Final
Compliance Monitoring Plan
North Marina Ameron/Hulbert Site
Everett, Washington

January 20, 2021

Prepared for

Port of Everett
Everett, Washington

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Compliance Monitoring Plan
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Everett, Washington

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TABLE OF CONTENTS

FIGURES

TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

1,1-DCE	1,1-dichloroethene
BEHP	bis(2-ethylhexyl)phthalate
BMP	best management practice
CAP	cleanup action plan
CDF	controlled density fill
CESCL	construction erosion and sediment control lead
CMP	compliance monitoring plan
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CUL	cleanup level
DO	dissolved oxygen
Ecology	Washington State Department of Ecology
EDR	engineering design report
EPA	US Environmental Protection Agency
ft	feet, foot
GPS	global positioning system
HASP	health and safety plan
IHS	indicator hazardous substance
LAI	Landau Associates, Inc.
mL	milliliter
MTCA	Model Toxics Control Act
ORP	oxidation reduction potential
PLP	potentially liable party
Port	Port of Everett
QC	quality control
Site	North Marina Ameron/Hulbert site
SVOC	semivolatile organic compound
SWPPP	stormwater pollution prevention plan
TPH-D	diesel-range total petroleum hydrocarbons
TPH-G	gasoline-range total petroleum hydrocarbons
TPH-O	oil-range total petroleum hydrocarbons
Trunkline IA	Trunkline interim action
UCL	upper confidence limit
volatile organic compound	VOC
WAC	Washington Administrative Code

1.0 INTRODUCTION

This Compliance Monitoring Plan (CMP), prepared by Landau Associates, Inc. (LAI) on behalf of the Port of Everett (Port), documents the compliance monitoring program for the final cleanup action of the North Marina Ameron/Hulbert site (Site; Figure 1). The Site is owned by the Port, the implementing potentially liable party (PLP) for this final cleanup action. The cleanup is being conducted pursuant to Consent Decree No. 15 2 01720 7 between the Port and other Site PLPs, and the Washington State Department of Ecology (Ecology).

This CMP is being submitted as an attachment to the Engineering Design Report (EDR), which describes the final cleanup action. The final cleanup action includes excavation and offsite disposal of contaminated soil from two areas: Cleanup Area G-2 and Cleanup Area G-4.

This CMP addresses compliance monitoring for the cleanup action, consistent with the requirements of the Model Toxics Control Act (MTCA) per Washington Administrative Code (WAC) 173-340-400 (4)(b) and WAC 173-340-410, which requires compliance monitoring for all cleanup actions for the following three purposes:

- **Protection monitoring** to confirm that human health and the environment are adequately protected during construction, operation, and maintenance associated with the cleanup action.
- **Performance monitoring** to confirm that the cleanup action has attained cleanup standards and any other performance standards.
- **Confirmation monitoring** to confirm the long-term effectiveness of the cleanup action once the cleanup standards and other performance standards have been attained.

The following sections present the approach and procedures for addressing these monitoring requirements.

2.0 PROTECTION MONITORING

This section describes planned monitoring activities for the protection of human health and the environment during implementation of the cleanup action for the Site.

2.1 Protection of Human Health

Monitoring for protection of human health addresses worker safety for activities related to construction, operation, and maintenance of the cleanup action and will be addressed through a project health and safety plan (HASP). The earthwork contractor will be required to prepare a project-specific HASP that will address monitoring for, and potentially mitigating physical and chemical hazards associated with, Site activities, consistent with the requirements of WAC 173-340-810. Anticipated potential physical hazards include: working in proximity to heavy equipment and moving vehicles, heat stress and cold stress, and dust generation. Anticipated potential chemical hazards include exposure to Site soil contaminants through various exposure pathways (i.e., direct contact, dust inhalation, and ingestion).

