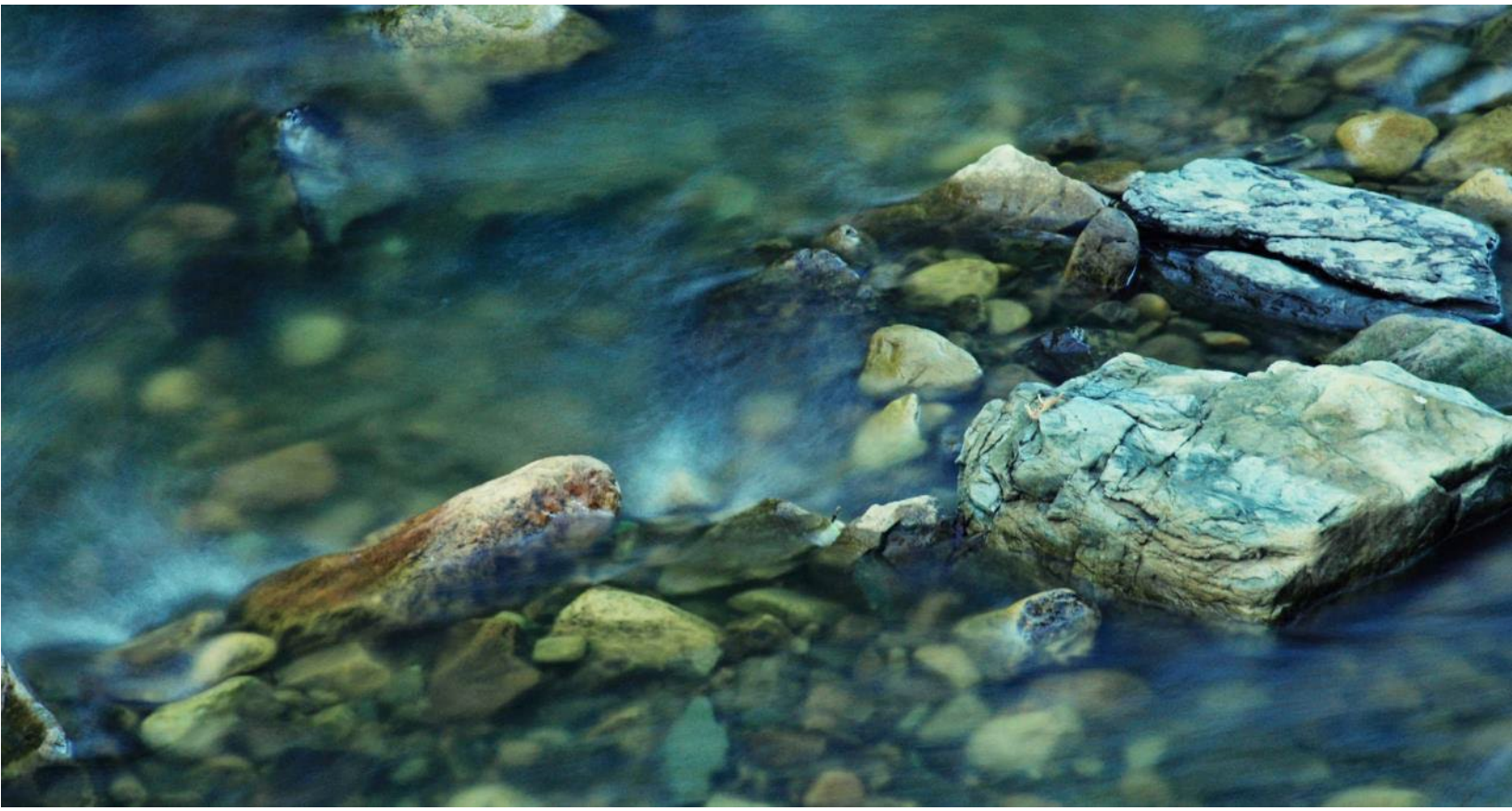
Attachment S
Hazardous Materials Summary Report

moffatt & nichol

FINAL REPORT
Produced For Port of Grays Harbor and Ag Processing, Inc.
July 2023

HAZARDOUS MATERIALS SUMMARY REPORT

Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project



Document Verification

Client	Port of Grays Harbor and Ag Processing, Inc.
Project name	Hazardous Materials Summary Report
Document title	Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project
Status	Final Report
Date	February 2023
Project number	221760

Revision	Description	Issued by	Date	Checked
00	Draft Report	A. Kinney	Feb 2023	V. England (LG), A. Roesler
01	Response to Comments	A. Kinney	24 April 2023	A. Roesler
02	Final Report	A. Kinney	5 July 2023	A. Roesler

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Glossary

AGP	Ag Processing, Inc.
ALY	Aberdeen Log Yard
Aspect	Aspect Consulting, Inc.
ASB	Aeration sedimentation basin
AST	Above-ground storage tank
bgs	Below ground surface
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
Chevron	Chevron Environmental Management Company
CSCL	Confirmed and Suspected Contaminated Sites List
CULs	cleanup levels
Ecology	Washington State Department of Ecology
EDR	Environmental Data Resources, Inc.
EIS	Environmental Impact Statement
ESA	Environmental Site Assessment
ft	feet
HCE	Hot caustic effluent
HCID	Hydrocarbon Identification
HSL	Hazardous Sites List: State Superfund Equivalent Sites
IRAP	Independent Remedial Action Program
Landau	Landau Associates, Inc.
LUST	Leaking Underground Storage Tank
MTBE	methyl tertiary-butyl ether
M&N	Moffatt & Nichol
mg/kg	milligram per kilogram
MTCA	Model Toxics Control Act
NA	Not Applicable
NAA	No Action Alternative
NEPA	National Environmental Policy Act
NFA	No Further Action
NPDES	National Pollutant Discharge Elimination System
NWTPH-Dx	Northwest Total Petroleum Hydrocarbons-Diesel Extended
NWTPH-Gx	Northwest Total Petroleum Hydrocarbons-Gasoline Extended
NWTPH-HCID	Northwest Total Petroleum Hydrocarbon – Hydrocarbon Identification
PAH	Polynuclear Aromatic Hydrocarbons
PCB	polychlorinated biphenyl
PCP	pentachlorophenol
PID	Photo-ionization Detector
PIR	Port Industrial Road
PLP	Potentially liable person
POGH	Port of Grays Harbor
Port	Port of Grays Harbor
Project	Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project
PQL	Practical Quantitation Limit
PUD	Public Utilities District
RCRA	Resource Conservation and Recovery Act
RCU	Reported Cleaned Up
REC	Recognized Environmental Condition
RORO	Roll-on Roll-off
SEPA	State Environmental Policy Act
SR	State Route
SSL	Spent sulfite liquor

Stantec	Stantec Consulting Services Inc.
SVOC	Semi-volatile Organic Compound
SWQC	Surface water quality criteria
T2	Terminal 2
T4	Terminal 4
T4A	Terminal 4, Berth A
T4B	Terminal 4, Berth B
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total dissolved solids
TEF	Toxicity equivalent factors
TEQ	Toxicity equivalent
TOC	Total organic carbon
TSS	Total suspended solids
µg/L	Micrograms per liter
USGS	U.S. Geological Survey
UST	Underground storage tank
VCP	Voluntary Cleanup Program Sites
VOC	Volatile organic compounds
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

1. Introduction

The Port of Grays Harbor (POGH/Port) and Ag Processing, Inc. (AGP) are proposing joint redevelopment activities at the Port's Terminal 4 (T4). T4 and adjacent Port properties are currently underutilized, and expansion and redevelopment of these areas would increase operational capacity and efficiency to support increased growth, job creation and retention, and economic opportunities related to multimodal Port operations.

The Port is proposing the Terminal 4 Expansion and Redevelopment Project (Project) to increase rail and shipping capacity at their facility to accommodate growth of dry bulk, breakbulk, and roll-on/roll-off cargos (RORO). This includes the rail upgrades and site improvements, the Terminal 4 Berth A (T4A) cargo yard relocation and expansion, and the T4 dock, fender, and stormwater upgrades. These project elements would be constructed by the Port and are referred to as the Port Project.

AGP is proposing to expand its operations to T4 as part of the Port's greater T4 redevelopment project. AGP currently operates at the Port's Terminal 2 (T2) facility. Transitioning operations to T4 and constructing new commodity transload facilities would provide AGP the infrastructure to accommodate increased throughput of soybean meal and other bulk commodities to meet global market demand. These project elements would be constructed by AGP and are referred to as the AGP Project.

The Port and AGP Projects will mutually benefit from concurrent design and permitting. These two projects are collectively referred to as the Project for the purposes of this report. Additional information regarding these Project elements is included in the Project description in Section 2 below.

This report presents the results of the hazardous materials environmental documentation study for the Project. The purpose of this study is to evaluate the proposed Project area relative to the potential for encountering hazardous materials/contaminated media (soil, sediment, groundwater) during construction activities. The study focuses on properties within or adjacent to the Project site that have the potential to impact construction activities, worker safety, and/or the environment including potential characterization, handling and disposal requirements, or potential site cleanup and monitoring requirements.

This technical report supports environmental review of the Project by the state and federal agencies with a funding, jurisdictional, or permitting authority over the Project. This includes compliance with the Washington State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA).

1.1. Project Location and Setting

The Port was founded in 1911 and is located on the Pacific coast of Washington state in Grays Harbor County near the mouth of the Chehalis River and entrance to Grays Harbor. T4 is located approximately 17 miles east of the Pacific Ocean. The Pacific Ocean is accessed from the Port via the deep-draft federal navigation channel within Grays Harbor. The Port is located approximately 1.5 miles to the southeast of the Hoquiam River and north of Rennie Island. The Port-managed Bowerman Airport is located approximately 4 miles west-northwest of the Port. Figure 1 shows the location and regional setting of the Port.

The Project area is accessed via Port Industrial Road, Heron Street, East Terminal Road, and West Terminal Way. Regional highway connections include U.S. Route 12 and U.S. Route 101.

FIGURE 1: LOCATION AND REGIONAL SETTING OF THE PORT

The general physiographic setting, geology, and groundwater occurrences in the vicinity of the Project site were identified based on review of U.S. Geological Survey (USGS) topographic maps of the site area and Ecology's well-log database. General site information, property use(s), and environmental setting of the Project area are summarized in Table 1 below.

TABLE 1: PROJECT SITE INFORMATION

Topographic Map	USGS, 7.5-minute "Aberdeen" quadrangle Grays Harbor Co. map
Project Site General Location	On the north shore of Grays Harbor near the mouth of the Chehalis River
Geologic Setting	Willapa Hills physiographic province, which is part of the coastal mountain range
Nearest Surface Water Bodies	Grays Harbor, Chehalis River, Fry Creek
Approximate Surface Elevation	Approximately 17 feet above sea level
Soil and Geologic Conditions	The site consists of primarily Quaternary Period alluvial sedimentary deposits from the nearby Hoquiam River and adjacent Grays Harbor.
Depth to Groundwater	Approximately 4 to 11 feet below ground surface (bgs)
Inferred Direction of Groundwater Flow	The overall direction of groundwater flow is anticipated to be to the south toward Grays Harbor, except when groundwater is under tidal influence

1.2. Scope of Work

Research and screening for this hazardous materials study were completed in accordance with the guidance provided in Chapter 447 of the Washington State Department of Transportation (WSDOT) *Environmental Procedures Manual* (WSDOT 2022), WSDOT guidance for "right sizing" (Guidance & Standard Methodology for WSDOT Hazardous Material Discipline Reports [WSDOT 2020]), and Project-specific assumptions and methodology.

The WSDOT-defined "standard-level" analysis was identified as the appropriate level review for the Project based on the Project's location in a developed area where current and past land use is industrial and commercial and proposed excavation activities exceed "minor amounts of excavation below existing grade (e.g., guardrail installation, utilities, and illumination bases)" (WSDOT 2020).

The depth and extent of excavation and ground disturbance activities associated with the proposed Project vary by Project component. Section 2 describes the various Project components and summarizes the anticipated depth of excavation for activities that will result in ground disturbance below existing grade.

1.3. Study Area

The study area includes the Project area as described in Section 2 as well as adjacent properties that represent "potential sites of concern" as described in Section 1.4. It was determined that the project area encompasses the geographic limits associated with ground disturbance related to project construction and adjacent properties with conditions that have the potential to impact construction activities, worker safety, and/or the environment. Records review includes facilities within 1 mile of the project site.

1.4. Methodology

This hazardous materials study was completed by reviewing available reports and data associated with the Project site and adjacent properties to identify "potential sites of concern" that are defined as properties within or adjacent to the Project site with conditions that have the potential to impact construction activities, worker safety, and/or the environment including potential characterization, handling and disposal requirements, or potential site cleanup and monitoring requirements.

The research consisted of the following.

- Reviewing the results of a search of federal, state, and local environmental and regulatory databases to identify known or suspected environmental conditions at sites located within the Project site or on nearby properties.
- Reviewing historical aerial photographs to identify past development history relative to the possible use, generation, storage, release, or disposal of hazardous substances within or adjacent to the Project site.
- Reviewing Washington State Department of Ecology (Ecology) web-based databases and regulatory files, as needed.
- Reviewing previous investigation reports, as available.

1.4.1. Risk Screening

Properties within or adjacent to the Project site identified by this study as "potential sites of concern" were screened and assigned a level of risk relative to potential impacts to the proposed Project site. The screening process is generally based on: (1) current regulatory status; (2) location and distance of the site of concern relative to the Project site; (3) position of the site of concern to the proposed Project site

relative to the inferred groundwater flow direction; (4) the type of contamination and media (soil, surface water, or groundwater) affected; and (5) proposed Project activities.

The site rankings used in this evaluation are based on the definitions in the *Guidance and Standard Methodology for WSDOT Hazardous Materials Discipline Reports* (WSDOT 2020) as follows.

1. **Low Impact.** This risk level identifies sites of concern where the likelihood for the site to impact the project is low because there was no evidence to suggest that groundwater from the site of concern is impacted, or the contamination from offsite migration is not expected to impact the project during construction.
2. **Moderate Impact.** This risk level identifies sites of concern where the likelihood for the site to impact the project is moderate because of type or extent of contaminant, groundwater from the site of concern is impacted and has a reasonable potential to impact the project footprint from offsite migration of groundwater, but there is no conclusive evidence.
3. **High Impact.** This risk level identifies sites of concern that may be substantially contaminated and will create a major liability for the Project proponents either in construction liability or by virtue of acquiring all or a portion of the site. If the site has undergone a detailed investigation and a feasibility study, the impacts and remediation costs may already be predicted. Nonetheless, the site is identified as a high impact site because of its potentially substantial impact or liability.

   In general, high impact sites are properties that may have large volumes of contaminated soil, groundwater, or sediment or properties that have multiple complex types of contaminants that require special handling and disposal that is expensive to manage. High impact sites include properties where the information necessary to predict remedial costs is lacking and/or the contaminants are persistent or expensive to manage.

The WSDOT Guidance also states that the risk evaluation should assess the level of complexity mitigation measures will have to the project for each site as follows.

- **Straightforward**: Sites determined to be straightforward are typically small to medium in size and the potential contaminants are not extremely toxic or difficult to treat. Examples of straightforward sites are gas stations, auto repair shops, most underground storage tanks (USTs), above-ground storage tanks (ASTs), buildings with asbestos, or materials that contain lead-based paint.
- **Complicated**: Sites determined to be complicated consist of sites with widespread contamination or potential contaminants that are difficult to treat. Complicated sites will typically involve additional research, investigation, and possibly regulatory involvement. Examples of complicated sites are dry cleaners, wood treating operations, metal plating facilities, or other operations that use or used large amounts of hazardous materials.

Sites of Potential Concern

Sites considered as having a low impact to the Project based on the above criteria were disregarded from further analysis. The remaining sites were considered “potential sites of concern” and were further evaluated by reviewing Ecology files, site-specific investigative reports provided by the Port, and site conditions relative to Project excavation activities.

Sites of Concern

“Sites of concern” are sites considered to be a low-moderate or higher risk to the Project based on reports obtained during an Ecology file review.

The Project site conditions and the results of the evaluation and screening processes are described below.

2. Proposed Project Alternatives

Two alternatives are evaluated in this report: the Proposed Project and a No Action Alternative (NAA). Additional details about these alternatives are documented in the Project Description Technical Report. The alternatives include the following:

- **Alternative 1 (Proposed Project).** As noted in Section 1 and as further described in the Project Description Technical Report, the proposed Project consists of the Port Project and the AGP Project. The Port Project includes the following: 1) rail upgrades and site improvements; 2) T4 dock, fender, and stormwater upgrades; and 3) cargo yard relocation and expansion. AGP, an existing tenant of the Port, also proposes to upgrade their facilities and operations by adding a second terminal at T4 for ship loading.
- **No Action Alternative.** The NAA represents the conditions anticipated without construction and operation of the proposed Project over the course of the construction analysis period of 2024 to 2025 and the operations analysis period from 2025 to 2045. Although the Port would not complete the proposed infrastructure enhancements or redevelop the T4 cargo yard under the No Action Alternative, it is anticipated that the Port would pursue growth opportunities within the existing Port footprint. It is also assumed that AGP would not complete the proposed infrastructure enhancements at Terminal 4 Berth B (T4B), but AGP would continue to maximize its operations at the existing T2 facility. However, under the No Action Alternative, the Port would continue to operate and maintain T4 as it exists under existing conditions and would continue to seek out new business. Because activity under the No Action Alternative would be limited to current port infrastructure and terminal capacity limits, the No Action alternative is anticipated to result in operations similar to existing conditions, as described in the Project Description Technical Report.

2.1. General Project Description

The following sections provide a high-level overview of Project components, including a table summarizing Project elements where excavation or ground disturbance have the potential to encounter hazardous materials. Figure 2 includes information about existing Project site conditions and proposed Project elements.

FIGURE 2: EXISTING CONDITIONS AND PROPOSED PROJECT ELEMENTS

2.1.1. Rail Upgrades and Site Improvements

The rail upgrades will increase the efficiency of the movement of goods through the Port, increase efficiency (unit train offloading, railcar storage, and assembly), increase capacity for Port users, and ensure that each terminal could operate unimpeded by unit trains on neighboring loops.

The rail upgrades include construction of up to approximately 50,245 linear feet of new rail at the Port's existing loop track facility. The upgrades include the following components:

- New lead track through terminal
- New storage tracks
- New storage silo structure adjacent to the rail receiving building
- Modification of existing storage tracks
- New fencing and security guard station
- New rail bridge
- Rail crossing modifications
- Access roads and secure site access
- Stormwater improvements

TABLE 2: RAIL UPGRADES AND SITE IMPROVEMENTS

Component	Anticipated Depth of Ground Disturbance*
Remove and replace pedestrian bridge at T1	Approximately 10 ft bgs
Remove existing pavement	Surficial
Construct drainage improvements including new stormwater pipes, catch basins, and manholes	Approximately 5-8 ft bgs
Construct subgrade and ditches	Approximately 5-8 ft bgs
Construct subgrade, grading, and ditching on each side of Port Industrial Road (PIR)	Approximately 5-8 ft bgs

*Anticipated depth of ground disturbance is a conservative estimate at the time of this report.

2.1.2. T4A Cargo Yard Relocation and Expansion

The cargo laydown area at T4A will be redeveloped to further optimize Port operations. The 50-acre former casting basin will be repurposed into a cargo yard where RORO cargo will be relocated. The work to be performed at the T4A site includes filling the former casting basin and upgrading surface treatments and drainage as necessary to create a cargo laydown yard with a combination of paved and gravel surfaces.

The former casting basin will be filled using all of the existing material stockpiled on the southwest corner of the T4A site during casting basin construction. New crushed rock gravel fill will be placed over the backfilled casting basin footprint and the former stockpile footprint. The remainder of the required clean fill material will be imported to the site by truck from a commercial supplier. The details of the origin of imported material and the destination of exported material, if any, will be the responsibility of the contractor when the contract is awarded.

Drainage at the T4A site will be modified as necessary to meet City of Aberdeen stormwater management requirements. Initial work is also anticipated to include demolition and decommissioning of existing drainage infrastructure that will need to be relocated. Areas that drain to the existing ponds located on the north side of the Project (proposed for demolition) will need new drainage infrastructure constructed to convey water to the West Ditch or existing outfall to the river after the ponds are demolished.

TABLE 3: CARGO YARD RELOCATION AND EXPANSION

Component	Anticipated Depth of Ground Disturbance
Casting Basin	Not Applicable (NA) – Only stockpiled material will be disturbed, no excavation below ground level will occur
Stormwater/Drainage	Approximately 5-8 ft bgs

2.1.3. T4 Dock Fender and Stormwater Upgrades

The Port is proposing to upgrade the dock fender and stormwater systems at T4. This is referred to as the T4 dock fender and stormwater upgrades. The proposed upgrades will allow for AGP's Terminal Improvement Project (T4B) to support existing and future uses (T4A) and minimize in-water obstructions.

The T4 dock fender and stormwater upgrades include the following components:

- Removal and replacement portions of the fender system along the T4 dock
- Install site improvements for stormwater conveyance at the T4 dock

TABLE 4: TERMINAL 4 DOCK, FENDER, AND STORMWATER UPGRADES

Component	Anticipated Depth of Ground Disturbance
Remove portions of the existing fender system along the entire 1,400-ft length of T4 at locations where new fender panels will be installed as follows: • *Stage 1:* Preparatory work, including removal of the fender system at the three proposed shiploader tower foundation locations • *Stage 2:* Removal of the remaining fender system along the portion of T4B used by AGP and installation of a new fender system along the entire AGP portion • *Stage 3*: Removal and installation of a new fender system along the remaining portion of T4B and the entire T4A	Approximately 40 ft bgs*
Remove rails, ties, and existing asphalt concrete paving	Surficial
Install a gravity-based stormwater conveyance system and a 6 pump-based stormwater conveyance system	Approximately 5-8 ft bgs

*40ft bgs is the assumed depth of pile installation. Piles will be vibrated to their final penetration depth

It should be noted that existing fender piles consist of creosote treated timber. Removed creosote-treated timber and piles will be handled, transported, and disposed of pursuant to applicable state and federal guidelines. All creosote-treated piles and timber and associated sediments will be disposed of by the contractor in a landfill approved to accept those types of materials.

2.1.4. AGP Project

AGP is proposing to construct the following facilities and improvements:

- **Rail Receiving Facility:** A new rail receiving building with two receiving pits will be constructed. An optional Soybean meal storage structure (silo) is also being considered and is proposed as part of the application narrative.
- **Shiploader:** A new three-tower shiploader with three spouts at the T4B dock will be constructed and will require related dock upgrades.
- **Support Structures:** Several support structures will be constructed, including a landside motor control center, dock side motor control center, and a bulk scale tower.
- **Utilities:** Water, sewer, and electrical system upgrades will be completed.
- **Lighting:** On-site lighting will be modified.

TABLE 5: AGP PROJECT

Component	Anticipated Depth of Ground Disturbance
Removal of existing asphalt paving within the T4 construction footprint prior to construction activities	Approximately 6 inches
Pile and foundation systems installation utilizing driven pipe piles and reinforced concrete for steel structures for the rail receiving building, bulk scale tower, and shiploader	Up to approximately 30 ft bgs
Removal of existing pre-stressed concrete piles and/or timber fender piles at the location of proposed shiploader foundations	Approximately 2 ft bgs
In-water installation of new support piles for new shiploader and conveyor system foundations	Approximately 40 ft bgs
Utility upgrades	Approximately 5-8 ft bgs
Stormwater Treatment	Pumpstation/Manholes/Lift Stations: Approximately 10-15 ft bgs Treatment systems: Approximately 8 ft bgs Pipes: 5-8 ft bgs
Steel and reinforced concrete pile-supported foundation system and pile cap structure for new silo. Structural steel support towers and structural steel bridge installed to support conveyance systems from silo.	Up to approximately 30 ft bgs

3. Regulatory Context

Numerous laws and regulations govern hazardous materials and related issues/topics. The following list provides a summary of the most common applicable (WSDOT 2020):

Federal:

- 15 USC 2601 Toxic Substances Control Act
- 42 USC 7401 et seq. Clean Air Act
- 40 CFR Parts 61 to 71 National Emission Standards for Hazardous Air Pollutants
- 40 CFR 763 Asbestos Hazard Emergency Response Act
- 29 CFR 1926.1101 Occupational Safety and Health Act Asbestos
- 40 CFR Part 112 Oil Pollution Prevention
- 40 CFR Part 312 All Appropriate Inquiries
- 29 USC 651 et seq. Occupational Safety and Health Act
- 33 USC 1251 et seq. Clean Water Act
- 42 USC 300f et seq. Safe Drinking Water Act
- 42 USC 4321 et seq. National Environmental Policy Act
- 42 USC 6901 et seq. Resource Conservation and Recovery Act
- 42 USC 9601 et seq. Comprehensive Environmental Response, Compensation, and Liability Act

State:

- Chapter 173-160 WAC Minimum Standards for Construction and Maintenance of Wells
- Chapter 173-200 WAC Water Quality Standards for Groundwaters of the State of Washington
- Chapter 173-201A WAC Water Quality Standards for Surface Waters of the State of Washington
- Chapter 173-204 WAC Sediment Management Standards
- Chapter 173-303 WAC Dangerous Waste Regulations
- Chapter 173-340 WAC Model Toxics Control Act
- Chapter 173-350 WAC Solid Waste Handling Standards
- Chapter 173-360 WAC Underground Storage Tank Regulations
- Chapter 197-11 WAC State Environmental Policy Act
- Chapter 296-62 WAC General Occupational Health Standards
- Chapter 296-155 WAC Labor and Industries Safety Standards for Construction Work
- Chapter 296-843 WAC Hazardous Waste Operations
- Chapter 296-62-077 WAC Labor and Industries Asbestos Regulations

4. Information Sources

The following information sources were used to describe existing conditions and expected future conditions within the Project area to support the impact analysis:

- Ecology Toxics Clean-up Program and Water Quality Program “What’s In My Neighborhood: Toxics Cleanup online database (herein referred to as Ecology’s database).
- Environmental Site Assessment Technical Memorandum – Port of Grays Harbor Terminal 4 Rail Loop Project (HDR 2022)
- Phase II Environmental Site Assessment, Former Bulk Fueling Facility – 3115 Port Industrial Road Hoquiam, WA (Stantec 2016)
- Port Industrial Road, Former Bulk Fuel Facility. Initial Investigation Field Report. (Ecology 2016a)
- Phase II Environmental Site Assessment, Former Pettit Oil Co. Facility – 820 Myrtle Street Hoquiam, WA (Stantec 2015)
- Site Hazard Assessment. Pettit Oil (640, 700, or 720 Myrtle St). (Ecology 2014)
- Notice of Change in Management and Contact Information Letter (Chevron 2017)
- City of Aberdeen Letter to Sue Simms Underground Storage Tank Notification Solid and Hazardous Waste Program Department of Ecology – Tank Removal (City of Aberdeen Public Works Department November 1989a)
- City of Aberdeen Letter to Sue Simms Underground Storage Tank Notification Solid and Hazardous Waste Program Department of Ecology – Tank Removal (City of Aberdeen Public Works Department December 1989b)
- City of Aberdeen Letter to Sue Simms Storage Tank Unit Department of Ecology – Tank Removal (City of Aberdeen Public Works Department July 1990a)
- City of Aberdeen Letter to John Bales Department of Ecology – UST Removal – Garfield and Heron Public Works Shops (City of Aberdeen Public Works Department November 1990b)
- City of Aberdeen Letter to John Bales Department of Ecology – UST Removal – Garfield and Heron (City of Aberdeen Public Works Department December 1990c)
- Early Notice Letter – City of Aberdeen Water Shop (Ecology 2013)
- Notice of Intent to Perform Site Characterization Activities at the City of Aberdeen Water Department (Ecology 2016b)
- Soil and Groundwater Characterization Summary – Aberdeen Water Treatment Facility (GeoEngineers 2017)
- Current Environmental Conditions Report – Former Grays Harbor Paper Mill Facility (Landau Associates 2017)
- Phase II Environmental Site Assessment; Anderson & Middleton Property, Aberdeen Logyard Property – November 2009 (CH2M HILL 2009a)
- Pontoon Construction Project. Supplemental Soil and Groundwater Investigation Report - WSDOT Phase II Environmental Site Assessment, Groundwater Investigation Results – Pontoon Construction Project, Aberdeen Log Yard – (CH2M HILL 2009b)
- WSDOT Document: Geology and Soil Technical Memorandum – May 20, 2010;
- Draft Environmental Impact Statement. SR 520 Bridge Replacement and HOV Program. SR 520 Pontoon Construction Project. Hazardous Materials Technical Memorandum (CH2M HILL 2010)

- Draft Environmental Impact Statement. SR 520 Bridge Replacement and HOV Program. SR 520 Pontoon Construction Project. Hazardous Materials Technical Memorandum (CH2M HILL 2010)
- Kiewit-General Memo to WSDOT: Notification Pursuant to MTCA – Discovery of Contamination at Aberdeen Log Yard – August 29, 2011
- Ecology Early Notice Letter (July 13, 2015) and Ecology Initial Investigation Field Report (July 7, 2015);
- WSDOT Letter to Scott Rose at Ecology – December 2, 2015 (WDOT 2015)

5. Research and Summary Findings

Moffatt & Nichol (M&N) staff reviewed the results of a search of pertinent environmental regulatory lists and databases, and previous investigation reports for current or previous facilities listed at addresses located within a 1/8-mile search distance from the Project site. The standard search distances were modified to focus the search area to the Project site and immediate vicinity where excavation associated with the Project is expected to occur. Several previous investigations have independently been conducted for areas within the greater Project footprint and immediately adjacent properties. The following sections summarize the resources reviewed and findings.

