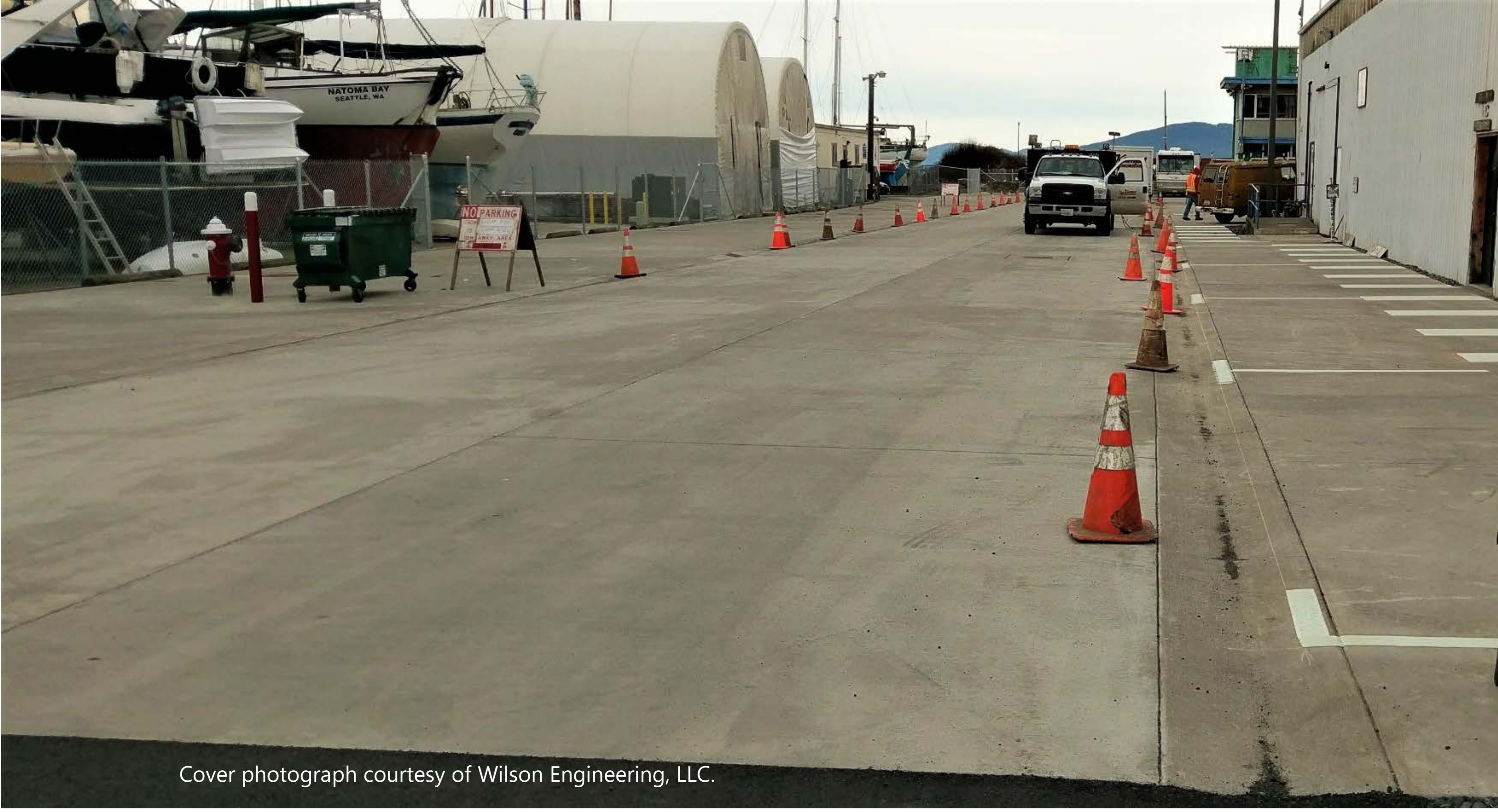

Cover photograph courtesy of Wilson Engineering, LLC.

April 2018
All American Marine Building and C Street Terminal Interim Action Project

Completion Report, Volume 1 of 2
Central Waterfront Site
C Street Terminal Interim Action

Prepared for Port of Bellingham

April 2018
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Completion Report, Volume 1 of 2
Central Waterfront Site
C Street Terminal Interim Action

Prepared for
Port of Bellingham
1801 Roeder Avenue
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Project Number: 161240-01.01
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ABBREVIATIONS

Anchor QEA	Anchor QEA, LLC (subconsultant to Wilson)
AO	Agreed Order
ASB	Aerated Stabilization Basin
City	City of Bellingham
Contractor	Prime Contractor to the Port
CSGP	NPDES Construction Stormwater General Permit
CST	C Street Terminal
Designer	Prime Consultant to the Port
Ecology	Washington State Department of Ecology
IA	interim action
IDW	investigation-derived waste
IMCO	IMCO General Construction (Prime Contractor to the Port)
MTCA	Model Toxics Control Act
NPDES	National Pollutant Discharge Elimination System
OWS	oil/water separator
PAH	polycyclic aromatic hydrocarbon
P.E.	Professional Engineer
Port	Port of Bellingham (Owner)
RI/FS	Remedial Investigation/Feasibility Study
Site	Central Waterfront Site
SWPPP	stormwater pollution prevention plan
SY	square yard
TCLP	toxicity characteristic leachability procedure
TESC	temporary erosion and sediment control
TPH	total petroleum hydrocarbon
WAC	Washington Administrative Code
Wilson	Wilson Engineering, LLC (Prime Consultant to the Port)
WSST	Washington State Sales Tax

1 Introduction

The Port of Bellingham (Port) constructed a new building and other infrastructure improvements in support of marine trades within portions of the Central Waterfront Site (Site) in Bellingham, Washington; see Figure 1. Portions of this work were identified as interim action (IA) work by the Washington State Department of Ecology (Ecology) and those portions are the focus of this Completion Report. The IA work was completed in conjunction with two separate projects.

The IA C Street Terminal (CST) Project constructed replacement underground utilities and replacement road surfaces along C Street from Roeder Avenue towards and just beyond Maple Street to rehabilitate upland infrastructure and enhance stormwater collection and treatment. Utility replacements included public water and sewer, electrical power, natural gas, and stormwater. Road surface replacements included concrete and asphalt pavements. Sheet C0.3 in Appendix A illustrates the approximate limits of work. Construction of the utilities and road surfaces required the Contractor to perform earthwork and manage groundwater and stormwater within Site areas known to contain impacted soils and groundwater. Figure 2 illustrates the characterized extents of soil and groundwater impacts within the IA CST Project area.

The interim action components of the CST Project consisted of the removal and disposal and/or capping of impacted soils and the treatment and disposal of impacted construction water managed during the Project. Construction of the paved terminal area will occur in a subsequent phase.

Note that this volume of the Completion Report (Volume 1) is for the C Street Terminal Interim Action only; Volume 2 of the Completion Report is for the All American Marine Building Interim Action.