2.2 Protection of the Environment

Environmental protection monitoring will be conducted during the construction activities. This will include dust monitoring, preparation and implementation of a stormwater pollution prevention plan (SWPPP), and implementation and monitoring of best management practices (BMPs) to minimize dust generation and control stormwater runoff from contaminated soil cleanup during construction. The requirement for a contractor-prepared SWPPP may be included in the project plans and specifications. If dewatering is conducted and permitted to discharge to the City of Everett's sanitary sewer, then regular testing will be performed to confirm water quality standards are being met prior to discharge.

During construction, a representative of the Port that is a certified construction erosion and sediment control lead (CESCL) will monitor performance of the BMPs and recommend changes in approach or application, as needed. Environmental protection monitoring will include visual monitoring to verify that excessive dust is not generated and that stormwater runoff is not being impacted.

Heavy equipment (e.g., excavators conducting the excavation) will be cleaned by a hot water, high-pressure wash before mobilization to the Site and at completion of the project. Potable tap water will be used as the cleansing agent. When heavy equipment is used to collect performance monitoring soil samples, the excavator buckets will be decontaminated per procedures presented in Section 4.4.

3.0 PERFORMANCE MONITORING

Performance monitoring will include verifying that the physical limits of planned excavations are attained and confirming that concentrations in soil remaining in place at the bottom of the excavation meet the Site cleanup levels (CULs). Survey control points will be provided in the project plans and specifications and used by the contractor to guide excavation and to verify that soil was removed as planned. In Cleanup Area G-4, this performance monitoring will consist of verifying that the excavation limits extend to concrete walls and slab surrounding the excavation area. Port representatives will provide construction observation and will work with the contractor to confirm adherence to the construction plans and specifications. After the physical limits of the planned excavation are attained, soil sampling will be conducted in the base and sidewalls of the excavation to determine whether soil remaining in place meets CULs provided in the Site cleanup action plan (CAP). This soil sampling is described in Section 4.0 and will be utilized as performance monitoring for this evaluation. Following completion of the cleanup action, confirmation groundwater monitoring will be conducted; this monitoring also described in Section 4.0.

4.0 CONFIRMATION MONITORING

Confirmation monitoring will be conducted following implementation of the cleanup action. This monitoring includes soil quality monitoring, which will be utilized as an aspect of performance monitoring for the cleanup action, and groundwater compliance monitoring.

4.1 Soil Quality Monitoring

During excavation and prior to backfilling, soil compliance monitoring will include collecting soil samples from the base and sidewalls of the excavation to confirm that Site soil CULs have been achieved and to document concentrations of contaminants remaining on-site. Confirmation samples will not be collected at Cleanup Area G-4 because the bottom and sidewalls of the excavation are expected to be concrete foundations/walls below the building slab; if these barriers are not present, bottom and/or sidewalls samples will be collected. Samples will also not be collected along the northern sidewall of Cleanup Area G-2, which is the southern edge of the 2019 Trunkline interim action (Trunkline IA; LAI 2019) excavation area. The Trunkline IA area was backfilled with controlled density fill (CDF) following excavation; the CDF, which will serve as a marker of the southern boundary of the Trunkline IA and will provide a stable northern sidewall during excavation.

As described in the EDR, Cleanup Area G-2 has been subdivided into seven subsections, which will each be excavated to different grades. Confirmation sample locations were selected to provide approximately equal coverage throughout each individual subsection in order to evaluate residual soil quality following the excavation. Excavation base samples will be collected from the 14 locations presented on Figure 1. The sample spacing provides a sufficient number of samples to support the calculation of an upper confidence interval for the mean contaminant concentrations remaining at the base of the excavation.

Confirmation soil samples will also be collected from the excavation sidewalls to evaluate whether the lateral limits of contamination have been removed. Sidewall sampling will occur around all excavation boundaries, except to the north where the Trunkline IA was completed, and between excavation subareas with excavation grade differences greater than 2 feet (ft) in height. Sidewall samples will not be collected between subareas if the difference in excavation grades are less than 2 ft. Excavation sidewall samples will be collected from 26 locations, as shown on Figure 1.