5.1. Phase I ESA Summary Findings

The database search reviewed was associated with a Phase I Environmental Site Assessment (ESA) conducted for the Project in October 2022 (HDR 2022). The database search was provided by a subcontracted regulatory list search service, Environmental Data Resources, Inc. (EDR). The subject parcel for this ESA was associated with the rail loop portion of the Project, however, adjacent Project components are covered within the search radius of the EDR report. The Phase I ESA is provided in Appendix A.

The EDR report includes details regarding facilities within the Project site and surrounding areas identified by federal, state, and local environmental agency databases and provides maps showing the approximate locations of the listed facilities relative to the Project site.

The sites summarized in Table 6 and shown in Figure 3 have been identified in the Phase I ESA and may represent sites of potential concern or sites of concern base on a review of the findings of the EDR Report and supplemental review of Ecology's Toxics Program database and other pertinent investigative reports (publicly available and/or provided by the Port). Sites listed as "cleanup complete" or that have been issued a letter of No Further Action (NFA) have been omitted from Table 6 as presence of contaminants within the Project site from these sites is unlikely either because the likelihood for the site to impact the Project site is low or the contamination was previously remediated. For a complete list of identified release sites refer to the Phase I ESA provided in Appendix A. Additional information regarding these sites is included in Section 4.2. Risk to the Project associated with these sites is detailed in Section 5.

TABLE 6: POTENTIAL SITES OF CONCERN

Map ID Figure 3	Position Relative to Site	Regulatory Database	Listed Business and Associated Address	Description
1	Adjacent to the north	WA CSCL	Port Industrial Road Former Bulk Fuel Facility - 3115 Port Industrial Road	Awaiting cleanup. Impacts to soil include non-halogenated organics - non-halogenated solvents, benzene, diesel-range petroleum hydrocarbons, and gasoline-range petroleum hydrocarbons. Groundwater impacts include non-halogenated organics - non-halogenated solvents, metals, diesel- and gasoline range petroleum hydrocarbons.
2	Adjacent – rail components to the north and south of this site	WA CSCL, VCP	Pettit Oil - 820 Myrtle Street	Cleanup started. Contaminant types include nonhalogenated organics and unspecified petroleum products in soil and groundwater.
3	Adjacent to the north	WA CSCL	POGH Property - Across From 820 Myrtle Street	Awaiting cleanup. This site has suspected unspecified petroleum contamination and confirmed unspecified petroleum surface water contamination according to Ecology's database.
4	Adjacent 100 ft to the north	WA CSCL, HSL, WA SPILL	Hoquiam Bulk Plant - 700 Myrtle Street	This site is not currently listed on the Department of Ecology website but does share an address with Pettit Oil – a site with database information as discussed below.
5	Adjacent to the north	WA CSCL, VCP	Pettit Oil - 640 700 720 Myrtle Street – 700 Myrtle Street	Cleanup started. This is an adjoining property with two sites that share the same address of 700 Myrtle Street. The Pettit Oil site is listed on the Department of Ecology website with documented soil and groundwater contamination above cleanup levels
6	Adjacent to the northeast	Ecology	City Aberdeen Water Shop - 101 W Heron Street	Cleanup started. This site is a Leaking Underground Storage Tank (LUST) site. Documented contaminants in the soil include lead above the cleanup levels with benzene, other non-halogenated organics, petroleum-gasoline, and petroleum other contaminants being suspected. There is suspected petroleum-diesel and petroleum-other contaminates in the groundwater.
7	Adjacent to the west	Ecology	Former Grays Harbor Paper Mill Facility – 801 23rd Street	Several release sites in various stages of cleanup. According to the Current Environmental Conditions Report for this facility (dated March 20, 2017), Total petroleum hydrocarbons and total chromium exceeding the cleanup levels were detected in the groundwater in the wastewater treatment plant and basin area. Soil data was insufficient.
8	On site	Ecology	SR 520 Pontoon Construction Site - 1301 W Heron Street	This property is included with the Project footprint and is listed as cleanup started. This site has documented non-halogenated organics - polycyclic aromatic hydrocarbons in soil above cleanup levels. The site has documented metals and petroleum products above cleanup levels in groundwater.

WA CSCL = Confirmed and Suspected Contaminated Sites List – State hazardous Waste Sites
VCP - Voluntary Cleanup Program Sites
HSL = Hazardous Sites List: State Superfund Equivalent Sites
WA SPILLS = Reported Spills, Spill has been reported to the spill prevention, preparedness and response division
Ecology = WA Department of Ecology's Toxics Cleanup Database

FIGURE 3: POTENTIAL SITES OF CONCERN

5.1.1. Historical Aerial Photographs

Aerial Photo Decade Packages were obtained and included with the Phase I ESA in Appendix A. Historic aerial photos were reviewed for the purpose of identifying historical land uses that have a potential to contaminate soil and/or groundwater in the vicinity of Subject Properties. The findings of each aerial photograph reviewed are summarized in the Phase I ESA. General findings are discussed below.

The Project site was historically occupied primarily by industrial uses since at least 1953. A rail line has been present on the west side of the Project area since at least this. Older railroad lines have been historically found to have been impacted by herbicides, metals, constituents of oil or fuel, polychlorinated biphenyls (PCBs), and wood preservatives such as creosote. New rail lines appear in the early 2000s (2006), though it is less likely that these rail lines may be impacted with hazardous materials.

The site contains wood waste from its years as a lumber processing facility, and potential for methane and hydrogen sulfide gases at the site as result of this decaying wood and the abundance of wood on site.

5.2. Regulatory Database and Investigative Reports

The following sections provide additional information about sites identified in the Phase I ESA that may represent a potential concern to the Project. Section 5 includes an assessment of these sites with regard to their potential to impact the Project site.

5.2.1. Port Industrial Road Former Bulk Fuel Facility - 3115 Port Industrial Road

This site is listed as “Awaiting Clean-up” on Ecology’s Toxics Program website. This site is situated adjacent to rail upgrades on the western end of the Project site north of Port Industrial Road and south of the existing rail line (See Figure 3).

A Phase II ESA (including soil and groundwater characterization) was conducted by Stantec Consulting Services Inc. in 2016. The findings of the Phase II ESA are summarized below.

Soil investigation was conducted during two events in August and September of 2016. The first investigation included 14 soil borings advanced to a depth of 16 feet bgs and installation of three monitoring wells. The second event included 6 soil borings to a depth of 4 feet bgs. Groundwater was collected from temporary groundwater monitoring wells at the 14 deep soil boring locations. Five permanent monitoring wells were also subsequently developed and sampled. Figures 4 and 5 show soil and groundwater sampling locations as provided in Stantec’s Phase II ESA Report.

A total of forty soil samples were collected and submitted for analyses. At least one soil sample was submitted for analyses from each boring and monitoring well location with the exception of one monitoring well (MW-1) where soil conditions were already characterized by a soil sample collected from a nearby boring (B-14).

Grab groundwater samples were collected from each of the deep boring locations (BH-1 to BH-14) but not from the shallow boring locations (BH-15 to BH-21). A total of fourteen groundwater samples were collected and submitted for analyses. Nine samples were collected from soil borings (temporary wells) and five groundwater samples were collected from monitoring wells (permanent wells).

Model Toxics Control Act (MTCA) Method A Clean Up Levels (CULs) were used for preliminary screening purposes to facilitate describing the contaminant distribution. The following discusses only those soil analytical results above the MTCA Method A CULs.

- Gasoline-range petroleum hydrocarbons concentrations exceeding the MTCA Method A CUL of 30 milligrams per kilograms (mg/kg) were identified in six of the forty soil samples collected (borings B-3, B-4, B-6, B-7, B-13, and MW-4). Gasoline-range petroleum hydrocarbons

concentrations greater than the CUL ranged from 6,400 mg/kg (in B-3) to 38 mg/kg in B-4 and from a depth of 8 feet to 16 feet bgs.

- Diesel-range petroleum hydrocarbons concentration above the CUL was detected in one soil sample (soil boring B-5) situated at the far eastern edge of the site near the property line. This was the only location in which diesel-range petroleum hydrocarbons concentrations were detected in soils above the CUL.
- Benzene, ethylbenzene, and xylenes concentrations above CUL were detected in one sample collected from 12 feet bgs (B-3); the same boring location where diesel-range petroleum hydrocarbon concentrations of 6,400 mg/kg were noted. Benzene concentrations above the CUL were noted in one soil sample collected from a boring to install a monitoring well (MW-4, which is situated along the south property line toward the center of the site). No other benzene, ethylbenzene, or xylenes concentrations above the CUL were detected in any of the other thirty-eight soil samples submitted for analyses.
- No other constituents analyzed in soil were detected above the CUL in the soil samples submitted for analyses.

Contaminant concentrations in soil were generally limited to the east portion of the site at depths ranging from approximately 5 feet to 14 feet. The highest soil contamination (6,400 mg/kg of gasoline-range petroleum hydrocarbons concentration at B-3) was identified at 12 feet bgs.

The MTCA CUL exceedances from groundwater collected at the site are summarized below.

- The presence of suspended particles in groundwater were observed in groundwater collected from the soil borings (“grab samples”). Groundwater samples from the soil borings were collected the same day as the borings were drilled and turbidity was high. Groundwater samples collected from the permanent monitoring wells was less turbid. Groundwater analytical results for gasoline-range petroleum hydrocarbons from the soil borings ranged from 2,100 micrograms per liter (µg/L) to 68,000 µg/L compared to less than 100 µg/L to 450 µg/L for in the groundwater samples collected from the monitoring wells. Results of samples collected from the monitoring wells should be considered more reflective of actual groundwater quality because of the lower prevalence of suspended solids.
- Analytical results of grab groundwater samples collected from the soil borings (temporary wells) indicated gasoline-range petroleum hydrocarbon concentrations above the CUL ranging from 2,100 µg/L to 63,000 µg/L.
- There were no CUL exceedances encountered in the groundwater samples collected from the permanent monitoring wells.
- Benzene concentrations above CULs were detected in grab groundwater samples collected from four borings (B-2, B-3, B-4, and B-9) and in two groundwater samples collected from permanent wells MW-4 and MW-5. Xylenes were detected above the CUL in the grab sample collected from B-4.
- Diesel-range petroleum hydrocarbon was detected at concentrations above CUL in a grab groundwater sample collected from one boring (B-9, located along the south property line) and in a sample collected from one permanent monitoring well (MW-2, located along the north property line).
- Total lead was detected at concentrations above the CUL in each of four grab groundwater samples that were submitted for lead analyses (B-2, B-5, B-6, and B-9) and in two of the five samples collected from the monitoring wells (MW-1 and MW-5).
- Contaminant concentrations in groundwater are generally limited to the east portion of the site. Groundwater contamination has not been fully delineated. The extent to the north (towards the rail spur), to the south (along Port Industrial Road), and to the east towards the adjacent property at 820 Myrtle Street has not been determined.

FIGURE 4: PORT INDUSTRIAL ROAD FORMER BULK FUEL FACILITY – SOIL SAMPLING RESULTS (STANTEC 2016)

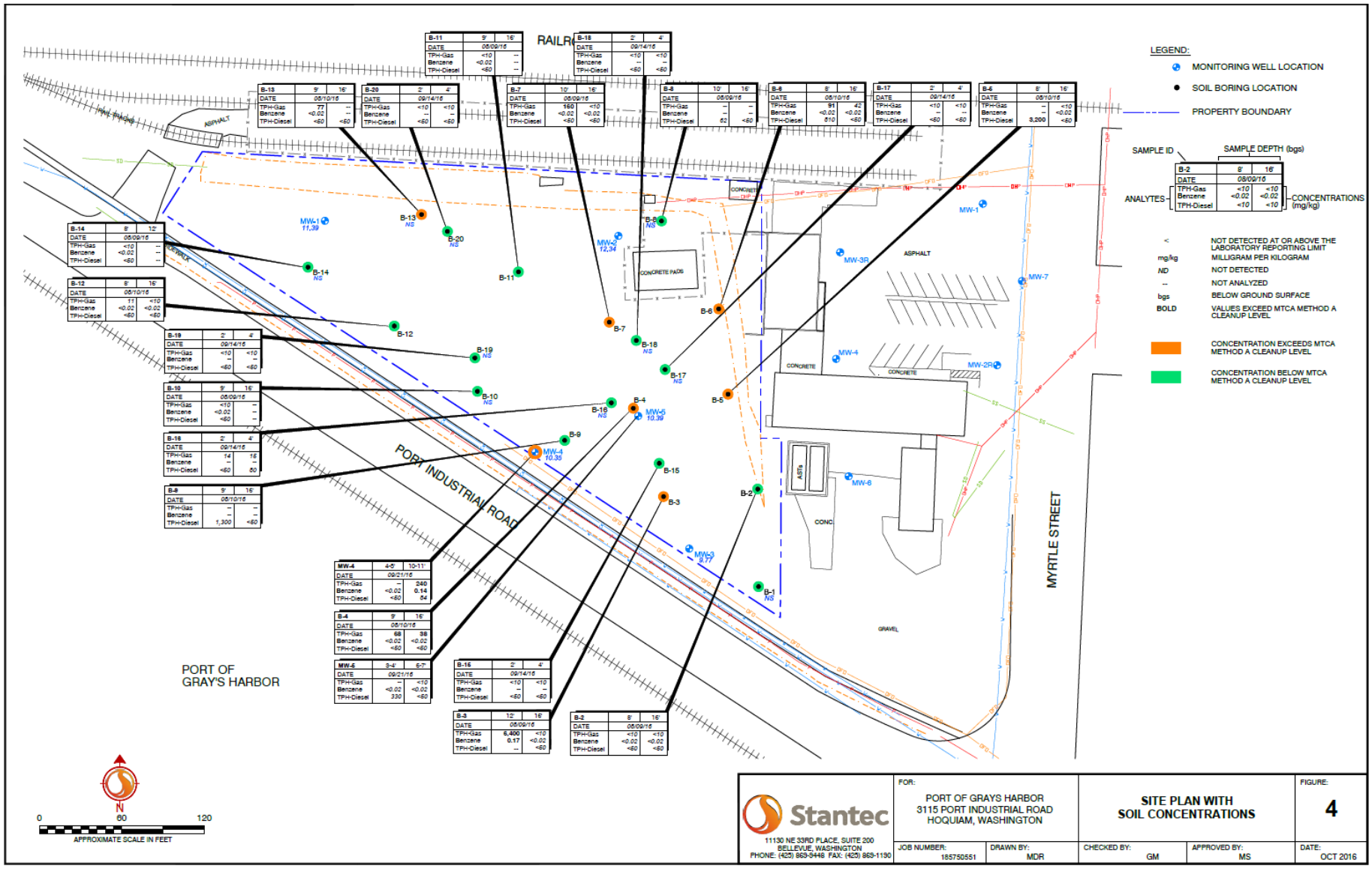
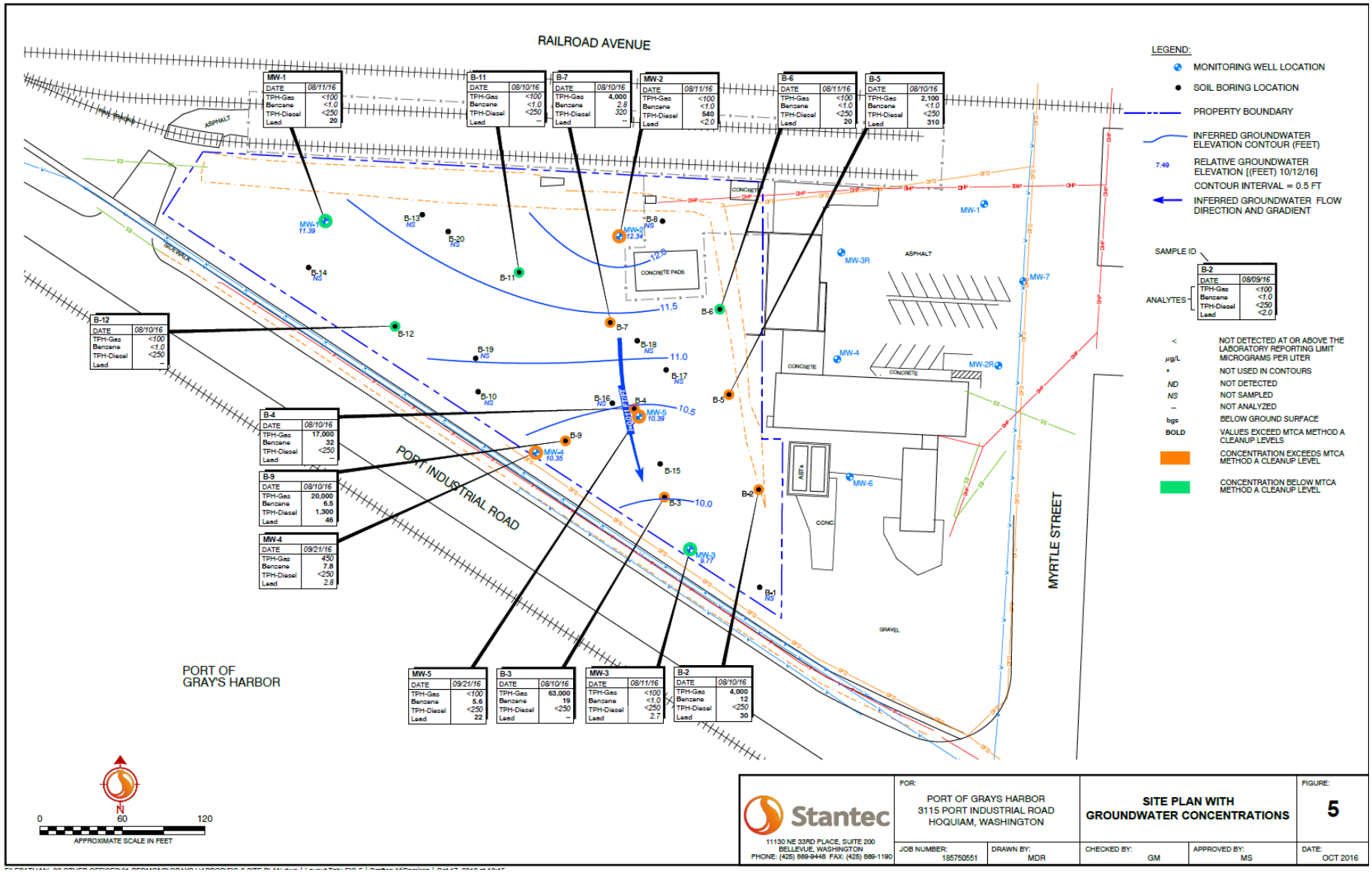


FIGURE 5: PORT INDUSTRIAL ROAD FORMER BULK FUEL FACILITY – GROUNDWATER SAMPLING RESULTS (STANTEC 2016)



The Former Bulk Facility Phase II exposure pathway findings and conclusions include the following:

Soil

- The primary contaminants of concern in site soil are diesel- and gasoline-range petroleum hydrocarbons associated with historical releases from ASTs formerly located at the site.
- Soil contamination at concentrations greater than applicable CULs has been identified primarily on the eastern portion of the site (borings B-3 through B-7 and MW-4) from approximately 5 feet to 12 feet bgs and some areas of contamination have also been identified on the south portion of the site (B-13).
- Concentrations of contaminants of concern in site soil characterized between the surface and 5 feet bgs and deeper than approximately 12 feet bgs are less than CULs.
- Additional investigation is recommended to evaluate if contamination extends beyond site boundaries to the south and east.

Groundwater

- Groundwater contamination appears limited to the eastern portion of the property. Groundwater grab samples contaminant concentrations are likely biased high due to the high turbidity of samples collected. Analytical results of samples collected from the permanent monitoring wells are likely more representative of existing groundwater conditions.
- Results of analyses on groundwater samples collected from the permanent monitoring wells indicated no gasoline-range petroleum hydrocarbon concentrations above the CUL in any of the samples collected.
- Contaminants of concern with identified concentrations exceeding CULs in samples obtained from the permanent groundwater monitoring wells are diesel-range petroleum hydrocarbons (from MW-2), benzene (MW-4 and MW-5), and lead (MW-1 and MW-5)
- Further investigation is required to determine the extent of groundwater contamination to the north, south, and east.

The complete exposure pathways include direct contact with soil and/or groundwater for construction personnel completing excavation as part of the Project. Construction personnel have the potential to encounter contaminated soil at the site in excavations extending from approximately 5 feet bgs to 12 feet bgs. The groundwater to surface water pathway has not been characterized. Additional investigation of groundwater quality at this site and down-gradient from this site is required to fully evaluate this pathway. Construction personnel have the potential to encounter potentially contaminated groundwater where site excavations extend to the groundwater surface (approximately 5 feet bgs).

A site-specific hazardous materials management plan is recommended to address potential contaminant exposure and characterization, handling, and disposal requirements.

5.2.2. Pettit Oil - 820 Myrtle Street

The Pettit Oil property is located at 820 Myrtle Street, adjacent to rail upgrades on the western end of the Project site north of Port Industrial Road and south of the existing rail line (See Figure 3). This property is listed as “Clean-up Started” on Ecology’s Toxics Program website. The site is listed on Ecology’s database for Non-Halogenated Organics - Petroleum Products-Unspecified.

A Phase II ESA (including soil and groundwater characterization) was completed at the Pettit Oil site by Stantec Consulting Services Inc. in 2015. Site use background and findings of the Phase II ESA are summarized below.

Background

The Pettit Oil site was operated as a bulk fueling facility from the 1940s to 2014. The site contained several large bulk ASTs and USTs, including six 20,000-gallon tanks storing diesel fuel and gasoline, two 6,000-gallon gasoline USTs, two 20,000-gallon bulk lube oil ASTs, and one 500-gallon used oil UST. Bulk ASTs and gasoline USTs on the north portion of the site were removed in the summer of 2003. Pettit Oil operated the site as a lube oil storage and distribution facility from 2003 until 2014. Bulk fuel storage has not occurred on this site since Pettit Oil vacated the property in 2014. Most recently, the property is leased to Sky Harbor (a medical transport company) and used as office space and parking for home healthcare patient transport vehicles.

A diesel fuel release from a leaking underground product between an AST secondary containment structure and a pump island line was reported in November 2001. The source of the release was determined to be a leaking underground product line in the pump island area according to the *Soil Remediation Report* prepared by Aspect Consulting Inc (Aspect 2004 in Stantec 2015). A moderate sheen was subsequently observed in a drainage ditch on the east side of Myrtle Street and in Fry Creek (further east of the site) in December of that year.

Remediation activities associated with the November 2001 spill are as follows according to the Initial Investigation Report prepared by Ecology personnel (dated December 12, 2001 [Ecology 2002 in Stantec 2015]) and *Soil Remediation Report* prepared by Pettit's environmental consultant Aspect Consulting, Inc. (Aspect 2004 in Stantec 2015).

- Over 1,000 gallons of free product were recovered during initial investigations (Ecology 2002 in Stantec 2015).
- Pettit planned to conduct a "more comprehensive assessment of the potential impacts to soil and ground water" in the summer of 2002 (Ecology 2002 in Stantec 2015).
- Six groundwater monitoring wells were installed on the northern portion of the site in March 2003.
- Site was enrolled in Ecology's VCP and assigned VCP No. SW 0427 in the summer of 2003.
- Two 6,000-gallon gasoline USTs, all piping, and ancillary equipment were removed on September 8, 2003.
- Impacted soils were reportedly removed during the subsequent remedial excavation of diesel-impacted soils conducted in 2003 (Aspect 2004 in Stantec 2015). During the remedial excavation, 3,225 tons of diesel-impacted soil, 9,600 gallons of diesel-impacted groundwater, and 400 gallons of free product were removed from the excavation area on the northern portion of the site.
- The report states "Excavation activities were generally directed at mitigating impacts from the November 2001 diesel release, and in some areas excavation was discontinued where impacts from an apparently older hydrocarbon release(s) were still evident in soils" Aspect 2004 in Stantec 2015.
- Ecology would not issue Pettit an NFA determination due to remaining residual contamination at the site.
- Remedial activities at the site have remained in a state of inactivity since 2006 because "the nature and timing of the release(s) that resulted in the historic petroleum impacts to soil and groundwater in the western portion of the site, and the party(s) other than the current property owner that may potentially be responsible for cleanup are presently unknown" according to a representative of Aspect.
- The site has since been removed from the VCP and no additional cleanup or monitoring has been conducted.

2015 Site Investigation

A Phase II ESA (including soil and groundwater characterization) was conducted by Stantec Consulting Services Inc. in 2015. Figures 6 and 7 show soil and groundwater sampling locations as provided in Stantec's Phase II ESA report. The findings of the Phase II ESA are summarized below.

Soil characterization consisted of 15 borings completed to depths ranging from 2 feet to 12 feet bgs. Soils were field screened to identify indications of potential contamination. Field screening consisted of visual observations of potential hydrocarbon contamination and headspace analysis for volatile organic vapors. A total of 19 soil samples were collected from 15 soil boring locations and submitted for laboratory analysis as discussed below.

