Soil and Groundwater Management Plan
Ameron/Hulbert Site
Everett, Washington

February 24, 2017

Prepared for

Port of Everett
Everett, WA

LANDAU ASSOCIATES

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Everett, Washington

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Project Coordinator:	tam

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1.0 INTRODUCTION

This document presents a Soil and Groundwater Management Plan (Plan) to help guide soil and groundwater management during construction and other intrusive activities at the Ameron/Hulbert Site (Site). The Port of Everett (Port) intends to develop portions of the Site as a part of the Waterfront Place Central (WPC) development, which includes multiple parcels in and surrounding the Site. The Port will develop portions of the Site itself, but will also sell or lease parcels within the Site for development by others. Any property development or other intrusive activities will need to properly manage contaminated soil and groundwater to meet the requirements of the cleanup action selected for the Site by the Washington State Department of Ecology (Ecology), as documented in the cleanup action plan (CAP; Ecology 2014).

1.1 Soil

The CAP identifies areas of contaminated soil as cleanup areas. Cleanup Areas G-2 and G-4, shown on Figure 1, are not addressed in this Plan, as they will be addressed by excavation during the final cleanup action. The remaining cleanup areas, where contaminated soil were left in place in the Site for permanent containment or for management during future development are identified as soil management areas (SMAs) for the purposes of this Plan. If Site CULs are not achieved throughout cleanup areas G-2 and G-4 during implementation of the final cleanup action, this Plan will be revised to document the location(s) of residual contaminated soil subject to the soil management requirements presented herein.

1.2 Groundwater

As part of the final cleanup action, groundwater Site-wide has use restrictions and management requirements and, as a result, groundwater management requirements apply to the entire Site rather than discrete management areas.

1.3 Use of this Plan

This Plan is to be utilized during development within the Site, or during other intrusive activities that encounter potential contaminated soil as described in Section 5.1, compromise the containment of contaminated media in any Site SMAs defined in Section 5.2, or encounter Site groundwater as described in Section 6.0.

In addition to the background information provided in the following section, this Plan:

- Reviews the soil and groundwater conditions at the Site and identifies how to recognize potentially contaminated soil if encountered in areas outside of identified SMAs.
- Outlines the procedures to be followed in managing residual soil contamination in identified SMAs, and any contaminated soil encountered outside of identified SMAs.
- Identifies the procedures to be followed in managing potentially contaminated groundwater that underlies the Site.

2.0 BACKGROUND

The area currently being developed as WPC, including the Site, has been used for a variety of commercial, industrial, and marine-related activities since the late 1800s. From about 1890 until about 1950, timber-product operations dominated waterfront industrial activities. Over that period, the shoreline of Port Gardner Bay was near the current location of West Marine View Drive, with shingle and lumber mills either along the shoreline or located on wharfs to the west of the shoreline. The Site was filled to its current configuration between about 1947 and 1955, using dredge fill from the Snohomish River to create the current Site uplands by filling the tidelands to the west of the original shoreline. After the additional uplands were created, businesses transitioned from primarily the wood products industry to a broader range of light to heavy industry and commercial enterprises, with a large percentage of them oriented toward marine services operations. These activities resulted in soil and groundwater contamination requiring cleanup under the State Model Toxics Control Act (MTCA) regulations (Washington Administrative Code [WAC] 173-340).

The Site was one of the six MTCA cleanup sites located within the WPC development, and the Site boundary is shown on Figure 1, which was identified by Ecology in the CAP. The Port, in conjunction with other liable parties, conducted a remedial investigation and feasibility study (RI/FS) for the Site to evaluate the nature and extent of contamination, and develop and evaluate a number of cleanup action alternatives to remediate the identified contamination. Based on the results of the RI/FS (LAI 2014), Ecology selected a final cleanup action for the Site, which is documented in the CAP.

The Port and the other responsible parties entered into a consent decree for implementation of the CAP, with the Port being the implementing party. Implementation of the physical remediation elements of the final cleanup action for the Site is pending, awaiting the advancement of the MTCA cleanup process for an adjacent site that is anticipated to be remediated in conjunction with this Site.

3.0 RELATIONSHIP TO INSTITUTIONAL CONTROLS

The CAP specifies the institutional controls that must be placed on the Site to ensure that the integrity of the cleanup action is not compromised by development or other intrusive activities following the implementation of the cleanup action or poor management/maintenance. An Institutional Controls Plan (ICP) for the Site will be submitted to Ecology following full implementation of the cleanup action. This Plan will be integrated by reference into the ICP. The institutional controls are also contained within a restrictive covenant filed on the property deed to the parcels encompassed by the Site to ensure that these institutional controls are retained on the property if property ownership changes.

4.0 GENERAL SITE SOIL CONDITIONS

Based on previous environmental investigations, soil and materials present at the Site include a native tideflat, hydraulic fill, general fill, and non-soil material fill. Contaminated soil and groundwater have been identified at the Site, primarily within the general fill and as non-soil materials. Arsenic, copper, lead, cPAHs, butyl benzyl phthalate, and petroleum hydrocarbons have been detected in Site soils at concentrations above the Site CULs.

In addition to the SMAs identified in Section 5.0, it is possible that future construction activities could result in discovery of previously unidentified contamination at other locations within the Site. As a result, it is important that soil conditions are observed during intrusive activities to identify potential contamination if it is encountered. Field personnel should be familiar with the physical appearance of the common soil types present throughout the Site so that potentially contaminated materials can be recognized.

Common soil types present at the Site are described as follows:

- **General Fill:** consisting of mixtures of brown to gray, fine to coarse or fine to medium sand with varying amounts of gravel and silt. Gravel fill and base coarse fill, placed as a trafficking surface to support site development purposes, is also included as general fill. General fill is generally located from the surface and extends to the top of the hydraulic fill.
- **Hydraulic Fill:** consisting of mixtures of sand and silt, with intermittent shell fragment layers, ranging from tan to dark gray, and located throughout the Site from 1 to 7 feet (ft) below ground surface (bgs), and generally extends to the native tideflat surface.
- **Native Tideflat:** consisting of silty sand to sandy silt with wood and shell fragments, typically below a layer of organic-rich silty sand, silt, or wood debris, and located at a depth of about 18 to 20 ft bgs.

Materials that contain hazardous substances at concentrations exceeding the Site CULs and have previously been encountered at the Site include the following:

- **Sandblast Grit:** granular sand-sized material that is typically black, but may be colored (e.g., pink, green). It is often encountered in conjunction with concrete waste and contains highly elevated concentrations of arsenic and lead. Photos of sandblast grit observed at the Site are included in Appendix A.
- **Concrete Waste:** soil-like material that exhibits unnatural or bright colors (e.g., green, red, white). The material is generally fine-grained and is often semi-consolidated (can be ripped with heavy equipment). It is often encountered in conjunction with sand blast grit and contains elevated concentrations of arsenic and lead. Photos of concrete waste observed at the Site area included in Appendix A.
- **Petroleum Hydrocarbons:** petroleum hydrocarbon products, such as gasoline, diesel, and motor oil. Contamination may be present in soil or groundwater and typically exhibits one or more of the following characteristics: iridescent sheen, black and greasy appearance, petroleum odor, dark staining in soil.

- **Buried Construction Debris:** sub-grade material contains construction debris that may include materials such as metal drums, brick, burnt wood, creosote-impregnated wood piles, and/or metal. Deposits of these materials have previously been associated with arsenic and carcinogenic polycyclic aromatic hydrocarbons (cPAH) contamination. Photos of buried construction debris observed at the Site are included in Appendix A.
- **Underground storage tanks (USTs):** undocumented USTs may be present in the vicinity of former buildings, and may contain heating oil or other petroleum products.

5.0 CONTAMINATED SOIL MANAGEMENT

Any intrusive activities in SMAs identified in this section that result in workers coming into contact with potentially contaminated soil need to follow applicable regulations regarding worker health and safety. Additionally, any soil excavated for property development must be properly managed to conform to the restrictive covenant applied to the property deed. There are soil management requirements that apply specifically to soil within each SMA, and more general soil management requirements that apply to soil outside of each designated SMA, but within the limits of the Site.

If materials that may contain hazardous substances are observed outside a SMA, the work will cease. The Port will evaluate the environmental conditions do determine appropriate next steps. If the Port determines that materials or conditions indicative of potential contamination meet requirements listed below, the potentially contaminated soil can be removed and managed without suspending construction provided the soil management procedures presented in Section 5.0 are followed. However, timely notification of Ecology is required and the adequacy of the removal action and post-removal compliance monitoring are subject to the review and concurrence of Ecology. The requirements are as follows:

1) the potential contamination is identified as a material previously encountered on the Site, as described in Section 4.0,
2) limits of the material are easily delineated,
3) the material to be excavated is approximately 10 in-place cubic yards or less, and
4) The potentially contaminated soil does not extend below the groundwater surface

If the Port determines the materials or conditions indicative of potential contamination do not meet the requirements listed above, work is to be suspended within the affected area, Ecology notified, and a plan for addressing the potential contamination developed. Any characterization or remediation of previously unknown contamination within the Site requires the review and concurrence of Ecology.

5.1 General Soil Management Requirements

The requirements that apply to intrusive activities throughout the Site, excluding the designated SMAs, consist of the following:

- All intrusive activities that have the potential to contact contaminated soil will be performed under a HASP that addresses all applicable state and federal requirements.
- Imported material for use as backfill shall meet Site CULs, which can be exhibited by a quality report either provided by the source or obtained by the Port.
- Information will be submitted to Ecology from the property owner, or in coordination with the property owner if the work was conducted by a third party, documenting the intrusive activities, presenting all environmental data, summarizing post-intrusive activity environmental conditions, and identifying any changes proposed to the restrictive covenant as a result of the intrusive activities.

