FACT SHEET

File Number
LU20-0107

Project Name
SeaPort Sound Plant Modernization Project

Project Proponent
SeaPort Sound Terminal, LLC
4130 East 11th Street
Tacoma, Washington 98421

Project Location
2628 Marine View Drive, Tacoma, Washington 98422

Summary of Proposed Action
The Proposed Action would provide flexibility to SeaPort Sound to respond to anticipated market demand by increasing tank capacity at the terminal to accommodate the distribution of low-carbon fuels. This increase in market demand is influenced by changes in legislation, such as the recently passed Washington House Bill 1091 for reducing the carbon intensity of road fuel. The Proposed Action would increase storage capacity by approximately 11% but is not seeking to increase any existing permit limits associated with permitted facility throughput and emissions as part of the Project. The Proposed Action includes demolishing the existing refinery equipment, boiler, and building; storage tanks; containment berm; and piping and replacing them with a new containment wall and renewables storage tanks. Existing wastewater treatment equipment located south of the refinery demolition area would be replaced, including replacing the oil-water separator used for wastewater treatment. The Proposed Action also includes installing a new stormwater line parallel to and around an existing blocked storm line on the east side of the property.

Summary of Proposed Alternatives
The proposed alternatives evaluated in this Environmental Impact Statement (EIS) include a No Action Alternative (Alternative 1) and the Proposed Action (Alternative 2).

Requesting State Environmental Policy Act Lead Agency
City of Tacoma
Planning and Development Services
747 Market Street
Tacoma, Washington 98402
State Environmental Policy Act Responsible Official
Peter Huffman, Director
City of Tacoma Department of Planning and Development Services

Environmental Impact Statement Contact Person
Shirley Schultz, Principal Planner
City of Tacoma Department of Planning and Development Services

Further Actions
Not applicable

Phasing, If Any
Not applicable

Required Permits and Approvals
- Shoreline Substantial Development Permit (City of Tacoma)
- Building Permit (City of Tacoma)

Authors and Principal Contributors
The list of preparers can be found in Chapter 6.

Location of Background Data and Source Material
Background data and materials used for this Draft EIS are listed in Chapter 5. Key documents used in this analysis include the following:
- Study Report: Inventory of Greenhouse Gas Emissions SeaPort Sound Plant Modernization Project (Appendix A)

Comment Period
The comment period will begin on the date the Notice of Availability is published in the State Environmental Policy Act register: https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-Register, and it will continue for a minimum of 30 days. Notice is anticipated to be published on November 10, 2022.

Date of Issuance for the Draft Environmental Impact Statement
November 10, 2022

Comments Due
December 15, 2022
Availability Statement
The Draft EIS is available online at: www.cityoftacoma.org/SeaportPlantModernizationDEIS

Printed copies of the Draft EIS and supporting materials are available for review at no cost at the following locations:

City of Tacoma
Planning and Development Services
747 Market Street
Tacoma, Washington 98402

Email SeaportPlantModernizationDEIS@cityoftacoma.org or call (253) 591-5030 for office hours and to arrange the receipt of a copy of the Draft EIS. Additional copies may be purchased for the cost of reproduction.

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# TABLE OF CONTENTS

Executive Summary ..................................................................................................................... ES-1

1  Introduction .......................................................................................................................... 1
   1.1 Background .................................................................................................................. 3
   1.2 Environmental Review Process .................................................................................. 4
   1.3 EIS Scope and Organization ....................................................................................... 5

2  Project Description and Alternatives .................................................................................. 7
   2.1 Purpose and Need ......................................................................................................... 7
   2.2 Existing Facility and Capacity .................................................................................... 7
   2.2.1 Terminal Throughput ............................................................................................. 11
   2.2.2 Previous Permitting and SEPA Review ................................................................. 13
   2.3 Market Fuel Mix Scenarios ....................................................................................... 14
   2.3.1 Static Scenario ....................................................................................................... 16
   2.3.2 Central Scenario ..................................................................................................... 16
   2.3.3 State Goal Scenario ............................................................................................... 17
   2.4 Alternative 1: No Action Alternative .......................................................................... 18
   2.5 Alternative 2: Proposed Action ................................................................................ 18
   2.5.1 Mitigation Measures and Best Management Practices ....................................... 24
   2.5.2 Direct Effects of Proposed Action .......................................................................... 27
   2.5.3 Secondary Effects of Proposed Action ................................................................... 28
   2.5.4 Elements of the Environment Determined to Have No Probable Adverse Impact 28
   2.6 Other Alternatives Considered .................................................................................. 28

3  Affected Environment, Impacts, and Mitigation Measures .............................................. 29
   3.1 Earth ........................................................................................................................... 29
   3.1.1 Affected Environment ........................................................................................... 29
   3.1.2 Potential Impacts from the No Action Alternative ............................................... 32
   3.1.3 Construction Impacts and Mitigation Measures from the Proposed Action ........ 32
   3.1.4 Long-Term Impacts and Mitigation Measures from the Proposed Action .......... 33
   3.2 Air ............................................................................................................................... 35
   3.2.1 Affected Environment .......................................................................................... 35
   3.2.2 Greenhouse Gas Emissions .................................................................................. 38
   3.2.3 Potential Impacts from the No Action Alternative ............................................... 38
   3.2.4 Construction Impacts and Mitigation Measures from the Proposed Action ....... 39
3.9.4 Long-Term Impacts and Mitigation Measures from the Proposed Action.............. 109
3.10 Public Services and Utilities........................................................................................................................ 111
3.10.1 Affected Environment................................................................................................................... 112
3.10.2 Potential Impacts from the No Action Alternative ............................................................ 116
3.10.3 Construction Impacts and Mitigation Measures from the Proposed Action .......... 117
3.10.4 Long-Term Impacts and Mitigation Measures from the Proposed Action.............. 120

4 Cumulative Effects .......................................................................................................................... 124

4.1 Methodology ................................................................................................................................................... 124
4.2 Past, Present, and Reasonably Foreseeable Future Projects.......................................................... 124
4.3 Potential Cumulative Effects ...................................................................................................................... 126
  4.3.1 Earth..................................................................................................................................................... 126
  4.3.2 Air ......................................................................................................................................................... 127
  4.3.3 Water ................................................................................................................................................... 128
  4.3.4 Plants and Wildlife ......................................................................................................................... 129
  4.3.5 Energy and Natural Resources .................................................................................................. 130
  4.3.6 Archaeological, Historical, and Cultural Resources ........................................................... 130
  4.3.7 Environmental Health and Safety ............................................................................................. 131
  4.3.8 Land and Shoreline Use ............................................................................................................... 131
  4.3.9 Transportation ................................................................................................................................. 132
  4.3.10 Public Services and Utilities ........................................................................................................ 133

5 References ................................................................................................................................................. 134

6 List of Preparers .................................................................................................................................................. 144

TABLES

Table ES-1  Summary of Construction, Long-Term, Secondary, and Cumulative Impacts for Alternatives.................................................................................................................................................. 10
Table 2-1  SeaPort Sound Terminal Actual Facility Throughput by Year........................................... 13
Table 2-2  Road Fuels ........................................................................................................................................ 15
Table 2-3  PADD 5 2016–2020 Market Fuel Mix......................................................................................... 15
Table 2-4  Grading Activities Summary ........................................................................................................ 23
Table 2-5  Impervious Surfaces Summary ............................................................................................... 23
Table 3-1  Predicted Road Fuels Off-Site Emissions Shares........................................................................ 45
Table 3-2  State-Listed and Regulated Bird Species Known or Likely to Occur in the Study Area................................................................................................................................................... 67
Table 3-3  Products Stored On Site and National Fire Protection Association Rating ................. 86
Table 3-4  Cleanup Sites on Parcels Adjacent to the Project Site .................................................. 88
Table 3-5  Population by Race ........................................................................................................ 101
Table 3-6  Household Income ........................................................................................................ 102
Table 4-1  Present and Reasonably Foreseeable Future Projects .................................................. 125

FIGURES
Figure 1-1  Site Vicinity Map ........................................................................................................... 2
Figure 2-1  Site Map .......................................................................................................................... 9
Figure 2-2  Existing Conditions Site Plan ......................................................................................... 10
Figure 2-3  Static Market Fuel Mix Scenario .................................................................................. 16
Figure 2-4  Central Market Fuel Mix Scenario ............................................................................... 17
Figure 2-5  State Goal Market Fuel Mix Scenario ......................................................................... 18
Figure 2-6  Proposed Conditions Site Plan ..................................................................................... 20
Figure 3-1  Geologic Hazards .......................................................................................................... 31
Figure 3-2  Cumulative Emissions Associated with Project Construction and SeaPort Sound Terminal Operation .......................................................................................................................... 42
Figure 3-3  Range of Secondary Off-site Emissions Under the Action and No Action Alternatives ........................................................................................................................................... 44
Figure 3-4  Water Study Area ......................................................................................................... 48
Figure 3-5  Site Drainage ................................................................................................................. 52
Figure 3-6  Plants and Wildlife Study Area ....................................................................................... 64
Figure 3-7  Zoning Map .................................................................................................................. 97
Figure 3-8  Land Use Designations ................................................................................................ 99
Figure 3-9  Shoreline Designations ................................................................................................ 100
Figure 3-10 Public Services and Utilities Study Area ...................................................................... 113
## APPENDICES

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix A</td>
<td>Study Report: Inventory of Greenhouse Gases – SeaPort Sound Plant Modernization Project</td>
</tr>
<tr>
<td>Appendix B</td>
<td>Distribution List</td>
</tr>
<tr>
<td>Appendix C</td>
<td>Cost of GHG Mitigation for the SeaPort Sound Plant Modernization Project Memorandum</td>
</tr>
<tr>
<td>Appendix D</td>
<td>Notices of Construction Summary</td>
</tr>
<tr>
<td>Appendix E</td>
<td>Project Laws and Regulations</td>
</tr>
<tr>
<td>Appendix F</td>
<td>Species Included on the Priority Habitats and Species List for Pierce County</td>
</tr>
</tbody>
</table>
ABBREVIATIONS

μg/m³  micrograms per cubic meter
AQCR  Air Quality Control Region
AST  aboveground storage tank
BAAQMD  Bay Area Air Quality Management District
BACT  Best Available Control Technology
BMP  best management practice
BTU  British thermal unit
CAP  cleanup action plan
CB N/T  Commencement Bay Nearshore/Tideflats
CDF  controlled density fill
CFR  Code of Federal Regulations
CH₄  methane
City  City of Tacoma
CO₂  carbon dioxide
Commerce  Washington State Department of Commerce
CSWGP  Construction Stormwater General Permit
cy  cubic yards
Ecology  Washington State Department of Ecology
EIS  Environmental Impact Statement
EMS  emergency medical services
EPA  U.S. Environmental Protection Agency
ESA  Endangered Species Act
GHG  greenhouse gas
HB  Washington House Bill
ISIP  Industrial Stormwater Individual Permit
IWDP  Industrial Wastewater Discharge Permit
kWh  kilowatt hour
LCFS  Low-Carbon Fuel Standard
LNG  liquified natural gas
MTCA  Model Toxics Control Act
N₂O  nitrous oxide
NAAQS  National Ambient Air Quality Standards
NFA  No Further Action
NFPA  National Fire Protection Association
NOAA Fisheries  National Oceanic and Atmospheric Administration, National Marine Fisheries Service
Executive Summary

Introduction
SeaPort Sound Terminal, LLC (SeaPort Sound), is proposing the SeaPort Sound Terminal, LLC, Plant Modernization Project (Project) at the SeaPort Sound Terminal on the Hylebos Waterway in Tacoma, Washington. The Project will remove existing refinery infrastructure and replace it with new storage tanks, piping, and associated equipment, including wastewater treatment infrastructure upgrades, that will meet the functional, operational, and environmental needs at the terminal. The Project will increase the storage capacity at the terminal for low-carbon fuels to improve SeaPort Sound’s flexibility in response to the increasing market demand for fossil fuel alternatives.

The City of Tacoma (City) is the Washington State Environmental Policy Act (SEPA) lead agency. On February 4, 2021, the City issued a Determination of Significance for the Project based upon the unknown and probable significant adverse impacts from the increased storage of fossil fuels in a location that is proximate to human habitation, that is adjacent to sensitive critical habitat, and that is subject to liquefaction and other seismic risks. This SEPA Environmental Impact Statement (EIS) has been prepared to identify and evaluate environmental impacts associated with a set of alternatives for the Project. This EIS has been prepared to meet the SEPA procedural requirements outlined in Revised Code of Washington (RCW) Chapter 43.21C and Tacoma Municipal Code (TMC)\(^1\) Chapter 13.12.

Background
SeaPort Sound is a storage and distribution company for bulk liquids, including fossil and renewable fuels, providing bulk liquids to the maritime and land-based consumer markets in the Pacific Northwest. The property has been used for various industrial purposes since the 1940s, including petroleum refining and storage. Refining activities were discontinued at the property around 2002 due to market factors. The first tank of biodiesel at the SeaPort Sound Terminal was installed in 2007, and by the end of the year, a permit application had been submitted to the Puget Sound Clean Air Agency (PSCAA) to allow SeaPort Sound to expand into the storage and throughput of starch-based biofuels (i.e., ethanol). In 2017, SeaPort Sound became a provider of renewable diesel, which would provide end users with access to advanced biofuels.

SeaPort Sound provides bulk liquid products to land-based consumer markets in the Pacific Northwest and to the overland freight transportation, road paving, and manufacturing industries. A portion of SeaPort Sound’s business currently involves providing fueling support to the maritime industry in Puget Sound. Although trucks are more frequently used to transport products to and from the site, marine transfers represent the largest single-volume transfers at the terminal. Storage

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\(^1\) The TMC is reliant on national and state authority and laws (e.g., seismic codes and flood regulations).
and product flexibility is required at the terminal to support maritime fueling because the vessels that SeaPort Sound serves vary in size and fuel types. Additionally, because the maritime customers determine when vessel fueling is needed, use of SeaPort Sound’s facilities routinely changes depending on several factors, including vessel type and number.

SeaPort Sound is well positioned as a distributor in the region’s renewable fuels market due to its location, infrastructure, and client base. It is expected that renewable fuels will continue to displace traditional fuels as market demand for renewables increases; notably, in response to the recent passage of Washington House Bill (HB) 1091 in 2021 (“Reducing greenhouse gas emissions by reducing the carbon intensity of transportation fuel”), which builds upon the California and Oregon Low-Carbon Fuel Standard (LCFS) programs.

The Project proposes an approximately 11% increase of existing storage capacity to improve flexibility for providing customers with a variety of products, including renewable and biofuels. This increase in storage capacity will allow SeaPort Sound to store a greater variety of products (namely renewable fuels and biofuels) to better serve its customers by being more responsive to fluctuations in market demand. SeaPort Sound’s throughput is regulated by facility permits that limit product throughput volumes and emissions. SeaPort Sound is not seeking permit modifications to increase its current authorizations and will continue to operate within the permitted throughput volume and emissions limits after the Project is completed.

SeaPort Sound is focused on maintaining its progress toward enhancing the regional availability of biofuels. While market demands may shift and impact fuel and fuel blends, SeaPort Sound sees the LCFS as an opportunity to further serve the community and help meet the growing needs of advanced biofuels in the marketplace. Ultimately, the use of the assets proposed by SeaPort Sound will be driven by market demand and equipment design. Compliance with stringent regulatory and operating requirements makes SeaPort Sound’s operations safe, reliable, efficient, and responsible. With the state acceptances of LCFS, SeaPort Sound believes there is a fast-approaching logistical need for increasing regional capacity to meet the demand for biofuels and LCFS products.

**Purpose and Need**

The SeaPort Sound Terminal is operated for the distribution of bulk liquids, including fossil and renewable fuels, in response to market demand. The purpose of the Project is to provide SeaPort Sound operational flexibility and modernized facilities to better meet increasing market demand for renewable/low-carbon fuels. This increase in market demand is influenced by changes in legislation, such as the recently passed HB 1091 for reducing the carbon intensity of road fuel. The Project would increase storage capacity for low-vapor-pressure bulk liquids including diesel, biodiesel, renewable fuel feedstock, and fuel oil. Storage capacity at the site would increase by approximately 11%, but
SeaPort Sound is not seeking to increase any permit limits associated with permitted facility throughput and emissions as part of the Project.

To accomplish the Project purpose, the Project will modernize the terminal by removing aging refinery infrastructure and replacing it with upgraded facilities. Removing the aging refinery infrastructure will remove the on-site potential for producing approximately 2 million barrels (84,000,000 gallons) of product per year and will remove the potential for 89,000 metric tons carbon dioxide equivalent (tCO2e) per year of direct emissions from refinery operations. The refinery infrastructure will be replaced with new storage tanks, piping, and associated equipment and safety and environmental protection measures, including upgraded wastewater treatment systems to meet the functional, environmental, and operational needs at the terminal.

The Project also includes replacing existing stormwater infrastructure that receives and conveys off-site stormwater that is outside of the purview of this facility’s National Pollutant Discharge Elimination System (NPDES) permit.

**Alternatives Evaluated**

The proposed alternatives evaluated in this EIS include a No Action Alternative (Alternative 1) and the Proposed Action (Alternative 2).

**Alternative 1: No Action Alternative**

Under Alternative 1, the No Action Alternative, the Project would not be constructed, and SeaPort Sound would continue to operate the facility using its existing infrastructure without necessary upgrades. The existing unused refinery equipment would remain in place. Maintaining the existing infrastructure may require SeaPort Sound to adjust the mix of bulk liquids stored at the terminal or modify existing tanks to hold different bulk liquids in response to market demand. This EIS considers three potential fuel market scenarios (described in the Market Fuel Mix Scenarios section). Under the No Action Alternative, throughput and mix of bulk products would continue to fluctuate within the terminal’s permitted limits based on market and customer demand. Similarly, the demand for specific products would continue to fluctuate, and terminal infrastructure may require future modifications to accommodate changes in the bulk liquids marketplace.

**Alternative 2: Proposed Action**

Under Alternative 2, Proposed Action, a portion of the SeaPort Sound Terminal would be upgraded to provide operational flexibility and modernized facilities to better meet increasing market demand for renewable/low-carbon fuels. This includes demolishing the existing refinery at the terminal and replacing it with fixed cone roof storage tanks and upgraded wastewater and stormwater infrastructure. The Proposed Action would increase existing bulk liquids storage capacity at the SeaPort Sound Terminal by up to 11% to accommodate low-vapor-pressure bulk liquids including...
diesel, biodiesel, renewable fuel feedstock, and fuel oil. However, SeaPort Sound is not seeking to increase any permit limits associated with permitted facility throughput and emissions as part of the Project.

The Proposed Action would require demolition and construction activities within the 200-foot S-10 Port Industrial Area shoreline district. A portion of the work would occur within the 50-foot marine buffer but would be limited to replacing equipment and stormwater utilities within the footprint of existing development. All activities would be completed within existing developed areas that are actively used to support the existing industrial property use. No in-water work would occur as part of the Proposed Action. Construction would be expected to begin in late 2023, with operations beginning in 2024.

The Proposed Action would include the following elements:

- Demolishing existing refinery equipment including stacks, towers, pumps and electrical systems, a boiler and building, seven storage tanks, piping, and a containment berm.
- Installing eight new storage tanks, two new process water tanks, and piping within a 4-foot-high concrete containment wall around the impervious new storage tank area.
- Demolishing and removing the existing wastewater treatment equipment, including replacing the oil-water separator (specifically, a coalescing plate separator with containment) and removing a rotating biological disk, a water clarifying unit, and an induced aeration basin.
- Upgrading wastewater treatment system equipment as practicable using best available technologies (i.e., surge pond, aeration pump).
- Filling and abandoning in place the existing blocked community stormwater line on the east side of the property and diverting stormwater through a realigned pipe to be constructed parallel to the existing pipe that would discharge through the existing outfall; the existing outfall would be retained, and no outfall modifications are proposed. This realigned stormwater line would handle stormwater that originates from off-site right-of-way areas along Marine View Drive.
- Installing new manholes along the new stormwater line.

**Market Fuel Mix Scenarios**

The No Action and Proposed Action alternatives are each evaluated under three market fuel mix scenarios: Static, Central, and State Goal. A range of scenarios was selected for the purposes of this EIS to assess the potential impacts of future variable market conditions. Each market fuel mix scenario includes a future potential market mix of road fuels that SeaPort Sound might store and distribute through the terminal. Road fuels are used in this analysis because they represent 80% of total product volume distributed through the terminal and are subject to recent regulations.
The three scenarios are intended to cover a range of additional renewable fuels considering market penetration from very high (State Goal scenario) to moderate (Central scenario) to none (Static scenario). The market fuel mix scenarios have been developed consistently with the data reported by the U.S. Energy Information Administration (U.S. EIA) to the regional scale.

**Static Scenario**
The **Static** scenario presumes continuation of the status quo fuel mix. This is equivalent to a scenario in which the new LCFS is struck down in the courts. In this scenario, the market fuel mix would remain unchanged throughout the analysis period. This is the least likely of the three market fuel mix scenarios because it would require a lawsuit to be filed to reverse existing legislation. No lawsuit has been filed, and the outcome of a potential lawsuit is uncertain. However, this scenario is being included to present a range of market fuel mix scenarios for consideration in this EIS.

**Central Scenario**
The **Central** scenario assumes that Petroleum Administration for Defense District (PADD) 5 fuel mix ratios change over time according to legislation that has been enacted. This is the same approach used by U.S. EIA for its annual energy forecasts. In Washington State, the mix of road fuels will change in response to HB 1091, the recently passed LCFS. The LCFS requires that the average carbon intensity of road fuels delivered in Washington State lower by up to 10% as of 2033 and by 20% as of 2038. Use of renewable fuels is expected to increase as a result of HB 1091. Using these values, year-by-year changes in the fuel mix can be forecasted through 2038. After 2038, this scenario assumes that the fuel mix does not change further because no other changes are currently legislated.

**State Goal Scenario**
The **State Goal** scenario is derived from the “Transport Fuels” scenario constructed for the Washington State Department of Commerce’s (Commerce’s) 2021 State Energy Strategy (Commerce 2021). This scenario posits less electrification of transportation than other state energy strategy scenarios, instead achieving greenhouse gas (GHG) reduction targets by substituting biofuels and synthetic fuels for petroleum products. Commerce’s analysis provides absolute forecast quantities of both biofuels and synthetic fuels in 5-year increments from 2025 to 2050. To produce the gasoline substitute and diesel substitute quantities needed for analysis, Commerce’s synthetic fuels and biofuels forecasts were summed and then reallocated to match the ratio of gasoline- and diesel-like fuels in SeaPort Sound’s bulk liquid mix.
Mitigation Measures and Best Management Practices

The following are mitigation measures and best management practices (BMPs; using the numbering MM-#) that will be used to address potential impacts from the Proposed Action:

**Permit Compliance**

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

**Project Design Features**

- **MM-2:** The new tanks and infrastructure will be designed to modern building codes and standards for safety and seismic stability, consistent with City of Tacoma (City) development and seismic code requirements and state aboveground storage tank (AST) secondary containment and fire protection requirements per Washington Administrative Code (WAC) 173-180-320 and 173-180-330.
- **MM-3:** The tanks will be installed with a bentonite liner and sand layer inside the circular footing of each tank to seal any exposed soil from potential incidental spills.
- **MM-4:** A 4-foot-tall concrete containment berm will be installed around the tanks, meeting state and federal secondary containment requirements (per 40 Code of Federal Regulations [CFR] 112 and WAC 173-180-320).
- **MM-5:** Components for the replacement wastewater treatment system will be elevated to protect against potential geological hazards in the area.
- **MM-6:** The Project will be designed so that any contact water generated during facility operation will be treated and managed in compliance with existing regulations.
- **MM-7:** The current on-site wastewater treatment system will be replaced with modern equipment to reduce electricity consumption at the facility.
- **MM-8:** The existing steam boiler will be replaced with a more energy-efficient hot oil heater that will result in a substantial energy savings at the facility (up to 30% energy savings), reduce GHG emissions, and reduce on-site water consumption by approximately 5 million gallons annually.
- **MM-9:** All work will occur in the footprint of existing development and will not disturb any existing shoreline vegetation or habitat.

**Construction Best Management Practices**

- **MM-10:** SeaPort Sound will obtain a Construction Stormwater General Permit (CSWGP) from the Washington State Department of Ecology (Ecology) for proposed ground-disturbing
activities. The CSWGP will cover stormwater, groundwater, water used for dust control, and other construction water discharges. SeaPort Sound will prepare and implement a stormwater pollution prevention plan (SWPPP), with all appropriate BMPs implemented and maintained in accordance with the SWPPP and the terms and conditions of the permit.

- **MM-11**: Construction contractors will receive an orientation, including emergency response protocols, before beginning work on site.

- **MM-12**: SeaPort Sound’s emergency response plans will be in place to provide an immediate on-site response to an incident if one occurs. SeaPort Sound will provide emergency response providers with regularly updated maps of the Project site, access points, contact information, and response procedures during construction.

- **MM-13**: Additional security patrols will be provided, and all work areas will be fenced to prevent public access during construction. The Project site will continue to comply with its Facility Security Plan requirements.

- **MM-14**: All equipment to be used for construction activities will be cleaned prior to arriving at the site and will be inspected daily to ensure that no leaks are present and the equipment is functioning properly.

- **MM-15**: Water that is used to clean decommissioned refinery equipment prior to removal from the site will be treated and disposed of properly.

- **MM-16**: All electrical and natural gas connections to the decommissioned refinery equipment will be properly disconnected and secured.

- **MM-17**: To reduce air emissions, the contractor will limit idling of construction equipment when not in use.

- **MM-18**: The contractor will employ dust suppression equipment as needed during grading activities to reduce potential dust emissions.

- **MM-19**: Unused equipment on the Project site that is demolished (e.g., refinery and wastewater treatment equipment) will be properly disposed of or recycled at an approved off-site facility.

- **MM-20**: Construction will occur during times allowed by the City’s noise ordinance in TMC Title 8 or an approved extension.

- **MM-21**: Construction traffic generated by the Project will be limited to what is required for construction and will use main arterials to the extent practicable.

- **MM-22**: Erosion control measures will be implemented during construction per the Temporary Erosion Control Plan to be prepared for the Project.

- **MM-23**: The contractor will be responsible for the preparation of a spill plan to be used for the duration of the Project to safeguard against unintentional spills of fuel, lubricants, or hydraulic fluid from construction equipment.

- **MM-24**: The construction contractor will be required to prepare a demolition plan for City review, describing the anticipated type and amount of construction and demolition wastes,
proposed recycling and reuse strategies, and arrangements to coordinate transport of the remaining waste to licensed disposal sites.

- **MM-25**: The construction contractor will be required to develop a contaminated media management plan to address the characterization, segregation, and disposal of any contaminated soils or groundwater potentially encountered during excavation.

- **MM-26**: SeaPort Sound will provide asbestos and lead abatement requirements and procedures to the contractor prior to construction. Asbestos and other hazardous wastes used or encountered during construction will be properly disposed of in accordance with appropriate regulations.

- **MM-27**: An Inadvertent Discovery Plan will be prepared and followed in the event of a discovery of cultural resources during construction.

### Operational Safety Plans and Procedures

- **MM-28**: All applicable operations manuals, plans, and permits will be updated to reflect new facilities. This includes but is not limited to the facility’s Industrial Stormwater Individual Permit (ISIP); Industrial Wastewater Discharge Permit; Spill Prevention, Control, and Countermeasure (SPCC) Plan; *SeaPort Sound Terminal LLC Facility Contingency Plan*; Facility Security Plan; Emergency Response Plans; and others as needed.

- **MM-29**: Trained personnel will operate the facility and will continue to inspect all facilities daily for potential leaks or signs of material corrosion or degradation.

- **MM-30**: Operators will be trained in proper material handling and emergency response procedures.

- **MM-31**: All facility personnel will continue to participate in SPCC Plan training as well as other safety training.

- **MM-32**: Emergency shutdown system training and drills will be updated to cover the Project vicinity infrastructure upgrades after construction and will continue to occur on a routine basis. The emergency shutdown system is designed to turn off pumps in the event of an unforeseen emergency. The emergency shutdown system is employed under a coordinated command and control facility that has established protocols in place to prevent product release. At a minimum, SeaPort Sound currently conducts two field deployment drills, a tabletop exercise, and four security drills annually. Emergency shutdown protocols are typically covered during at least one of these drills. Training is provided to operators and maintenance staff on the use of emergency shutdown systems.

- **MM-33**: SeaPort Sound’s vendors are required to adhere to local, state, and federal regulations and emergency response plans to reduce potential impacts on emergency response services during off-site fuel transport activities.
Additional Mitigation

- **MM-34**: To mitigate for GHG emissions anticipated to be produced from Project construction and operation of the new tanks over the next 40 years (as calculated per the *Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project* [Appendix A]), SeaPort Sound will contribute an equivalent amount of money to the City’s Urban Forestry Program as would be required to purchase third-party-verified GHG offsets. This mitigation measure is consistent with the City’s 2030 Climate Action Plan sustainability goals and will help the City to achieve local GHG emissions drawdown targets (City of Tacoma 2021a).
- **MM-35**: SeaPort Sound will install tanks within the proposed expansion area with fixed cone roofs designed to store low-vapor-pressure bulk liquids such as diesel, biodiesel, renewable fuel feedstock, and fuel oil. This would preclude the storage of high-vapor-pressure bulk liquids (i.e., gasoline and ethanol) within these tanks without retrofitting or replacing the tanks with a floating roof system, which would require a separate SEPA review and a Notice of Construction issued through the PSCAA.

Summary of Impacts and Mitigation

Table ES-1 provides a summary of benefits and impacts for the alternatives, including construction, long-term, secondary (not a direct result of the Proposed Action), and cumulative (those that could result in the combination of effects from individual project actions occurring over time) benefits and impacts. These impacts are described in more detail following the table and in Chapter 3. The EIS did not identify any significant adverse impacts that cannot be mitigated.
<table>
<thead>
<tr>
<th>Element of the Environment</th>
<th>Type of Impact</th>
<th>Alternative 1: No Action</th>
<th>Alternative 2: Proposed Action</th>
<th>Mitigation Measures and Best Management Practices (MM-#)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Earth</strong></td>
<td>Construction</td>
<td>No Adverse Impact</td>
<td>Minor Impact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-Term</td>
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Earth

Construction Impacts

- **No Action Alternative**: The No Action Alternative would have no impacts on earth resources from construction since no construction would occur.

- **Proposed Action**: Construction of the Proposed Action would result in temporary and localized impacts on earth resources, primarily consisting of the use of imported fill material during construction. Due to the implementation of BMPs during construction, including erosion control BMPs, it is expected that impacts on earth resources would be minor.

Long-Term Impacts

- **No Action Alternative**: In the long term, the No Action Alternative would result in minor impacts on earth resources, with potential impacts being nominally greater than the Proposed Action since infrastructure would not be replaced or upgraded to current building code standards.

- **Proposed Action**: Long-term impacts as a result of the Proposed Action from earthquakes, lahars\(^2\), or tsunamis are expected to be minor due to safety upgrades and adherence to permit and regulatory requirements, such as compliance with International Building Code Standards, use of modern City seismic and development codes, and federal secondary containment requirements. Unforeseen emergencies such as a spill could also impact earth resources, but these impacts are also expected to be minor due to the implementation of emergency shutdown protocols in place to quickly respond in the event of an emergency per the *SeaPort Sound Terminal LLC Facility Contingency Plan* (SeaPort Sound 2020).

Secondary Impacts

- No secondary impacts on local earth resources are anticipated from the No Action Alternative or Proposed Action.

Cumulative Effects

- **No Action Alternative**: Some short-term increases in risk of erosion could occur from other past, present, and reasonably foreseeable future projects, mainly from construction activities. In addition, the construction and operation of new infrastructure from nearby projects could cause increases in risk of exposure to geological hazards.

\(^2\) A hot or cold mixture of water and rock fragments that flows down the slopes of a volcano and typically enters a river valley.
• **Proposed Action:** There may be some minor impacts on earth resources, mainly during construction of the Proposed Action and other construction projects in the area, and negligible increases in risk of exposure to geologic hazards that would be addressed through construction BMPs. This is not expected to result in a cumulatively significant impact.

**Air**

**Construction Impacts**

• **No Action Alternative:** The No Action Alternative would have no impacts on air from construction since no localized construction emissions would occur.

• **Proposed Action:** The construction of the Proposed Action would include large machinery and equipment such as excavators, front-end loaders, welders, and forklifts. Construction impacts and emissions associated with construction equipment are expected to be minor since they would be short-term and limited in duration. On-site GHG emissions from construction equipment are anticipated to total approximately 221 tCO₂e. BMPs would be implemented during construction to avoid or minimize potential impacts on air, such as limiting idling of construction equipment when not in use, using dust suppression equipment during grading to reduce potential dust emissions, and periodically checking equipment to ensure that it is in good operational condition.

**Long-Term Impacts**

• **No Action Alternative:** Long-term impacts on air from the No Action Alternative are expected to be minor since the terminal would continue to operate in compliance with current permits and regulations. Emissions control measures implemented during operation to address potential impacts on air would also continue to occur. On-site GHG operating emissions are anticipated to be approximately 291,900 tCO₂e under the No Action Alternative for the analysis period from 2024 through 2063.

• **Proposed Action:** Operational emissions from the Proposed Action would only slightly increase compared to the No Action Alternative when modeling facility operations at maximum capacity by 2033 (see Appendix A). This is because the permitted throughput would not increase and on-site operations would remain largely similar to the No Action Alternative. Operational emissions under the Proposed Action are different than the No Action Alternative because facility equipment will be replaced and storage capacity will be expanded. Emissions at the facility are largely unaffected by the quantity of renewable versus fossil fuels in the throughput product mix because emissions associated with storage make up a relatively small part of overall facility emissions. Therefore, operations emissions would be largely the same under all market fuel mix scenarios. On-site GHG emissions from operation of the Proposed
Action are anticipated to result in an approximately 16,800 tCO2e increase in GHG emissions compared to the emissions anticipated under the operation of the No Action Alternative over the analysis period from 2024 through 2063 (operating emissions would be approximately 291,900 tCO2e under the No Action Alternative and approximately 308,700 tCO2e under the Proposed Action).

Technologies that would continue to be in place at the facility during operation of the Proposed Action to control emissions and odors include a bottom-load truck rack that vacuums emissions and returns them to the storage tanks, floating roofs in some existing tanks (floating roof tanks are not proposed as part of the Proposed Action), a vapor detection system for propane loading, vapor demisters, a blower that pulls vapors from asphalt oil trucks and processes them through a vapor control device and carbon filter, and a marine vapor combustion unit that is used during product transfers. The PSCAA would also conduct regular inspections to ensure compliance and that no unacceptable emissions or odors have been identified that would require further control. Additionally, the facility meets the California Bay Area Air Quality Management District (BAAQMD) definition for Best Available Control Technology (BACT). Therefore, long-term air impacts from operation of the Proposed Action are anticipated to be minor.

Secondary Impacts

- Secondary impacts on air from the Proposed Action include off-site transportation of the throughput products from their point of origin and to their destination and the combustion or consumption of the products, similar to the No Action Alternative. As a third-party storage and distribution terminal, SeaPort Sound does not extract or refine feedstock materials for the products that it holds in inventory. Changes at the SeaPort Sound Terminal are unlikely to impact the regional demand for these products or the manner in which those products are manufactured. Ultimately, combustion of fuels or consumption of materials sold to customers is based on market demand and is expected to occur within the greater fuels marketplace regardless of SeaPort Sound’s actions due to the relative inelasticity of demand for fuel products. The Proposed Action may reduce secondary off-site emissions associated with the transport of fuel products, if it is providing more efficient pathways between manufacturers and consumers.