If field observations of the soil at the base of an excavation indicate evidence of potential contamination either through visual observation (e.g., soil discoloration, presence of debris or sand blast grit) or detection of concrete-like odor, then this material will be removed with additional excavation and a sample will be collected in this potentially contaminated location that will replace the nearest planned sample location(s). Based on the analytical results for confirmation samples, additional excavation may be required to remove residual soil contamination that exceeds CULs. Soil excavation and subsequent confirmation soil sampling will continue in an iterative manner until concentrations remaining in the soil at the Site meet the CULs, or the base of excavation becomes unstable. Decisions regarding excavation stability will be made by the Port field representative in consultation with the contractor.

4.1.1 Sample Collection Procedures

Soil samples at the base of the excavation will be collected from within the upper 6 inches of soil at depth. If safe to enter the excavation, samples will be collected by hand using decontaminated hand implements, including stainless-steel spoons, steel shovels, picks, and similar equipment. If the base of the excavation is not accessible because of soft soil conditions or the presence of groundwater, the sample will be collected from an excavator bucket.

Compliance monitoring samples collected from the excavation sidewalls will be collected from a depth interval extending the full length of the sidewall excavation depth. The surface of the excavation sidewall will be scraped using decontaminated hand implements to expose a fresh surface for sample collection. Equal amounts of soil from the sidewalls will be collected using a decontaminated stainless-steel spoon, placed in a decontaminated stainless-steel bowl, homogenized, and transferred to the appropriate sample container. Similar to bottom samples, if the excavation sidewalls are not accessible to sampling personnel, the sample will be collected using an excavator bucket.

Material greater than about ¼ -inch will be removed from the sample prior to placing the soil in the sample container. Excavation confirmation samples will be verified in the field with a global positioning system (GPS). Soil sample containers, preservatives, and holding times are presented in Table 1.

Sample nomenclature will provide information regarding the sample type (BS or SW for base or sidewall) and sample location, as demonstrated with the following examples:

- BS-1 (Base sample, sample location 1)
- SW-2 (Sidewall sample, sample location 2).

If additional excavation is conducted based on the results of confirmation sampling, the new sample will be collected at the new base elevation or extended sidewall location. The new sample will be named similar to the sample that it replaces with the addition of the suffix “a,” “b,” “c,” etc. For example, BS-2a would be a second base sample collected after additional excavation at location BS-2.

4.1.2 Soil Laboratory Analyses

Confirmation soil samples will be analyzed on an expedited turnaround time by ALS Laboratory, located in Everett, Washington, for the following:

- Metals
  - Antimony, arsenic, and lead by US Environmental Protection Agency (EPA) Method 6020.

- Diesel-range and gasoline-range total petroleum hydrocarbons (TPH-D and TPH-G) by Method NWTPH-Dx and NWTPH-G. If significant amounts of wood debris are encountered during excavation, samples will also be tested for TPH with silica-gel cleanup prior to analysis.
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by EPA Method 8270-SIM.

Soil sample chemical analyses, analytical methods, CULs, and reporting limit goals are presented in Table 2. The target reporting limits are only goals because instances may arise where sample concentrations, heterogeneity of samples, or matrix interferences preclude achieving the desired reporting limits and associated quality control (QC) criteria. If this occurs, the laboratory will report the reason(s) for deviations from these reporting limits or noncompliance with QC criteria.

4.1.3 Soil Sample Data Evaluation

Following completion of confirmation soil sampling activities, and validation of the analytical results, the soil data will be compared to the CULs provided in Table 2. Based on the analytical results for these soil samples, additional excavation may be required in order to remove contamination that exceeds CULs. Soil excavation and subsequent confirmation soil sampling will continue in an iterative manner until concentrations remaining in the soil at the Site meet the CULs, if practicable (i.e., further excavation will be considered impracticable at the depth where the base of excavation becomes unstable).