Soil samples that did not have any visual or olfactory indications of petroleum impact were initially submitted for analysis by Hydrocarbon Identification (HCID) using Ecology Method NWTPH-HCID (a non-quantifying methodology that indicates detections in each of the general hydrocarbon ranges) Samples with detections within in any of the general hydrocarbon ranges were re-submitted for quantification analysis using either Ecology Method NWTPH-G for gasoline-range hydrocarbons or Ecology Method NWTPH-Dx for diesel-range and oil-range hydrocarbons. Soil samples with obvious petroleum impact were submitted directly for analysis of gasoline-range petroleum hydrocarbons, diesel- range petroleum hydrocarbons, oil- range petroleum hydrocarbons, Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX), and total lead analysis.

Groundwater was encountered in the borings completed at the site at depths from approximately 7 feet to 8 feet bgs. Groundwater samples were collected via temporary groundwater monitoring wells from all soil boring locations (with the exception of B-13 and B-14, located in the warehouse area).

The analytical results from the soil and groundwater samples collected from the site (Stantec 2015) are summarized below.

Soil

Soil samples collected from the northern portion of the site did not contain concentrations of diesel or oil-range constituents exceeding the MTCA Method A CULs and it is inferred that most of the contaminated soils historically situated in the northern portion of the site were excavated and removed in 2003 based on these results. Remaining contaminated soil impacted with benzene and gasoline-, diesel-, and oil-range constituents above the Method A CULs were generally in vicinity or south of the warehouse. Details of soil sample results are summarized below.

- Gasoline-range petroleum hydrocarbons concentrations exceeding the MTCA Method A CUL were detected in five of the soil samples. (B-5 [5 ft], B-9 [7 ft], B-10 [5 ft], B-11 [7 ft], and B-12 [7 ft]).
    - Concentrations ranged from 39 mg/kg in B-12 (7 ft) to 2,300 mg/kg in B-11 (7 ft). Gasoline-range petroleum hydrocarbons concentrations in soil are highest in the southwestern portion of the site.
- Total lead was detected in two of the five soil samples with gasoline-range petroleum hydrocarbon impacts. Both concentrations are less than the MTCA Method A CUL for soil. No lead was detected in the other soil samples.
- Benzene concentrations exceeding the MTCA Method A CUL were detected in four of the soil samples (B-5 [5 ft], B-6 [5 ft], B-9 [7 ft], and B-11 [7 ft]).
    - Concentrations ranged from 0.04 mg/kg in B-9 (7 ft) to 4.2 mg/kg in B-11 (7 ft). Benzene concentrations in soil are highest in the southwestern portion of the site.
- The ethylbenzene concentration in one sample exceeds the MTCA Method A CUL (B-11 [7 ft] was 31 mg/kg). All other concentrations of toluene, ethylbenzene, and total xylenes were less than respective MTCA Method A CULs.

- Diesel-range petroleum hydrocarbons concentration exceeding the MTCA Method A CUL was detected in only one sample (B-10 [5 ft] with a concentration of 3,400 mg/kg). One sample had diesel-range petroleum hydrocarbons concentration less than the MTCA Method A CUL (soil sample B-11 [7 ft]). Diesel-range petroleum hydrocarbons were not detected in any of the other soil samples. Concentrations in soil are highest in the southwestern portion of the site.
- Oil-range petroleum hydrocarbons concentrations exceeding the MTCA Method A CUL of 2,000 mg/kg was detected in only one sample (B-14 [1 ft] with a concentration of 6,300 mg/kg).
    - Six soil samples had oil-range petroleum hydrocarbons concentrations less than MTCA Method A CULs. Soil sample B-13 (1 ft) had a concentration of 1,400 mg/kg; B-6 (5 ft) had a concentration of 1,600 mg/kg; B-2 (5 ft) had a concentration of 200 mg/kg; and B-8 (8 ft) had a concentration of 230 mg/kg.
    - No oil-range petroleum hydrocarbon concentration was detected in any of the other soil samples.

Groundwater

Contaminated groundwater containing diesel-range and gasoline-range constituents and benzene exceeding the MTCA Method A CUL were identified within the southwestern portion of the site. Contaminated groundwater containing gasoline-range constituents and benzene exceeding the Method A CUL were also identified in the southwest portion of the site and at the northwest corner of the site. Total lead impacts in groundwater exceeding the MTCA Method A CUL were identified at the northwest corner of the site and in the immediate vicinity of the concrete containment structure located on the south side of the warehouse. Concentrations of total lead generally correspond with the location of the highest gasoline-impacted groundwater, indicating that releases of both leaded and unleaded gasoline have likely occurred historically. Details of groundwater sample results are summarized below.

- Gasoline- -range petroleum hydrocarbons concentrations exceeding the MTCA Method A CUL were detected in three of the groundwater samples: B-9, B-10, and B-11.
- Gasoline-range petroleum hydrocarbons concentrations in groundwater are highest in the southwestern portion of the site.
- Benzene concentrations exceeding the MTCA Method A CUL were detected in two of the groundwater samples collected (B-5 had a concentration of 24 µg/L; B-11 had a concentration of 31 µg/L.) Benzene concentrations in groundwater were highest in southwestern portion of the site.
- Concentrations of toluene, ethylbenzene, and total xylenes were detected less than MTCA Method A CULs in five of the samples.
- Diesel-range petroleum hydrocarbons concentrations exceeding the MTCA Method A CUL were detected in six of the groundwater samples (B-4, B-6, B-9, B-10, B-11, and B-12). Diesel-range petroleum hydrocarbons concentrations in groundwater are highest in the southwestern portion of the site.
- Oil-range petroleum hydrocarbons concentrations exceeding the MTCA Method A CUL were detected in four of the groundwater samples collected from the southwestern portion of the site (B-6, B-10, B-11, and B-12). No oil-range petroleum hydrocarbons were detected in any of the other groundwater samples.
- Total lead concentrations exceeding the MTCA Method A CUL were detected in two of the three samples with exceedances of gasoline-range petroleum hydrocarbons CUL from samples collected from the northwest and southwest portions of the property. B-9 had a total lead concentration of 41 µg/L, and the groundwater sample collected from B-10 had a total lead concentration of 29 µg/L.

The Stantec Phase II ESA also concludes that the source of the contaminated soil and groundwater identified during this investigation is related to historical operation of the site as a fuel storage and distribution facility and additional contamination may have been contributed from a former bulk petroleum storage facility located on the adjoining property to the west.

FIGURE 6: PETTIT OIL 820 MYRTLE STREET– SOILS SAMPLING RESULTS

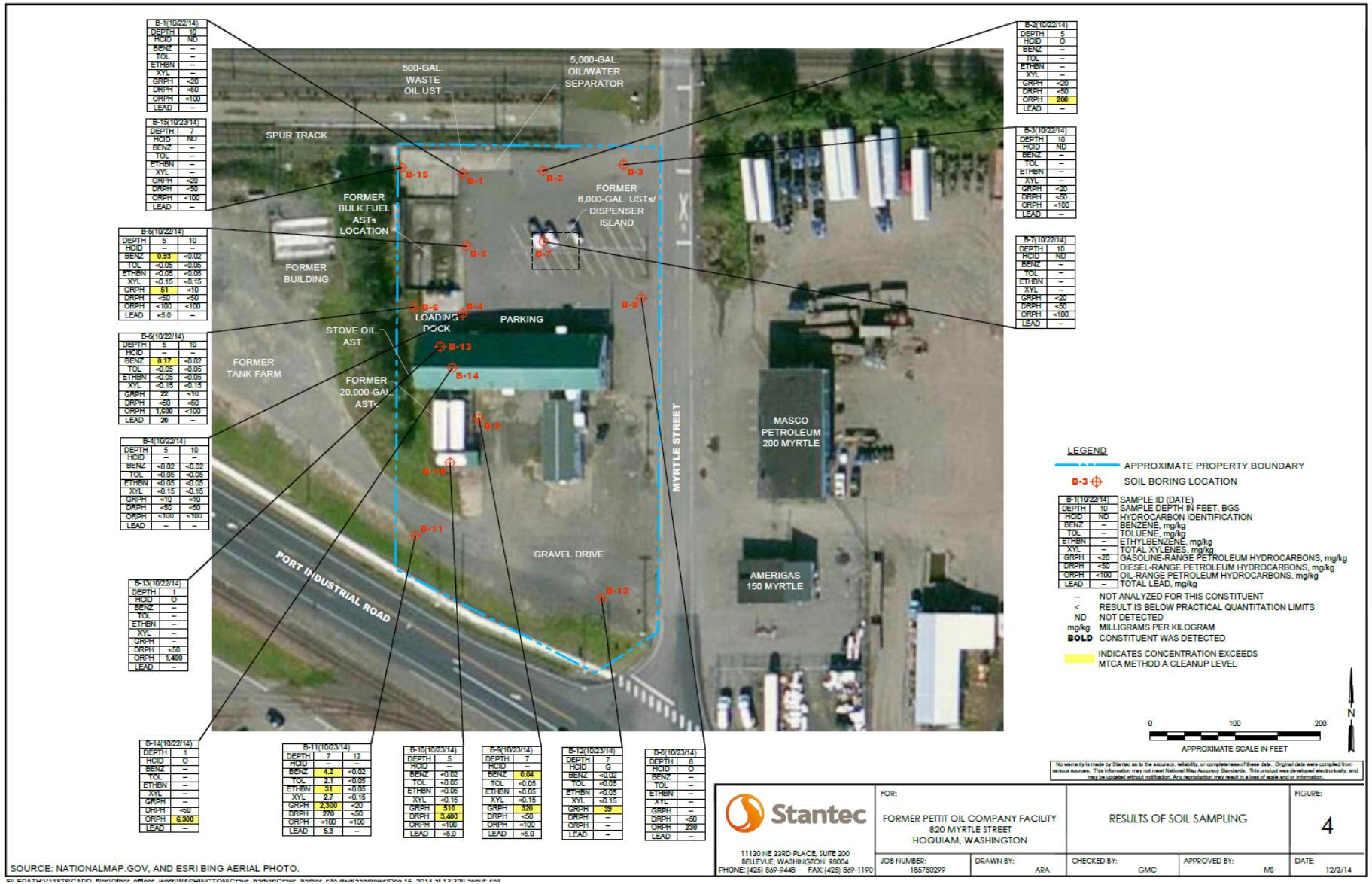
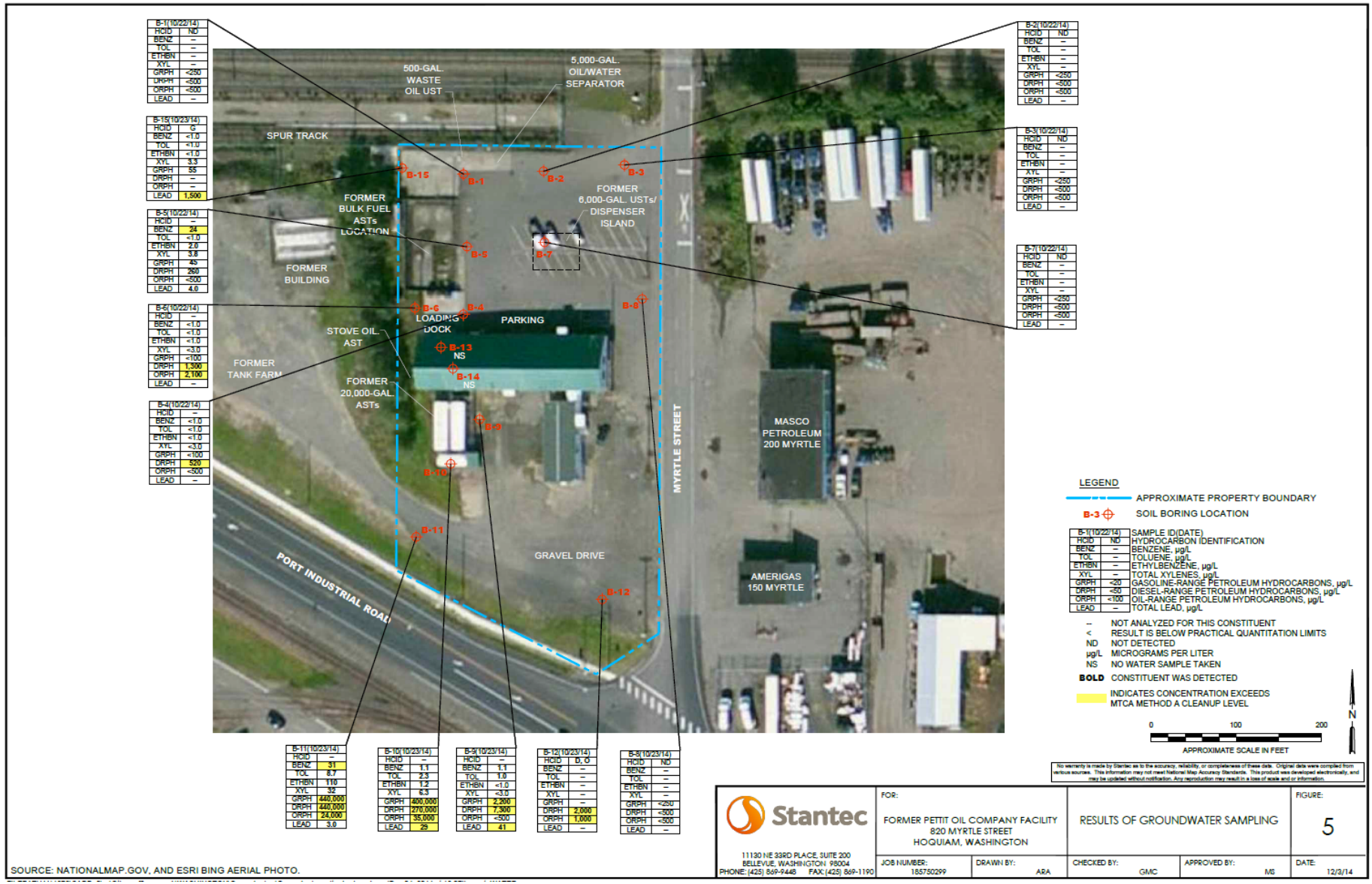


FIGURE 7: PETTIT OIL 820 MYRTLE STREET– GROUNDWATER SAMPLING RESULTS



5.2.3. POGH Property - Across From 820 Myrtle Street

This site is northeast of rail upgrade project components on the west end of the Project site. It is identified as “POGH Property” on Ecology’s database and is shown located generally east of 820 Myrtle Street (though the exact location/address of this site is not listed). It appears that Ecology’s listing is associated with the address 200 Myrtle Street (which is a Port-owned lot with a trucking firm location). Immediately to the south is 150 Myrtle Street, which is occupied by AmeriGas Propane.

There is limited information about this site available on Ecology’s database. The POGH Property site is listed for suspected unspecified petroleum contamination and confirmed unspecified petroleum surface water contamination in Ecology’s database. The Port stated there are no investigations in progress for this site at this time.

5.2.4. Hoquiam Bulk Plant / Pettit Oil 640 700 720 Myrtle Street – 700 Myrtle Street

These listings are situated immediately north of rail upgrades on the west side of the Project site (See Figure 3).

There are two listings in the Phase I ESA report associated with this the address: Hoquiam Bulk Plant and Pettit Oil 640 700 720 Myrtle Street. “Hoquiam Bulk Plant” is not included in Ecology’s database but there is information included for this Pettit Oil listing. The site is listed for non-halogenated organics and unspecified petroleum product contamination of soil and groundwater on Ecology’s webpage.

There are two documents available on Ecology’s database: a Notice of Change in Management and Contact Information (Chevron 2017), and a Site Hazard Assessment Report (GeoEngineers 2017).

The Notice of Change in Management and Contact Information document is a letter from Brett Hunter (Project Manager, Chevron Environmental Management Company [Chevron]) to Nick Acklam at Ecology notifying Ecology of Chevron’s intention to transfer eight facilities to Phillips 66 company. The letter concludes that “Phillips 66 (or its designees or representatives) will manage the day-to-day corrective action/remediation obligations related to the referenced case”. An attached table of transfer sites includes a listing for a bulk plant at 640 Myrtle Street in Hoquiam.

The contents of the Site Hazard Assessment Report are summarized below (Figure 8 is the GeoEngineers-developed site plan that shows locations of borings, monitoring wells and other pertinent site features):

- The site consists of three localized tax parcels designated as “Retail Trade – Automotive, Marine Craft, Aircraft, & Accessories – Gas Stations” in an area of Hoquiam zoned for commercial, residential, and industrial use. The associated parcels include 052209300100, 052209300101, and 052209301300.
- The commercial fueling bulk plant house at the site was constructed in the 1920s. The facility consists of a storehouse, office, loading racks, ASTs, USTs, a drum storage area, a filling area, and a gasoline station with dispensers.
- Ecology was notified of a 100-gallon gasoline release at the site in March 1993.
    - No documentation of remedial activities was received for this release.
    - Four storage tanks were listed at the site at that time. The tanks included a 2,000-gallon solvent tank, a 6,000-gallon hydraulic oil tank, a 20,000-gallon gasoline/diesel/fuel oil tank, and a “-000” gallon diesel tank, the volume of this tank was not legible.
- Pacific Crest Environmental completed due diligence activities at the site in October 1997 and May 1998.
- Seventeen exploratory soil borings were completed to depths of 1.5 feet to 4 feet bgs. The soil borings ended at the soil-groundwater interface.

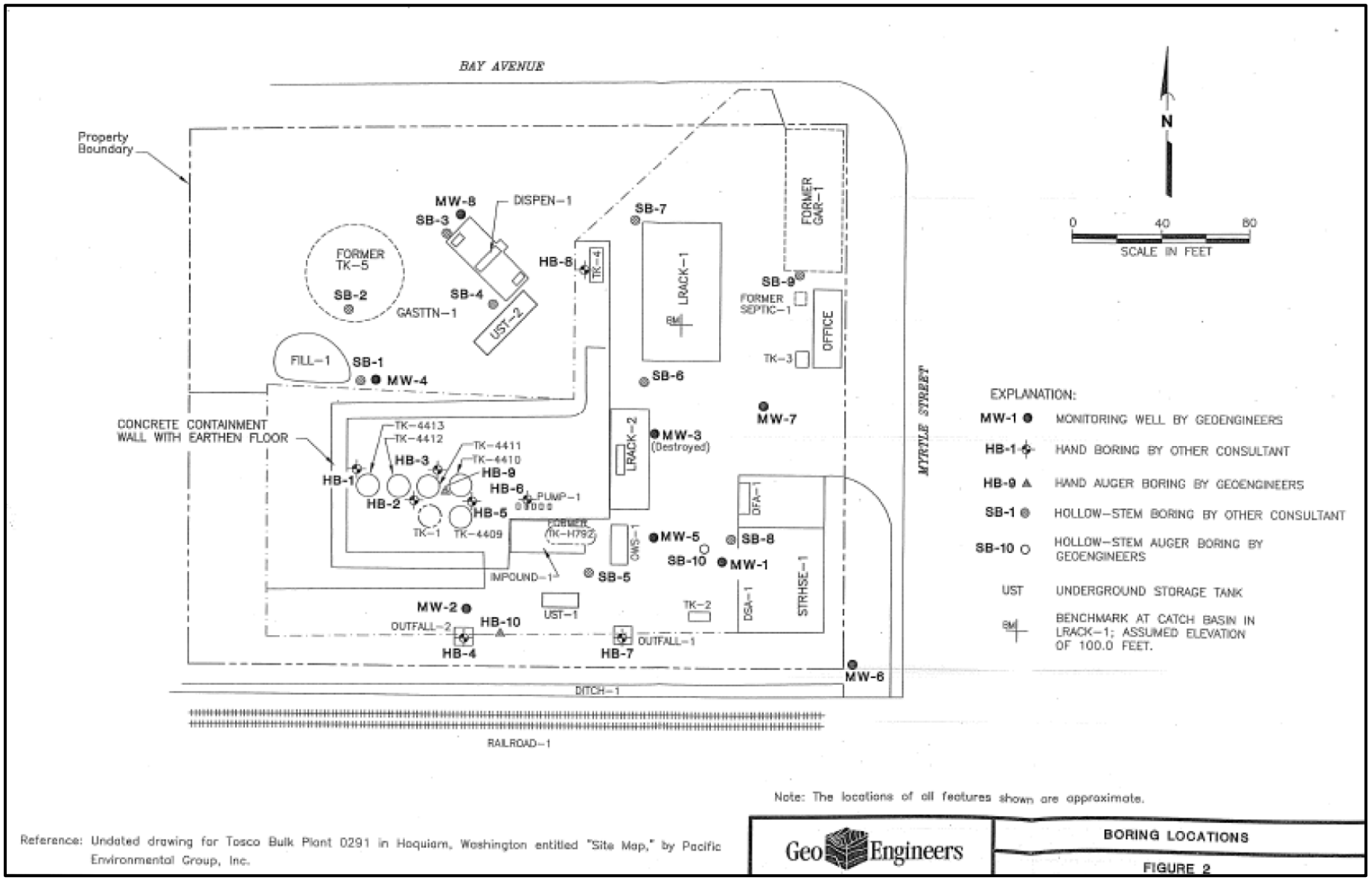
- Seventeen soil samples and 9 groundwater samples were collected at the site for BTEX, total petroleum hydrocarbon, gasoline, diesel, heavy oil, and methyl tertiary-butyl ether (MTBE) analysis.
    - The soil sample results returned with gasoline, diesel, benzene, ethyl benzene, and xylene above their respective MTCA Method A CULs in soil.
    - The groundwater sample results returned with gasoline, diesel, heavy oil, and benzene above their respective MTCA Method A CULs in groundwater.
    - The highest soil results were from samples collected in the area west of the former gasoline station and the area south of the former AST farm. The highest groundwater results were from samples collected west of the drum storage area.
- GeoEngineers installed four monitoring wells at the site in September 1998. The monitoring wells were completed to depths between 2.5 feet and 10 feet bgs.
    - Soil samples from the monitoring well borings showed benzene contamination above the MTCA Method A CUL of 0.03 mg/kg for benzene in soil.
- GeoEngineers completed a Site Characterization Activities Report in November 1998. The report documented the completion of four soil borings, converted to groundwater monitoring wells at the site.
    - Soil and groundwater samples were collected from the borings and analyzed for gasoline, diesel, heavy oil, MTBE, and BTEX. Soil sample results showed benzene contamination, while groundwater sample results showed substances of concern less than their respective MTCA Method A CULs.
    - Two additional groundwater monitoring wells, well numbers 5 and 6, were installed in April 2001. Soil and groundwater samples were collected from the monitoring well borings. The sample results showed BTEX, gasoline, diesel, and heavy oil contamination above their respective MTCA Method A CULs.
- GeoEngineers completed a Delineation Assessment to further investigate subsurface conditions in June 2001.
    - Two additional monitoring wells were installed. One monitoring well was installed at an off-site location southwest of the bulk plan. The other monitoring well was installed at an on-site location east of the oil-water separator.
    - Five soil samples and two groundwater samples were collected for BTEX, gasoline, diesel, heavy oil, and MTBE analysis. The sample results showed that groundwater contamination had migrated off-site to the southeast.
- GeoEngineers completed a Delineation Assessment Report in February 2003. The report assessed a drainage ditch beyond the southern boundary of the site to determine if contamination was migrating off-site. The assessment confirmed that surface contamination from the ASTs was migrating off-site.
- GeoEngineers completed an additional Delineation Assessment Report in December 2003. The report detailed the completion of two additional groundwater monitoring wells at the site. Soil samples collected from the well borings were analyzed for volatile organic compounds (VOCs), gasoline, diesel, and total metals. The soil sample results returned were less than the MTCA Method A CULs for all substances of concern. No groundwater samples were collected at this time.
- A Supplemental Soil Investigation Report was completed by Delta Environmental Consultants Inc. in September 2005.
    - A total of twenty-three shallow soil borings were completed at the site to further define the shallow soil contamination. The borings were completed to depths between 2 feet and 5 feet bgs.

  - Sixteen soil samples were collected from the twenty-three soil borings for gasoline, diesel, heavy oil, BTEX, MTBE, and naphthalene analysis. The soil sample results showed gasoline, diesel, heavy oil, benzene, toluene, xylene, and naphthalene above their respective MTCA Method A CULs.
- Delta Environmental Consultants Inc. conducted an Additional Soil Investigation Report in August 2007 to delineate previously identified impacted areas at the site.
  - A total of thirty-three soil borings of varying depths were completed in four main areas of concern: near the ASTs, west and south of the warehouse, south of the loading rack, and west and east of the cardlock.
  - Twenty of the soil borings were from previously identified locations of soil contamination and thirteen samples were completed from new locations to further delineate the extent of the soil contamination.
  - The soil sample results showed the most impacted soils were from the AST area. Soil contamination was also identified in the area southeast of the truck unloaders, west of the western outfall, and south of the loading rack. The impacted areas were estimated to contain approximately 745 tons of contaminated soil extending 2.5 feet to 5 feet bgs.
- Delta Consultants Inc completed a Soil Excavation Report (March 2008) documenting soil excavation conducted in advance of anticipated facility upgrades to the ASTs and pumps.
  - Approximately 197 cubic yards of surface soil was removed from the AST area and the pump area.
  - Excavation was limited by shallow groundwater and existing structures. Soil samples confirmed remaining soil contamination at the excavation's boundaries.
- Routine quarterly groundwater monitoring was conducted as detailed below. Groundwater sample results showed persistent elevated levels of gasoline, diesel, heavy oil, and benzene above their respective MTCA Method A CULs:
  - from June 2000 through December 2009
  - March and June 2010
  - December 2011
  - February and August 2012
  - February and August 2013

An additional (unrelated) release of diesel also occurred at the site in March 2012.

- The release was the result of human error (a tank valve was left open and the valve drained into the containment, which overflowed into the oil-water separator, which flowed into a storm water ditch on the south site of the property).
- A total estimated volume of 100 gallons of diesel was released to the storm water ditch. A total of 6,043 gallons of diesel and impacted water was removed from the storm drain with a vactor truck.
- A surface water sample was collected from the "discharge of the under flow weir". The surface water sample returned with diesel, heavy oil, BTEX, and naphthalene less than their respective MTCA Method A CULs. This incident was granted the status of NFA.

FIGURE 8: PETTIT OIL 640 700 720 MYRTLE STREET



5.2.5. City Aberdeen Water Shop - 101 West Heron Street

This property is located north of rail upgrade components on the east end of the Project site and north of the City of Aberdeen wastewater treatment plant (See Figure 3).

This site is listed as “Clean Up Started” on Ecology’s database for confirmed lead contamination in soils above CULs and suspected non-halogenated organics in soil (petroleum – gasoline, petroleum – other, and other non-halogenated organics) and groundwater (petroleum – diesel, and petroleum – other).