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3 The facility’s infrastructure currently meets and will continue to meet the California Air Resources Board, BAAQMD’s definition for BACT. BACT is a pollution control standard mandated by the Clean Air Act and administered by the U.S. Environmental Protection Agency (EPA), though more stringent standards may be adopted by the local Air Quality Control Region (AQCR). The BACT standard determines what air pollution control technology must be used to control the emission levels of a specific pollutant to its specified legal limit. The BAAQMD’s BACT standards are among the most restrictive air pollution controls and apply to similar terminals in California’s Bay Area.
Under both alternatives, regional population growth will likely continue, potentially leading to an increase in market demand for fuel products and the need to transport them via SeaPort Sound and its competitors (OFM 2021). Using modeling, the predicted quantities of off-site, secondary GHGs generated by those external users who combust products handled by SeaPort Sound would increase by approximately 9% under each market fuel mix scenario. This value is not an increase in total global GHG emissions. It is only an increase in the share of fuels underlying global GHG emissions that would pass through SeaPort Sound under the Proposed Action.

Increased use of renewable and biofuel alternatives is expected to reduce GHG emissions over time, particularly in this region where the use of renewable and biofuel alternatives is more encouraged through policymaking. Under the Central and State Goal scenarios, as compared to the Static scenario, there may be a minor benefit to air as more carbon-intensive road fuels continue to be offset by renewable and biofuels. It is expected that under the Proposed Action, SeaPort Sound will be better equipped to provide the flexibility to offer an expanded inventory of renewable and biofuel products as the demand increases for low-carbon road fuels. Overall, the Proposed Action is anticipated to have minor secondary impacts on air compared to the No Action Alternative. As described in the previous paragraphs, secondary impacts are market-driven and associated with off-site actions that would occur independently of any changes to the SeaPort Sound Terminal’s capacity.

**Cumulative Effects**

- **No Action Alternative:** There could be short- and long-term increases in emissions as a result of construction and operation of nearby projects. However, no construction would occur under the No Action Alternative and the aging refinery infrastructure and wastewater treatment system would remain in place. Under the No Action Alternative, the terminal will continue to operate similar to existing conditions with fluctuations of on-site emissions.

- **Proposed Action:** Construction of the Proposed Action may contribute to local short-term increases in emissions if multiple projects are undergoing construction simultaneously. However, the Proposed Action would occur within an active industrial facility, with impacts that are typical of the surrounding industrial setting, and BMPs would avoid or minimize potential impacts during construction of the Proposed Action.

The Proposed Action will result in a minor increase in on-site emissions to support operations. Minor cumulative adverse impacts on long-term air quality could also occur with the implementation of present and reasonably foreseeable future projects. The Proposed Action, under the Central and State Goal scenarios, is anticipated to carry a greater quantity of renewable and biofuels through the site to the local and regional market, which is consistent
with Washington’s LCFS goals toward reducing statewide GHG emissions through low-carbon alternatives. Mitigation measures consistent with the City’s Climate Action Plan goals (City of Tacoma 2021a) are also proposed to offset potential air quality impacts from construction and operation. Therefore, the Proposed Action could contribute to minor cumulative effects on air quality.

The Proposed Action would result in minor benefits to air quality under the Central and State Goal scenarios, each of which would result in a decrease in emissions over time relative to existing conditions (No Action Alternative) under the 2016 to 2020 baseline period (resulting from higher fractions of renewable and biofuels displacing fossil fuels).

**Water**

**Construction Impacts**
- **No Action Alternative**: Under the No Action Alternative, construction would not occur; therefore, no impacts on water would occur.

- **Proposed Action**: Construction of the Proposed Action would require excavation several feet below the existing grade that could lead to encountering contaminated soils or groundwater. These activities have the potential to result in contaminated water being discharged from the construction site and impacting water quality in the Hylebos Waterway or Commencement Bay. However, permit requirements including Ecology’s CSWGP and plans such as a SWPPP and a contaminated media management plan would be in place to avoid and minimize these potential impacts. Therefore, no impacts on water are anticipated from the Proposed Action.

**Long-Term Impacts**
- **No Action Alternative**: Under the No Action Alternative, the on-site stormwater system and industrial wastewater pretreatment system would be operated, maintained, and repaired consistent with permit requirements. The No Action Alternative would provide neither improved wastewater treatment nor spill prevention measures, and the blocked stormwater line would continue to be blocked with restricted flow and would not be replaced. Furthermore, the existing wastewater treatment system is an older and aging system, and repair materials are becoming harder to obtain. The No Action Alternative could lead to a scenario where the wastewater treatment system equipment is no longer sufficient to meet on-site wastewater permit requirements. Excavation to construct the Project would not occur, and there would not be a need to manage groundwater that might be present in excavation areas. SeaPort Sound would continue to operate the existing facility in compliance with local, state, and federal regulations. Compliance with regulations and required plans (SWPPP, emergency action response plan, and *SeaPort Sound Terminal LLC Facility Contingency Plan*)
[Seaport Sound 2020]) would continue to avoid or minimize the risk of impacts on water quality near the Project site during operation. No impacts on water quality, water supply, or flood hazard areas are anticipated from the No Action Alternative.

- **Proposed Action:** No long-term impacts on water quality from the Proposed Action are anticipated due to ongoing adherence to permit requirements. There would also be no long-term impacts on water supply or flood hazard areas. The Proposed Action could result in potential changes in the amount of stormwater discharged to Hylebos Waterway compared to the City municipal sewer system; however, stormwater discharges would be compliant with permit requirements. There could be minor benefits to stormwater from repair and replacement of the wastewater treatment system, as well as a reduction in water usage from replacement of the steam boiler with a more efficient hot oil heater.

**Secondary Impacts**

- Secondary impacts from the Proposed Action could include a nominal increase in risk of spills during transport of fuel products off site, proportional to the amount of fuel transferred. The risk of these impacts occurring would be similar to the No Action Alternative since transportation throughput is driven by market demand, not an increase in storage capacity. A major spill anywhere along the supply chain that reaches freshwaters or marine waters could have significant impacts if not properly responded to and quickly contained.

SeaPort Sound does not operate off-site transport vessels, trains, or trucks; however, third-party vessels that access the facility are required to adhere to federal and Washington State regulations regarding vessel safety, spill prevention, and discharges of ballast water. Similarly, state and federal regulations require safety measures for trains and trucks transporting fuel products to provide for human safety, but also for the protection of natural resources and the environment. Adherence to these regulations would minimize but not eliminate the risk of a large spill and associated impacts on water quality under the No Action Alternative and the Proposed Action.

**Cumulative Effects**

- **No Action Alternative:** Demolition and construction would not occur at the site under the No Action Alternative, including replacement of the damaged City stormwater line. The wastewater treatment system would not be upgraded, possibly resulting in minor cumulative impacts on the sanitary sewer system where water is discharged from other operations in the Tacoma Tideflats area. New development in the Tideflats area may include the installation of new pollution-generating impervious surfaces; however, the new surfaces would meet the current standards for flow control and water quality treatment for stormwater runoff, which could have a cumulative benefit to water quality.
• **Proposed Action:** The Proposed Action would result in a net decrease of 400 square feet of impervious surface on the Project site compared to existing conditions, and BMPs would be implemented during construction and operation to minimize risks to water quality. Nearby cleanup projects include sites with contaminated surface water and groundwater, resulting in a cumulative benefit to water quality. For these reasons, the Proposed Action is not expected to contribute to cumulative adverse impacts on water quality.

Present and reasonably foreseeable future projects could result in a need for additional water; however, the Proposed Action would not require substantial amounts of additional water during construction and would reduce facility water use during operations through replacement of the existing steam boiler with a more efficient hot oil heater (reducing on-site water consumption by approximately 5 million gallons annually). Therefore, the Project is not expected to contribute to cumulative adverse effects on water supply. It is anticipated that SeaPort Sound and other users of the waterway would continue to conduct activities consistent with state and federal regulations that enforce the protection of water quality and aquatic species. The Proposed Action is anticipated to have no cumulative impacts on nearby surface waters from construction or operation.

**Plants and Wildlife**

**Construction Impacts**

• **No Action Alternative:** Under the No Action Alternative, the proposed facilities would not be constructed; therefore, there would be no construction impacts on plants and wildlife.

• **Proposed Action:** The Proposed Action could result in negligible construction impacts on terrestrial wildlife due to construction disturbance; however, species that would be present are already somewhat tolerant of disturbance due to the industrial setting. No in-water construction is proposed as part of the Proposed Action, and noise from construction is not anticipated to result in impacts on marine mammals or fish. Therefore, no impacts on plants and wildlife would occur under the Proposed Action.

**Long-Term Impacts**

• **No Action Alternative:** Under the No Action Alternative, impacts on plants and wildlife resulting from operation and maintenance of the existing facilities would not occur because habitat conditions would remain the same.

• **Proposed Action:** Under the Proposed Action, no direct impacts on plants or wildlife are anticipated because the Proposed Action would not substantially change the level of human
activity or noise occurring at the Project site, and the Project site would remain an industrial facility where little wildlife habitat and vegetation exist.

Secondary Impacts

- Secondary impacts from the Proposed Action would be similar to the No Action Alternative since throughput is driven by market demand, not an increase in storage capacity. However, there could be a nominal increase in risk of spills during transport of fuel products off site if demand for bulk liquid products in the region increases. A major spill anywhere along the supply chain could degrade wetlands, streams, marine waters, and other plant and wildlife habitats where they are present along the transportation route. SeaPort Sound does not operate off-site transport vessels, trains, or trucks. Third-party vessels that access the facility are required to adhere to Washington State regulations that comprehensively regulate shipping lanes, vessel speeds, and setback zones for the protection of killer whales. These regulations are intended to reduce noise levels that are harmful to killer whales and to maintain safe distances between vessels and wildlife. Similarly, state and federal regulations require safety measures for trains and trucks transporting fuel products to provide for human safety, but also for the protection of natural resources and the environment. Adherence to these regulations would minimize but not eliminate the risk of a large spill and associated impacts on plants and wildlife under the No Action Alternative and the Proposed Action. Impacts would be minor under any of the three market fuel mix scenarios.

Cumulative Effects

- **No Action Alternative:** No construction would occur under the No Action Alternative and the aging refinery infrastructure and wastewater treatment system would remain in place. No adverse impacts are anticipated from the No Action Alternative.

- **Proposed Action:** Construction of the Proposed Action would occur within an industrial area with little habitat, and it includes no in-water work. Therefore, it would not contribute to cumulative adverse impacts on plants or wildlife. During operations, the Proposed Action would continue existing uses of the site and waterway. It is anticipated that SeaPort Sound and other users of the waterway would continue to conduct activities consistent with state and federal regulations that enforce the protection of water quality and aquatic species. The implementation of other reasonably foreseeable future actions, such as the PSE Liquified Natural Gas (LNG) Facility, may increase the amounts of fuel products being transported through the Tideflats area and could lead to an increase in the potential for spills. It is anticipated that SeaPort Sound and these other, similar facilities in the area would continue to operate in compliance with local, state, and federal regulatory guidelines for spill prevention and other environmental health and safety measures. Overall, the Proposed Action could contribute to minor cumulative effects on plants and animals.
Energy and Natural Resources

Construction Impacts

- **No Action Alternative:** Under the No Action Alternative, demolition and construction would not occur; therefore, no construction impacts on energy and natural resources would occur.

- **Proposed Action:** During construction of the Proposed Action, electricity would be used to provide temporary construction site lighting, heat buildings, and power tools and equipment. A temporary increase in fuel usage would result from transporting construction personnel and materials to the Project site and operating construction equipment. The demand for electricity, diesel, and gasoline, or renewable and biofuel alternatives, needed during construction is anticipated to be met by existing supplies, resulting in negligible energy supply impacts. Nonrenewable natural resources that would be used to construct the Proposed Action would include concrete, aggregate, and steel. The demand for natural resources needed during construction is anticipated to be met by existing supplies, resulting in a negligible level of impact.

Long-Term Impacts

- **No Action Alternative:** Under the No Action Alternative, infrastructure would not be replaced with more modern, energy-efficient equipment. Maintaining the existing infrastructure may require SeaPort Sound to modify existing tanks to hold different bulk liquids in response to market demand. These modifications, as well as ongoing operation and maintenance of existing facilities, would require a minor commitment of energy and natural resources, resulting in a negligible level of impact.

- **Proposed Action:** Under the Proposed Action, energy-efficient equipment would be installed, resulting in a net reduction in overall energy usage. Replacement of the on-site boiler, in particular, would result in a substantial energy savings at the facility (up to 30% energy savings). Once the new facilities are constructed, no significant use of natural resources would be needed, resulting in a negligible level of impact.

Secondary Impacts

- Secondary impacts from the Proposed Action could include a potential for minor increase in use of fuels to transport products off site, depending on market demand, similar to the No Action Alternative.

Cumulative Effects

- **No Action Alternative:** No construction would occur under the No Action Alternative and the aging refinery infrastructure and wastewater treatment system would remain in place.
Energy use at the site would continue to fluctuate based on operational needs, which are largely driven by market demand. No adverse impacts are anticipated from the No Action Alternative.

- **Proposed Action:** When combined with past, present, and reasonably foreseeable future actions, the demand for resources required for construction and operation of the Proposed Action is still expected to be met by existing supplies. Therefore, no cumulative adverse impacts on energy and natural resources are expected from the Proposed Action.

**Archaeological, Historical, and Cultural Resources**

**Construction Impacts**
- **No Action Alternative:** No impacts on archaeological, historical, and cultural resources are expected from the No Action Alternative because no construction would occur.

- **Proposed Action:** No impacts on archaeological, historical, and cultural resources are expected from construction of the Proposed Action, and no mitigation is recommended. For the Proposed Action, ground disturbance is not expected to extend beyond 10 feet below the surface and would likely occur in imported fill. An Inadvertent Discovery Plan would be prepared and followed in the event of a discovery of cultural resources during construction.

**Long-Term Impacts**
- **No Action Alternative:** No long-term impacts on archaeological, historical, and cultural resources are expected from the No Action Alternative.

- **Proposed Action:** No impacts on archaeological, historical, and cultural resources are expected from the Proposed Action, and no mitigation is recommended.

**Secondary Impacts**
- No secondary impacts on archaeological, historical, and cultural resources are expected as a result of the No Action Alternative or the Proposed Action.

**Cumulative Effects**
- **No Action Alternative:** No cumulative effects to archaeological, historical, and cultural resources are expected from the No Action Alternative.

- **Proposed Action:** No cumulative effects to archaeological, historical, and cultural resources are expected from the Proposed Action, and no mitigation is recommended.


Environmental Health and Safety

Construction Impacts

- **No Action Alternative:** Under the No Action Alternative, the proposed facilities would not be constructed, and construction impacts on environmental health and safety would not occur.

- **Proposed Action:** It is anticipated that construction of the Proposed Action would have negligible impacts on environmental health and safety. During construction of the Proposed Action, it is possible that contaminated soils could be encountered that may be present from historical activities at the facility; however, a contaminated media management plan will be developed to address the characterization, segregation, and disposal of any contaminated soils encountered during excavation. Demolition of existing structures could disturb asbestos-containing materials where present. Most asbestos was already removed, but appropriate demolition and disposal practices would be implemented during asbestos removal. Short-term and localized increases in noise may occur from construction activities; however, potential increases in construction noise are anticipated to quickly attenuate to background levels due to the industrial setting.

Long-Term Impacts

- **No Action Alternative:** No long-term impacts on environmental health and safety would occur under the No Action Alternative because potential impacts from ongoing activities at the terminal would continue to be mitigated via response plans and ongoing training.

- **Proposed Action:** The Proposed Action would include an increase in the storage of bulk liquids at the terminal, with throughput levels continuing to fluctuate (within the permitted limit similar to the No Action Alternative). The Proposed Action includes both design and operational safety measures to avoid and minimize potential environmental impacts from operation and storage of materials, such as designing the new tanks to meet design safety standards. Continued safe operation of the facility would be ensured through compliance with local, state, and federal regulations for the handling, storage, and transport of materials. Long-term noise levels at the Project site would remain similar to existing levels after completion of the Proposed Action, and no new noise impacts would occur as part of the Proposed Action. Long-term benefits to environmental health and safety could result from the removal of asbestos from existing structures or contaminated soil from the site.

Long-term impacts from the operation of the Proposed Action are expected to be comparable to the No Action Alternative since similar bulk liquids and materials will be handled on site under both alternatives. Any impacts from the Proposed Action are expected to be mitigated through response plans, ongoing training, and upgrading fire response
infrastructure at the terminal. The Proposed Action would include similar operations as the No Action Alternative under all three market fuel mix scenarios and would continue to operate within the permitted throughput limits.

Secondary Impacts

- Secondary impacts from the Proposed Action would be similar to the No Action Alternative since similar bulk liquids would be handled, and transportation throughput is driven by market demand, not an increase in storage capacity. However, there could be a nominal increase in risk of spills during transport of bulk liquid products off site, proportional to the amount of bulk liquids transferred if demand for bulk liquid products in the region increases. Spill response measures, including those described in the Plants and Wildlife Long-Term Impacts section, would be implemented to address potential spills; therefore, impacts are expected to be minor.

Cumulative Effects

- **No Action Alternative:** Under the No Action Alternative, short-term cumulative impacts on environmental health and safety if multiple projects are undergoing construction simultaneously, temporarily increasing traffic, dust, and noise in the area.

- **Proposed Action:** The Proposed Action could also lead to short-term increases in noise and dust; however, the Proposed Action would occur within an active industrial facility, with impacts that are typical of an industrial setting and BMPs would be implemented to avoid or minimize potential construction impacts.

Implementation of cleanup actions near the Project site could lead to beneficial cumulative impacts on environmental health and safety due to the removal of contaminants from soils, sediments, groundwater, and surface water. Implementation of other reasonably foreseeable future actions, such as the PSE LNG Facility, may increase the amounts of fuel products being transported through the Tideflats area and could lead to an increase in the potential for spills. It is anticipated that SeaPort Sound and these other, similar facilities in the area would continue to operate in compliance with local, state, and federal regulatory guidelines for spill prevention and other environmental health and safety measures. Overall, the Proposed Action could contribute to minor cumulative effects on environmental health and safety.

*Land and Shoreline Use*

Construction Impacts

- **No Action Alternative:** Under the No Action Alternative, no construction would occur; therefore, no land and shoreline use impacts would occur.
• **Proposed Action:** Under the Proposed Action, minor, short-term increases in noise and dust from construction could impact adjacent properties; however, the Project site and immediately surrounding land uses are zoned Heavy Industrial, and construction activities are compatible with existing land use and shoreline use designations. BMPs would be in place to minimize these impacts, including using low-noise-emitting equipment, limiting high-noise activities to daytime hours, and using dust suppression BMPs. Construction would take place entirely within SeaPort Sound’s existing development footprint, and no people reside within the Project vicinity. Since minorities and low-income populations are not present within the study area, construction impacts would not have disproportionate effects on these populations.

**Long-Term Impacts**

• **No Action Alternative:** Under the No Action Alternative, SeaPort Sound would continue to operate its existing facility, which is a permitted use. Although the Proposed Action would not occur, it is assumed that growth in the region would continue under the No Action Alternative, which could lead to development of another industrial use at or near the Project site. Such development could result in impacts similar to those for the Proposed Action.

• **Proposed Action:** The Proposed Action would result in continued use of the Project site as a bulk liquids storage facility, which is compatible with current and projected land uses and plans. The Proposed Action would not change these existing land uses or affect nearby or adjacent properties. Implementation of the Proposed Action would require the applicant to apply for land use permits from the City, which requires demonstration of consistency with the applicable policies, zoning, and conditions. Therefore, operation of the Proposed Action at the Project site would be consistent with the applicable policies, including consistency with the City’s Comprehensive Plan, zoning ordinance, critical areas ordinance, and Shoreline Master Program. With implementation of permit conditions, long-term impacts resulting from the Proposed Action would be considered negligible and would not require mitigation.

No residential properties are present on the Project site, and the nearest residential neighborhood is more than 0.25 mile from the Project site. After construction, long-term operations at the site would be similar to industrial activities now taking place on the site and are not expected to adversely affect population groups in the area.

**Secondary Impacts**

• No secondary impacts on land and shoreline use are expected as a result of the No Action Alternative or the Proposed Action.
Cumulative Effects

- **No Action Alternative:** Under the No Action Alternative, none of the reasonably foreseeable future projects or actions have been identified as having significant adverse impacts on land use due to extensive planning efforts that have happened and are currently underway to enforce compatible uses within the Tideflats area.

- **Proposed Action:** Similar to the No Action Alternative, the Proposed Action is consistent with land use goals and policies and planned future development, including the City’s Comprehensive Plan and Shoreline Master Program (City of Tacoma 2015a, 2019b). Therefore, the Proposed Action is not expected to contribute to significant adverse impacts on land and shoreline use.

Although cumulative impacts are not anticipated from the Proposed Action, the Tideflats Subarea Plan, currently under development by the City, could help mitigate potential land use impacts from the numerous projects that are being planned in the Tideflats area. The Tideflats Subarea Plan is intended to create a shared long-term vision and more coordinated approach to development, environmental review, and strategic capital investments in the Tideflats area and would be consistent with the City’s planning policies and goals.

*Transportation*

Construction Impacts

- **No Action Alternative:** Under the No Action Alternative, no construction would occur; therefore, no transportation impacts would occur.

- **Proposed Action:** The Proposed Action would likely create a limited increase in traffic to the Project vicinity due to construction. However, the Project is located in an industrial zone with existing truck traffic and infrastructure, which can accommodate the short-term increase of traffic associated with construction. Therefore, no adverse impacts on transportation are anticipated from construction of the Proposed Action.

Long-Term Impacts

- **No Action Alternative:** Under the No Action Alternative, increases in rail, truck, or vessel traffic may occur within the terminal’s permitted throughput limits in response to increases in market demand. Any potential change in transportation due to an increase in renewable and biofuels at the site under the Central and State Goal scenarios would likely be nominal because the different fuel mixes would not equate to an increase in demand. Overall, the No Action Alternative would have no adverse impacts on transportation at the site under any of the three market fuel mix scenarios.
- **Proposed Action:** Overall, it is anticipated that there would be no adverse impact on transportation as a result of the Proposed Action. Any changes in transportation to and from the site are driven by changes in market demand. Although the storage capacity would increase by 11% under the Proposed Action, SeaPort Sound would continue to operate within its permitted throughput limits in response to changes in market demand. Continued implementation of response plans and compliance with local, state, and federal regulations for transport of fuels would continue under all three market fuel mix scenarios.

**Secondary Impacts**
- Overall, the Proposed Action may result in a small increase in rail, truck, and vessel traffic within the Tideflats area. This is because an increase in demand for renewable and biofuels would represent a greater percentage of the overall permitted throughput volume and a decrease in the overall percentage of conventional fuel throughput volume, not necessarily an increase in the overall throughput volume as a whole. As stated in Sections 3.9.2 and 3.9.4, an increase in storage alone is not expected to increase transportation; changes in market conditions and demand for a specific fuel type are likely to be the primary drivers of increased transportation. Other transportation-related secondary impacts could include impacts on air (see Section 3.2.5.1) or environmental health and safety (see Section 3.7.4.1). It is expected that there would be no adverse secondary impacts on transportation from the Proposed Action under any of the three market fuel mix scenarios because conditions would be similar to the No Action Alternative.

**Cumulative Effects**
- **No Action Alternative:** Simultaneous construction of reasonably foreseeable future projects may cause cumulative impacts on road traffic and roadway surface damage due to a temporary increase in construction vehicles.
- **Proposed Action:** The Proposed Action could have minor cumulative effects on transportation during construction; however, most of the reasonably foreseeable future projects occur on other areas of the Tideflats, such as the Blair-Hylebos Peninsula, so construction vehicles would likely use different roadways. In addition, improvements being made to Marine View Drive would provide improved roadway surfaces to accommodate existing and proposed traffic.

Changes in throughput may occur due to market conditions and customer demand under both the No Action Alternative and the Proposed Action, but throughput and associated transportation would not exceed permitted levels that were determined through past projects requiring review of current and projected uses in the area. Overall, operation of the Proposed Action may lead to minor cumulative impacts on roadway, rail, and vessel traffic; however,
these impacts are not expected to be significant and would be consistent with projected uses accounted for in the permitted throughput limits.

Public Services and Utilities

Construction Impacts

- **No Action Alternative**: Under the No Action Alternative, no construction would occur; therefore, no public services and utilities impacts would occur.

- **Proposed Action**: Overall, construction of the Proposed Action could temporarily increase calls for emergency response and could require law enforcement, emergency medical, and fire protection services during the construction period. SeaPort Sound’s emergency response plans would be in place to provide an immediate on-site response to an incident if one occurs. SeaPort Sound would provide emergency response providers with regularly updated maps of the Project site, access points, contact information, and response procedures during construction. Therefore, it is anticipated that no adverse impact on fire protection, law enforcement, or emergency medical services would occur during construction of the Proposed Action. Construction of the Proposed Action would not result in impacts on public transit, electricity, natural gas, sewer, or solid waste services.

Long-Term Impacts

- **No Action Alternative**: Under the No Action Alternative, the facility would continue to operate under existing conditions, and demand for fire protection, law enforcement, emergency medical, public transit, electricity, natural gas, sewer, or solid waste services would not change at the Project site.

- **Proposed Action**: Impacts on public services and utilities under the Proposed Action would be similar to that of the No Action Alternative. Field deployment drills, security drills, and training in the use of emergency shutoff devices would continue to occur. A new fire water loop system would be installed that would expand fire response capabilities site wide.

Under the Proposed Action, installation of a more efficient hot oil heater would reduce natural gas consumption at the site. The proposed hot oil heater would operate at 9.9 million British thermal units (BTUs) or 9,750 cubic feet per hour (which is comparable to the existing steam boiler, which runs at that rate but has capacity for 21 million BTUs or 20,690 cubic feet of natural gas per hour). Replacement of the on-site boiler would result in a substantial energy savings at the facility (up to 30% energy savings) due to heat return efficiencies that the existing steam boiler does not have (because it lacks condensate return and loses heat and efficiency). Elimination of boiler blowdown water would also reduce the volume of water
discharged to the on-site treatment system, with a proportionate reduction in treated water entering the sanitary sewer system. This upgrade would reduce on-site water consumption by approximately 5 million gallons annually.

Secondary Impacts

- An increase in demand could increase trips needed to transport bulk liquid products under any of the three market fuel mix scenarios. If an increase in trips needed occurs, it could indirectly result in increased potential for incidents requiring emergency response (fire, police, medical) under both the No Action Alternative and Proposed Alternative. However, the number of bulk liquid transport trips from the Project site would remain within SeaPort Sound’s permitted limits described in Chapter 2. In addition, transport-related incidents could occur anywhere that fuel products are transported along the supply chain. Incidents related specifically to transporting products from the Project site would be unlikely and, if they do occur, would represent only a small percentage of incidents that occur throughout the region each year. With the regulations and emergency response plans in place at local, state, and federal levels, and mitigation measures, secondary impacts on emergency response services due to transporting fuel products off site under the Proposed Action would be negligible.

Cumulative Effects

- **No Action Alternative:** Under the No Action Alternative, minor cumulative effects to public services and utilities could occur due to an increased need for fire protection and emergency medical services, as well as an increased need for utilities such as electricity, natural gas, sewer, and solid waste within the Tideflats area. The SeaPort Sound Terminal uses various modes of transportation to transport products to and from the site, including truck, rail, and vessel transport. Transportation of products to and from the site would not exceed permitted levels that were determined through past projects requiring review of current and projected uses in the area.

- **Proposed Action:** Combined with present and reasonably foreseeable future projects, the Proposed Action could similarly contribute to minor cumulative impacts on public services and utilities. The Proposed Action is unlikely to result in a significant increase in fire response calls because of the fire suppression, spill prevention and control, and response measures in place at the Project site. The Proposed Action includes energy and water use reduction measures (e.g., replacement of the existing steam boiler with a more efficient hot oil heater) and would not substantially change the existing need for electricity, natural gas, sewer, or solid waste utilities. For these reasons, the Proposed Action is not expected to contribute to significant adverse impacts on public services and utilities.
1 Introduction

This Washington State Environmental Policy Act (SEPA) Environmental Impact Statement (EIS) has been prepared to identify and evaluate environmental impacts associated with a set of alternatives for the proposed SeaPort Sound Terminal, LLC (SeaPort Sound), Plant Modernization Project (Project). The Project is located at the SeaPort Sound Terminal on the Hylebos Waterway at 2628 Marine View Drive in Tacoma, Washington (Figure 1-1). SeaPort Sound’s objective for the Project is to demolish components that are not needed at the terminal and replace them with new storage tanks, piping, and associated equipment, including wastewater treatment infrastructure upgrades, that will meet the functional, operational, and environmental needs at the terminal. The Project will remove existing refinery infrastructure and replace it with new tanks, increasing the storage capacity at the terminal for low-carbon and other bulk liquids to improve SeaPort Sound’s flexibility in response to the increasing market demand for low-carbon fuels.

The Project includes demolishing the existing refinery equipment, boiler, building, storage tanks, containment berm, and piping, and replacing them with a new containment wall and storage tanks. The new storage tanks will be installed within a similar footprint as the existing equipment and tanks. Existing wastewater treatment equipment located south of the refinery demolition area will be replaced, including replacing the oil-water separator used for wastewater treatment, corrugated plate interceptor induced air flotation, aeration pond, and rotating biological contactor and clarifier. A new stormwater line will be installed parallel to and around an existing blocked storm line on the east side of the property that discharged from Marine View Drive to the Hylebos Waterway. This storm line handles off-site stormwater that is outside of the purview of this facility’s National Pollutant Discharge Elimination System (NPDES) permit. No changes to the existing NPDES permit will occur. New manholes will be installed along the new alignment for access to the line. The existing outfall will remain, and no outfall modifications or in-water work are proposed. Design and operational safety measures will be incorporated to avoid and minimize potential environmental impacts from operation and storage of materials, including installation of a 4-foot-tall concrete containment berm.

This chapter provides information on the location of the Project, background on the need for the Project, an explanation of the environmental review process for the Project, and a summary of the permitting process that ended with the City of Tacoma (City) issuing a Determination of Significance for the Project.
NOTES:
2. Aerial image is USDA National Agriculture Imagery Program (USDA 2019).
1.1 Background

SeaPort Sound is a storage and distribution company for bulk liquids, including fossil and renewable fuels such as biofuels, providing bulk liquids to the maritime and land-based consumer markets in the Pacific Northwest. The property has been used for various industrial purposes since the 1940s, including petroleum refining and storage. Refining activities were discontinued at the property around 2002 due to market factors.

The Renewable Fuel Standard (RFS) identified in the Energy Policy Act of 2005 and further expanded upon in the U.S. Energy Independence and Security Act of 2007 required that, over a 15-year period ending in 2022, the volume of renewable fuels used in the United States must increase from 7 to 36 billion gallons annually. The RFS, in particular, required that by 2009 biomass-based diesel (biodiesel) should be introduced as part of a national effort to use non-petroleum-based fuel feedstocks. Fuels in this category were required to demonstrate a life cycle greenhouse gas (GHG) emissions reduction of 50%. The RFS also required an increase in conventional, starch-based biofuels, representing a 20% life cycle reduction in GHG, to 15 billion gallons a year, and an increase in advanced biofuels (including cellulosic fuels) by 20 billion gallons with up to a 60% reduction in GHG.

Following the creation of the RFS, SeaPort Sound began developing facilities for providing biofuels to the region. The first tank of biodiesel at the terminal was installed in 2007, and by the end of the year, a permit application had been submitted to the Puget Sound Clean Air Agency (PSCAA) to allow SeaPort Sound to expand into the storage and throughput of starch-based biofuels (i.e., ethanol). In 2017, SeaPort Sound became a provider of renewable diesel, which would provide end users with access to advanced biofuels. This allowed SeaPort Sound to become a significant regional logistical source for the distribution of biofuels addressing the requirements of the RFS schedule while aiding end users in complying with the U.S. Energy Independence and Security Act.

A portion of SeaPort Sound’s business currently involves providing fueling support to the maritime industry in Puget Sound (e.g., container ships, local fishing fleets, and the cruise ship industry). Storage and product flexibility is required at the terminal to support maritime fueling because the vessels that SeaPort Sound serves vary in size and fuel types. Additionally, because the maritime customers determine when vessel fueling is needed, use of SeaPort Sound’s facilities routinely changes depending on several factors, including vessel type and number.

Most of SeaPort Sound’s business serves the Puget Sound region, with limited vessel transport along the West Coast, Hawaii, and Pacific Rim. SeaPort Sound also provides bulk liquid products to the land-based consumer markets in the Pacific Northwest and freight transportation (for use at regional truck stops), as well as to the road paving industry for construction materials and the manufacturing industry for renewable products (from low-impact wood preservation products to low volatile
organic compound [VOC] paints). Currently, SeaPort Sound transports products through the site using the following loading and unloading methods:

- Outbound loading to truck (via the truck rack) and vessel (via the SeaPort Sound dock)
- Inbound unloading via truck, rail, pipeline, and vessel

SeaPort Sound’s operations, including facility throughput and emissions, are regulated by a variety of regulatory permits and approvals, including City land use permits and PSCAA Notices of Construction (NOCs) as described in Chapter 2. SeaPort Sound is not seeking to increase any permit limits associated with permitted facility throughput and emissions as part of the Project.

SeaPort Sound is an important distributor in the region’s renewable and biofuels market. It is expected that low-carbon fuels will continue to displace traditional fuels as market demand for low-carbon fuels increases; notably, in response to the recent passage of Washington House Bill (HB) 1091 in 2021 (“Reducing greenhouse gas emissions by reducing the carbon intensity of transportation fuel”), which builds upon the California and Oregon Low-Carbon Fuel Standard (LCFS) programs.

The removal of the existing refinery, tanks, and wastewater treatment system, which will be replaced by new tanks, will result in an approximately 11% increase in existing storage capacity to improve flexibility for providing customers with a variety of products, including low-carbon energy products. This increase in storage capacity will allow SeaPort Sound to store a greater variety of products (namely low-carbon energy products) to better serve its customers by being more responsive to fluctuations in market demand. SeaPort Sound’s throughput is regulated by the facility permits that limit product throughput volumes and emissions as described in Section 2.2. SeaPort Sound is not seeking permit modifications to increase its current authorizations and will continue to operate within the permitted throughput volume and emissions limits after the Project is completed.

SeaPort Sound is focused on maintaining its progress toward enhancing the regional availability of biofuels. While market demands may shift and impact fuel and fuel blends, SeaPort Sound sees the LCFS as an opportunity to further serve the community and help meet the growing needs of advanced biofuels in the marketplace. Ultimately, the use of the assets proposed by SeaPort Sound will be driven by market demand and equipment design. Compliance with stringent regulatory and operating requirements makes SeaPort Sound’s operations safe, reliable, efficient, and responsible. With the state acceptances of LCFS, SeaPort Sound believes there is a fast-approaching logistical need for increasing regional capacity to meet the demand for biofuels and LCFS products.

1.2 Environmental Review Process

SeaPort Sound submitted a SEPA Checklist to the City on May 21, 2020. The City, acting as the SEPA Lead Agency, notified the public that a Mitigated Determination of Nonsignificance was anticipated
and invited public comment. Due to an administrative process error for the public notice, two 30-day notices were issued: the first on July 17, 2020, and the second on August 20, 2020. Additionally, two public meetings were held, on July 30, 2020, and September 10, 2020. At each meeting, a presentation was given, and the public was instructed on how to submit comments. The City met with the Puyallup Tribe in July 2020, and comments were addressed at the meeting.

On February 4, 2021, the City withdrew the preliminary SEPA determination and issued a Determination of Significance for the Project based upon the unknown and probable significant adverse impacts from the increased storage of fossil fuels in a location that is proximate to human habitation, that is adjacent to sensitive critical habitat, and that is subject to liquefaction and other seismic risks (City of Tacoma 2021b). A scoping period occurred from February 4 to February 25, 2021, and a virtual scoping meeting was held on February 18, 2021. The public was invited to comment on the Project. The City issued a scoping letter on March 9, 2021, based on scoping comments received on the Determination of Significance for the Project. The scoping letter details the scope of work required for the EIS in addition to the environmental element descriptions set forth in Washington Administrative Code (WAC) 197-11.4

This EIS has been prepared to meet the SEPA procedural requirements outlined in Revised Code of Washington (RCW) Chapter 43.21C and Tacoma Municipal Code (TMC) Chapter 13.12. SEPA requires lead agencies to evaluate how the Project will be implemented, along with the potential impacts and mitigation that could result from the implementation of the action alternatives and the No Action Alternative, prior to making a project decision. Existing environmental documents are incorporated by reference, to the extent practicable, to support the evaluation of proposed actions, alternatives, or environmental impacts, consistent with TMC 13.12.700 and WAC 197-11-635. Information and analysis from the SeaPort SEPA Environmental Checklist are also incorporated by reference into the analysis and findings of this EIS, in accordance with the previously referenced regulations. An EIS distribution list from the City is included in Appendix B.