- Excavated soil shall be handled according to the following requirements:
  - Excavated soil that does not contain previously encountered contaminated materials described in Section 4.0, or other visual or olfactory indications of potential contamination, may be replaced in the excavation or reused subject to the limitations in the following bullets.
  - Excavated material that exhibits any of the conditions of previously encountered contaminated material described in Section 4.0, or exhibits other indications of potential contamination (e.g., discoloration, odor), shall be stockpiled separately from unaffected soil and tested to determine appropriate management requirements.
  - No excavated soil is to be reused at locations outside of the Site without adequate testing to confirm that the soil does not exceed any MTCA soil CULs.
  - Any soil removed from the Site must also meet all other applicable regulations, including the Solid Waste Handling Standards (WAC 173-350).
  - Any soil that is tested and exceeds the Site CULs or other applicable criteria must be properly disposed of at an offsite permitted disposal facility.

5.2 Environmental Conditions and Management of Soil in SMAs

Management of soil from SMAs defined in the CAP are discussed individually below. The soil CULs established for the Site are presented in Table 1. Maximum analytical results for parameters detected at concentrations above the CULs are included in the following text; analytical results for all soil samples collected within or near the SMAs can be found in the LAI RI/FS report (LAI 2014) and the LAI Interim Action report (LAI 2010). The sample locations and the location of soil CUL exceedances for the Site are shown on Figure 2 with the location of CUL exceedances highlighted in red, and for individual SMAs on Figures 3 through 8. The common requirements for SMAs are:

- Compliance monitoring will be conducted to demonstrate that CULs have been achieved throughout the SMA if removal of all contaminated soil and termination of the restrictive covenant for an identified SMA is planned as part of the intrusive activities. A compliance monitoring plan would need to be submitted to Ecology for review and approval in advance of conducting the cleanup action.
- For intrusive activities within a SMA, the containment will be re-established consistent with previous conditions if contaminated soil is not completely removed as part of the intrusive activities.
- If additional investigation is triggered, the plan for additional soil characterization and the report presenting the results of the investigation will be submitted to Ecology for review.
- Imported material for use as backfill shall meet Site CULs, which can be determined through analytical testing either provided by the source or obtained by the Port.

5.2.1 SMA I-12

Crushed rock base course material imported as subgrade support in 2006 for the esplanade at the head of the 12th Street channel (western edge of Area I) was determined to contain arsenic concentrations up to 126 mg/kg, which exceeds the Site CUL for arsenic of 20 mg/kg. Accessible

portions of the base course material were removed. However, approximately the western 20 ft of the affected base course material was already covered by the concrete esplanade constructed for public access along the shoreline and, as a result, the affected base course beneath the esplanade was left in place and is contained by this structure. This area is defined as SMA I-12 (Figure 3), and the affected material extends to approximately 1 ft below the concrete.

Soil management requirements are to properly characterize and manage all soil excavated from SMA I-12 and properly dispose of any contaminated soil at an offsite permitted disposal facility. The following can be used to guide characterization activities:

- Any soil excavated or contacted at depths from the base of the concrete esplanade to about 6 inches below the limits of the base course material, estimated to extend approximately 1 ft below the concrete, is anticipated to be contaminated. Soil within this depth profile should be managed as contaminated soil and should be disposed of at an appropriately licensed offsite waste disposal facility unless analytical testing demonstrates that the soil does not exceed Site CULs.
- Any soil excavated from depths below the above limits is anticipated to be clean, but would need to be characterized to confirm soil quality if intended for reuse offsite or if it exhibits any indications of potential contamination, including the presence of crushed rock base course material.

5.2.2 SMA I-13

Black sand-sized material and multi-colored apparent concrete waste material were observed in SMA I-13 (Figure 4) during a 2007 Interim Action excavation. As much of the material as possible was removed at that time, but utilities prevented the excavation of all residual contamination. Maximum concentrations of analytes detected at concentrations above the Site CULs are as follows:

- Arsenic- 600 mg/kg
- Lead- 473 mg/kg.

Impacted soil encountered in this area was generally limited to the upper 2.5 ft of fill material overlying the hydraulic dredge fill based on test pit observations, soil sampling, and observations during the 2007 Interim Action excavation. Test pits excavated to the east identified irregularly occurring seams (2 inches to 2 ft) of the black sand-sized material just below the grass layer within the top 1 to 2 ft of ground surface across the unpaved area to the east. However, the contaminated soil located to the east of the fence line that separates Area G from Area I in the SMA I-13 vicinity was removed during the G-1b/G-3 Emergency Action, bounding the extent of SMA I-13 to the east.

Soil management requirements are to properly characterize and manage all soil excavated from SMA I-13 and properly dispose of any contaminated soil at an offsite permitted disposal facility. The following can be used to guide characterization activities:

- Any soil excavated or contacted at depths from the surface to approximately 2.5 ft below the concrete is anticipated to be contaminated. Soil within this depth range should be managed as contaminated soil and should be disposed of at an appropriately licensed offsite waste disposal facility unless analytical testing demonstrates that the soil does not exceed MTCA CULs.
- Any soil excavated from depths below 2.5 ft bgs, which is approximately the elevation of the top of hydraulic fill, is anticipated to be clean, but would need to be characterized to confirm soil quality if intended for reuse outside of the Site or if it exhibits any indications of potential contamination.

5.2.3 SMA J-3a

Elevated concentrations of arsenic are present in SMA J-3a. Exceedances are associated with buried construction debris, typically consisting of yellow, red, and orange brick-like fragments, yellow concrete building material, metal, and burned materials (see Photos in Appendix A). It is estimated that the affected material extends down to 17 ft bgs. Maximum concentrations of analytes detected at concentrations above the Site CULs are as follows:

- Arsenic- 33 mg/kg.

An interim action completed in 2006 removed contaminated soil from SMA J-3a to a depth of approximately 6 ft bgs to accommodate the installation of utilities for nearby development. The excavation area was backfilled with clean backfill to the west, and with arsenic-affected crushed rock (with concentrations up to 126 mg/kg, as discussed in Section 5.2.2) that was removed from accessible portions of the esplanade adjacent to SMA I-12 to the east. The approximate limits of the arsenic-affected backfill are shown on Figure 5, but is more specifically identifiable as crushed rock base course material not associated with the current pavement section and present as general fill within the J-3a area.

Soil management requirements are to properly characterize and manage all soil excavated from SMA J-3a and properly dispose of any contaminated soil at an offsite permitted disposal facility. The following can be used to guide characterization activities:

- Within the area containing arsenic-contaminated crushed rock backfill, any soil excavated or contacted at depths from beneath the pavement section to the limits of the crushed rock fill, which is estimated to extend to approximately 6 ft bgs, is anticipated to be contaminated. This soil is to be managed as contaminated and be disposed of at an appropriately licensed offsite waste disposal facility unless analytical testing demonstrates that the soil does not exceed MTCA CULs.
- Outside of the area of arsenic-contaminated backfill, and to the east of the Waterfront Center building, soil from the surface to approximately 6 ft bgs, which is backfill placed in the 2006 interim action excavation, is anticipated to be clean. However, this soil would need to be characterized to confirm soil quality if intended for reuse offsite or if it exhibits any indications of potential contamination, particularly the presence of crushed rock.

- Any soil excavated or contacted at depths between 6 ft and 17 ft bgs, or soil excavated from the portion of SMA J-3a that extends beneath the Waterfront Center building, is anticipated to be contaminated. Soil within this depth range should be managed as contaminated soil and should be disposed of at an appropriately licensed offsite waste disposal facility unless analytical testing demonstrates that the soil does not exceed Site CULs.
- Any soil excavated from depths below 17 ft bgs is anticipated to be clean, but would need to be characterized to confirm soil quality if intended for reuse outside the limits of the Site or if it exhibits any indications of potential contamination.

5.2.4 SMA M-2

SMA M-2 has both shallow (within the upper 5 ft of soil) and deep (deeper than 5 ft bgs) soil contamination. Maximum concentrations of analytes detected above the CULs in shallow soil are arsenic (35.3 mg/kg) and lead (328 mg/kg). Maximum concentrations of analytes detected at concentrations above the Site CULs at depths ranging from 6 ft to 8.5 ft bgs are as follows:

- Arsenic- 2,440 mg/kg
- Lead- 1,820 mg/kg
- cPAHs- 0.226 mg/kg
- butyl benzyl phthalate- 14.1 mg/kg.

Clean hydraulic fill is present below 9 ft bgs. Soil contamination in Area M-2 is currently contained by asphalt roadway, sidewalks, and a parking lot. The approximate limits of SMA M-2 are shown on Figure 6.

Soil management requirements are to properly characterize and manage all soil excavated from SMA M-2 and properly dispose of any contaminated soil at an offsite permitted disposal facility. The following can be used to guide characterization activities:

- Because soil quality exceedances in the upper 5 ft were infrequent and the concentrations were relatively low, soil characterization may demonstrate that soil within this depth range does not require any special management. Soil characterization can be limited to visual screening for signs of potential contamination if the soil is planned for reuse within the Site. Analytical testing is required if visual screening indicates potential contamination, or if soil is to be reused or disposed of offsite.
- Any soil excavated or contacted at depths between 5 ft and 9 ft bgs is anticipated to be contaminated. Soil within this depth range should be managed as contaminated soil and should be disposed of at an appropriately licensed offsite waste disposal facility unless analytical testing demonstrates that the soil does not exceed MTCA CULs.
- Any soil excavated from depths below 9 ft bgs is anticipated to be clean, but would need to be characterized to confirm soil quality if intended for reuse offsite, or if it exhibits any indications of potential contamination.

5.2.5 Management Area M-3

Shallow soil below the pavement and base course, approximately 0.5 to 2 ft bgs, contains arsenic at a maximum detected concentration of 76.4 mg/kg in SMA M-3. This SMA is located east of the Ameron sublease building in the paved access road/parking area, as shown on Figure 7.

