcel No. 53510136) and along the north, east and southeast perimeter of the subject property. Shoring will occur concurrently with the contaminant delineation activities described in this CMP/EMMP. No special handling of soil encountered during shoring is anticipated as there is sufficient historical soil and groundwater data to show that soil at the property boundary does not contain detectable concentrations of cVOCs and groundwater samples collected from the monitoring wells installed at the perimeter of the site did not contain detectable concentrations of cVOCs. Shoring along the south portion of the property to the south of the building may commence once the lateral extent of cVOCs impacts in the area of the former dry cleaner has been fully defined.

## 3.1 Field Investigation

Based on the available data from borings advanced in the vicinity of the dry cleaner, cVOCs were not detected at concentrations exceeding their respective cleanup levels, with the exception of one soil sample, which exceeded the cleanup level by 0.001 mg/kg at a depth of 2.5 feet bgs located directly beneath the dry cleaner machine. Data obtained from previous investigations indicates concentrations of cVOCs generally decrease with depth. To characterize the lateral extent of cVOC impacted soil and refine our estimate of the volume of soil to be excavated and managed under the CID, soil samples will be collected from test pits excavated between prior boring locations where cVOCs were not detected and those where cVOCs were detected. Excavation of cVOC impacted soil within the lateral boundary defined by the test pit investigation will proceed from the ground surface to the design depth of 12 feet bgs and performance soil samples will be collected from the bottom of the completed excavation per the sampling plan discussed in Section 5.

Proposed test pit locations are shown on **Figure 3**. The test pits will be excavated to depths up to approximately 6 to 7 feet bgs using a backhoe or excavator. Test pits will be excavated in a two-tiered approach as shown on **Figure 3**.The purpose of the two-tier process is to identify the

lateral boundary between areas known to be impacted by cVOCs and the areas where cVOCs are non-detect. Test pit locations designated as Tier 1 will be excavated and soil samples will be collected and analyzed on a 48-hour turn-around time. Based on the results from the Tier 1 samples, a second event will be scheduled to excavate additional Tier 2 test pits as needed to complete delineation. For example, if the Tier 1 samples are non-detect for cVOCs in a particular direction, then the boundary between the known areas of cVOC-impacted soil and areas where soil is non-detect for cVOCs will have been established. If the Tier 1 samples in a particular direction still contain detectable concentrations of cVOCs one must step further out to identify the boundary. Soil samples collected during the Tier 2 event will also be submitted on a 48-hour turn-around time. The rapid turn-around time of 48 hours (a week or more is typical) is necessary to support the CID process and keep the development work on schedule.

Soil excavated from each test pit will be logged according to the Unified Soil Classification System (USCS) by a CDM Smith geologist. Two discrete soil samples will be collected from each test pit either directly from the test pit or from the backhoe bucket, depending up on the depth of the test pit. A soil sample will be collected from approximately 2 to 3 feet bgs, and from the base of each test pit at approximately 6 to 7 feet bgs. Soil will be collected from each of these test pits from the excavator bucket using clean, disposable nitrile gloves or a decontaminated stainless steel spoon and placed into a laboratory supplied 4-ounce jar. These samples will be used for dry weight determination. Soil samples to be analyzed for cVOCs will be collected following EPA Method 5035 for the preservation of volatiles. This method entails collecting an approximately 5-gram soil sample using a core device and immediately dispensing the sample into a laboratory-supplied pre-weighed VOA bottle. All samples will be immediately sealed, labeled, and stored in a chilled cooler for transport and delivery to the analytical laboratory.

Soil samples will be delivered under chain-of-custody to OnSite Environmental (OnSite) located in Redmond, Washington for analysis of a select list of cVOCs (PCE, TCE, cis-1,2-DCE, trans-1,2-dichloroethene [trans-1,2-DCE] and vinyl chloride [VC]) by EPA Method 8260D. To assist in soil disposal profiling, selected samples will also be analyzed for total metals (RCRA 8 metals plus copper, nickel and zinc) by EPA Methods 6020/7470A.

The excavated soil will be placed back into the test pits after logging and soil sampling has been completed in the same general order in which it was removed and compacted with the excavator bucket. The horizontal location of each test pit will be measured using a handheld global positioning system (GPS) unit to obtain a latitude and longitude for each test pit location. Locations will also be marked with a labeled flag or wooden stake in the field and recorded on a site figure.

## 3.2 Well Decommissioning

Prior to demolition and initiation of the field investigation, all existing monitoring wells installed throughout the redevelopment parcels will be appropriately decommissioned. Monitoring wells MW1 through MW5 will need to be abandoned by a licensed well driller in accordance with WAC 173-160-460, which pertains to decommissioning of resource protection wells. CDM Smith will assist as needed in procuring a licensed driller and supplying the driller with the well construction logs (if not already available in Ecology's online well records) necessary to complete well decommissioning activities.

# Section 4
# Compliance Monitoring

Two types of compliance monitoring, as described in WAC 173-340-410, will be conducted. *Protection monitoring* will be used to confirm that human health and the environment are adequately protected during the cleanup action. *Performance monitoring* will be used to confirm that the cleanup action has attained cleanup goals. MTCA identifies a third type of compliance monitoring, *confirmation monitoring*, which is intended to demonstrate the long-term effectiveness of the cleanup action. Because of the complete soil removal and that existing groundwater sampling data demonstrates that concentrations of cVOCs are not and have never been present in groundwater at concentrations exceeding the MTCA Method A cleanup levels for groundwater, there is no need for confirmation monitoring, such as long-term groundwater monitoring.

The CMP covers protection monitoring and performance monitoring, to be conducted during the soil removal as described in the following sections. The monitoring that is associated with the management of wastes (e.g., profiling of excavated soil) is discussed further in the SAP presented in Section 5.

## 4.1 Protection Monitoring

### 4.1.1 Human Health

Field screening will be conducted during the test pit investigation and the mass soil excavation to protect site workers and the general public from air emissions associated with the soil excavation. The field screening will be accomplished in accordance with CDM Smith's, R. Miller's, and R. Miller's subcontractors' health and safety plans. An organic vapor meter equipped with a photoionization detector (OVM-PID) will be used to monitor the breathing zone periodically (e. g., hourly) and if there is noticeable odor. If volatile organic compound (VOC) concentrations within the work area become significant (i.e., at levels that require an action), conditions at the property limits will also be monitored. If VOC concentrations exceed established action levels for any sustained period of time, then operations will be temporarily suspended. If necessary, engineering controls will be implemented to keep VOC concentrations below action limits while completing the work. Given the low concentrations of cVOCs observed at the site to date, it is anticipated that air monitoring will consist primarily of breathing zone monitoring during excavation activities and that temporary work suspension or engineering controls will be unnecessary.