1.1 Limitations

This Completion Report has been prepared by Anchor QEA, LLC (Anchor QEA) for the Port in accordance with: 1) the Ecology-approved Interim Action Work Plan (Anchor QEA 2016)[1], and 2) the Model Toxics Control Act (MTCA)[2] to document construction activities and it is the engineer's opinion that, based on the testing results and inspections, the IA was constructed in substantial compliance with the Interim Action Work Plan.

Anchor QEA was subcontracted by Wilson Engineering, LLC (Wilson)[3] to provide IA-related construction support and documentation services for the CST Project. Wilson provided general construction management services for the overall project, separately from Anchor QEA. Appendix B

[1] Relating to the Agreed Order (AO) No. DE 3441 as amended (Ecology 2006, 2012) between the Port, the City of Bellingham (City), and Ecology.

[2] Washington Administrative Code [WAC] 173-340-400 (6)(b)(ii).

[3] Wilson Engineering, LLC (Wilson) was the Port's prime consultant on the Project.

includes copies of Daily Field Activity Reports, completed by Anchor QEA. The role of Anchor QEA during construction included the following:

1. Providing construction monitoring of the Contractor's management of on-site soils and construction waters
2. Collecting soil samples from the Contractor's on-site soil stockpiles for analysis by an Ecology-accredited laboratory
3. Coordinating with the Port, Wilson, and the Contractor in construction matters relating to the IA Work Plan

1.2 Site Description and Background

The Site, located in Bellingham, Washington, encompasses 51 acres and includes both upland property (bounded by the Whatcom and I&J Waterways, Roeder Avenue, and the former Aerated Stabilization Basin facility) and in-water nearshore surface sediments in Whatcom Waterway. The Site comprises four contaminated sites that were formerly managed separately under the Model Toxics Control Act: the Roeder Avenue Landfill site, the Olivine Corporation Hilton site (Olivine Uplands), the Chevron Bellingham Port site (Chevron Terminal), and the Colony Wharf site. In 2003, due to the presence of comingled groundwater contamination, Ecology consolidated these four sites into a single area-wide site now known as the Central Waterfront Site. In 2006, the Port and City of Bellingham (City) entered into the Agreed Order (AO) with Ecology to perform a remedial investigation/feasibility study (RI/FS) for the Site, which is currently in progress.

The first amendment to the AO (AO Amendment 2012) allows the Port and City to undertake IAs before completing the RI/FS, with public review and Ecology approval, in accordance with Washington Administrative Code (WAC) 173-340-430 and WAC 173-340-600(16). The IAs outlined in the IA Work Plan were implemented to reduce the potential threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to a hazardous substance at the Site. The IAs were implemented in advance of selecting the final cleanup action for the Site and will not preclude reasonable alternatives for the final cleanup action (WAC 173-340-430(3)(b)).

The Site is divided into three subareas based on historical land use and associated contamination: the Landfill and Perimeter subarea, C Street Properties subarea, and Hilton Avenue Properties subarea (Figure 2). The CST Project area is located within the C Street Properties subarea.

1.3 Construction Bid Process

In May 2016, Ecology approved the IA Work Plan (Anchor QEA 2016) and the Port and Wilson Engineering, LLC (Designer) prepared the final version of the construction documents for the redevelopment project. The Port published a Notice of Bid in the Bellingham Herald on July 6, 2016, and the bid package was posted with Western Construction Resources on the same day.

The Port received five bid proposals for the CST redevelopment project. The bids were opened and made public at 2:00 p.m. on June 24, 2016, with bids ranging from $2,185,009 to $3,085,508[4], including Washington State Sales Tax (WSST) of 8.7%. The Port Commission awarded the contract to IMCO as the Prime Contractor (Contractor) during their regular commission meeting on July 19, 2016.

[4] This range of costs is for the C Street Terminal redevelopment project, of which the IA is a portion of the scope.

2 Construction Activities

Construction activities are discussed separately in the following subsections. Note that only IA-related construction activities are discussed below.

2.1 Mobilization

The Port issued the Notice to Proceed to the Contractor on August 11, 2016. The Contractor prepared their work plans and began submittals the week of August 8, 2016, to the Port, Wilson, and Anchor QEA for review and approval. The Contractor began mobilizing their equipment and supplies to the Site on August 15, 2016. Mobilization occurred over the course of the following weeks and throughout the Project, as needed, to support various work activities.

2.2 Site Preparation

During the week of August 15, 2016, the Contractor began installing temporary erosion and sedimentation controls (TESC), laying out the temporary stockpile containment pad, conducting utility locates, installing signage and access controls, and minor clearing and grubbing.

2.2.1 Temporary Erosion and Sediment Control Measures

TESC measures installed by the Contractor included straw wattles along the perimeter of the staging and stockpiling area, catch basin inserts along C Street, and diversion berms along pavements to isolate stormwater runoff.

2.2.2 Temporary Stockpile Containment Pad

A temporary stockpile containment pad was constructed in the designated staging and stockpiling area to manage on-site-generated soils. The pad surface consisted of asphalt pavement above a compacted subgrade. The asphalt surface was graded to drain into two temporary catch basins (within the pad) connected by PVC piping that drained towards a third catch basin located near the temporary water pretreatment system (see below). Waters generated from the soils, including soil dewatering and stormwater runoff from the soils, would drain into the catch basins on the pad and collect at the third catch basin where collected water was pumped into the temporary water pretreatment system as described below.

The containment pad surface was divided into several cells with the use of stacked concrete blocks. Cells were designated by bid schedule and by characterization.

2.2.3 Temporary Groundwater Dewatering System

The Contractor designed and constructed a temporary groundwater dewatering system in support of the construction of the large, deep stormwater utility vaults in C Street. The dewatering system consisted of 35 individual wellpoints near the utility vault locations and was powered by a diesel generator. Extracted groundwater was pumped to the temporary water pretreatment system as described below.

2.2.4 Temporary Water Pretreatment System

The Contractor constructed, operated, and maintained a temporary water pretreatment system to manage construction-generated water in accordance with the IA Work Plan, the Contractor's Stormwater Pollution Prevention Plan (SWPPP), and a Non-Routine Discharge Approval by Ecology.[5] Waters managed by the temporary water pretreatment system included the following:

- Groundwater from the Contractor's temporary groundwater dewatering well system in C Street. Water was pumped from the well system into the pretreatment system.
- Stormwater runoff collected in the various excavations. Water was pumped from the excavations into the pretreatment system.
- Stormwater runoff, soil decontamination water, and soil dewatering from the temporary stockpile containment pad. Waters from the pad were pumped from a temporary catch basin into the pretreatment system.

The system consisted of a 16,000-gallon settling tank, followed by a coalescing media oil/water separator (OWS), and followed by a surge tank. Water flowed via gravity from the settling tank to the OWS to the surge tank. Influent water was pumped into the settling tank. Pre-treated effluent was pumped from the surge tank via temporary piping into the Port's Aerated Stabilization Basin (ASB). Performance of the system was monitored by the Contractor, the Port, and the Port's consultants during the Project.