Soil management requirements are to properly characterize and manage soil excavated from SMA M-3 and properly dispose of any contaminated soil at an offsite permitted disposal facility. The following can be used to guide soil management activities:

- Any soil excavated or contacted at depths between 0.5 ft and 2 ft bgs is anticipated to be contaminated. Soil within this depth range should be managed as contaminated soil and should be disposed of at an appropriately licensed offsite waste disposal facility unless analytical testing demonstrates that the soil does not exceed Site CULs.
- Any soil excavated from depths below 2 ft bgs is anticipated to be clean, but would need to be characterized to confirm soil quality if intended for reuse outside of the Site or if it exhibits any indications of potential contamination.

5.2.6 Isolated SMAs

Relatively isolated occurrences of metals, cPAHs, and petroleum hydrocarbons, generally consisting of a single CUL exceedance, are present in SMAs I-5a, I-5b, M-1a, M-4, and M-5. The following sections describe these isolated SMAs.

Soil within the isolated SMAs needs to be properly characterized and managed and, if determined to be contaminated, properly disposed of at an offsite permitted disposal facility. Because soil CUL exceedances were infrequent and/or the concentrations were relatively low, soil characterization may demonstrate that soil within these SMAs do not require management as contaminated soil. Soil characterization can be limited to visual screening for signs of potential contamination (see Section 4.0) if the soil is planned for reuse within the Site. Analytical testing is required if visual screening indicates potential contamination, or if soil is to be reused or disposed of outside of the Site.

5.2.6.1 SMAs I-5a and I-5b

The locations of SMAs I-5a and I-5b are shown on Figure 8. Maximum detected concentrations of arsenic (1,730 mg/kg), copper (3,070 mg/kg), and lead (2,270 mg/kg) detected during the 2007 interim action were associated with a thin (approximately 1 ft) layer of colored concrete and black sand waste materials observed within the upper 3 ft of soil at the northern boundary of the Site in these areas, and extended to the northern fence line. The thickness of the waste material was observed to decrease rapidly as the excavation progressed toward the northern fence line and additional testing during the RI did not encounter contaminated soil in the vicinity of these locations.

5.2.6.2 SMA M-1a

The location of SMA M-1a is shown on Figure 7. A maximum detected cPAH TEQ concentration of 1.01 mg/kg exceeded the Site CUL along the northern sidewall of an interim action excavation extending to approximately 2 ft bgs conducted south of the Ameron office building. The extent of contamination was bounded in all directions by previous investigations, as shown on Figure 7 and this exceedance appears to be an isolated occurrence.

5.2.6.3 SMA M-4

The location of SMA M-4 is shown on Figure 7. Petroleum hydrocarbons (by US Environmental Protection Agency [EPA] Method 418.1) were detected at a maximum concentration of 7,160 mg/kg in one surface soil sample collected in 1992 from along the west side of the Ameron sublease building. This area has since been developed by Ameron into paved holding bins for concrete slurry waste, and the TPH contamination was reportedly remediated at that time by Ameron. However, no confirmational sampling was conducted so the adequacy of the independent cleanup actions could not be confirmed. If residual contamination remains, the extent of contamination appears to be very limited based on sampling data and observations made at the time of the 1992 sampling, as well as the soil and groundwater data collected down gradient during the RI.

5.2.6.4 SMA M-5

SMA M-5, located in the Dunlap paved storage yard to the north of the Ameron sublease building along West Marine View Drive, is shown on Figure 7. Shallow soil below the pavement and base course, or approximately 0.5 to 1.5 ft bgs, contains a maximum detection of arsenic (33.3 mg/kg) at concentrations greater than the Site CUL in this area.

6.0 GROUNDWATER MANAGEMENT

Based on results of previous groundwater monitoring, dissolved arsenic, dissolved copper, dissolved lead, dissolved mercury, diesel- and oil-range petroleum hydrocarbons, 1,1-dichloroethene (1,1-DCE), and bis(2-ethylhexyl) phthalate (BEHP) were detected in one or more groundwater samples at a concentration greater than the screening levels during the RI. Groundwater sample locations are shown on Figure 9 and the analytical results are presented in Table 2. Site groundwater CULs are provided in Table 1.

The restrictive covenant for the Site requires that groundwater not be used for potable water purposes and that any groundwater extracted for construction dewatering or other non-potable purposes be managed, treated, and discharged in conformance with this Plan. Groundwater extracted for purposes other than construction dewatering are not addressed in this Plan and would require review and approval by Ecology.

Groundwater sampling and testing in advance of construction dewatering would be required to determine management requirements. If testing demonstrates that groundwater does not exceed any of the Site CULs, extracted groundwater could be infiltrated onsite, if appropriate, or it could be discharged to the City of Everett sanitary or stormwater sewer systems, subject to obtaining a temporary discharge permit from the City. Alternatively, the contractor could select other means of disposing of extracted groundwater, subject to local, state, and federal regulations.

If groundwater is determined to contain concentrations exceeding Site groundwater CULs, as presented in Table 1, it cannot be infiltrated onsite. The groundwater would need to be discharged to the City of Everett sanitary sewer, subject to obtaining a temporary discharge permit, or managed by other means that comply with local, state, and federal regulations.

7.0 USE OF THIS PLAN

This Soil and Groundwater Management Plan has been prepared for the exclusive use of the Port of Everett. Reliance on this report by third parties is at their sole risk. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates 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.

8.0 REFERENCES

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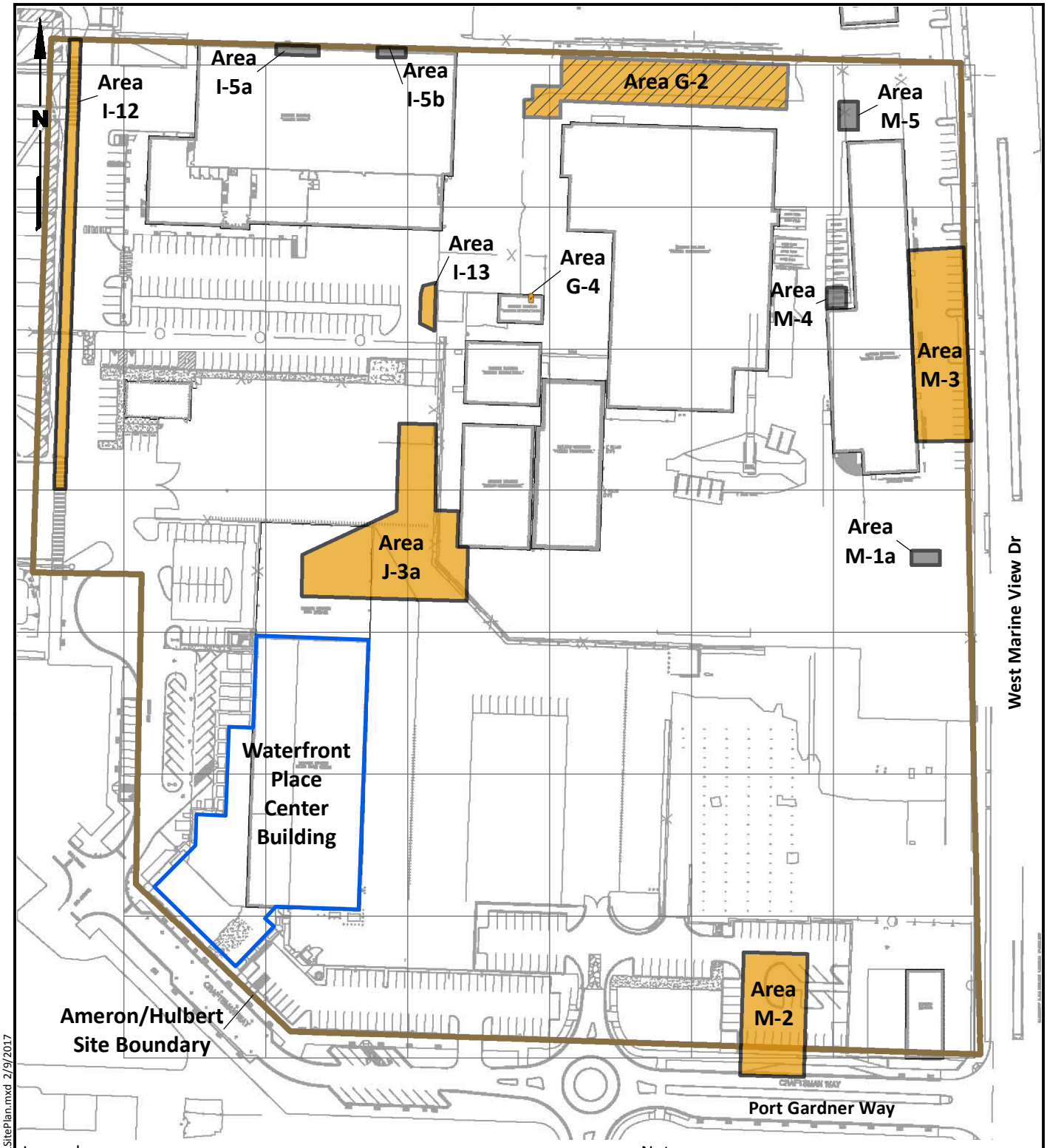

Legend

- Ameron/Hulbert Site Boundary
- Soil Management Area to be Addressed by Containment in Final Cleanup Action
- Cleanup Area to be Addressed by Excavation in Final Cleanup Action
- Isolated Soil Management Areas to be Addressed Under SGWMP
- Waterfront Place Center Building

Notes

1. SGWMP = Soil and Groundwater Management Plan
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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Scale in Feet