If a statistical approach is used to demonstrate compliance with the cleanup level, the evaluation will be in accordance with Ecology guidance documents (Ecology 1992, 1993) and MTCA (WAC 173-340-740[7][d]). MTCA allows for a site to meet cleanup goals using a statistical approach and the CAP reiterates that may be appropriate at this Site (Ecology 2014). If a statistical approach is used to demonstrate attainment of cleanup, the following three requirements will be satisfied:

- The upper 95 percent confidence limit (UCL) on the true mean shall be less than the soil CUL (confidence interval test).[1]
- No single sample concentration will be greater than two times the soil CUL.
- Less than 10 percent of the sample concentrations will exceed the soil CUL.

4.2 Groundwater Compliance Monitoring

After performance monitoring soil sampling confirms that the cleanup action has attained cleanup standards, groundwater compliance monitoring will be conducted to confirm long-term effectiveness of the cleanup action. Groundwater compliance monitoring will consist of at least four consecutive quarters of groundwater quality monitoring for 1 year at locations where compliance with CULs needs to be verified and at all shoreline wells to verify that CULs are being achieved at the conditional point

[1] In accordance with WAC 173-340-740(7)(c)(iii), the appropriate statistical methods for calculating the UCL will be determined based on the distribution (i.e., normal or lognormal distribution) of the sample data for each indicator hazardous substance (IHS). Ecology's statistics software package (MTCAStat, Version 2.0) will be used to determine the distribution of the sample data and to perform the confidence interval test.

of compliance for the Site. If any of the quarterly groundwater monitoring results show exceedances of the CULs, additional groundwater monitoring will be required, as determined by Ecology, to show compliance. As presented in the CAP, groundwater samples will be collected from monitoring wells RI-MW-1, RI-MW-2, RI-MW-3, RI-MW-4, RI-MW-6, RI-MW-7, P-10, SEE-EC-3, and ECI-MW-3; these locations are shown on Figure 2.

4.2.1 Water Level Measurements

Water level measurements will be obtained at each monitoring well prior to purging and sample collection. All water levels will be measured using an electronic water level indicator and will be recorded to the nearest 0.01 ft. Measurements will be taken from the top of the well casing.

4.2.2 Groundwater Sample Collection

Groundwater samples will be collected from existing monitoring wells RI-MW-1, RI-MW-2, RI-MW-3, RI-MW-4, RI-MW-6, RI-MW-7, P-10, SEE-EC-3, and ECI-MW-3. Groundwater monitoring at shoreline wells (RI-MW-1, RI-MW-2, and RI-MW-3), which were determined to be tidally influenced during the Site remedial investigation (LAI 2014) will be collected within 1 hour prior to 1 hour after the predicted low tide to minimize influence on the sample by marine surface water.

Collection of groundwater samples will be completed at each monitoring well using the following procedures:

- Immediately following removal of each well monument cover, the wellhead will be observed for damage, leakage, and staining. Additionally, immediately following removal of the wellhead cap, any odors will be recorded, and the condition of the well opening will be observed. Any damage, leakage, or staining to the wellhead or well opening will be recorded.
- Prior to sampling, each well will be purged using a peristaltic pump that is attached to dedicated purge and sample collection tubing. Purging will be conducted following low-flow purging procedures (EPA 2017).
- Field parameters, including pH, temperature, specific conductance, dissolved oxygen (DO), oxidation reduction potential (ORP), and turbidity, will be continuously monitored during purging using a flow cell. Purging of the well will be considered to be complete when all field parameters become stable for three successive readings. The successive readings should be within +/– 0.1 pH units for pH, +/– 3 percent for specific conductance, and +/– 10 percent for DO and turbidity.
- Purge data will be recorded on a Groundwater Sample Collection form including purge volume; time of commencement and termination of purging; any observations regarding color, turbidity, or other factors that may have been important in evaluation of sample quality; and field measurements of pH, specific conductance, temperature, DO, and turbidity.
- Following the stabilization of field parameters, the flow cell will be disconnected and groundwater samples will be collected. Sample data will be recorded on a Groundwater Sample Collection form, including sample number and time collected, the observed physical

characteristics of the sample (e.g., color, turbidity, etc.), and field parameters (pH, specific conductance, temperature, and turbidity).