2.3 Earthwork

Soil excavation, grading, and backfilling was performed throughout the course of the Project in support of the following work elements, which are unrelated to the IA:

- Public water, sewer, and stormwater utility installations along C Street
- Electrical, natural gas, and telecommunication utility installations along C Street
- Concrete and asphalt pavement construction along C Street; pavements
- Temporary groundwater dewatering system installation in C Street

Earthwork for utilities along C Street was preceded by defined pavement or structure demolition and removal; demolition materials were managed separately from soils as debris (see Section 2.5.2). Road subgrades were excavated along utility alignments and excavated soils were hauled to the stockpile

[5] Non-Routine Discharge Approval from Ecology obtained by the Port, by letter dated May 17, 2016.

containment pad (see Section 2.2.2), where soils were tracked by bid schedule and characterization (see Section 2.5.1).

2.4 IA Cap Construction

Asphalt pavement and concrete pavement were constructed along C Street following completion of the utility installations; these pavements constitute hardscape caps in the IA Work Plan to cover underlying soils that are known to be or are potentially impacted. The IA Work Plan requires hardscape caps to be at least 3 inches thick and underlain with at least 4 inches of gravel base. Soil Reuse Map Figures[6] (included in Appendix C) illustrate the reuse of on-site soils by schedule that were capped with pavements. In total, about 4,360 square yards (SY) of cap were constructed, including about 1,700 SY of asphalt pavement[7] that was a minimum of 3 inches thick, 2,600 SY of concrete pavement that was a minimum of 8 inches thick, and 60 SY of concrete patching that was a minimum of 3 inches thick. Photograph 1 illustrates repair of asphalt pavement in multiple lifts, totaling more than 3 inches thick. Sheets C4.1 through C4.3 of the Record Drawings, in Appendix A, illustrate the areas and details of the constructed hardscape caps. An interim cap maintenance plan for IA cap areas is included in Appendix E. This plan identifies operation, inspection, documentation, and maintenance activities for the IA cap areas. A final Site-wide cap maintenance plan will be developed following completion of the Site cleanup activities.

Photograph 1
Asphalt Pavement Repair on C Street

Photograph courtesy of Wilson Engineering, LLC.

[6] The Soil Reuse Map Figures were developed by the Contractor.
[7] Area provided by Wilson on May 2, 2017, based on the record drawings and total asphalt weight tracked during the Project.

2.5 Soil, Debris, and Water Management

On-site soil, debris, and waters generated during the Project were managed as described in the following subsections.

2.5.1 Soil Management

Excavated soils were tracked per the bid schedule for payment purposes as follows:

- Schedule A: C Street Roadway and Drainage Improvements
- Schedule B: City Water Improvements
- Schedule C: Franchise Utilities and Sanitary Sewer Improvements

In addition to tracking by bid schedule, excavated soils were sampled for chemical and/or geotechnical testing to determine whether they were suitable for on-site reuse:

- Soils were deemed suitable for on-site reuse if chemical concentrations met IA Work Plan Soil Cleanup Levels[8] (Anchor QEA 2016) and soils met geotechnical requirements.
- Soils were deemed unsuitable for on-site reuse if they did not meet geotechnical requirements; these soils were disposed of in an approved Subtitle D landfill.
- Soils were considered contaminated if they were excavated from below the groundwater table, or had chemical concentrations that exceeded the IA Work Plan Soil Cleanup Levels (Anchor QEA 2016); these soils were disposed of in an approved Subtitle D landfill.

To facilitate tracking and characterization of soils, the Contractor constructed and operated a temporary stockpile containment pad (see Section 2.2.2).

All excavated soils were hauled to the temporary stockpile containment pad, which consisted of various cells. Some cells were designated for soil testing, while others were designated by schedule for reuse or disposal following environmental and material testing, which is described further below.

Soils excavated above the groundwater table that appeared to be suitable for on-site reuse were stockpiled for environmental and material testing. Soils excavated above the groundwater table that appeared to be unsuitable for on-site reuse were stockpiled for disposal in an approved Subtitle D landfill. Criteria for soils determined to be unsuitable for reuse included: the presence of deleterious matter, geotechnically unsuitable soils (e.g., excess clays or silts), and soils that were visibly impacted by petroleum byproducts (e.g., exhibiting a sheen or staining on the soil and/or strong odor).

Soils excavated below the groundwater table were, by Contract, considered contaminated and were stockpiled in a cell designated for off-site disposal in an approved Subtitle D landfill.

[8] See Table 1 – Soil Cleanup Levels in the IA Work Plan

Excavated soils that underwent environmental testing for on-site reuse suitability were sampled and analyzed at a frequency of at least one sample for every 200 cubic yards stockpiled. In total, 24 soil samples were collected and analyzed. See Section 4 for more detailed information. Further geotechnical testing occurred as needed. Following soil sampling, analysis, and further testing, stockpiled soils were then either reused on site or hauled off site for landfill disposal.

Table 1 summarizes the approximate soil volume by soil determination.

Table 1
On-site-Generated Soil Summary

Soil Determination	Approximate Soil Volume (CY)
Soils Suitable for On-site Reuse, Conditional	425 [1,4]
Soils Suitable for On-site Reuse, Unconditional	2,890 [2,4]
Soils Contaminated and/or Unsuitable for On-site Reuse: Hauled to Subtitle D Landfill	2,348 [3]
Subtotal	**5,663** [3,4]

Notes:
1. Soils determined to be conditionally suitable for on-site reuse were placed beneath capped areas only.
2. Soils determined to be unconditionally suitable for on-site reuse were reused or stockpiled for future reuse on site.
3. The approximate soil volume is based on an estimated conversion factor of 1.5 tons per cubic yard; soils hauled to the landfill were tracked by weight (tons).
4. Volume estimated by the Contractor.

All soils determined to be contaminated or unsuitable for on-site reuse were hauled off site for disposal in an approved Subtitle D landfill. Approximately 3,522 tons of contaminated or unsuitable soil were hauled off site for disposal at the Republic Services Roosevelt Regional Landfill.[9] Four 50-gallon drums of petroleum-impacted soil sourced from the installation of a utility pole prior to the start of the CST Project were disposed of as part of the CST Project.[10] Appendix D summarizes soil disposal at the Subtitle D landfill; note that soil disposal was tracked by schedule (see Section 2.2.2 for more information).

Soils determined to be suitable for unconditional on-site reuse were those that were sampled, analyzed, and determined to meet the IA Work Plan Soil Cleanup Levels. Approximately 2,890 cubic yards of on-site-generated soils were determined to be suitable for unconditional on-site reuse.

[9] Solid Waste Permit No. SW11-0002, issued by Klickitat County Health Department, valid from March 16, 2016, to April 1, 2017. Municipal Solid Waste Landfilling Permit issued by Klickitat County Health Department on July 15, 1998, modified on March 1, 2014.

[10] A utility pole, installed on the Central Waterfront Site in June 2016 as part of the Whatcom Waterway Cleanup in Phase 1 Areas Project, generated petroleum-impacted soils that were placed into four 50-gallon barrels. These drums containing soil were added to impacted soils managed as part of the CST Project, which was disposed of in the approved Subtitle D landfill.

Soils determined to be conditionally suitable for on-site reuse included a few stockpiles that were sampled, analyzed, and determined to meet the IA Work Plan Soil Cleanup Levels except for minor exceedances of metals—specifically, copper and zinc. These soils were placed under capped areas only. Approximately 425 cubic yards of on-site-generated soils were determined to be conditionally suitable for on-site reuse. Appendix C illustrates the placement of conditionally suitable soils for on-site reuse.