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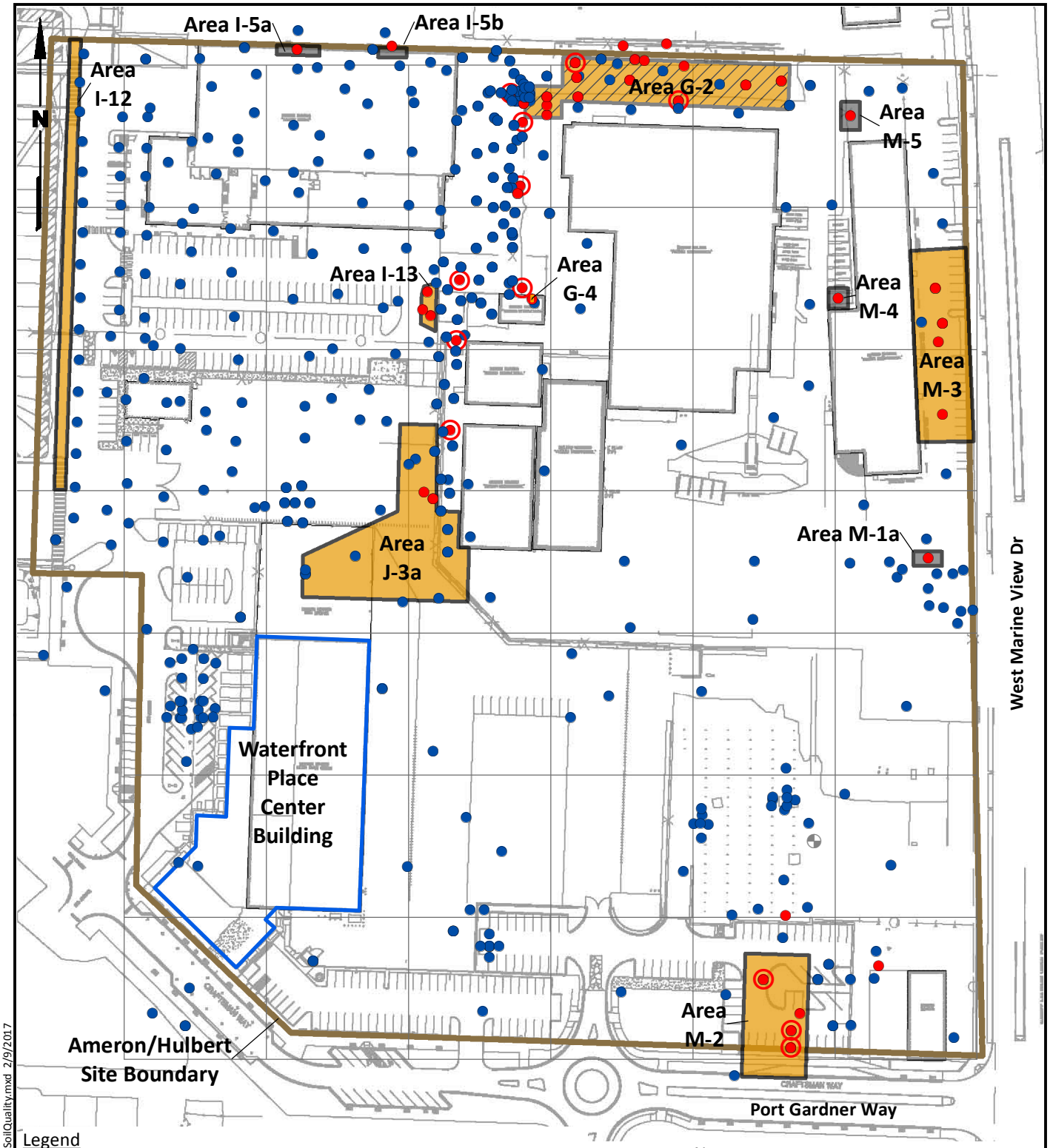
North Marina
Ameron/Hulbert Site
Everett, Washington

Site Plan

Figure
1



Legend

- Soil Sample with a Concentration Greater than 5x the Cleanup Level
- Soil Sample Exceeded Cleanup Level - Represents Soil Remaining
- Soil Sample Below Cleanup Level - Represents Soil Remaining
- Ameron/Hulbert Site Boundary
- Soil Management Area to be Addressed by Containment in Final Cleanup Action
- Cleanup Area to be Addressed by Excavation in Final Cleanup Action
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North Marina
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Everett, Washington

Soil Quality

Figure
2

Legend

- Soil Sample with a Concentration Greater than 5x the Cleanup Level
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- Soil Sample Below Cleanup Level - Represents Soil Remaining
- Ameron/Hulbert Site Boundary
- Soil Management Area to be Addressed by Containment in Final Cleanup Action

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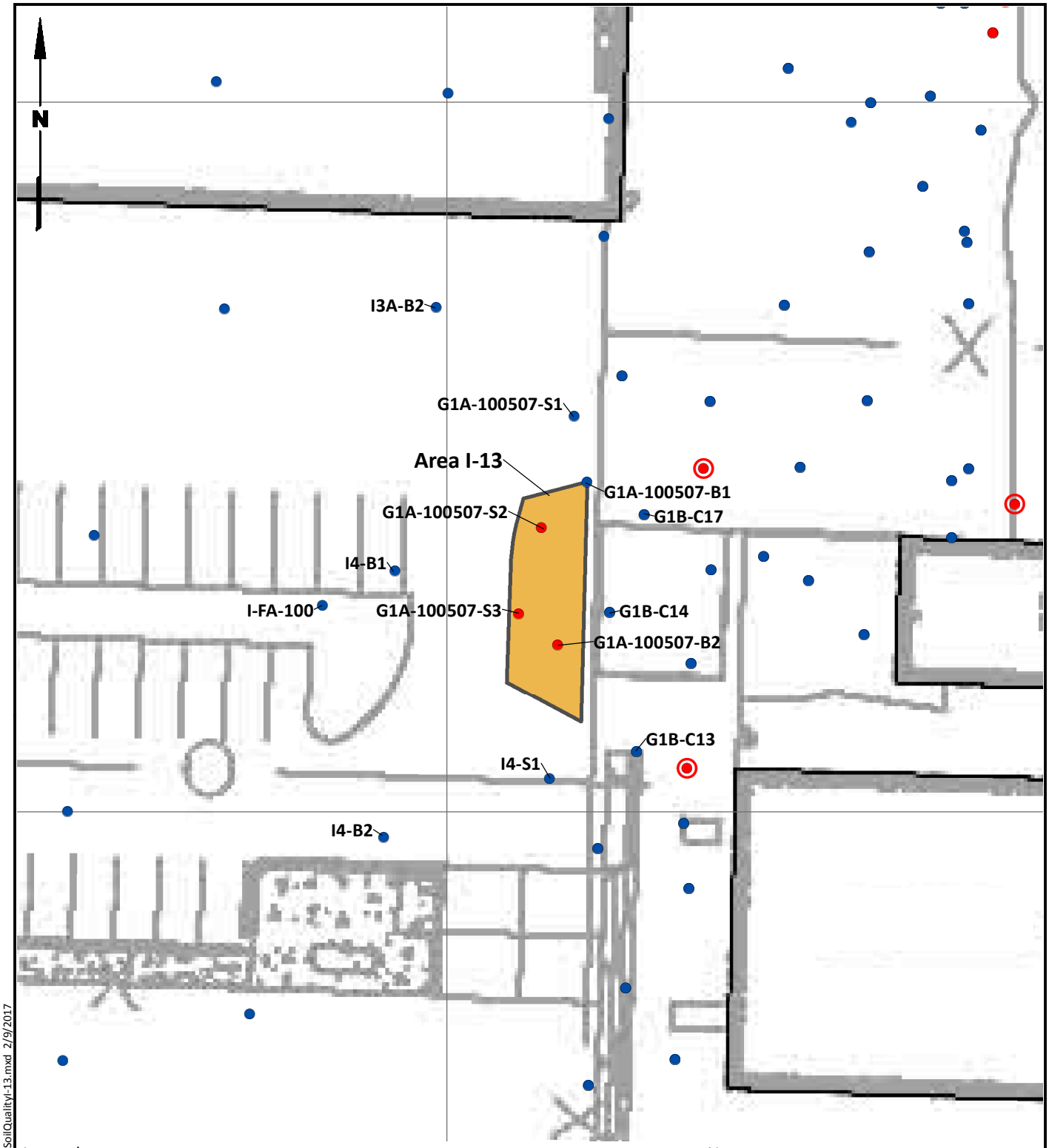
North Marina
Ameron/Hulbert Site
Everett, Washington