### 4.1.2 Environment

*Stormwater Control:* During excavation, controlling stormwater runoff will protect the environment. Implementation of Best Management Practices (BMPs) in accordance with the Stormwater Management Manual for Western Washington (Ecology 2012) will ensure compliance with the Water Pollution Control Act. The construction contractor, R. Miller, will be responsible for development of a Stormwater Pollution Prevention Plan (SWPPP) and

implementation of the SWPPP's BMPs in accordance with the redevelopment permit. BMPs will include, but not be limited to:

- installation of silt fencing;
- installation of catch basin inserts;
- minimizing sediment track out by vehicles by use of a stabilized construction entrance, wheel washing, dry brushing, and/or other methods; and
- covering soil stockpiles.

***Dust Control:*** Dust generation is both a human health and environmental issue. Dust control will occur in accordance with the health and safety plan. As necessary, dust will be controlled by spraying water on exposed surfaces.

## 4.2 Performance Monitoring

Soil monitoring and sampling will be conducted to evaluate the performance of the cleanup action during the excavation. This involves field screening to assess the progress of the cleanup, sampling the excavated soils to determine appropriate disposal, and sampling the excavation limits to assess when the cleanup goals have been met. Soil samples collected from the pre-excavation test pits will also be used as performance samples, as appropriate. The frequency and scope of the monitoring and sampling is detailed in Section 5. The performance monitoring results will be used to assess when the cleanup objectives have been met.

As was noted previously, the goals of this CMP/EMMP are the appropriate delineation and disposal of soils impacted by cVOCs and petroleum hydrocarbons. Soil samples collected from the pre-excavation test pits and excavation limits will be compared to the analytical method practical quantitation limit (PQL) for each analyte. Excavated soil containing concentrations of cVOCs greater than their respective PQL will be disposed of under the CID. Excavated soil containing detectable concentrations of TPH-O will be disposed of in accordance with Ecology's *Guidance for Remediation of Petroleum Contaminated Sites,* Table 12.1, Guidelines for Reuse of Petroleum-Contaminated Soil provided in **Appendix A**. See Section 8 for further discussion of the excavated material handling protocol.

# Section 5
# Sampling and Analysis Plan

Soil and groundwater sampling will be conducted for the following purposes:

- Field screening will be conducted to guide soil excavation and assist in segregation of clean soils versus contaminated soils.
- If excavated soils are stockpiled, soil samples may be collected from excavated stockpiled soil for disposal profiling.
- Soil samples will be collected from test pits excavated prior to mass excavation and/or at the excavation limits to confirm that cleanup standards have been met at the base of the excavation and confirm that soil does not contain detectable concentrations of cVOCs and/or TPH-O at the excavation sidewall limits before further mass excavation occurs to allow for the re-development construction to proceed.
- Groundwater samples of extracted groundwater from dewatering activities may be collected for wastewater discharge permit compliance, as well as for performance monitoring purposes.

The following sections provide details of the soil sampling and groundwater sampling that will be completed during re-development construction and remedial activities.

## 5.1 Field Screening of Soil

RECs identified during previous Phase 1 ESAs included the historical dry cleaning operation and a possible heating oil underground storage tank (UST) associated with a historical oil burner on the site. Prior investigations evaluated RECs to the extent practicable and field screening will occur in areas of known impacts. If, during excavation outside these areas, evidence of contamination is found (e.g. discolored or odorous soils, or a heating oil UST), then the nature and extent of that contamination will be evaluated and handled appropriately per the contingency plan discussed in Section 5.5.

Qualitative field screening methods will be used to monitor soils being removed from the excavation, the excavation sidewalls, and stockpiled soils in the area of known impacts. Field screening results will be used to aid in evaluating whether the limits of the contamination have been attained at the excavation limits, as well as segregation of clean soils versus contaminated soils. Screening methods include: 1) visual examination; and 2) headspace screening using an OVM-PID.

Visual screening consists of inspecting the soil for discoloration indicative of contamination and if applicable, sheen testing. Sheen testing involves placing a sample of the soil in water and checking for an oil sheen. Headspace screening consists of placing a representative portion of soil into a resealable plastic bag and disaggregating the sample. After a several minute stabilization period,

concentrations of VOCs in the headspace will be measured using an OVM-PID. This is not a compound-specific analysis and is affected by, among other influences, climate (e.g., temperature and humidity), soil type and conditions, instrument calibration and operation, and type of contamination present.

# 5.2 Soil Sampling

## 5.2.1 Excavated Soil Profile Sampling

Stockpile sampling of cVOC-impacted soil is not anticipated as the expectation is that the excavation limits will be mostly or entirely delineated during the pre-excavation test pit investigation and direct loading of excavated material to pre-defined excavation limits will occur. Furthermore, it is not anticipated that Ecology will allow for stockpiling of soils impacted by cVOCs. TPH-O impacted soils on the south portion of the site were also mostly delineated during prior investigations. However, if during the mass excavation soils otherwise suspected to be impacted by contaminants are encountered, they will be stockpiled and sampled. **Table 5-1** summarizes the minimum sampling density based on the stockpile size. Analytical testing will be determined based on the field screening, suspected contaminant source, and requirements of the receiving landfill.

**Table 5-1 Stockpile Sampling**

| Description | Bulk Cubic Yards | Minimum Number of Samples | Analytical Testing |
|---|---|---|---|
| Soil Stockpile | 0-100 | 3 | As determined based on field screening and the suspected contaminant source. |
| | 101-500 | 5 | |
| | 501-1,000 | 7 | |
| | 1,001-2,000 | 10 | |
| | >2,000 | 10+1 for ea. Additional 500 cy | |

## 5.2.2 Excavation Limit Performance Sampling

Performance soil samples will be obtained from the excavation limit sidewalls and base. A minimum of one discrete sample will be collected per approximately 400 square feet of excavation base or sidewall, if test pit sampling data cannot be used to represent a “clean” sidewall for a given area. Once performance soil sample results or test pit sample results demonstrate the excavation sidewalls do not contain detectable concentrations of cVOCs, removal of contaminated soil will be considered complete. There are currently no plans to perform additional soil removal beyond the planned depth of the main re-development excavation. Confirmation soil samples collected from the base of the excavation will be collected from the design depth to determine if any residual impacted soil remains.