While stockpiled, suitable, unsuitable, and contaminated soils were covered with plastic sheeting to reduce the potential for contact stormwater generation and to minimize the potential for dust generation.

2.5.2 Debris Management

Debris not containing soil, such as concrete, asphalt, timber, and other non-refuse debris was stockpiled for either off-site recycling or disposal. Debris containing soil was managed along with the soil as described in Section 2.5.1. Approximately 357 tons of asphalt and 641 tons of concrete were recycled. Remaining debris was hauled off site for disposal. Appendix D summarizes recycling of asphalt and concrete debris managed during the Project.

2.5.3 Water Management – Construction Stormwater

Construction stormwater was managed by the Contractor under coverage of the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit (CSGP)[11], the Port's NPDES Waste Discharge Permit[12], and a Non-Routine Discharge Approval from Ecology (see Section 2.2.4 for more information).

In general, stormwater that was in contact with or had the potential to be in contact with impacted soils and/or impacted groundwater was collected and conveyed to the Temporary Water Pretreatment System (see Section 2.2.4 for more information). Investigation-derived waste (IDW) water was managed by this system; the water originated from earlier Site investigation work[13] and amounted to about 60 to 70 gallons. Stormwater that was not in contact with, nor had the potential to be in contact with, impacted soils and/or impacted groundwater was allowed to infiltrate or was managed using the existing stormwater system that was modified to include TESC measures.

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[11] CSGP Permit No. WAR304177; coverage issued to the Port of Bellingham on November 18, 2015, transferred to the Contractor on August 16, 2016, and terminated on February 3, 2017.

[12] NPDES Waste Discharge Permit No. WA0001091; issued to the Port of Bellingham on December 17, 2014, and modified on November 12, 2015.

[13] Water from Central Waterfront Site groundwater sampling that occurred in July 2016 prior to the start of the CST Project. Sample IDs: CWF-CW-1 and CWF-CW-2, completed as part of the RI/FS Work Plan Addendum No. 7. Groundwater was temporarily stored in two steel drums. The water in the drums was drained into the temporary water pretreatment system; the drums were decontaminated and disposed of.

Following the installation of TESC measures as part of the Site Preparation work (see Section 2.2.1), the Contractor maintained and modified the TESC measures as needed based on activities and site conditions. For example, the Contractor installed an additional temporary catch basin and temporary piping near the Project southwest area of its staging and stockpiling area to manage stormwater runoff during an extended and intense rainfall event. Stormwater runoff in this area was collected in the catch basin and the stormwater was conveyed to the Temporary Stockpile Containment Pad for treatment (see Section 2.2.4 for more information). Other examples include the maintenance of straw wattles and catch basin inserts.

2.5.4 Water Management – Construction Dewatering

Construction dewatering was managed by the Contractor using two methods, described below.

For localized excavation dewatering, the Contractor removed groundwater and stormwater runoff collected in excavations using submersible pumps and temporary piping that discharged water into the Temporary Water Pretreatment System (see Section 2.2.4 for more information).

For area-wide excavation dewatering, the Contractor utilized the Temporary Groundwater Dewatering System (see Section 2.2.3 for more information).

2.6 Demobilization

Demobilization of equipment followed completion of various activities, as described below.

2.6.1 Temporary Groundwater Dewatering System

The Contractor decommissioned, removed, and demobilized the Temporary Groundwater Dewatering System following construction of the vaults in C Street during the week of October 17, 2016. The temporary wellpoints were removed, the temporary piping was disassembled and removed, and the Temporary Water Pretreatment System remained in operation in support of other soil and water management activities.

2.6.2 Temporary Stockpile Containment Pad

Decommissioning of the temporary stockpile containment pad began following the removal of soils stockpiled on the pad during the week of December 19, 2016. The Contractor cleaned the asphalt surface, demolished the asphalt pavement, and removed the temporary catch basins and piping. The demolished asphalt was hauled off site to Whatcom Builders, Inc., where the materials will be recycled.

2.6.3 Temporary Water Pretreatment System

Following the construction of the permanent stormwater system improvements and removal of soils from the Temporary Stockpile Containment Pad during the week of December 19, 2016, the Contractor decommissioned the temporary water pretreatment system. The Contractor cleaned the tanks, removed the temporary piping to the system and from the system to the ASB, and demobilized the system components from the Site.

Sediment that accumulated in the tanks was added to soils that were hauled off site for disposal in the approved Subtitle D landfill. An oil/water mixture that was removed during operation of the OWS was managed by a subcontractor in accordance with the subcontractor's waste discharge permit.[14]

2.6.4 Overall Project Demobilization

Substantial completion was obtained by the Contractor on January 20, 2017, which started the final demobilization process. The Contractor demobilized from the Site following completion of the Work, except for final asphalt paving that was delayed until suitable pavement construction conditions occurred during the week of January 23, 2017.

[14] City of Portland Environmental Services Significant Categorical Industrial User Wastewater Discharge Permit No. 437.005; effective date 10/31/2015; revised date 10/31/2015; expiration date 09/15/2018.

3 Record Drawings

Record drawings were completed by Wilson and approved by the City of Bellingham (approval of record drawings was limited to utility and road improvements); see Appendix A for the Record Drawings (see Note below). Sheets C4.1 through C4.3 detail the extents of the environmental caps constructed as part of the Project; see Section 2.4 for more details.

4 Soil Sampling Results

Soil sampling and analyses were conducted throughout the course of the Project as part of the soil management Work. Table 2, included at the end of this report, summarizes the soil sampling results.

A total of 24 soil samples were collected during construction. Of the 24 samples analyzed, 7 samples exceeded the IA Work Plan Soil Cleanup Levels (Anchor QEA 2016); soils represented by these samples were determined to be unsuitable for on-site reuse and were hauled to the approved Subtitle D landfill for disposal. Exceedances varied by sample; analytes that exceeded associated cleanup levels included total petroleum hydrocarbons (TPHs), polycyclic aromatic hydrocarbons (PAHs), and total metals. One sample had an exceedance of the maximum allowable concentration for lead; this sample was then analyzed for Toxicity Characteristic Leachability Procedure (TCLP) for lead and was below the TCLP cleanup level for lead.

A total of 13 samples were below the IA Work Plan Soil Cleanup Levels; these soils were determined to be suitable for on-site reuse.

The remaining 4 samples had minor exceedances of the IA Work Plan Soil Cleanup Levels for total metals—copper and zinc; these soils were determined to be conditionally suitable for on-site reuse and were reused under cap areas only. None of the soils determined to be conditionally suitable for on-site reuse had exceedances of TPHs or PAHs.

Analytical data reports for the soil sampling are contained in Appendix F.