Soil Quality
SMA I-12

Figure
3



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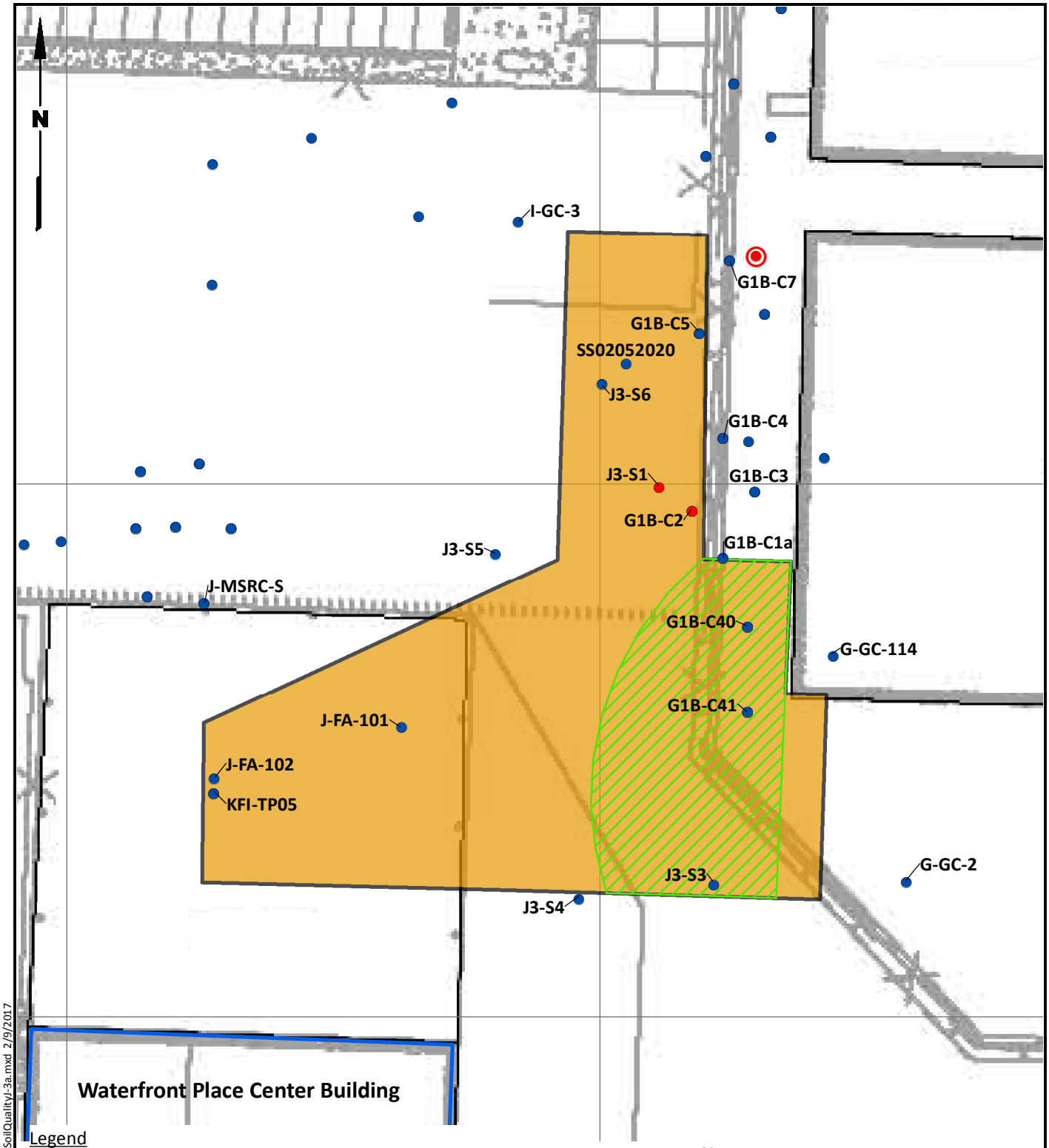
Everett, Washington

Soil Quality
SMA I-13

Figure
4



Legend

- Soil Sample with a Concentration Greater than 5x the Cleanup Level
- Soil Sample Exceeded Cleanup Level - Represents Soil Remaining
- Soil Sample Below Cleanup Level - Represents Soil Remaining
- Ameron/Hulbert Site Boundary
- Soil Management Area to be Addressed by Containment in Final Cleanup Action
- Arsenic - Affected Crushed Rock Containment Area (0-6 ft BGS)
- Waterfront Place Center Building

Note

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

0 40 80

Scale in Feet

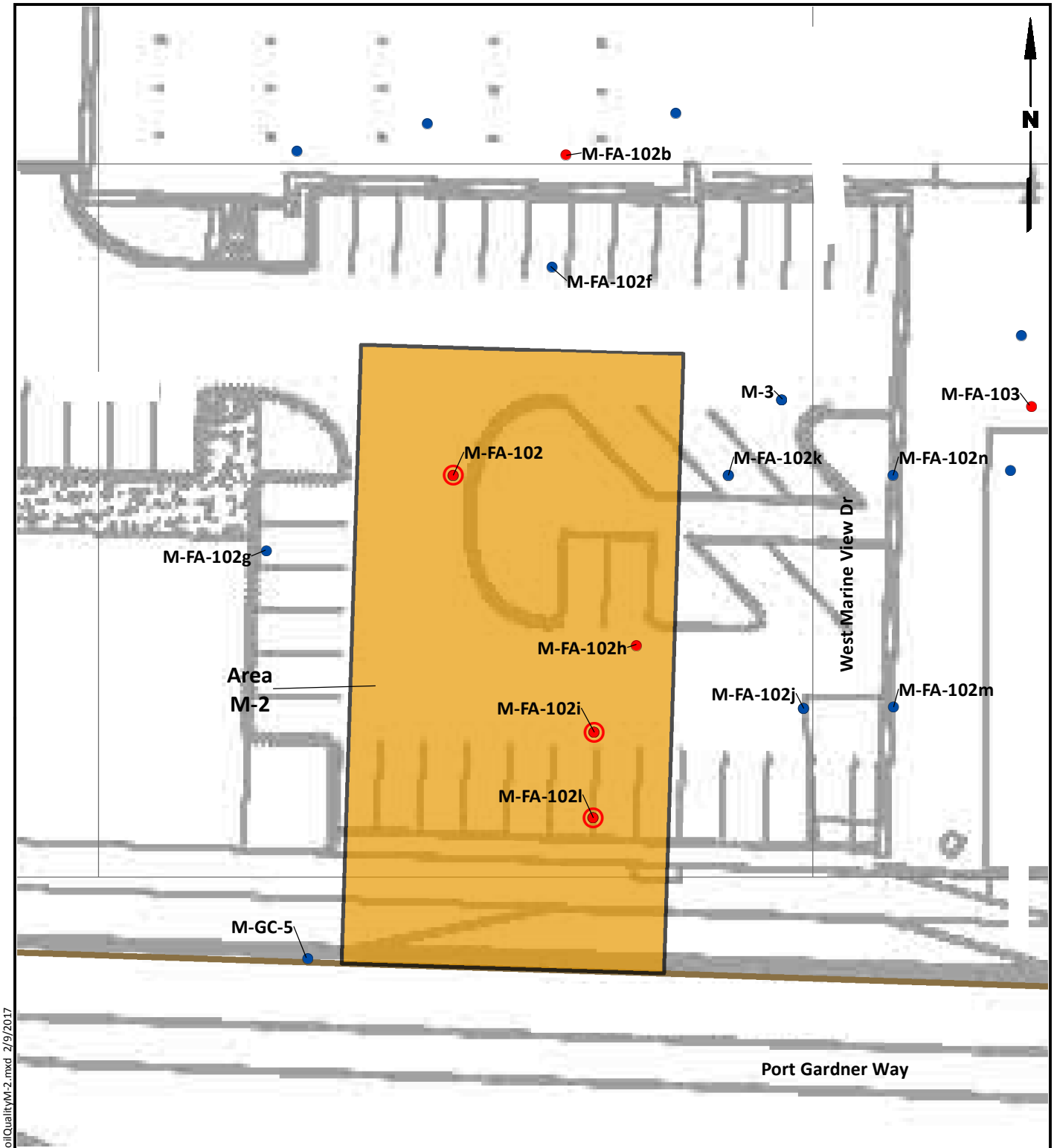
G:\Projects\147\029\500\820\SGWMP\F05SoilQualityJ-3a.mxd 2/9/2017

LANDAU ASSOCIATES

North Marina
Ameron/Hulbert Site
Everett, Washington

Soil Quality
SMA J-3a

Figure
5



Legend

- Soil Sample with a Concentration Greater than 5x the Cleanup Level
- Soil Sample Exceeded Cleanup Level - Represents Soil Remaining
- Soil Sample Below Cleanup Level - Represents Soil Remaining
- Ameron/Hulbert Site Boundary
- Soil Management Area to be Addressed by Containment in Final Cleanup Action

Notes

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

0 30 60

Scale in Feet

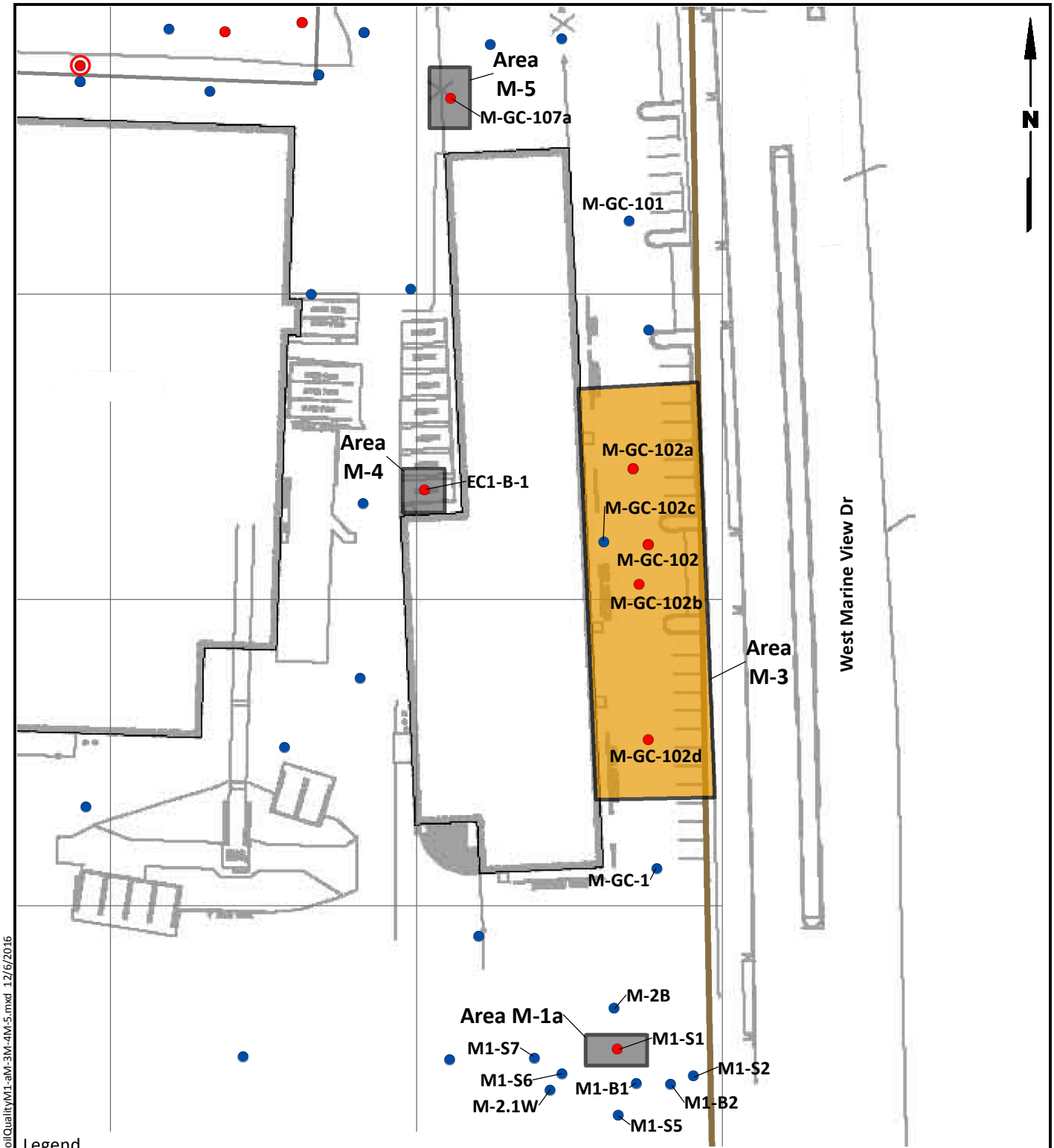
G:\Projects\147\029\500\820\SGWMP\F066SoilQualityM-2.mxd 2/9/2017