Confirmation soil samples will be obtained from the locations that exhibited the greatest evidence of contamination (e.g., residual source areas; stringers of contamination within the soil profile which indicated the path of migration; the capillary zone). All soil samples will be analyzed for cVOCs by EPA Method 8260D. Selected samples in the area of known TPH-O impacts will be analyzed for diesel- and oil-range TPH by Northwest Method NWTPH-Dx.

### 5.2.3 Soil Sample Collection Procedures

New disposable nitrile gloves will be worn by field staff for each sample obtained. Non-disposable sampling equipment will be decontaminated between each sample using methods described in later sections of this CMP. Disposable sampling equipment will be discarded between each individual sample set. Soil samples to be analyzed for VOCs will be collected in accordance with EPA Method 5035A. This method involves using a disposable coring device to collect an approximately 5 gram soil sample and dispensing the sample directly into a 40 milliliter VOA vial that is sealed with a Teflon lined septum. Depending upon the laboratory, the sample container may or may not contain a preservative. Unpreserved samples must be delivered to the laboratory within 48 hours of collection or frozen. Soils for dry weight determination and all other analyses will be collected into 4-ounce laboratory-supplied sample containers. All sample containers will be immediately labeled with the sample ID, date and time of collection, and sampler's initials, stored in a chilled cooler, and transported to the laboratory under chain-of-custody protocol. **Table 1** summarizes the appropriate containers/preservatives and maximum holding times for each of the analytes.

### 5.2.4 Sample Documentation

The horizontal location of each sidewall sample will be measured using a handheld GPS unit to obtain its latitude and longitude for each test pit location. The limits of the excavation will also be plotted using the GPS. These data will be used in preparing the figures for the report that documents the final cleanup action.

## 5.3 Groundwater

Construction dewatering implementation and design is the responsibility of the construction contractor. Groundwater recovered during dewatering efforts, will be sampled by CDM Smith, as needed, for waste disposal characterization and discharge permit compliance. Analytical methods will be based upon discharge permit requirements and treatment of recovered groundwater prior to discharge, if any, will be designed to ensure compliance with the discharge permit.

## 5.4 Analytical Methods

Analytical methods, and PQLs for cVOCs, total petroleum hydrocarbons and total metals are presented on **Table 2**.

## 5.5 Contingency Planning

In the event of any unplanned discoveries during construction, such as a UST or discolored and/or odorous soils, in areas where contamination was not previously identified or anticipated, this section outlines a contingency plan for addressing unanticipated environmental conditions that may be encountered during construction.

Field observations of staining or odors in soils during excavation activities may indicate a potential for contamination. The procedure for addressing discoveries of previously unidentified or unanticipated soil with suspected contamination will be to stop work in the affected area. A discussion will be initiated between the CDM Smith project manager and the construction superintendent to assess the nature of the observed impacts. Based on the nature of the

observations and suspected impacts observed, additional sampling will be conducted in the affected area to characterize the nature and extent of contamination.

If a heating oil UST is discovered during soil excavation, then the contents of the UST will be assessed, and the UST will be emptied, cleaned, inerted, and removed by a licensed UST decommissioning contractor. Soil samples will be collected from native soil at the limits of the UST removal excavation by a CDM Smith licensed Washington State Site Assessor in accordance with Ecology's *Site Assessment Guidance for Underground Storage Tank Systems* (Ecology 2021) and WAC 173-360A-0730. If the results of sampling confirm a release of petroleum products to the subsurface, then the appropriate notifications will be made to Ecology to report the release in accordance with the above referenced document. Contamination at concentrations greater than the MTCA Method A cleanup level will be removed and disposed of as appropriate and problem waste containing detectable concentrations of petroleum contaminants will be managed in accordance with Section 8.2. If encountered, UST closure and site assessment results will be documented as part of the final closure report for the project as discussed in Section 9.

The re-development excavation is planned to proceed to the design depth and lateral extent specified by the construction contractor. In the unlikely event that performance sampling results obtained during the removal of CID soils or problem waste soils as described in Section 5.2.2 and Section 8 indicate that contamination in excess of the applicable cleanup levels remains at the design limits of the excavation, the project manager will evaluate appropriate remedial actions. If it is agreeable with Xinghua and the other project stakeholders that it is practical and cost effective to excavate and remove all soils exceeding the applicable cleanup levels, then soil over-excavation will be performed and additional performance samples will be collected from the completed limits of the over-excavated areas to demonstrate the final conditions and completion of the cleanup action. If soil or groundwater exceeding MTCA cleanup levels remain in place after excavation is completed, the project manager or other appropriate project representative will report to Ecology in accordance with Toxics Cleanup Program Policy 300 (June 10, 2004) and will conduct additional characterization and cleanup in accordance with the MTCA Regulations (WAC 173-340).

# Section 6

# Sample Custody Procedures, Handling and Shipping

## 6.1 Custody

Samples collected during the project will represent physical evidence collected from the site or its immediate surroundings. Because of the potential use of these samples as evidence, their possession must be traceable from collection until the data from them are ultimately used. A chain-of-custody protocol will be followed to maintain and document sample possession. The principal documents used include:

- Sample labels
- Sampling records specific to the various media
- Chain-of-custody records

Each sample will be labeled immediately after collection. Each label will include, at a minimum, the following information:

- Project name and number
- Initials of sampler
- Date and time of collection
- Number that uniquely identifies the sample and its collection location (the sample numbering sequence will not indicate to the laboratory which samples are duplicates, splits, or field blanks)
- Preservative (if any)

Samples will be kept in the sampler's custody until they are turned over to the analytical laboratory's custody.

Samples will be shipped to the analytical laboratory with chain-of-custody records, establishing the documentation necessary to trace sample possession from the time of collection. The chain-of-custody records will contain, at a minimum, the following information:

- Sample numbers
- Signature of collector
- Dates and times of collection

- Place of collection
- Sample matrix
- Signatures of persons involved in the chain of possession
- Inclusive dates of possession

The chain-of-custody record will also be used to indicate what analyses are required by checking the appropriate box(es) on the form. Following proper sealing and labeling, sample containers will be placed in a chilled cooler.