1.3 EIS Scope and Organization

The rest of this EIS is organized into the following chapters to meet the requirements of SEPA:

- **Chapter 2 – Project Description and Alternatives:** Describes the range of alternatives evaluated during the EIS process as well as alternatives that were considered but not carried forward.
- **Chapter 3 – Affected Environment, Impacts, and Mitigation Measures:** Describes the existing environment; analyzes potential impacts of the alternatives; and provides proposed avoidance, minimization, and mitigation measures.

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4 The full permit record is available via the City of Tacoma’s Planning and Development Services permitting website: https://aca-prod.accela.com/TACOMA/Default.aspx.
5 It should be noted that the TMC is reliant on national and state authority and laws (e.g., seismic codes and flood regulations).
• **Chapter 4 – Cumulative Effects:** Describes cumulative impacts of the Proposed Action relative to the No Action Alternative and identifies potential mitigation measures to reduce potential cumulative effects of the Proposed Action.

• **Chapter 5 – References:** Provides a list of references used to support preparation of this EIS.

• **Chapter 6 – List of Preparers:** Identifies individuals who participated in the preparation of this EIS.
2 Project Description and Alternatives

2.1 Purpose and Need

The SeaPort Sound Terminal is operated for the distribution of bulk liquids, including fossil and renewable fuels, in response to market demand. The purpose of the Project is to provide SeaPort Sound operational flexibility and modernized facilities to better meet increasing market demand for renewable/low-carbon fuels. This increase in market demand is influenced by changes in legislation, such as the recently passed HB 1091 for reducing the carbon intensity of road fuel. The Project would increase storage capacity for low-vapor-pressure bulk liquids including diesel, biodiesel, renewable fuel feedstock, and fuel oil. Storage capacity at the site would increase by approximately 11% but SeaPort Sound is not seeking to increase any permit limits associated with permitted facility throughput and emissions as part of the Project.

To accomplish the Project purpose, the Project will modernize the terminal by removing aging refinery infrastructure, which will remove the on-site potential for producing approximately 2 million barrels (84,000,000 gallons) of product per year and will remove the potential for 89,000 metric tons carbon dioxide equivalent (tCO₂e) per year of direct emissions from refinery operations. The refinery infrastructure will be replaced with new storage tanks, piping, and associated equipment and safety and environmental protection measures, including upgraded wastewater treatment systems to meet the functional, environmental, and operational needs at the terminal. The Project also includes replacing existing stormwater infrastructure that receives and conveys off-site stormwater that is outside of the purview of this facility’s NPDES permit.

Fuel Types

- Fuel oil is a liquid petroleum product used to generate heat or power.
- A distillate is a type of fuel oil obtained from the condensation of vapors during a distillation process. Distillates include diesel, jet fuel, kerosene, and other transportation fuel additives.
- Diesel is a type of distillate used in motor vehicles that is suitable for use in compression-ignition engines.
- Biodiesel is a type of fuel typically made from vegetable oils, animal fats, or recycled grease.
- Gasoline is a fuel refined from crude oil or other petroleum liquids that is mainly used as an engine fuel in vehicles.
- Renewable diesel is similar to biodiesel but produced via hydrotreating, which removes metals and compounds containing nitrogen and oxygen.
- Renewable gasoline is a type of fuel refined from biomass suitable for use in spark-ignition engines.
Project will not change these existing land uses. Adjacent industrial properties include additional SeaPort Sound Terminal storage facilities to the west and Edman Company (a logging business) and a log yard and chip mill to the east. Hylebos Waterway is an industrial waterway that borders the south side of the terminal.

The existing refinery within the Project site includes a boiler and building, refinery equipment, and piping of various sizes located within a containment berm.
Figure 2-1
Site Map

NOTES:
2. Aerial image is USDA National Agriculture Imagery Program (USDA 2019).
Figure 2-2

Existing Conditions Site Plan

NOTE:
Site plan presented from SeaPort Sound Terminal Plant Modernization Project plans from Norwest Engineering, Inc. April 2020.
Nine existing tanks are present with varying capacities and ability to hold the product types listed below. Note that 1 barrel equals 42 gallons.

- TK-11: 1,326 barrels of water, fuel oil, or distillates
- TK-12: 1,366 barrels of water, fuel oil, or distillates
- TK-13: 1,127 barrels of water, fuel oil, or distillates
- TK-14: 1,365 barrels of water, fuel oil, distillates, or diesel
- TK-15: 1,352 barrels of water, fuel oil, or distillates
- TK-16: 4,872 barrels of biodiesel, fuel oil, or distillates
- TK-17: 1,997 barrels of biodiesel, fuel oil, or distillates
- TK-23: 168 barrels of water
- TK-24: 200 barrels of water

Existing wastewater treatment equipment located south of the former refinery area includes a surge pond, aeration basin, corrugated plate interceptor, induced air floatation device, rotating biological disk, waste oil tanks, and an oil-water separator, along with a contact water drain line that connects from the truck rack and a discharge pipe that connects from the wastewater treatment equipment to the sanitary sewer.

The Project site is currently developed and covered by impervious, compacted gravel fill and paving, including an existing concrete pad under the refinery equipment. An existing stormwater line that handles off-site stormwater from right-of-way areas along Marine View Drive outside of the terminal is located on the east side of the Project site. The stormwater line is currently blocked and minimally discharges to the existing outlet to Hylebos Waterway. The existing outfall is still in good condition and will not be modified as part of the Project. The remainder of the property, outside of the Project vicinity, also contains a laboratory building, a loading terminal with 52 aboveground storage tanks (ASTs), a five-lane truck loading rack along Marine View Drive, and a vessel pier in Hylebos Waterway. The terminal also includes a rail facility located on the south side of Hylebos Waterway along Taylor Way, which connects to the main terminal via an underground pipeline.

2.2.1 Terminal Throughput

SeaPort Sound's facility permits have established throughput limitations on various products that are transported through the terminal. These limits are set by City land use decisions and PSCAA NOCs. Throughput limitations are set for gasoline (PSCAA NOC 11403: 501,875,000 gallons of gasoline per consecutive 12 months; and not to exceed 4,800 gallons per minute or 40,000 gallons per 15 minutes), crude oil at the marine terminal (PSCAA NOC 11069: 14,601,600 barrels of crude oil per consecutive 12 months), gasoline and ethanol at the marine terminal (PSCAA NOC 11069: 2,555,000 barrels of gasoline and ethanol per consecutive 12 months), and isoctane at the marine terminal (PSCAA NOC 11069: 3,000,000 barrels of isoctane per consecutive 12 months).
Other product throughput is limited based upon the physical capacity of truck loading and vessel loading as described in the previously issued facility permits. Truck loading is, on average, up to 300 trucks per day (City of Tacoma 2011); truck loading for propane is up to 50 trucks per day (City of Tacoma 2006a); vessel calls are, on average, up to 68 vessels per month (City of Tacoma 2013a); and railcars are, on average, up to 540 cars per week. SeaPort Sound is not proposing to modify the loading capacity of the facility or limits set by these permits. SeaPort Sound’s facility average throughput limits are set by the following approvals:

- **Sound Refining, Inc., Determination of Nonsignificance (File No. 40000062528).** May 3, 2006. (City of Tacoma 2006a)
- **Sound Refining, Inc., Shoreline Substantial Development Permit (SHR 40000062527).** May 3, 2006. (City of Tacoma 2006b)
- **Sound Refining, Inc., Wetlands Development Permit (WET 40000062526).** May 3, 2006. (City of Tacoma 2006c)
- **Targa Sound Terminal Shoreline Substantial Development Permit (SHR 2011-40000162962), FWHCA Development Permit (WET2011-40000162963), and Mitigated Determination of Nonsignificance (SEP2011-40000162964).** April 4, 2012. (City of Tacoma 2011)
- **Targa Sound Terminal Shoreline Substantial Development Permit (File No. SHR 2013-40000203722).** December 5, 2013. (City of Tacoma 2013a)
- **Targa Sound Terminal Determination of Environmental Nonsignificance (SEPA File No. SEP2013-40000203723).** December 5, 2013. (City of Tacoma 2013b)
- **PSCAA NOC 11069.** March 8, 2016.
- **Targa Sound Terminal Shoreline Substantial Development Permit and Determination of Environmental Nonsignificance (LU 16-0211).** January 6, 2017. (City of Tacoma 2017)
- **PSCAA NOC 11403.** July 31, 2018.
- **SeaPort Sound Terminal Shoreline Substantial Development Permit and Determination of Environmental Nonsignificance (LU 19-066).** November 15, 2019. (City of Tacoma 2019a)
- **PSCAA NOC 11917.** December 24, 2020.

Actual facility throughput for the 5 years prior to the City’s Determination of Significance (2016 through 2020) is included in Table 2-1.
Table 2-1
SeaPort Sound Terminal Actual Facility Throughput by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Vessel Calls</th>
<th>Rail Cars Unloaded</th>
<th>Truck Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>478</td>
<td>3,838</td>
<td>56,444</td>
</tr>
<tr>
<td>2017</td>
<td>497</td>
<td>5,489</td>
<td>68,187</td>
</tr>
<tr>
<td>2018</td>
<td>527</td>
<td>6,521</td>
<td>67,987</td>
</tr>
<tr>
<td>2019</td>
<td>577</td>
<td>6,831</td>
<td>66,807</td>
</tr>
<tr>
<td>2020</td>
<td>414</td>
<td>6,514</td>
<td>58,953</td>
</tr>
</tbody>
</table>

2.2.2 Previous Permitting and SEPA Review

The SeaPort Sound Terminal has been developed over time in response to customer and market demands. As a result, development has occurred through separate and independent projects occurring on an as-needed basis. The following summarizes past projects undertaken by various entities that have owned and operated the terminal since 2006.

- **2006**: Taylor Way Rail Spur Project (Sound Refining, Inc.), located along Taylor Way. Two rail spurs were constructed south of Hylebos Waterway at 1501 (now 1621) Taylor Way. Wetland and marine buffer mitigation was required along the west and north sides of the property to remove invasive species and restore a native plant community. Mitigation construction was combined with the rail modification proposed in 2013 (see the third bullet). Plantings were installed in 2016. Four years of maintenance and monitoring has been completed. The final Year 5 monitoring report was due for submittal to the City in October 2021 to fulfill mitigation requirements.

- **2008**: Hylebos bore line connections. Sound Refining, Inc., bored a tunnel underneath the Hylebos Waterway to establish a connection for bulk liquids exchange between the Taylor Way property and the terminal.

- **2012**: Sound Refining Renewable Fuels Project (Sound Refining, Inc.), located in the western portion of the facility. Twelve tanks were constructed, and a pipeline was installed along East 11th Street. Marine buffer mitigation included restoration along the shoreline. The City required 5 years of maintenance and monitoring, which was successfully completed and approved by the City on November 20, 2020.

- **2013**: Rail Modification and Tank Expansion Project (Targa Sound Terminal, LLC), located along Taylor Way. One additional rail spur was constructed south of Hylebos Waterway at 1501 (now 1621) Taylor Way. Two tanks were modified, and two tanks were constructed as part of this project. No mitigation was required beyond the wetland and marine buffer mitigation described in the 2006 Taylor Way Rail Spur Project (Sound Refining, Inc.).
• **2015**: Targa Sound Terminal Maintenance Dredge Project (Targa Sound Terminal, LLC). This project involved removal of accumulated sediment in Hylebos Waterway. No mitigation was required.

• **2015**: Targa Sound Terminal Tank 21 Replacement Project (Targa Sound Terminal, LLC). This project involved the replacement of Tank 21 located north of the proposed Project site. The project was considered exempt from procedural requirements by the City (under SEPA) with conditions. No mitigation was required.

• **2016**: Targa Sound Terminal Security Fence Replacement Project (Targa Sound Terminal, LLC). This project was considered exempt from procedural requirements by the City with conditions but was never constructed.

• **2017**: Targa Sound Terminal Dock Restoration Program (Targa Sound Terminal, LLC). This project involved maintenance and replacement of components of the marine terminal. Mitigation was required by the City, including removal of creosote-treated piles and replacement of a portion of the dock structure with grating to allow light passage to intertidal areas along Hylebos Waterway. Mitigation construction was approved by the City in 2018.

• **2018**: Targa Sound Terminal Stormwater Treatment System Installation (Targa Sound Terminal, LLC). This project involved installation of stormwater treatment systems. No mitigation was required.

• **2019**: Taylor Way Project (SeaPort Sound). This project includes installation of four new rail spurs with transfer equipment to reduce the number of rail car switches on and off of the site from Taylor Way, along with enhancements to rail safety and site-wide fire suppression safety. No mitigation measures were required. This project is currently under construction.

### 2.3 Market Fuel Mix Scenarios

The No Action and Proposed Action alternatives are each evaluated under three market fuel mix scenarios: Static, Central, and State Goal. A range of scenarios was selected for the purposes of this EIS to assess the potential impacts of future variable market conditions. Each market fuel mix scenario includes a future potential market mix of road fuels that SeaPort Sound might store and distribute through the terminal. Road fuels are used in this analysis because they represent 80% of total product volume distributed through the terminal and are subject to recent regulations. Other bulk liquids handled by SeaPort Sound Terminal are modeled to maintain their current, collective proportions. The mix of road fuels included in this analysis and evaluated in the *Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project* (Appendix A) are shown in Table 2-2.
### Table 2-2
Road Fuels

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Spark-Ignition</th>
<th>Compression-Ignition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fossil Fuel</td>
<td>Gasoline</td>
<td>Diesel</td>
</tr>
<tr>
<td>Drop-In Fuel</td>
<td>Renewable gasoline</td>
<td>Renewable diesel</td>
</tr>
<tr>
<td>Biofuel</td>
<td>Ethanol</td>
<td>Biodiesel</td>
</tr>
</tbody>
</table>

The three market fuel mix scenarios are intended to cover a range of additional renewable and biofuels considering market penetration from none (Static scenario) to very high (State Goal scenario). The market fuel mix scenarios have been developed consistent with the data reported by the U.S. Energy Information Administration (U.S. EIA) to the geographic scale of Petroleum Administration for Defense Districts (PADDs). SeaPort Sound Terminal is located in PADD 5, which includes the states of Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington. As of 2020, the PADD 5 market fuel mix was as shown in Table 2-3 on a volume basis.6

### Table 2-3
PADD 5 2016–2020 Market Fuel Mix

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>73.4%</td>
</tr>
<tr>
<td>Diesel</td>
<td>25.4%</td>
</tr>
<tr>
<td>Ethanol</td>
<td>0.8%</td>
</tr>
<tr>
<td>Other Renewable Fuels</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Note:
Regional fuel production is reported to the U.S. EIA for the PADD 5 region. These data are commonly used for forecasting because they provide a clear baseline. SeaPort Sound actuals are modeled proportionately to the PADD 5 market fuel mix for the purposes of estimating potential market fuel mix scenarios as part of this analysis.

The proposed starting point for all three market fuel mix scenarios is 2024. To account for the Project’s indirect impacts on product storage across the terminal, the market fuel mix scenarios apply terminal-wide, not just the section of the terminal where the Proposed Action would be constructed.

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6 Based on direct reports of production within PADD 5. U.S. EIA also issues “product supplied” estimates that relate more tightly to consumption, but the methodology that U.S. EIA uses for estimating these is too coarse to produce meaningful values for renewable fuels. The U.S. EIA State Energy Data System derives consumption values by fuel for state-level geographies, but these lag the PADD reports (which represent primary rather than secondary data) by more than a year.
2.3.1  Static Scenario

The **Static** scenario simply presumes continuation of the status quo market fuel mix. This is equivalent to a scenario in which the new LCFS is struck down in the courts. In this scenario the market fuel mix would remain unchanged throughout the analysis period. This is the least likely of the three market fuel mix scenarios because it would require a lawsuit to be filed to reverse existing legislation. No lawsuit has been filed, and the outcome of a potential lawsuit is uncertain. However, this scenario is being included to present a range of market fuel mix scenarios for consideration in this EIS. The forecasted market fuel mix for the Static scenario is shown in Figure 2-3.

![Static Market Fuel Mix Scenario](image)

**Figure 2-3**
Static Market Fuel Mix Scenario

Notes:
RD: refined diesel
RG: refined gasoline

2.3.2  Central Scenario

The **Central** scenario assumes that PADD 5 market fuel mix ratios change over time according to legislation that has been enacted. This is the same approach used by the U.S. EIA for its annual energy forecasts. In Washington State, the mix of road fuels will change in response to HB 1091, the recently passed LCFS. The LCFS requires that the average carbon intensity of road fuels delivered in Washington State be reduced by up to 10% as of 2033 and by 20% as of 2038. Use of low-carbon road fuels is expected to increase as a result of HB 1091. Using these values, year-by-year changes in the market fuel mix can be forecasted through 2038. After 2038, this scenario assumes that the
market fuel mix does not change further because no other changes are currently legislated. See Figure 2-4 for an outline of these changes.

### Figure 2-4
**Central Market Fuel Mix Scenario**

![Central scenario](chart.png)

**Notes:**
- RD: refined diesel
- RG: refined gasoline

### 2.3.3 State Goal Scenario

The **State Goal** scenario is derived from the “Transport Fuels” scenario constructed for the Washington State Department of Commerce’s (Commerce’s) 2021 State Energy Strategy (Commerce 2021). This scenario posits less electrification of transportation than other state energy strategy scenarios, instead achieving GHG reduction targets by substituting biofuels and synthetic fuels for petroleum products. Commerce’s analysis provides absolute forecast quantities of both biofuels and synthetic fuels in 5-year increments from 2025 to 2050. To produce the gasoline substitute and diesel substitute quantities needed for analysis, Commerce’s synthetic fuels and biofuels forecasts were summed and then reallocated to match the ratio of gasoline-like and diesel-like fuels in SeaPort Sound’s bulk liquid mix. See Figure 2-5 for an outline of these changes.
2.4 Alternative 1: No Action Alternative

Under Alternative 1, the No Action Alternative, the Project would not be constructed, and SeaPort Sound would continue to operate the facility using its existing infrastructure without necessary upgrades. The existing unused refinery equipment would remain in place. Maintaining the existing infrastructure may require SeaPort Sound to adjust the mix of bulk liquids stored at the terminal or modify existing tanks to hold different bulk liquids in response to market demand. This EIS considers three potential market fuel mix scenarios as described in Section 2.3. Under the No Action Alternative, throughput and mix of bulk products would continue to fluctuate within the terminal’s permitted limits based on market and customer demand. Similarly, the demand for specific products would continue to fluctuate, and terminal infrastructure may require future modifications to accommodate changes in the bulk liquids marketplace.

2.5 Alternative 2: Proposed Action

Under Alternative 2, Proposed Action, a portion of the SeaPort Sound Terminal would be upgraded to provide operational flexibility and modernized facilities to better meet increasing market demand for renewable/low-carbon fuels. This includes demolishing the existing refinery at the terminal and
replacing it with fixed cone roof storage tanks and upgraded wastewater and stormwater infrastructure. The Proposed Action would increase existing bulk liquids storage capacity at the SeaPort Sound Terminal by up to 11% to accommodate low-vapor-pressure bulk liquids including diesel, biodiesel, renewable fuel feedstock, and fuel oil. However, SeaPort Sound is not seeking to increase any permit limits associated with permitted facility throughput and emissions as part of the Project.

The Proposed Action would require demolition and construction activities within the 200-foot S-10 Port Industrial Area shoreline district. A portion of the work will occur within the 50-foot marine buffer but will be limited to replacing equipment and stormwater utilities within the footprint of existing development. All activities will be completed within existing developed areas that are actively used to support the existing industrial property use. No in-water work will occur as part of the Project. Construction is expected to begin in late 2023, with operations beginning in 2024.

The Project includes the following elements (Figure 2-6):

- Demolishing existing refinery equipment including stacks, towers, pumps and electrical systems, a boiler and building, seven storage tanks, piping, and a containment berm.
- Installing eight new storage tanks, two new process water tanks, and piping within a 4-foot-high concrete containment wall around the impervious new storage tank area.
- Demolishing and removing the existing wastewater treatment equipment, including replacing the oil-water separator (specifically, a coalescing plate separator with containment) and removing two water tanks, a rotating biological disk, a water clarifying unit, and an induced aeration basin.
- Upgrading wastewater treatment system equipment as practicable with best available technologies (i.e., surge pond, aeration pump).
- Filling and abandoning in place the existing blocked community stormwater line on the east side of the property and diverting stormwater through a realigned pipe to be constructed parallel to the existing pipe that will discharge through the existing outfall; the existing outfall will be retained, and no outfall modifications are proposed. This realigned stormwater line handles stormwater that originates from off-site right-of-way areas along Marine View Drive.
- Installing new manholes along the new stormwater line.
NOTE:
Site plan presented from SeaPort Sound Terminal Plant Modernization Project plans from Norwest Engineering, Inc. April 2020.
Prior to demolition activities, a stormwater pollution prevention plan (SWPPP) will be prepared, and dust control best management practices (BMPs) will be implemented. Demolition activities will include removing the existing refinery equipment, boiler, and 24-foot by 41-foot building and foundation (984 square feet); seven storage tanks of varying sizes (plus two water storage tanks in the wastewater treatment system area); the 450-linear-foot earthen containment berm associated with the removed tanks (approximately 400 cubic yards [cy]); and appurtenances including various pumps, equipment, and related piping. Approximately 13,000 square feet of pavement within the demolition area will be removed. Excavation several feet below the existing grade will be required to remove approximately 100 linear feet of existing stormwater and contact water piping within the demolition area. In total, approximately 8,320 cy of excavation will be required for demolition of the refinery area.

New storage tanks will be constructed to replace the demolished tanks. The new tanks will range in diameter from 20 to 70 feet and will be between 35 and 60 feet tall. Construction of the new tanks will include installing a new reinforced concrete circular footing for each tank. An impervious bentonite liner and sand layer will be placed inside the circular footing to seal any exposed soil underneath the tanks. The new tanks will be constructed within an area contained by a 4-foot-tall concrete wall, meeting secondary containment requirements (per 40 Code of Federal Regulations [CFR] 112 and WAC 173-180-320).

The new containment area will be connected to the containment area to the west by a culvert for shared containment. A new contact water drain line will also be installed from the containment area to the replaced wastewater treatment system to the south. A vehicle access ramp will be located at the southwest entrance. In total, approximately 7,800 cy of fill will be placed over the demolition area (approximately 5,200 cy of native compacted fill and approximately 2,600 cy of gravel fill).

Portions of the existing contact water system will also be removed, including the existing oil-water separator and other related equipment and piping. Wastewater treatment system equipment will be upgraded as practicable with best available technologies (i.e., surge pond, aeration pump). No soil excavation will be required for removing the existing structures and appurtenances within the contact water system area. The contact water system will be replaced with new, upgraded features, including replacing the contact water drain line and oil-water separator. Flow and pH meters will be replaced within the 50-foot marine shoreline buffer along the existing discharge pipe to the sanitary sewer. These features will be installed over the existing impervious gravel and compact fill surfaces and within the existing contact water system development footprint. Approximately 390 cy of clean fill material will be used as backfill to support installation of the replaced contact water system features. Very limited vegetation is present on site, and no vegetation will be altered or removed from anywhere within the Project vicinity.
A new fire loop system supplied by City fire lines will be installed at the terminal to expand fire control capabilities on site. The fire system and Project infrastructure will be designed to meet current codes for fire systems.

The existing stormwater line that extends beneath the terminal to the east of the Project vicinity has a restricted flow and will also be replaced. The existing line drains stormwater from off-site right-of-way areas along Marine View Drive and does not serve the property. To replace the stormwater line, the existing line will be filled with controlled density fill (CDF) and abandoned in place. A realigned stormwater line will be installed parallel and east of the existing stormwater line. Approximately 702 cu yd of excavation will be required to install the replacement line. New manholes will be installed along the new stormwater line alignment, including two manholes within the 50-foot marine shoreline buffer. Approximately 631 cu yd of clean backfill material will be required to restore the area. The realigned stormwater line will connect to the existing outfall to Hylebos Waterway. No new outfalls will be constructed, and no in-water work will be required to support the stormwater line realignment. This realigned stormwater line handles stormwater that originates off site.

Construction will be completed using heavy equipment that may include backhoes, excavators, mobile and stationary cranes, vactors,\(^7\) dump trucks, and watering trucks (for dust control if needed). Demolished materials and excavated soils will be removed and disposed of or recycled at an approved off-site facility. Table 2-4 includes a summary of grading activities. Table 2-5 includes a summary of impervious surface changes within the Project vicinity.

---

\(^7\) Vactors are equipment used to suction wet or dry material, typically loading materials onto a truck or storage tank via a pump.
### Table 2-4
Grading Activities Summary

<table>
<thead>
<tr>
<th>Project Element</th>
<th>Cubic Yards</th>
<th></th>
<th></th>
<th>Square Feet</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Outside 50-Foot Marine Buffer</td>
<td>Within 50-Foot Marine Buffer</td>
<td>Outside 50-Foot Marine Buffer</td>
<td>Within 50-Foot Marine Buffer</td>
<td></td>
</tr>
<tr>
<td><strong>Existing refinery, tank farm, and boiler building area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavation at existing berm</td>
<td>520</td>
<td>0</td>
<td>5,500</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavation at existing gravel area, concrete area, and tank farm area</td>
<td>7,800</td>
<td>0</td>
<td>53,000</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place compacted native material</td>
<td>5,200</td>
<td>0</td>
<td>53,000</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place gravel fill over clay liner</td>
<td>2,600</td>
<td>0</td>
<td>53,000</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Contact water system area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place clean fill in abandoned structures</td>
<td>156</td>
<td>234</td>
<td>150</td>
<td>250</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stormwater relocation area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavation associated with trenching</td>
<td>650</td>
<td>52</td>
<td>2,200</td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fill associated with trenching</td>
<td>585</td>
<td>46</td>
<td>2,200</td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Containment culvert area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavation associated with trenching</td>
<td>360</td>
<td>0</td>
<td>750</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fill associated with trenching</td>
<td>360</td>
<td>0</td>
<td>750</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2-5
Impervious Surfaces Summary

<table>
<thead>
<tr>
<th>Project Element</th>
<th>Impervious Surface Removed (square feet)</th>
<th>Impervious Surface Replaced (square feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Outside 50-Foot Marine Buffer Within 50-Foot Marine Buffer</td>
<td>Outside 50-Foot Marine Buffer Within 50-Foot Marine Buffer</td>
</tr>
<tr>
<td>Refinery concrete slab</td>
<td>13,000</td>
<td>0</td>
</tr>
<tr>
<td>Tank farm</td>
<td>17,500</td>
<td>0</td>
</tr>
<tr>
<td>Boiler building</td>
<td>980</td>
<td>0</td>
</tr>
<tr>
<td>Gravel area</td>
<td>21,520</td>
<td>0</td>
</tr>
<tr>
<td>Contact water system</td>
<td>150</td>
<td>250</td>
</tr>
<tr>
<td><strong>Total Proposed Impervious Surface Removed or Replaced</strong></td>
<td><strong>53,400</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total Proposed Impervious Surface Net Change</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.5.1 Mitigation Measures and Best Management Practices

The following are proposed mitigation measures and BMPs (using the numbering MM-#) that would be used to address potentially significant environmental effects from the Proposed Action as identified in this EIS. Proposed mitigation measures were identified as required by SEPA consistent with WAC 197-11-660, which states that mitigation shall be reasonable, capable of being accomplished, and imposed to the extent attributable to the identified adverse impact of the proposal. Mitigation measures included in permit conditions would become legal requirements of the Applicant.

2.5.1.1 Permit Compliance

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

2.5.1.2 Project Design Features

- **MM-2:** The new tanks and infrastructure will be designed to modern building codes and standards for safety and seismic stability, consistent with City development and seismic code requirements and state AST secondary containment and fire protection requirements per WAC 173-180-320 and 173-180-330.
- **MM-3:** The tanks will be installed with a bentonite liner and sand layer inside the circular footing of each tank to seal any exposed soil from potential incidental spills.
- **MM-4:** A 4-foot-tall concrete containment berm will be installed around the tanks, meeting state and federal secondary containment requirements (per 40 CFR 112 and WAC 173-180-320).
- **MM-5:** Components for the replacement wastewater treatment system will be elevated to protect against potential geological hazards in the area.
- **MM-6:** The Project will be designed so that any contact water generated during facility operation will be treated and managed in compliance with existing regulations.
- **MM-7:** The current on-site wastewater treatment system will be replaced with modern equipment to reduce electricity consumption at the facility.
- **MM-8:** The existing steam boiler will be replaced with a more energy-efficient hot oil heater that will result in a substantial energy savings at the facility (up to 30% energy savings), reduce GHG emissions, and reduce on-site water consumption by approximately 5 million gallons annually.
- **MM-9:** All work will occur in the footprint of existing development and will not disturb any existing shoreline vegetation or habitat.
2.5.1.3 Construction Best Management Practices

- **MM-10**: SeaPort Sound will obtain a Construction Stormwater General Permit (CSWGP) from the Washington State Department of Ecology (Ecology) for proposed ground-disturbing activities. The CSWGP will cover stormwater, groundwater, water used for dust control, and other construction water discharges. SeaPort Sound will prepare and implement a SWPPP, with all appropriate BMPs implemented and maintained in accordance with the SWPPP and the terms and conditions of the permit.

- **MM-11**: Construction contractors will receive an orientation, including emergency response protocols, before beginning work on site.

- **MM-12**: SeaPort Sound’s emergency response plans will be in place to provide an immediate on-site response to an incident if one occurs. SeaPort Sound will provide emergency response providers with regularly updated maps of the Project site, access points, contact information, and response procedures during construction.

- **MM-13**: Additional security patrols will be provided, and all work areas will be fenced to prevent public access during construction. The Project site will continue to comply with its Facility Security Plan requirements.

- **MM-14**: All equipment to be used for construction activities will be cleaned prior to arriving at the site and will be inspected daily to ensure that no leaks are present and the equipment is functioning properly.

- **MM-15**: Water that is used to clean decommissioned refinery equipment prior to removal from the site will be treated and disposed of properly.

- **MM-16**: All electrical and natural gas connections to the decommissioned refinery equipment will be properly disconnected and secured.

- **MM-17**: To reduce air emissions, the contractor will limit idling of construction equipment when not in use.

- **MM-18**: The contractor will employ dust suppression equipment as needed during grading activities to reduce potential dust emissions.

- **MM-19**: Unused equipment on the Project site that is demolished (e.g., refinery and wastewater treatment equipment) will be properly disposed of or recycled at an approved off-site facility.

- **MM-20**: Construction will occur during times allowed by the City’s noise ordinance in TMC Title 8 or an approved extension.

- **MM-21**: Construction traffic generated by the Project will be limited to what is required for construction and will use main arterials to the extent practicable.

- **MM-22**: Erosion control measures will be implemented during construction per the Temporary Erosion Control Plan to be prepared for the Project.
• **MM-23:** The contractor will be responsible for the preparation of a spill prevention and control plan to be used for the duration of the Project to safeguard against unintentional spills of fuel, lubricants, or hydraulic fluid from construction equipment.

• **MM-24:** The construction contractor will be required to prepare a demolition plan for City review, describing the anticipated type and amount of construction and demolition wastes, proposed recycling and reuse strategies, and arrangements to coordinate transport of the remaining waste to licensed disposal sites.

• **MM-25:** The construction contractor will be required to develop a contaminated media management plan to address the characterization, segregation, and disposal of any contaminated soils or groundwater potentially encountered during excavation.

• **MM-26:** SeaPort Sound will provide asbestos and lead abatement requirements and procedures to the contractor prior to construction. Asbestos and other hazardous wastes used or encountered during construction will be properly disposed of in accordance with appropriate regulations.

• **MM-27:** An Inadvertent Discovery Plan will be prepared and followed in the event of a discovery of cultural resources during construction.

2.5.1.4 Operational Safety Plans and Procedures

• **MM-28:** All applicable operations manuals, plans, and permits will be updated to reflect new facilities. This includes but is not limited to the facility’s Industrial Stormwater Individual Permit (ISIP); Industrial Wastewater Discharge Permit; Spill, Prevention, Control, and Countermeasure (SPCC) Plan; SeaPort Sound Terminal LLC Facility Contingency Plan; Facility Security Plan; Emergency Response Plans; and others as needed.

• **MM-29:** Trained personnel will operate the facility and will continue to inspect all facilities daily for potential leaks or signs of material corrosion or degradation.

• **MM-30:** Operators will be trained in proper material handling and emergency response procedures.

• **MM-31:** All facility personnel will continue to participate in SPCC Plan training as well as other safety training.

• **MM-32:** Emergency shutdown system training and drills will be updated to cover the Project vicinity infrastructure upgrades after construction and will continue to occur on a routine basis. The emergency shutdown system is designed to turn off pumps in the event of an unforeseen emergency. The emergency shutdown system is employed under a coordinated command and control facility that has established protocols in place to prevent product release. At a minimum, SeaPort Sound currently conducts two field deployment drills, a tabletop exercise, and four security drills annually. Emergency shutdown protocols are typically covered during at least one of these drills. Training is provided to operators and maintenance staff on the use of emergency shutdown systems.
• **MM-33:** SeaPort Sound’s vendors are required to adhere to local, state, and federal regulations and emergency response plans to reduce potential impacts on emergency response services during off-site fuel transport activities.

### 2.5.1.5 Additional Mitigation

• **MM-34:** To mitigate for GHG emissions anticipated to be produced from Project construction and operation of the new tanks over the next 40 years (as calculated per the *Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project* [Appendix A]), SeaPort Sound will contribute an equivalent amount of money to the City’s Urban Forestry Program as would be required to purchase third-party-verified GHG offsets. This mitigation measure is consistent with the City’s 2030 Climate Action Plan sustainability goals and will help the City to achieve local GHG emissions drawdown targets (City of Tacoma 2021a).

• **MM-35:** SeaPort Sound will install tanks within the proposed expansion area with fixed cone roofs designed to store low-vapor-pressure bulk liquids such as diesel, biodiesel, renewable fuel feedstock, and fuel oil. This would preclude the storage of high-vapor-pressure bulk liquids (i.e., gasoline and ethanol) within these tanks without retrofitting or replacing the tanks with a floating roof system, which would require a separate SEPA review and NOC issued through the PSCAA.

The methodology and calculations for MM-34 are described in the *Cost of GHG Mitigation for the SeaPort Sound Plant Modernization Project* memorandum in Appendix C.

### 2.5.2 Direct Effects of Proposed Action

The construction and routine operation of the Proposed Action has the potential to cause direct effects on the following elements of the environment, as described in Chapter 3:

- Earth
- Air
- Water
- Plants and wildlife
- Energy and natural resources
- Archaeological, historical, and cultural resources
- Environmental health and safety
- Land and shoreline use
- Transportation
- Public services and utilities
2.5.3 Secondary Effects of Proposed Action

Secondary effects, also known as indirect impacts, are reasonably foreseeable environmental impacts that may be caused by a proposed action but occur later in time or are further removed than direct impacts. Secondary effects may result from transportation during construction or operation of the Proposed Action. This could include minor temporary increases in construction vehicle traffic on the road during construction. During operation, increases in rail, truck, or vessel traffic may occur within the terminal’s permitted throughput limits in response to increases in market demand for either the No Action or Proposed Action alternatives. Other secondary impacts may be related to the extraction and combustion of fuels that are transported through the terminal. These are evaluated as secondary effects because SeaPort Sound is not directly responsible for the extraction and combustion of materials. As a storage and distribution terminal, the rates of extraction and combustion of materials are influenced by market demand and are expected to occur independent of SeaPort Sound’s actions in the marketplace.