5 Deviations to the Contract Documents and IA Work Plan

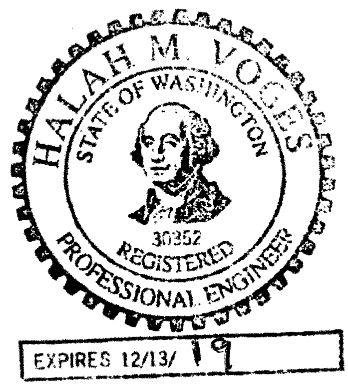
While there were minor deviations to the Construction Plans, the substantive elements of the Project's design were implemented in accordance with the contract documents and the IA Work Plan.

Deviations included the following:

- CST IA construction consisted of managing soils and impacted construction water during the replacement of underground utilities and road surfaces along C Street from Roeder Avenue towards and just beyond Maple Street. Construction of the paved terminal area defined in the IA work plan will occur in subsequent phases.
- Conditional soil reuse for on-site-generated soils determined to contain slightly elevated metals concentrations; these soils were placed beneath cap areas only.
- Schedule; the Project was substantially completed in January 2017, rather than the anticipated completion of October 2016.
- Soil stockpiling for future reuse; soils analyzed that were below the cleanup levels and that passed geotechnical testing were stockpiled on site, pending future reuse.
- Concrete debris was hauled off site for recycling, rather than hauling to the GP-West Site for size reduction and stockpiling.

6 Opinion of the Engineer

The remedial interim action portions of the C Street Terminal Interim Action Project on the Central Waterfront Site have been completed in substantial compliance with the Interim Action Work Plan dated March 2016.



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Principal Engineer
Anchor QEA, LLC

7 References

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Ecology (Washington State Department of Ecology), 2006. *In the Matter of Remedial Action by the Port of Bellingham and the City of Bellingham*. Agreed Order No. DE 3441 issued by Washington State Department of Ecology. September 2006.

Ecology, 2012. *In the Matter of Remedial Action by the Port of Bellingham and the City of Bellingham*. First Amendment to Agreed Order No. DE 3441 issued by Washington State Department of Ecology. 2012.

Table

Table 2

Soil Sampling Analytical Results for C Street Terminal Interim Action

Analyte (by Group)	Cleanup Level for Unrestricted Land Use - Unsaturated Soil	Maximum Allowable Concentration 20 x TC	Stockpile Source, Sample ID, Date Collected, and Determination					
			"A Test", 8th Lot	"A Test", 7th Lot	"C Test", 11th Lot	"B Test", 5th Lot	"A Test", 6th Lot	"C Test", 10th Lot
			CWF-CSTP1-01-12092016	CWF-CSTP1-04-12062016	CWF-CSTP1-03-12062016	CWF-CSTP1-02-12062016	CWF-CSTP1-01-12062016	CWF-CSTP1-02-11142016
			12/9/2016	12/6/2016	12/6/2016	12/6/2016	12/6/2016	11/14/2016
			Suitable	Suitable	Suitable	Suitable	Disposal	Disposal
Total Petroleum Hydrocarbons (TPH) (mg/kg)								
Gasoline Range Hydrocarbons	30	-	3 U	3 U	3 U	3 U	3 U	3 U
Diesel Range Hydrocarbons	2000	-	10.0	18.3	9.15	9.28	45.1	10.2
Oil Range Hydrocarbons	2000	-	32.2	43.8	14.0	17.5	174	18.6
Total TPHs	2000	-	42.2	62.1	23.2	26.8	219	28.8
Conventionals and Other Metals								
pH	<2.5 or >11.0[‡]	-	-	-	-	-	-	-
Total Organic Carbon (%)	-	-	-	-	-	-	-	-
Volatile Organic Compounds (mg/kg)								
Benzene	0.034	10	0.00037 J	0.0007	0.00025 J	0.00053 U	0.00108	0.00038 J
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)								
Acenaphthene	2.5	-	0.0036 J	0.0049 U	0.0045 U	0.0049 U	0.0084	0.0081
Anthracene	34	-	0.0219	0.0108	0.0024 J	0.0030 J	0.0145	0.0753
Fluoranthene	25	-	0.1100	0.0812	0.0108	0.0116	0.0837	0.5200 D
Fluorene	3.6	-	0.0167	0.0038 J	0.0045 U	0.0049 U	0.0107	0.0218
Pyrene	160	-	0.0894	0.1010	0.0126	0.0133	0.1000	0.6360 D
1-Methylnaphthalene	35	-	0.0250	0.0198	0.0206	0.0145	0.0397	0.0200
2-Methylnaphthalene	320	-	0.0344	0.0278	0.0226	0.0196	0.0608	0.0352
Naphthalene	16	-	0.0222	0.0223	0.0202	0.0109	0.0300	0.0501
Benzo(a)anthracene	1.1	-	0.0410	0.0483	0.0052	0.0057	0.0456	0.3980
Benzo(a)pyrene	0.14	-	0.0345	0.0576	0.0048	0.0048 J	0.0451	0.5470 D
Benzo(b)fluoranthene	1.4	-	0.0356	0.0422	0.0067	0.0083	0.0457	0.3010
Benzo(k)fluoranthene	3.7	-	0.0183	0.0247	0.0028 J	0.0029 J	0.0190	0.1930
Chrysene	1.2	-	0.0435	0.0571	0.0081	0.0094	0.0713	0.4440
Dibenzo(a,h)anthracene	0.14	-	0.0079	0.0116	0.0045 U	0.0049 U	0.0098	0.0809
Indeno(1,2,3-cd)pyrene	1.4	-	0.0252	0.0332	0.0029 J	0.0066	0.0281	0.2690
Total Benzofluoranthenes	-	-	-	-	-	-	-	-
Total cPAHs TEQ	0.14	-	0.0477	0.0742	0.0071	0.0077	0.0606	0.6756
Total Metals (mg/kg)								
Arsenic	20	100	11.4 U	4.52 U	4.50 U	4.75 U	5.32 U	5.17 U
Cadmium	1.2	20	0.403	0.366	0.450	0.321	0.610	0.320
Chromium (Total)	5200	100	17.5	18.3	16.3	17.5	25.8	17.5
Chromium (VI)	48	100	-	-	-	-	-	-
Copper	36	-	34.1	26.7	10.3	10.7	40.7	20.6
Lead	250	100	24.5	17.9	3.22	8.56	28.7	16.8
Mercury	2	4	0.07487	0.05055	0.01054 J	0.02633	0.05474	0.04571
Nickel	48	-	20.4	18.3	15.3	14.0	24.8	17.7
Selenium	7.4	20	3.88 J	3.51 J	2.70 J	2.75 J	3.73 J	4.99 J
Silver	0.32	100	0.275 U	0.271 U	0.270 U	0.285 U	0.319 U	0.310 U
Zinc	100	-	73.1	62.5	27.6	31.9	83.0	60.8
TCLP Metals (mg/L)								
Lead	250	100	-	-	-	-	-	-