There are nine documents included on Ecology’s webpage for this property, including two legal documents, one LUST document, and six technical reports. These documents are listed below and discussed chronologically in the following sections:

- City of Aberdeen Letter to Sue Simms Underground Storage Tank Notification Solid and Hazardous Waste Program Department of Ecology – Tank Removal (City of Aberdeen Public Works Department November 1989a)
- City of Aberdeen Letter to Sue Simms Underground Storage Tank Notification Solid and Hazardous Waste Program Department of Ecology – Tank Removal (City of Aberdeen Public Works Department December 1989b)
- City of Aberdeen Letter to Sue Simms Storage Tank Unit Department of Ecology – Tank Removal (City of Aberdeen Public Works Department July 1990a)
- City of Aberdeen Letter to John Bales Department of Ecology – UST Removal – Garfield and Heron Public Works Shops (City of Aberdeen Public Works Department November 1990b)
- City of Aberdeen Letter to John Bales Department of Ecology – UST Removal – Garfield and Heron (City of Aberdeen Public Works Department December 1990c)
- Early Notice Letter (Ecology 2013)
- Notice of Intent to Perform Site Characterization Activities at the City of Aberdeen Water Department (Ecology 2016b)
- Soil and Groundwater Characterization Summary – Aberdeen Water Treatment Facility (GeoEngineers 2017)

The first three documents provide limited information. The first two are letters from the City of Aberdeen informing Ecology of the City’s intention to remove USTs at the site including a 1,000-gallon waste oil storage tank and two additional tanks that were apparently discovered during excavation to remove the initial tank. Information related to the size and/or material stored in the two additional tanks is not included in this letter. All tanks are located at the Public Works Shop at Garfield and Heron and were to be disposed of at the LeMay Landfill in Grays Harbor County.

The July 1990 letter was written from the City informing Ecology of the City’s intention to remove three USTs at this site. It is unclear whether any or all of these tanks are the above mentioned. This letter includes an associated Site Notification Number (000286).

The remaining documents provide additional pertinent details and are discussed below.

City of Aberdeen Letter to John Bales Department of Ecology – UST Removal – Garfield and Heron Public Works Shops (City of Aberdeen Public Works Department November 1990b)

The November 1990 letter is from Suzanne Young (City of Aberdeen Administrative Assistant) to John Bales (Ecology Storage Tank Unit) and includes a Notice of Permanent Closure of Underground Storage Tanks associated with Site Notification Number 000286. The enclosed Notice of Permanent Closure of Underground Storage Tanks form indicates that three USTs were removed by the City in September 1990 and included one 3,000-gallon “unleaded” tank, one 3,000-gallon “regular” tank, and one 1,500-gallon diesel tank.

The form also indicates that a site assessment was completed and that no contamination was found. A hand-written note in the margin reads "*Entered Closure Info 10/28/1991 -GS*"

City of Aberdeen Letter to John Bales Department of Ecology – UST Removal – Garfield and Heron (City of Aberdeen Public Works Department December 1990c)

This letter includes a Notice of Permanent Closure of Underground Storage Tanks for "sites near the Water Shop at Garfield and Heron Streets".

There are two Notice of Permanent Closure of Underground Storage Tanks forms attached. The first indicates that one 1,000-gallon gasoline tank of unknown age was removed on 4 January 1990. A site assessment was completed and found no evidence of contamination (referenced above). The second indicates that one 1,000-gallon furnace oil tank of unknown age was removed on 4 January 1990. A site assessment was completed and found no evidence of contamination. A typed note indicates that "Laucks Testing Lab results were mailed to your [Ecology's] office on 18 July 1990. These analytical results are not currently available on Ecology's webpage for this site.

Early Notice Letter (Ecology 2013)

This is an Early Notice Letter to the City of Aberdeen from the Department of Ecology informing the City that Ecology intends to add the City of Aberdeen Water Shop site to Ecology's "Known and Suspected Contaminated Sites List". The letter indicates that the Water Shop site is part of a group of historical sites previously designated as "Reported Cleaned Up" (RCU) (sites where cleanup reports and/or other documentation was submitted to Ecology by owners or consultants indicating to us they had "reportedly cleaned up the site" but did not enter Ecology's former Independent Remedial Action Program (IRAP) or VCP to achieve closure).

Subsequent review of the file for this site by Ecology confirmed that soil and/or groundwater were contaminated due to a release from a LUST and that documentation previously provided to Ecology did not demonstrate MTCA cleanup standards were achieved. The letter notes the following:

- Soil contaminated with gasoline-range petroleum hydrocarbons and other constituents may be present above MTCA CULs in the area of the old USTs. No documentation of USTs removal and demonstrating clean-up standards were achieved for all contaminants of concern for soil is known to have been provided to Ecology.

The letter concludes that further investigation or cleanup action would need to be done to comply with Washington State laws and regulations unless the City could provide historical documentation (not previously provided to Ecology)·demonstrating MTCA cleanup standards were achieved.

Notice of Intent to Perform Site Characterization Activities at the City of Aberdeen Water Department (Ecology 2016b)

This letter is from Jeremy Hughs (Ecology LUST Backlog Coordinator) to Mike Randich (Water Systems Manager, City of Aberdeen). It is a Notice of Intent to Perform Site Characterization Activities at the City of Aberdeen Water Department, Intersection of West Heron Street and South Garfield Street, Aberdeen, Washington (CSID 7547; FSID 3639864)

The letter states that Ecology was notified in April 1990 of a suspected release of petroleum product from two UST systems located in the vicinity of this site. The release notification resulted in the site being added to Ecology's CSCL as an active LUST site (Facility Site number 3639864). The letter indicates that (at that time) the site was awaiting further characterization and potential cleanup before a determination of NFA could be granted.

The letter reports that Ecology had recently received funding to provide additional site characterization to assist LUST sites toward closure with the intention to "further characterize previously identified petroleum

impacts at LUST sites still awaiting receipt of a NFA determination from Ecology". The Aberdeen Water Shop site was selected to receive a portion of the allocated funds.

It also states that sites that receive characterization and are found to have no contamination (or with constituents less than applicable MTCA CULs) may receive an NFA determination. Sites found to have residual contamination above applicable MTCA CULs would remain on the CSCL and would be encouraged to enroll in Ecology's VCP.

The remaining portions of the letter detail the scope of work to be conducted at the site. The following section discussing GeoEngineers' site characterization includes this scope of work.

Soil and Groundwater Characterization Summary – Aberdeen Water Treatment Facility (GeoEngineers 2017)

This Soil and Groundwater Summary report includes the results of subsurface investigation activities completed by GeoEngineers on behalf of Ecology at the Aberdeen Water Treatment Facility (Ecology FSID 3639864) located at West Heron Street and South Garfield Street in Aberdeen, Washington. The purpose of the subsurface investigation was to assess the nature and extent of residual petroleum hydrocarbons in soil and groundwater beneath the site associated with historic releases from the former UST system.

Five soil borings (AWD-1 through AWD-5 shown on Figure 9) were advanced at the site to a maximum depth of 32 feet bgs in November 2016. Soil samples collected from the soil borings were field screened for evidence of petroleum hydrocarbons using a photo-ionization detector (PID). A maximum of two soil samples and one grab groundwater sample from each boring were collected from each location and submitted for analysis of Northwest Total Petroleum Hydrocarbons-Gasoline Extended (NWTPH-Gx) and Northwest Total Petroleum Hydrocarbons-Diesel Extended (NWTPH-Dx) for gasoline and diesel range organics and heavy oils; VOCs (including BTEX); and total and dissolved lead.

Field screening of soil from borings AWD-1, AWD-2, AWD-3, and AWD-5 indicated evidence of petroleum hydrocarbons and VOCs in fill material at depths of approximately 3.5 to 5 feet bgs. The remaining soil and groundwater samples from borings AWD-1 through AWD-5 did not indicate the presence of significant concentrations of petroleum hydrocarbons or VOCs. Analytical results are summarized below:

- Gasoline-, diesel-, and heavy oil-range petroleum hydrocarbons and associated VOCs were not detected above their respective MTCA Method A CULs for unrestricted land use in the soil samples collected from borings AWD-1 through AWD-5.
- Total lead was detected above the associated MTCA Method A CUL of 250 mg/kg in soil samples collected from borings AWD-2 (420 mg/kg) and AWD-3 (320 mg/kg) at 3.5 feet bgs.
- Gasoline-range petroleum hydrocarbons were not detected above the associated practical quantitation limit (PQL) of 100 µg/L in the groundwater samples collected from borings AWD-1 through AWD-5.
- VOCs were not detected above their respective MTCA Method A CULs in the groundwater samples collected from borings AWD-1 through AWD-5.
- Diesel- and heavy oil-range petroleum hydrocarbons were detected above the associated MTCA Method A CUL of 500 µg/L in groundwater samples collected from borings AWD-2 (1,000 µg/L heavy oil-range) and AWD-3 (640 µg/L diesel-range).
- Total lead was detected above the associated MTCA Method A CUL of 15 µg/L in groundwater samples collected from borings AWD-1 (67 µg/L), AWD-2 (98 µg/L), and AWD-3 (31 µg/L).
- Dissolved-phase lead, however, was not detected above the associated PQL (1.0 µg/L) at these same locations (borings AWD-1 through AWD-3) during the November 2016 investigation.

FIGURE 9: CITY OF ABERDEEN WATER SHOP – SAMPLE LOCATIONS (GEOENGINEERS 2017)

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source:
Aerial from Google Earth Pro dated 8/17/2016.

N W E S

20 0 20
Feet

Legend
AWD-1 Boring Completed by GeoEngineers, August 2016

Site Plan	
Aberdeen - SWRO Tanks Model Remedies Aberdeen, Washington	
GeoEngineers	Figure 2

5.2.6. Former Grays Harbor Paper Mill Facility – 801 23rd Street

This site is located east of the Project site adjacent to 28th Street. There are several sites affiliated with this property identified on Ecology's database in various stages of clean up. Five of the sites are included as "clean up complete". Three remaining sites are listed as "awaiting clean up" including: ITT Rayonier Paper Machine site, ITT Rayonier Hoquiam, and Grays Harbor Paper LP.

All three of these sites have the same associated documentation included with their applicable Ecology database webpages. These include: a Current Environmental Conditions Report (Landau Associates, Inc. [Landau] March 2017), a Preliminary Determination of Liability for Release of Hazardous Substances letter (Ecology May 2017), and a Final Determination of Liability for Release of Hazardous Substances letter (Ecology July 2018).

The Preliminary and Final Determination of Liability for Release of Hazardous Substances letters (Ecology 2017 & 2018, respectively) find Rayonier AM Properties LLC liable for a release of hazardous substances at this site based on "credible evidence" reviewed by Ecology. These letters do not provide detailed information about soil or groundwater investigations or associated analytical data and are not discussed further.

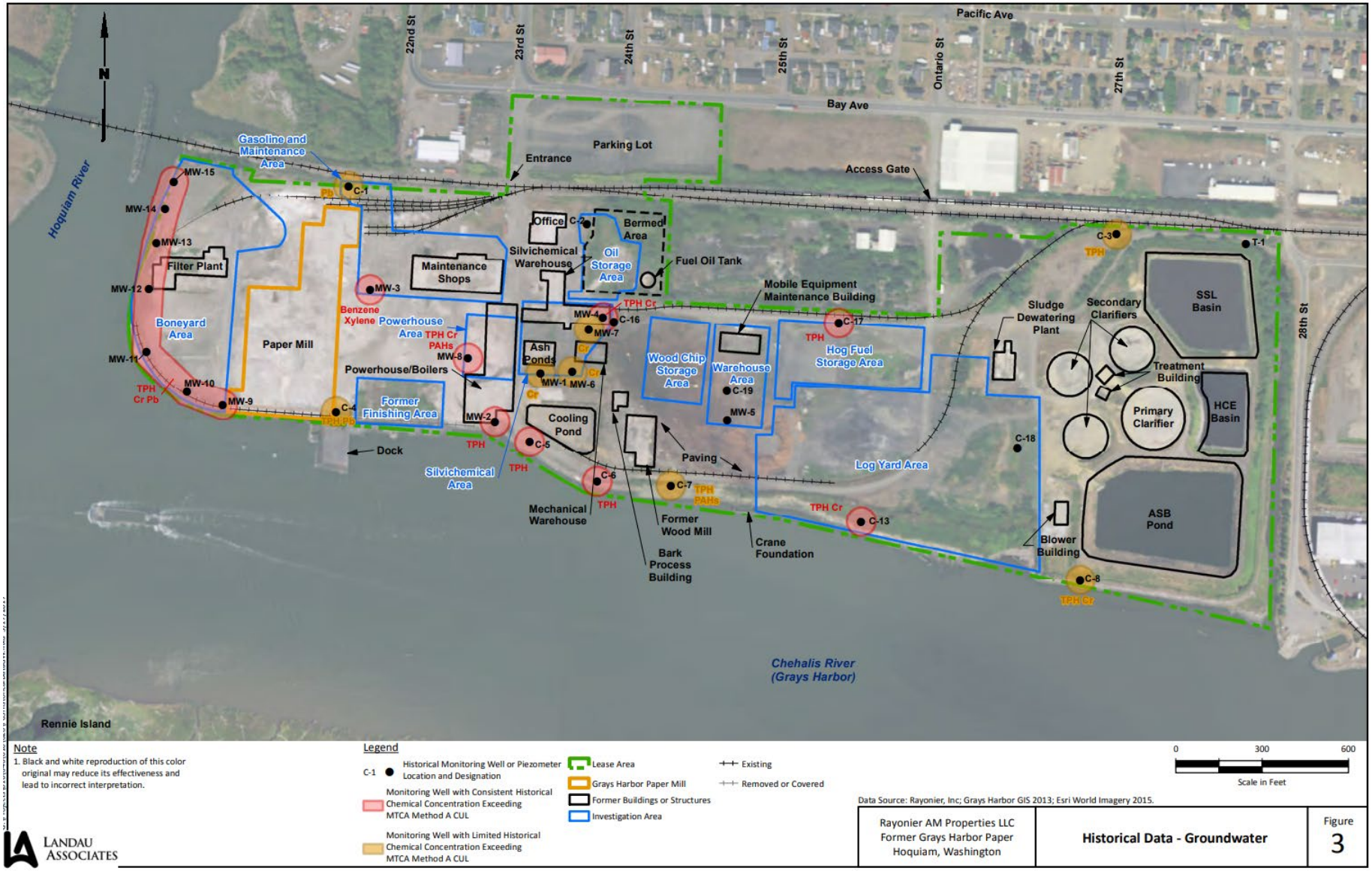
The Current Environmental Conditions Report prepared by Landau was intended to provide a frame of reference for environmental management decisions in the context of anticipated industrial redevelopment of the site at the time it was completed. The report includes discussion of Ecology sites with and without NFA closure and "other areas of interest". Historical chemical concentrations are compared to current MTCA cleanup levels in soil and groundwater in the report to identify sites that "may warrant further action, depending on the development of plans for property reuse". The following is a brief discussion related to sites with known soil and groundwater contamination at this site and soil and groundwater characterization available for sites of interest situated nearest to the Project site:

- Sites identified with existing contamination exceeding current MTCA Method A CULs are located on the west side of this site, most are more than 0.5 mile west of the Project site (See Figure 10).
- All sites are cross-gradient from the Project site.
- The nearest groundwater sampling location (C-8 – See Figure 10) showed previous concentrations of oil- and diesel-range petroleum hydrocarbons exceeding MTCA Method A CULs. This location is more than 700 feet from the Project site and is also cross gradient from the Project site.
    - This sampling location is identified as having "limited historical chemical concentrations exceeding MTCA Method A CULs".
    - Oil-range petroleum hydrocarbon concentrations were detected at 1,100 µg/L (above current MTCA Method A CULs of 500 µg/L) during a sampling event in 1994. All sampling events prior to the 1994 event have results that are "non-detect" for historical MTCA Method A CUL concentrations for oil-range petroleum hydrocarbons of 1,000 µg/L.
    - Diesel-range petroleum hydrocarbon concentrations were detected at 750 µg/L (above current MTCA Method A CULs of 500 µg/L) during a sampling event in 1994. Three previous sampling events in 1994 at this same site showed diesel-range petroleum hydrocarbon concentrations less than current MTCA Method A CULs. Two sampling events in 1993 at this same site showed diesel-range petroleum hydrocarbon concentrations above current MTCA Method A CULs (520 µg/L and 1,000 µg/L).

The "area of interest" nearest to the Project site identified in the report is the "Wastewater Treatment Plant and Basin Area". This is situated on the east end of the site and consists of a primary clarifier, three secondary clarifiers, a spent sulfite liquor (SSL) basin, a hot caustic effluent (HCE) basin, and an aeration sedimentation basin (ASB) pond.

- No soil sampling has been conducted in this area by Rayonier.
- Grays Harbor Public Utilities District (PUD) drained the ASB pond and collected bottom solids samples as part of a bottom-solids disposal effort in late 2014 to early 2015. Grays Harbor PUD subsequently excavated and removed bottom solids from the ASB pond and disposed of the bottom solids off site . Soil analytical data resulting from these activities is not available in the Landau Report.
- Groundwater has not been characterized directly within this site; however, the above-mentioned C-8 groundwater sampling location is downgradient of the wastewater treatment and basin area (See Figure 10).

FIGURE 10: FORMER GRAYS HARBOR PAPER MILL FACILITY – GROUNDWATER SAMPLE LOCATIONS (LANDAU 2016)



5.2.7. 520 Pontoon Construction Site - 1301 West Heron Street

Cargo yard relocation and expansion components of the Project are situated within the former WSDOT State Route (SR) 520 Pontoon Site. The SR 520 Pontoon Construction site (Pontoon site) located at 1301 West Heron Street was used by WSDOT between 2011 and 2015 for casting pontoons for the SR 520 bridge in Seattle. The Pontoon site was previously known as the Aberdeen Log Yard (ALY) and was owned and operated by Weyerhaeuser and various predecessors for lumber and sawmill operations from the early 1900s to the early 1990s prior to its use by WSDOT. “Pontoon site” and “ALY” are used interchangeably in this report depending on the reports and time periods referenced. For clarification purposes, these names reference the same site.

Various investigations at the site have resulted in the discovery of known and suspected contamination at the site. Several investigative reports were developed in association with various stages of the SR 520 Pontoon Construction Project including property acquisition, Project permitting and environmental assessment, and site closure. A review of associated reports for these investigations is summarized chronologically below.

WSDOT Phase II Environmental Site Assessment, Anderson & Middleton Property, Aberdeen Log Yard – CH2M HILL 2009a

CH2M HILL completed a Phase II ESA on behalf of WSDOT at this site in November 2009 in support of the alternative site selection for the SR 520 Pontoon Construction project. The objective of the Phase II ESA was to evaluate the potential for environmental contamination in the subsurface soil and groundwater from historical activities at the sites.

The Phase II ESA indicates that a Draft Hazardous Materials Alternative Site Screening Memorandum was completed by CH2M HILL in October 2008 for the ALY Property (CH2M HILL 2008). The purpose of the report was to evaluate the environmental conditions at the property. The report found the following potential “recognized environmental conditions” (RECs) at the ALY Property:

- Potential dioxins in the soil due to historical sawmill operations
- Potential chlorophenols, PAHs (polynuclear aromatic hydrocarbons), and metals from the presence of wood treatment chemicals
- Potential petroleum hydrocarbons, metals, chlorinated compounds, and PAHs from past industrial uses
- Potential offsite migration of contaminant(s) from adjacent properties
- Potential wood debris in nearshore sediments

The Phase II investigation included soil samples collected from soil cores using direct-push drilling and sampling methods (Figure 11). Soils were visually inspected and field screened for VOCs and total petroleum hydrocarbons using a photoionization detector. Samples were collected from the near surface (0 to 3 feet bgs) and just above the groundwater table (3 to 11 feet bgs). A total of twenty-four soil samples were collected from twelve soil borings at the ALY Property. The samples were analyzed for NWTPH-Gx; NWTPH-Dx; VOCs; metals; PCBs (shallow soil samples); and dioxins and furans (selected shallow soil samples).

Groundwater sampling was completed in December 2008 and again in January 2009. Groundwater was sampled from five temporary wells (ALY-SB-2, ALY-SB-3, ALY-SB-7, ALY-SB-11, and ALY-SB-1) during the 2008 site visit (Figure 11). These samples were analyzed for NWTPH-Gx; NWTPH-Dx; VOCs; metals; and PAHs (selected boring locations). Significant particulate matter in the groundwater was observed after the temporary wells had been purged at some of the sampling locations.

Additional samples were collected from existing monitoring wells and two additional piezometers in 2009 to confirm the December 2008 analytical results for metals in groundwater and to obtain geochemical parameters for potential dewatering system design and treatment (See Figure 11 for monitoring wells and

piezometer locations). These groundwater samples were submitted for analysis of total and dissolved metals, hexavalent chromium, total organic carbon (TOC), total dissolved solids (TDS), and total suspended solids (TSS).

For the 2008 Phase II ESA, the soil analytical data were compared to MTCA Method B CULs for soil. If no MTCA Method B CUL exists, then the MTCA Method A CUL was used (for example, petroleum hydrocarbons).

December 2008 Soil Results

- Benzo(a)pyrene (PAH compound) was detected in five of the twenty-four soil samples. The concentration of benzo(a)pyrene exceeded the MTCA Method B CUL of 0.14 mg/kg at soil boring ALY-SB-7 (10 to 11 feet bgs). Other PAH compounds were either not detected or detected at concentrations less than the MTCA CULs in the remaining samples.
- Gasoline-range petroleum hydrocarbons were detected in three of the twenty-four soil samples. Detected concentrations of gasoline-range petroleum hydrocarbons were less than MTCA Method A CULs.
- Diesel-range petroleum hydrocarbons were detected in eighteen of the twenty-four samples submitted for analysis. The detected concentrations ranged from 12 to 454 mg/kg. All detected concentrations of diesel-range petroleum hydrocarbons were less than the MTCA Method A CUL of 2,000 mg/kg.
- Oil-range petroleum hydrocarbons were detected in fifteen of the twenty-four samples at concentrations that range from 27.8 to 1,310 mg/kg. The detected concentrations of oil-range petroleum hydrocarbons were less than the MTCA Method A CUL of 2,000 mg/kg.
- Arsenic was detected in twenty-three of the twenty-four samples collected at the ALY property (at sample locations ALY-SB-1 through ALY-SB-12). Detected concentrations of arsenic ranged from 0.51 to 6.59 mg/kg, and sixteen of the twenty-three detected concentrations exceeded the MTCA Method B CUL of 0.67 mg/kg for arsenic.
- The background concentration for arsenic in soil is 8.47 mg/kg in the southwest region of Washington State (Ecology 1994). Arsenic concentrations were less than the MTCA Method A CUL of 20 mg/kg.
- Three shallow soil samples were analyzed for dioxins and furans at the ALY property. Toxicity equivalent (TEQ) values were calculated using toxicity equivalent factors (TEFs) for each compound (Van den Berg et al. 2006). No sample results detected concentrations of 2, 3, 7, 8-TCDD. There are no additional MTCA CULs for other dioxin/furans. Two samples had detected TEQ values of 0.043 and 0.8 pg/g.

Soil samples from the ALY property did not contain total petroleum hydrocarbons, VOCs, PCBs, dioxins/furans, or metals at concentrations greater than MTCA CULs or regional background concentrations. Of the twenty-four soil samples analyzed, only one soil sample AM-SB-7 (10 to 11 feet bgs and detected at 0.38 mg/kg) exceeded the MTCA Method B CUL concentration for benzo(a)pyrene of 0.14 mg/kg.

Other PAH compounds were also detected in sample AM-SB-7 (10 to 11 feet bgs) but did not exceed MTCA Method B CULs. Potential sources of PAHs in the environment include wood treatment chemicals, diesel exhaust, coal tar, burnt wood, and asphalt production. Possible sources of PAHs include historic activities such as wood treatment, burning hog fuel, and heavy diesel truck traffic. The data collected at the site does not appear to indicate that there is widespread PAH contamination of soils within the property.

December 2008 Groundwater Results

- VOCs, PAHs, and total petroleum hydrocarbons (gasoline-, diesel-, and oil-range) were either not detected or detected at concentrations less than MTCA CULs.
- The concentrations of the following metals were either not detected or detected less than MTCA CULs: antimony, barium, beryllium, cadmium, cobalt, copper, mercury, molybdenum, nickel, selenium, silver, thallium, titanium, and zinc.
- Arsenic was detected in all groundwater samples exceeding the MTCA Method B CUL of 0.058 µg/L (ALY-W-2, ALY-W-3, ALY-W-,7, ALY-W-11, and ALY-W-12). Concentrations of arsenic in groundwater ranged from 3.58 to 29.7 µg/L.
- Chromium was detected in all of the groundwater samples ranging from 7.43 to 144 µg/L. The concentration of two groundwater samples (ALY-W-3 and ALY-W-7) exceeded the MTCA Method A CUL of 50 µg/L.
- Three groundwater samples (ALY-W-3, ALY-W-7, and ALY-W-12) exceeded the MTCA Method A CUL for lead in groundwater of 15 µg/L.
- Manganese was detected at concentrations ranging from 1,210 to 5,130 µg/L. Samples collected from three groundwater monitoring locations (ALY-W-3, ALY-W-7, and ALY-W-12) exceeded the MTCA Method B CUL for manganese of 2,200 µg/L.
- Detected concentrations of vanadium in groundwater ranged from 17.5 to 399 µg/L with two groundwater samples (ALY-W-3 and ALY-W-7) exceeding the MTCA Method B CUL of 110 µg/L.

Groundwater samples taken in December 2008 did not contain levels of total petroleum hydrocarbons, VOCs, or PAHs at concentrations greater than MTCA CULs. Detected concentrations of arsenic, chromium, lead, manganese, and vanadium exceeded MTCA CULs for groundwater. Arsenic exceeded MTCA Method B CULs in all samples. Concentrations of chromium and vanadium exceeded MTCA CULs in groundwater at borings ALY-SB-3 and ALY-SB-7. Detected concentrations of manganese and lead exceeded MTCA CULs at borings ALY-SB-3, ALY-SB-7, and ALY-SB-12.

Dissolved metal samples were not taken during the December 2008 sampling event. The December 2008 groundwater samples were collected from temporary wells where more suspended solids were observed in the samples. There is the potential that the relatively high metal concentrations are due to elevated turbidity and suspended solids in the groundwater samples. Additional groundwater sampling, completed in January 2009 showed that lower turbidity samples also had reduced metal concentrations. There were no CUL exceedances observed in the groundwater samples collected for this investigation. There were no CUL exceedances of applicable metals' CULS in soil samples analyzed for this investigation. .

January 2009 Groundwater Results

Two groundwater samples were collected from piezometers (from about 23 to 33 feet and from 30 to 40 feet bgs) at the ALY property in 2009. The groundwater samples were analyzed for total and dissolved metals, hexavalent chromium, and general chemistry parameters including TOC, TSS, and TDS. Results are summarized below.

- Concentrations of total metals were either not detected or detected less than MTCA Method B CULs, except for total arsenic.
- Detected concentrations of arsenic ranged from 1.78 to 3.02 µg/L. The concentrations of arsenic in both samples analyzed exceeded the MTCA Method B CUL for arsenic in groundwater of 0.058 µg/L but were lower than concentrations observed during previous sampling events. There is the potential that the relatively lower concentrations of metals in the groundwater samples collected in January 2009 was due to lower amounts of turbidity in the samples as these samples were collected from existing piezometers and monitoring wells that have been developed, and samples were collected using low-flow sampling techniques to reduce the suspended solids in the samples.

- Hexavalent chromium was detected in one of the two groundwater samples at the ALY site (H-2P-08) at concentrations less than MTCA Method B CUL of 50 µg/L.