## 6.2 Shipping

As described above, samples will be accompanied by a properly completed chain-of-custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to the project laboratory, or to/from a secure storage area.

Samples will be properly packaged for shipment and dispatched to the laboratory for analysis with a separate, signed custody record enclosed in each sample cooler. If samples are to be shipped by courier, shipping containers will be secured with strapping tape and custody seals will be attached for shipment to the laboratory. The preferred procedure includes use of a custody seal attached to the front right and back left of the cooler. The custody seals are covered with clear plastic tape. The cooler is strapped shut with strapping tape in at least two locations.

## 6.3 Documentation and Sample Identification

A Daily Field Investigation Form will be the basis of documentation for this project. Entries on it describe the day's activities. If an incorrect entry is made, the information will be crossed out with a single line and initialed and dated by the field representative.

Samples will be labeled uniquely and sequentially. For example:

**Test Pit Samples: e.g., TP-1-7**

- TP is the designation for a test pit sample.
- The first number - 1 in this instance – is the first test pit
- The second number is the depth of the sample, from ground surface, in feet.

**Excavation Limit Samples: e.g., EW-2-12**

- EW is the designation for the excavation east sidewall (B would be the designation for the excavation base, and SW would be the designation for the south sidewall, and so forth)
- The first number – 2 in this instance – is the second sample from that sidewall.
- The second number – 12 in this instance – is the depth of the sample in feet.

**Stockpile Samples: e.g., SP-2-3-2/20**

- SP is the designation for a stockpile sample.
- The first number - 2 in this instance - is the second stockpile
- The second number – 3 in this instance – is the third sample collected from the stockpile

The third set of numbers are the month and day of collection (February 20)

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# Section 7

# Equipment Decontamination and Waste Control

## 7.1 Objectives

Equipment decontamination and waste control during proposed field activities are very important to prevent the spread of contaminants and ensure integrity of the work. The primary objectives are as follows:

- Contain all contaminated soil and water on the site in such a manner that work performed for the investigation does not cause the spread of any hazardous constituents located within the site.
- Decontaminate all sampling equipment in such a manner that no hazardous constituents are introduced into subsequent samples through cross contamination.
- Dispose of decontamination wastes properly.

## 7.2 Large Equipment Decontamination

Large equipment used for excavation of the contaminated material will be pressure washed prior to moving on to work at other locations (i.e., excavation of uncontaminated soil onsite).

## 7.3 Small Equipment Decontamination

Decontamination of non-disposable equipment between sample locations will consist of a series of three clean plastic buckets. The first bucket will contain clean, potable water and nonphosphate-based soap and serve as the main wash stage. The second bucket will contain clean, potable rinse water. The third bucket will be used to conduct a final rinse with distilled water. Water within the wash buckets and rinse buckets will be changed as it becomes dirty.

All sampling equipment will be decontaminated before and after each sampling event. The specific procedure is as follows:

- Wash in solution of non-phosphate based soap and potable water. Nylon pads and brushes are used to facilitate washing.
- Dip rinse in potable water.
- Final rinse with distilled water.
- Place on clean polyethylene sheeting.

Sponges, brushes, and nylon scrubbers will be used during step 1. All equipment will be air dried and contained in clean plastic bags, if possible, between sample collection events.

## 7.4 Waste Control

Liquids generated during decontamination will be captured, treated and disposed of the same as the groundwater that is generated from the impacted areas during dewatering. Alternately, it may be disposed of on the contaminated soil that is transported offsite for disposal as long as it does not cause free liquids to be generated.

# Section 8
# Excavated Material Handling

## 8.1 CID Soils

In a CID, Ecology often prescribes that soil containing cVOCs (dry cleaner solvent) be directly loaded into trucks or roll-off containers as opposed to first being stockpiled. The purpose of the two-tier test pit sampling and analysis described in Sections 3 through 5 of this document is to determine excavation boundaries and estimated soil volumes that are contaminated with cVOCs. CDM Smith staff will work with the contractor to develop an excavation plan after the pre-excavation contaminant delineation is complete. CDM Smith will submit the request for the CID and necessary documentation to Ecology and address any further questions that Ecology may have prior to authorizing the CID. Once the CID has been obtained. CDM Smith will assist the contractor in the necessary profiling of this material for acceptance by the receiving landfill.

All soils determined to contain cVOCs at concentrations exceeding the laboratory PQLs will be directly loaded and transported to a Subtitle D landfill and disposed of under the requirements set forth in the CID issued by Ecology. Specific requirements for contaminated soil handling will be outlined in Ecology's CID and must be adhered to.

After the cVOC-impacted soil is removed to the pre-defined boundaries, additional performance samples will be collected from the excavation sidewalls and analyzed to achieve the desired sampling density at the excavation limits. Soil still containing cVOC concentrations greater than the laboratory PQLs will be excavated and directly loaded. After it has been satisfactorily demonstrated that soil containing detectable concentrations of cVOCs has been removed from the site and design depths have been met, then the development project may proceed without further contaminant delineation and special handling/disposal.

## 8.2 Problem Waste Soils

Soil containing concentrations of TPH-O greater than the MTCA Method A cleanup level of 2,000 mg/kg identified on the south portion of the property during earlier investigations, will be disposed of as a problem waste. CDM Smith will assist the contractor in the necessary profiling of this material for acceptance by the receiving landfill. Other soils containing detectable concentrations of TPH-O will be disposed of in accordance with Ecology's *Guidance for Remediation of Petroleum Contaminated Sites,* Table 12.1, Guidelines for Reuse of Petroleum-Contaminated Soil and Table 12.2 Description and Recommended Best Management Practices for Soil Categories in Table 12.1, provided in **Appendix A**. Identification of the target disposal facilities for problem waste soils is the responsibility of the construction contractor. All other soils will be handled as clean soil and may be used at the contractor's discretion.

If soil containing suspected or detectable concentrations of contaminants is stockpiled onsite, stockpiles must be placed on a plastic liner and covered at the end of each working day or during periods of precipitation to prevent stormwater runoff and erosion from the stockpiles. Stockpiled soils not previously profiled will be sampled per Section 5.2.1.