2.5.4 Elements of the Environment Determined to Have No Probable Adverse Impact

The following elements of the environment were considered but are not expected to be adversely affected by the Proposed Action. This was based in part on input provided during the public scoping period. Therefore, the EIS does not further address the following:

- Housing
- Recreation
- Agricultural crops
- Parking
- Schools
- Parks or other recreational facilities
- Maintenance of public services and utilities
- Communications
- Scenic resources

2.6 Other Alternatives Considered

Alternative 2, the Proposed Action, is the only alternative considered by SeaPort Sound for removing aging infrastructure and replacing it with modernized facilities intended to provide operational flexibility and better meet increasing market demand for renewable/low-carbon fuels.
3 Affected Environment, Impacts, and Mitigation Measures

3.1 Earth
This section describes the existing geology in the Project vicinity, including geologic considerations (soils, slope, and stability), seismic hazards, and site conditions (e.g., potential for contamination from past uses). This section also evaluates potential impacts from the No Action Alternative, construction impacts from the Proposed Action, and long-term construction and operational impacts from the Proposed Action. Where appropriate, mitigation measures are identified to avoid or minimize these potential impacts.

3.1.1 Affected Environment
The study area for the earth affected environment considered for the proposed Project includes the area currently within the SeaPort Sound property footprint, particularly where earthwork is proposed to occur, and adjacent properties within approximately 0.25 mile of the property footprint. Analysis of the study area was based on previous geological site reviews, U.S. Geological Survey maps, Washington Department of Geology and Earth Resources surveys maps, and a review of existing geotechnical engineering reports.

3.1.1.1 Topography
The Project site consists of imported fill and gravel materials and is generally flat (approximately 1% to 2% slopes). The Project site is on approximately 10 to 20 feet of historically placed fill above what was once the open water of Commencement Bay (Hudson and White 2006; Patterson 2015). The property is currently developed and covered by impervious, compacted gravel fill and paved surfaces. Elevation at the Project site ranges between approximately 2 feet and 16 feet mean lower low water.

3.1.1.2 Geologic Conditions
A review of the Washington Division of Geology and Earth Resources Map Series 2015-03, Geologic Map of the Tacoma 1:100,000-scale Quadrangle, Washington, shows the geologic unit description of the Project site to be quaternary unconsolidated deposits of Holocene artificial fill and modified land area (Qf). This geologic unit typically consists of gravel, sand, silt, concrete, garbage, slag, and other materials used as fill, as well as natural deposits mixed and reworked by excavation and/or redistribution that obscures or substantially alters the original geologic deposit. The study area is in the area affiliated with development of the Port of Tacoma at Commencement Bay, which is the largest area of fill and modified land within the referenced map series (Schuster et al. 2015).
3.1.1.3 Geologic Hazards

3.1.1.3.1 Seismic Hazards
The Project vicinity is considered seismically active due to the interaction of the Pacific, Juan de Fuca, and North American plates. Interactions between these plates at the Cascadia Subduction Zone produces both intercrustal and intracrustal earthquakes. Physical evidence suggests that several large (magnitude 8 to 9) earthquakes have occurred along the Canadian Subduction Zone in the last 1,500 years, the most recent of which occurred in January 1700 (Atwater et al. 2005).

3.1.1.3.2 Landslide Hazards
The Project vicinity is not considered to be within a landslide hazard area based on the City’s criteria for landslide hazard because the site is sloped at less than 5%. Figure 3-1 shows adjacent sloped areas within the study area. Outside the Project vicinity, on the northeast side of Marine View Drive, are steep slopes (greater than 40%) classified by the City as a landslide hazard. These slopes are stable under static conditions but may not be stable during an earthquake event (Pierce County 2018).

3.1.1.3.3 Liquefaction Hazards
Liquefaction occurs when loosely packed, waterlogged sediments at or near the ground surface lose their strength in response to strong shaking, commonly during earthquakes. The subsequent reduction in soil shear strength can result in settlement and lateral spreading. Figure 3-1 shows the Project vicinity is in an area identified as having a high potential for liquefaction on the City’s Seismic Hazard Areas map (City of Tacoma 2004).

3.1.1.3.4 Tsunami Hazards
The City defines “tsunami hazard” areas as coastal areas susceptible to flooding and inundation as a result of excessive wave action due to seismic or other landslide events. The Tsunami Hazard Map of Tacoma, Washington (Walsh et al. 2009) indicates that tsunami wave inundation is not likely in the Project vicinity. A seismic tsunami coinciding with low tide would not affect the Project vicinity. Only a seismic tsunami coinciding with normal high tides would encroach on the Project vicinity. The predicted maximum water depth is about 4.5 feet with a current of about 0.9 mile per hour (Walsh et al. 2009).

3.1.1.3.5 Lahar Hazards
Volcanic hazards include pyroclastic flows, lava flows, debris avalanches, and inundation by debris flows, lahars\(^8\), mud flows, or flooding resulting from volcanic activity. Pierce County hazard maps indicate the Project vicinity lies within the inundation zone for Case II lahars. Case II lahars are areas that could be affected by relatively large noncohesive lahars, which are most commonly caused by the melting of snow and glacier ice by hot rock fragments during an eruption, but which can also

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\(^8\) A hot or cold mixture of water and rock fragments that flows down the slopes of a volcano and typically enters a river valley.
NOTES:
2. Aerial image is USDA National Agriculture Imagery Program (USDA 2019).
3. Landslide and erosion hazards data acquired from City of Tacoma.
4. Liquefaction susceptibility data acquired from Washington Department of Natural Resources.

Figure 3-1
Geologic Hazards
Draft Environmental Impact Statement
SeaPort Sound Plant Modernization Project
have a noneruptive origin. Because the average time interval between Case II lahars from Mount Rainier is near the lower end of the 100- to 500-year recurrence range, it is common engineering practice to consider these flows analogous to the 100-year flood (USGS 1998).

3.1.1.3.6  Erosion Hazards
The potential for erosion is typically dependent on soil type, slope, groundwater seepage, or surface runoff. Areas characterized by slopes greater than 15% and as having artificial fill and alluvial soils, or slopes steeper than 25% and with a vertical release of 10 or more feet, are defined by the City as an erosion hazard area. The Project vicinity, shown in Figure 3-1, is not classified as an erosion hazard area because it is relatively flat and developed.

3.1.2  Potential Impacts from the No Action Alternative
Under the No Action Alternative, the site would continue to be used for bulk liquid storage and distribution. No grading would occur within the refinery area. Additionally, the existing tanks within the refinery area and wastewater treatment system would not be replaced or upgraded with infrastructure to current building code standards. SeaPort Sound would continue to operate the existing facility in compliance with current local, state, and federal regulations. The site and terminal infrastructure would continue to be subject to similar geologic hazards, with older infrastructure being more at risk to geologically hazardous events. Overall, the No Action Alternative would have no impacts on earth resources from construction since no construction would occur. In the long term, the No Action Alternative would result in minor impacts on earth resources during operations, with potential impacts being nominally greater than the Proposed Action since infrastructure would not be replaced or upgraded to current building code standards.

3.1.3  Construction Impacts and Mitigation Measures from the Proposed Action
The Proposed Action would include upland excavation and filling activities as part of demolition of existing structures, grading to prepare the site for construction, and trenching associated with the stormwater line and shared containment culvert between storage tank areas. Excavation activities are anticipated to occur within the footprint of existing fill material and would not extend to native soils. During construction, because of the potential for soils with petroleum or other contaminants to be encountered, soils shall be tested and disposed of at an approved off-site disposal facility (see also Section 3.7.3). The construction contractor shall be required to develop a contaminated media management plan to address the characterization, segregation, and disposal of any contaminated soils encountered during excavation. All activities would be completed within existing developed areas that are actively used to support the existing industrial property use. All applicable permits for the Proposed Action would be obtained prior to construction. Construction and operation would be
performed according to the requirements and conditions of these permits. Filling and grading activities are described in Section 2.5.

3.1.3.1 Construction Mitigation Measures and Best Management Practices
Potential impacts on earth resources from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.
- **MM-10**: SeaPort Sound will obtain a CSWGP from Ecology for proposed ground-disturbing activities. The CSWGP will cover stormwater, groundwater, water used for dust control, and other construction water discharges. SeaPort Sound will prepare and implement a SWPPP, with all appropriate BMPs implemented and maintained in accordance with the SWPPP and the terms and conditions of the permit.
- **MM-18**: The contractor will employ dust suppression equipment as needed during grading activities to reduce potential dust emissions.
- **MM-22**: Erosion control measures will be implemented during construction per the Temporary Erosion Control Plan to be prepared for the Project.

3.1.4 Long-Term Impacts and Mitigation Measures from the Proposed Action
The Proposed Action would install eight new ASTs that are designed and constructed according to modern engineering standards and specifications, which are generally more protective than design standards from the mid- to late 1960s and are also consistent with International Building Standards. The new ASTs would be constructed according to the City’s current seismic and development code requirements. A new reinforced concrete circular footing for each tank would be installed, including a bentonite liner and sand layer placed inside the circular footing to seal any exposed soil underneath the tanks. The new tanks would be constructed within an area contained by a 4-foot-tall concrete wall meeting secondary containment requirements (per 40 CFR 112, 2021, and WAC 173-180-320, 2006). The new containment area would be connected to the existing containment area to the west by a culvert for shared (and greater) containment.

SeaPort Sound would provide information required by the City to support its review of the Proposed Action, including geotechnical information required for development in liquefaction-prone areas (per TMC Title 2 – Building and Development Code, and TMC Chapter 13.11 – Critical Areas Preservation, which includes geologically hazardous areas).
The Proposed Action would result in the removal of concrete, asphalt, and gravel. There will be a total net decrease in impervious surfaces of 400 square feet on the property compared to existing conditions as described in Section 2.5.

3.1.4.1 Secondary Impacts
The Proposed Action would not result in secondary impacts on area geology and would not exacerbate geologic hazards that occur within the Project vicinity.

3.1.4.2 Long-Term and Secondary Mitigation Measures and Best Management Practices
Potential impacts on earth resources would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

- **MM-2**: The new tanks and infrastructure will be designed to modern building codes and standards for safety and seismic stability, consistent with City development and seismic code requirements and state AST secondary containment and fire protection requirements per WAC 173-180-320 and 173-180-330.

- **MM-3**: The tanks will be installed with a bentonite liner and sand layer inside the circular footing of each tank to seal any exposed soil from potential incidental spills.

- **MM-4**: A 4-foot-tall concrete containment berm will be installed around the tanks, meeting state and federal secondary containment requirements (per 40 CFR 112 and WAC 173-180-320).

- **MM-5**: Components for the replacement wastewater treatment system will be elevated to protect against potential geological hazards in the area.

- **MM-28**: All applicable operations manuals, plans, and permits will be updated to reflect new facilities. This includes but is not limited to the facility’s ISIP, Industrial Wastewater Discharge Permit, SPCC Plan, SeaPort Sound Terminal LLC Facility Contingency Plan, Facility Security Plan, Emergency Response Plans, and others as needed.

- **MM-29**: Trained personnel will operate the facility and will continue to inspect all facilities daily for potential leaks or signs of material corrosion or degradation.

- **MM-30**: Operators will be trained in proper material handling and emergency response procedures.

- **MM-31**: All facility personnel will continue to participate in SPCC Plan training as well as other safety training.
• **MM-32:** Emergency shutdown system training and drills will be updated to cover the Project vicinity infrastructure upgrades after construction and will continue to occur on a routine basis. The emergency shutdown system is designed to turn off pumps in the event of an unforeseen emergency. The emergency shutdown system is employed under a coordinated command and control facility that has established protocols in place to prevent product release. At a minimum, SeaPort Sound currently conducts two field deployment drills, a tabletop exercise, and four security drills annually. Emergency shutdown protocols are typically covered during at least one of these drills. Training is provided to operators and maintenance staff on the use of emergency shutdown systems.

• **MM-33:** SeaPort Sound’s vendors are required to adhere to local, state, and federal regulations and emergency response plans to reduce potential impacts on emergency response services during off-site fuel transport activities.

### 3.2 Air

This section describes the existing air quality conditions in the Project vicinity, including attainment, nonattainment, and maintenance status of the study area, existing air quality conditions, sources of criteria air pollutants, and changes to GHG emissions. This section evaluates potential impacts from the No Action Alternative, construction impacts from the Proposed Action, and long-term construction and operational impacts from the Proposed Action. Where appropriate, mitigation measures are identified to avoid or minimize these potential impacts.

#### 3.2.1 Affected Environment

The study area for the air affected environment considered for the proposed Project includes the construction area within the SeaPort Sound property footprint and Tacoma-Pierce County attainment area, within the Puget Sound Intrastate Air Quality Control Region (AQCR). Analysis of the study area was based on review of PSCAA and U.S. Environmental Protection Agency (EPA) publications and resources.

#### 3.2.1.1 Attainment, Nonattainment, and Maintenance

For the purpose of implementing the Clean Air Act, Section 107 necessitates the establishment of AQCRs. AQCRs may be wholly intrastate, composed of an entire region within a single state; or interstate, composed of similar geographic areas that may be within more than one state. A State Implementation Plan (SIP) outlining control measures for compliance with the National Ambient Air Quality Standards (NAAQSs) would be submitted to and approved by EPA. NAAQSs have been established for six of the most common air pollutants: carbon monoxide, lead, ground-level ozone, particulate matter, nitrogen dioxide, and sulfur dioxide. Collectively these six pollutants are known as “criteria air pollutants.”
The proposed Project would occur within the Puget Sound intrastate AQCR and specifically within the Tacoma-Pierce County attainment area. The Tacoma-Pierce County attainment area comprises areas within the City and unincorporated Pierce County. EPA, Ecology, and PSCAA maintain a network of air quality monitoring stations to measure existing air quality and determine whether areas are designated as attainment or nonattainment areas for the six NAAQS criteria air pollutants.

Air quality throughout the entire AQCR must comply with NAAQS emission standards for a particular pollutant; otherwise, the entire AQCR is designated by EPA as nonattainment for the pollutant. Attainment for a given pollutant indicates that the air quality in an area complies with the NAAQS for that pollutant. For an area designated as nonattainment, Ecology and PSCAA must develop an EPA-approved SIP to achieve attainment of the NAAQS. If an area designated as nonattainment meets applicable NAAQS emission standards, the area is redesignated as “maintenance” and requires a maintenance plan to ensure that ambient concentrations and air quality do not deteriorate back to nonattainment levels. Maintenance areas that continually meet NAAQS standards for several years, typically 10 years, may be reclassified as in attainment.

In 2009 Tacoma-Pierce County was designated as nonattainment for the 2006 24-hour fine particulate matter (PM$_{2.5}$) standard. In 2012 EPA determined that Tacoma-Pierce County had met the 24-hour 2006 PM$_{2.5}$ NAAQS based on 2009 to 2011 monitoring data. In 2012, Ecology submitted a SIP to meet the remaining attainment plan requirement, a 2008 Baseline Emissions Inventory, and strengthened woodsmoke control measures. In 2013, EPA reviewed 2010 to 2012 monitoring data, which showed continued attainment of the 24-hour PM$_{2.5}$ standard, and approved 2011 motor vehicle emission budgets for the purpose of meeting transportation conformity requirements.

In 2014, Ecology submitted a request to redesignate the Tacoma-Pierce County nonattainment area to attainment and submitted a maintenance plan demonstrating that the control measures already in place will continue to ensure attainment over the next 10 years. EPA approved the maintenance plan submitted by Ecology and redesignated the entire area to attainment of the 2006 24-hour PM$_{2.5}$ standard in 2015 (EPA 2021a). The Tacoma-Pierce County attainment area is currently designated as “in attainment” for the NAAQSs.

### Existing Air Quality Conditions

Of greatest concern for the Puget Sound AQCR, and the Tacoma-Pierce County attainment area, is ground-level ozone (smog), which is created by chemical reactions with different types of air pollution such as vehicles, industrial facilities, and gasoline fumes; PM$_{2.5}$ that comes from home-heating wood stoves, wildfires, industrial facilities, and vehicles; and black carbon from diesel exhaust.

PSCAA currently has two air quality monitoring stations active in the Tacoma area: Tideflats Station and South L Street Station. These monitoring stations are specific to PM$_{2.5}$. The 3-year average of
annual maximum 98th percentile PM$_{2.5}$ values between 2018 through 2020 was 24.6 micrograms per cubic meter ($\mu$g/m$^3$) at the Tideflats Station and 32.9 $\mu$g/m$^3$ at the South L Street Station (PSCAA 2021a). PM$_{2.5}$ values for both stations are below the 35 $\mu$g/m$^3$ EPA standard.

Except for days that experienced high levels of smoke from wildfires, air quality within the Tacoma-Pierce County attainment area is generally good. Approximately 81% of days in 2020 were below the EPA standard of 35 $\mu$g/m$^3$ for PM$_{2.5}$ and were considered to be in the “Good” category of the EPA Air Quality Index, 16% were in the “Moderate” category, 1.1% were in the “Unhealthy for Sensitive Groups” category, 1.1% were in the “Unhealthy” category, and 0.8% were in the “Very Unhealthy” category (PSCAA 2021b).

3.2.1.3 Existing Sources of Criteria Air Pollutants

Existing sources of criteria air pollutants within the Tacoma-Pierce County attainment area include on-road sources, nonroad sources, and existing industrial facilities. On-road sources include trucks and cars within the Port of Tacoma and on adjacent roadways. Nonroad sources of criteria air pollutants include marine vessels (such as oceangoing vessels like ocean freighters) and harbor vessels (such as assist tugs and bunkering tugs). Railroad locomotives are another source of criteria air pollutants and operate throughout the greater Port of Tacoma area. Equipment that is used to handle and facilitate intermodal transfer of cargo includes gantry cranes, yard tractors, front- and side-loading forklifts, and heavy-duty off-road vehicles. Existing industrial facilities include a refinery, a pulp mill, and SeaPort Sound. Industrial facilities also generate emissions of criteria air pollutants from the combustion of fossil fuels, most commonly in boilers and heaters. Other notable pollutant sources include combustion engine vehicles, wood stoves, and wildfires.

3.2.1.4 Permitted Operations

SeaPort Sound is a tank farm and terminal that receives and dispenses products such as crude oil, gasoline, ethanol, diesel fuel, renewable diesel, biodiesel, fuel oil, asphalt, and propane. These products are then transported elsewhere by the facility’s customers and consumed for transport energy or heat, or used as a component in other products. The facility has the capacity to receive and dispense crude oil; however, this product was not offered during the reference period of January 1, 2016, to December 31, 2020, that was used in the Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project (Appendix A).

Most of SeaPort Sound’s throughput volume is regulated under NOCs issued by PSCAA. Authorization and product throughput limits are captured across multiple NOCs rather than by a single operating permit. Appendix D provides a summary of SeaPort Sound’s active NOCs and lists past NOCs that are superseded by the active NOCs. Throughput volume in the PSCAA permits is measured as the volume of product leaving the facility by loading trucks and loading vessels. Air emission sources from the facility are below major source limits and managed under required
permits from PSCAA. SeaPort Sound is not requesting any changes to throughput limits regulated under the NOCs as part of the Proposed Action.

3.2.2 Greenhouse Gas Emissions

As outlined in Section 2.3, and in depth in Appendix A, the analysis prepared for this EIS models 40 years of throughput and includes three market fuel mix scenarios (Static, Central, and State Goal) based on U.S. EIA data from the geographic division of PADD 5 states, recent LCFS legislation passed by the Washington State Legislature, and the Washington State Energy Strategy. Since the recent LCFS legislation is primarily intended to address GHG emissions from transportation fuels, the analysis focuses on conventional road fuels such as gasoline (73.4% of all road fuels) and diesel (25.4%), which make up the greatest percentage of the PADD 5 market fuel mix and are the most carbon intensive. In contrast, gasoline and diesel substitutes (ethanol and other renewable fuels) combined equal 1.2% of the PADD 5 market fuel mix. Substitute fuels can include drop-in fuels such as renewable gasoline and renewable diesel, and biofuels such as ethanol and biodiesel.

Drop-in renewable fuels are hydrocarbon biofuels produced from biomass sources through a variety of biological, thermal, and chemical processes. These products are chemically identical to petroleum gasoline or diesel. Since they meet the same ASTM International fuel quality standards as the petroleum fuels they replace, drop-in fuels can be used in existing engines and infrastructure to reduce GHG emissions. Biofuels such as ethanol and biodiesel vary greatly in chemical composition from the fossil fuels they are intended to replace and generally require significant modification to existing engines or infrastructure to support their use.

As stated in Section 2.3, it is expected that the percentage of both renewable fuels and biofuels within the facility’s product mix will increase as a result of the LCFS and as acceptance of these alternative fuels results in a greater market share within the energy industry as the LCFS mandate is more broadly implemented.

3.2.3 Potential Impacts from the No Action Alternative

Under the No Action Alternative, the Project site would continue to be used for bulk liquids storage and transport. SeaPort Sound would continue to operate the existing facility in compliance with current local, state, and federal regulations, as described in Section 2.2. The facility would continue to operate in compliance with local, state, and federal regulations and within the facility’s permitted throughput limits.

As described in Appendix A, operations emissions under each of the three market fuel mix scenarios are projected to be largely unaffected by the proportion of renewable to fossil fuels in the throughput product mix because the majority of facility equipment and infrastructure will continue to operate using the same fuel types currently used to maintain facility operations.
In comparison, operations emissions are expected to change under the Proposed Action versus the No Action Alternative because the Proposed Action would replace some of the facility equipment and expand the facility’s capacity. For this reason, operations emissions are considered to be sensitive only to the choice of alternatives (No Action or Proposed Action), not to specific market fuel mix scenarios (Static, Central, or State Goal).

Modeling of emissions for the No Action and Proposed Action alternatives indicates only a minor difference between the two. Over the analysis period (2024 through 2063), the on-site, cumulative operating GHG emissions under the No Action Alternative are anticipated to be approximately 16,800 tCO₂e, or the difference between the No Action Alternative (approximately 291,900 tCO₂e) and Proposed Action (approximately 308,700 tCO₂e). These numbers assume that operations would increase to maximum capacity levels by the modeled estimate of 2033, which would be dependent on a variety of market factors but is modeled based on the last 5 years of SeaPort Sound throughput data as described in Appendix A.

SeaPort Sound employs a variety of technologies to reduce on-site emissions and odors and maintain compliance with its PSCAA permits. PSCAA also regularly inspects the facility to ensure compliance and that no unacceptable emissions or odors have been identified that would require further control. SeaPort Sound’s technologies to control GHG and other emissions and odors include a bottom-load truck rack that vacuums emissions and returns them to the storage tanks, floating roofs in some tanks, a vapor detection system for propane loading, a blower that pulls vapors from asphalt oil trucks and processes them through a vapor control device and carbon filter, and a marine vapor combustion unit that is used during product transfers. This equipment controls emissions in compliance with PSCAA permit requirements. Operation of these systems would continue under the No Action Alternative and would have no adverse impact on regional air quality.

Overall, impacts on air from the No Action Alternative are expected to be minor. No temporary and localized construction emissions would occur. The terminal would continue to operate in compliance with current permits and regulations. Emissions control measures implemented during operation to address potential impacts on air would also continue.

### 3.2.4 Construction Impacts and Mitigation Measures from the Proposed Action

The construction of the Proposed Action would include large machinery and equipment such as excavators, front-end loaders, welders, and forklifts. Construction impacts and emissions associated with construction equipment would be short term. Equipment would be expected to be in service for approximately 26 weeks, and the construction site would be active for approximately 40 hours per week. GHGs accounted for in this phase of the Proposed Action include carbon dioxide (CO₂),
methane (CH4), and nitrous oxide (N2O). SeaPort Sound would comply with air emissions standards and would obtain any necessary air quality permits associated with the Proposed Action.

Expected on-site GHG emissions of machinery used during construction are summarized in Appendix A. The highest emissions-emitting equipment is anticipated to include excavators and front-end loaders. Using the EPA MOVES model, on-site emissions would total approximately 221 tCO2e during construction of the Proposed Action.

Expected upstream GHG emissions of steel, concrete, and aggregate expected to be used during the construction process are summarized in Appendix A. Emissions for fabrication and transport of materials consumed during construction were calculated using the Argonne National Laboratory GREET model. In total, emissions for off-site fabrication and transport of materials would total approximately 3,734 tCO2e to construct the Proposed Action.

3.2.4.1 Construction Mitigation Measures and Best Management Practices
Potential impacts on air from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

- **MM-14:** All equipment to be used for construction activities will be cleaned prior to arriving at the site and will be inspected daily to ensure that no leaks are present and the equipment is functioning properly.

- **MM-17:** To reduce air emissions, the contractor will limit idling of construction equipment when not in use.

- **MM-18:** The contractor will employ dust suppression equipment as needed during grading activities to reduce potential dust emissions.

- **MM-26:** SeaPort Sound will provide asbestos and lead abatement requirements and procedures to the contractor prior to construction. Asbestos and other hazardous wastes used or encountered during construction will be properly disposed of in accordance with appropriate regulations.

- **MM-34:** To mitigate for GHG emissions anticipated to be produced from Project construction and operation of the new tanks over the next 40 years (as calculated per the Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project [Appendix A]), SeaPort Sound will contribute an equivalent amount of money to the City’s Urban Forestry Program as would be required to purchase third-party-verified GHG offsets. This mitigation measure is consistent with the City’s 2030 Climate Action Plan sustainability
goals and will help the City to achieve local GHG emissions drawdown targets (City of Tacoma 2021a).

3.2.5 **Long-Term Impacts and Mitigation Measures from the Proposed Action**

The Proposed Action would permanently demolish existing refinery infrastructure and ASTs, and increase storage capacity 11% by installing eight ASTs designed to store low-vapor-pressure bulk liquids. Demolition of the refinery infrastructure under the Proposed Action removes the on-site potential for producing approximately 2 million barrels (84,000,000 gallons) of petroleum products per year and removes the potential for 89,000 tCO₂e per year of direct emissions from refinery operations. Under both the No Action and Proposed Action alternatives, the facility would continue to operate within permitted throughput limits.

Additionally, fuel types that can be stored in the new tanks installed as part of the Project will be limited due to the proposed fixed-roof tank design that is intended for low-vapor-pressure fuels such as diesel, biodiesel, renewable fuel feedstock, and fuel oil. Asphalt cannot be stored in the tanks, even though it also has low vapor pressure and is currently stored on site. To store high-vapor-pressure fuels such as gasoline and ethanol in the new tanks, modifications would need to be made to the tanks (e.g., installing a floating roof). PSCAA considers this type of modification new construction and would require a SEPA determination from the City and a PSCAA NOC to be issued prior to any tank modifications.

Construction impacts and emissions associated with construction equipment would be short term; on-site emissions would total approximately 221 tCO₂e during construction of the Proposed Action.

On-site GHG emissions from operation of the Proposed Action are anticipated to total approximately 16,800 tCO₂e over the analysis period (2024 through 2063). This is the difference between gross, cumulative operating emissions under the No Action Alternative (approximately 291,900 tCO₂e) and the Proposed Action (approximately 308,700 tCO₂e).

Direct impacts from construction and operation, or emissions over which SeaPort Sound has control, are summarized in Figure 3-2 for both the No Action and Proposed Action alternatives. As of 2063, cumulative construction and operation emissions will be 0.313 million tCO₂e in the Proposed Action and 0.292 million tCO₂e in the No Action Alternative.

Operations at the site are not anticipated to change drastically from existing conditions, and emissions control measures would continue to be implemented. This is because the permitted throughput would not increase, and on-site operations would remain largely similar to the No Action Alternative. Emissions of operations under the Proposed Action are different than the No Action Alternative because facility equipment will be replaced and storage capacity will be expanded.
Emissions at the facility are largely unaffected by the quantity of renewable versus fossil fuels in the throughput product mix because emissions associated with storage make up a relatively small part of overall facility emissions. Therefore, operations emissions would be largely the same under all market fuel mix scenarios, and long-term air impacts from operation of the Proposed Action are anticipated to be minor.

Figure 3-2 includes emissions from construction and operations. Emissions from construction are computed under the assumption that they occur during calendar years 2022 and 2023 but accrue to the cumulative results during calendar year 2024 for simplicity of presentation. Cumulative emissions associated with construction and operation are anticipated to be minimal over the duration of the 40-year analysis period.

3.2.5.1 Secondary Impacts
Secondary impacts on air from the Proposed Action include off-site transportation of the throughput products from their point of origin and to their destination, and the combustion or consumption of the products, similar to the No Action Alternative. As a third-party storage and distribution terminal, SeaPort Sound does not extract or refine feedstock materials for the products that it holds in
inventory. The Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project in Appendix A has modeled upstream and downstream emissions of throughput products that pass through the SeaPort Sound Terminal. Changes at the SeaPort Sound Terminal are unlikely to impact the regional demand for these products or the manner in which those products are manufactured. Ultimately, combustion of fuels or consumption of materials sold to its customers is based on market demand and is expected to occur within the greater fuels marketplace regardless of SeaPort Sound’s actions due to the relative inelasticity of demand for fuel products. The Proposed Action may reduce secondary off-site emissions associated with the transport of fuel products compared to the No Action Alternative, if it is providing more efficient pathways between manufacturers and consumers.

Under both alternatives, regional population growth will likely continue, potentially leading to an increase in market demand for fuel products and the need to transport them via SeaPort Sound and its competitors (OFM 2021). Using modeling, the predicted quantities of off-site, secondary GHGs generated by those external users who combust products handled by SeaPort Sound will increase by approximately 9% under each market fuel mix scenario. This value is not an increase in total global GHG emissions. It is only an increase in the share of fuels underlying global GHG emissions that would pass through SeaPort Sound under the Proposed Action.

Increased use of renewable and biofuel alternatives is expected to reduce GHG emissions over time, particularly in this region where the use of renewable and biofuel alternatives is more encouraged through policymaking. Under the Central and State Goal scenarios, as compared to the Static scenario, there may be a minor benefit to air as more carbon-intensive road fuels continue to be offset by renewable and biofuels. It is expected that under the Proposed Action, SeaPort Sound will be better equipped to provide the flexibility to offer an expanded inventory of renewable and biofuel products as the demand increases for low-carbon road fuels. Overall, the Proposed Action is anticipated to have minor secondary impacts on air compared to the No Action Alternative. As described in the previous paragraphs, secondary impacts are market-driven and associated with off-site actions that would occur independently of any changes to the SeaPort Sound Terminal capacity.

Figure 3-3 describes the range of secondary off-site emissions that could result under the suite of scenarios evaluated. The blue region represents potential secondary off-site emissions associated with the No Action Alternative. The green region represents potential secondary off-site emissions associated with the Proposed Action. The turquoise region represents overlap of outcomes from the No Action and Proposed Action alternatives. The upper edge of each region represents the Static scenario, while the lower edge of each region represents the State Goal scenario. The two regions overlap substantially, as represented by the turquoise-colored region.
Under the three market fuel mix scenarios, secondary emissions modeled from the potential combustion of fuels under the Static scenario would be the greatest (approximately 273 million tCO₂e under the Proposed Action). The secondary emissions under the Central and State Goal scenarios would be less (approximately 230 and 166 million tCO₂e, respectively). The reductions realized from the Central and State Goal scenarios compared to the Static scenario are due to the change in emissions from a greater share of renewable spark-ignition and compression-ignition road biofuels in the market mix as a response to policies.

This document attempts to estimate off-site GHG reductions by computing differences between policy scenarios. Differences between action alternatives are not highlighted as much because off-site GHGs are not actually changed by the Project; rather, the Project is only associated with a greater or lesser share (see Appendix A).

Table 3-1 provides projections of off-site road fuels GHG emissions associated with the No Action and Proposed Action alternatives. Factors used for each alternative were identical; only predicted quantities of throughput products differ. As shown in Table 3-1, secondary emissions projected for all scenarios are approximately 9% more compared to the same No Action Alternative scenarios. The greatest difference in projected secondary emissions can be attributed to regulatory changes that
are influencing the distribution and use of low-carbon fuels. Relative to the Static scenario, there is an approximately 16% reduction in GHGs under the Central scenario and an approximately 40% reduction in GHGs under the State Goal scenario under both the No Action and Proposed Action alternatives. See Appendix A for additional information.

**Table 3-1**

**Predicted Road Fuels Off-Site Emissions Shares**

<table>
<thead>
<tr>
<th>Product</th>
<th>No Action Static (million tCO₂e)</th>
<th>Central (million tCO₂e)</th>
<th>State Goal (million tCO₂e)</th>
<th>Proposed Action Static (million tCO₂e)</th>
<th>Central (million tCO₂e)</th>
<th>State Goal (million tCO₂e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totals</td>
<td>249</td>
<td>210</td>
<td>151</td>
<td>273</td>
<td>230</td>
<td>166</td>
</tr>
</tbody>
</table>

Note:
This table shows the total predicted off-site emissions for both combustion and noncombustion emissions for the purposes of this EIS.

When considering secondary off-site emissions, the Central and State Goal scenarios each show a decrease in emissions over time relative to existing conditions (the 2016 to 2020 baseline period) under both the No Action and Proposed Action alternatives. This is expected to result from higher fractions of renewable and biofuels displacing fossil fuels in the regulated vehicle fuels market, and from biomass-based fuels increasing their share of throughput products. The Static scenario under the Proposed Action is predicted to result in an increase in emissions over time relative to the 2016 to 2020 baseline period because it assumes existing low-carbon fuels legislation would be overturned; it does not assume changes in the regulated fuels market; and regional population growth is likely to continue, potentially leading to an increase in market demand for SeaPort Sound bulk liquid products and the need to transport them (OFM 2021).

Overall, the Proposed Action is anticipated to have minor secondary impacts on air compared to the No Action Alternative. Secondary off-site emissions associated with fuel products are market-driven and associated with off-site actions that would occur regardless of changes to the SeaPort Sound Terminal capacity. An increase in storage capacity will provide SeaPort Sound with the flexibility to offer an expanded inventory of renewable and biofuel products as the demand mix increases for low-carbon road fuels. Operations will continue similarly to existing conditions, with the potential for the increased use of renewable and biofuels expected to reduce relative emissions over time. Under the Central and State Goal scenarios, there may be a minor benefit to air as more carbon-intensive road fuels are offset by renewable and biofuels that the terminal will be better equipped to provide compared to the Static scenario.
3.2.5.2 Long-Term and Secondary Mitigation Measures and Best Management Practices

Potential impacts on air would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

- **MM-2**: The new tanks and infrastructure will be designed to modern building codes and standards for safety and seismic stability, consistent with City development and seismic code requirements and state AST secondary containment and fire protection requirements per WAC 173-180-320 and 173-180-330.

- **MM-8**: The existing steam boiler will be replaced with a more energy-efficient hot oil heater that will result in a substantial energy savings at the facility (up to 30% energy savings), reduce GHG emissions, and reduce on-site water consumption by approximately 5 million gallons annually.

- **MM-29**: Trained personnel will operate the facility and will continue to inspect all facilities daily for potential leaks or signs of material corrosion or degradation.

- **MM-34**: To mitigate for GHG emissions anticipated to be produced from Project construction and operation of the new tanks over the next 40 years (as calculated per the Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project [Appendix A]), SeaPort Sound will contribute an equivalent amount of money to the City’s Urban Forestry Program as would be required to purchase third-party-verified GHG offsets. This mitigation measure is consistent with the City’s 2030 Climate Action Plan sustainability goals and will help the City to achieve local GHG emissions drawdown targets (City of Tacoma 2021a).

- **MM-35**: SeaPort Sound will install tanks within the proposed expansion area with fixed cone roofs designed to store low-vapor-pressure bulk liquids such as diesel, biodiesel, renewable fuel feedstock, and fuel oil. This would preclude the storage of high-vapor-pressure bulk liquids (i.e., gasoline and ethanol) within these tanks without retrofitting or replacing the tanks with a floating roof system, which would require a separate SEPA review and a Notice of Construction issued through the Puget Sound Clean Air Agency to complete.