FIGURE 11: ALY PHASE II ESA –SAMPLE LOCATIONS (CH2M HILL/WSDOT 2009)

Source: WSDOT (2006) Aerial Photo and Grays Harbor County (2007) GIS Data (Streets). Horizontal datum for all layers is State Plane Washington South NAD 83, vertical datum for layers is NAVD88.

INTERNAL USE ONLY-DRAFT

- Piezometer Sample Location, January 2009
- Soil Sample Location, December 2008
- Direct Push Soil and Groundwater Sample Location, December 2008
- Project Alternative Site

Figure 2-2. **Aberdeen Log Yard Phase II ESA Sampling Locations**

SR 520 Pontoon Construction Project

Washington State Department of Transportation

\\SIMBA\PROJ\PARAMETRIX\180171\GIS\MAPFILES\PONTOON\SPECIALREQUESTS\HAZARDOUSMATERIALS\SITEINVERSTIGATIONPHASE2\PON_TM_HZ_SPR_ALY_SGRWTSMPE_PHASE2.MXD PON_TM_HZ_SPR_ALY_Fig2-2_SGRWTSMPE_PHASE2.PDF 2/17/2009

Supplemental Soil and Groundwater Investigation Report, Anderson & Middleton Property, Aberdeen Log Yard Property – CH2M HILL November 2009b

CH2M HILL prepared a *Supplemental Soil and Groundwater Investigation Report* (Supplemental Investigation Report) at the ALY for WSDOT in November 2009. The report summarized additional groundwater and soil data collected from the site relative to the nature and extent of contamination in subsurface soil in select areas of the ALY where historical activities impacted the site. The supplemental investigation was a follow-up to the Phase II ESA discussed above.

Additional samples (Figure 12) were collected from ALY during the supplemental investigation to investigate contamination observed during other evaluations, including the geotechnical baseline study conducted in July 2009 and the cultural resources investigation conducted in September 2009.

The supplemental investigation report also presents the results of groundwater samples collected in July and August of 2009 during pumping tests conducted at ALY. The following is a summary of these investigations.

Soil samples were obtained from cores collected from the southwest and northeast portions of the ALY property where previous contamination was encountered visually inspected for signs of contamination as well as field screened for VOCs and petroleum hydrocarbons using a PID.

2009 Cultural Resources Test Trench Investigation Follow-up (2009) Results

The cultural resources test trench investigation in September 2009 identified a creosote odor, soil staining, and groundwater sheen at ALY-SB-17 and an unidentified white viscous liquid was observed at ALY-14TP (both locations are situated on the east side of the site). Soil samples were collected at both locations during the supplemental investigation and were analyzed for PAHs and total petroleum hydrocarbons. ALY-SB-17 was also analyzed for VOCs.

- PAH concentrations detected were less than MTCA Method B CULs.
- VOCs were not detected.
- Neither diesel- or heavy oil-range petroleum hydrocarbons were detected in either of these samples.

Groundwater was sampled downgradient of both locations at ALY-13 and cross-gradient at ALY-18 (See Figure 12). Both groundwater samples were analyzed for total petroleum hydrocarbons and total and dissolved metals. ALY-18 was also analyzed for PAHs.

- ALY-13 had total metals (arsenic and manganese) detections at concentrations greater MTCA Method B CULs
- Both ALY-13 and ALY-18 had dissolved metals (arsenic and manganese) detections at concentrations greater MTCA Method B CULs
- The only PAH detected was 1-methyl naphthalene (at ALY-18), which does not have a MTCA Method B CUL established. No other PAHs were detected.

Soil and groundwater analytical results did not confirm the cultural resource investigation observations, although localized areas of soil and groundwater contamination are likely to exist throughout the site, according to the supplemental site investigation report.

Geotechnical Investigation Follow-up (2009) Results

During a geotechnical investigation in July 2009, a sheen, floating layer on the groundwater surface, and stained soil were observed at monitoring well H-30PA-09 (Landau 2009). During the Supplemental Investigation, petroleum contaminated soil was observed in soil borings at approximately 8 feet bgs within a few feet of piezometer H-30PA-09 and again approximately 40 feet north of piezometer H-30PA-09 (Figure 12).

Borings were drilled upgradient, cross-gradient, and downgradient of H-30PA-09 until no evidence of petroleum contaminated soil was observed (borings ALY-SB13, ALY-SB14, ALY-SB15, and ALY-SB16). Petroleum hydrocarbons were not detected in groundwater sampled downgradient of the identified petroleum contamination at ALY-13. Soil and groundwater results are summarized below.

- Eight groundwater samples were collected at the ALY property during the 2009 supplemental investigation: ALY-SB3, ALY-SB12, ALY-13, ALY-14, ALY-15, ALY-16, ALY-18, and ALY-19. ALY-SB3 and ALY-SB12 are two locations that were sampled during the previous Phase II investigation.
    - Four total metals (arsenic, chromium, lead, and manganese) exceeded MTCA Method B CULs at samples locations as follows:
        - Arsenic and Manganese (total) exceeded MTCA Method B CULs at all of the 2009 groundwater sampling locations.
        - Total Chromium concentrations were greater than MTCA Method B CULs at ALY-15
        - Total Lead concentrations were greater than MTCA Method B CULs at ALY-15 and ALY-16
    - Three dissolved metals (arsenic, lead, and manganese) exceeded MTCA Method B CULs as follows:
        - Dissolved arsenic and manganese concentrations were greater than MTCA Method B CULs at each of the 2009 groundwater sampling locations.
        - Dissolved lead concentrations were greater than MTCA Method B CULs at ALY-16
    - Dissolved copper exceeded surface water quality criteria (SWQC) at two sample locations (ALY-16 and ALY-18).
    - Dissolved lead exceeded SWQC in one sample location at ALY-16.
    - Diesel-ranged petroleum hydrocarbons were detected in two samples but did not exceed the MTCA Method A CUL.
    - The only PAH detected was 1-methyl naphthalene (at ALY-18), which does not have a MTCA Method B CUL established. No other PAHs were detected.
- A total of twelve soil samples were collected and analyzed for total petroleum hydrocarbons.
    - Diesel-range petroleum hydrocarbons were detected in five of the twelve samples (all between 0 and 4 ft bgs) however no concentrations were greater than MTCA Method A CULs.
    - Heavy oil-range petroleum hydrocarbons were detected in six of the twelve soil samples. No heavy oil-range petroleum hydrocarbon concentrations were greater than MTCA Method A CULs.

The extent of petroleum contaminated soil around piezometers H-30PA-09 and H-30PA-09 was delineated through analysis of soil samples collected from several borings in the southern portion of the site in the vicinity of piezometer H-30PA-09 (ALY-SB13 through ALY-SB16). The extent of petroleum contaminated soil measured approximately 50 feet by 70 feet by 6 feet deep. Groundwater was sampled downgradient of this location and petroleum hydrocarbons were not detected.

Aquifer Test Investigation (2009) Results

An aquifer test was also conducted at the ALY property in July 2009 at Pumping Well #1 (PW-1-09 within the southern central portion of the site). Two water samples were collected and submitted for analytical testing including VOCs, dissolved metals, alkalinity, and hardness.

- All VOCs were detected less than or at detection limits with the exception of acetone and 2-butanone (in samples PW-1-09-S1 and PW-1-09-S1). The suspected source of acetone and 2-butanone detections are the PVC glue used during pumping well installation.
- Dissolved arsenic concentrations were greater than MTCA Method B CULs at PW-1-09-S1, and PW-1-09-S2
- Two additional samples were collected analyzed for VOCs on August, 6 2009: PW-1-F3 (from PW-1-09) and PW-1-Tank (from the on-site steel tank holding the pumped water). Acetone was the only analyte detected (PW-1-F3), with a concentration slightly greater than the detection limit.

The supplemental investigation reports states that additional localized areas of soil and groundwater contamination may be present based on field observations during the archeological test trench investigation conducted in September 2009. During test trench excavations two potential locations of contamination were identified based on visual observations. Soil and groundwater analytical results did not confirm the cultural resource investigation observations.

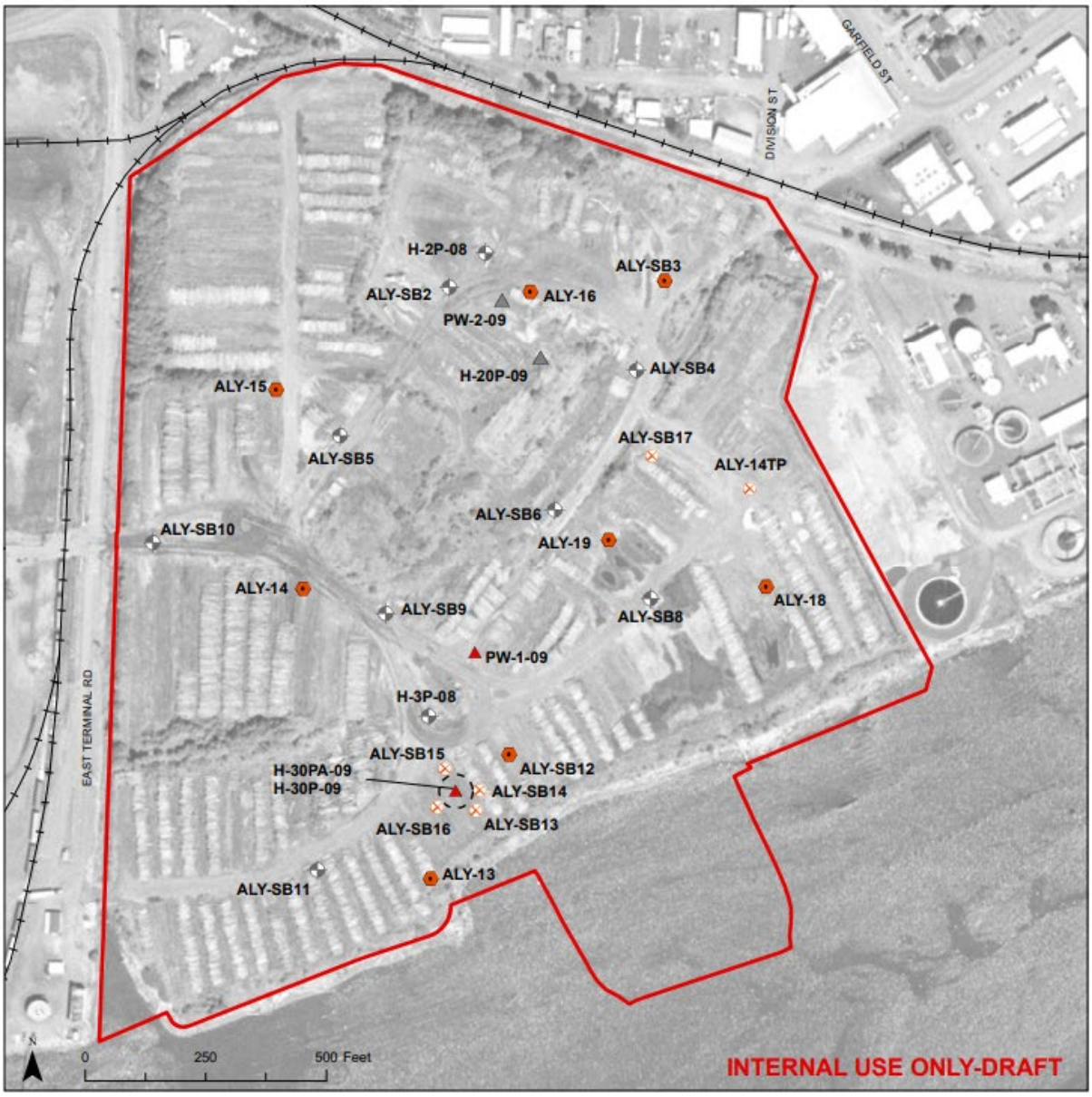
Laboratory analysis of groundwater samples collected during the Phase II ESA and from the Supplemental Investigation indicated that at least a portion of the groundwater pumped from the ALY property may require additional treatment and/or offsite disposal at the time it was developed by WSDOT (2010 - 2011) for casting basin construction (particularly true in the vicinity of H-30PA-09 where petroleum hydrocarbons were observed, and at ALY-16 where elevated metals concentrations, including lead and copper, have been detected).

The 2009 supplemental investigation identified potentially contaminated areas at the Pontoon Construction site including areas associated with piezometers H-30PA-09 and H-30PA-09 in the southwest portions of the site and pumping well PW-1-09 in the north eastern portion of the site. The investigation did not confirm the presence of contamination associated with indications of potential contamination identified during the cultural resources test trench on the eastern portion of the site.

General contaminants of concern and areas associated with potential contamination are summarized below:

- Total and dissolved lead and manganese in groundwater were identified at concentrations greater than MTCA Method B CULs were identified throughout much of the site (with the exception of the very north and very western portions where groundwater samples were not obtained).
- Total and dissolved lead greater than MTCA Method B CULs were identified in soil samples in the northwestern portion of the site.
- Diesel-range petroleum hydrocarbons were detected in soil between 0 and 4 ft bgs (at concentrations less than MTCT Method B CULs) in the southwestern portion of the site.
- Heavy oil-range petroleum hydrocarbons were detected in soil between 0 and 8 ft bgs (at concentrations less than MTCT Method B CULs) in the southwestern portion of the site.

FIGURE 12: ALY SUPPLEMENTAL SOIL AND GROUNDWATER INVESTIGATION –SAMPLE LOCATIONS (CH2M HILL/WSDOT 2009)



- Groundwater Sampling Location, September 2009
- Boring Location, September 2009
- Pumping Well Sample Location, July and August 2009
- Phase II ESA Sampling Location, December 2008 and January 2009
- Geotechnical Baseline Study, Landau 2009
- Approximate Extent of Petroleum Contaminated Soil, September 2009
- Build Alternative Site

Source: WSDOT (2006) Aerial Photo and Grays Harbor County (2007) GIS Data (Streets). Horizontal datum for all layers is State Plane Washington South NAD 83; vertical datum for layers is NAVD88.

Figure 2-2. **Aberdeen Log Yard Supplemental Soil and Groundwater Investigation, September 2009**

Pontoon Construction Project

Washington State Department of Transportation

\\SIMBA\PROJ\PARAMETRIX\180171\GIS\MAPFILES\PONTOON\SPECIALREQUESTS\HAZARDOUSMATERIALS\SSGR\PON_SR_HAZ_SSGR_ALY.MXD 11/2/2009

Hazardous Materials: SR 520 Pontoon Construction Project Final Environmental Impact Statement – December 2010

Section 3.3 of the SR 520 Pontoon Construction Project Environmental Impact Statement (EIS) provides a summary of environmental investigations up to late 2010. Results of the Phase II ESA and Supplemental Soil and Groundwater Investigation are covered in the two other environmental reports previously summarized in this document. The following additional information was included in Section 3.3 of the EIS:

Weyerhaeuser interoffice communication: Excavation of Contaminated Soil Report (Weyerhaeuser Company 1997)

An interoffice communication titled *Excavation of Contaminated Soil Report* was prepared by Charlie Barrett for Dennis Davies, both with Weyerhaeuser Company (Weyerhaeuser Company 1997). The field investigation included soil samples collected in the vicinity of an approximately 50-gallon hydraulic oil release from a log-stacking machine. Hydraulic oil was spilled onto the ground surface in the north-central portion of the property. Approximately 16 cubic yards of petroleum-contaminated soil was excavated and removed from the site. Groundwater was not encountered during soil excavation. Laboratory test results concluded that concentrations of heavy oil- and diesel-range petroleum hydrocarbons in soil were not detected at concentrations greater than the method detection limits in any of the six soil samples collected from the bottom of the excavation.

Storm Water Pollution Prevention and Monitoring Plan for Weyerhaeuser Company Harbor Port Sort Yard

A Storm Water Pollution Prevention and Monitoring Plan for Weyerhaeuser Company Harbor Port Sort Yard was prepared by Thomas Scheidman, Jr. of Weyerhaeuser as part of Weyerhaeuser's National Pollutant Discharge Elimination System (NPDES) permit number S03-002762 in July 1996 and updated in October 2007 (Weyerhaeuser 2007). Under Section 2.10, Significant Spills or Leaks of Toxic or Hazardous Pollutants, the following events were reported:

- Weyerhaeuser performed a site assessment in 1992 and 1993. "As a result of that assessment, hydrocarbon contaminated ground was excavated and removed by Olympus Environmental Incorporated in 1993 – 1995." The report stated that approximately 50 to 100 gallons of used lubricating oil being stored in drums was spilled during drum removal operations. The site map indicated the spill occurred north of the property.
- "A hydraulic oil spill of approximately 100 gallons occurred in May 1997." The incident report, Excavation of Contaminated Soil Report, is discussed above.
- "Another hydraulic oil line spill of 20 gallons occurred on 2/18/98. The contaminated soils were removed and site assessment indicated that the total petroleum hydrocarbons of the soils in the spill area was non-detectable." No additional report regarding this spill was provided.

Kiewit-General Memo to WSDOT: Notification Pursuant to MTCA – Discovery of Contamination at Aberdeen Log Yard – August 29, 2011

A Kiewit-General memo reported the discovery of free product (heavy oil and diesel) during earth work activities to construct a stormwater detention pond (Pond 2) near the southwest corner of the casting basin. Approximately 8 tons of contaminated soil were excavated to construct Pond 2. The contaminated soil was disposed of off-site. Confirmation samples collected at the limits of the excavation showed concentrations less than regulatory action levels.

Kiewit-General noted further that petroleum product was noted flowing from a depth of 4 feet from the sidewall of an exploratory test pit situated approximately 4 feet from Pond 2. This test pit was situated near the location of the geotechnical boring containing the free product.

Ecology Early Notice Letter (July 13 - Ecology 2015a) and Ecology Initial Investigation Field Report (July 7 - Ecology 2015b)

An Initial Investigation of the site was conducted by Ecology on 7 July 2015. The Initial Site Investigation Field Report indicates the following

- A Phase II ESA (completed in February 2009 by CH2M HILL) identified benzo(a)pyrene at concentrations greater than the MTCA method A CULs in soil.
- May 2010 Geology and Soils Technical Memorandum (completed for WSDOT) documented floating petroleum in one of the borings at the ALY site. The Initial Site Investigation Field Report concludes that “given the free produced noted in groundwater at the site” it is recommended for listing on the CSCL .

The Early Notice Letter Regarding Release of Hazardous Substances (dated 13 July 2015) indicates that during the initial site investigation Ecology “found free petroleum in groundwater and PAHs in soil at the site”

The site was added to the CSCL as a result of the investigation. The letter does not indicate that WSDOT was identified as a potentially liable person (PLP). Ecology reported finding free petroleum product in groundwater and PAHs in soil during their investigation. Neither the Initial Site Investigation Report nor the Early Notice Letter characterize the constituents of the free petroleum identified (i.e., gasoline-, diesel-, or oil-range petroleum hydrocarbons). Ecology indicated they may conduct a site hazard assessment and at that time will assess whether action will be needed and establish a priority for work.

WSDOT Letter to Scott Rose at Ecology – December 2, 2015

WSDOT issued this letter to Scott Rose at Ecology in accordance with Washington Administrative Code (WAC) 173-340-300 to inform Ecology of the discovery of soil contamination within right-of-way owned by WSDOT. The letter summarizes results of soil investigations in the vicinity of pentachlorophenol (PCP)-treated light poles that appeared to be leaching contaminants into the surrounding soils.

Five of the total twenty-seven light poles at the sites were selected to represent all poles throughout the site (Figure 13). Sampling activities consisted of collecting soil samples from soil borings approximately 2 feet from each of the selected light poles. Two soil samples were collected at each location (from ground surface and from approximately 8 feet below the surface). Analyses included NWTPH-Dx, semi-volatile organic compounds (SVOCs), and Resource Conservation and Recovery Act (RCRA) 8 Metals.

A total of nine soil samples (PLP – 1A, PLP – 1B, PLP – 2A, PLP – 2B, PLP – 3A, PLP – 3B, PLP – 4A, PLP – 4B, and PLP – 5A) were collected as discreet grab samples from the five boring locations, consisting of five surface samples (1A – 5A) collected directly adjacent to each light pole approximately 6 inches bgs, and four subsurface samples (1B-5B) collected at depths ranging from 8 to 10 feet bgs. The subsurface samples were collected at distances ranging from 18 to 27 inches away from each light pole. Groundwater was encountered at location PLP-03 at approximately 4 feet bgs, and a visible petroleum sheen was observed.

Individual chemical constituents detected in each soil sample were compared to applicable CULs and/or dangerous waste thresholds to characterize the soil for reuse or disposal.

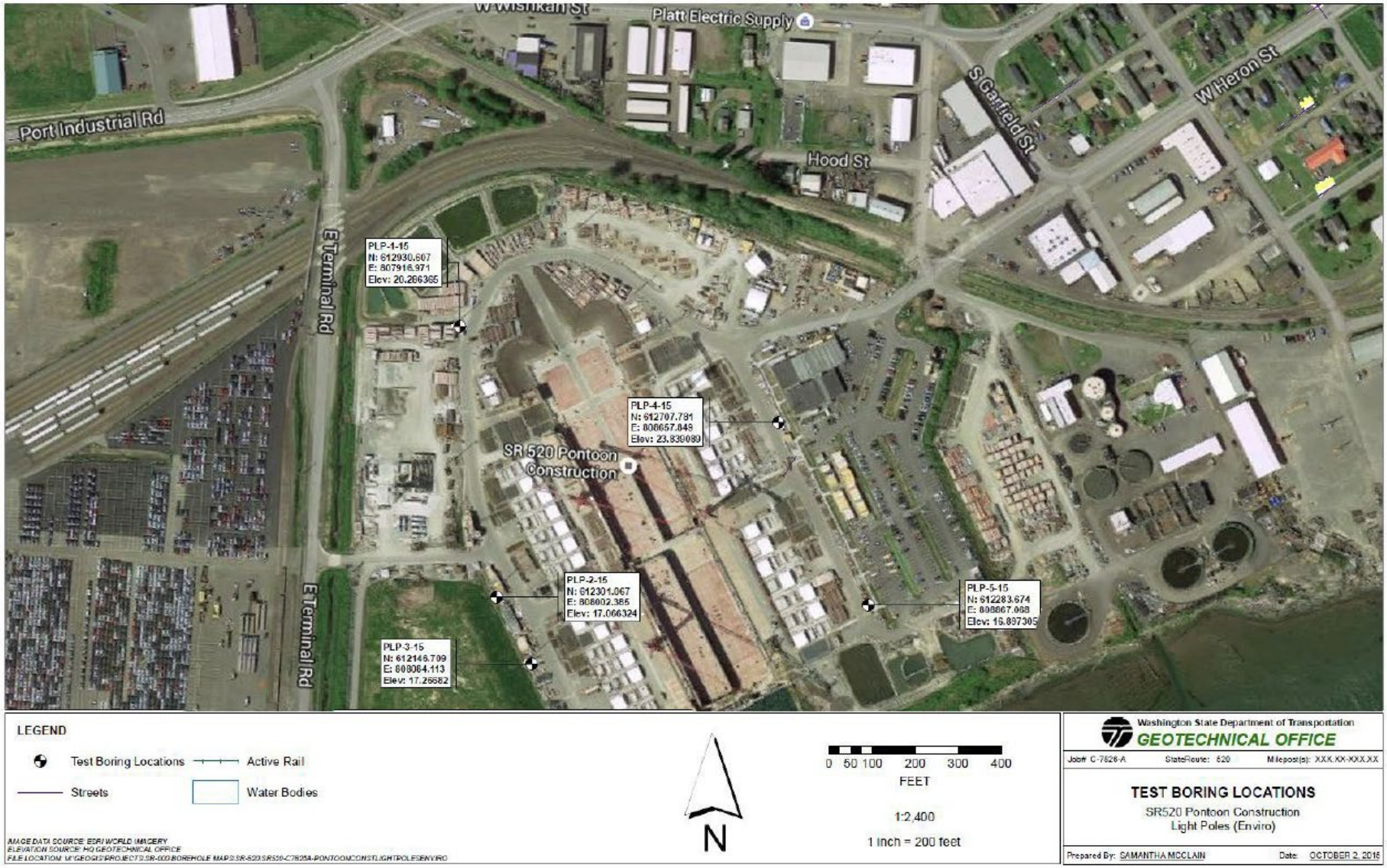
- Lube oil was detected in each surface sample (PLP-1A through PLP-5A) at concentrations ranging from 18,000 mg/kg to 70,000 mg/kg, greater than the MTCA Method A CUL of 2,000 mg/kg. Lube oil was also detected in two subsurface samples (1B and 4B) with concentrations less than MTCA Method A CULs.
- PCP was detected in each surface sample (PLP-1A through PLP-5A) at concentrations ranging from 68 mg/kg to 980 mg/kg exceeding the MTCA Method B CULs of 2.5 mg/kg, as referenced in the 2015 Cleanup Levels and Risk Calculation table. A Toxicity Characteristics Leaching Procedure (TCLP) was requested for samples 2A, 4A, and 5A to determine if the soils surrounding the light poles would need to be managed as dangerous waste in

accordance with Washington Administrative Code (WAC) 173-303-090. The TCLP results identified concentrations at 1.5 mg/kg, 0.91 mg/kg and 1.7 mg/kg, respectively, less than the dangerous waste threshold of 100 mg/kg.

- Barium, chromium, and lead were detected at concentrations less than the MTCA Method A and Method B CULs, or near background levels found in Washington state.

Results showed that lube oil was detected in each of the surface soil samples at concentrations greater than regulatory levels. Lube oil was detected in the deeper samples but was not detected at concentrations greater than regulatory levels. Similarly, PCP concentrations in surface soil samples contained concentrations greater than regulatory levels and deeper soil samples did not contain PCP concentrations greater than regulatory levels. Groundwater was observed at a depth of 4 feet bgs. A petroleum-related sheen was observed in the groundwater at one of the soil boring locations. No groundwater samples were collected.

FIGURE 13: SR 520 PONTOON SITE CONSTRUCTION LIGHT POLES – TEST BORING LOCATIONS



Results of Subsurface Aberdeen Soil Investigation, February 28, 2011 – Compared to MTCA Method A Soil Criteria for Unrestricted Land Use – Floyd Snyder, 7 March 2011

It should be noted that investigative reports review above were completed in advance of the development of the SR 520 Pontoon Construction Project. The Project site has since been redeveloped.

As part of the SR 520 Pontoon Construction Project material excavated for construction of the casting basin was stockpiled and remains on the Project site (See Figure 2). The Project proposes using existing stock-piled material to backfill the casting basin for redevelopment of the Project site.