Table 2
Soil Sampling Analytical Results for C Street Terminal Interim Action

Analyte (by Group)	Cleanup Level for Unrestricted Land Use - Unsaturated Soil	Maximum Allowable Concentration 20 x TC	Stockpile Source, Sample ID, Date Collected, and Determination					
			"A Test", 5th Lot	"C Test", 9th Lot	"C Test", 8th Lot	"B Test", 4th Lot	"B Test", 3rd Lot	"A Test", 4th Lot
			CWF-CSTP1-01-11142016	CWF-CSTP1-01-11102016	CWF-CSTP1-02-11072016	CWF-CSTP1-01-11072016	CWF-CSTP1-01-11032016	CWF-CSTP1-02-10312016
			11/14/2016	11/10/2016	11/7/2016	11/7/2016	11/3/2016	10/31/2016
			Disposal	Suitable	Disposal	Disposal	Suitable	Suitable
Total Petroleum Hydrocarbons (TPH) (mg/kg)								
Gasoline Range Hydrocarbons	30	-	3 U	3 U	**73**	3 U	4 U	3 U
Diesel Range Hydrocarbons	2000	-	**6.74**	**12.1**	**93.7**	**30.1**	**8.35**	**18.2**
Oil Range Hydrocarbons	2000	-	**12.7**	**30.2**	**64.3**	**36.9**	**17.2**	**24.7**
Total TPHs	2000	-	**19.4**	**42.3**	**158.0**	**67.0**	**25.6**	**42.9**
Conventionals and Other Metals								
pH	<2.5 or >11.0[‡]	-	-	-	-	-	-	-
Total Organic Carbon (%)	-	-	-	-	-	-	-	-
Volatile Organic Compounds (mg/kg)								
Benzene	0.034	10	**0.00028 J**	0.00049 U	**0.00024 J**	**0.00100**	**0.00027 J**	**0.00016 J**
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)								
Acenaphthene	2.5	-	0.0048 U	**0.0051**	0.0050 U	0.0046 U	0.0047 U	0.0045 U
Anthracene	34	-	**0.0197**	**0.0041 J**	**0.0128**	**0.0587**	**0.0035 J**	**0.0201**
Fluoranthene	25	-	**0.1510**	**0.0213**	**0.0943**	**0.4320**	**0.0182**	**0.0424**
Fluorene	3.6	-	**0.0037 J**	**0.0023 J**	**0.0161**	**0.0125**	**0.0016 J**	**0.0078**
Pyrene	160	-	**0.1930**	**0.0248**	**0.1040**	**0.6310 D**	**0.0224**	**0.0378**
1-Methylnaphthalene	35	-	**0.0110**	**0.0301**	**0.0260**	**0.0446**	**0.0163**	**0.0148**
2-Methylnaphthalene	320	-	**0.0181**	**0.0366**	**0.0297**	**0.0565**	**0.0197**	**0.0196**
Naphthalene	16	-	**0.0191**	**0.0200**	**0.0208**	**0.0612**	**0.0113**	**0.0109**
Benzo(a)anthracene	1.1	-	**0.0981**	**0.0103**	**0.0498**	**0.2690**	**0.0102**	**0.0113**
Benzo(a)pyrene	0.14	-	**0.1160**	**0.0111**	**0.0527**	**0.3000**	**0.0106**	**0.0115**
Benzo(b)fluoranthene	1.4	-	**0.0716**	**0.0125**	**0.0372**	**0.1830**	**0.0113**	**0.0103**
Benzo(k)fluoranthene	3.7	-	**0.0483**	**0.0051**	**0.0215**	**0.1240**	**0.0041 J**	**0.0053**
Chrysene	1.2	-	**0.1060**	**0.0169**	**0.0535**	**0.2810**	**0.0149**	**0.0157**
Dibenzo(a,h)anthracene	0.14	-	**0.0186**	**0.0038 J**	**0.0070**	**0.0495**	0.0047 U	0.0045 U
Indeno(1,2,3-cd)pyrene	1.4	-	**0.0552**	**0.0079**	**0.0258**	**0.1480**	**0.0071**	**0.0075**
Total Benzofluoranthenes	-	-	**-**	**-**	-	-	-	**0.0215**
Total cPAHs TEQ	0.14	-	**0.1462**	**0.0152**	**0.0674**	**0.3802**	**0.0145**	**0.0155**
Total Metals (mg/kg)								
Arsenic	20	100	5.14 U	5.22 U	**1.11 J**	**1.06 J**	**17.7**	**1.49 J**
Cadmium	1.2	20	**0.200 J**	**0.402**	**0.246**	**0.258**	**0.381**	**0.243**
Chromium (Total)	5200	100	**16.3**	**18.3**	**14.8**	**20.6**	**14.7**	**14.0**
Chromium (VI)	48	100	-	-	**-**	**-**	-	-
Copper	36	-	**12.5**	**13.0**	**14.5**	**27.4**	**8.83**	**15.8**
Lead	250	100	**10.1**	**17.4**	**10.6**	**18.9**	**9.41**	**9.35**
Mercury	2	4	**0.03226**	**0.05398**	**0.05894**	**0.08338**	**0.03521**	**0.03841**
Nickel	48	-	**13.1**	**13.6**	**14.1**	**20.2**	**11.9**	**14.5**
Selenium	7.4	20	**3.83 J**	**2.02 J**	**3.33 J**	**3.77 J**	**2.52 J**	**3.16 J**
Silver	0.32	100	0.308 U	0.313 U	0.296 U	0.310 U	**0.329** U	**0.321** U
Zinc	100	-	**31.9**	**38.1**	**38.5**	**48.3**	**29.6**	**37.4**
TCLP Metals (mg/L)								
Lead	250	100	-	-	-	-	-	-