LANDAU ASSOCIATES

North Marina
Ameron/Hulbert Site
Everett, Washington

Soil Quality
SMA M-2

Figure
6



Legend

- Soil Sample with a Concentration Greater than 5x the Cleanup Level
- Soil Sample Exceeded Cleanup Level - Represents Soil Remaining
- Soil Sample Below Cleanup Level - Represents Soil Remaining
- Ameron/Hulbert Site Boundary
- Soil Management Area to be Addressed by Containment in Final Cleanup Action
- Isolated Soil Management Areas to be Addressed Under SGWMP

Notes

1. SGWMP = Soil and Groundwater Management Plan
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 70 140

Scale in Feet

G:\Projects\147\029\500\820\SGWMP\F07SoilQualityM1-aM-3M-4M-5.mxd 12/6/2016

LANDAU ASSOCIATES

North Marina
Ameron/Hulbert Site
Everett, Washington

Soil Quality
SMAs M-1a, M-3, M-4, M-5

Figure
7

Legend

- Soil Sample with a Concentration Greater than 5x the Cleanup Level
- Soil Sample Exceeded Cleanup Level - Represents Soil Remaining
- Soil Sample Below Cleanup Level - Represents Soil Remaining
- Ameron/Hulbert Site Boundary
- Isolated Soil Management Areas to be Addressed Under SGWMP

Notes

1. SGWMP = Soil and Groundwater Management Plan
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 40 80

Scale in Feet

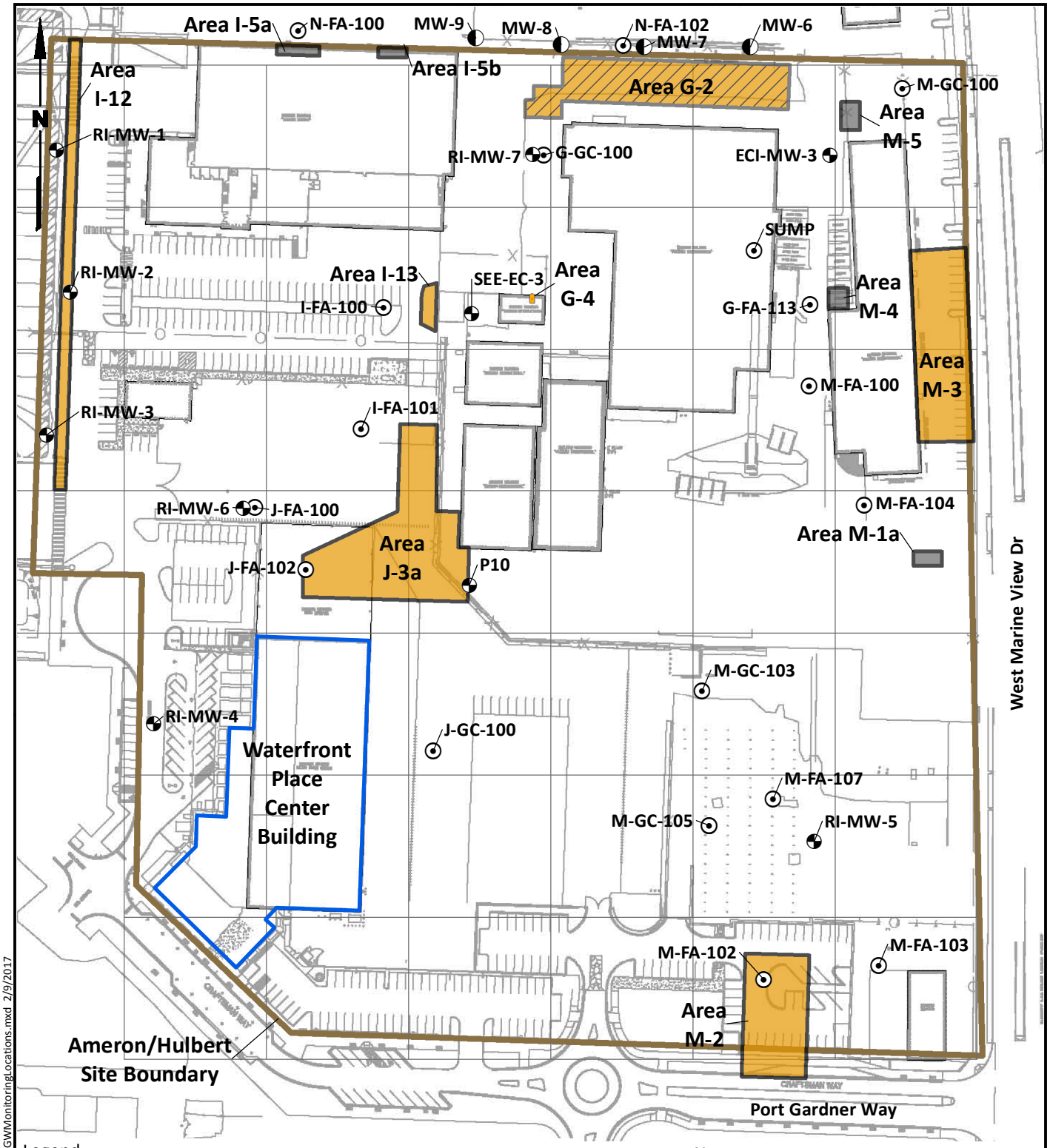
G:\Projects\147\029\500\820\SGWMP\F08SoilQualityI-5.mxd 12/6/2016

LANDAU ASSOCIATES

North Marina
Ameron/Hulbert Site
Everett, Washington

Soil Quality
SMAs I-5a and I-5b

Figure
8



Legend

- Monitoring Well
- Soil Boring
- TC Systems Monitoring Well
- Ameron/Hulbert Site Boundary
- Management Area to be Addressed by Containment in Final Cleanup Action
- Cleanup Area to be Addressed by Excavation in Final Cleanup Action
- Isolated Soil Management Areas to be Addressed Under SGWMP
- Waterfront Place Center Building

Notes

1. SGWMP = Soil and Groundwater Management Plan
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 150 300

Scale in Feet

G:\Projects\147\029\500\820\SGWMP\F09GWMonitoringLocations.mxd 2/9/2017

LANDAU ASSOCIATES

North Marina
Ameron/Hulbert Site
Everett, Washington

Groundwater Monitoring Locations

Figure 9

TABLE 1
SOIL AND GROUNDWATER CLEANUP LEVELS
NORTH MARINA AMERON/HULBERT SITE
PORT OF EVERETT, WASHINGTON

	Soil Cleanup Level (mg/kg)	Groundwater Cleanup Level (µg/L)
Antimony	32	--
Arsenic	20	5
Copper	--	3.1
Lead	250	--
cPAH TEQ	0.14	--
bis(2-Ethylhexyl)phthalate	--	2.2
1,1-dichloroethylene	--	3.2
TPH-Dx	2,000	500
TPH-Oil	--	500
TPH-Gx	100	--

-- = Constituent is not a contaminant of concern for this media.
mg/kg = milligrams per kilogram
µg/L = micrograms per liter
cPAH = carcinogenic polycylic aromatic hydrocarbons
TEQ = Toxicity Equivalency Factor
TPH-Dx = total petroleum hydrocarbons - diesel range
TPH-Oil = total petroleum hydrocarbons - oil range
TPH-Gx = total petroleum hydrocarbons - gasoline range

TABLE 2
GROUNDWATER ANALYTICAL RESULTS FOR DETECTED COMPOUNDS
NORTH MARINA AMERON/HULBERT SITE SOIL/GROUNDWATER MANAGEMENT PLAN