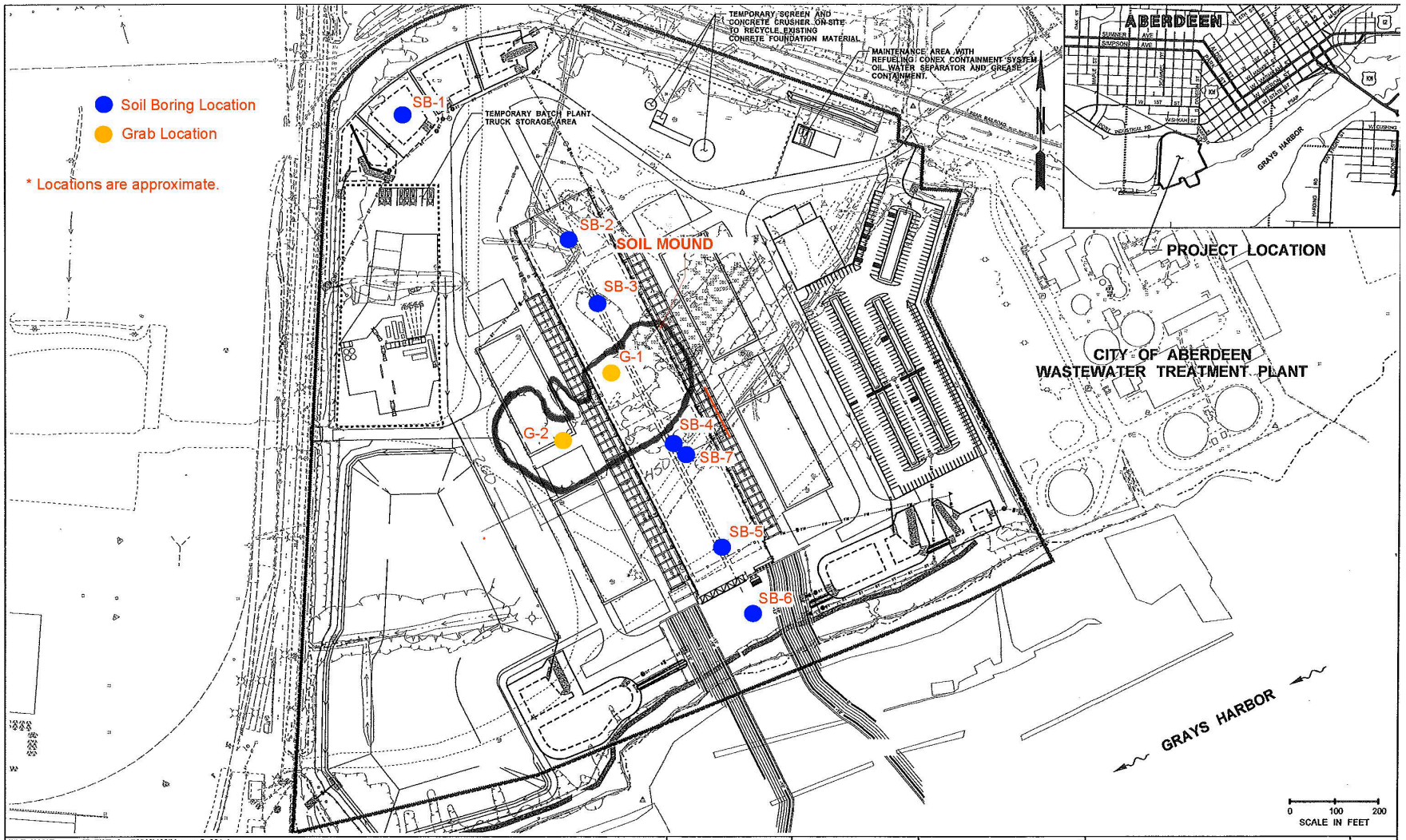
Floyd Snyder presented a letter to Mike Shaw with Kiewit Infrastructure detailing the analytical results of the soil investigation at the SR 520 Pontoon Construction Design-Build Project Site. On February 28, 2011, Floyd|Snider conducted a soil investigation to characterize the chemical quality of soil that will be excavated from the Site for disposal suitability purposes.

Floyd Snyder installed seven direct-push soil borings and collected two discrete grab samples from above grade should mound located in the center of the proposed casting basin footprint (See Figure 14). Samples were submitted for analyses for the following constituents by the methods indicated below:

- Model Toxics Control Act (MTCA) Metals; As, Cd, Cr, Cu, Pb, and Hg, (USEPA Method 6010/7471)
- Semivolatile organics (USEPA Method 8270)
- Volatile organics (USEPA Method 8260)
- Total petroleum hydrocarbons—diesel and oil range (NWTPH-Dx)
- Total petroleum hydrocarbons—gasoline range (NWTPH-Gx)

All results were compared to Washington State MTCA Method A soil cleanup levels for unrestricted land use. There were detections but no exceedances of MTCA Method A criteria in any sampled location.

FIGURE 14: SR 520 PONTOON SITE – PRE-CONSTRUCTION SOIL CHARACTERIZATION SAMPLE LOCATIONS (FLOYD SNIDER)



5.2.8. Terminal 4 Berth Sediment Characterization

Sediment characterization was completed for maintenance dredging at the Terminal 4 berth in October 2021. The characterization was completed in general accordance with a Dredged Material Management Program (DMMP) approved project sampling and analysis plan. Contaminants of concern either were not detected or were detected at concentrations less than the DMMP criteria. The dredged material from the Terminal 4 berth is suitable for in-water placement, upland placement, and/or beneficial use and the post dredge surface is suitable for unconfined, aquatic exposure[1] based on the chemical analytical results.

[1] The Port has been testing sediment from within the Terminal berths since the 1990s. Based on the historical sediment characterization results and historical use of the site there is no reason to believe that the concentrations of contaminants of concern increase with depth.

6. Summary Findings

The sites provided in Table 7 were found to represent RECs in the Phase I ESA conducted by HDR and discussed in Section 4. These sites have been further investigated by reviewing publicly available documents from Ecology's database and site-specific reports provided by the Port. Table 7 provides an overview of the sites that represent potential concern for the Project (Moderate Impact), and those that have been identified as unlikely to represent potential concern (Low Impact).

TABLE 7: POTENTIAL SITES OF CONCERN – RISK ASSESSMENT

Map ID	Listed Business and Associated Address	Description and Site Ranking
1	Port Industrial Road Former Bulk Fuel Facility - 3115 Port Industrial Road	**Site of Potential Concern - Moderate Impact** Position Relative to Project Site: Upgradient. Situated immediately adjacent (to the north and south) to rail upgrade components on the west end of the Project site. Ecology Status: Awaiting Clean Up. Contaminants: Impacts to soil include non-halogenated organics - non-halogenated solvents, benzene, diesel- and gasoline-range petroleum hydrocarbons, Groundwater impacts include non-halogenated organics - non-halogenated solvents, metals, and diesel- and gasoline-range petroleum hydrocarbons. Rationale for Site Ranking: Position relative to and proximity to Project site. Known contaminant concentrations in groundwater are generally limited to the east portion of this property; however, groundwater contamination has not been fully delineated. The extent to the north (towards the rail spur) to the south (along Port Industrial Road) and to the east has not been determined.
2	Pettit Oil 820 Myrtle Street	**Site of Potential Concern – Moderate Impact** Position Relative to Project Site: Upgradient. Situated immediately adjacent (to the north and south) to rail upgrade components on the west end of the Project site. Ecology Status: Clean Up Started. Contaminants: Soil impacted with benzene and gasoline-, diesel-, and oil-range constituents greater than the Method A CUL (generally found between 1 and 7 feet bgs). Contaminated groundwater containing diesel-range and gasoline-range constituents and benzene exceeding the Method A CUL. Rationale for Site Ranking: Position relative to and proximity to Project site. Known soil and groundwater contamination exceeding applicable MTCA Method A CULs.
3	POGH Property – Across From 820 Myrtle Street	**Site of Potential Concern – Low Impact** Position Relative to Project Site: Cross gradient. Ecology Status: Awaiting Clean Up. Contaminants: Non-Halogenated Organics - Petroleum Products-Unspecified (suspected in soil, confirmed in surface water according to Ecology's database). Rationale for Site Ranking: Position relative to and proximity to Project site (cross gradient).
4 & 5	Hoquiam Bulk Plant/ Pettit Oil 640 700	**Site of Potential Concern – Moderate Impact** Position Relative to Project Site: Upgradient.

Map ID	Listed Business and Associated Address	Description and Site Ranking
	720 Myrtle Street – 700 Myrtle Street	Ecology Status: Hoquiam Bulk Plant - Not Listed. Pettit Oil 640 700 720 Myrtle Street – Cleanup Started. Known contaminants: Gasoline, diesel, benzene, ethyl benzene, and xylene at concentrations greater than their respective MTCA Method A CULs in soil. Gasoline, diesel, heavy oil, and benzene at concentrations greater than their respective MTCA Method A CULs in groundwater Rationale for Site Ranking: Position relative to and proximity to Project site. Sample results have previously shown that groundwater contamination had migrated off-site to the southeast. Repeated monitoring at the site has shown constituents of concern at concentrations greater than MTCA CULs.
6	City Aberdeen Water Shop - 101 W Heron Street	**Site of Potential Concern – Moderate Impact** Position Relative to Project Site: Upgradient. Ecology Status: Cleanup Started. Known contaminants: Lead exceeding MTCA Method A CULs in soil. Lead and diesel- and heavy oil-range petroleum hydrocarbons were detected at concentrations greater than the associated MTCA Method A CUL. Rationale for Site Ranking: Position relative to and proximity to Project site. Known constituents of concern at concentrations greater than MTCA CULs.
7	Former Grays Harbor Paper Mill Facility – 801 23rd Street	**Site of Potential Concern – Low Impact** Position Relative to Project Site: Cross gradient. Ecology Status: Awaiting Clean Up. Known contaminants: Oil- and diesel-range petroleum hydrocarbons exceeding MTCA Method A CULs in groundwater (monitoring well locations greater than 700 west of the Project site). Rationale for Site Ranking: Position relative to and proximity to Project site - cross gradient, known contaminated soils greater than 0.5 mile west of Project site, groundwater monitoring well locations greater than 700 west of the Project site. Monitoring well sites identified as “having limited historical chemical concentrations exceeding MTCA Method A CULs”.
8	520 Pontoon Construction Site - 1301 W Heron Street.	**Site of Potential Concern – Low Impact** Position Relative to Project Site: Within Project footprint. Ecology Status: Cleanup Started. Known contaminants: concentration of benzo(a)pyrene exceeded the MTCA Method B CUL. Chromium, lead, manganese, vanadium concentrations in excess of the MTCA Method A CUL in groundwater. Lube oil was detected in surface soil samples at concentrations greater than MTCA Method A CUL associated with PCP-treated light poles. Rationale for Site Ranking: Lube oil concentrations at concentrations greater than MTCA cleanup levels in soil are isolated to areas in the immediate vicinity of PCP-treated light poles. Limited amounts of excavation (related to stormwater utilities) is proposed at the SR 520 Pontoon Construction Site within this area.

7. Conclusions

Four sites in the vicinity of the Project have been identified as having a moderate potential to impact the Project Site:

- Port Industrial Road Former Bulk Fuel Facility
- Pettit Oil 820 Myrtle Street
- Hoquiam Bulk Plant / Pettit Oil 640 700 720 Myrtle Street – 700 Myrtle Street
- City Aberdeen Water Shop

A summary of these sites (including contaminants of concern within the sites) is included in Table 8 below.

TABLE 8: MODERATE RISK SITES - SUMMARY

Map ID	Listed Business and Associated Address	Description and Site Ranking
1	Port Industrial Road Former Bulk Fuel Facility - 3115 Port Industrial Road	Upgradient. Situated immediately adjacent (to the north and south) to rail upgrade components on the west end of the Project site. Gasoline -range concentrations greater than the CUL in soil from a depth of 8 feet to 16 feet bgs. Gasoline- and diesel-range petroleum hydrocarbons, benzene, and lead above the MTCA Method A CUL in groundwater
2	Pettit Oil 820 Myrtle Street	Upgradient. Situated immediately adjacent (to the north and south) to rail upgrade components on the west end of the Project site. Gasoline- and diesel- range petroleum hydrocarbons and benzene concentrations exceeding the MTCA Method A CUL in soil between 5 and 7 ft bgs. Oil-range petroleum hydrocarbons below MTCA Method A CULs in soils between 1 and 5 ft bgs. Gasoline-, diesel-, and oil-range petroleum hydrocarbons, benzene, and total lead in concentrations exceeding the MTCA Method A CUL in groundwater.
4 & 5	Hoquiam Bulk Plant/ Pettit Oil 640 700 720 Myrtle Street – 700 Myrtle Street	Upgradient. Gasoline- and diesel-range petroleum hydrocarbons, benzene, ethyl benzene, and xylene above their respective MTCA Method A CULs in soil between 2 and 5 feet bgs. Gasoline-, diesel-, and heavy oil-range petroleum hydrocarbons and benzene above their respective MTCA Method A CULs in groundwater.
6	City Aberdeen Water Shop - 101 W Heron Street	Upgradient. Diesel- and heavy oil-range petroleum hydrocarbons , and total lead detected at concentrations greater than the associated MTCA Method A CUL in soil between 3 and 5 ft bgs. Total lead detected at concentrations greater than the associated MTCA Method A CUL in groundwater.

7.1. No Action Alternative

Under the no-action alternative, impacts related to hazardous materials from the construction of the proposed action would not occur. The applicant would continue to operate its existing facility as described in the Project Description Technical Report.

The risk of exposure would primarily be related to routine handling and storage of hazardous materials for the purposes of Port operations (e.g., operational vehicle fuel, oil filters, used oil, solvents/cleaning agents, etc.). This would be similar to existing conditions. Minor releases of hazardous materials could occur during routine operations as the result of human error or minor equipment failure. It is anticipated that these releases would be small and easily contained within existing containment structures and/or with standard best management practices for spill response, containment, and clean up that are currently administered by on-terminal workers/employees.

The Port and AGP would continue to comply with applicable regulations to implement safety and spill prevention and response protocols to reduce the release of hazardous materials (including but not limited to the Occupational Safety and Health Administration standards pertaining to hazardous materials (29 CFR 1910 Subpart H).

7.2. Alternative 1 (Proposed Action)

7.2.1. Operations

Under the Proposed Action (similar to the no action alternative) the risk of exposure would primarily be related to routine handling and storage of hazardous materials for the purposes of Port operations. Minor releases of hazardous materials could occur during routine operations as the result of human error or minor equipment failure. It is anticipated that any releases would be small and easily contained within existing containment structures and/or with standard best management practices for spill response, containment, and clean up that are currently administered by on-terminal workers/employees.

The Port and AGP would continue to comply with applicable regulations to implement safety and spill prevention and response protocols to reduce the release of hazardous materials (including but not limited to the Occupational Safety and Health Administration standards pertaining to hazardous materials (29 CFR 1910 Subpart H).

7.2.2. Construction

The sites identified above have known contamination at concentrations greater than applicable MTCA CULs and are situated upgradient of the Project Site. Soil and groundwater contamination has either been: 1) identified within the immediate vicinity of Project components; 2) has been demonstrated to have migrated off the source site; or 3) has not been fully delineated and has the potential to have migrated.

The Proposed Project would not directly impact adjacent properties which are the source of potential contamination and thus would not result in the disturbance of potential contamination confined within those properties. There is some potential for disturbance of potential contamination where it has been demonstrated that hazardous materials may have migrated off of their source properties.

Construction personnel may have the potential to encounter contaminated soil and/or groundwater at the site related to contamination originating from the above listed properties, particularly in areas along the northeast and northwest portion of the Project area adjacent to the above listed sites. In general, contaminated soil (where present) is likely to be encountered in excavations extending from approximately 5 feet bgs to 12 feet bgs. Construction personnel have the potential to encounter potentially contaminated groundwater where site excavations extend to the groundwater surface (approximately 5 feet bgs).

A site-specific hazardous materials management plan is recommended to address potential contaminant exposure and characterization, handling, and disposal requirements.

Three of the originally identified sites of potential concern have been more thoroughly reviewed and are unlikely to represent low-moderate or higher sites of concern:

- POGH Property - Across From 820 Myrtle Street
- Former Grays Harbor Paper Mill Facility
- SR 520 Pontoon Construction Site

The POGH Property and Former Grays Harbor Paper Mill Facility are cross-gradient from the Project site and there is a low potential that the project area is impacted from contamination originating from these sites based on assumed groundwater flow direction.

Limited excavation (related to stormwater utilities) is proposed at the SR 520 Pontoon Construction Site. Lube oil has detected in surface soil samples (in the immediate vicinity of PCP-treated light poles) at concentrations greater than MTCA Method A CULs.

The risk of exposure resulting from construction activities would limited to routine handling and storage of hazardous materials for the purposes construction (equipment related fuel, lube oil, hydraulic fluid, etc.). Minor releases of hazardous materials could occur during construction activities as the result of human error or minor equipment failure. It is anticipated that any releases would be small and easily contained within existing containment structures and/or with standard best management practices for spill response, containment, and clean up. Standard BMPs would be implemented to prevent release of hazardous materials into the environment (including but not limited to a contractor-developed Spill, Prevention, Control, and Countermeasure (SPCC) Plan to be used for the duration of the project).

8. Recommendations

The Project proponents can minimize risk to the Project associated with encountering hazardous materials by (1) using special provisions, a hazardous materials management plan, or similar plan to account for uncertainties that may impact the project schedule or budget and/or (2) complete site soil and groundwater characterization in areas to be excavated at the project site prior to the project start date.

Moffatt & Nichol recommends use of special provisions to account for potentially encountering hazardous materials at the project site. Recommendations for a hazardous materials management plan and/or site characterization are provided below.

The Project's special provisions should address notification, handling, and disposal of hazardous materials if they are encountered at any point during project construction. The implementation of these special provisions can help to mitigate project delays and costs if hazardous materials are encountered unexpectedly or in association with conditions at sites identified in this report as sites of concern and/or sites of potential concern.

A site-specific hazardous materials management plan is recommended to address potential contaminant exposure and characterization, handling, and disposal requirements in areas where known and suspected contamination has been identified (Sites 1, 2, 4, 5, and 6 in Table 8 and shown on Figure 3[2]).

In areas where dewatering will occur, it is also recommended that that water be characterized for handling, disposal, or discharge purposes in areas where dewatering will occur.

[2] This includes stockpiled material associated with the former SR 520 Pontoon Construction project unless a previously conducted chemical characterization report is provided and shows that stockpiled material does not contain contaminants of concern at concentrations greater than MTCA Method A CULs.

Disclaimer

Moffatt & Nichol devoted effort consistent with (i) the level of diligence ordinarily exercised by competent professionals practicing in the area under the same or similar circumstances, and (ii) the time and budget available for its work, to ensure that the data contained in this report is accurate as of the date of its preparation. This study is based on estimates, assumptions and other information developed by Moffatt & Nichol from its independent research effort, general knowledge of the industry, and information provided by and consultations with the client and the client's representatives. No responsibility is assumed for inaccuracies in reporting by the Client, the Client's agents and representatives, or any third-party data source used in preparing or presenting this study. Moffatt & Nichol assumes no duty to update the information contained herein unless it is separately retained to do so pursuant to a written agreement signed by Moffatt & Nichol and the Client.

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This study is qualified in its entirety by, and should be considered in light of, these limitations, conditions and considerations.

9. References

Aspect Consulting Inc. (Aspect). 2004. Referenced throughout as (Aspect 2004 in Stantec 2015) Soil Remediation Report Pettit Oil Company 820 Myrtle Street Facility, Hoquiam, Washington, dated January 26, 2004.

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APPENDIX A: PHASE 1 ENVIRONMENTAL SITE ASSESSMENT

Technical Memorandum

Date:	Wednesday, October 26, 2022
Project:	Port of Gray's Harbor Terminal 4 Rail Loop Project
To:	Lisa Danielski, HDR
From:	Charlie O'Neill, HDR
Subject:	Environmental Site Assessment Port of Grays Harbor, Aberdeen, Washington

Introduction

This Technical Memorandum presents an Environmental Site Assessment (ESA) for the Port of Grays Harbor Terminal 4 Rail Loop project (**Figure 1**). The purpose of this ESA is to identify environmental liabilities on or immediately adjacent to the project site herein referred to as the subject property (**Figure 1**). This ESA is intended to support a future Phase I ESA which will be prepared in accordance with the ASTM E 1527-21 standard to provide landowner liability protection under CERCLA Parts 101 and 40 CFR 312. The goal of the processes established by ASTM E 1527-21 is to identify recognized environmental conditions (RECs). The term recognized environmental condition means:

1. The presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment;
2. The likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or
3. The presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment.

Scope of Services

The services provided for this ESA consisted of the following:

- Providing a description of the subject property including current land uses.
- Reviewing reasonably ascertainable and reviewable regulatory information published by federal, state, local, health, and/or environmental agencies pertaining to the subject property.
- Reviewing historical data sources for the subject property and close vicinity, including aerial photographs, topographic maps, and other readily available development data.
- Preparing a written report of methods and findings.

The scope of services for this ESA did not include:

- Conduct of a site visit
- Preparation of a description of the topography, soils, geology, and groundwater flow direction

- Review of fire insurance maps
- Interview(s) current owners or knowledgeable site contacts regarding fuel tanks, environmental conditions, and complaints or violations at or adjacent to the Subject Property
- Collection of samples for laboratory analysis.

Significant Assumptions

HDR has made certain assumptions in preparing the scope of this ESA:

- Data gathered from public information sources (i.e., databases or public regulatory agencies) are accurate and reliable.
- Subject Property use reflects site conditions relative to potential releases and no intentional concealment of environmental conditions or releases has occurred.
- Regulatory information is limited to sites discovered after the late 1980s because reliable records were not kept by regulatory agencies prior to that time frame.

Environmental Records Review

In June 2022, an Environmental Data Resources, Inc. (EDR) environmental database records search was performed to identify facilities within 1 mile of the Subject Property (**Appendix A**) which generate and/or store hazardous materials or where a release of hazardous materials has occurred. The databases searched included the standard federal, state, local, and tribal databases (EDR, 2021).

The EDR database is effective at identifying contaminated sites, but generally ineffective on providing much detail on the magnitude and extent of soil/groundwater contamination. Greater detail on the magnitude of the release (if any), and whether the release presents a risk to the Subject Property, was researched based on review of publicly available documents on the State of Washington Department of Ecology Cleanup Sites database.

For each release site listed in the EDR report, an assessment was made to determine if past releases of chemicals could impact the Subject Property. The assessment included an opinion of the potential for contamination by hazardous substances or petroleum products to migrate to the Subject Property from an adjoining or nearby site, including by vapor migration or encroachment (i.e., potential for a vapor encroachment condition. Based on this evaluation, the following individual facilities were identified as the most likely potential sources of impact to the Subject Property. The findings of the environmental records from the EDR report, presented by database, are listed below and identified on **Figure 2**.

LUST Sites:

Records review identified 27 LUST sites within a half mile of the subject property. Twenty-five of these sites were greater than 500-feet from the subject property. Two of these sites were within 500-feet, both of which were issued a no further action letter. The sites are as follows:

- Grays Harbor Transportation Authority - 705 30th Street
- Hoquiam School District 28 Transp Coop - 3030 Bay Avenue

UST Sites:

Records review identified 10 UST sites that appear to be on properties adjoining the subject property. The review did not identify any USTs on the subject property.

Solid Waste Facilities/Landfill Sites

Three solid waste landfill facilities or landfill sites were identified within a half mile radius of the subject property. These are either recycling or biosolids facilities. These facilities are not expected to impact to the subject property.

Brownfields

There are 15 Brownfield sites withing a half mile radius of the subject property, all of which are greater than 500-feet from the subject property.

Confirmed and Suspected Contaminated Sites List – State Hazardous Waste Sites

There are 56 state hazardous waste sites listed within 1 mile of the subject property. Thirty-seven of these sites had contamination in groundwater above cleanup levels with another 10 sites having suspected groundwater contamination. Four of the sites are within 500-feet of the subject property and are listed as awaiting cleanup or cleanup started. These four sites have documented soil and groundwater impacts that may impact the subject property. These sites are as follows:

- Port Industrial Road Former Bulk Fuel Facility - 3115 Port Industrial Road
- Pettit Oil 820 Myrtle Street - 820 Myrtle Street
- Pogh Property - Across From 820 Myrtle Street
- Hoquiam Bulk Plant - 700 Myrtle Street
- Pettit Oil 640 700 720 Myrtle Street – 700 Myrtle Street

Confirmed and Contaminated Sites - No Further Action

There are 21 facilities listed in the EDR report withing 1 mile of the subject property that are undergoing cleanup or are awaiting further investigation and/or cleanup. Eight of these sites are either within 500-feet of the subject property or are in a location that may have the potential to impact to the subject property. Suspected impacts include both soil and groundwater. These sites are as follows:

- BPA Aberdeen Substation - 628 Myrtle Street
- Grays Harbor Port Us Oil Tank Farm - Port Industrial 1st Street
- Grays Harbor Transportation Authority - 705 30th Street
- Hoquiam School District 28 Transp Coop - 3030 Bay Avenue
- Jacob Fred Living Trust Property - 117 S Monroe Street
- Paneltech - 2999 John-Stevens Way
- Pettit Oil Port Dock - 2616 Industrial Road
- Quigg Brothers Mcdonald - Lincoln Street & BN RR

ALLSITES - Facility/Site Identification System Listing

The ALLSITES database lists basic information on facilities and sites of interest to the Department of Ecology. The data provided in this dataset does not have sufficient detail to assess the potential presence of contamination on the subject property and is not practically reviewable.

ECHO Enforcement & Compliance History Information

The ECHO database provides integrated compliance and enforcement information for regulated facilities nationwide. The EDR report list 33 facilities in the ECHO database withing a half mile of the subject property. Eleven of these facilities are either on or are withing 500-feet of the subject property. The data in the ECHO system is not practically reviewable for an expedited site screening.

Hazardous Sites List – HSL: State Superfund Equivalent Sites

There are 23 facilities listed in the EDR report within 1 mile of the subject property. Of these facilities, one site is within 500-feet of the subject property with a status of cleanup started. This site is also listed in the CSCSL database with confirmed soil and groundwater impacts above cleanup levels and may have impacts on the subject property. This site is as follows:

- Hoquiam Bulk Plant - 700 Myrtle Street

Independent Cleanup Reports ICR

The ICR database lists sites that have submitted remedial action reports to the Department of Ecology. This is a legacy database that is no longer updated by the Department of Ecology. There are 20 facilities listed in the ICR database in the EDR report within 1 mile of the subject property. One site is within 500-feet of the subject property located at 3030 Bay Avenue. This site is listed in other databases and has received no further action letters. The site listed at 3030 Bay Avenue is not expected to have impacts on the subject property.

RCRA - Large Quantity Generators

The RCRA-LQG database lists one large quantity generator which is located on an adjoining property. This site is also listed on other databases listed in the EDR report with documented soil and groundwater impacts that may impact the subject property. This site is as follows:

- Paneltech International LLC - 2999 John Stevens Way

RCRA – Very Small Quantity Generators

The RCRA-VSQG database list the subject property Grays Harbor Port – 2305 Industrial Road as a generator. This is not expected to have an impact to soil or groundwater.

Reported Spills - SPILLS

There were 22 facilities with reported spills within 1 mile of the subject property. Seven of the spills are reported within 500-feet or in an area that may impact the subject property. One of the seven spills was geographically plotted on the subject property at 28th and John Stevens Way Near Warehouse #8. This spill was 13 gallons of oil to an impermeable surface and is considered de minimis. The other 6 spill sites had limited information or were reported at facilities that are listed on other databases. The seven spill sites of interest are as follows:

- Hoquiam Bulk Plant - 700 Myrtle Street
- Hoquiam School District 28 Transp Coop - 3030 Bay Avenue
- Masco Petroleum - 200 Myrtle Street
- BPA Aberdeen Substation 2 - 862 Myrtle Street
- Contanda Terminal LLC Hoquiam - 3128 Port Industrial Road
- 28th & John Stevens Way near Warehouse #8
- Paneltech - 2999 John Stevens Way

Underground Injection Wells Listing -UIC

There are two listings in the UIC database that are located within one half mile of the subject property. No specific information was identified about these two listings.