## 8.3 Groundwater

Groundwater extracted during construction activities will be managed by the construction contractor and the contractor is responsible for obtaining the appropriate discharge permits and complying with the terms of the permit. CDM Smith will assist as needed in the collection, chemical analysis, profiling and treatment (if any) of extracted groundwater to ensure compliance with the discharge permit requirements.

# Section 9
# Reporting

At the completion of the soil removal action, CDM Smith will prepare a closure report that documents the soil excavation, dewatering, sampling procedures, and provides a discussion of the site description, observations, analytical results, findings, and conclusions. The report will include data summary tables and figures. Test pit logs, analytical reports, and soil and groundwater disposal documentation, will be included in the report appendices.

In the unlikely event that contaminant concentrations exceeding the applicable MTCA cleanup levels are left in-place, the report will include recommendations for additional follow-up monitoring or remedial actions.

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# Section 10
# References


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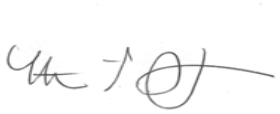

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Matthew F Schultz, PE
Associate Engineer

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# Tables

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**Table 1**

**Analytical Methods, Sample Containers, and Holding Times**

Mercer Island Property

Compliance Monitoring Plan

2885 78th Avenue SE

Mercer Island, Washington

| Analyte | Method | Container/Preservative | Maximum Holding Time |
|---|---|---|---|
| **Soil** | | | |
| Chlorinated VOCs | 8260D<br>5035A | 4 oz. widemouth glass jar<br>2 - Preweighed 40 ml VOA Vial with Teflon Septum | 14 days<br>(If not preserved, freeze within 48 hrs at lab) |
| TPH-Diesel and Oil | NWTPH-Dx | 4 oz. widemouth glass jar | 14 days |
| Metals | 1311<br>6020/7470A | 4 oz. widemouth glass jar | 6 months/Hg 28 Days |

Notes:

TPH - total petroleum hydrocarbons

ml - milliliter

Hg - mercury

VOC- volatile organic compounds

**Table 2**

**Analytical Method Reporting Limits - Chlorinated VOCs, Petroleum Hydrocarbons and Metals**

Mercer Island Property

Compliance Monitoring Plan

2885 78th Avenue SE

Mercer Island, Washington

| Analyte | Method | Soil Practical Quantitation Limit | |
|---|---|---|---|
| Chlorinated VOCs[a] | 8260D | | |
| Tetrachloroethene | | 1.0 | µg/kg |
| Trichloroethene | | 1.0 | µg/kg |
| (cis) 1,2-Dichloroethene | | 1.0 | µg/kg |
| (trans) 1,2-Dichloroethene | | 1.0 | µg/kg |
| Vinyl Chloride | | 1.0 | µg/kg |
| TPH-Diesel and Oil Range | NWTPH-Dx | | |
| Diesel | | 25 | mg/kg |
| Lube Oil | | 50 | mg/kg |
| Metals (RCRA 8) | 6020/7470A | | |
| Arsenic | | 10 | mg/kg |
| Cadmium | | 0.50 | mg/kg |
| Chromium | | 0.50 | mg/kg |
| Copper | | 0.50 | mg/kg |
| Lead | | 5.0 | mg/kg |
| Nickel | | 2.5 | mg/kg |
| Selenium | | 10 | mg/kg |
| Barium | | 2.5 | mg/kg |
| Silver | | 0.50 | mg/kg |
| Mercury | | 0.25 | mg/kg |
| Zinc | | 2.5 | mg/kg |

Notes:

a) Select list of Chlorinated VOCs

µg/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

TPH - total petroleum hydrocarbons

VOC- volatile organic compounds

RCRA - Resource Conservation and Recovery Act

# Figures

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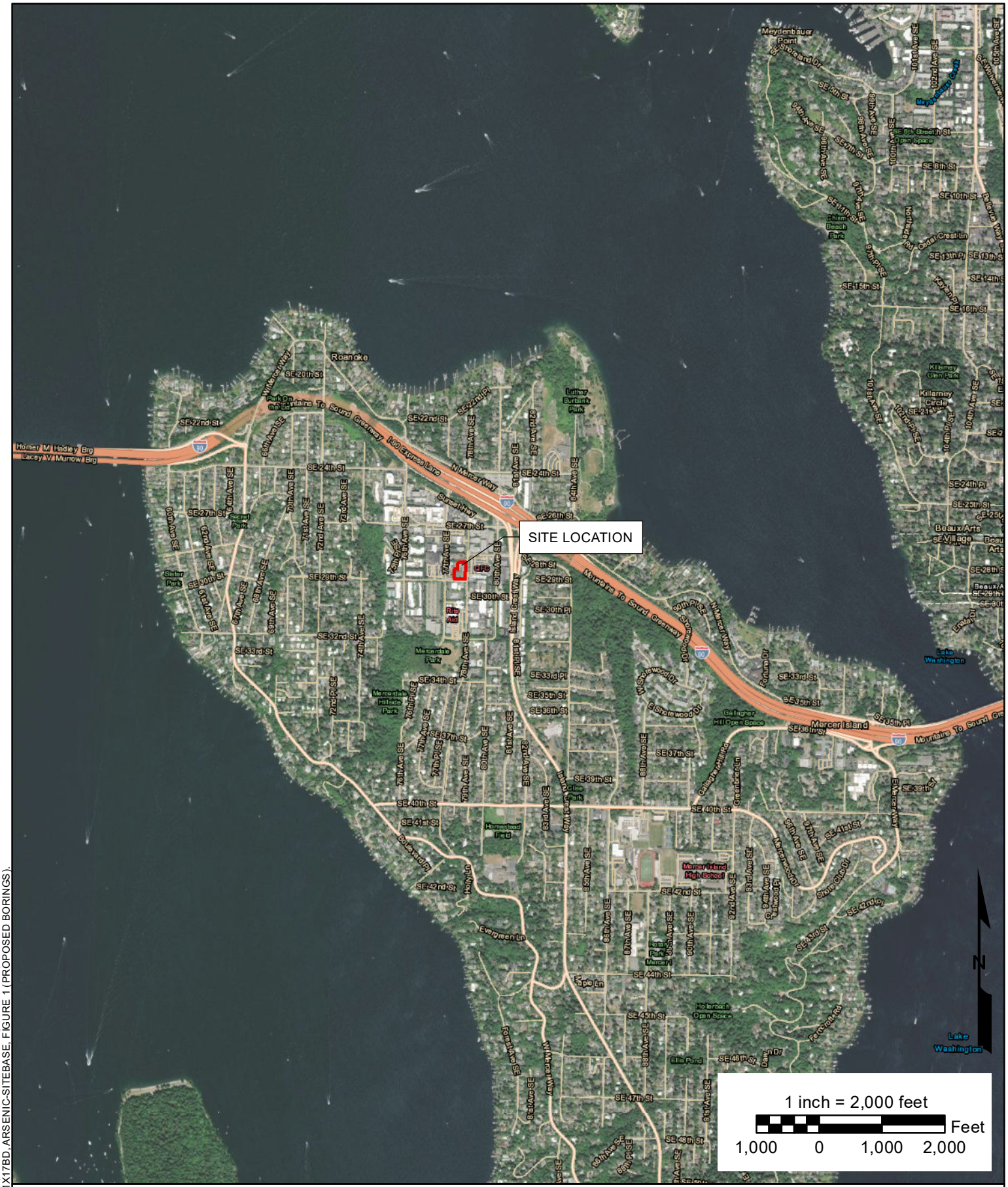