3.3 Water

This section describes water resources in and near the Project site, including surface water (marine, estuarine, and freshwater), groundwater, frequently flooded areas, and water supplies. It assesses the potential for impacts that could result under the No Action Alternative or as a result of the construction and operation of the Proposed Action. Finally, this section presents measures identified
to mitigate impacts of the Proposed Action. Wetlands and aquatic species are discussed in
Section 3.4, Plants and Wildlife. Laws and regulations that are applicable to the Project and that were
referenced for determining potential impacts on water resources are summarized in Appendix E.

3.3.1 Affected Environment
The study area for water resources encompasses a 1-mile area surrounding the Project site
(Figure 3-4). Hylebos Waterway, which is located adjacent to the Project site, is discussed in detail.
Other waterbodies located within approximately 1 mile of the Project site are discussed at a more
general level.

The Project site is located adjacent to the north bank of Hylebos Waterway, one of several navigation
channels located in the Tacoma Tideflats area on Commencement Bay, an embayment in southern
Puget Sound. The waterway is an estuarine environment where marine and freshwaters mix. The
Tideflats area has been heavily modified and industrialized over the past century, as discussed in
Section 3.4.

Hylebos Waterway is a straightened channel, ranging from about 460 to 1,000 feet wide and
approximately 3 miles long, that is regularly dredged to accommodate shipping. Under typical
conditions, Hylebos Waterway experiences two major tidal flushing events per day, similar to other
bays and waterbodies in Puget Sound. The water level within the waterway varies markedly between
high and low tides, affecting local groundwater levels to some extent.

No freshwater streams or drainage channels are located within the Project site. Several freshwater
streams within the study area flow from slopes on the north side of Marine View Drive under the
roadway into Hylebos Waterway. Streams are discussed in more detail in Section 3.4.
NOTES:
1. Streams, culverts, and pipe data are acquired from Pierce County.
2. Wellhead Protection Area travel times acquired from City of Tacoma Shoreline Inventory and Characterization.
3. Critical aquifer recharge area acquired from Pierce County.
3.3.1.1 Water Quality

3.3.1.1.1 Surface Water and Sediment
In 1983, Hylebos Waterway was added to EPA’s National Priorities List as part of the Commencement Bay Nearshore/Tideflats (CB N/T) Superfund Site, which encompasses several square miles of shallow water, shorelines, and adjacent land. As a result of a century of industrial use, water and sediments in this area were contaminated with heavy metals, hydrocarbons, pesticides, and other chemicals. A record of decision issued for the entire CB N/T Superfund Site in 1989, and subsequent Explanation of Significant Differences, established regulatory responsibilities through cooperative agreements that designated Ecology as the lead agency for controlling sources of pollutants and EPA as the lead agency for sediment cleanup. Contaminated sites are discussed in Section 3.7.

Cleanup efforts have been ongoing for decades, and conditions have improved. However, portions of Hylebos Waterway are still listed by Ecology as not meeting water quality or sediment quality standards for some types of pollutants. These include chlorinated pesticides, DDT, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls in water within the upper part of the waterway (east of the Project site toward the head of the waterway) at levels requiring improvement (known as impaired, Category 5, or 303(d) list waters). The lower part of the waterway (west of the Project site toward the mouth of the waterway) contains waters of concern (Category 2) for levels of benzene, tetrachloroethylene, and trichloroethylene. The Ecology mapping shows Category 4B sediments throughout the waterway, meaning there is a pollution control program in place that is expected to resolve pollution problems (Ecology 2021a).

Dredging to remove contaminated sediments from Hylebos Waterway was conducted as part of the Superfund sediment cleanup in the early 2000s and for maintenance dredging purposes. Relatively recent navigation dredging that was permitted as a maintenance project was conducted in 2017 near the SeaPort Sound dock. In other parts of the waterway, contaminated sediments have been covered with a layer of clean material such as sand to decrease exposure to contaminants. In addition, a process of “natural recovery” is occurring as currents deposit clean sediments on the bottom of the waterway.

Several upland cleanup projects have occurred along Hylebos Waterway to remove contaminated soils in an effort to control sources of contamination to the aquatic environment (see Section 3.7). The Project site was not included in EPA’s list of major ongoing contaminant sources to the Hylebos Waterway, which was part of EPA's Superfund Explanation of Significant Differences document published in 2000 (Anchor QEA 2019). In 2020, Ecology concluded that additional sediment sampling near the Project site’s stormwater outfalls was not required as part of NPDES monitoring activities, in part because of installation of new stormwater treatment systems at the facility in 2018 (Ecology 2020a).

EPA is continuing to review the status of cleanup in the CB N/T Superfund Site and issues 5-year review reports. The latest report (EPA 2020) states that sediment cleanup actions to date in the
mouth of Hylebos Waterway area have been adequate to address unacceptable risks, but that until all cleanup objectives have been met, site use restrictions (i.e., fish and shellfish consumption advisories) will remain in effect to limit human exposure to contaminated seafood.

3.3.1.1.2 **Groundwater**

Ecology defines groundwater as “water that collects or flows beneath the earth’s surface, percolating through and filling the porous spaces in soil, sediment, and porous rocks, as well as fractures in hard rock. Groundwater originates from rain, melting snow and ice, irrigation, surface water, and infiltrated stormwater” (Ecology 2021b). Groundwater provides water supply through wells, which are important in the Tacoma area, and it supports flows in streams and rivers during the summer months.

Geology directly affects the presence and movement of groundwater. In the Puget Sound lowland region, a series of glaciers during the last Ice Age deposited gravel, boulders, sand, and sediments in layers up to thousands of feet thick over the underlying bedrock. Layers of coarse materials (known as unconsolidated) are interspersed with layers of fine-grained (consolidated) materials. In some places, bedrock is exposed at the surface. Regional geology was also affected by volcanoes, mudflows, and earthquakes. This complex geology means that local patterns of groundwater presence and movement are also complex (Vaccaro et al. 1998). (See Section 3.1 for additional discussion.)

Groundwater tends to move laterally through unconsolidated glacial deposits and vertically through consolidated deposits. The vertical movement is usually downward, but near streams, rivers, and saltwater bodies groundwater tends to move upward (Vaccaro et al. 1998). An aquifer is a layer of rock or sediment that can hold groundwater. The boundaries of an aquifer are where a barrier, such as consolidated sediment, blocks the movement of groundwater.

At a watershed scale, groundwater in the Puyallup River Valley moves toward and eventually discharges to Commencement Bay. Shallow groundwater discharges to streams and waterways as it flows toward the bay. Groundwater also seeps from the bluffs along the bay in some areas (Conestoga-Rovers & Associates 2006). The lower Puyallup River Valley has one of the highest densities of flowing artesian wells in all of Washington State. Artesian wells occur where low-permeability or consolidated layers confine and pressurize underlying high-permeability or unconsolidated layers. When penetrated by a well, this pressure results in artesian flows, where water flows from the surface without pumping (Conestoga-Rovers & Associates 2006, Vaccaro et al. 1998).

Groundwater movement is also influenced by the presence of saltwater. Fresh groundwater and saltwater have different densities. Where the two meet, such as along Commencement Bay, there is a mixing zone. In some parts of the valley, saltwater intrudes or pushes inland within the groundwater table for more than a mile.
According to EPA, areas of subtidal groundwater discharge appear to be more diffuse toward the mouth of the Hylebos Waterway, where native sand is present underneath the fill material that was placed as the Tacoma Tideflats were developed. Farther upstream in Hylebos Waterway, groundwater discharges appear to occur from discrete aquifers beneath the waterway surface (EPA 2020).

Groundwater was monitored in several locations at the Project site following closure of the refining facility and a soil removal action. During well monitoring in November 2012, the depth to groundwater in the monitoring wells ranged from approximately 4 to 15 feet below ground surface. None of the five on-site monitoring wells contained contaminants above state Model Toxics Control Act (MTCA) standards at that time (Targa 2013).

3.3.1.2  Stormwater

3.3.1.2.1  On-Site Stormwater Management

Stormwater flows from the Project site into Hylebos Waterway through three outfalls that discharge approximately 108,000 gallons per day on average (Ecology 2020a). The facility’s stormwater discharge is permitted under an NPDES ISIP that is administered by Ecology (Ecology 2018). This does not include industrial wastewater, which is routed and treated separately at the on-site wastewater treatment system and discharged to the City sewer system under a separate permit (see Section 3.3.1.3). The portions of the Project site that are currently covered under each permit are illustrated in Figure 3-5.

The ISIP (No. WA0003204) for stormwater has been continually maintained since 1992, was last updated in 2018, and will expire in 2023. The ISIP includes requirements for regular stormwater monitoring, testing, and reporting; an up-to-date spill control plan and SWPPP; and proper operation and maintenance of all treatment, control, and conveyance systems. The permit sets limits on the amount of pollutants that can be contained in site stormwater discharged to Hylebos Waterway. Recent sediment sampling offshore of the Project site indicates that stormwater discharge from the site does not contribute to elevated levels of contaminants in Hylebos Waterway sediments (Anchor QEA 2019).

SeaPort Sound uses numerous procedures and systems to prevent discharge of contaminated stormwater from the Project site. Examples include the following:

- **Secondary Containment and Visual Inspection.** Three stormwater drainage areas are located within the Project site (Figure 3-5). The storage tanks on the Project site are all located in secondary containment (bermed) areas within these drainage areas. Stormwater (including precipitation, exhaust water from internal steam heating coils from heated tanks, and tank roof water) follows the natural grade of the tank containment areas to low points where stormwater accumulates. When a significant amount of stormwater is accumulated, SeaPort
LEGEND:
- Approximate Outfall Location
- Facility Drainage Area
- Storwater discharge per Ecology
  NPDES Permit No. WA0003204
- Industrial Wastewater Area;
- Discharge per City of Tacoma
  (Permit No. TAC0035-2016)

NOTES:
2. Aerial image is USDA National Agriculture Imagery Program (USDA 2019).
3. 002 NW pumps to 002 SE sub-drainage area.

Figure 3-5
Site Drainage
Draft Environmental Impact Statement
SeaPort Sound Plant Modernization Project
Sound employees visually check for floating oil before the containment valves are opened. If stormwater retained in the secondary containment area has a hydrocarbon sheen or oil, the impacted water is skimmed off and reclaimed. If skimming does not sufficiently remove the oil, the stormwater is routed to the on-site wastewater treatment system.

- **Stormwater Treatment System.** Three Aquip stormwater treatment systems were installed at the Project site in 2018. This is a passive sorptive media filtration stormwater treatment system. Because the treatment systems are above grade, pumps have been fitted to modified weir boxes in drainage areas 002 and 004 that convey stormwater to the Aquip system. Drainage areas 002 and 003 have parallel interconnected treatment systems, each equipped with Aquip model R300 treatment systems. If needed, the flows from either drainage area can be directed into either treatment system. The combined post-Aquip flows discharge through outfall 003. Drainage area 004 is equipped with a single Aquip model R400, which discharges to existing outfall 004.

- **Employee Training.** Employees are trained on the visual inspection and system operational criteria to prevent releases of visual petroleum products. Training includes an understanding of SPCC requirements for tank farm containment, including the storage and handling of stormwater, as well as the proper handling of regulated materials. The training program meets the state's requirements for a Class 1 Facility as outlined in WAC 173-180-510, 2006. Additionally, operators are trained on established procedures for the handling of stormwater.

- **Catch Basin BMPs.** Each stormwater catch basin is outfitted with a filter fabric sock insert designed to retain solids. The catch basins are monitored frequently to ensure the filter fabric insert is operating as designed and the filter fabric is replaced as necessary.

- **Spill Response Materials.** Suitable cleanup materials, such as absorbent materials, booms for containing small spills, and covers for stormwater grates, are kept on site to facilitate prompt cleanup should a spill occur.

- **Fueling Transfer.** Appropriate employees are instructed on the proper use of fuel dispensers. Appropriate maintenance and production employees are instructed on the procedures for fuel transfer from tanker truck to tank to reduce the risk of spills.

- **Weir Box Plates.** Weir box structures that are fitted with sorbent fabrics are integrated into the stormwater conveyance system as the final structure prior to discharge. The weir plates within the structure are set to retain non-emulsified products within the structure and allow for product to be retained and removed for disposal. The structures are regularly inspected and maintained to ensure proper operation.

- **Planning:** As required by regulations, SeaPort Sound maintains up-to-date stormwater pollution prevention, spill control, oil spill prevention, and other plans that include procedures and BMPs to prevent contaminated water from entering Hylebos Waterway.
3.3.1.2.2  **Off-Site Stormwater Pipe**

An existing stormwater line that handles off-site stormwater from right-of-way areas along Marine View Drive is located on the east side of the Project site (Figure 2-1). The stormwater line is currently blocked and minimally discharges to the existing outfall to Hylebos Waterway.

3.3.1.3  **Industrial Wastewater**

SeaPort Sound operates under a City of Tacoma Industrial Wastewater Discharge Permit (IWDP) issued in 2021 (Permit No. TAC-035-2021; City of Tacoma 2021c). This permit covers areas where stormwater may contact potential pollutants. This contact water receives on-site treatment through the industrial wastewater treatment system before discharge to the City’s sewer system and ultimately the Tacoma Central Treatment Plant. Industrial wastewater may contain contaminants and cannot be discharged directly to surface waters. Industrial wastewater from the facility includes contact stormwater not suitable for discharge to Hylebos Waterway and boiler wastewater (SeaPort Sound 2021). The IWDP limits the volume and rate of wastewater discharge to the City sewer system and the level of certain contaminants allowed to remain in wastewater following on-site treatment.

The on-site wastewater treatment system, located south of the former refinery area (Figure 3-5), includes a surge pond, aeration basin, corrugated plate interceptor, induced air floatation device, rotating biological disk, recovered oil tanks, an oil-water separator, and a contact water drain line that connects from the truck rack and a discharge pipe that connects from the wastewater treatment equipment to the sanitary sewer.

SeaPort Sound is required to regularly sample and test wastewater from the on-site treatment system for permit compliance before it is discharged to the City sewer system. Monitoring reports are submitted to the City each month. Any accidental spills affecting the City sewer system are reported to the City immediately. SeaPort Sound is also required to maintain and implement an up-to-date accidental spill prevention plan.

Pre-treated wastewater from the Project site is routed to the Tacoma Central Treatment Plant located on the Tacoma Tideflats along the Puyallup River (City of Tacoma 2021d). The plant discharges treated effluent to Puget Sound. The Central Treatment Plant receives wastewater from the interlocal agreement areas of Fife, Fircrest, portions of Pierce County, and the majority of Tacoma. The City’s treatment plant discharges are subject to NPDES municipal discharge permit requirements.

3.3.1.4  **Water Supply**

Tacoma Water supplies water to the study area. Municipal water sources include the Green River watershed and groundwater wells. In a normal weather year, groundwater wells supply approximately 5% of Tacoma Water’s total annual water requirements (Tacoma Water 2021).
The Project site is located within a critical aquifer recharge area mapped by Pierce County that encompasses the entire Tideflats area (Figure 3-4). The potential for groundwater recharge is likely low to moderate within the Project site because the property is developed and covered by impervious, compacted gravel and paved surfaces over several feet of imported fill (described in Section 3.1).

Wellhead protection areas mapped by the City are located off site but in the Project vicinity (approximately 0.25 mile or more from the Project site; Figure 3-4). The South Tacoma Groundwater Protection District is located more than 3 miles southwest from the study area. Tacoma Water has identified one potential future well located in the study area; it corresponds to the wellhead protection area located on the west side of Hylebos Waterway mapped by the City (City of Tacoma 2008; Tacoma Water 2019).

The Project site is located over a mile outside of the central Pierce County sole-source aquifer designated by EPA. A sole-source aquifer supplies at least 50% of the drinking water for its service area, and there are no reasonably available alternative drinking water sources should the aquifer become contaminated (EPA 2021b).

3.3.1.5 Flood Hazard Areas
The Project site lies outside of any mapped flood hazard areas and is protected by an existing berm located along the shoreline of Hylebos Waterway. Flood mapping indicates that Hylebos Waterway is within Zone AE (a regulatory flood zone). The shorelines of Commencement Bay adjacent to the Tideflats are within zone Coastal A (a coastal area inundated by 1% annual chance flooding) and Zone VE (an area inundated by 1% annual chance flooding with velocity hazard) (City of Tacoma 2021e). Tsunami risk is discussed in Section 3.1.1.

3.3.2 Potential Impacts from the No Action Alternative

3.3.2.1 Water Quality, Stormwater, and Industrial Wastewater
Under the No Action Alternative, the on-site stormwater system and industrial wastewater pretreatment system would be operated, maintained, and repaired consistent with permit requirements. The No Action Alternative would not provide improved wastewater treatment or spill prevention measures. Furthermore, the existing wastewater treatment system is an older and aging system, and repair materials are becoming harder to obtain. The No Action Alternative could lead to a scenario where the wastewater treatment system equipment is no longer sufficient to meet on-site wastewater permit requirements.

The blocked stormwater line that drains off-site stormwater from the Marine View Drive right-of-way that crosses the site would continue to be blocked with restricted flow and would not be replaced. Excavation to construct the Project would not occur, and there would not be a need to manage
groundwater that might be present in excavation areas. SeaPort Sound would continue to operate the existing facility in compliance with local, state, and federal regulations. Compliance with regulations and required plans (SWPPP, emergency response action plan, and facility response plan) would continue in order to avoid or minimize the risk of impacts on water quality near the Project site during operation. No impacts on water quality in surface waters or groundwater are anticipated from the No Action Alternative.

3.3.2.2 Water Supply
The amount of water used at the Project site from the municipal supply system would remain similar to current use under the No Action Alternative. No impacts on water supply would occur.

3.3.2.3 Flood Hazard Areas
The No Action Alternative would not modify on-site facilities, and no impacts related to flood hazards would occur.

3.3.3 Construction Impacts and Mitigation Measures from the Proposed Action

3.3.3.1 Water Quality, Stormwater, and Industrial Wastewater
All delivery of construction materials, and all construction work, would take place on land. The Proposed Action would include upland excavation and filling activities within both the 200-foot shoreland area and the 50-foot marine buffer for Hylebos Waterway. Earthwork is described in Chapter 2 and discussed in Sections 2.5 and 3.1.

Excavation several feet below the existing grade would be required to remove approximately 100 linear feet of existing stormwater and contact water piping within the demolition area. Excavation may encounter groundwater, particularly at depths of 5 feet or more. Ground-disturbing construction activities may encounter contaminated soils or groundwater. These activities have the potential to result in contaminated water being discharged from the construction site and impacting water quality in the Hylebos Waterway or Commencement Bay. However, permit requirements and plans are in place to avoid and minimize these potential impacts.

Ecology’s CSWGP applies to ground-disturbing activities affecting 1 acre or more that discharge stormwater to surface waters of the state. The Proposed Action would occur over approximately 1.4 acres, and a CSWGP would be required. The CSWGP covers stormwater, groundwater, water used for dust control, and other construction water discharges. Discharges must not cause or contribute to a violation of state surface water, groundwater, or sediment management standards or human health-based criteria. All known, available, and reasonable methods of prevention, control, and treatment must be applied before discharging water from the construction site. This includes the
preparation and implementation of an adequate SWPPP, with all appropriate BMPs installed and maintained in accordance with the SWPPP and the terms and conditions of the permit. Discharges of groundwater from dewatering activities, including discharges from dewatering of trenches and excavations, must be managed according to Special Condition S9.D.10 of the CSWGP (Ecology 2021c).

As discussed in Section 3.3.1, the Project site has not been identified by EPA as a source of contamination to the Hylebos Waterway. However, because of the potential to encounter contaminants during excavation, soils would be tested and disposed of at an approved off-site disposal facility (see also Section 3.7.3). If groundwater is encountered during construction, it would be treated on site in accordance with permit requirements.

The construction contractor would be required to develop a contaminated media management plan to address the characterization, segregation, and disposal of any contaminated soils or groundwater encountered during excavation.

To minimize risks of soil contamination, the refinery equipment, tanks, and associated piping would be drained of any liquids prior to demolition. Tanks would be cleaned by qualified contractors. SeaPort Sound intends to recover or recycle any petroleum materials when possible. All washwater would be disposed of properly. All materials designated as a solid waste that would be generated during the demolition portion of the Proposed Action would meet the transportation and disposal requirements of the receiving facility. Equipment that contained petroleum would be cleaned prior to transportation.

Additional BMPs that would be used to minimize the risk of impacts on water quality in Hylebos Waterway and Commencement Bay during construction are described in Section 2.5. With these BMPs and the permits and plans described earlier in place, there is a low risk of contaminated water leaving the construction site and entering surface waters. No water quality impacts are anticipated.

3.3.3.2 Water Supply
SeaPort Sound does not anticipate a need for substantial amounts of additional water during construction beyond what is currently used. Minimal water would be needed for dust suppression and wheel washing of construction vehicles. The water supplied by Tacoma Water would be adequate to meet on-site construction needs.

3.3.3.3 Flood Hazard Areas
Construction of the Proposed Action would occur outside of mapped flood hazard areas. No impacts related to flood hazard areas are anticipated.
3.3.4 Construction Mitigation Measures and Best Management Practices

Potential impacts on water resources from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

- **MM-10:** SeaPort Sound will obtain a CSWGP from Ecology for proposed ground-disturbing activities. The CSWGP will cover stormwater, groundwater, water used for dust control, and other construction water discharges. SeaPort Sound will prepare and implement a SWPPP, with all appropriate BMPs implemented and maintained in accordance with the SWPPP and the terms and conditions of the permit.

- **MM-11:** Construction contractors will receive an orientation, including emergency response protocols, before beginning work on site.

- **MM-12:** SeaPort Sound’s emergency response plans will be in place to provide an immediate on-site response to an incident if one occurs. SeaPort Sound will provide emergency response providers with regularly updated maps of the Project site, access points, contact information, and response procedures during construction.

- **MM-14:** All equipment to be used for construction activities will be cleaned prior to arriving at the site and will be inspected daily to ensure that no leaks are present and the equipment is functioning properly.

- **MM-15:** Water that is used to clean decommissioned refinery equipment prior to removal from the site will be treated and disposed of properly.

- **MM-23:** The contractor will be responsible for the preparation of a spill plan to be used for the duration of the Project to safeguard against unintentional spills of fuel, lubricants, or hydraulic fluid from construction equipment.

3.3.4 Long-Term Impacts and Mitigation Measures from the Proposed Action

3.3.4.1 Water Quality, Stormwater, and Industrial Wastewater

Following construction, on-site stormwater and industrial wastewater would continue to be managed under the facility’s ISIP and IWDP, which would be updated as required to reflect the modified on-site treatment system. The new tanks, their footings, and the new containment area would be designed to current safety standards as described in Chapter 2, reducing the risk of on-site spills and potential localized water quality impacts. Removal of any existing contaminated soils or groundwater from the site (if encountered during construction) would also remove a potential source of stormwater or groundwater contaminants.
The Proposed Action would modify stormwater patterns on the Project site. With the addition of tanks in the former refinery area, the Proposed Action may reduce the area of the Project site that currently drains contaminated stormwater directly to the on-site wastewater treatment system. The new tank area would have a containment berm where stormwater would be inspected and directed either to the Aquip treatment systems and then to the Hylebos Waterway outfalls, or to the on-site wastewater treatment system, as described in Section 3.3.1. In addition, the Proposed Action would result in a net decrease of 400 square feet of impervious surface on the site compared to existing conditions as described in Section 3.1.

The change in the amount of stormwater that would be discharged to Hylebos Waterway versus the municipal sewer system would depend on rainfall and other factors and cannot be quantified. However, both the quantity and quality of stormwater and industrial wastewater discharged from the Project site would be compliant with permit requirements. SeaPort Sound would continue to maintain and update the SeaPort Sound Terminal LLC Facility Contingency Plan (SeaPort Sound 2020) and provide its employees with training to address potential spills. With regulatory compliance and required plans in place to prevent and respond to spills, no additional impacts on water quality in the study area are anticipated beyond what is present under the No Action Alternative.

The SeaPort Sound Terminal LLC Facility Contingency Plan (SeaPort Sound 2020) would be updated upon completion of the Proposed Action to reflect the new tanks and storage capacity, consistent with WAC 173-182. The Proposed Action would not affect SeaPort Sound’s response capabilities or tactics because the completed Proposed Action would remain within the Project site’s spill response measures for a worst-case scenario, and Proposed Action upgrades would be reflected in the SeaPort Sound Terminal LLC Facility Contingency Plan.

The on-site wastewater treatment system would be replaced with new and improved equipment, including the contact water drain line, oil-water separator, and flow and pH meters. The existing surge pond and aeration pump would be repaired as needed to serve the Project site. These upgrades would improve the function of the wastewater treatment system that currently operates on site. Wastewater from this system is routed to the City’s municipal treatment system. In addition, the Proposed Action would replace the existing steam boiler with a hot oil heater. The existing steam boiler generates steam condensate and boiler blowdown water that is discharged into the on-site wastewater treatment system. The new hot oil heater would not create discharge water and would reduce on-site water consumption by approximately 5 million gallons annually. Because wastewater from the Project site represents a small volume relative to overall discharge from the Central Treatment Plant, these improvements would have minimal effects on municipal wastewater discharge and water quality in Commencement Bay.

The stormwater line that would be relocated as part of the Proposed Action would be replaced in coordination with the City and would be installed consistent with City stormwater standards.
Replacement of the blocked stormwater line that crosses the Project site would allow for more efficient drainage to Hylebos Waterway from off-site areas along Marine View Drive.

With the required safety measures in place, and ongoing facility compliance with permit requirements, no impacts on stormwater quality discharged from the Project site to Hylebos Waterway are anticipated under the Proposed Action, with minor benefits occurring from repair and replacement of wastewater treatment system infrastructure, a slight reduction in water usage from replacement of the steam boiler with a more efficient hot oil heater, and replacement/relocation of the existing stormwater line.

3.3.4.2 Water Supply
The Proposed Action would reduce facility water use by replacing the existing steam boiler with a hot oil heater. The existing steam boiler generates steam condensate and boiler blow down water that is discharged into the on-site wastewater treatment system. The new hot oil heater that would be installed as a part of the Proposed Action would not use water and would reduce on-site water consumption by approximately 5 million gallons annually. This reduction in water usage would result in a minor benefit from the Proposed Action.

The study area is located within a Pierce County-mapped aquifer recharge area but outside of wellhead protection areas mapped by the City (Figure 3-4). A bentonite liner and sand layer would be placed inside the circular footing around the new tanks to seal any exposed soil from potential incidental spills. The Project would comply with regulations and site-specific spill response plans intended to prevent or respond to spills. Due to design measures and BMPs that would be implemented through operation, the Proposed Action is not anticipated to further encroach upon or adversely impact the underlying aquifer recharge area.

3.3.4.3 Flood Hazard Areas
The Proposed Action would be located outside of mapped flood hazard areas. New tanks would have containment berms and other safety measures in place. No impacts related to flood hazard areas are anticipated.

3.3.4.4 Secondary Impacts
In the future, the number of truck, rail, and marine vessel trips carrying product from the Project site under any of the three market fuel mix scenarios could change compared to current conditions under both the No Action Alternative and the Proposed Action. The risk of these impacts occurring would be similar under either alternative since transportation throughput is driven by market demand, not an increase in storage capacity. The Proposed Action would increase storage capacity on the Project site by 11%. However, the number of transport trips under both alternatives would
continue to depend on market demand and would remain within SeaPort Sound’s permitted throughput limits described in Chapter 2.

Transporting fuel products by truck, rail, or marine vessel has inherent risks of a spill that could degrade water quality or groundwater proportional to the amount of fuel transferred. An increase in transport trips could result in a nominal increase in associated spill or collision risk along truck haul routes, railroads, and vessel routes. A major spill anywhere along the supply chain that reaches freshwaters or marine waters could have significant impacts if not properly responded to and quickly contained. The number of trips needed to transport bulk liquid products in the future under either alternative cannot be accurately predicted and is likely to fluctuate due to a variety of factors, including the extensive area covered by the supply chain, changes in market demand, fuel efficiency, and other factors. However, trips will continue to occur within the permitted throughput limits under both alternatives.

SeaPort Sound does not operate off-site transport vessels, trains, or trucks. Third-party vessels that access the facility are required to adhere to federal and Washington State regulations that comprehensively regulate vessel safety, spill prevention, and discharges of ballast water. Similarly, state and federal regulations require safety measures for trains and trucks transporting bulk liquids to provide for human safety, but also for the protection of natural resources and the environment. Adherence to these regulations would minimize but not eliminate the risk of a large spill and associated impacts on water quality under the No Action Alternative and Proposed Action.

3.3.4.5 Long-Term and Secondary Mitigation Measures and Best Management Practices

Potential impacts on water resources would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.
- **MM-2:** The new tanks and infrastructure will be designed to modern building codes and standards for safety and seismic stability, consistent with City development and seismic code requirements and state AST secondary containment and fire protection requirements per WAC 173-180-320 and 173-180-330.
- **MM-3:** The tanks will be installed with a bentonite liner and sand layer inside the circular footing of each tank to seal any exposed soil from potential incidental spills.
- **MM-4:** A 4-foot-tall concrete containment berm will be installed around the tanks, meeting state and federal secondary containment requirements (per 40 CFR 112 and WAC 173-180-320).
• **MM-5**: Components for the replacement wastewater treatment system will be elevated to protect against potential geological hazards in the area.

• **MM-6**: The Project will be designed so that any contact water generated during facility operation will be treated and managed in compliance with existing regulations.

• **MM-7**: The current on-site wastewater treatment system will be replaced with modern equipment to reduce electricity consumption at the facility.

• **MM-8**: The existing steam boiler will be replaced with a more energy-efficient hot oil heater that will result in a substantial energy savings at the facility (up to 30% energy savings), reduce GHG emissions, and reduce on-site water consumption by approximately 5 million gallons annually.

• **MM-28**: All applicable operations manuals, plans, and permits will be updated to reflect new facilities. This includes but is not limited to the facility’s ISIP, IWDP, SPCC Plan, SeaPort Sound Terminal LLC Facility Contingency Plan, Facility Security Plan, Emergency Response Plans, and others as needed.

• **MM-29**: Trained personnel will operate the facility and will continue to inspect all facilities daily for potential leaks or signs of material corrosion or degradation.

• **MM-30**: Operators will be trained in proper material handling and emergency response procedures.

• **MM-31**: All facility personnel will continue to participate in SPCC Plan training as well as other safety training.

• **MM-32**: Emergency shutdown system training and drills will be updated to cover the Project vicinity infrastructure upgrades after construction and will continue to occur on a routine basis. The emergency shutdown system is designed to turn off pumps in the event of an unforeseen emergency. The emergency shutdown system is employed under a coordinated command and control facility that has established protocols in place to prevent product release. At a minimum, SeaPort Sound currently conducts two field deployment drills, a tabletop exercise, and four security drills annually. Emergency shutdown protocols are typically covered during at least one of these drills. Training is provided to operators and maintenance staff on the use of emergency shutdown systems.

• **MM-33**: SeaPort Sound’s vendors are required to adhere to local, state, and federal regulations and emergency response plans to reduce potential impacts on emergency response services during off-site fuel transport activities.

### 3.4 Plants and Wildlife

This section addresses wildlife, plants, fish and other aquatic species, and habitats including streams and wetlands located near the Project site. This section also assesses the potential for impacts that could result under the No Action Alternative or as a result of the construction and operation of the Proposed Action. Finally, this section presents measures identified to mitigate impacts of the
Proposed Action. Laws and regulations that are applicable to the Project and that were referenced for determining potential impacts on plants and wildlife are summarized in Appendix E.

3.4.1 Affected Environment

The study area for plants and animals includes a 1-mile radius around the Project site. The study area encompasses the lower middle portion of Hylebos Waterway, as well as Marine View Drive and forested areas to the east (Figure 3-6). Commencement Bay lies just outside the study area, but the bay is referenced in this section where relevant to wider use of the marine environment by wildlife species.

The Project site is located on the Tacoma Tideflats, a former intertidal estuarine area that was filled over the past century to accommodate industrial development. The Tideflats provide highly modified habitat for vegetation or wildlife because of active industrial and port uses. Noise and activity levels are high. Noise in the study area is also contributed by a shooting range located north of Marine View Drive. Hylebos Waterway, adjacent to the Project site, has been straightened and is regularly dredged to accommodate shipping and ongoing contaminant cleanup. Little native shoreline vegetation is present along the waterway except where restoration work has occurred, some of which has been constructed by SeaPort Sound associated with previous construction activities. However, wildlife use of the Project site and surrounding areas still occurs.

3.4.1.1 Habitat Types

Habitat types in the Project vicinity (within 1 mile of the Project site) include industrial sites, wetlands, estuarine and marine areas (Commencement Bay and the waterways), streams, and forested and riparian areas north of Marine View Drive.

3.4.1.1.1 Industrial Sites

The Project site itself consists of paved and gravel areas, tanks, refinery infrastructure, and other equipment. Upland vegetation on site is limited to narrow patches of non-native plants such as Himalayan blackberry (*Rubus armeniacus*) along the shoreline, except on the western portion of the shoreline, where SeaPort Sound installed native vegetation in 2015 to restore the shoreline buffer associated with a previous terminal expansion. Conditions on the site are similar to other developed industrial properties throughout the study area. Regular wildlife use of industrial sites is unlikely because of ongoing human activity and lack of vegetation or other habitat features. However, wildlife species that can tolerate human disturbance may occasionally use rooftops or other structures for perching or may pass through these sites while moving to other habitats in the surrounding area.
NOTES:
2. Aerial image is USDA National Agriculture Imagery Program (USDA 2019).
3. Culverts, pipes, and Pierce County Wetlands Inventory are acquired from Pierce County.
4. Streams are acquired from City of Tacoma, and Pierce County.
6. Port of Tacoma habitat sites from https://www.portoftacoma.com/environment/habitat-restoration

LEGEND:
- Stream
- National Wetland Inventory
  - Culvert
  - Pipe
- Habitat Sites (Port of Tacoma)
  - Estuarine and Marine Deepwater
  - Estuarine and Marine Wetland
  - Freshwater Emergent Wetland
  - Freshwater Forested/Shrub Wetland
  - Freshwater Pond
  - Riverine

Figure 3-6
Plants and Wildlife Study Area
Draft Environmental Impact Statement
SeaPort Sound Plant Modernization Project
3.4.1.1.2 **Wetlands**
The Project site does not contain any freshwater wetlands. Within the study area, freshwater wetlands have been mapped by the U.S. Fish and Wildlife Service (USFWS) on the Blair Peninsula (south side of Hylebos Waterway) and in other portions of the Tideflats (Figure 3-6). Some of these wetlands are part of restoration or mitigation projects. Additional freshwater wetlands are mapped or considered highly likely to be present within the forested area north of Marine View Drive (City of Tacoma 2021f; USFWS 2021a). Estuarine wetlands are located off site, as discussed in Section 3.4.1.

3.4.1.1.3 **Estuarine and Marine Habitats**
The Project site is located in the Tacoma Tideflats area on Hylebos Waterway, approximately 1.3 miles from where the waterway empties into Commencement Bay, an embayment of Puget Sound. The Tideflats area was historically a large delta of estuarine wetlands and mudflats where the Puyallup River emptied into the bay. Over the past century, the river was diked, and the delta was filled, channelized, and developed to facilitate industries such as timber and wood product manufacturing, chemical plants, and transportation facilities.

Today, Hylebos Waterway is one of several waterways in the Tideflats area. The waterway is an estuarine environment where marine water from Commencement Bay and freshwaters from local streams mix. The Hylebos Waterway is a straightened channel ranging from about 460 to 1,000 feet wide and approximately 3 miles long, which is regularly dredged to accommodate shipping. The upland shoreline of Hylebos Waterway is dominated by industrial facilities constructed on top of a thick layer of fill.

Under typical conditions, the waterway experiences two major tidal flushing events per day, similar to other bays and waterbodies in Puget Sound. The water level within the waterway varies markedly between high and low tides. Estuarine wetland areas are present in the study area along the shoreline of Hylebos Waterway, including areas directly adjacent to the Project site, northwest of the 11th Street bridge, and near stream mouths east of the Project site (Figure 3-6). Several estuarine wetland restoration sites have been constructed along portions of the shoreline (Figure 3-6). These include an estuarine wetland restoration area located immediately west of the Project site, known as the Sound Refining Cove restoration project (Figure 3-6). This site (21 acres) is located adjacent to SeaPort Sound property on an intertidal area owned by the Port of Tacoma. The restoration was constructed and is maintained by Occidental Chemical as part of Superfund activities in the waterway (Port of Tacoma 2021a; USFWS 2021a; WDFW 2021a; City of Tacoma 2021f). Estuarine wetlands provide foraging, resting, and breeding sites for birds and may be used by small mammals.