Voluntary Cleanup Program Sites -VCP

There are twelve facilities listed in the VCP database of the EDR report. Four of these facilities are located within 500-feet or in an area that may impact the subject property. These four sites are listed in other databases already reviewed and are as follows:

- Hoquiam School District 28 Transp Coop - 3030 Bay Avenue
- Panel Tech International LLC - 2999 John Stevens Way
- Pettit Oil 640 700 or 720 Myrtle Street - 700 Myrtle Street
- Pettit Oil 820 Myrtle Street - 820 Myrtle Street

Fuels Program: EPA Fuels Program Registered Listing

One facility is listed under the Fuels Program in the EDR report. The REG Grays Harbor LLC listed at 3122 Port Industrial Road is noted as a refiner of biodiesel and renewable diesel.

State of Washington Department of Ecology Database Review

To supplement the EDR report listings, HDR reviewed the State of Washington's Department of Ecology website to assess the presence of chemical release sites in the vicinity of the Subject Property. Release sites of interest are described below:

Former Grays Harbor Paper Mill Facility – 801 23rd Street. This site contains several release sites in various stages of cleanup. The eastern side of this site, which is adjacent to the Subject Property, was the location of a wastewater treatment plant and basin area. According to Current Environmental Conditions Report for this facility dated March 20, 2017, this area consisted of a primary clarifier, three secondary clarifiers, a spent sulfite liquor pond, a hot caustic effluent basin and an aeration sedimentation basin pond. According to this report, TPH and total chromium exceeding the cleanup levels were detected in the groundwater in the wastewater treatment plant and basin area. Soil data was insufficient. Due to the highly industrialized use of this property, the proximity to the Subject Property, and the likely presence of contaminants migrating to the Subject Property, the presence of contaminants on the Subject Property from this site is a REC.

Former Bulk Fuel Facility 3115 Port Industrial Road. This site is awaiting cleanup. Impacts to soil include non-halogenated organics - non-halogenated solvents, benzene, TPH-D and TPH-G. Groundwater impacts include non-halogenated organics - non-halogenated solvents, metals, TPH-D and TPH-G. The likely presence of contaminants on the Subject Property from this site is a REC.

Pettit Oil - 820 Myrtle Street. Cleanup has started at this site. Contaminant types include non-halogenated organics and unspecified petroleum products in soil and groundwater. The likely presence of contaminants on the Subject Property from this site is a REC.

Port of Grays Harbor Property. Adjacent to 820 Myrtle Street. This site is listed as awaiting cleanup. This site has suspected unspecified petroleum contamination and confirmed unspecified petroleum surface water contamination. No impacts are reported for groundwater. Because contamination is not reported in groundwater, this site is not likely to have impacted the Subject Property.

Pettit Oil Bulk Plant - 640 700 720 Myrtle Street and Hoquiam. This is an adjoining property with two sites that share the same address of 700 Myrtle Street. The Pettit Oil site is listed on the Department of Ecology website with documented soil and groundwater contamination above cleanup levels. Cleanup is listed as started. The likely presence of contaminants on the Subject Property from this site is a REC.

Panel Tech International LLC - 2999 Jon Stevens Way. This is an adjoining property and is listed as a no further action site. The Department of Ecology website lists non-halogenated organics – phenolic compounds above cleanup levels at the site. In 2010, the site was issued a no further action letter.

Pettit Oil Port Dock - 2616 Industrial Road. This site is listed as a no further action site. The Department of Ecology website lists non-halogenated organics – petroleum products-unspecified as being remediated. In 2004, the site was issued a no further action letter. The exact location of the release is not identified by the Department of Ecology; however, the release location is likely near the oil dock in Gray's Harbor and near the Subject Property.

520 Pontoon Construction Site - 1301 W Heron Street. This is an adjoining property and is listed as cleanup started and includes the Aberdeen Log Yard. This site has documented non-halogenated organics - polycyclic aromatic hydrocarbons in soil above cleanup levels. The site has documented metals and petroleum products above cleanup levels in groundwater. The likely presence of contaminants on the Subject Property from this site is a REC.

City Aberdeen Water Shop - 101 W Heron Street. This is an adjacent property and is listed as cleanup started. This site is a LUST site. Documented contaminants in the soil include lead above the cleanup levels with benzene, other non-halogenated organics, petroleum -gasoline, and petroleum other contaminants being suspected. There is suspected petroleum-diesel and petroleum-other contaminates in the groundwater. The likely presence of contaminants on the Subject Property from this site is a REC.

Quigg Brothers McDonald - Lincoln Street & BN Railroad. This site is an adjoining property and is listed as no further action. The Department of Ecology website lists the contaminant at this site as non-halogenated organics - petroleum products-unspecified with soil being remediated and

groundwater being suspected. The likely presence of contaminants on the Subject Property from this site is a REC.

Grays Harbor Transportation Authority - 705 30th Street. This site is an adjoining property and is listed as a no further action site. The Department of Ecology website report lists petroleum-diesel as the contaminant and soil as the only media affected. The soil was remediated to below cleanup levels. In 2012, the site was issued a no further action letter. Due to the age of the release, the distance to the Subject Property and because the release was limited to soil, the presence of contaminants on the Subject Property from this site is unlikely.

Hoquiam School District 28 Transportation Cooperative - 3030 Bay Avenue. This adjoining property is listed as a no further action site. The Department of Ecology website report lists non-halogenated organics – petroleum - other as the contaminant and soil as the only media affected. The soil has been remediated to below cleanup levels. In 1999, the site was issued a no further action letter. Due to the age of the release, the distance to the Subject Property and because the release was limited to soil, the presence of contaminants on the Subject Property from this site is unlikely.

Grays Harbor Port US Oil Tank Farm - Port Industrial at 1st Street. This adjoining property is listed as a no further action site. The Department of Ecology website report lists non-halogenated organics – petroleum products-unspecified as the contaminant with impacts to soil, groundwater, and surface water. The DOE website states that the contaminants have been remediated. In 2002, the site was issued a no further action letter.

Historical Use Information

The objective of reviewing historical use information is to develop a history of previous land uses in the vicinity of the Subject Property and to assess if these uses may impact the Subject Property with respect to by hazardous substances or petroleum products. Historical sources were reviewed that were readily available and reviewable and likely to provide useful information. Historical information is contained in **Appendices B and C**.

Aerial Photographs

Aerial Photo Decade Packages were obtained and included in **Appendix B** for the purpose of identifying historical land uses which have a potential to contaminate soil and/or groundwater in the vicinity of the Subject Properties (EDR, 2022b). Each photograph year depicts the entire Subject Property. The findings of the aerial photograph review are summarized below:

1950's – two photographs were provided from 1953. Near the western boundary, two marine berths are depicted extending from Gray's Harbor to Port Industrial Road. Log rafts are observed within and outside of these marine berths. Five large white cylindrical tanks are shown immediately west of Myrtle Street and north of Port Industrial Road. Between Myrtle Street and West 1st Street and north of Port Industrial Road, another five large white cylindrical tanks are shown. At the northeast intersection of Port Industrial Road and West 1st Street, one cylindrical tank is observed. A rail line is depicted north of Port Industrial Road and a portion of the Subject Property from Mrytle Street to approximately 1500 feet wet is occupied by railroad. A rail line is also depicted from south Thornton Street to south Adler Street along the Subject Property. At least three buildings associated with a

sawmill is observed at South Division Street at Grays Harbor. From South Division Street to South Adler Street, several small buildings are observed between the shoreline and the rail line.

1970's – six photographs are provided from the 1970's; two from 1971, two from 1974 and two from 1975. The 1971 photograph shows two marine terminals near the western boundary extending from Gray's Harbor to Port Industrial Road. Abundant material storage is observed on the west and east sides of the marine berths. Log rafts and ships are observed within and outside of these marine terminals. Eight large white cylindrical tanks are shown immediately west of Myrtle Street and north of Port Industrial Road. Between Myrtle Street and West 1st Street and north of Port Industrial Road, another five large white cylindrical tanks are shown. The single cylindrical tank observed at the northeast intersection of Port Industrial Road and West 1st Street, is no longer present and several buildings occupy the location. North of the Subject Property, a rail line is depicted north of Port Industrial Road. Near the eastern boundary, a sawmill is located at the shoreline of Gray's Harbor near South Division Street.

Near the eastern boundary, East Terminal Road is now present and provides access to a terminal located in Gray's Harbor with a large cargo loading area which extends from Gray's Harbor to Port Industrial Road. The former sawmill located at the shoreline of Gray's Harbor near South Division Street has been converted to a cargo loading area. A large log raft is observed in Gray's Harbor at this location. From South Division Street to South Adler Street and south of the rail line, the shoreline of Gray's Harbor has been extensively developed with buildings.

The 1974 photograph shows log rafts are present in the western marine berths and in Gray's Harbor. The cargo storage area located between East Terminal Road and to the west of Commerce Street has been expanded. The marine berth at this location has been expanded as well. A single cylindrical tank is located at the south end of East Terminal Road. The increased resolution of this photograph indicates that the cargo storage in this area is stacked logs which extend from the west of Commerce Street to South Garfield Street. A small water treatment facility is located south of South Garfield Street. An elongate building is now present south of the rail line between South Monroe Street and south Lincoln Street. Debris piles are located along the shoreline between South Garfield Street and South Adler Street.

The 1975 photograph shows similar features as the 1974 photograph.

1980's – two photographs 1981 were provided. This photograph shows the western marine berth near 28th Street has been filled and is no longer present. A wastewater treatment plant is now located immediately west of 28th Street. From 28th Street to East Terminal Road and south of Port Industrial Road, the land use is primarily for storage of what appears to be cut and stacked lumber. Several buildings are located along the south side of Port Industrial Road. East of East Terminal Road, a new sawmill facility has been constructed and a portion of the shoreline south of South Divisions Street, has been filled. The small wastewater treatment facility located south of South Garfield Street has been expanded. Debris piles are located along the shoreline between South Garfield Street and South Adler Street.

1990's - two photographs 1990 were provided. This photograph shows that the remaining marine berth is no longer being used and a levee has separated the marine berth from Gray's Harbor. The sawmill located south of South Division Street appears to be idle, despite some stacks of processed lumber in the area.

2000's - photographs 2006 and 2009 were provided. The 2006 photograph shows both marine berths completely filled and no longer used for shipping. The tank farms observed in the 1971 photograph near Myrtle Street and north of Port Industrial Road and those at West 1st Street and north of Port Industrial Road are no longer present. The inventory of cut and stacked lumber has been greatly reduced from what was observed in 1990. Three square shaped buildings are observed immediately west of East Terminal Road. The sawmill located east of East Terminal Road has been removed and a few stacks of cut lumber are present. The wastewater treatment facility expanded with addition of a fifth aeration basin. Debris piles are located along the shoreline between South Garfield Street and South Adler Street.

The 2006 photograph shows approximately 12 cylindrical tanks and a second set of 4 cylindrical tanks with piping connecting the tanks to the marine terminals are observed adjacent to West Terminal Way. Rail line construction is observed on the west and south of the Subject Property to and along East Terminal Road with connection to the rail line at South Thornton Street. No other significant changes were observed.

2010's - photographs 2013 and 2017 were provided. The 2013 photograph shows approximately 8 new cylindrical tanks with piping connecting the tanks to the adjacent marine terminal. South of the rail line and west of East Terminal Road is occupied with rows of what appears to be automobiles for import/export. Rail line construction is observed with several parallel tracks west of East Terminal Road. The area east of East Terminal Road has been repurposed to a large commercial complex. The debris piles formerly located along the shoreline between South Garfield Street and South Adler Street have been removed and the area appears to be paved. No other significant changes were observed.

The 2017 photograph shows no significant changes since 2013, except that the large commercial complex east of East Terminal Road has been demolished.

Topographic Maps

Topographic maps for the years 1953, 1957, 1992 and 1994 were reviewed for the purpose of identifying historical land uses and/or uses which have a potential to contaminate soil and/or groundwater at or in the vicinity of the Subject Property (**Appendix C**). The findings of the aerial photograph review are summarized below:

1953 – This map is at a scale of 1:250,000 and shows Aberdeen as being developed as identified by red shading on the map. The surrounding areas are depicted as undeveloped and unshaded with a single rail line and a single highway both trending east / west across the city. The map also displays what appears to be marine berths for the Port of Grays marine terminal.

1957 - This map is at a scale of 1:250,000 and shows Aberdeen as being developed as identified by red shading on the map. A single rail line and a single highway both trending east / west across the city. The surrounding areas are depicted as undeveloped and unshaded with. The map also displays what appears to be marine berths for the Port of Grays marine terminal.

1992 - This map is at a scale of 1:100,000 and shows Aberdeen as being developed as identified by a gridded network of surface streets and gray shading. A single rail line and a single highway both trending east west across the city The surrounding areas are depicted as undeveloped and

unshaded with. The map also displays what appears to be marine berths for the Port of Grays marine terminal and minor rail spurs from the main railroad tracks trending east/west.

1994 - This 7.5 minute series map is at a scale of 1:24,000 and shows Aberdeen as being developed as identified by a gridded network of surface streets and gray shading. A single rail line and a single highway both trending east west across the city The surrounding areas are depicted as undeveloped and unshaded with. The map also displays marine berths for the Port of Grays marine terminal and numerous minor rail spurs from the main railroad tracks trending east/west. Within the Port of Grays Harbor, several large buildings are depicted as are several isolated water bodies west of 28th Street.

Findings

HDR conducted a review of records to assess the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment which could impact planned rail improvements at the Port of Gray's Harbor. This TM summarizes the review of environmental databases, a review of historical data sources, a summary and review of previous site investigations and reports; and review of several documents with information pertaining to properties with known contamination. The following findings based on information gathered consist of the following:

1. In the vicinity of Myrtle Street at Port Industrial Road there are several sites with documented chemical releases (**Figure 2**). Due to the number of reported releases in this area, there is a likely presence of hazardous substances or petroleum products in this portion of the subject property.
2. From at least 1953 to present, a railroad is present on the west and east ends of the subject property. Historically, railroad lines have been found to be impacted by herbicides, metals, constituents of oil or fuel, PCBs, and wood preservatives such as creosote. The potential exists that historic rail lines could be impacted from these constituents. After 2006, additional rail lines were constructed on the subject property. These newer rail lines are less likely to be impacted by hazardous substances or petroleum products.
3. The following sites which are describe above, have the potential to have contaminated the subject property resulting in RECs:
    a. Former Grays Harbor Paper Mill Facility – 801 23rd Street
    b. 520 Pontoon Construction Site - 1301 W Heron Street
    c. Former Bulk Fuel Facility 3115 Port Industrial Road
    d. Pettit Oil - 820 Myrtle Street
    e. Pettit Oil Bulk Plant - 640 700 720 Myrtle Street and Hoquiam
    f. Quigg Brothers McDonald - Lincoln Street & BN Railroad
    g. City Aberdeen Water Shop - 101 W Heron Street

References

EDR, 2022a. EDR Area / Corridor Report, PoGH Terminal 4 Rail Loop, Aberdeen, WA 98520. Inquiry Number 7029955.6s. June 27

EDR, 2022b. The EDR Aerial Photo Decade Package, PoGH Terminal 4 Rail Loop, Aberdeen, WA 98520. Inquiry Number 7029955.3. June 28

USGS, 1992. Chehalis River, Washington Topographic – Bathymetric Map, Scale 1:100,000.

USACE, 1957. Hoquiam, United States Scale 1:250,000.

USACE, 1953. Hoquiam, United States Scale 1:250,000.

USGS, 1957. Aberdeen, WA. Scale 1:24000, 7.5 minute series, revised 1994.

Figures

0 Miles 0.5

FIGURE 1

SITE LOCATION MAP

PORT OF GRAYS HARBOR, ABERDEEN, WASHINGTON

PATH: C:\PORT OF GRAYS HARBOR\MXD\01 SITE LOCATION MAP.MXD - USER: WRITTER - DATE: 10/20/2022

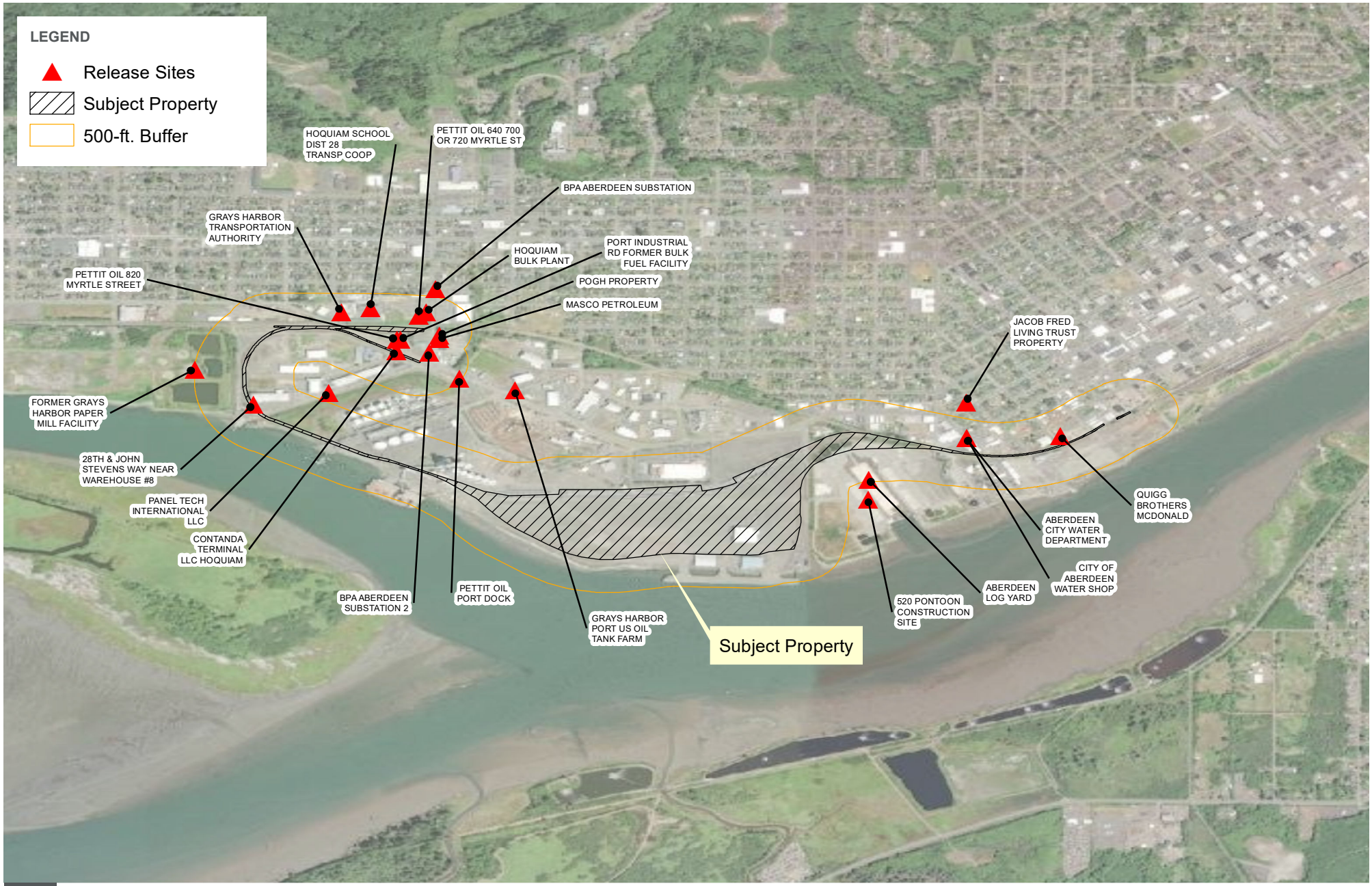


FIGURE 2

RELEASE LOCATIONS MAP
PORT OF GRAYS HARBOR, ABERDEEN, WASHINGTON

PATH: C:\PORT OF GRAYS HARBOR\MXD\02 RELEASE LOCATIONS MAP.MXD - USER: WRITTER - DATE: 10/20/2022

PoGH Terminal 4 Rail Loop

PoGH Terminal 4 Rail Loop

Aberdeen, WA 98520

Inquiry Number: 7029955.3

June 28, 2022

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Date EDR Searched Historical Sources:

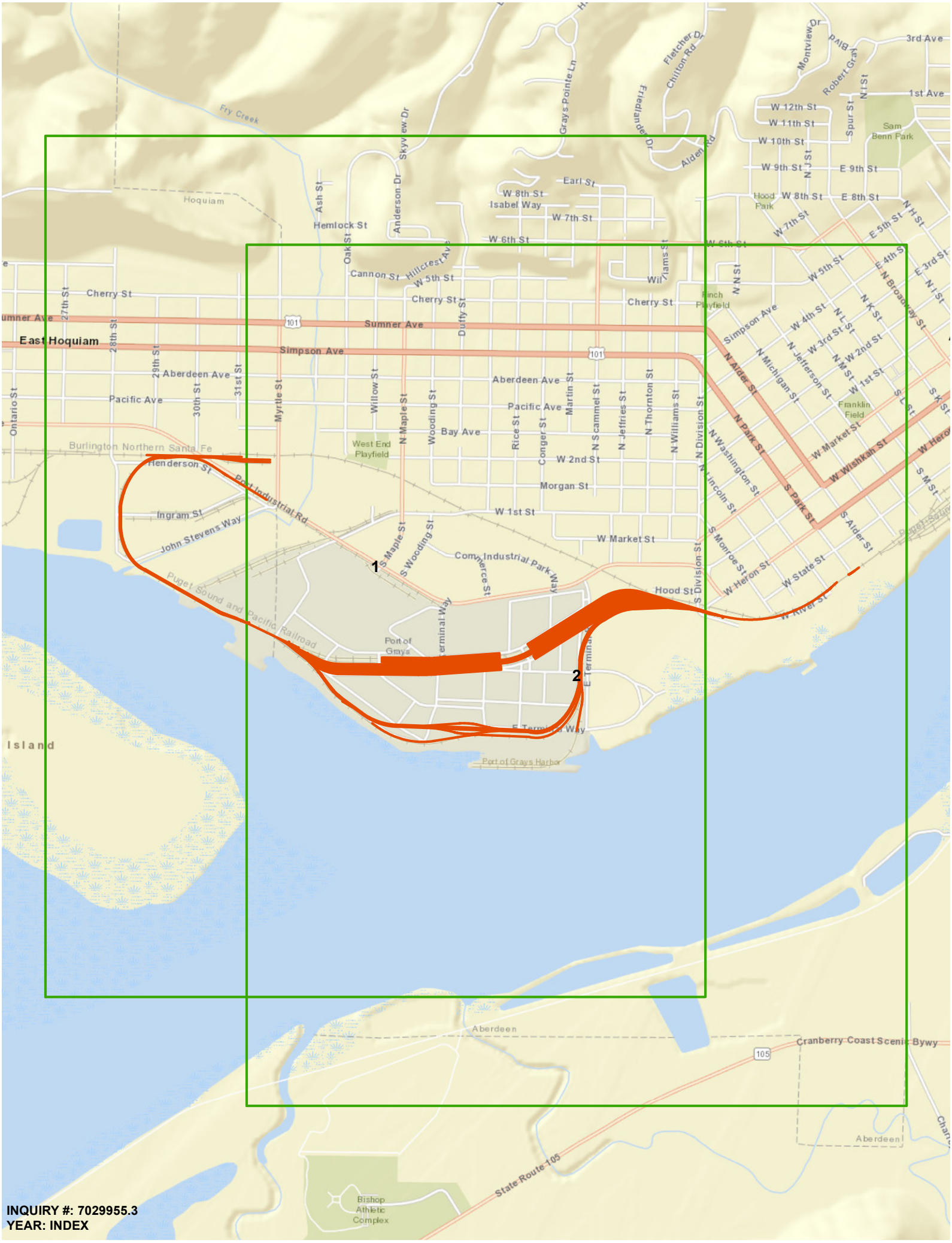
Aerial Photography June 28, 2022

Target Property:

PoGH Terminal 4 Rail Loop

Aberdeen, WA 98520

Year	***Scale***	***Details***	***Source***
1953	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1953	USGS
1971	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1971	USGS
1974	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1974	USGS
1975	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1975	USGS
1981	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1981	USDA
1990	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1990	USGS/DOQQ
2006	Aerial Photograph. Scale: 1"=1000'	Flight Year: 2006	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=1000'	Flight Year: 2009	USDA/NAIP
2013	Aerial Photograph. Scale: 1"=1000'	Flight Year: 2013	USDA/NAIP
2017	Aerial Photograph. Scale: 1"=1000'	Flight Year: 2017	USDA/NAIP



INQUIRY #: 7029955.3
YEAR: INDEX


30th Street
Myrtle Street
rail line
28th
Industrial
W. 1st St
INQUIRY #: 7029955.3
YEAR: 1953
SCALE: 1"=1000'

INQUIRY #: 7029955.3
YEAR: 1953
SCALE: 1"=1000'

INQUIRY #: 7029955.3
YEAR: 1971
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 1971
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 1974
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 1974
SCALE: 1"=1000'

INQUIRY #: 7029955.3
YEAR: 1975
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 1975
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 1981
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 1981
SCALE: 1"=1000'

INQUIRY #: 7029955.3
YEAR: 1990
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 1990
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 2006
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 2006
SCALE: 1"=1000'

INQUIRY #: 7029955.3
YEAR: 2009
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 2009
SCALE: 1"=1000'

INQUIRY #: 7029955.3
YEAR: 2013
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 2013
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 2017
SCALE: 1"=1000'


INQUIRY #: 7029955.3
YEAR: 2017
SCALE: 1"=1000'

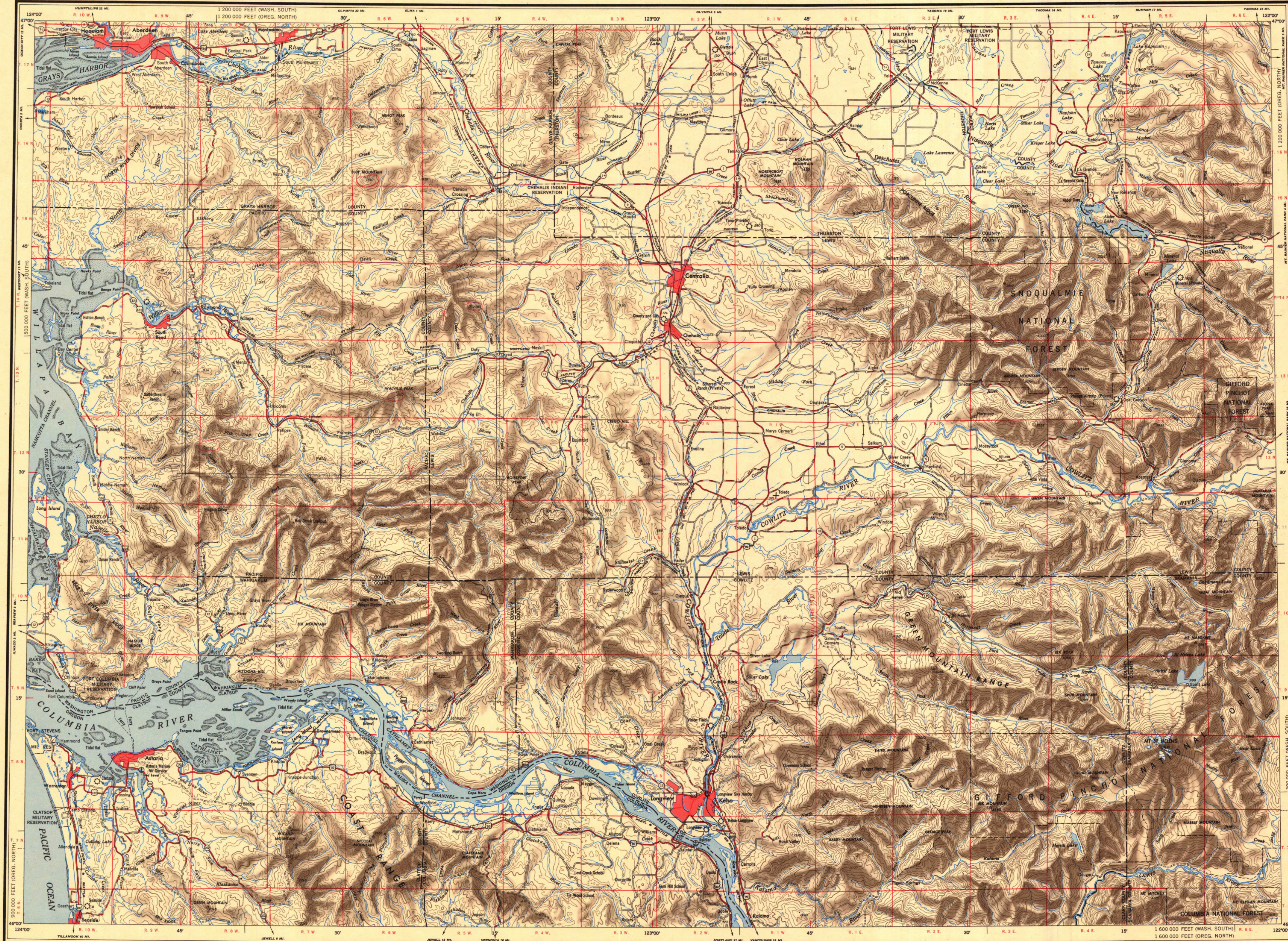
C

Appendix C.
Historical Topographic Maps

WESTERN UNITED STATES 1:250,000

HOQUIAM

NL 10-5
AMS SERIES V502



PRINTED BY ARMY MAP SERVICE, CORPS OF ENGINEERS, 3-53 , 91261

AMS V502
First Edition–AMS

Prepared under the direction of the Chief of Engineers by the Corps of Engineers, U. S. Army Map Service (AM), Washington, D. C. Compiled in 1949 from United States Quadrangles 1:25,000, 1:50,000, 1:125,000, U. S. Geological Survey and Corps of Engineers, 1913-1948; County Highway Maps, 1939-1947; and intelligence data to 1948. Planimetric detail partially revised by photo-planimetric methods. Aerial photography, 1941-1945. Road, railroad, and aeronautical data verified by state authorities, 1951. Control by U. S. Coast and Geodetic Survey, Corps of Engineers and U. S. Army Map Service.