SOURCE: ESRI WORLD IMAGERY, 2020

CDM Smith

2885 78TH AVENUE SOUTHEAST
MERCER ISLAND, WASHINGTON

Figure 1
Site Vicinity Map

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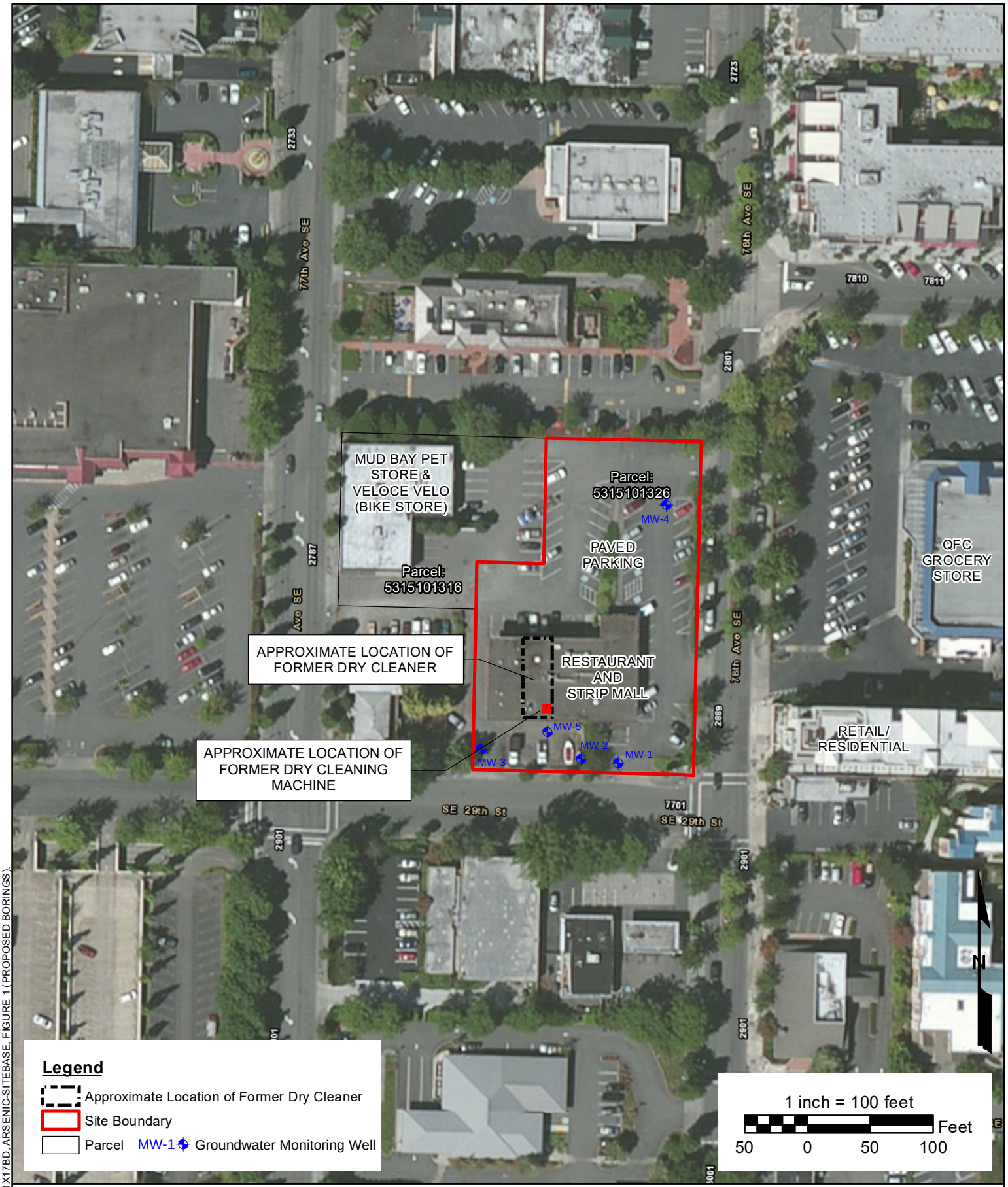
CAD XREFS: ARSENIC-11X17BD, ARSENIC-SITEBASE, FIGURE 1 (PROPOSED BORINGS).