3.4.1.1.4 **Streams**
No freshwater streams or surface drainage channels are located within the Project site. Several off-site freshwater streams are present in the study area. They flow from slopes on the north side of
Marine View Drive, under the roadway into Hylebos Waterway (Figure 3-6). Those that are closest to
the Project site include McMurray Gulch to the west and Coski Gulch to the east. The upper portions
of these streams flow through forested areas, whereas the lower portions flow through culverts and
pipes into the waterway. Hylebos Creek (just outside of the study area) flows into the head of the
waterway about 1.7 miles southeast of the Project site (City of Tacoma 2021f). Restoration projects
are ongoing at the mouth of Hylebos Creek where it enters the waterway.

3.4.1.1.5  Forested and Riparian Areas
Riparian areas are the lands located directly along streams. Riparian areas containing native
vegetation provide foraging, breeding, and nesting habitat and movement corridors for birds,
mammals, amphibians, reptiles, and invertebrates. Riparian vegetation overhanging streams provides
shade that moderates water temperatures, and the plants provide a source of organic material and
insects to the aquatic ecosystem.

The Project site and the Tideflats in general do not provide forested or riparian habitat; these habitat
types are present off-site in the study area to the north of Marine View Drive (Figure 3-6). The
Washington Department of Fish and Wildlife (WDFW) maps this forested area as a biodiversity area
or corridor, which is a type of state priority habitat. WDFW describes this area as providing raptor
habitat and a refuge for bird and mammal species (WDFW 2021b). Species that use these forested
and riparian areas may also occasionally use Hylebos Waterway as part of foraging or movement
corridors.

3.4.1.2  Plants
The Project site consists of industrial facilities and paved and gravel areas that are devoid of native
vegetation. The shoreline of Hylebos Waterway adjacent to the site is armored with riprap. This is
similar to other industrialized properties in the study area. However, terrestrial, wetland, and aquatic
plants are present off-site in the study area.

The wetlands and forested and riparian areas discussed in Section 3.4.1.1.5 contain both native and
non-native plant species. Estuarine wetlands are typically dominated by salt-tolerant sedges and
other emergent species. Puget Sound lowland and riparian forests usually have a multi-layered
canopy of trees, shrubs, and emergent plants. Non-native species are common in disturbed forests,
particularly along forest edges and trails.

Aquatic plants are limited in the study area and are not located within the Project site. According to
the Washington Marine Vegetation Atlas (DNR 2021a), no eelgrass or kelp is present in Hylebos
Waterway or the adjacent portion of Commencement Bay. “Other macroalgae” are mapped in
Hylebos Waterway, including sea lettuce (Ulva sp.) and red algae. Macroalgae often attaches to rock
and other hard surfaces in the marine nearshore. The nearest mapped kelp and seagrass to the
Project site is along the outer portion of Browns Point on Commencement Bay.
No state-mapped rare plants or rare or high-quality vegetation communities are present on or within 1 mile of the Project site (DNR 2021b). USFWS indicates that one Endangered Species Act (ESA)-listed plant species may occur in the Tideflats area: marsh sandwort (*Arenaria paludicola*), which is federally listed as endangered (USFWS 2021b). However, while this species historically occurred in Pierce County, it is now believed to be extirpated from Washington State (USFWS 2008).

### 3.4.1.3 Wildlife

#### 3.4.1.3.1 Birds

The Project site is unlikely to be used by birds except for species that are highly tolerant of human activities and that may occasionally perch on buildings or other structures. In the study area, numerous bird species use Hylebos Waterway, Commencement Bay, and surrounding undeveloped areas such as the forested corridor north of Marine View Drive. Bird species that may use the Project vicinity include songbirds, raptors, waterfowl, wading birds, and seabirds. The site is located within the Pacific Flyway, a major flight corridor for migratory birds extending from Alaska to Mexico and South America.

Table F-1 in Appendix F lists bird species and groups that are included on the state Priority Habitats and Species (PHS) list and that occur in Pierce County (WDFW 2021b). Some of these species, while they occur somewhere in Pierce County, are unlikely to occur in the study area because suitable habitat is lacking. Table 3-2 lists PHS bird species that have been observed or mapped in the study area or for which suitable habitat is available in the study area. The table also includes bald eagle, which is not on the PHS list but potentially uses the study area and is covered under state and federal regulations.

**Table 3-2**

<table>
<thead>
<tr>
<th>Species</th>
<th>Status¹</th>
<th>Known or Potential Habitat Use in the Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterfowl: common loon, western grebe, harlequin duck, cackling geese</td>
<td>On PHS list</td>
<td>Commencement Bay and Hylebos Waterway for resting, roosting, foraging; nearby structures for roosting (cackling geese)</td>
</tr>
<tr>
<td>Shorebirds and wading birds: great blue heron, plovers, curlews, sandpipers, snipes, phalaropes</td>
<td>On PHS list</td>
<td>Estuarine wetlands and shorelines for resting, foraging; nearby structures for perching (great blue heron); forested area east of Marine View Drive for nesting (great blue heron)²</td>
</tr>
<tr>
<td>Cavity-nesting ducks: bufflehead, goldeneye</td>
<td>On PHS list</td>
<td>Commencement Bay and Hylebos Waterway for resting, foraging</td>
</tr>
</tbody>
</table>

¹ Status: On PHS list

² Habitat for breeding and nesting.
### Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Known or Potential Habitat Use in the Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seabirds: cormorants, terns, pigeon guillemot, auklets</td>
<td>On PHS list</td>
<td>Commencement Bay and Hylebos Waterway for resting, foraging; cliffs north of Marine View Drive for nesting (pigeon guillemot); structures near waterway for roosting (double-crested cormorant)</td>
</tr>
<tr>
<td>Songbirds: band-tailed pigeon</td>
<td>On PHS list</td>
<td>Forested areas north of Marine View Drive for foraging, breeding, roosting</td>
</tr>
<tr>
<td>Purple martin</td>
<td>No longer on PHS list but included in PHS mapping</td>
<td>Nest sites documented in the study area, on dolphins and pilings in Hylebos Waterway</td>
</tr>
<tr>
<td>Bald eagle</td>
<td>Not listed; protected under the Bald and Golden Eagle Protection Act, state Bald Eagle Protection Rules, and the Migratory Bird Treaty Act</td>
<td>Large trees north of Marine View Drive for perching and roosting; estuarine wetlands and shorelines for foraging; human structures near water for perching (no mapped nesting sites in study area according to PHS mapping)</td>
</tr>
</tbody>
</table>

### Notes:

1. See Appendix F for details of species and species groups listings.
2. A great blue heron rookery is mapped by WDFW within the study area. The mapped location is approximately 0.9 mile from the Project site. The latest nesting activity recorded in the rookery by WDFW was in 2000.

Sources: WDFW 2021a, 2021b, 2021c; USFWS 2021b

Citizens have recorded numerous additional bird species in the Hylebos Waterway area (ebird 2021). These include several species of gulls, waterfowl, songbirds, seabirds, and shorebirds that are not state or federally listed but are considered to be relatively common in the Puget Sound region or are migratory species. All native birds are regulated under the Migratory Bird Treaty Act.

Five federally listed or proposed bird species regulated under the ESA may occur in Pierce County: marbled murrelet, yellow-billed cuckoo, northern spotted owl, streaked horned lark, and Oregon vesper sparrow. None of these species are likely to occur in the study area due to a lack of suitable habitat (Appendix F).

### 3.4.1.3.2 Terrestrial Mammals

The Project site and other industrialized portions of the Tideflats provide potentially suitable habitat for small mammal species typically associated with urban and industrial areas (e.g., rats, mice, raccoons, coyotes, muskrats, eastern gray squirrels, and Virginia opossum). The lack of vegetation reduces the habitat value for most native terrestrial mammals, particularly those that are sensitive to human disturbance or have other specific habitat requirements.

Table F-2 in Appendix F lists terrestrial mammals that are included on the state PHS list and that occur in Pierce County (WDFW 2021b). Some of these species, while they occur somewhere in Pierce County, are unlikely to occur in the study area because suitable habitat is lacking. The study area north of Marine View Drive provides potential habitat for PHS-listed bats and for black-tailed deer.
Bats may roost in tree cavities and forage for insects in the vicinity. Columbian black-tailed deer are common in forested areas.

One federally listed terrestrial mammal species occurs in Pierce County: the Mazama or western pocket gopher. This species is limited to areas with specific soil types typical of south Puget Sound prairies, which are not present in the study area.

3.4.1.3.3 Other Terrestrial Species
Table F-3 of Appendix F lists five amphibian species, one reptile species, and six insect species that are included on the state PHS list and that occur in Pierce County (WDFW 2021b). Two of the species on the PHS list are also federally listed species: Oregon spotted frog and Taylor’s checkerspot butterfly. The Cascade torrent salamander and the western pond turtle have been petitioned for federal listing.

Of these species, only the western toad is likely to occur in the study area, potentially using forested areas north of Marine View Drive for dispersal and overwintering. The other amphibian, reptile, and insect species are not likely to occur in the study area because suitable habitat is lacking, or because the species are largely extirpated in Washington and known to occur only in a few isolated populations.

In addition, USFWS indicates that the monarch butterfly, a federal candidate species, could occur in the study area (USFWS 2021b). Individual adult monarchs could pass through the study area during migrations, possibly using native vegetation in forested areas or wetlands for resting and feeding. However, the study area is mostly developed and does not provide abundant milkweed plants needed for feeding by monarch butterfly larvae.

3.4.1.3.4 Marine Fish
Table F-4 in Appendix F lists the marine fish species included on the WDFW PHS list for Pierce County (WDFW 2021b). The list includes forage fish, rockfish, bottomfish, and other marine fish species. All of these species may occur in Commencement Bay and could also use Hylebos Waterway during certain life stages.

Forage fish breed on beaches that provide the right conditions for spawning; these known spawning areas are mapped by WDFW. No forage fish spawning is mapped within the study area.

Three federally listed marine fish species may occur in the study area: bocaccio, canary rockfish, and yelloweye rockfish (Appendix F).

Commencement Bay supports numerous other marine fish species that are not PHS or federally listed, such as flathead sole (*Hippoglossoides elassodon*), C-O sole (*Pleuronichthys coenosus*), sand sole (*Pegusa lascaris*), starry flounder (*Platichthys stellatus*), and speckled sand dab.
(Citharichthys stigmaeus) (EPA 2020). These species may also be present within Hylebos Waterway at some times.

3.4.1.3.5 **Anadromous and Freshwater Fish**

Table F-5 in Appendix F lists the anadromous and freshwater fish species included on the WDFW PHS list (WDFW 2021b). They include salmon, trout, steelhead, white sturgeon, and lamprey, all of which may occur in the study area. These species move between freshwater streams and marine/estuarine areas for spawning, rearing, and growth. They could be present in Commencement Bay and Hylebos Waterway at some times of the year.

Hylebos Waterway is a migratory corridor for salmon and trout moving between Hylebos Creek (at the head of the waterway) and Commencement Bay. Fall Chinook salmon (Oncorhynchus tshawytscha), coho salmon (O. kisutch), fall chum salmon (O. keta), and winter steelhead (O. mykiss) have been documented in Hylebos Creek (WDFW 2021d). These species are likely to be present in Hylebos Waterway at different times of year.

Federally listed marine fish species likely to occur in the study area include bull trout, Chinook salmon, and steelhead. Bull trout are documented in the Puyallup River and may occur in nearshore habitats in the study area. Adult Chinook salmon migrate through the study area in late summer and fall to reach spawning sites in Hylebos Creek upstream of the waterway. Juvenile salmon outmigrate through the Hylebos Waterway on their way to Commencement Bay during the spring and summer months. Local adult winter steelhead may be present in the study area throughout the year, and juveniles may be present during outmigration (Anchor QEA 2015).

In addition to the species listed in Appendix F, the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries) indicates that eulachon or Pacific smelt (Thaleichthys pacificus) and green sturgeon (Acipenser medirostris), both federally listed species, may occur in the study area (NOAA Fisheries 2021). However, WDFW maps these species as occurring in counties along the outer coast of Washington, Strait of Juan de Fuca, and in the Columbia River, but not in central Puget Sound or Pierce County (WDFW 2021b). Therefore, they are unlikely to occur in the study area.

3.4.1.3.6 **Shellfish**

Several priority shellfish species are present in Pierce County, including butter clam (Saxidomus giganteus), native littleneck clam (Protothaca staminea), Pacific geoduck (Panopea generosa), Dungeness crab (Cancer magister), pandalid shrimp (Pandalus spp.), Manila (Japanese) littleneck clam (Venerupis philippinarum), and Pacific oyster (Crassostrea gigas) (WDFW 2021b). None of these species are state or federally listed. The Olympia oyster (Ostrea lurida) is a state candidate species. All these shellfish species have recreational, commercial, or tribal importance and vulnerable aggregations.
All the shellfish species noted above may occur in Commencement Bay and potentially within shallower portions of the Hylebos Waterway. Shellfish harvesting for clams, geoduck, scallops, mussels, and oysters is closed in Commencement Bay and the waterways of the Tideflats due to pollution (DOH 2021a).

3.4.1.3.7 **Marine Mammals**

Table F-6 in Appendix F lists the marine mammal species included on the WDFW PHS list for Pierce County (WDFW 2021b). All these species are regulated by the Marine Mammal Protection Act.

Harbor seals have been observed in Hylebos Waterway; along with California sea lions, they are known to haul out on buoys, floats, and log booms near the waterway mouth on Commencement Bay (WDFW 2020). Harbor porpoises are common in Puget Sound. These three species could use the waters of the study area for foraging. In late 2021, a beluga whale was sighted in Commencement Bay. This individual was far south of the species’ typical range. It is unknown whether this individual belonged to the federally listed Cook Inlet population (Orca Network 2021).

The southern resident killer whale (SRKW) distinct population segment is federally listed as endangered. SRKWs have rarely been sighted in Commencement Bay over the past year; transient killer whales were more commonly seen in Puget Sound south of Seattle (Orca Network 2021). Based on SRKW sightings data from 1976 to 2014, SRKWs occur in southern Puget Sound (including Commencement Bay) less commonly than in central and northern Puget Sound and around the San Juan Islands (Olson et al. 2018).

Transient or Bigg’s killer whales also occur in Puget Sound but are not federally listed. Transient killer whales have been sighted in Commencement Bay over the past year (Orca Network 2021). In February 2021, a transient killer whale calf entered Blair Waterway while the rest of its pod was in Commencement Bay (Port of Tacoma 2021b). This was an unusual occurrence. Killer whales (both transient and SRKW) are unlikely to enter the waterways, particularly adult whales since the area is heavily modified by shoreline development and is a high-traffic area for vessels. On Hylebos Waterway, the 11th Street Bridge crosses the waterway approximately 4,300 feet from the mouth of Commencement Bay. Hylebos Waterway is narrow, at approximately 505 feet wide at the crossing of the bridge. Killer whales could pass through this opening and occur near the Project vicinity; however, the bridge, narrow passageway, and high vessel and human activity may act as a strong deterrent. Water depth will also likely deter killer whales from entering nearby the Project vicinity. The maximum depth of the Hylebos Waterway is approximately 50 feet. The majority of the Hylebos Waterway, except for the deepest portions, is too shallow to be considered typical killer whale habitat (Anchor QEA 2015).

The State of Washington has recognized the importance of and threats to SRKW. In 2018, the Governor established the Southern Resident Orca Task Force (Executive Order 18-02), which includes
a Vessel Working Group to address issues specific to marine vessels. In 2019, the Washington State Legislature passed additional requirements to strengthen spill prevention measures in Puget Sound in recognition that “a catastrophic oil spill could cause potentially irreversible damage to the endangered SRKWs and other species, damage commercial fishing, violate tribal treaty rights, and cause severe economic and public health consequences in Washington” (Ecology 2020b). These recent requirements and programs are incorporated in RCW 88.46, Vessel Oil Spill Prevention and Response, and in RCW 88.16, the Pilotage Act.

Gray whales are also a federally listed marine mammal species. Gray whales have recently been sighted around Vashon and Anderson islands (Orca Network 2021), and it is possible that gray whales could enter Commencement Bay. Like killer whales, gray whales are typically too large to enter Hylebos Waterway. Steller sea lions, another federally listed species, are known to use Puget Sound in the Tacoma area and could occasionally use the study area for foraging (Smultea et al. 2017).

3.4.2 Potential Impacts from the No Action Alternative

Under the No Action Alternative, the proposed facilities would not be constructed. Existing facilities would continue to be maintained and operated similarly to existing conditions. Terminal infrastructure may be modified in the future to accommodate changes in demand in the bulk liquids marketplace. As an active industrial facility, the Project site would continue to provide minimal habitat for plants and wildlife, with high levels of ongoing noise and human activity. SeaPort Sound would continue to operate the existing facility in compliance with local, state, and federal regulations to minimize the risk of stormwater contamination or spills that could impact aquatic species, shorebirds, or waterfowl; however, the No Action Alternative would not provide improved stormwater treatment or spill prevention measures (see Sections 3.3 and 3.7). Direct impacts on plants and wildlife in the study area resulting from operation and maintenance of the existing facilities would not occur because habitat conditions would remain the same at the Project site.

3.4.3 Construction Impacts and Mitigation Measures from the Proposed Action

Construction activities at the Project site would occur over approximately 61,300 square feet (1.4 acres) of developed area used for storage and transport of bulk liquids. Birds and mammals using the study area may be temporarily disturbed or displaced due to construction noise, lights, and activities. However, wildlife species that regularly use the study area are likely to be at least somewhat tolerant of these types of disturbances because of the industrial setting. Background noise levels in the study area are already relatively high because of both the industrial activities and the presence of a shooting range located north of Marine View Drive. Therefore, negligible impacts on terrestrial animals are anticipated.
No in-water construction is proposed as part of the Proposed Action. Construction is not expected to result in impacts on killer whales or other marine mammals. Whales could be present in Commencement Bay near the study area during the construction period but would likely be offshore in the deeper waters of Commencement Bay, outside of the Hylebos Waterway. Smaller marine mammals, such as seals, sea lions, and porpoises, could be present in Hylebos Waterway during construction, but construction noise is expected to remain within background noise levels and would not impact these species.

Measures described in Section 3.3 would minimize the risk of adverse water quality impacts that could affect aquatic species during construction as a result of soil erosion or an accidental spill. No impacts on fish, shellfish, or marine mammals are likely to occur with these measures in place during construction.

3.4.3.1 Construction Mitigation Measures and Best Management Practices

Potential impacts on plants and wildlife from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

- **MM-10**: SeaPort Sound will obtain a CSWGP from Ecology for proposed ground-disturbing activities. The CSWGP will cover stormwater, groundwater, water used for dust control, and other construction water discharges. SeaPort Sound will prepare and implement a SWPPP, with all appropriate BMPs implemented and maintained in accordance with the SWPPP and the terms and conditions of the permit.

- **MM-11**: Construction contractors will receive an orientation, including emergency response protocols, before beginning work on site.

- **MM-12**: SeaPort Sound’s emergency response plans will be in place to provide an immediate on-site response to an incident if one occurs. SeaPort Sound will provide emergency response providers with regularly updated maps of the Project site, access points, contact information, and response procedures during construction.

- **MM-14**: All equipment to be used for construction activities will be cleaned prior to arriving at the site and will be inspected daily to ensure that no leaks are present and the equipment is functioning properly.

- **MM-22**: Erosion control measures will be implemented during construction per the Temporary Erosion Control Plan to be prepared for the Project.
• **MM-23:** The contractor will be responsible for the preparation of a spill plan to be used for the duration of the Project to safeguard against unintentional spills of fuel, lubricants, or hydraulic fluid from construction equipment.

### 3.4.4 Long-Term Impacts and Mitigation Measures from the Proposed Action

The Proposed Action would not substantially change the level of human activity or noise occurring at the Project site once the new facilities are operational. The Project site is currently an industrial property, and it would remain so, providing little wildlife habitat due to ongoing human disturbance and lack of vegetation or other habitat features.

The Proposed Action would include replacing existing tanks and refinery infrastructure with new tanks. The new tanks would include all required containment and safety measures. The Proposed Action also includes improving wastewater treatment at the Project site. The *SeaPort Sound Terminal LLC Facility Contingency Plan* (SeaPort Sound 2020) for safe materials handling and spill response would remain in place and be implemented in compliance with state and federal regulations and permits (discussed in Sections 3.3 and 3.7). The Proposed Action would not affect SeaPort Sound’s response capabilities because the completed Project would remain within the facility’s spill response measures for a worst-case scenario. Therefore, no direct impacts on plants or wildlife are anticipated under any of the market fuel mix scenarios for the Proposed Action.

#### 3.4.4.1 Secondary Impacts

In the future, the number of truck, rail, and marine vessel trips carrying product from the Project site under any of the three market fuel mix scenarios could change compared to current conditions under both the No Action Alternative and the Proposed Action. The Proposed Action would increase storage capacity on the Project site by 11%. However, the number of transport trips under both alternatives would continue to fluctuate in response to market demand and would remain within SeaPort Sound’s permitted throughput limits.

Transporting bulk liquid products by truck, rail, or marine vessel has inherent risks of a spill, and in the case of vessel transport, risk of collision with marine life. An increase in transport trips during times of peak demand could result in a nominal increase in associated spill or collision risk along truck haul routes, railroads, and vessel routes. Since increases in throughput are driven by market demand, the risk of these impacts occurring would be similar under the No Action Alternative. The number of trips needed to transport fuel products in the future under either alternative cannot be accurately predicted due to the extensive area covered by the supply chain, changes in market demand, fuel efficiency, and other factors. A major spill anywhere along the supply chain could degrade wetlands, streams, marine waters, and other plant and wildlife habitats where they are present along the transportation route.
SeaPort Sound does not operate off-site transport vessels, trains, or trucks. Transportation of products to and from the SeaPort Sound Terminal is conducted by other parties that are subject to local, state, and federal regulations for safety and spill response measures. For water-based transport, third-party vessels that access the facility are required to adhere to Washington State regulations that comprehensively regulate shipping lanes, vessel speeds, and setback zones for the protection of killer whales. These regulations are intended to reduce noise levels that are harmful to killer whales and maintain safe distances between vessels and wildlife. Similarly, state and federal regulations require safety measures for trains and trucks transporting fuel products to provide for human safety, but also for the protection of natural resources and the environment. Adherence to these regulations would minimize but not eliminate the risk of a large spill and associated impacts on plants and wildlife under the No Action Alternative and the Proposed Action. Impacts would be minor under any of the three market fuel mix scenarios for the No Action and Proposed Action alternatives.

3.4.4.2 Long-Term and Secondary Mitigation Measures and Best Management Practices

Potential impacts on plants and wildlife would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

- **MM-2**: The new tanks and infrastructure will be designed to modern building codes and standards for safety and seismic stability, consistent with City development and seismic code requirements and state AST secondary containment and fire protection requirements per WAC 173-180-320 and 173-180-330.

- **MM-3**: The tanks will be installed with a bentonite liner and sand layer inside the circular footing of each tank to seal any exposed soil from potential incidental spills.

- **MM-4**: A 4-foot-tall concrete containment berm will be installed around the tanks, meeting state and federal secondary containment requirements (per 40 CFR 112 and WAC 173-180-320).

- **MM-5**: Components for the replacement wastewater treatment system will be elevated to protect against potential geological hazards in the area.

- **MM-6**: The Project will be designed so that any contact water generated during facility operation will be treated and managed in compliance with existing regulations.

- **MM-9**: All work will occur in the footprint of existing development and will not disturb any existing shoreline vegetation or habitat.
• **MM-28:** All applicable operations manuals, plans, and permits will be updated to reflect new facilities. This includes but is not limited to the facility’s ISIP, IWDP, SPCC Plan, SeaPort Sound Terminal LLC Facility Contingency Plan, Facility Security Plan, Emergency Response Plans, and others as needed.

### 3.5 Energy and Natural Resources

This section addresses the current and projected consumption of energy (electricity, natural gas, and bulk liquids) and natural resources (nonrenewable construction materials). Water supply and use are discussed in Section 3.3. Mitigation measures to avoid potential impacts are presented where appropriate.

#### 3.5.1 Affected Environment

The study area for energy and natural resources directly related to construction and operation of the Proposed Action focuses on the Project site itself. Regional energy and natural resources are generally discussed to provide context about available supplies and forecast demand.

#### 3.5.1.1 Electricity

Electricity is supplied to the Project site by Tacoma Power. Tacoma Power provides electric service to Tacoma, Fircrest, University Place, and Fife, parts of Steilacoom, Lakewood, Joint Base Lewis-McChord, and portions of unincorporated Pierce County. In 2019, 82% of Tacoma Power’s supply was from hydroelectric sources; much of this energy is generated by hydroelectric projects owned by Tacoma Power and located on four rivers in western Washington. Other power sources in 2019 included biomass (<1%), nuclear (7%), petroleum (<1%), solar (<1%), wind (6%), and unspecified sources (3%). Tacoma Power also purchases energy from other suppliers including Bonneville Power Administration (Tacoma Power 2020, 2021; Commerce 2020).

In 2019, Tacoma Power sold 4.7 million megawatt hours to 182,234 customers (U.S. EIA 2019a). Industrial customers accounted for 52% (2.4 million megawatt hours) of the electricity consumption in the Tacoma Power electrical service area in 2019 (U.S. EIA 2019b). Under existing conditions, the SeaPort Sound facility used an average of approximately 8.1 million kilowatt hours (kWh) of electricity each year between 2016 and 2020. This represents approximately 0.3% of electricity supplied by Tacoma Power to industrial customers in its service area in 2019.

At a regional level in the Pacific Northwest, the annual winter peak electricity forecast is projected to grow at 0.5%, with a forecast of 0.8% growth in the summer peak. The growth in summer peak load is consistent with past projections, while the winter peak load forecast is lower than previous estimates. Most of the forecasted growth comes from large new and expanding industrial customers. Pacific Northwest utilities are expected to need to obtain new sources of power to meet regional
demand within the next few years due to forecasted load growth and the retirement of coal plants (PNUCC 2021).

### 3.5.1.2 Natural Gas

Natural gas is used for three pieces of equipment at the facility. First, a hot oil heating system is used to heat asphalt tanks. This heating system circulates a thermal fluid through coils or special pipes to keep the contents warm, maintain product viscosity, and reduce the risk of damaging equipment (SeaPort Sound 2021). Second, a marine vapor combustion unit is used to control vapors during marine loading, particularly for loading of ethanol on ships and barges. Third is the existing boiler that would be replaced with a more efficient hot oil heater under the Proposed Action.

Natural gas is supplied to the Project site by Puget Sound Energy (PSE). PSE’s service area is primarily in the Puget Sound region, where they serve more than 900,000 natural gas customers. PSE has approximately 165,000 natural gas customers in Pierce County, with 300 industrial customers (PSE 2020).

In 2019, PSE supplied a total of 118 billion cubic feet of natural gas to residential, commercial, and industrial power recipients in Washington State. Of that total, 20 billion cubic feet, or 17%, were consumed by industrial uses (U.S. EIA 2019c). Between 2016 and 2020, the SeaPort Sound facility used an average of approximately 135.4 million cubic feet of natural gas annually. This represents approximately 0.7% of the natural gas supplied by PSE to industrial users in 2019.

### 3.5.1.3 Fuel

In 2019 and 2020, SeaPort Sound maintenance vehicles used an average of 1,150 gallons of gasoline per year. Company boats use approximately 240 gallons of gasoline per year. Diesel is used on site for a mobile compressor (720 gallons per year) and a mobile water pump (144 gallons per year). This represents a small portion of fuels used throughout the region each year.

### 3.5.1.4 Natural Resources

Nonrenewable natural resources used in the Tacoma area primarily consist of sand and gravel extracted from local sources and steel manufactured either locally or outside of the region. Timber, a renewable resource, is also locally available. These materials are used primarily for construction projects. There are numerous sand, gravel, lumber, and steel suppliers in the Tacoma area for general construction needs.

### 3.5.2 Potential Impacts from the No Action Alternative

Under the No Action Alternative, demolition and construction at the Project site would not occur as they would under the Proposed Action. There would be no construction-related impacts on energy or natural resources.
Under the No Action Alternative, the existing steam boiler (operating at approximately at 21 million British thermal units [BTUs] or 20,690 cubic feet of natural gas per hour) would not be replaced with a more efficient hot oil heater that would result in an up to 30% energy savings, reduce GHG emissions, and reduce on-site water consumption by approximately 5 million gallons annually. Additionally, other infrastructure at the site would not be replaced with more modern, energy-efficient elements under the No Action Alternative. Energy used to operate the facilities under the No Action Alternative would continue to be similar to that discussed in Section 3.5.1 and would be essentially the same for each of the three market fuel mix scenarios discussed in Chapter 2. Maintaining the existing infrastructure may require SeaPort Sound to modify existing tanks to hold different bulk liquids in response to market demand. These modifications, as well as ongoing operation and maintenance of existing facilities, would require a minor commitment of energy and natural resources, resulting in a negligible level of impact.

3.5.3 Construction Impacts and Mitigation Measures from the Proposed Action

3.5.3.1 Electricity, Natural Gas, and Fuel
During demolition and construction at the Project site, electricity would be used to provide temporary construction site lighting, to heat buildings, and for power tools and equipment. Consumption of natural gas specifically for construction work is not anticipated.

A temporary increase in fuel usage would result from transporting construction personnel and materials to the Project site and operating construction equipment. The demand for electricity, diesel, and gasoline needed during construction is anticipated to be met by existing supplies, resulting in negligible energy supply impacts.

3.5.3.2 Natural Resources
Nonrenewable natural resources that would be used to construct the Proposed Action would include approximately 1,620 tons of concrete; 16,605 tons of aggregate; and 1,300 tons of steel (Appendix A). There are numerous suppliers of sand, gravel, concrete, piping, and other standard construction materials in the Tacoma area. The demand for natural resources needed during construction is anticipated to be met by existing supplies, resulting in a negligible level of impact to the supply chain.

Unused equipment on the Project site that is demolished (e.g., refinery and wastewater treatment equipment) would be properly disposed of or recycled at an approved off-site facility.
3.5.3.3 Construction Mitigation Measures and Best Management Practices

Potential impacts on energy and natural resources from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.
- **MM-16:** All electrical and natural gas connections to the decommissioned refinery equipment will be properly disconnected and secured.
- **MM-17:** To reduce air emissions, the contractor will limit idling of construction equipment when not in use.
- **MM-19:** Unused equipment on the Project site that is demolished (e.g., refinery and wastewater treatment equipment) will be properly disposed of or recycled at an approved off-site facility.
- **MM-24:** The construction contractor will be required to prepare a demolition plan for City review, describing the anticipated type and amount of construction and demolition wastes, proposed recycling and reuse strategies, and arrangements to coordinate transport of the remaining waste to licensed disposal sites.

3.5.4 Long-Term Impacts and Mitigation Measures from the Proposed Action

3.5.4.1 Electricity, Natural Gas, and Fuel

The Proposed Action includes installing two 200-horsepower pumps that would consume an average of 350,000 kWh per year. Equipment upgrades under the Proposed Action include replacing the current on-site wastewater treatment system, which consumes an electrical load of approximately 180,000 kWh per year, with a new system that is estimated to draw 40,000 kWh per year. These changes in electricity use represent a small percentage of the approximately 8.1 million kWh used by the SeaPort Sound facility annually and an even smaller percentage of the electricity provided by Tacoma Power to industrial users (see Section 3.5.1.1). Therefore, impacts on electrical supply during operation of the Proposed Action would be negligible.

The proposed equipment upgrades also include replacing the existing steam boiler with a more energy-efficient hot oil heater that will operate at 9.9 million BTUs or 9,750 cubic feet per hour (compared to 21 million BTUs or 20,690 cubic feet of natural gas per hour for the existing steam boiler). Several of the tanks in SeaPort Sound’s tank farms are served by an aging and less efficient steam boiler. The boiler runs on natural gas and operates by converting water into steam, and then using the steam’s pressure to push the vaporized water through a series of coils located in the
bottoms of the storage tanks. The existing system lacks a condensation return system, meaning that the majority of the water and heat energy used to keep the more viscous oils hot is lost after a single transit through the facility’s steam loop. Whenever steam is lost through steam traps or blowdowns, all the energy involved in the process of generating the steam is lost.

The new hot oil heater system would feature a closed loop and heat return system (known as a hot oil heat transfer fluid system). The proposed system operates by replacing the steam component with a heat conducive thermal oil. The thermal fluid is circulated through the system and returned to a reservoir where the remaining heat and energy can be captured and the thermal fluid reheated and recirculated through the system. This system is an efficiency upgrade, which will reduce the amount of natural gas consumed by the heating system and reduce GHG emissions at the site. Replacement of the on-site boiler would result in a substantial energy savings at the facility (up to 30% energy savings), reduce GHG emissions, and reduce on-site water consumption by approximately 5 million gallons annually.

The proposed hot oil heater system offers additional operational benefits when compared to the existing steam boiler. The hot oil system works by using a pump, compared to a steam boiler operating by pressure. The removal of a pressurized vessel reduces risk of malfunction. Additionally, water is corrosive to metal, and steam heating systems can experience issues with corrosion over time. Thermal fluids are not corrosive and last longer.

The amount of gasoline and diesel fuel used on site for operation of pumps, generator, and SeaPort Sound vehicles and boats would be similar to existing conditions, and no impacts on fuel use are anticipated.

3.5.4.2 Natural Resources
Once the new facilities are constructed, no significant use of natural resources such as sand, gravel, timber, and steel would be needed. Minor quantities of these resources would be required for ongoing maintenance and repair of facilities, and these could be met by regional supplies, resulting in a negligible level of impact.

3.5.4.3 Secondary Impacts
Methods used for off-site transportation of bulk liquids would be similar to existing operations described in Chapter 2 and Section 3.9.1, and would use the existing system of roads, rail, and shipping lanes. The Proposed Action would result in an 11% increase in product storage at the Project site. Regional population growth is likely to continue, potentially leading to an increase in market demand for SeaPort Sound bulk liquids and the need to transport them. This population growth could indirectly result in increased demand for gasoline, diesel, renewables, biofuels, and other fuels to power trucks, train locomotives, and marine vessels carrying fuel products throughout the supply chain. The City’s 2030 Climate Action Plan (City of Tacoma 2021a) and the LCFS, in
addition to other future GHG reduction initiatives, may lead to a higher demand in renewable and biofuels and use of electric vehicles that reduce the use and transport of fossil fuels in the region.

The number of truck, rail, and marine vessel trips carrying product from the Project site under any of the three market fuel mix scenarios could change compared to current conditions but would remain within SeaPort Sound’s permitted throughput limits described in Chapter 2. The amount of energy used by trucks, trains, and vessels to transport fuel products in the future cannot be accurately predicted due to the extensive area covered by the supply chain, changes in market demand, fuel efficiency, and other factors.

However, it is known that the fuels needed to transport products are widely available. Also, an increase in transport trips from the Project site under the Proposed Action would represent only a small percentage of fuels consumed throughout the region for freight and other uses each year. Impacts on the regional fuel supply resulting from increased product transport trips attributable to the Proposed Action would be minor.

The Proposed Action does not include changes to roadways, railways, or other transportation facilities whose construction would consume building materials. Any additional trips from the Project site would result in minimal wear on these transportation facilities relative to overall regional transportation and would remain within the permitted throughput limits.

SeaPort Sound’s products are ultimately combusted for transport energy or heat, or used as a component in downstream products. The Proposed Action would allow more flexibility in the types of bulk liquids SeaPort Sound can provide to customers, including a greater volume of low-carbon fuels that would offset fossil fuels such as gasoline.