- Four replicate field measurements of temperature, pH, specific conductance, DO, ORP, and turbidity will be obtained using the following procedures:
- A 250-milliliter (mL) plastic beaker will be rinsed with de-ionized water followed by sample water.
- The electrodes and temperature compensation probe will be rinsed with de-ionized water followed by sample water.
- The beaker will be filled with sample water; the probes will be placed in the beaker until the readings are stabilized. Temperature, pH, specific conductance, DO, and turbidity measurements will be recorded on the Groundwater Sample Collection form.
- The above step will be repeated to collect the remaining replicates.
- Any problems or significant observations will be noted in the “comments” section of the Groundwater Sample Collection form.
- Groundwater samples will be collected into the appropriate sample containers using a peristaltic pump. Clean gloves will be worn when collecting each sample.
- Groundwater for dissolved metals analyses will be collected last and field-filtered through a 0.45 micron, in-line disposable filter. Dissolved metals samples will be preserved, as specified in Table 1. A note will be made on the sample label, sample collection form, and chain-of-custody form to indicate the sample has been field-filtered and preserved, including the type of preservative used.

Groundwater samples will be submitted to the laboratory for analysis as described in Section 4.2.3. Table 1 presents the appropriate sample containers, preservatives, and holding times.

4.2.3 Groundwater Laboratory Analyses

Compliance monitoring groundwater samples will be analyzed by ALS Laboratory. In accordance with the CAP, the wells listed below will be monitored for the following:

- RI-MW-1 – dissolved arsenic, dissolved copper
- RI-MW-2 – dissolved arsenic, dissolved copper
- RI-MW-3 – dissolved arsenic, dissolved copper, semivolatile organic compounds (SVOCs; bis[2-ethylhexyl]phthalate [BEHP] only)
- RI-MW-4 – TPH-D and oil-range total petroleum hydrocarbons (TPH-O)
- RI-MW-6 – dissolved arsenic, TPH-D and TPH-O
- RI-MW-7 – SVOCs (BEHP only)
- P-10 – dissolved arsenic, dissolved copper
- SEE-EC-3 – dissolved arsenic

- ECI-MW-3 – dissolved arsenic, volatile organic compounds (VOCs; 1,1-dichloroethene [1,1-DCE] only).

Dissolved metals will be analyzed by EPA Method 6020, SVOCs (BEHP) by EPA Method 8270D, VOCs (1,1-DCE only) by EPA Method 8260, and TPH-D and TPH-O by Method NWTPH-Dx both with and without the acid/silica gel cleanup (SGC) preparation method. Use of the SGC preparation method is consistent with analytical procedures used during the remedial investigation.

A summary of groundwater sample chemical analyses, analytical methods, CULs, and reporting limit goals are presented in Table 2. The target reporting limits are only goals because instances may arise where sample concentration, heterogeneity of samples, or matrix interferences preclude achieving the desired reporting limits and associated QC criteria. If this occurs, the laboratory will report the reason(s) for deviations from these reporting limits or noncompliance with QC criteria.

4.3 Sample Transportation and Handling

The transportation and handling of soil samples will be accomplished in a manner that not only protects the integrity of the sample, but also prevents any detrimental effects because of the release of samples. Samples will be logged on a chain-of-custody form and will be kept in coolers on ice until delivery to the analytical laboratory. The chain-of-custody form will accompany each shipment of samples to the laboratory.

4.4 Equipment Decontamination

The decontamination procedures described below are to be used by field personnel to clean sampling and other field equipment. Deviation from these procedures must be documented in field records.