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2885 78TH AVENUE SOUTHEAST
MERCER ISLAND, WASHINGTON

Figure 2
Site Plan

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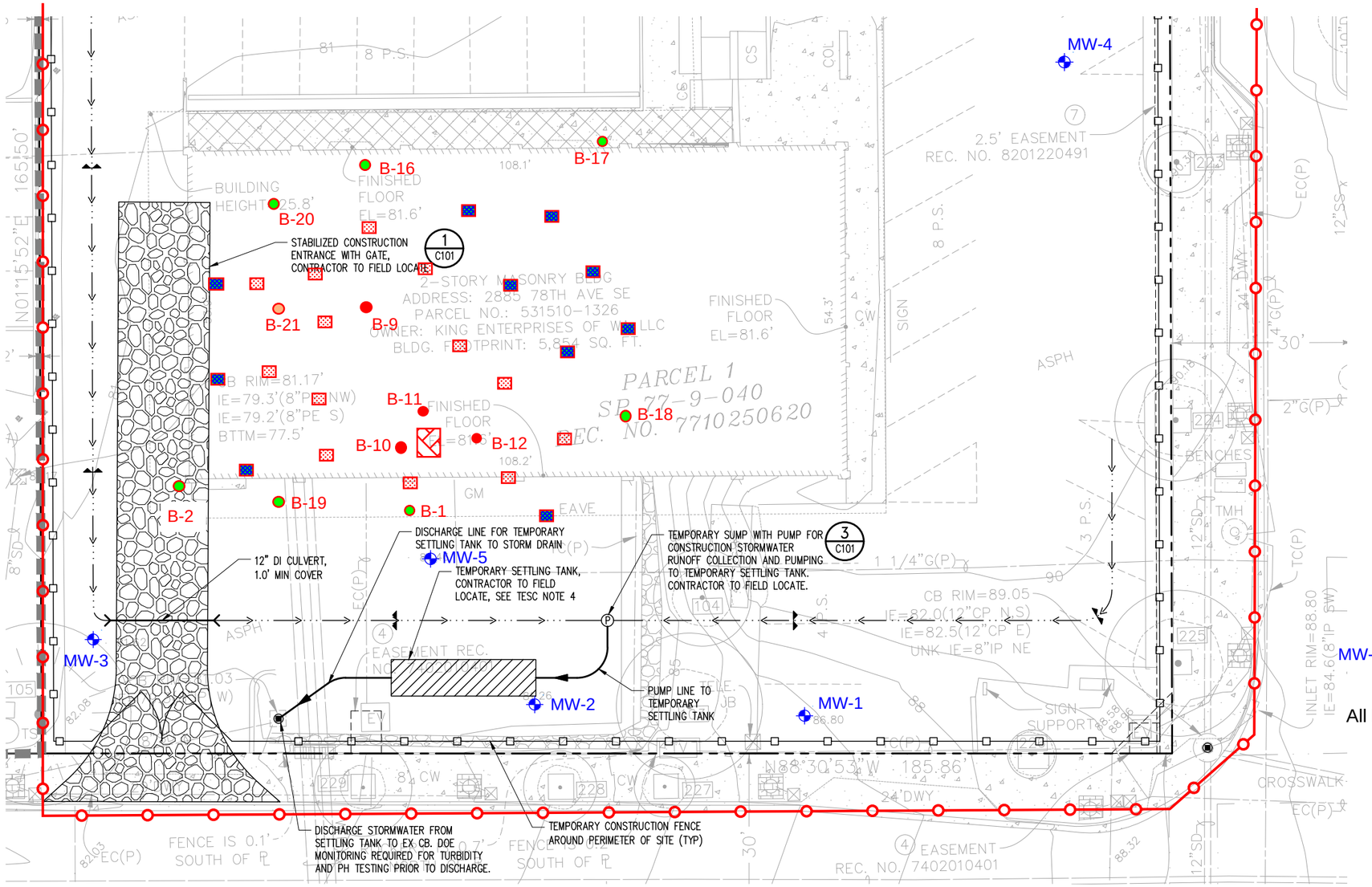


## Legend

- Boring location with no cVOC detections
- Boring location with cVOC detections/all depths
- Boring location with cVOC detection at 2 ft bgs
- Proposed pre-excavation test pit location - Tier 1
- Proposed pre-excavation test pit location - Tier 2
- Former dry cleaning machine
- MW-1 Groundwater monitoring well

All locations are approximate

R|MILLER INC
18321 98TH AVENUE NE, SUITE #1
BOTHELL, WA. 98011
425.775.3822 rmillerinc.com

CLIENT NAME / CLIENT LOGO

CONSULTANT NAME / CONSULTANT LOGO

PROJECT TITLE / PROJECT ADDRESS

SITE LOGISTICS
MERCER ISLAND MIXED USE
MERCER ISLAND, WA

REVISIONS

PERMIT DOCUMENTS
BID DOCUMENTS
CONSTRUCTION DOCUMENTS

| | |
|---|---|
| PROJECT NUMBER | 190057 |
| DRAWN BY | TH/MWB |
| CHECKED BY | |
| DATE | 10/12/2020 |

ARCHITECT / ENGINEER SEAL

SHEET TITLE

PHASE 1
DEMOLITION

SHEET NUMBER

RM-1.0

CDM Smith

MERCER ISLAND PROPERTY
2885 78th AVENUE SE
MERCER ISLAND, WASHINGTON

**FIGURE 3**
Pre-Excavation Contaminant Delineation
Test Pit Locations

# Appendix A

# Table 12.1 and Table 12.2 from Ecology's *Guidance for Remediation of Petroleum Contaminated Sites*

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## Table 12.1 Guidelines for Reuse of Petroleum-Contaminated Soil

| Parameter | Analytical Method | Soil Category (8)(9)(10) | | | |
|---|---|---|---|---|---|
| | | 1<br>No detectable Petroleum Components<br>(mg/kg) | 2<br>Commercial Fill Above Water Table<br>(mg/kg) | 3<br>Paving Base Material & Road Construction<br>(mg/kg) | 4<br>Landfill Daily Cover or Asphalt Manufacturing<br>(mg/kg) |
| **Total Petroleum Hydrocarbons (1)(2) See Table 7.1 for petroleum products that fall within these categories.** | | | | | |
| Gasoline Range Organics | NWTPH-Gx | <5 | 5 - 30 | >30 - 100 | >100 |
| Diesel Range Organics | NWTPH-Dx | <25 | 25 - 200 | >200 - 500 | >500 |
| Heavy Fuels and Oils* | NWTPH-Dx | <100 | 100 - 200 | >200 – 500 | >500 |
| Mineral Oil | NWTPH-Dx | <100 | 100 - 200 | >200 – 500 | >500 |
| **Volatile Petroleum Components** | | | | | |
| Benzene | SW8260B | <0.005 | 0.005 - 0.03 | 0.03 or less | See Table 12.2 |
| Ethyl benzene | SW8260B | <0.005 | 0.005 - 6 | 6 or less | >6 |
| Toluene | SW8260B | <0.005 | 0.005 - 7 | 7 or less | >7 |
| Xylenes (3) | SW8260B | <0.015 | 0.015 - 9 | 9 or less | >9 |
| **Fuel Additives & Blending Components** | | | | | |
| (MTBE) Methyl Tert-Butyl Ether | SW8260B | <0.005 | 0.005 - 0.1 | 0.1 or less | >0.1 |
| Lead | SW6010A | <17 | 17 - 50 | >50 - 220 | See Table 12.2 |
| **Other Petroleum Components** | | | | | |
| Polychlorinated (4) Biphenyls (PCBs) | SW8082 | <0.04 | <0.04 | <0.04 | See Table 12.2 |
| Naphthalenes (5) | SW8260B | <0.05 | 0.05 - 5 | 5 or less | >5 |
| cPAHs (6) | SW8270C | <0.05 | 0.05 - 0.1 | >0.1 - 2 | >2 |
| **Other Petroleum Characteristics (Applies to soils contaminated with any petroleum product.)** | | | | | |
| Odors | Smell | No detectable odor | | | |
| Staining | Visual | No unusual color or staining | | | |
| Sheen Test | See Footnote # 7 | No visible sheen | | | |