3.5.4.4 Long-Term and Secondary Mitigation Measures and Best Management Practices

Potential impacts on energy and natural resources would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.
- **MM-7:** The current on-site wastewater treatment system will be replaced with modern equipment to reduce electricity consumption at the facility.
- **MM-8:** The existing steam boiler will be replaced with a more energy-efficient hot oil heater that will result in a substantial energy savings at the facility (up to 30% energy savings), reduce GHG emissions, and reduce on-site water consumption by approximately 5 million gallons annually.
3.6 Archaeological, Historical, and Cultural Resources

Historic, archaeological, and cultural resources are buildings, structures, sites, or traditional cultural properties that are eligible for listing in the Washington Heritage Register or the National Register of Historic Places. Laws and regulations that are applicable to the Project and that were referenced for determining potential impacts on historic and archaeological resources are summarized in Appendix E.

State law prohibits unpermitted excavation in archaeological sites. The City’s Land Use Regulatory Code (TMC 13.12.570) requires research to determine if any “historically designated or significant sites” are located within 500 feet of the Project site. If any such sites are present within 500 feet, a cultural resource site assessment is required. The code also requires documentation of structures older than 50 years and consultation with the state Department of Archaeology and Historic Preservation.

3.6.1 Affected Environment

The Project vicinity is on the southwest shoreline of Commencement Bay in Puget Sound. After the last glacial maximum about 14,000 years ago, the Project vicinity was a deep embayment. About 5,600 years ago, a large eruption of Mount Rainier created the Osceola mudflow, which introduced massive amounts of sediment into the White and Puyallup river drainage (Dragovich et al. 1994). The sediment influx caused the river deltas to aggrade rapidly, creating the intertidal system present at historic contact (Vallance and Scott 1997). The delta likely reached its present location around 4,200 years ago (Barnhardt et al. 2003); no archaeological sites would be expected prior to that time.

Although the earliest recorded archaeological sites in the Puget Sound area date to the late Pleistocene (Ames and Maschner 1999), sites in the Project vicinity would not pre-date the formation of the Tideflats around 4,200 years ago. By the mid-Holocene, larger populations began to organize in complex ways to exploit a wide range of resources including salmon; shellfish; land mammals; and plant resources such as berries, roots, and bulbs. Cultures around Puget Sound and northward show “an unequivocal adaptation to coastal resources,” although classic Northwest Coast developments such as sizeable longhouses and large-scale storage are still absent (Matson and Coupland 1995:97). Over time, populations grew and began to reside in large semisedentary cedar plank house villages located at river mouths and confluences and on protected shorelines. The artifact tool kits became increasingly complex and specialized, allowing for large takes of resources, which were processed and stored for year-long consumption (Ames and Maschner 1999).

The Project vicinity is in the traditional territory of the Puyallup Tribe of Indians. The Puyallup, or S’Puyalupubsh, are a Coast Salish tribe who speak a Southern Lushootseed language (Puyallup Tribe of Indians 2018). At the time of Euroamerican contact, the Puyallup had more than a dozen large villages along the Puyallup River, and numerous camps on Commencement Bay (Haeberlin and
Gunther 1930). In the early twentieth century, ethnographer T.T. Waterman recorded two Lushootseed place names near the Project vicinity. LtELEb is the location of the Tideflats "where the shipyards stood during the busy times of 1918," and Kalka’laqu is the Tideflats between Hylebos Creek and Wapato Creek (Hilbert et al. 2001:248). The former appears to be approximately 1 mile northwest of the Project vicinity, and the latter is about 0.75 mile southeast of the Project vicinity.

Commencement Bay was not mapped in detail until the Wilkes expedition in 1841 (Morgan 1979:52). Shortly thereafter, settlers began to trickle into the Commencement Bay area, encouraged by the Donation Land Act of 1850 (Kirk and Alexander 1990). Nicholas Delin built a sawmill in Commencement Bay in 1852, which attracted a “small settlement” (Wilma 2002:1). Shortly thereafter, land claims were made in the area by Peter and Anna Judson, Job Carr (the City’s first mayor), and others (Wilma 2002). As the Euroamerican presence in the area grew, the Puyallup were pressured to negotiate a treaty with the United States Government. The Treaty of Medicine Creek, which assigned the Puyallup people to the Puyallup Reservation, was signed in 1854 and renegotiated several times until 1873 (Ruby and Brown 1986:166).

Almost immediately, Americans began to settle the reservation. The North Pacific Railroad announced in 1873 that a major rail line between the Great Lakes and Puget Sound would terminate at Commencement Bay (Ruby and Brown 1986:168). The resulting development brought pressure to acquire Puyallup Indian allotments within reservation boundaries, and many tribal members sold land (Ruby and Brown 1986:168).

Population and industrial activity increased toward the end of the nineteenth century as the logging, milling, and freight industries boomed (Magden 2008). Land was modified in the Tideflats area to increase useable land and shipping channels and for flood control. As elsewhere in Puget Sound, naturally occurring channels were dredged to deepen and straighten them, and sediments were deposited on adjacent tideflats to increase useable land. Voters established the Port of Tacoma in 1918, and the port instituted an ambitious program to dredge and fill 240 acres of Commencement Bay tidelands a year later (Oldham 2008). Dredging, filling, and development significantly disturbed the Tideflats, and few archaeological sites are recorded in the area despite ethnographic records of heavy use by Native Americans.

The Project site does not appear to have been filled during the initial Port of Tacoma dredging; a 1945 aerial photograph shows it as vacant although possibly at a somewhat higher elevation than on previous maps due to deposition of dredge spoils. On a 1964 aerial photograph, the northwestern portion of the site still appears low-lying and intertidal, while the southeastern portion is filled uplands with five tanks and log stacks visible. Sound Refining used the property as a refinery starting in 1967. The terminal is visible in its current location on a 1968 aerial photograph. By 1968, the entire parcel was filled and supporting a tank farm, as it has been ever since.
No cultural resources have been recorded in the Project site or within 500 feet (one resource, the M.V. Kalakala, is listed on the Department of Archaeology and Historic Preservation database as within 500 feet of the Project site; however, the vessel was scrapped in 2015). Cultural resource surveys have been conducted on either side of the parcel. Both included archaeological monitoring of construction. To the southeast, monitoring revealed about 12 feet of fill above beach deposits (Kelly 2012). To the northwest and in a more upland area, monitoring revealed about 5 feet of fill above glacial deposits (Dellert 2013).

These results, together with the parcel history, indicate that at least the upper 10 feet below the ground surface is highly likely to be imported fill. Given that filling occurred in a fairly short period of time in the mid-twentieth century, it is unlikely that significant historic archaeological resources would be present in the fill.

3.6.2 Potential Impacts from the No Action Alternative
No impacts are expected from the No Action Alternative, and no mitigation is recommended.

3.6.3 Construction Impacts and Mitigation Measures from the Proposed Action
Ground disturbance is not expected to extend beyond 10 feet below the surface and would likely occur in imported fill. This is anticipated to have minor impacts on archaeological, historical, or cultural resources.

3.6.3.1 Construction Mitigation Measures and Best Management Practices
Potential impacts on archaeological, historical, and cultural resources from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits.
- **MM-27**: An Inadvertent Discovery Plan will be prepared and followed in the event of a discovery of cultural resources during construction.

3.6.4 Long-Term Impacts and Mitigation Measures from the Proposed Action
No long-term impacts on historical, archaeological, or cultural resources are expected as a result of the Proposed Action.
3.6.4.1 Secondary Impacts
No secondary impacts on archaeological, historical, and cultural resources are expected as a result of
the Proposed Action.

3.6.4.2 Long-Term and Secondary Mitigation Measures and Best Management
Practices
No mitigation measures are proposed because there would be no long-term or secondary impacts
on archaeological, historical, or cultural resources as a result of the Proposed Action.

3.7 Environmental Health and Safety
Environmental health concerns associated with the Proposed Action include noise and the risk of
potential releases to the environment and associated consequences affecting public health, such as
risk of fire, explosion, spills, and other means of exposure to toxic or hazardous materials. This
section describes impacts on environmental health that could result under the No Action Alternative
or as a result of the construction and operation of the Proposed Action. This section also presents
measures identified to mitigate impacts of the Proposed Action. Laws and regulations that are
applicable to the Project and that were referenced for determining potential impacts on
environmental health and safety are summarized in Appendix E.

3.7.1 Affected Environment
The study area for environmental health encompasses the areas that could be directly or indirectly
affected by construction or operation of the Proposed Action. This includes the existing refinery area
plus a 500-foot buffer from the Project footprint boundaries to include adjacent properties where
impacts may occur.

3.7.1.1 Fuel and Hazardous Materials
SeaPort Sound stores a variety of products on site with varying degrees of hazards. Safety Data
Sheets for these products contain information such as the properties of the product; the physical,
health, and environmental hazards; and safety precautions for handling, storing, and transporting
the product. The National Fire Protection Association (NFPA) has developed a rating standard to provide
a sense of the hazards of a material and the severity of these hazards as they relate to emergency
response. Products receive a health, flammability, and instability rating on a scale from 0 (lowest risk)
to 4 (highest risk). Products currently stored on site and their NFPA ratings are included in Table 3-3.
None of the products currently stored on site are explosive, even under elevated temperatures or
pressures, and all products have a 1 or 2 rating for health hazards. Gasoline, propane, and ethanol
have flash points below 100°F and are considered flammable liquids.
### Table 3-3
**Products Stored On Site and National Fire Protection Association Rating**

<table>
<thead>
<tr>
<th>Product</th>
<th>NFPA Health Rating¹</th>
<th>NFPA Flammability²</th>
<th>NFPA Instability Hazard³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Biodiesel</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Ethanol</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Heavy Fuel Oil</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Low Sulfur Fuel Oil</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Residual Fuel Oil</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Distillates (Petroleum)</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Premium Unleaded Gasoline</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Regular Unleaded Gasoline</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Propane</td>
<td>2</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Renewable Diesel</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Toluene⁴</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Acetone⁴</td>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Notes:**
1. NFPA Health Ratings: 0=normal material; 1=slightly hazardous; 2=hazardous; 3=extreme danger; 4=deadly
2. NFPA Flammability Ratings: 0=will not burn; 1=flash point above 200°F; 2=flash point between 100°F and 200°F; 3=flash point between 73°F and 100°F; 4= flash point below 73°F
3. NFPA Instability Hazard Ratings: 0=stable; 1=unstable if heated; 2=violent chemical change; 3=shock and heat may detonate; 4=may detonate
4. Product stored in low quantities at on-site lab.

### 3.7.1.2 Incident Prevention, Preparation, and Response

SeaPort Sound Terminal operates under multiple plans that include measures to protect the safety of the public, SeaPort Sound’s employees, and the surrounding environment. These plans include guidance for safe operations and procedures for transferring bulk liquids at the dock (consistent with state and federal regulations), BMPs for protecting stormwater and water quality, an SPCC Plan, safe operation of the pipeline, air quality control plans covering maintenance and operation of equipment consistent with PSCAA regulations, and emergency and spill response planning documents.

One of the plans that SeaPort Sound Terminal operates under is the *SeaPort Sound Terminal LLC Facility Contingency Plan* (SeaPort Sound 2020), which is a combined spill prevention and response plan that meets all applicable requirements for spill response and emergency response. The plan is a living document that is re-evaluated, changed, and improved as needed. SeaPort Sound maintains a plan that is complete and responsive to the requirements of 49 CFR 194, Response Plans for Onshore Transportation-Related Oil Pipelines; WAC 173-182, 2019; Oil Spill Contingency Plan; 33 CFR 154, Subpart F, 1996; 40 CFR 112, Subpart D, 2009; the Oil Pollution Act of 1990; the *Northwest Area Contingency Plan* (EPA et. al 2019); 40 CFR 112, SPCC Plan (SeaPort Sound 2020); the Central Puget
SeaPort Sound maintains a variety of emergency response equipment on site in case of an incident. This includes booms, sorbents, response boats, hand tools, and communication equipment. SeaPort Sound is prepared to deploy response equipment and booms to recover and store material to meet regulatory response time and recovery requirements for EPA, Ecology, and USCG Worst-Case Discharge estimates. A Primary Response Contractor (PRC) has been retained, and Ecology has provided a letter stating that Marine Spill Response Corporation has been granted approval as a PRC. SeaPort Sound also maintains contracts with prominent spill management teams, including Witt O'Brien's and Gallagher Marine.

In addition to maintaining boom and response equipment and securing contracts with a PRC, SeaPort Sound conducts inspections of response equipment and performs and participates in drills, to which agency observers are invited, including Ecology, the Tacoma Fire Department (TFD), and USCG. At a minimum, SeaPort Sound conducts two field deployment drills, a tabletop exercise, and four security drills each year. All facility personnel participate in SPCC Plan training as well as other safety training.

### 3.7.1.3 Cleanup Sites

EPA lists one National Priorities List (i.e., Superfund) site in the study area: the CB N/T Superfund Site. EPA placed the site on the Superfund National Priorities List in 1983 due to widespread contamination of the water, sediments, and upland areas. Cleanup is underway and is being addressed through state, federal, and potentially responsible party actions.

In 2019, a comprehensive field examination of the SeaPort Sound refinery process area was completed for the purposes of demolition. The resulting survey identified 15 areas where samples were found to contain greater than 1% asbestos. After the field examination was completed, Construction Group International was contracted to remove all areas of asbestos identified by the survey. This work was completed in December 2019. Asbestos-containing gasket materials maintained between flanged connections were left in place for removal during demolition. Boiler deaerator tank testing at the same time found asbestos in the insulation.

The Project site is located within the footprint of the area known as the Asarco Plume. Properties within the plume are known to contain contaminants associated with the operation of the former Asarco Tacoma smelter located approximately 5 miles to the west of the Project site. Soils taken off site would be tested and disposed of appropriately. There are no active underground petroleum pipelines associated with the refinery.
In addition to the Asarco Tacoma smelter site, there are two sites on properties adjacent to the Project site that are identified by Ecology as contaminated sites (Table 3-4). Cleanup occurs for any soil disturbance activities on properties affected by the Asarco Tacoma smelter. The other two sites have achieved No Further Action (NFA) status, which means that the sites have been successfully cleaned up and no contamination remains above the applicable cleanup levels outlined in the MTCA. The most common affected media types within these sites are soil and surface water.

**Table 3-4**
**Cleanup Sites on Parcels Adjacent to the Project Site**

<table>
<thead>
<tr>
<th>Cleanup Site Name</th>
<th>Cleanup Site ID</th>
<th>Address</th>
<th>Cleanup Type</th>
<th>Site Status</th>
<th>Contaminant</th>
<th>Affected Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asarco Tacoma Smelter Site</td>
<td>3657</td>
<td>Plume covers a large portion of the Puget Sound region including Tacoma</td>
<td>Federal</td>
<td>Cleanup Started</td>
<td>Arsenic</td>
<td>Soil, surface water</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lead</td>
<td>Soil</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Metals priority pollutants</td>
<td>Soil, surface water</td>
</tr>
<tr>
<td>Cascade Timber 2</td>
<td>3047</td>
<td>S Taylor Way, approximately 0.2 mile northwest of Project site</td>
<td>No Process</td>
<td>NFA</td>
<td>Conventional contaminants, organic</td>
<td>Soil, groundwater, surface water</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Metals priority pollutants</td>
<td>Soil, groundwater, surface water</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Petroleum products – unspecified</td>
<td>Soil, groundwater, Surface water</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PAHs</td>
<td>Soil, groundwater, Surface water</td>
</tr>
<tr>
<td>Edman Co. Side 1 Marine View Dr</td>
<td>2662</td>
<td>2502 Marine View Drive SW</td>
<td>Ecology</td>
<td>NFA</td>
<td>Metals priority pollutants</td>
<td>Soil, surface water</td>
</tr>
</tbody>
</table>

3.7.1.4 Noise

Land uses that are considered sensitive to noise impacts are referred to as sensitive receptors. This can include schools, residences, libraries, hospitals, and other care facilities. The nearest sensitive receptors to the Project site are residences that are more than 0.25 mile away. The existing noise environment is typical of an industrial facility. Existing noise sources at the Project site include routine operations, operations at adjacent industrial facilities, vehicle traffic on Marine View Drive and other nearby roads, and vessels on Hylebos Waterway.
Noise from Project construction and operations would be subject to the City’s noise ordinance (TMC 8.122). Within the City, permitted construction hours are from 7:00 a.m. to 9:00 p.m. on weekdays and 9:00 a.m. to 9:00 p.m. on weekends and holidays; however, after-hours work is allowed provided that the sound does not exceed the limits outlined in the noise ordinance.

3.7.2 Potential Impacts from the No Action Alternative

Under the No Action Alternative, the site would continue to be used for bulk liquids storage and transport. There would be limited changes to the amount of fuel or hazardous materials stored on site to support operations, as volumes of stored products fluctuate within the existing tank capacity over time. SeaPort Sound would continue to follow existing incident prevention, preparation, and response plans and operate the existing facility following the same compliance with local, state, and federal regulations for the handling, storage, and transport of materials as would be followed under the Proposed Action. Contaminated soils or other hazardous material would not be encountered or removed from the site during construction because construction would not occur. There would be no changes to noise levels at the site, and SeaPort Sound would continue to operate under the City’s noise ordinance. Overall, there would be no impact to environmental health and safety under the No Action Alternative because potential impacts from ongoing activities at the terminal would continue to be mitigated via response plans and ongoing training.

3.7.3 Construction Impacts and Mitigation Measures from the Proposed Action

The Proposed Action includes installing new bulk liquids storage tanks, which would be used to store petroleum and renewable and biofuel products. No new types of hazardous materials would be stored on site as a result of the Proposed Action. Products that would be stored in the new tanks would not be present during construction; however, the contractor would be responsible for the preparation of a spill plan to be used for the duration of the Project to safeguard against unintentional spills of fuel, lubricants, or hydraulic fluid from construction equipment.

Contaminated sites identified by Ecology that are on parcels adjacent to the Project site have achieved NFA status. However, some soil contamination could be present from historical activities at the facility. During construction, it is possible that contaminated soils could be encountered that may be present from historical activities at the facility. The construction contractor would be required to develop a contaminated media management plan to address the characterization, segregation, and disposal of any contaminated soils encountered during excavation. Soils would be observed for visual contamination and would be tested and disposed of appropriately at an approved off-site disposal facility. Exposed soils could also contaminate stormwater runoff if not controlled. However, BMPs will be implemented as described in Section 3.3.3.4 to avoid or minimize stormwater impacts.
Demolition of existing structures could disturb asbestos-containing materials where present. Most areas of the site that contained greater than 1% asbestos were removed by Construction Group International in 2019; therefore, significant impacts on human or environmental health are not expected from the removal of the remaining asbestos on the site. Asbestos-containing gasket materials present between flanged connections would be removed during demolition. If the deaerator tank is removed during the Project, the asbestos insulation would also be removed. Appropriate demolition and disposal practices would be implemented during asbestos removal.

Short-term and localized increases in noise may occur from construction activities. The Proposed Action would occur within an active industrial facility, with noise levels that are typical of an industrial setting. The noise of the surrounding environment would not affect the Proposed Action. Construction would occur during times allowed by the City’s noise ordinance in TMC Title 8 or an approved extension.

It is anticipated that construction of the Proposed Action would have negligible impacts on environmental health and safety. The Proposed Action is located in an industrial setting where operational noise-generating activities occur and impacted soils are common and can be properly handled and disposed of. Potential increases in construction noise are anticipated to quickly attenuate to background levels due to the industrial setting.

3.7.3.1 Construction Mitigation Measures and Best Management Practices

Potential impacts on environmental health and safety from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.
- **MM-10:** SeaPort Sound will obtain a CSWGP from Ecology for proposed ground-disturbing activities. The CSWGP will cover stormwater, groundwater, water used for dust control, and other construction water discharges. SeaPort Sound will prepare and implement a SWPPP, with all appropriate BMPs implemented and maintained in accordance with the SWPPP and the terms and conditions of the permit.
- **MM-11:** Construction contractors will receive an orientation, including emergency response protocols, before beginning work on site.
- **MM-12:** SeaPort Sound’s emergency response plans will be in place to provide an immediate on-site response to an incident if one occurs. SeaPort Sound will provide emergency response providers with regularly updated maps of the Project site, access points, contact information, and response procedures during construction.
- **MM-13**: Additional security patrols will be provided, and all work areas will be fenced to prevent public access during construction. The Project site will continue to comply with its Facility Security Plan requirements.
- **MM-14**: All equipment to be used for construction activities will be cleaned prior to arriving at the site and will be inspected daily to ensure that no leaks are present and the equipment is functioning properly.
- **MM-15**: Water that is used to clean decommissioned refinery equipment prior to removal from the site will be treated and disposed of properly.
- **MM-16**: All electrical and natural gas connections to the decommissioned refinery equipment will be properly disconnected and secured.
- **MM-17**: To reduce air emissions, the contractor will limit idling of construction equipment when not in use.
- **MM-18**: The contractor will employ dust suppression equipment as needed during grading activities to reduce potential dust emissions.
- **MM-19**: Unused equipment on the Project site that is demolished (e.g., refinery and wastewater treatment equipment) will be properly disposed of or recycled at an approved off-site facility.
- **MM-20**: Construction will occur during times allowed by the City’s noise ordinance in TMC Title 8 or an approved extension.
- **MM-21**: Construction traffic generated by the Project will be limited to what is required for construction and will use main arterials to the extent practicable.
- **MM-22**: Erosion control measures will be implemented during construction per the Temporary Erosion Control Plan to be prepared for the Project.
- **MM-23**: The contractor will be responsible for the preparation of a spill plan to be used for the duration of the Project to safeguard against unintentional spills of fuel, lubricants, or hydraulic fluid from construction equipment.
- **MM-24**: The construction contractor will be required to prepare a demolition plan for City review, describing the anticipated type and amount of construction and demolition wastes, proposed recycling and reuse strategies, and arrangements to coordinate transport of the remaining waste to licensed disposal sites.
- **MM-25**: The construction contractor will be required to develop a contaminated media management plan to address the characterization, segregation, and disposal of any contaminated soils or groundwater potentially encountered during excavation.
- **MM-26**: SeaPort Sound will provide asbestos and lead abatement requirements and procedures to the contractor prior to construction. Asbestos and other hazardous wastes used or encountered during construction will be properly disposed of in accordance with appropriate regulations.
3.7.4 **Long-Term Impacts and Mitigation Measures from the Proposed Action**

The Proposed Action would include an increase in the storage of bulk liquids that are similar to the mix currently held and transported through the terminal. The Proposed Action includes both design and operational safety measures to avoid and minimize potential environmental impacts from operation and storage of materials. The new tanks would be designed to current safety standards for seismic stability, consistent with City seismic and development code requirements. Construction of the new storage tanks would include installing a new reinforced concrete circular footing for each tank. A bentonite liner and sand layer would be placed inside the circular footing to seal any exposed soil from potential incidental spills. The tanks would be constructed within an area contained by a 4-foot-high concrete wall meeting secondary containment requirements (per 40 CFR 112, 2021, and WAC 173-180-320, 2006). Additionally, the wastewater treatment system would be replaced with new and improved equipment, including the contact water drain line, oil-water separator, and flow and pH meters. The existing surge pond and aeration pump would be repaired as needed to serve the facility. These upgrades would improve the function of the wastewater treatment system that currently operates on site. The new non-SeaPort Sound stormwater line to be relocated as part of the Proposed Action is being replaced in coordination with the City and would be installed consistent with City stormwater standards. A new fire loop system will be installed at the terminal to expand fire response capabilities on site. The fire system and Project infrastructure will be designed to meet current codes.

Although most areas of the site that contained greater than 1% asbestos were removed by Construction Group International in 2019, the removal of remaining asbestos from the site would be a benefit to environmental health and safety. If contaminated soils are found during construction and are removed, that would also result in long-term benefits to environmental health and safety.

The Proposed Action would not introduce any new products other than those that are already stored on site; therefore, there would be no increased risk of health hazards, fires, or explosions. The new tanks are designed to only handle lower-vapor-pressure products (e.g., the tanks will not require floating roofs). Due to the safety standards and implementation of safety measures, the long-term impacts of the Proposed Action on environmental health and safety are expected to be low.

Continued safe operation of the facility would be ensured through compliance with local, state, and federal regulations for the handling, storage, and transport of materials. SeaPort Sound would continue to maintain and update the *SeaPort Sound Terminal LLC Facility Contingency Plan* (SeaPort Sound 2020) to address potential spills at the site in compliance with WAC 173-182; the Oil Pollution Act of 1990, and 33 CFR 154. Trained personnel operate the facility and would continue to inspect all facilities daily for potential leaks or signs of material corrosion or degradation. A vapor detection system is installed at the facility propane transfer to actively monitor and alert operators of potential leaks. The Proposed Action is designed so that any contact water generated during facility operation...
operation would be treated and managed in compliance with existing regulations. SeaPort Sound
anticipates that any potential public health impacts from the Proposed Action would be addressed
through design and operational BMPs. The safety plans in place and safety training among staff
would result in a low risk of environmental health and safety impacts due to spills. The Tacoma-
Pierce County Health Department’s Environmental Health Program also submitted a comment
through the SEPA process stating that they have no comments on the current proposal.

Long-term impacts from the operation of the Proposed Action are expected to be comparable to the
No Action Alternative since similar bulk liquids and materials will be handled on site under both
alternatives. Any impacts from the Proposed Action are expected to be mitigated through response
plans and ongoing training and upgraded fire response infrastructure at the terminal. The Proposed
Action includes similar operations as the No Action Alternative under all three market fuel mix
scenarios and would continue to operate within the permitted throughput limits. Long-term noise
levels at the Project site would remain similar to existing levels after Project completion, and there
would be no new noise impacts as part of the Proposed Action.

3.7.4.1 Secondary Impacts
Secondary impacts from the Proposed Action would be similar to the No Action Alternative since
similar bulk liquids would be handled, and transportation throughput is driven by market demand,
ot an increase in storage capacity. However, there could be a nominal increase in risk of spills
during transport of bulk liquid products off site, proportional to the amount of bulk liquids
transferred if demand for bulk liquid products in the region increases. Spill response measures,
including those described in the Plants and Wildlife section (Section 3.4.4), would be implemented to
address potential spills; therefore, impacts are expected to be minor.

3.7.4.2 Long-Term and Secondary Mitigation Measures and Best Management
Practices
Potential impacts on environmental health and safety would be avoided, minimized, or mitigated by
implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction.
  Construction and operation will be performed according to the requirements and conditions
  of these permits, including compliance with permitted facility throughput and emissions limits
  that apply to operations.

- **MM-2**: The new tanks and infrastructure will be designed to modern building codes and
  standards for safety and seismic stability, consistent with City development and seismic code
  requirements and state AST secondary containment and fire protection requirements per

- **MM-3**: The tanks will be installed with a bentonite liner and sand layer inside the circular
  footing of each tank to seal any exposed soil from potential incidental spills.
• **MM-4**: A 4-foot-tall concrete containment berm will be installed around the tanks, meeting state and federal secondary containment requirements (per 40 CFR 112 and WAC 173-180-320).

• **MM-5**: Components for the replacement wastewater treatment system will be elevated to protect against potential geological hazards in the area.

• **MM-6**: The Project will be designed so that any contact water generated during facility operation will be treated and managed in compliance with existing regulations.

• **MM-7**: The current on-site wastewater treatment system will be replaced with modern equipment to reduce electricity consumption at the facility.

• **MM-8**: The existing steam boiler will be replaced with a more energy-efficient hot oil heater that will result in a substantial energy savings at the facility (up to 30% energy savings), reduce GHG emissions, and reduce on-site water consumption by approximately 5 million gallons annually.

• **MM-9**: All work will occur in the footprint of existing development and will not disturb any existing shoreline vegetation or habitat.

• **MM-28**: All applicable operations manuals, plans, and permits will be updated to reflect new facilities. This includes but is not limited to the facility’s ISIP, IWDP, SPCC Plan, SeaPort Sound Terminal LLC Facility Contingency Plan, Facility Security Plan, Emergency Response Plans, and others as needed.

• **MM-29**: Trained personnel will operate the facility and will continue to inspect all facilities daily for potential leaks or signs of material corrosion or degradation.

• **MM-30**: Operators will be trained in proper material handling and emergency response procedures.

• **MM-31**: All facility personnel will continue to participate in SPCC Plan training as well as other safety training.

• **MM-32**: Emergency shutdown system training and drills will be updated to cover the Project vicinity infrastructure upgrades after construction and will continue to occur on a routine basis. The emergency shutdown system is designed to turn off pumps in the event of an unforeseen emergency. The emergency shutdown system is employed under a coordinated command and control facility that has established protocols in place to prevent product release. At a minimum, SeaPort Sound currently conducts two field deployment drills, a tabletop exercise, and four security drills annually. Emergency shutdown protocols are typically covered during at least one of these drills. Training is provided to operators and maintenance staff on the use of emergency shutdown systems.

• **MM-33**: SeaPort Sound’s vendors are required to adhere to local, state, and federal regulations and emergency response plans to reduce potential impacts on emergency response services during off-site fuel transport activities.
• **MM-34:** To mitigate for GHG emissions anticipated to be produced from Project construction and operation of the new tanks over the next 40 years (as calculated per the Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project [Appendix A]), SeaPort Sound will contribute an equivalent amount of money to the City’s Urban Forestry Program as would be required to purchase third-party-verified GHG offsets. This mitigation measure is consistent with the City’s 2030 Climate Action Plan sustainability goals and will help the City to achieve local GHG emissions drawdown targets (City of Tacoma 2021a).

• **MM-35:** SeaPort Sound will install tanks within the proposed expansion area with fixed cone roofs designed to store low-vapor-pressure bulk liquids such as diesel, biodiesel, renewable fuel feedstock, and fuel oil. This would preclude the storage of high-vapor-pressure bulk liquids (i.e., gasoline and ethanol) within these tanks without retrofitting or replacing the tanks with a floating roof system, which would require a separate SEPA review and a Notice of Construction issued through the Puget Sound Clean Air Agency to complete.

### 3.8 Land and Shoreline Use

Land use refers to how land is developed for various human uses, including residential, commercial, and industrial uses. It also refers to the preservation or protection of land for natural uses. Shorelines—land along a waterbody—can also be developed for human purposes or preserved for natural purposes. Development projects, such as the Proposed Action, must be compatible with surrounding land uses and must comply with all state and local regulations and policies governing land and shoreline use.

This section describes the current land and shoreline use and environmental justice populations of interest in the study area and assesses the potential for impacts on land and shoreline use that could result under the No Action Alternative or as a result of the construction and operation of the Proposed Action. This section also presents measures identified to mitigate impacts of the Proposed Action. Laws and regulations that are applicable to the Project and that were referenced for determining potential impacts on land and shoreline use are summarized in Appendix E.

#### 3.8.1 Affected Environment

The study area for land and shoreline use consists of areas where land uses may be directly or indirectly affected by construction or operation of the Proposed Action. This includes the existing refinery area plus a 500-foot buffer from the Project footprint boundaries to include adjacent properties where impacts may occur. The environmental justice analysis uses a 0.5-mile buffer from the Project site.
3.8.1.1 Land Use and Zoning

The Project site is located in the City of Tacoma, Washington, along the Hylebos Waterway in an area zoned for industrial use (Figure 3-7). It is also located within the regionally designated Port of Tacoma Manufacturing and Industrial Center, which is made up of 5,160 acres of waterfront land and adjoining waterways on Tacoma’s Commencement Bay (PSRC 2015). Adjacent industrial properties include additional SeaPort Sound Terminal storage facilities to the west and Edman Company, a logging business, and a landfill to the east. The Hylebos Waterway is an industrial waterway that borders the south side of the facility. Marine View Drive is located north of the Project site, with several residential areas located on top of a steep hillside to the north.

The parcel number is 0321264046, which is zoned as M-2: Heavy Industrial District by the City (City of Tacoma 2021g). The Heavy Industrial District is intended to allow most industrial uses. Parcels located to the west and east of the Project site are also zoned as M-2, while the parcels on the north side of Marine View Drive are zoned C-2: General Community Commercial District. Further to the north, there are areas zoned as R-2: Single-Family Dwelling District that also have a View Sensitive Overlay District where buildings may not exceed a height of 25 feet.
NOTES:
2. Aerial image is USDA National Agriculture Imagery Program (USDA 2019).
3. Zoning designations acquired from City of Tacoma.

LEGEND:

Zoning Designation
- **C1** - Commercial
- **C2** - Commercial
- **M1** - Light Industrial
- **M2** - Heavy Industrial
- **PMI** - Port Maritime and Industrial
- **R2** - One Family Dwelling
- **S10** - Port Industrial Area (HI)
- **S11** - Marine View Drive (UC)
- **S13** - Marine Waters of the State (A)

Figure 3-7
Zoning Map

Draft Environmental Impact Statement
SeaPort Sound Plant Modernization Project
The City’s Comprehensive Plan, known as “One Tacoma,” guides the community’s long-term development and describes plans for the vision for the future. The current Comprehensive Plan designation of the Project property is Heavy Industrial (Figure 3-8; City of Tacoma 2015a) which is characterized by higher levels of noise and odors, large-scale production, large buildings and sites, extended operating hours, and heavy truck traffic. This designation also requires access to major transportation corridors, often including heavy-haul truck routes and rail facilities. The Comprehensive Plan designation of the surrounding areas is commercial and industrial, which supports ongoing port and other similar uses requiring multimodal transportation of goods and services.

The City is currently developing a Tideflats Subarea Plan, which is intended to create a shared long-term vision and more coordinated approach to development, environmental review, and strategic capital investments in the Tideflats area. As of publication of the EIS, the City is currently developing a Tideflats Subarea Plan EIS to support land use decision-making under these new regulations. The Project is expected to be vested under the previous regulations because the SEPA Determination of Significance for this Project was issued prior to the completion of the Tideflats Subarea Plan.

3.8.1.2 Shoreline Environment

The Shoreline Management Act applies to all counties and cities that have “Shorelines of the State,” as defined in RCW 90.58.030. Shoreline Master Programs (SMPs) typically regulate development within 200 feet of jurisdictional waterbodies to be consistent with the Shoreline Management Act goals. The Project site is located within the jurisdiction of the City’s SMP with an environmental designation of “S-10 Port Industrial, High-Intensity” (Figure 3-9). This designation allows for “the continued development of the Port Industrial Area, with an increase in the intensity of development and a greater emphasis on terminal facilities within the City,” pursuant to TMC 19, Chapter 9.12(A) (City of Tacoma 2019b). A portion of the Proposed Action, primarily wastewater treatment system repairs and upgrades and stormwater line replacement, is located within the SMP-regulated 50-foot marine buffer.

3.8.1.3 Critical Areas

Critical areas regulated by the City pursuant to TMC Title 13 include critical aquifer recharge areas, fish and wildlife habitat conservation areas, flood hazard areas, geologically hazardous areas, stream corridors, and wetlands. Critical areas that are present on the Project site include the 200-foot shoreland area of the Hylebos Waterway, the 50-foot marine buffer, and an area of high liquefaction susceptibility (City of Tacoma 2021g). These critical areas are identified and evaluated in Section 3.1, Earth; Section 3.3, Water; and Section 3.4, Plants and Wildlife.
NOTES:
2. Aerial image is USDA National Agriculture Imagery Program (USDA 2019).
3. Land use designations acquired from City of Tacoma.

LEGEND:
Land Use Designation
- Single Family Residential
- Neighborhood Commercial
- Heavy Industrial
- Parks and Open Space
- Shoreline
NOTES:
2. Aerial image is USDA National Agriculture Imagery Program (USDA 2019).
3. Shoreline designations data acquired from City of Tacoma.

Figure 3-9
Shoreline Designations
Draft Environmental Impact Statement
SeaPort Sound Plant Modernization Project
3.8.1.4 Environmental Justice

Environmental justice refers to the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. There are no residential properties on the Project site; therefore, no minority or low-income groups live on the site. Residential properties are also not present immediately adjacent to the site, and the nearest residential neighborhood is greater than 0.5 mile from the Project site.

Tables 3-5 and 3-6 summarize the 2014 to 2018 American Community Survey census data for the area within a 0.5-mile radius from the Project boundaries (EPA 2021c). Data from the City are also included for comparison. Table 3-5 includes the population by race, which is primarily white alone with smaller percentages of Black alone and Asian alone. The City is also primarily white alone, with similar levels of Black alone and Asian alone as the Project vicinity. People who identify as Hispanic or Latino of any race account for approximately 11% of the people within a 0.5-mile radius and approximately 12% in the City.