Table 2
Soil Sampling Analytical Results for C Street Terminal Interim Action

Analyte (by Group)	Cleanup Level for Unrestricted Land Use - Unsaturated Soil	Maximum Allowable Concentration 20 x TC	Stockpile Source, Sample ID, Date Collected, and Determination					
			"B Test", 2nd Lot	"C Test", 7th Lot	"B Test", 1st Lot	"A Test", 3rd Lot	"C Test", 6th Lot	"C Test", 5th Lot
			CWF-CSTP1-01-10312016	CWF-CSTP1-02-10272016	CWF-CSTP1-01-10272016	CWF-CSTP1-01-10192016	CWF-CSTP1-02-10132016	CWF-CSTP1-01-10132016
			10/31/2016	10/27/2016	10/27/2016	10/19/2016	10/13/2016	10/13/2016
			Suitable	Suitable	Suitable	Suitable	Suitable	Conditional
Total Petroleum Hydrocarbons (TPH) (mg/kg)								
Gasoline Range Hydrocarbons	30	-	3 U	3 U	3 U	**13**	4 U	4 U
Diesel Range Hydrocarbons	2000	-	**12.5**	**23.3**	**23.5**	**219**	**13.1**	**13.0**
Oil Range Hydrocarbons	2000	-	**17.9**	**87.9**	**148**	**150**	**11.7**	**38.4**
Total TPHs	2000	-	**30.4**	**111.2**	**172**	**369**	**24.8**	**51.4**
Conventionals and Other Metals								
pH	<2.5 or >11.0‡	-	-	-	-	-	**8.43**	-
Total Organic Carbon (%)	-	-	-	-	-	-	**0.15**	-
Volatile Organic Compounds (mg/kg)								
Benzene	0.034	10	**0.00044 J**	**0.00065**	**0.00112**	**0.00041 J**	0.00053 **U**	**0.00179**
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)								
Acenaphthene	2.5	-	**0.0027 J**	**0.0030 J**	**0.0062**	0.0046 U	0.0046 U	**0.0102**
Anthracene	34	-	**0.0062**	**0.0038 J**	**0.0117**	**0.0069**	0.0046 U	**0.0230**
Fluoranthene	25	-	**0.0253**	**0.0176**	**0.0692**	**0.0289**	**0.0091**	**0.1380**
Fluorene	3.6	-	**0.0032 J**	0.0050 U	**0.0053**	**0.0057**	0.0046 U	**0.0066**
Pyrene	160	-	**0.0321**	**0.0198**	**0.0655**	**0.0337**	**0.0081**	**0.1480**
1-Methylnaphthalene	35	-	**0.0392**	**0.0178**	**0.0452**	**0.0239**	**0.0039 J**	**0.0365**
2-Methylnaphthalene	320	-	**0.0566**	**0.0214**	**0.0569**	**0.0310**	**0.0058**	**0.0438**
Naphthalene	16	-	**0.0250**	**0.0137**	**0.0480**	**0.0144**	**0.0045 J**	**0.0445**
Benzo(a)anthracene	1.1	-	**0.0182**	**0.0077**	**0.0288**	**0.0077**	**0.0027 J**	**0.0685**
Benzo(a)pyrene	0.14	-	**0.0154**	**0.0064**	**0.0301**	**0.0069**	**0.0032 J**	**0.0767**
Benzo(b)fluoranthene	1.4	-	**0.0228**	**0.0103**	**0.0358**	**0.0079**	**0.0047**	**0.0618**
Benzo(k)fluoranthene	3.7	-	**0.0075**	**0.0048 J**	**0.0156**	**0.0035 J**	**0.0024 J**	**0.0327**
Chrysene	1.2	-	**0.0444**	**0.0161**	**0.0479**	**0.0132**	**0.0055**	**0.0929**
Dibenzo(a,h)anthracene	0.14	-	**0.0043 J**	0.0050 U	**0.0075**	0.0046 U	0.0046 U	**0.0126**
Indeno(1,2,3-cd)pyrene	1.4	-	**0.0110**	**0.0068**	**0.0228**	**0.0080**	**0.0035 J**	**0.0459**
Total Benzofluoranthenes	-	-	**0.0389**	**0.0192**	**0.0699**	**0.0167**	**0.0098**	**0.1300**
Total cPAHs TEQ	0.14	-	**0.0222**	**0.0101**	**0.0416**	**0.0102**	**0.0051**	**0.0998**
Total Metals (mg/kg)								
Arsenic	20	100	**2.11 J**	**13.1**	**3.64 J**	**2.53 J**	**4.2 J**	**8.9 J**
Cadmium	1.2	20	**0.173 J**	**0.433**	**0.287**	**0.219**	**0.11 J**	**0.25 J**
Chromium (Total)	5200	100	**18.8**	**15.9**	**27.3**	**13.1**	**13.1**	**27.0**
Chromium (VI)	48	100	-	-	-	-	-	-
Copper	36	-	**23.8**	**16.2**	**33.7**	**14.2**	**15.1**	**84.8**
Lead	250	100	**18.9**	**18.0**	**42.0**	**8.48**	**4.1**	**55.0**
Mercury	2	4	**0.07039**	**0.0652**	**0.0568**	**0.0331**	**0.0213 J**	**0.0817**
Nickel	48	-	**14.9**	**12.6**	**30.6**	**12.8**	**8.3**	**35.0**
Selenium	7.4	20	**2.95 J**	**2.61 J**	**2.26 J**	**1.84 J**	**1.7 J**	**4.6 J**
Silver	0.32	100	**0.326** U	0.310 U	0.316 U	**0.327** U	0.32 U	**0.790** U
Zinc	100	-	**39.1**	**51.2**	**74.4**	**38.5**	**24.9**	**122**
TCLP Metals (mg/L)								
Lead	250	100	-	-	-	-	-	-

Table 2
Soil Sampling Analytical Results for C Street Terminal Interim Action

Analyte (by Group)	Cleanup Level for Unrestricted Land Use - Unsaturated Soil	Maximum Allowable Concentration 20 x TC	Stockpile Source, Sample ID, Date Collected, and Determination					
			"C Test", 4th Lot	"A Test" 2nd Lot	"C Test", 3rd Lot	"C Test", 2nd Lot	"A Test" 1st Lot	"C Test", 1st Lot
			CWF-CSTP1-01-10072016	CWF-CSTP1-01-10062016	CWF-CSTP1-01-09302016	CWF-CSTP1-01-09222016	CWF-CSTP1-01-09142016	CWF-CSTP1-01-09122016
			10/7/2016	10/6/2016	9/30/2016	9/22/2016	9/14/2016	9/12/2016
			Conditional	Disposal	Conditional	Conditional	Disposal	Suitable
Total Petroleum Hydrocarbons (TPH) (mg/kg)								
Gasoline Range Hydrocarbons	30	-	3 U	8	6	3 U	50	4
Diesel Range Hydrocarbons	2000	-	22.2	70.9	47.3	9.16	4790	9.82
Oil Range Hydrocarbons	2000	-	79.6	204.0	67.4	22.3	1870	69.1
Total TPHs	2000	-	101.8	274.9	114.7	31.5	6660	78.9
Conventionals and Other Metals								
pH	<2.5 or >11.0[‡]	-	-	-	-	-	-	-
Total Organic Carbon (%)	-	-	-	-	-	-	-	-
Volatile Organic Compounds (mg/kg)								
Benzene	0.034	10	0.0009	0.0011	0.00052	0.00117	0.00049 U	0.00038 J
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)								
Acenaphthene	2.5	-	0.0058	0.0229 D	0.0320	0.0049 U	2.1900	0.0047 U
Anthracene	34	-	0.0127	0.1580 D	0.0144	0.0026 J	0.3290	0.0047 U
Fluoranthene	25	-	0.0944	0.3870 D	0.0713	0.0249	0.0538	0.0237
Fluorene	3.6	-	0.0040 J	0.0336 D	0.0144	0.0049 U	1.7600	0.0047 U
Pyrene	160	-	0.0918	0.6180 D	0.0750	0.0164	0.1250	0.0194
1-Methylnaphthalene	35	-	0.0401	0.1020 D	0.0896	0.0115	9.8200 D	0.0190
2-Methylnaphthalene	320	-	0.0462	0.1430 D	0.0845	0.0140	2.9900	0.0197
Naphthalene	16	-	0.0379	0.1570 D	0.0554	0.0124	0.0488 U	0.0115
Benzo(a)anthracene	1.1	-	0.0394	0.2650 D	0.0264	0.0093	0.0488 U	0.0129
Benzo(a)pyrene	0.14	-	0.0433	0.3770 D	0.0276	0.0101	0.0488 U	0.0237
Benzo(b)fluoranthene	1.4	-	0.0376	0.1980 D	0.0339	0.0128	0.0488 U	0.0204
Benzo(k)fluoranthene	3.7	-	0.0164	0.1060 D	0.0148	0.0043 J	0.0488 U	0.0095
Chrysene	1.2	-	0.0543	0.3190 D	0.0477	0.0157	0.0488 U	0.0216
Dibenzo(a,h)anthracene	0.14	-	0.0078	0.0665 D	0.0064	0.0031 J	0.0488 U	0.0054 Q
Indeno(1,2,3-cd)pyrene	1.4	-	0.0294	0.2420 D	0.0254	0.0094	0.0488 U	0.0186
Total Benzofluoranthenes	-	-	0.0750	0.4400 D	0.0656	0.0244	0.0976 U	0.0400
Total cPAHs TEQ	0.14	-	0.0569	0.4679	0.0388	0.0141	0.0488 U	0.0306
Total Metals (mg/kg)								
Arsenic	20	100	11.7 J	10.4	9.5	7.6	5.3	6.1
Cadmium	1.2	20	0.30 J	0.92	0.22	0.51	0.1 J	0.2 J
Chromium (Total)	5200	100	36.2	57.9	20.5	16.6	15.9	19.0
Chromium (VI)	48	100	-	-	-	-	-	-
Copper	36	-	40.0	56.2	41.1	48.4	7.9	30.9
Lead	250	100	69.5	110	30.7	25.6	2.1 J	25.3
Mercury	2	4	0.1107	0.3751	0.2305	0.0515	0.0226	0.0439
Nickel	48	-	33.4	31.6	19.8	16.6	11.7	15.8
Selenium	7.4	20	6.4 J	5.5 U	4.1 J	2.1 J	1.5 J	1.8 J
Silver	0.32	100	0.820 U	0.330 U	0.32 U	0.30 U	0.3 U	0.3 U
Zinc	100	-	77.4	146	93.8	137	19.1	57.1
TCLP Metals (mg/L)								
Lead	250	100	-	0.03 J	-	-	-	-