	Preliminary Screening Level	ECI-MW-3 CHM101216-1 12/15/2010	Dup of ECI-MW-3 ECI-MW-302 CHM101216-1 12/15/2010	ECI-MW-3 SK38F 02/22/2011	ECI-MW-3 TR28A/TR93A 10/11/2011	G-FA-113 CHM101122-2 11/22/2010	G-GC-100 CHM101220-07 12/20/2010	I-FA-100 CHM101217-8 12/17/2010	I-FA-101 CHM101217-8 12/17/2010	J-FA-100 CHM101201-1 CHM101213-7 11/29/2010	J-FA-102 CHM101201-1 11/29/2010	J-GC-100 CHM101201-1 11/29/2010	M-FA-100 CHM101122-2 11/22/2010	M-FA-102 CHM101202-16 12/1/2010	M-FA-103 CHM101202-16 12/2/2010
NWTPH-HCID (µg/L)															
Diesel-Range Organics (DRO)	500									**D**	500 U				
Heavy Oil	500					500 U				**D**	500 U		500 U	500 U	500 U
Heavy Oil-Range Organics	500														
NWTPH-Dx (µg/L)															
Diesel-Range Organics (DRO)	500									**881**					
Diesel (Fuel Oil)	500						50 UJ			50 U					
Mineral Oil	500						50 UJ			50 U					
Heavy Oil	500						100 UJ			**2240**					
DISSOLVED METALS (µg/L)															
Method EPA 200.8/SW7470A															
Antimony	640	0.20 U			**0.2**	0.2 U	**0.300**	0.20 U	**0.515**	**13.5**	**2.45**	0.20 U	0.2 U	**1.05**	0.2 U
Arsenic	5	**18.2**			**65.8**	**4.10**	**3.35**	**0.984**	1.0 U	**7.35**	**3.90**	1.0 U	**5.40**	1.0 U	1.0 U
Cadmium	8.8	0.20 U			0.1 U	0.2 U	0.20 U	0.20 U	**0.270**	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U
Chromium	240,000	**40.2**			**1.4**	**19.9**	**22.1**	**15.0**	**97.5**	**25.8**	**0.424**	**4.55**	**62.4**	**57.7**	**11.9**
Copper	3.1	**0.642**			**0.7**	0.5 U	**61.5**	**5.75**	**7.15**	**127**	**27.5**	**8.45**	0.5 U	0.5 U	**3.20**
Lead	8.1	1.0 U			0.1 U	1.0 U	1.0 U	1.0 U	1.0 U	**143**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Mercury	0.1	0.10 U			0.02 U	0.10 U	0.10 U	**0.470**	**0.385**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Zinc	81	1.5 U			4 U	1.5 U	**24.0**	**14.0**	**14.6**	**21.2**	1.5 U	**4.85**	**4.35**	1.5 U	1.5 U
TURBIDITY (NTU) (EPA 180.1)															
SEMIVOLATILES (µg/L)															
Method SW8270/SW8270D															
Acenaphthene	640	0.5 U	0.5 U		1.0 U					1.0 U				0.5 U	
Diethylphthalate	28000	1.0 U	1.0 U		1.0 U					**5.52**				1.0 U	
Fluorene	3,500	0.5 U	0.5 U		1.0 U					1.0 U				0.5 U	
Phenanthrene		0.5 U	0.5 U		1.0 U					1.0 U				0.5 U	
Di-n-Butylphthalate	2900	0.360 UJ	0.440 UJ		1.0 U					**3.92**				1.0 U	
bis(2-Ethylhexyl)phthalate	2.2	0.5 UJ	0.5 UJ	1.0 U	1.0 U					1.0 U				0.5 U	
1-Methylnaphthalene	1.5	0.5 U	0.5 U		1.0 U					1.0 U				0.5 U	
cPAHs (µg/L)															
Method SW8270D-SIM															
Chrysene	30	0.10 U	0.10 U		0.10 U					**0.160**				0.10 U	
cPAH TEQ	0.1	ND	ND		ND					**0.0016**				ND	
VOLATILES (µg/L)															
Method SW8260B/C															
Carbon Disulfide		NA			0.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	3.2	**12.3**			0.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane		1.0 U			**1.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	16	1.0 U			0.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	15,000	1.0 U			0.2 U	**1.65**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	2,100	1.0 U			0.2 U	**6.22**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
n-Butylbenzene		1.0 U			0.2 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Naphthalene	4,900	4.0 U			0.5 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Total Xylenes	1,600	1.0 U			NA	**17.7**	1.0 U	**1.55**	**1.35**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

TABLE 2
GROUNDWATER ANALYTICAL RESULTS FOR DETECTED COMPOUNDS
NORTH MARINA AMERON/HULBERT SITE SOIL/GROUNDWATER MANAGEMENT PLAN

	Preliminary Screening Level	M-FA-104 CHM101122-2 11/22/2010	Dup of M-FA-104 M-FA-204 CHM101122-2 11/22/2010	M-FA-107 CHM110131-4 1/28/2011	Dup of M-FA-107 M-FA-10702 CHM110131-4 1/28/2011	M-GC-100 CHM101201-1 11/30/2010	M-GC-103 CHM101217-8 12/17/2010	M-GC-105 CHM110131-4 CHM110202-5 1/28/2011	MW-6	MW-7	MW-8	MW-9	N-FA-100 CHM101202-16 12/1/2010	N-FA-102 CHM101202-16 12/1/2010	P10 (G-2) CHM101216-1 12/15/2010	P10 (G-2) TR28B/TR93B 10/11/2011	RI-MW-1 CHM101216-1 12/15/2010
NWTPH-HCID (µg/L)																	
Diesel-Range Organics (DRO)	500			500 U	500 U	500 U		500 U									
Heavy Oil	500	500 U	500 U	500 U	500 U	500 U		500 U						500 U			
Heavy Oil-Range Organics	500			500 U	500 U			**D**									
NWTPH-Dx (µg/L)																	
Diesel-Range Organics (DRO)	500																
Diesel (Fuel Oil)	500							50 U									
Mineral Oil	500							50 U									
Heavy Oil	500							**150**									
DISSOLVED METALS (µg/L)																	
Method EPA 200.8/SW7470A																	
Antimony	640	0.2 U	0.2 U	**0.176** J	**0.138** J	**0.250**	0.20 U	**0.857**					0.2 U	**2.25**	0.20 U	0.2 U	0.20 U
Arsenic	5	**6.00**	**5.55**	1.0 U	1.0 U	**9.80**	1.0 U	1.0 U					1.0 U	**2.90**	**16.7**	**1.4**	1.0 U
Cadmium	8.8	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U					0.2 U	0.2 U	0.20 U	0.1 U	0.20 U
Chromium	240,000	**35.8**	**40.4**	**13.6** J	**8.97** J	**14.7**	**7.32**	**17.3**					**100**	**39.5**	**27.4**	1 U	**36.2**
Copper	3.1	0.5 U	0.5 U	0.50 U	0.50 U	**2.10**	**2.91**	**1.34**					**18.3**	**3.60**	**5.23**	0.5 U	**4.35**
Lead	8.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U					1.0 U	1.0 U	**1.07**	0.1 U	**1.19**
Mercury	0.1	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	**1.09**	0.10 U					0.10 U	0.10 U	0.10 U	0.02 U	**0.296**
Zinc	81	1.5 U	1.5 U	**2.89**	**2.65**	1.5 U	**14.1**	**13.9**					1.5 U	1.5 U	**2.29**	4 U	**4.99** J
TURBIDITY (NTU) (EPA 180.1)																	
SEMIVOLATILES (µg/L)																	
Method SW8270/SW8270D																	
Acenaphthene	640					1.0 U								0.5 U			0.5 U
Diethylphthalate	28000					2.0 U								1.0 U			1.0 U
Fluorene	3,500					1.0 U								0.5 U			0.5 U
Phenanthrene						1.0 U								0.5 U			0.5 U
Di-n-Butylphthalate	2900					2.0 U								**1.84** J			1.04 U
bis(2-Ethylhexyl)phthalate	2.2					1.0 U								**1.60**			0.5 UJ
1-Methylnaphthalene	1.5					1.0 U								0.5 U			0.5 U
cPAHs (µg/L)																	
Method SW8270D-SIM																	
Chrysene	30					0.10 U								0.10 U			0.10 U
cPAH TEQ	0.1					ND								ND			ND
VOLATILES (µg/L)																	
Method SW8260B/C																	
Carbon Disulfide		NA	NA	NA	NA	NA	NA	NA					NA	NA	NA	0.2 U	NA
1,1-Dichloroethene	3.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U					1.0 U	1.0 U	1.0 U	0.2 U	1.0 U
1,1-Dichloroethane		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U					1.0 U	1.0 U	1.0 U	0.2 U	1.0 U
cis-1,2-Dichloroethene	16	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.03**	1.0 U					1.0 U	1.0 U	1.0 U	0.2 U	1.0 U
Toluene	15,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U					1.0 U	1.0 U	1.0 U	0.2 U	1.0 U
Ethylbenzene	2,100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U					1.0 U	1.0 U	1.0 U	0.2 U	1.0 U
n-Butylbenzene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U					1.0 U	1.0 U	1.0 U	0.2 U	1.0 U
Naphthalene	4,900	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U					4.0 U	**1.52** J	4.0 U	0.5 U	4.0 U
Total Xylenes	1,600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U					1.0 U	1.0 U	1.0 U	NA	1.0 U

TABLE 2
GROUNDWATER ANALYTICAL RESULTS FOR DETECTED COMPOUNDS
NORTH MARINA AMERON/HULBERT SITE SOIL/GROUNDWATER MANAGEMENT PLAN