4.4.1 Sampling Equipment

All reusable sampling equipment (e.g., stainless-steel bowls, stainless-steel spoons, excavator, etc.) will be decontaminated using a three-step process, as follows:

1) Scrub surfaces of equipment that would be in contact with the sample with brushes using an Alconox solution.
2) Rinse and scrub equipment with clean tap water.
3) Rinse equipment a final time with de-ionized water to remove tap water impurities.

Decontamination of the reusable sampling equipment (including heavy equipment) will occur between collection of each sample. Decontamination of sampling equipment that contains a visible sheen will include a hexane rinse (or other appropriate solvent) prior to the tap water rinse.

4.5 Investigation-Derived Waste Management

This section describes the management of investigation-derived waste including purge water and decontamination water generated during groundwater sampling activities.

4.5.1 Liquid Waste

Decontamination water and purge water generated during groundwater sampling will be temporarily stored in 55-gallon drums. Disposal methods will be determined based on the analytical results for the groundwater samples.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

The soil and groundwater analytical results must be accurate, precise, representative, complete, and comparable. Validation of the analytical data will be performed by LAI following the guidelines in applicable sections of the EPA Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review (EPA 2016a, b).

Accuracy of the data will be determined through recovery of spiked surrogates, matrix spikes, and spiked laboratory control samples. For each analysis, the following quality control samples will be collected to evaluate accuracy:

- **Laboratory Control Sample:** A minimum of one laboratory control sample per 20 samples, not including QC samples, or one laboratory control sample per sample batch if fewer than 20 samples are obtained, will be analyzed for all parameters.
- **Method Blank:** A minimum of one method blank sample will be performed for each analysis and each batch of samples analyzed.
- **Trip Blanks:** One set of trip blanks will accompany and be analyzed with each batch of samples to be analyzed for volatiles (TPH-G or VOCs).

Precision of the data will be determined through evaluation of the relative percent difference between duplicate samples. To evaluate precision, the following QC sample will be collected and/or analyzed:

- **Blind Field Duplicate:** One blind field duplicate groundwater sample will be collected during each monitoring event and analyzed for the same constituents as the parent sample. The blind field duplicate will consist of a split sample collected at a single sample location. Blind field duplicates will be collected by alternately filling sample containers for both the original and the corresponding duplicate sample at the same location to decrease variability between the duplicates.

Representativeness of the data will be optimized through appropriate selection of sampling locations and methods. Analyses will be performed promptly within established holding times identified in Table 1.

Completeness for the project will be established as the proportion of data generated that is determined to be valid. The data quality objective for completeness is 90 percent.

Comparability is an expression of the confidence with which one data set can be compared to another. In this project, standard methods, promulgated by EPA or Ecology where available, will be used. Data generated will be reported in units consistent with Ecology or EPA guidelines.

6.0 USE OF THIS REPORT

This CMP has been prepared for the exclusive use of the Port of Everett for specific application to the planned remedial action at the North Marina Ameron/Hulbert site in Everett, Washington. Any reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by LAI, shall be at the user's sole risk. LAI warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

7.0 REFERENCES

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Legend

- RI Soil Sample Location
- Trunk Line Confirmation Sample
- 1976 Pavement Line (Approximate)
- Trunk Line Excavation

Excavation Subsection and Depth (ft)

- 4
- 5.5
- 6
- 8
- 10

- Sidewall Confirmation Sample
- Bottom Confirmation Sample
- A 6 ft — Excavation Area and Depth

0 20 40
Scale in Feet

Data Source: ©Google Earth Pro, 2011

Note
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Landau Associates

North Marina Ameron/Hulbert Site
Compliance Monitoring Report
Everett, Washington