LEGEND

ROAD DATA 1951

POPULATED PLACES
- Small; large
- 500,000 or over — BOSTON
- 100,000 to 500,000 — RICHMOND
- 25,000 to 100,000 — ALEXANDRIA
- 5,000 to 25,000 — Marion
- 1,000 to 5,000 — Old Dominion
- 1,000 or less — Stowell

- Hard surface, heavy duty road, more than two lanes wide — 3 LANES | 4 LANES
- Hard surface, heavy duty road, two lanes wide
- Hard surface, medium duty road, more than two lanes wide — 3 LANES | 4 LANES
- Hard surface, medium duty road, two lanes wide
- Loose surface, graded and drained road
- Dirt road; Trail
- Route markers: Federal; State

RAILROADS — Single track / Multiple track
- Standard gauge
- Narrow gauge
- International boundary
- State boundary
- Spot elevation in feet
- Military airfield
- Municipal or commercial airfield
- Auxiliary airfield
- Woodland
- Intermittent stream
- Swamp, marsh
- Reef; Limit of danger line

Scale 1:250,000

5 0 5 10 15 20 25 Miles
5 0 5 10 15 20 25 30 35 Kilometers
5000 0 5000 10000 15000 20000 25000 30000 35000 Yards

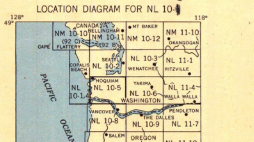
CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL

TRANSVERSE MERCATOR PROJECTION
1927 NORTH AMERICAN DATUM

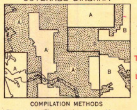
100,000-FOOT GRIDS BASED ON WASHINGTON COORDINATE SYSTEM, SOUTH ZONE, AND OREGON COORDINATE SYSTEM, NORTH ZONE

1949 MAGNETIC DECLINATION FOR THIS SHEET VARIES FROM 22°15' EASTERLY FOR THE CENTER OF THE WEST EDGE TO 21°45' EASTERLY FOR THE CENTER OF THE EAST EDGE. MEAN ANNUAL CHANGE IS 0°03' WESTERLY.

LOCATION DIAGRAM FOR NL 10-5



COVERAGE DIAGRAM



COMPILATION METHODS
Photo-stereo · Photo-planimetric · Map
Areas for which woodland information is available

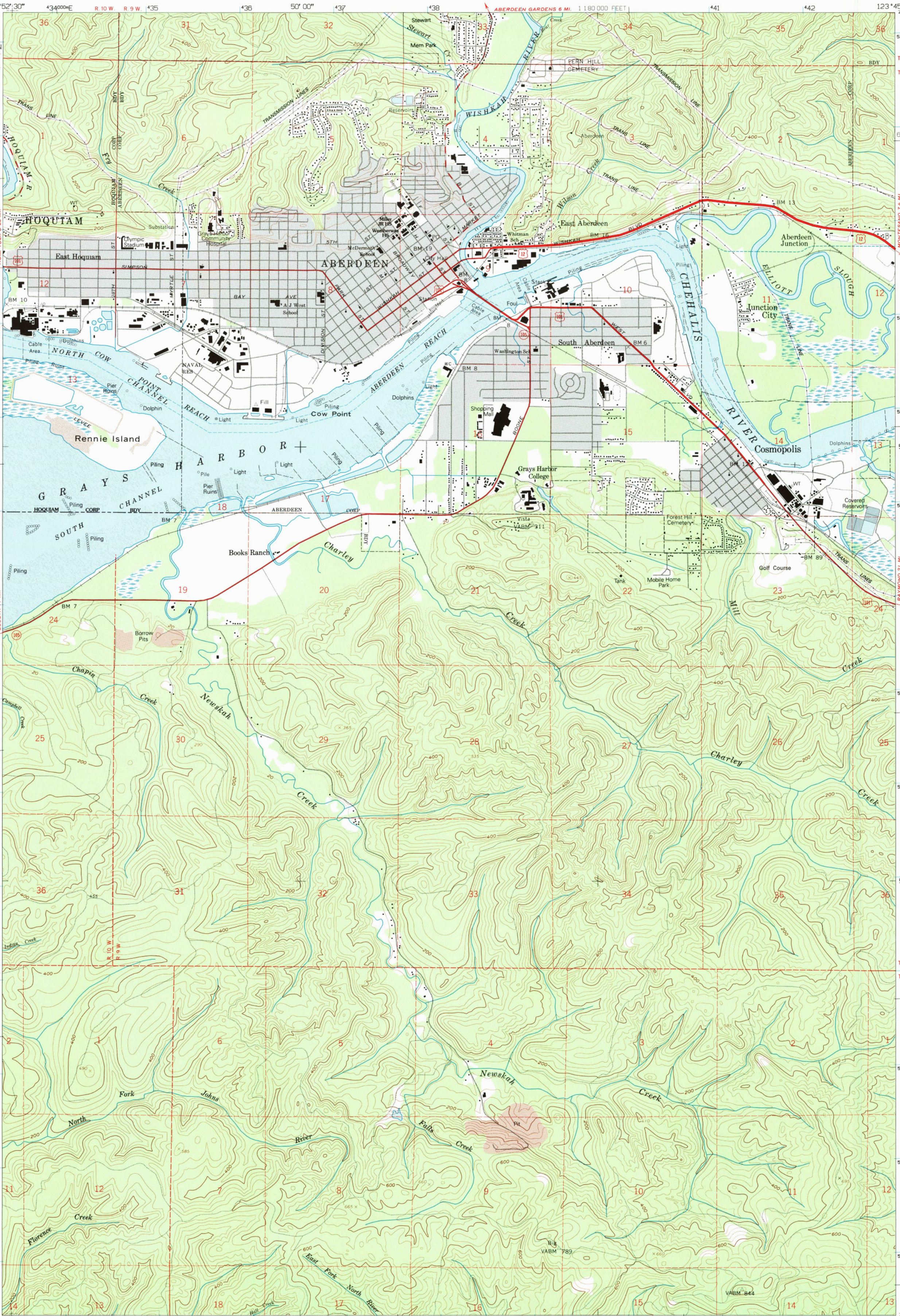
SECTIONIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

TOWNSHIP OR RANGE LINE
LAND GRANT BOUNDARY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ABERDEEN QUADRANGLE
WASHINGTON-GRAYS HARBOR CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



123°52'30" · 47°00'00" · 123°45'00" · 46°52'30"

INTERIOR - GEOLOGICAL SURVEY, RESTON, VIRGINIA - 1995

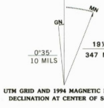
Produced by the United States Geological Survey

Control by USGS and NOS/NOAA

Compiled from aerial photographs taken 1950. Field checked 1957
Revised from aerial photographs taken 1990 and other sources.
Map edited 1994. Contours and land elevations have not been revised and may conflict with other content

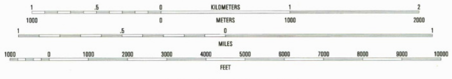
North American Datum of 1927 (NAD 27). Projection and blue 1000-meter ticks: Universal Transverse Mercator, zone 10
10 000-foot ticks: Washington Coordinate System, south zone

North American Datum of 1983 (NAD 83) is shown by dashed corner ticks. The values of the shift between NAD 27 and NAD 83 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON Software



UTM GRID AND 1994 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000



CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 10 FEET
TO CONVERT FEET TO METERS MULTIPLY BY 0.3048
TO CONVERT METERS TO FEET MULTIPLY BY 3.2808
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY
DENVER, COLORADO 80225 OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Primary highway hard surface ....
Secondary highway hard surface ....
Light-duty road, hard or improved surface ......
Unimproved road ......

Interstate Route · U.S. Route · State Route

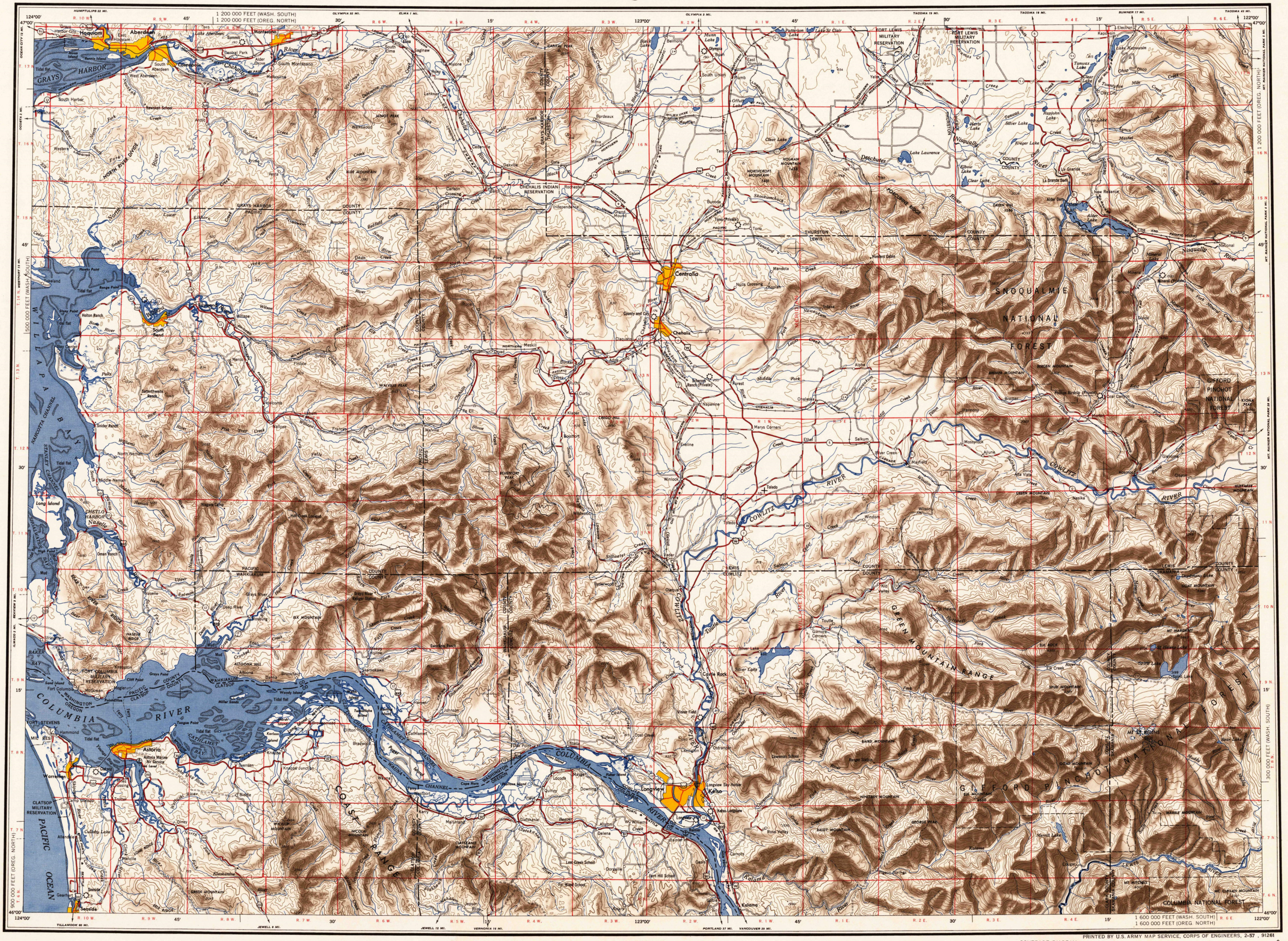
1	2	3
4		5
6	7	8

1 New London
2 Aberdeen Gardens
3 Wynoochee Valley SW
4 Hoquiam
5 Central Park
6 Western
7 Aberdeen SE
8 Elkhorn Creek

ADJOINING 7.5' QUADRANGLE NAMES

ABERDEEN, WA
46123-H7-TF-024
1957
REVISED 1994
DMA 1277 IV NE-SERIES V891

HOQUIAM



Prepared under the direction of the Chief of Engineers by the Corps of Engineers, U. S. Army Map Service (AM), Washington, D. C. Compiled in 1949 from United States Quadrangles 1:25,000, 1:50,000, 1:125,000, U. S. Geological Survey and Corps of Engineers, 1913-1948; County Highway Maps, 1939-1947. Planimetric detail partially revised by photo-planimetric methods. Aerial photography, 1941-1945. Road, railroad, and aeronautical data verified by state authorities, 1951. Control by U. S. Coast and Geodetic Survey, Corps of Engineers and U. S. Army Map Service.

LEGEND

ROAD DATA 1951

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- 100,000 to 500,000 — RICHMOND
- 25,000 to 100,000 — ALEXANDRIA
- 5,000 to 25,000 — Marion
- 1,000 to 5,000 — Old Dominion
- 1,000 or less — Stowell

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- Hard surface, heavy duty road, two lanes wide
- Hard surface, medium duty road, more than two lanes wide — 3 LANES | 4 LANES
- Hard surface, medium duty road, two lanes wide
- Loose surface, graded and drained road
- Dirt road; Trail
- Route markers: Federal; State

RAILROADS — Single track, Multiple track
- Standard gauge
- Narrow gauge
- International boundary
- State boundary
- County boundary
- Park and reservation

- Spot elevation in feet — .121
- Military airfield
- Municipal or commercial airfield
- Auxiliary airfield
- Seaplane base
- Seaplane anchorage
- Intermittent stream
- Swamp, marsh
- Reef; Limit of danger line
- Rocks awash; Wharf, pier
- Foreshore flats

Scale 1:250,000

5 0 5 10 15 20 Miles

5 0 5 10 15 20 25 30 Kilometers

5000 0 5000 10000 15000 20000 25000 30000 Yards

CONTOUR INTERVAL 200 FEET
DATUM IS MEAN SEA LEVEL

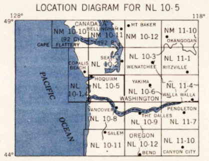
TRANSVERSE MERCATOR PROJECTION
1927 NORTH AMERICAN DATUM

100,000-FOOT GRIDS BASED ON OREGON COORDINATE SYSTEM, NORTH ZONE, AND WASHINGTON COORDINATE SYSTEM, SOUTH ZONE

1955 MAGNETIC DECLINATION FOR THIS SHEET VARIES FROM 22°15′ EASTERLY FOR THE CENTER OF THE WEST EDGE TO 21°45′ EASTERLY FOR THE CENTER OF THE EAST EDGE. MEAN ANNUAL CHANGE IS 0°03′ WESTERLY.

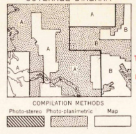
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 2, COLORADO OR WASHINGTON 25, D. C.

LOCATION DIAGRAM FOR NL 10-5



PRINTED BY U.S. ARMY MAP SERVICE, CORPS OF ENGINEERS, 2-57, 91261

COVERAGE DIAGRAM



COMPILATION METHODS
Photo-stereo Photo-planimetric Map

A. Large scale topographic maps, 1936-48, reliability good.
B. Medium scale topographic maps, 1913-34, reliability good.
Dates of aerial photography, 1941-45.

TOWNSHIP OR RANGE LINE

LAND GRANT BOUNDARY

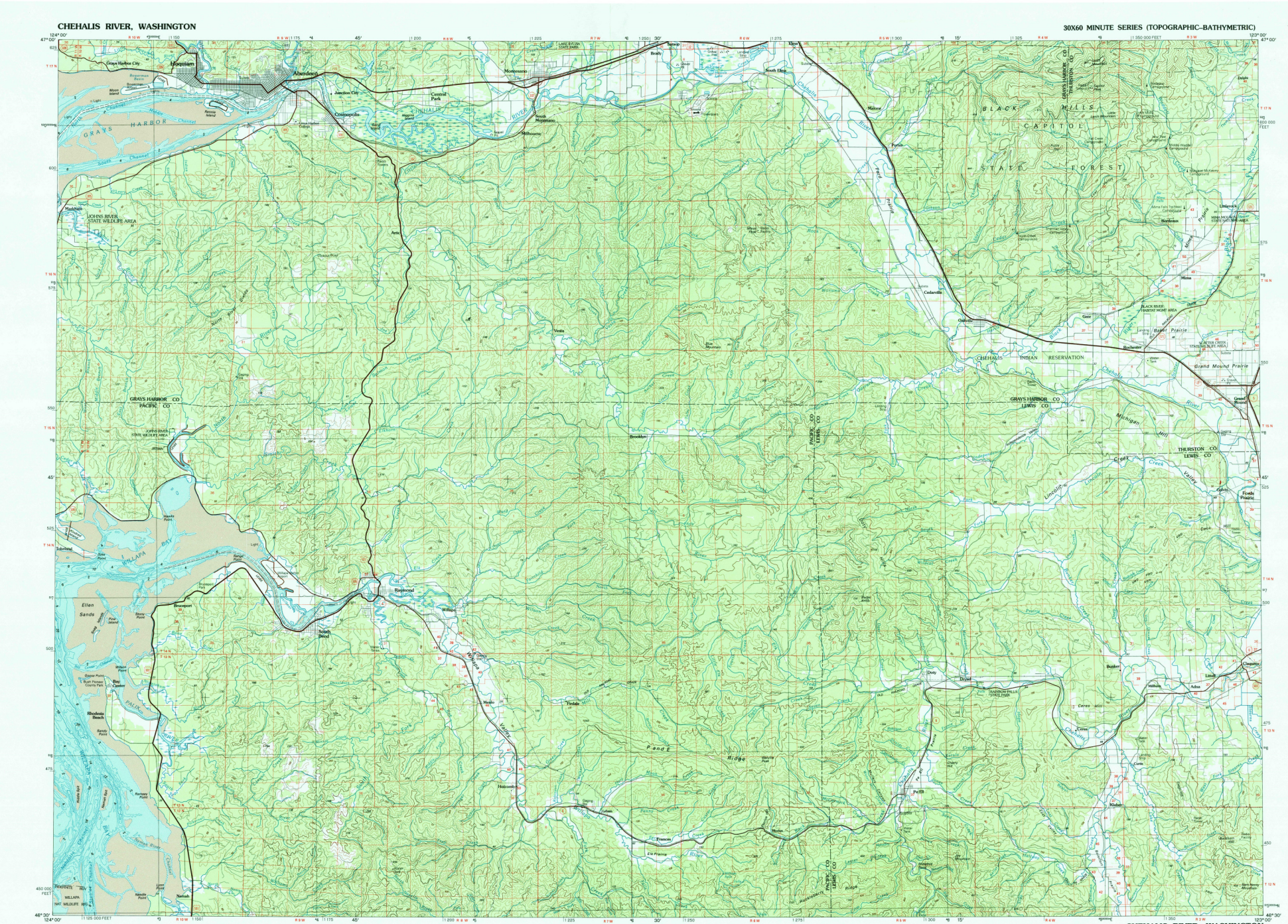
SECTIONIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

2-2057
6,800

CHEHALIS RIVER, WASHINGTON

30X60 MINUTE SERIES (TOPOGRAPHIC–BATHYMETRIC)



SCALE 1:100 000

1 CENTIMETER ON THE MAP REPRESENTS 1 KILOMETER ON THE GROUND

CONTOUR INTERVAL 50 METERS

KILOMETERS 1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

MILES 1 0 1 2 3 4 5 6 7 8 9 10 11 12 13

1 000 0 5000 10 000 15 000 20 000 METERS

5000 0 10 000 20 000 30 000 40 000 50 000 60 000 70 000 FEET

INTERIOR–GEOLOGICAL SURVEY, RESTON, VIRGINIA—1992

CHEHALIS RIVER, WASHINGTON

46123-E1-TB-100

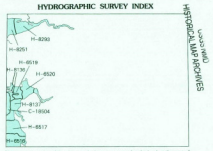
1992

HYDROGRAPHIC SURVEY INFORMATION

SURVEY NUMBER	SURVEY DATE	SURVEY SCALE	SURVEY LINE SPACING (NAUT. MILES)
H-6516	1939	1:10,000	01–09
H-6517	1939	1:10,000	02–12
H-6519	1939	1:10,000	02–12
H-6520	1939	1:10,000	01–12
H-8136	1964	1:10,000	02–08
H-8137	1964	1:10,000	02–08
H-8251	1955–56	1:10,000	02–09
H-8293	1956	1:10,000	04–10

NOS CHART 18504 1982 1:40,000

HYDROGRAPHIC SURVEY INDEX



Photographic copies of the above and prior surveys may be obtained, at the cost of reproduction, by addressing the Director, NOS/OAD, National Ocean Service, National Oceanic and Atmospheric Administration, Rockville, Maryland 20852

HISTORICAL MAP ARCHIVES

RECEIVED MAY 2002

USGS
science for a changing world

Chehalis

WASHINGTON

1:100 000-scale *metric*

topographic—bathymet

- Contours and elevation
- Highways, roads and c manmade structures
- Water features
- Woodland areas
- Geographic names
- Bathymetric contours

U. S. GEOLOGICAL SU
NATIONAL OCEAN SE

1992

Produced by the United States Geolog and the National Ocean Service

Compiled from USGS 1:24 000-scale topograph 1963-1986. Planimetry revised from aerial phot and other source data. Revised information not Map edited 1992

Bathymetry compiled by the National Ocean Ser hydrographic surveys. This information is not s purposes. Mean lower low water (dotted) line a solid) line compiled by NOS from other coordinat Apparent shoreline (outer edge of vegetation) sh 1927 North American Datum (NAD 27). Project 10 000-meter grid: Universal Transverse Mercat 25 000-foot ticks: Washington coordinate system

The difference between (NAD 27) and North Am 1983 (NAD 83) is too small to show at this scale of the shift between the datums for 7.5-minute t are given in USGS Bulletin 1875

There may be private inholdings within the boun the National or State reservations shown on this

CONTOUR INTERVAL 50 METERS

NATIONAL GEODETIC VERTICAL DATUM OF 192 ELEVATIONS SHOWN TO THE NEAREST METER BATHYMETRIC CONTOUR INTERVALS: 10 METER SUPPLEMENTED BY 2 METER INTERVALS DATUM LOW WATER. THE RELATIONSHIP BETWEEN THE

BASE MAP COMPILED WITH NATIONAL MAP AC BATHYMETRIC SURVEY DATA COMPILED WITH T HYDROGRAPHIC ORGANIZATION (IHO) SPECIAL I ACCURACY STANDARDS AND/OR STANDARDS U OF THE SURVEY

CONVERSION TABLE

Meters	Feet
1	3.2808
2	6.5617
3	9.8425
4	13.1234
5	16.4042
6	19.6851
7	22.9659
8	26.2467
9	29.5276
10	32.8084

To convert meters to feet multiply by 3.2808

To convert feet to meters multiply by 0.3048

DECLINATION DIAGRA

0°22' 7 MILS 15° 247 MILS

UTM grid convergence (GN) and 1992 magneti declination (MN) at center of map

Diagram is approximate

ISSN 0-607-5839

9 780607 583

Topographic Map

Primary highway, hard surface

Secondary highway, hard surface

Light duty road, principal street, hard or improved surfa

Other road or street; trail

Route marker: Interstate; U. S.; State

Railroad: standard gage; narrow gage

Bridge: overpass; underpass

Tunnel: road; railroad

Built up area; locality; elevation

Airport; landing field; landing strip

National boundary

State boundary

County boundary

National or State reservation boundary

Land grant boundary

U. S. public lands survey: range, township; section

Range, township; section line: protracted

Power transmission line; pipeline

Dam; dam with lock

Cemetery; building

Windmill; water well; spring

Mine shaft; adit or cave; mine, quarry; gravel pit

Campground; picnic area; U. S. location monument

Ruins; cliff dwelling

Distorted surface; strip mine, levy, sand

Contours: index; intermediate; supplementary

Bathymetric contours: index; intermediate

Stream, lake; perennial; intermittent

Rapids, large and small; falls, large and small

Area to be submerged; marsh, swamp

Land subject to controlled inundation; woodland

Scrub; mangrove

Orchard; vineyard

A pamphlet describing topographic maps is available at

FOR SALE BY U.S. GEOLOGICAL SU
P.O. BOX 25286, DENVER, COLORADO

Exposed at low tide

DEPTH GRADIENT

Meters 0

Maximum depth

20% TOTAL RECOVERED