***IMPORTANT: See Table 12.2 and the footnotes to this Table on the following pages!***

***Test soil for the parameters specified in Table 7.2.***

****Does NOT include waste oil contaminated soils, which should be disposed of in a landfill.***

***"<" means less than; ">" means greater than***

**Table 12.2 Description and Recommended Best Management Practices for Soil Categories in Table 12.1 (continued next page)**

| Category | Acceptable Uses | Limitations |
|---|---|---|
| **Category 1 Soils:** Soils with no detectable/ quantifiable levels of petroleum hydrocarbons or constituents using the analytical methods listed in Table 7.3 and are not suspected of being contaminated with any other hazardous substances. | • Can be used anywhere the use is allowed under other regulations.<br>• Any use allowed for Category 2, 3 & 4 soils. | • These soils should be odor-free. |
| **Category 2 Soils:** Soils with residual levels of petroleum hydrocarbons that could have adverse impacts on the environment in some circumstances. | • Any use allowed for Category 3 & 4 soils.<br>• Backfill at cleanup sites above the water table.<br>• Fill in commercial or industrial areas above the water table.<br>• Road and bridge embankment construction in areas above the water table. | • These soils may have a slight petroleum odor, depending on the sensitivity of the individual. This should be considered when reusing these soils.<br>• Should be placed above the highest anticipated high water table. If seasonal groundwater elevation information is not available, place at least 10 feet above the current water table.<br>• Should not be placed within 100 feet of any private drinking water well or within the 10 year wellhead protection area of a public water supply well.<br>• Should not be placed in or directly adjacent to wetlands or surface water where contact with water is possible.<br>• Should not be placed under a surface water infiltration facility or septic drain field.<br>• Any other limitations in state or local regulations. |
| **Category 3 Soils:** Soils with moderate levels of residual petroleum contamination that could have adverse impacts on the environment unless re-used in carefully controlled situations. | • Any use allowed for Category 4 soils.<br>• Use as pavement base material under public and private paved streets and roads.<br>• Use as pavement base material under commercial and industrial parking lots. | • Should be placed above the highest anticipated high water table. If seasonal ground water elevation information is not available, place at least 10 feet above the water table.<br>• Should be a maximum of 2 feet thick to minimize potential for leaching or vapor impacts.<br>• Should not be placed within 100 feet of any private drinking water well or within the 10 year wellhead protection area of a public water supply well.<br>• Should not be placed in or directly adjacent to wetlands or surface water.<br>• Should not be placed under a surface water infiltration facility or septic drain field.<br>• When exposed, runoff from area in use should be contained or treated to prevent entrance to storm drains, surface water or wetlands.<br>• Any other limitations in state or local regulations. |

**Table 12.2** Description and recommended best management practices for soil categories in Table 12.1 (continued next page).

**Table 12.2 (continued) Description and Recommended Best Management Practices for Soil Categories in Table 12.1**

| Category | Acceptable Uses | Limitations |
|---|---|---|
| **Category 4 Soils:** Soils with high levels of petroleum contamination that should not be re-used except in very limited circumstances. | • Use in the manufacture of asphalt.<br>• Use as daily cover in a lined municipal solid waste or limited purpose landfill provided this is allowed under the landfill operating permit. | **Landfill Limitations:**<br>The soil should be tested for and pass the following tests:<br>➢ Free liquids test. Soils that contain free liquids cannot be landfilled without treatment.<br>➢ TCLP for lead and benzene. Unless exempt under WAC 173-303-071(3)(t), soils that fail a TCLP for lead or benzene must be disposed of as hazardous waste.<br>➢ Flammability test. Soils that fail this test must be disposed of as hazardous waste.<br>➢ Bioassay test under WAC 173-303-100(5). Soils that fail this test must be disposed of as hazardous waste.<br>➢ PCBs. Soils with a total PCB content of 2 ppm or more must be disposed of as hazardous waste.<br>Soil used for daily cover should be stockpiled within the landfill lined fill area.<br>Soil containing more than 10,000 mg/kg TPH should be buried immediately with other wastes or daily covered to limit potential worker exposure.<br>Any additional limitations specified in the landfill permit or in other state or local regulations.<br>**Asphalt Manufacturing Limitations:**<br>Soil storage areas should be contained in a bermed area to minimize contact with surface water runoff from adjacent areas. Runoff from storage areas should be considered contaminated until tested to prove otherwise.<br>Soil storage areas should also be lined and covered with a roof or secured tarp to minimize contact with precipitation and potential groundwater contamination. Leachate from storage areas should be considered contaminated until tested to prove otherwise.<br>The soil should be tested for and pass the following tests:<br>➢ TCLP for lead and benzene. Unless exempt under WAC 173-303-071(3)(t), soils that fail a TCLP for lead or benzene must be disposed of as hazardous waste.<br>➢ Flammability test. Soils that fail this test must be disposed of as hazardous waste.<br>➢ Bioassay test under WAC 173-303-100(5). Soils that fail this test must be disposed of as hazardous waste.<br>➢ No detectable levels of PCBs in soil (<0.04 mg/kg).<br>Precautions should be taken to minimize worker exposure to soil storage piles and any dust or vapors from these piles prior to feeding into the asphalt batch plant. |

***IMPORTANT: See the following page for additional information!***