Soil Confirmation Sample Locations in Excavation Area G-2

Figure
1

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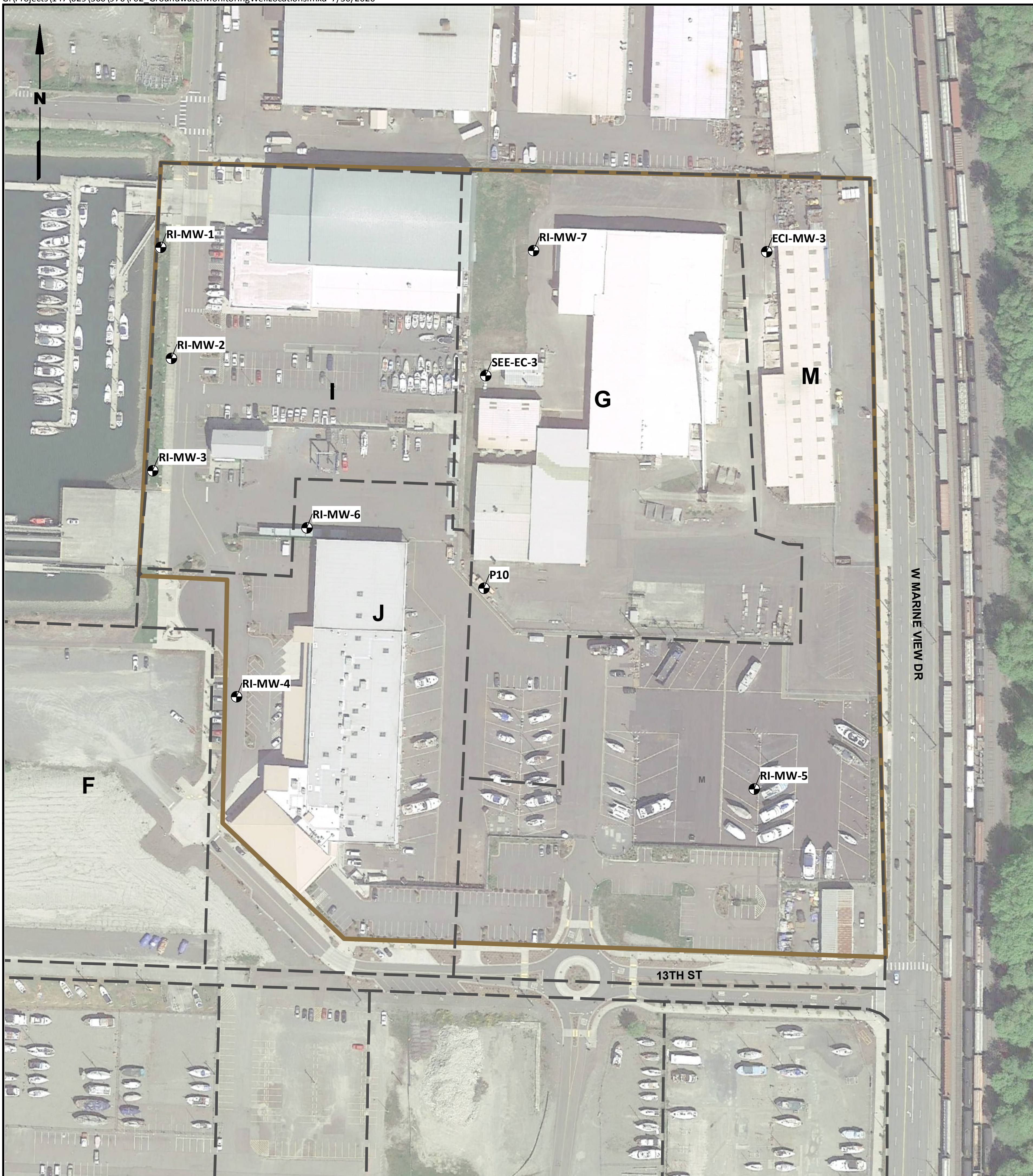

Legend

Monitoring Well

North Marina Ameron/Hulbert Site Boundary (Determined in the RI/FS)

G - Area Designation

Notes

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Source: Google Earth Pro (2011 Image)

0 140 280

Scale in Feet

Landau Associates

North Marina Ameron/Hulbert Site
Compliance Monitoring Report
Everett, Washington