	Preliminary Screening Level	RI-MW-1 SK38A 02/22/2011	RI-MW-1 TR28C/TR93C 10/11/2011	RI-MW-2 CHM101216-1 12/15/2010	RI-MW-2 SK38B 02/22/2011	RI-MW-2 TR28D/TR93D 10/11/2011	RI-MW-3 CHM101216-1 12/15/2010	RI-MW-3 SK38C 02/22/2011	RI-MW-3 TR28E/TR93E 10/11/2011	RI-MW-4 CHM101230-5 CHM101216-1 12/15/2010	Dup of RI-MW-4 RI-MW-402 CHM101230-5 CHM101216-1 12/15/2010	RI-MW-4 SK38D 02/22/2011	RI-MW-4 TR28F/TR93F 10/11/2011	RI-MW-5 CHM101216-1 12/15/2010	RI-MW-5 SK38E 02/22/2011
NWTPH-HCID (µg/L)															
Diesel-Range Organics (DRO)	500												500 U		
Heavy Oil	500									500 U	**D**		500 U	500 U	
Heavy Oil-Range Organics	500														
NWTPH-Dx (µg/L)															
Diesel-Range Organics (DRO)	500											100 U	100 U		
Diesel (Fuel Oil)	500									**50** J	50 UJ				
Mineral Oil	500									**50** J	50 UJ				
Heavy Oil	500									**1390** J	**1100** J	200 U	200 U		
DISSOLVED METALS (µg/L)															
Method EPA 200.8/SW7470A															
Antimony	640		0.2 U	0.20 U		0.2 U	**0.295**		0.2 U	0.20 U	0.20 U		0.2 U	0.20 U	
Arsenic	5		**1.8**	**1.64**		**0.4**	**0.679**		**0.4**	**1.97** J	**2.98** J		**1.9**	**1.32**	
Cadmium	8.8		0.1 U	0.20 U		0.1 U	0.20 U		0.1 U	0.20 U	0.20 U		0.1 U	**0.20**	
Chromium	240,000		0.5 U	**23.4**		**1.0**	**31.1**		0.5 U	**10.2** J	**14.3** J		0.5 U	**24.2**	
Copper	3.1		**2.9**	0.50 U		0.5 U	0.50 U		**0.6**	**2.68** J	0.50 UJ		**0.8**	0.50 U	
Lead	8.1		0.1 U	**0.946** J		0.1 U	**0.886** J		0.1 U	1.0 U	**1.01**		**0.3**	1.0 U	
Mercury	0.1	0.02 U	0.02 U	**0.480**	0.02 U	0.02 U	**0.133**	0.02 U	0.02 U	**0.337** J	**0.141** J	0.02 U	0.02 U	**0.125** J	0.02 U
Zinc	81		**6**	**2.93**		**7**	**1.29**		**7**	**3.22** J	1.5 UJ		**9**	1.5 U	
TURBIDITY (NTU) (EPA 180.1)															
SEMIVOLATILES (µg/L)															
Method SW8270/SW8270D															
Acenaphthene	640		1.0 U	0.5 U		1.0 U	0.5 U		1.0 U	0.5 U			1.0 U	**6.44** J	
Diethylphthalate	28000		1.0 U	1.0 U		1.0 U	1.0 U		1.0 U	1.0 U			1.0 U	1.0 U	
Fluorene	3,500		1.0 U	0.5 U		1.0 U	0.5 U		1.0 U	0.5 U			1.0 U	**0.384** J	
Phenanthrene			1.0 U	0.5 U		1.0 U	0.5 U		1.0 U	0.5 U			1.0 U	0.5 U	
Di-n-Butylphthalate	2900		1.0 U	0.520 UJ		1.0 U	1.12 U		1.0 U	0.480 UJ			1.0 U	0.400 UJ	
bis(2-Ethylhexyl)phthalate	2.2	1.0 U	1.0 U	0.5 UJ		1.0 U	0.5 UJ	**6.8**	**3.1**	0.5 UJ			**1.0**	0.5 UJ	1.0 U
1-Methylnaphthalene	1.5		1.0 U	0.5 U		1.0 U	0.5 U		1.0 U	0.5 U			1.0 U	**0.620** J	
cPAHs (µg/L)															
Method SW8270D-SIM															
Chrysene	30		0.10 U	0.10 U		0.10 U	0.10 U		0.10 U	0.10 U			0.10 U	0.10 U	
cPAH TEQ	0.1		ND	ND		ND	ND		ND	ND			ND	ND	
VOLATILES (µg/L)															
Method SW8260B/C															
Carbon Disulfide			0.2 U	NA		0.2 U	NA		0.2 U	NA	NA		**0.4**	NA	
1,1-Dichloroethene	3.2		0.2 U	1.0 U		0.2 U	1.0 U		0.2 U	1.0 U	1.0 U		0.2 U	1.0 U	
1,1-Dichloroethane			0.2 U	1.0 U		0.2 U	1.0 U		0.2 U	1.0 U	1.0 U		0.2 U	1.0 U	
cis-1,2-Dichloroethene	16		0.2 U	1.0 U		0.2 U	1.0 U		0.2 U	1.0 U	1.0 U		0.2 U	1.0 U	
Toluene	15,000		0.2 U	1.0 U		0.2 U	1.0 U		0.2 U	1.0 U	1.0 U		0.2 U	1.0 U	
Ethylbenzene	2,100		0.2 U	1.0 U		0.2 U	1.0 U		0.2 U	1.0 U	1.0 U		0.2 U	1.0 U	
n-Butylbenzene			0.2 U	1.0 U		0.2 U	1.0 U		0.2 U	1.0 U	1.0 U		0.2 U	1.0 U	
Naphthalene	4,900		0.5 U	4.0 U		0.5 U	4.0 U		0.5 U	4.0 U	4.0 U		0.5 U	4.0 U	
Total Xylenes	1,600		NA	1.0 U		NA	1.0 U		NA	1.0 U	1.0 U		NA	1.0 U	

TABLE 2
GROUNDWATER ANALYTICAL RESULTS FOR DETECTED COMPOUNDS
NORTH MARINA AMERON/HULBERT SITE SOIL/GROUNDWATER MANAGEMENT PLAN

	Preliminary Screening Level	RI-MW-5 TR28G/TR93G 10/11/2011	RI-MW-5-Dup TR28H/TR93H 10/11/2011	RI-MW-6 TR28I 10/11/2011	RI-MW-7 TR28J 10/11/2011	SEE-EC-3 CHM101216-1 12/15/2010	SEE-EC-3 CHM110215-3 12/15/2010	SEE-EC-3 SK37A 02/22/2011	SEE-EC-3 TR28K/TR93I 10/11/2011	SUMP CHM101220-07 CHM110104-5 12/20/2010	SUMP TT03ATT04A 10/19/2011
NWTPH-HCID (µg/L)											
Diesel-Range Organics (DRO)	500	500 U	500 U								
Heavy Oil	500	500 U	500 U							**D** J	
Heavy Oil-Range Organics	500										
NWTPH-Dx (µg/L)											
Diesel-Range Organics (DRO)	500			100 U							100 U
Diesel (Fuel Oil)	500									50 UJ	
Mineral Oil	500									50 UJ	
Heavy Oil	500			200 U						**268** J	210 U
DISSOLVED METALS (µg/L)											
Method EPA 200.8/SW7470A											
Antimony	640	0.2 U	0.2 U			**0.617**			0.2 U	0.20 U	0.2 U
Arsenic	5	**0.5**	**0.5**	**9.4**	**2.4**	**256**	**218**	**35.6**	**34.6**	1.0 U	**0.4**
Cadmium	8.8	0.1 U	0.1 U			0.20 U			0.1 U	**0.167**	0.1 U
Chromium	240,000	0.5 U	0.5 U			**46.1**			**1.6**	**14.0**	**1.2**
Copper	3.1	0.5 U	0.5 U	**1.0**	**1.4**	0.50 U			**0.7**	0.50 U	0.5 U
Lead	8.1	0.1 U	0.1 U	**0.2**		**0.940** J			0.1 U	1.0 U	0.1 U
Mercury	0.1	0.02 U	0.02 U			0.10 U			0.02 U	0.10 U	0.02 U
Zinc	81	**5**	4 U			**4.86**			**8**	**16.1**	**6**
TURBIDITY (NTU) (EPA 180.1)							**0.377** J				
SEMIVOLATILES (µg/L)											
Method SW8270/SW8270D											
Acenaphthene	640	**2.8**	**3.0**							**3.88** J	**1.9**
Diethylphthalate	28000	1.0 U	1.0 U							1.0 UJ	1.0 U
Fluorene	3,500	1.0 U	1.0 U							0.5 UJ	1.0 U
Phenanthrene		1.0 U	1.0 U							0.5 UJ	**1.3**
Di-n-Butylphthalate	2900	1.0 U	1.0 U							**1.60** J	1.0 U
bis(2-Ethylhexyl)phthalate	2.2	1.0 U	1.0 U							0.5 UJ	1.0 U
1-Methylnaphthalene	1.5	1.0 U	1.0 U							0.5 UJ	1.0 U
cPAHs (µg/L)											
Method SW8270D-SIM											
Chrysene	30	0.10 U	0.10 U							0.10 UJ	0.10 U
cPAH TEQ	0.1	ND	ND							ND	ND
VOLATILES (µg/L)											
Method SW8260B/C											
Carbon Disulfide		0.2 U	0.2 U			NA		**0.2**	NA	0.2 U	
1,1-Dichloroethene	3.2	0.2 U	0.2 U			1.0 U		0.2 U	1.0 U	0.2 U	
1,1-Dichloroethane		0.2 U	0.2 U			1.0 U		0.2 U	1.0 U	0.2 U	
cis-1,2-Dichloroethene	16	0.2 U	0.2 U			1.0 U		0.2 U	1.0 U	0.2 U	
Toluene	15,000	0.2 U	0.2 U			1.0 U		0.2 U	1.0 U	0.2 U	
Ethylbenzene	2,100	0.2 U	0.2 U			1.0 U		0.2 U	1.0 U	0.2 U	
n-Butylbenzene		0.2 U	**0.4**			1.0 U		0.2 U	1.0 U	0.2 U	
Naphthalene	4,900	0.5 U	0.5 U			4.0 U		0.5 U	4.0 U	**0.8**	
Total Xylenes	1,600	NA	NA			1.0 U		NA	1.0 U	NA	

D = Indicates detection at or above the listed reporting limit
NA = Not analyzed
ND = Not Detected
EPA = U.S. Environmental Protection Agency
SIM = Selected Ion Monitoring
NTU = Nephelometric Turbidity Unit
µg/L = micrograms per liter

* = indicates surface water sample
U = Indicates the compound was undetected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = The analyte was not detected in the sample; the reported sample detection limit is an estimate.
Bold = Detected compound.
Boxed value indicates exceedance of preliminary screening level.

APPENDIX A

Selected Site Photos

LANDAU ASSOCIATES

North Marina
Ameron/Hulbert Site
Everett, Washington

Selected Site Photos –
Buried Construction Debris

Figure
A-1

LANDAU ASSOCIATES

North Marina
Ameron/Hulbert Site
Everett, Washington

Selected Site Photos – Concrete Waste

Figure
A-2

LANDAU ASSOCIATES

North Marina
Ameron/Hulbert Site
Everett, Washington

Selected Site Photos – Sandblast Grit

Figure
A-3