Table 2

Soil Sampling Analytical Results for C Street Terminal Interim Action

Table Notes:

1 Soil cleanup levels are based on Table 4-2a of the RI (Anchor QEA 2015) for unrestricted land use. Cleanup levels are the most stringent value, protective of all exposure pathways, adjusted upward for background or Method A criteria.

2 Soil cleanup levels based on protection of groundwater may be adjusted based on site-specific leaching tests during development of the cleanup action plan, during remedial design, or during compliance monitoring.

Bold = Detected result

J Estimated concentration value detected below the reporting limit.

U This analyte is not detected above the applicable reporting or detection limit.

E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).

D The reported value is from a dilution.

B This analyte was detected in the method blank.

Q Detected analyte with an initial or continuing calibration that does not meet established acceptance criteria.

Compound exceeding the Cleanup Level for Unrestricted Land Use (unsaturated soil).

Compound reporting limit exceeding the Cleanup Level for Unrestricted Land Use (unsaturated soil); detection limit is less than the Cleanup Level.

X Compound exceeding the Maximum Allowable Concentration (20 x TC).

Compound exceeding the Maximum Concentration for the Toxicity Characteristic (TC).

Figures

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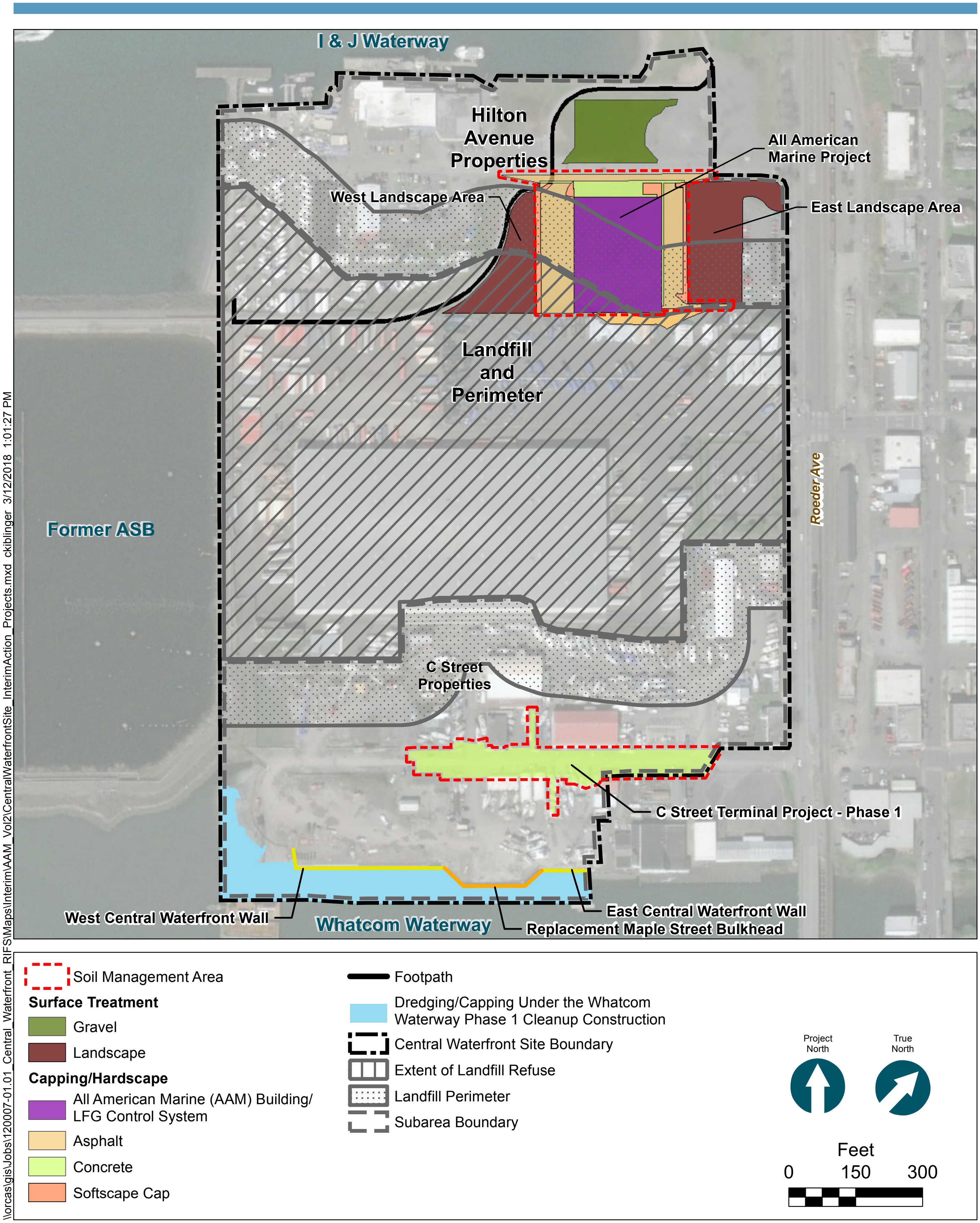
Figure 1
Vicinity Map
Completion Report, Volume 1
Central Waterfront Site, C Street Terminal Interim Action
Port of Bellingham, WA



NOTE:
1. Aerial by National Agriculture Imagery Program (NAIP), July 2013.

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Figure 2
Location of Interim Action Projects
Completion Report, Volume 1
Central Waterfront Site, C Street Terminal Interim Action
Port of Bellingham, WA