Groundwater Monitoring Well Locations

Figure 2

Table 1
Analytical Methods, Containers, Preservation, and Hold Times
North Marina Ameron/Hulbert Site
Port of Everett, Washington

Matrix / Analysis	Analytical Method	Container	Preservation	Maximum Holding Time (Days)
Soil				
TPH-D/TPH-O	NWTPH-Dx (a)	8-oz. jar - glass	Store cool at less than 6°C	14
TPH-G	NWTPH-G	2 each 40 mL VOA	Methanol and store at less than 6°C	14
Metals	EPA 6020	8-oz. jar - glass	Store cool at less than 6°C	180
SVOCs / cPAHs	EPA 8270	8-oz. jar - glass	Store cool at less than 6°C	14
Water				
TPH-D/TPH-O	NWTPH-Dx (a)	2 x 500-mL amber glass	Store cool at 4°C	7
VOCs (1,1-DCE only)	EPA 8260B	2 x 40-mL vials - glass	Add HCl to pH<2; Store cool at 4°C	14
SVOCs (BHEP only)	EPA 8270/3545 (SIM for cPAHs only)	2 x 500-mL amber glass	Store cool at 4°C	7
Dissolved Metals (field filtered)	EPA 6020	1-L polyethylene	Add HNO_3; Store cool at 4°C	180 (mercury 28 days)

Notes:
(a) Laboratory sample preparation / Cleanup method: Acid / Silica gel cleanup.

Abbreviations and Acronyms:
°C = degrees Celsius
1,1-DCE = 1,1-dichloroethene
BHEP = bis(2-ethylhexyl)phthalate
cPAH = carcinogenic polycyclic aromatic hydrocarbons
EPA = US Environmental Protection Agency
HCl = hydrogen chloride
HNO_3 = nitric acid
L = liters
mL = milliliters
oz = ounces
SIM = select ion monitoring
SVOC = semivolatile organic compound
TPH-D = diesel-range total petroleum hydrocarbons
TPH-G = gasoline-range total petroleum hydrocarbons
TPH-O = oil-range total petroleum hydrocarbons
VOC = volatile organic compound

Table 2
Analytical Reporting Limit Goals and Cleanup Levels
North Marina Ameron/Hulbert Site
Port of Everett, Washington

Analyte	Analytical Method (mg/kg)	Soil		Groundwater	
		Reporting Limit Goals (mg/kg)	Ameron/Hulbert Site CAP Proposed Soil Cleanup Levels (mg/kg)	Reporting Limit Goals (µg/L)	Ameron/Hulbert Site CAP Proposed Groundwater Cleanup Levels (µg/L)
Antimony	EPA Method 6020	0.5	32	n/a	n/a
Arsenic	EPA Method 6020	1	20	1.0	5
Copper	EPA Method 6021	n/a	n/a	2.0	3
Lead	EPA Method 6020	0.5	250	n/a	n/a
cPAH TEQ [benzo(a)pyrene]	EPA Method 8270 SIM	0.02	0.14	n/a	n/a
SVOCs (bis[2-Ethylhexyl]phthalate)	EPA Method 8270	n/a	n/a	1	2.2
VOCs (1,1-dichloroethylene)	EPA Method 8260	n/a	n/a	0.2	3.2
TPH-D	NWTPH-Dx	25	2,000	250	500
TPH-O	NWTPH-Dx	n/a	n/a	500	500
TPH-G	NWTPH-Gx	5	100	n/a	n/a

Abbreviations and Acronyms:

µg/L = micrograms per liter
CAP = cleanup action plan
cPAH = carcinogenic polycyclic aromatic hydrocarbons
EPA = US Environmental Protection Agency
mg/kg = milligrams per kilogram
n/a = not applicable
SVOC = semivolatile organic compound
TEQ = toxicity equivalency quotient
TPH-D = diesel-range total petroleum hydrocarbons
TPH-G = gasoline-range total petroleum hydrocarbons
TPH-O = oil-range total petroleum hydrocarbons
VOC = volatile organic compound