If the percentage of minorities or low-income populations within the study area is greater than the City percentage, the study area is considered an environmental justice population. Based on the data presented, the area within 0.5 mile of the Project site does not have greater levels of environmental justice populations compared to the City as a whole.

Table 3-5
Population by Race

<table>
<thead>
<tr>
<th>Race</th>
<th>Within 0.5 Mile of the Project Site</th>
<th>City of Tacoma</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of People</td>
<td>Percentage</td>
</tr>
<tr>
<td>White alone</td>
<td>666</td>
<td>73%</td>
</tr>
<tr>
<td>Black alone</td>
<td>92</td>
<td>10%</td>
</tr>
<tr>
<td>American Indian alone</td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td>Asian alone</td>
<td>87</td>
<td>10%</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Some other race</td>
<td>16</td>
<td>2%</td>
</tr>
<tr>
<td>Two or more races</td>
<td>56</td>
<td>6%</td>
</tr>
<tr>
<td>Hispanic or Latino (of any race)</td>
<td>105</td>
<td>11%</td>
</tr>
</tbody>
</table>

Source: EPA 2021c

Table 3-6 includes household income. In 2021, the federal poverty guideline for a four-person household was $26,500. Approximately 11% of households within 0.5 mile of the Project were at or
below the federal poverty guideline, and approximately 21% of households within the City were at or below the federal poverty guideline (ASPE 2021).

### Table 3-6 Household Income

<table>
<thead>
<tr>
<th>Income</th>
<th>Within 0.5 Mile of the Project site</th>
<th>City of Tacoma</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Households</td>
<td>Percentage</td>
</tr>
<tr>
<td>&lt;$15,000</td>
<td>23</td>
<td>7%</td>
</tr>
<tr>
<td>$15,000 to $25,000</td>
<td>13</td>
<td>4%</td>
</tr>
<tr>
<td>$25,000 to $50,000</td>
<td>37</td>
<td>11%</td>
</tr>
<tr>
<td>$50,000 to $75,000</td>
<td>49</td>
<td>15%</td>
</tr>
<tr>
<td>$75,000+</td>
<td>206</td>
<td>63%</td>
</tr>
</tbody>
</table>

Source: EPA 2021c

### 3.8.2 Potential Impacts from the No Action Alternative

For the No Action Alternative, no construction would occur; therefore, no temporary construction or long-term operational impacts would occur relative to the Proposed Action, and no mitigation would be required. SeaPort Sound would continue to operate its existing facility as described in Section 2.2, which is a permitted use.

Although the Proposed Action would not occur, it is assumed that growth in the region would continue under the No Action Alternative, which could lead to development of another industrial use at or near the Project site. Such development could result in impacts similar to those described in the subsequent section for the Proposed Action. Overall, it is anticipated that there would be no impacts on land and shoreline use from the No Action Alternative.

### 3.8.3 Construction Impacts and Mitigation Measures from the Proposed Action

During construction, minor, short-term increases in noise and dust could impact adjacent properties. However, the Project site and immediately surrounding land uses are zoned Heavy Industrial, and construction activities are compatible with existing land use and shoreline use designations. BMPs would be in place to minimize these impacts, including using low-noise-emission equipment, limiting high-noise activities to daytime hours, and using dust suppression BMPs. Construction would take place entirely within SeaPort Sound’s existing development footprint, and no people reside within the Project vicinity. The Proposed Action would not require any property relocations and would not displace any residences or businesses. Since environmental justice populations of interest are not
present within the study area, construction impacts would not have disproportionate effects on minorities or low-income populations.

To ensure the Proposed Action complies with all applicable federal, state, and local planning requirements throughout construction, the applicant would obtain all appropriate permits and approvals prior to construction. The Proposed Action would also comply with applicable City land use and development codes as vested at publication of this document. Therefore, impacts on land and shoreline use from construction of the Proposed Action are not anticipated to occur.

### 3.8.3.1 Construction Mitigation Measures and Best Management Practices
Potential impacts on land and shoreline use from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.
- **MM-13:** Additional security patrols will be provided, and all work areas will be fenced to prevent public access during construction. The Project site will continue to comply with its Facility Security Plan requirements.
- **MM-17:** To reduce air emissions, the contractor will limit idling of construction equipment when not in use.
- **MM-18:** The contractor will employ dust suppression equipment as needed during grading activities to reduce potential dust emissions.
- **MM-20:** Construction will occur during times allowed by the City’s noise ordinance in TMC Title 8 or an approved extension.
- **MM-21:** Construction traffic generated by the Project will be limited to what is required for construction and will use main arterials to the extent practicable.
- **MM-24:** The construction contractor will be required to prepare a demolition plan for City review, describing the anticipated type and amount of construction and demolition wastes, proposed recycling and reuse strategies, and arrangements to coordinate transport of the remaining waste to licensed disposal sites.

### 3.8.4 Long-Term Impacts and Mitigation Measures from the Proposed Action
The Proposed Action would result in continued use of the Project property as a bulk liquids storage facility, which is compatible with current and projected land uses and plans, including consistency with the City’s Comprehensive Plan. The Proposed Action would not change these existing land uses or affect nearby or adjacent properties.
Implementation of the Proposed Action requires the Applicant to apply for land use permits from the City, which requires demonstration of consistency with the applicable policies, zoning, and conditions. Therefore, operation of the Proposed Action at the Project site would be consistent with the applicable policies, including consistency with comprehensive plans, zoning ordinances, critical areas ordinances, and SMPs. With implementation of permit conditions, impacts resulting from the Proposed Action are considered negligible and would not require mitigation.

The area surrounding the Project site has greater levels of people who identify as white alone compared to the City (73% versus 65%) and an overall greater household income, with 63% of households having an income of greater than $75,000 compared to only 38% in the City. There are no residential properties on the Project site; therefore, no minority or low-income groups live on the site. Residential properties are not present immediately adjacent to the site, and the nearest residential neighborhood is more than 0.25 mile from the Project site. After construction, long-term operations at the site would be similar to industrial activities now taking place on the site and are not expected to adversely affect population groups in the area. No new jobs are expected to be created as part of the Proposed Action; therefore, there would be no impacts or benefits to nearby populations due to job creation.

3.8.4.1 Secondary Impacts
No secondary impacts on land and shoreline use are expected as a result of the Proposed Action.

3.8.4.2 Long-Term and Secondary Mitigation Measures and Best Management Practices
Potential impacts on land use would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.
- **MM-28:** All applicable operations manuals, plans, and permits will be updated to reflect new facilities. This includes but is not limited to the facility’s ISIP, IWDP, SPCC Plan, SeaPort Sound LLC Terminal Facility Contingency Plan, Facility Security Plan, Emergency Response Plans, and others as needed.
- **MM-32:** Emergency shutdown system training and drills will be updated to cover the Project vicinity infrastructure upgrades after construction and will continue to occur on a routine basis. The emergency shutdown system is designed to turn off pumps in the event of an unforeseen emergency. The emergency shutdown system is employed under a coordinated command and control facility that has established protocols in place to prevent product release. At a minimum, SeaPort Sound currently conducts two field deployment drills, a
tabletop exercise, and four security drills annually. Emergency shutdown protocols are typically covered during at least one of these drills. Training is provided to operators and maintenance staff on the use of emergency shutdown systems.

- **MM-33**: SeaPort Sound’s vendors are required to adhere to local, state, and federal regulations and emergency response plans to reduce potential impacts on emergency response services during off-site fuel transport activities.

- **MM-34**: To mitigate for GHG emissions anticipated to be produced from Project construction and operation of the new tanks over the next 40 years (as calculated per the *Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project* [Appendix A]), SeaPort Sound will contribute an equivalent amount of money to the City’s Urban Forestry Program as would be required to purchase third-party-verified GHG offsets. This mitigation measure is consistent with the City’s 2030 Climate Action Plan sustainability goals and will help the City to achieve local GHG emissions drawdown targets (City of Tacoma 2021a).

### 3.9 Transportation

This section describes the existing transportation-related facilities in the Project vicinity, including rail, truck, and marine vessels. This section also evaluates potential impacts from the No Action Alternative, construction impacts from the Proposed Action, and long-term construction and operational impacts from the Proposed Action. Where appropriate, mitigation measures are identified to avoid or minimize these potential impacts.

#### 3.9.1 Affected Environment

The study area for the transportation affected environment considered for the proposed Project includes the SeaPort Sound Terminal, the upland properties on either side of the Hylebos Waterway, and the Tacoma Tideflats. Analysis of the study area was based on Pierce County publications, previous environmental impact studies within the Tideflats area, and communications with SeaPort Sound. The storage and transport of petroleum products is subject to significant existing regulatory oversight that meets the requirements of RCW 43.21C.240 for environmental analysis, protection, and mitigation measures, which may be met by application of other applicable local, state, or federal laws and rules.

#### 3.9.1.1 Rail

Rail facilities within the Tideflats area consist of industrial rail lines and four intermodal railyards serving a number of businesses. From Tacoma, Burlington Northern Santa Fe Railway Company and the Union Pacific Railroad offer transcontinental service across North America, while Tacoma Rail provides short line, terminal, and switching services. Goods are transported throughout the region through three highway interchanges along I-5 from the Port of Tacoma’s railyards.
The SeaPort Sound Terminal rail-offload facility is located across the Hylebos Waterway and consists of a three-track, 36-car rail spur located at 1601 Taylor Way. The Taylor Way facility consists of 36 offload spots that are manifolded to offload pumps. The products are then pumped under the Hylebos Waterway in buried pipelines. The piping is buried below the bed of the waterway, connecting to the terminal within the fenced area of the main terminal. The piping is contained within steel casings and equipped with cathodic protection and leak detection. Shoreside valves are located on each end of the pipeline. Valves on the waterway crossing are connected to the emergency shutdown system and will block the pipes on both sides of the waterway. The railyard also contains equipment to facilitate the offloading of propane railcars into three pressure vessels at the railyard. Propane can then be loaded into transport trucks through a single-lane truck rack. The rail-offload facility only receives products and does not load railcars for delivery.

In 2019, SeaPort Sound was issued local land use permits for the installation of four new rail spurs with transfer equipment through the central and eastern sides of the site to reduce the number of rail car switches onto and off of the site from Taylor Way. This project is under construction. Enhancements include rail safety and site-wide fire suppression safety, as well as relocation of liquified petroleum gas truck transfer east of the new rail spurs. Adding the rail spurs will streamline and reduce the number of rail switching and facility operations, allow for access to other properties along Taylor Way between transfer operations, and reduce traffic impacts and the amount of time that trains and train cars are staged on Tacoma Rail property (Heffron 2017). The number of car-unloading stations will increase from 36 to 68 on the site. Overall rail movements and blockage of Taylor Way are expected to decrease. The new rail spots will be connected to SeaPort Sound’s existing product transfer systems.

The City of Tacoma 2019 shoreline permit for the rail spurs continues previous City permit limitations for SeaPort Sound’s railcar capacity at 540 railcars per week (City of Tacoma 2019a). Table 2-1 shows rail trip data from the last 5 years.

3.9.1.2 Truck and Freight
A number of roadways connect the Project vicinity to the greater Port of Tacoma area. The City defines the specific standards for streets in the Project vicinity. Street and highway standards are defined using a functional classification hierarchy from most intensive use to least intensive uses, which are then grouped into classes according to their roles in the City-wide street network. The City defines three main classes of streets:

- Principal Arterials are streets that have a high percentage of long-distance vehicle trips.
- Minor Arterials are streets that have a near balanced percentage of long-distance vehicle trips with local access usage.
- Collector Arterials are streets that have a low percentage of long-distance vehicle trips.
Access to the general area is by arterial and collector roads surrounding the Port of Tacoma; direct access to the Project site is via Marine View Drive/Highway 509 and East 11th Street. Within the Project vicinity, the City has designated sections of public roads as “heavy-haul corridors” (TMC 11.55). These corridors are meant to facilitate the movement of vehicles that are in excess of the legal weight limit, where the load is a sealed oceangoing container. Heavy-haul corridors connect truck traffic traveling to and from the Port of Tacoma and connect truck traffic between marine terminals and other industrial areas and facilities within the Port of Tacoma.

SeaPort Sound currently operates a truck loading rack located along Marine View Drive on the northeast side of the Project site. It has two top-loading lanes that load tanker trucks with asphalt and fuel oil. The rack also has three loading lanes capable of loading with a total of eight load arms at a time. Loading limitation is set through engineered designs. Loading at the truck rack is usually completed in approximately 30 to 40 minutes. The Project would not require new or improved roads or transportation-related infrastructure outside of the property. The completed Project would not increase truck traffic to or from the area.

SeaPort Sound’s facility permits have established throughput limitations on gasoline and propane over the truck rack as specified in Section 2.2. Truck loading is limited to up to 300 trucks per day (City of Tacoma 2011), and truck loading for propane at the Taylor Way facility is limited to up to 50 trucks per day (City of Tacoma 2006c). Table 2-1 shows truck trip data from the last 5 years.

### 3.9.1.3 Marine Vessels

Hylebos Waterway is used extensively for commercial maritime vessel traffic, with a variety of vessels making use of the waterway, such as the harbor fleet of tugs and barges, various pleasure craft, commercial boat traffic, and periodically USCG vessels. Barge and tugboat traffic occurs almost daily in Hylebos Waterway and surrounding areas; these vessels support many operations and facilities within the Tideflats area, with multiple companies operating in the waterway. Escort tugboats ensure a safe passage through the approach channel and apply steering and braking forces if needed. Rescue tugboats, also known as Emergency Response Towing Vehicles, respond to disabled ships and barges, preventing them from grounding and helping to prevent oil spills and other significant maritime incidents.

Hylebos Waterway is generally divided between channels managed by the U.S. Army Corps of Engineers and berthing areas managed by private parties or the Port of Tacoma. The parcel adjacent to the SeaPort Sound property to the north is owned by the Port of Tacoma and serves as an intertidal habitat restoration area. The property to the south serves as the federal navigation channel, which is located within Port of Tacoma property. The area surrounding the Hylebos Waterway is a heavily populated urban area with commercial, residential, and industrial activities.
The SeaPort Sound Terminal is used to transfer petroleum, petroleum products, renewable, and biofuels. It operates as a berthing area for standard barges, articulated tug barges, tugboats, and vessels. The marine terminal is capable of handling vessels 700 feet in length with a maximum beam of 106 feet, and with a berth depth of 30 feet mean lower low water. The maximum displaced tonnage at the dock is 35,000 tons. SeaPort Sound does not own or operate the marine vessels. SeaPort Sound operates at approximately 68 vessel calls per month as confirmed in the City of Tacoma’s 2019 shoreline permit issued for the site (City of Tacoma 2019a). Table 2-1 shows vessel trip data from the last 5 years.

Third-party vessels that access the Project vicinity are required to adhere to a variety of Washington State regulations that comprehensively regulate shipping lanes, vessel speeds, and setback zones for safe operation and the protection of killer whales (Sussman and Huff 2019). These regulations are intended to reduce noise levels that are harmful to killer whales and to maintain safe distances between vessels and wildlife.

3.9.2 Potential Impacts from the No Action Alternative

Under the No Action Alternative, the Project site would continue to be used for bulk liquids storage and transport. SeaPort Sound would continue to operate the existing facility in compliance with current local, state, and federal regulations. During operations and storage of materials, the Project site would continue to operate within the facility permits for throughput volume and emissions.

During operation, increases in rail, truck, or vessel traffic may occur within the terminal’s permitted throughput limits in response to increases in market demand for either the No Action or Proposed Action alternative. Changes in market conditions and demand for a specific fuel type are likely to be the primary drivers of increased transportation to and from the site. Although a different mix of fuels is possible in the future, the fuel mix under the Static scenario may encourage some customers to source a particular fuel type, low-carbon versus conventional, from a different location and vendor. Any potential change in transportation due to an increase in renewable and biofuels at the site under the Central and State Goal scenarios would likely be nominal because the different fuel mix would not equate to an increase in demand. Overall, the No Action Alternative would have no adverse impacts on transportation at the site under any of the three scenarios because the terminal will continue to operate within permitted throughput limits.

3.9.3 Construction Impacts and Mitigation Measures from the Proposed Action

The Proposed Action would likely create a limited increase in traffic to the Project vicinity due to construction. This may include additional truck traffic required for delivering construction materials or large machinery to and from the Project vicinity. However, the Project vicinity is located in an
industrial zone with existing truck traffic and infrastructure, which is likely to accommodate the short-term increase of traffic associated with construction. Therefore, no adverse impacts on transportation are anticipated from construction of the Proposed Action.

3.9.3.1 Construction Mitigation Measures and Best Management Practices

Potential impacts on transportation from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

- **MM-21**: Construction traffic generated by the Project will be limited to what is required for construction and will use main arterials to the extent practicable.

- **MM-24**: The construction contractor will be required to prepare a demolition plan for City review, describing the anticipated type and amount of construction and demolition wastes, proposed recycling and reuse strategies, and arrangements to coordinate transport of the remaining waste to licensed disposal sites.

3.9.4 Long-Term Impacts and Mitigation Measures from the Proposed Action

Although the Proposed Action would increase storage capacity, SeaPort Sound is not seeking permit modifications to change the currently permitted use at the Project site or increase its permitted throughput volume limits. The proposed increase in storage capacity would allow SeaPort Sound to store a greater variety of products, such as renewable and biofuels, to serve its customers more efficiently by maintaining the ability to respond to fluctuations in market demand. This includes local customers such as the Northwest Seaport Alliance, local fishing fleets, the cruise ship industry, and regional truck stops.

Section 2.2 describes SeaPort Sound’s facility permit limits on product volumes and emissions. The number of vessels, trucks, and railcars that access SeaPort Sound facilities varies per month based on customer needs. Table 2-1 provides the number of vessel calls, railcars unloaded, and trucks loaded per year over a 5-year period from 2016 to 2020. The monthly average over this 5-year period for each of the three modes of transportation can be summarized as 42 vessel calls, 487 railcars unloaded, and 5,303 trucks loaded.

As stated in Section 3.9.2, a different mix of bulk liquids within the constraints of the new tanks (i.e., low-vapor-pressure fuels) is possible in the future. However, changes in market conditions and demand for a specific fuel type are likely to be the primary drivers of increased transportation; an increase in storage alone is not expected to increase transportation. Any potential increase in
transportation due to an increase in renewable and biofuels, which would occur under the Central and State Goal scenarios, would likely be nominal. An increase in demand for renewable and biofuels would represent a greater percentage of the overall permitted throughput volume, and conversely, a decrease in the overall percentage of conventional fuel throughput volume, not necessarily an increase in the overall throughput volume as a whole.

The SeaPort Sound Terminal LLC Facility Contingency Plan (SeaPort Sound 2020) adopts and uses applicable documentation from the National Incident Management System-Incident Command System, the Central Puget Sound Geographic Response Plan, and the Northwest Area Contingency Plan. Safe handling of materials and spill response procedures would continue to be followed during operation according to SeaPort Sound’s policies. Operators are trained in proper material handling and emergency response procedures, including implementation of an SPCC Plan. This would include implementation of facility-wide spill prevention, preparedness, and response plans, including the use of outside spill response resources, in cooperation with emergency first responders. Ecology reviewed the Project and spill prevention plans and confirmed that the proposed tank upgrades would not change the facility’s worst-case spill volume (Ecology 2020c). The SeaPort Sound Terminal LLC Facility Contingency Plan would be updated upon completion of the Proposed Action to reflect the new tanks and storage capacity, consistent with WAC 173-182. The Proposed Action would not affect SeaPort Sound’s response capabilities or tactics because the completed Proposed Action would remain within the facility’s emergency planning under a potential worst-case scenario.

Overall, it is anticipated that there would be no adverse impact on transportation as a result of the Proposed Action. Any changes in transportation to and from the site is driven by changes in market demand. Although the storage capacity would increase by 11% under the Proposed Action, SeaPort Sound would continue to operate within its permitted throughput limits in response to changes in market demand. Continued implementation of response plans and compliance with local, state, and federal regulations for transport of bulk liquids will continue under all three market fuel mix scenarios.

3.9.4.1 Secondary Impacts
Overall, the proposed Project is expected to create only a small increase in rail, truck, and vessel traffic within the Tacoma Tideflats area because an increase in demand for renewable and biofuels would represent a greater percentage of the overall permitted throughput volume and a decrease in the overall percentage of conventional fuel throughput volume, not necessarily an increase in the overall throughput volume as a whole. As stated previously, an increase in storage alone is not expected to increase transportation; changes in market conditions and demand for a specific fuel type are likely to be the primary drivers of increased transportation. Other transportation-related secondary impacts could include impacts on air (see Section 3.2.5.1) or environmental health and safety (see Section 3.7.4.1). It is expected that there would be no adverse secondary impacts from the
Proposed Action under any of the three market fuel mix scenarios as conditions would be similar to the No Action Alternative. Compared to the No Action Alternative, the Proposed Action may reduce transportation impacts if the Project is providing more efficient pathways between manufacturers and consumers.

### 3.9.4.2 Long-Term and Secondary Mitigation Measures and Best Management Practices

Potential impacts on transportation would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

- **MM-28**: All applicable operations manuals, plans, and permits will be updated to reflect new facilities. This includes but is not limited to the facility’s ISIP, IWDP, SPCC Plan, SeaPort Sound Terminal LLC Facility Contingency Plan, Facility Security Plan, Emergency Response Plans, and others as needed.

- **MM-33**: SeaPort Sound’s vendors are required to adhere to local, state, and federal regulations and emergency response plans to reduce potential impacts on emergency response services during off-site fuel transport activities.

- **MM-35**: SeaPort Sound will install tanks within the proposed expansion area with fixed cone roofs designed to store low-vapor-pressure bulk liquids such as diesel, biodiesel, renewable fuel feedstock, and fuel oil. This would preclude the storage of high-vapor-pressure bulk liquids (i.e., gasoline and ethanol) within these tanks without retrofitting or replacing the tanks with a floating roof system, which would require a separate SEPA review and a Notice of Construction issued through the Puget Sound Clean Air Agency to complete.

### 3.10 Public Services and Utilities

This section describes the existing public services and utilities in the area of the Project site and assesses potential impacts that could result from the No Action Alternative or construction and operation of the Proposed Action. The following public services and utilities are evaluated: fire protection, law enforcement, emergency medical services (EMS), public transit, electricity, natural gas, sewer services, and solid waste services. Water supply is discussed in Section 3.3. Mitigation measures to avoid potential impacts are presented where appropriate. Laws and regulations that are applicable to the Project and that were referenced to determine potential impacts on public services and utilities are summarized in Appendix E.
3.10.1 Affected Environment

The study area for public services and utilities encompasses the areas that could be directly or indirectly affected by the No Action Alternative or construction or operation of the Proposed Action. This includes the Project site for direct impacts. For indirect impacts, the analysis addresses the service areas for City and Pierce County emergency services and utilities (fire protection, law enforcement, EMS, public transit, electricity, sewer, and solid waste; Figure 3-10). Natural gas is provided to the site by a regional utility and is addressed at a regional level.

3.10.1.1 Fire Protection

The Tacoma Fire Department (TFD) covers 72 square miles including Tacoma, Fircrest, and Fife. As of January 2021, TFD’s resources included approximately 430 commissioned personnel at 16 fire stations (Figure 3-10; City of Tacoma 2021h). The Project site is located between Station 3 in northeast Tacoma (2.7 miles from the Project site) and Station 5 in the Tacoma Tideflats area (0.8 mile from the Project site). Other stations located on the Tideflats include the Tacoma Fire Training Center (4.9 miles from the Project site) and Station 6 (7.2 miles from the Project site). Station 1 is located west of the Tideflats (7.1 miles from the Project site) (City of Tacoma 2021i).

In 2020, the total response time (including 911 dispatch, response crew turnout, and travel time) met TFD’s goals for 62% of fire calls, 48% of EMS calls, and 67% of specialty calls. (These times were affected by modified protocols for dispatching and responding to EMS incidents due to COVID-19.) TFD predicts that the demand for services will continue to grow with population growth and that response times will remain constant but will not meet overall performance goals with the current level of resources (TFD 2020).

The TFD Marine Division has three fire boats that serve 32 miles of saltwater shoreline on the Tacoma Narrows, Commencement Bay, Tacoma Tideflats, and Port of Tacoma. In 2020 they responded to 155 incidents (City of Tacoma 2021j; TFD 2020).

All City firefighters are trained to the Hazmat Operations Level, with more than 20 firefighters certified to the Technician Level. The TFD Technical Rescue Team includes 24 Technician Level personnel supported by 50 personnel trained to the Technical Rescue Operations Level. In 2020 the full Hazmat Team responded to 25 incidents, and the full Technical Rescue Team responded to 18 incidents (City of Tacoma 2021j; TFD 2020).

The City is party to an interlocal agreement with Pierce County and other local emergency service providers to provide mutual aid across jurisdictional boundaries in the event of a major fire, disaster, or other emergency. This includes providing supplemental fire suppression and EMS equipment and personnel (City of Tacoma 2015b).
NOTES:
2. Aerial image is USDA National Agriculture Imagery Program (USDA 2019).
3.10.1.2 Law Enforcement

The City of Tacoma Police Department, Pierce County Sheriff, Washington State Patrol (WSP), District 1, USCG, and U.S. Customs and Border Protection provide law enforcement services within the Project vicinity. Port of Tacoma Port Patrol officers provide law enforcement at port-owned facilities in the Tideflats area.

**Tacoma Police Department.** The Project site is located in the Tacoma Police Department Sector 1 policing area, which serves the Tacoma Tideflats. The sector covers Upper Tacoma/Hilltop, Downtown Tacoma, the Port of Tacoma/Tideflats, and Northeast Tacoma/Browns Point (Figure 3-10). Police substations located within Sector 1 include the Central Substation and the Northeast Substation (City of Tacoma 2021h, 2021i).

The Tacoma Police Marine Services and Dive Unit has a harbor patrol vessel that assists in port security, boating safety, and safeguarding of life and property throughout 46 miles of Tacoma shoreline, including Commencement Bay, Thea Foss waterway, Wapato Lake, and portions of the Puyallup River and Hylebos Creek. The unit also patrols the Washington State Vashon ferry lane near Point Defiance. They work with USCG, U.S. Customs, WDFW, and Seattle and Tacoma Port Authorities to secure port waterways and shipping lanes within Commencement Bay. (Tacoma Police Department 2021).

**Pierce County Sheriff.** The Pierce County Sheriff’s Department provides law enforcement, court, security, and civil processing services to unincorporated Pierce County and the contract cities of Edgewood and University Place. The Pierce County Sheriff also operates the county jail facilities located in Tacoma. The department employs 300 commissioned officers who serve unincorporated areas (Pierce County 2021a).

The Pierce County Metro Dive Team includes nine members of the Pierce County Sheriff’s Department, two members of the Tacoma Police Department, and one member of the Lakewood Police Department. They respond to 60 to 70 calls annually, including rescues, recoveries, and evidence searches (Pierce County 2021b).

**Washington State Patrol.** WSP serves state highways and responds to emergencies in Pierce and Thurston counties. The WSP District 1 Headquarters is located in Tacoma. District 1 has a staff of approximately 200 employees assigned to law enforcement, traffic investigations, auto theft, vehicle inspections, communications, administrative support services, forensic laboratory services, deputy fire marshals, and electronic services (Washington State Patrol 2019).

**U.S. Coast Guard and U.S. Customs and Border Protection.** The USCG Sector Puget Sound covers 10 ports and 12 counties with commercial marine interests. This includes the three major shipping ports of Seattle, Everett, and Tacoma. Sector Puget Sound’s Vessel Traffic Center (VTC), the largest in
the nation, is located in Seattle; it monitors 3,500 square miles of waterways from the Strait of Juan de Fuca to Puget Sound as far south as Olympia. They coordinate operations with other federal, state, and local government agencies including WSP and local law enforcement and fire departments. The Puget Sound VTC also communicates with two Canadian VTCs in Prince Rupert and Victoria, B.C., to advise each other of vessels passing between their zones (USCG 2021a, 2021b).

The SeaPort Sound facility implements a Facility Security Plan in compliance with federal regulations. Foreign vessels docking at the Project site are subject to inspection by U.S. Customs and Border Protection. USCG and other federal marine safety programs are described in Section 3.7.

3.10.1.3 Emergency Medical Services
Several hospitals and medical centers in Pierce County provide routine services and EMS to the area. The closest Level I trauma center is Harborview Medical Center in Seattle. Level II trauma centers near the Project site include Mary Bridge Children’s Hospital and the Tacoma Trauma Center. The Tacoma Trauma Center is a partnership between MultiCare Tacoma General Hospital, St. Joseph Medical Center, and Madigan Army Medical Center at Joint Base Lewis-McChord (DOH 2021b; MultiCare 2021). Level II trauma centers within Tacoma are shown in Figure 3-10.

TFD provides EMS and paramedic services throughout the Project vicinity, as discussed in Section 3.10.1.1. Public and private ambulance services must comply with Ambulance and Aid Service Rules and Regulations provided by the Tacoma-Pierce County Board of Health and the Pierce County EMS department.

3.10.1.4 Public Transit
The Project vicinity is not currently served by regular public transit routes. The nearest Pierce County Transit route (63 NE Tacoma Express) bus stop is approximately 3 miles away by foot and is located at 29th Street NE and 59th Avenue NE in Tacoma (Pierce Transit 2021a).

The Pierce Transit Tideflats Runner (Tideflats Runner) is an on-demand public transportation service that uses smaller vehicles to connect employees working in the Tideflats area to and from transit centers and bus stops located outside of the Tideflats area (e.g., Commerce Street Station, Tacoma Dome Station, and bus stops along Pacific Highway) (Pierce Transit 2021b).

3.10.1.5 Electricity
Electricity is supplied to the Project site and surrounding areas by Tacoma Power, as described in Section 3.5.1.

3.10.1.6 Natural Gas
Natural gas is supplied to the Project site and the region by PSE as described in Section 3.5.1.
3.10.1.7 Sewer Services
Sanitary sewer services in the Project vicinity are provided by the City, which operates 50 sewage pump stations and two wastewater treatment plants. Sanitary sewage in the Tideflats area, including the Project site, is treated at the City’s Central Treatment Plant, located along the Puyallup River, before it is discharged to Commencement Bay. The Central Treatment Plant serves Tacoma and 20,000 customers in Fife, Fircrest, and unincorporated Pierce County (City of Tacoma 2021k). Treatment of industrial wastewater at the Project site prior to discharge to the sanitary sewer is described in Section 3.3.

3.10.1.8 Solid Waste Services
The City’s solid waste utility provides curbside services to more than 58,500 residential and commercial customers in Tacoma. Garbage is transported to the Tacoma Transfer Station. The Tacoma Transfer Station does not recycle construction or demolition waste; there are several private companies in the Tacoma area that provide this service (City of Tacoma 2021l, 2021m). Disposal of solid hazardous waste is discussed in Section 3.7.

3.10.2 Potential Impacts from the No Action Alternative

3.10.2.1 Fire Protection, Law Enforcement, and Emergency Medical Services
Under the No Action Alternative, activities on the Project site would remain similar to existing conditions, with potential increases in throughput occurring only within permitted throughput limits, and would not increase the need for emergency fire, law enforcement, or medical response services. This would be the case for all three of the market fuel mix scenarios. The facility’s emergency response plans, described in Section 3.7, are in place to quickly respond to on-site fires, spills, or other emergencies if they occur. However, TFD emergency response times may continue to operate above the current TFD goals under both the No Action and Proposed Action alternatives, as discussed in Section 3.10.1.

3.10.2.2 Public Transit
The number of employees commuting to and from the Project site would not immediately change under the No Action Alternative; therefore, this alternative would not result in increased demand for public transit (e.g., Tideflats Runner) in the area. This would be the case for all three of the market fuel mix scenarios.

3.10.2.3 Electricity and Natural Gas
Under the No Action Alternative, impacts on electricity use related to demolition and construction at the Project site would not occur. SeaPort Sound would continue to operate its existing facility as described in Chapter 2. On-site electricity and natural gas use would continue to be similar to that discussed in Sections 3.10.1.5 and 3.10.1.6, but slightly higher than the Proposed Action, and would
not affect the regional availability of these resources for other users. This would be the case for all three of the market fuel mix scenarios.

3.10.2.4 Sewer Services
The amount and type of sanitary sewage discharged to the City’s sewer system would not substantially change with the No Action Alternative. SeaPort Sound would continue to route liquid industrial waste from its operations through the on-site wastewater treatment system prior to discharge to the municipal sewer, in accordance with City permit requirements as discussed in Section 3.3. Therefore, no impacts on the City sewer system or City’s Central Treatment Plant are anticipated. This would be the case for all three of the market fuel mix scenarios.

3.10.2.5 Solid Waste
Under the No Action Alternative, work at the Project site to remove the decommissioned refinery equipment, install the new storage tanks, and construct the new stormwater line would not occur. Disposal of construction debris would not be required. SeaPort Sound would continue to use City services for disposal of nonhazardous solid waste generated during daily operations, and the amount and type of these waste materials would not substantially change. Any hazardous wastes generated during operations at the on-site laboratory would be properly disposed of as discussed in Section 3.7. This would be the case for all three of the market fuel mix scenarios.

3.10.3 Construction Impacts and Mitigation Measures from the Proposed Action

3.10.3.1 Fire Protection, Law Enforcement, and Emergency Medical Services
The increased activity on the Project site during demolition and construction could temporarily result in a minor increase in the risk of a fire, hazardous material incident, or worker injury during the construction period described in Chapter 2. Construction contractors would receive an orientation including emergency response protocols before beginning work on the site.

Unused refinery equipment at the Project site would be thoroughly cleaned and then disposed of off site, removing it as a potential source of flammable materials. Construction materials would include aggregates and steel tanks, which are not flammable. Products that would be stored in the new storage tanks would not be present during construction; however, the contractor would be responsible for the preparation of a spill plan to be used for the duration of construction to safeguard against unintentional spills of fuel, lubricants, or hydraulic fluid from construction equipment.

Emergency services are available from the City, Pierce County, WSP, and USCG as described in Sections 3.10.1.1 through 3.10.1.3. Level II trauma centers are available in Tacoma, and patients could
be transported to the Level I trauma center in Seattle if needed. During construction, additional security measures could be needed to address theft, vandalism, or trespassing into work areas. Additional security patrols would be provided, and all work areas would be fenced to prevent public access during construction. The Project site would continue to comply with its Facility Security Plan requirements.

Construction traffic is expected to arrive at the Project site via major roadways as discussed in Section 3.9. The most direct route for emergency vehicles to travel from the nearest fire stations to the Project site would be on State Route (SR) 705, SR 509, Marine View Drive, East 11th Street, and Norpoint Way NE. As discussed in Section 3.9, temporary increases in traffic due to construction would not significantly impact the existing ability of emergency service providers to access the Project site. However, as discussed earlier, TFD response times are currently above standards. The need for a large emergency response at the Project site during construction, or a response requiring specialized teams such as hazardous materials or technical rescue, while unlikely, could require resources from other fire stations that would then be unavailable to respond to incidents in other parts of the City.

Overall, construction of the Proposed Action could temporarily increase calls for emergency response and could require law enforcement, emergency medical, and fire protection services during the 26-month construction period. SeaPort Sound’s emergency response plans would be in place to provide an immediate on-site response to an incident if one occurs. SeaPort Sound would provide emergency response providers with regularly updated maps of the Project site, access points, contact information, and response procedures during construction. Therefore, it is anticipated that there would be no adverse impact on fire protection, law enforcement, or EMS during construction of the Proposed Action.

3.10.3.2 Public Transit

Construction and demolition would require 25 to 50 construction workers over a period of 26 months. It is likely that construction workers would either drive to the Project site or use the Tideflats Runner on-demand public transit service. No impacts on public transit would occur.

3.10.3.3 Electricity and Natural Gas

Construction would require additional use of electricity for the 26-week construction period. Most construction equipment would be powered by gasoline or diesel. The anticipated peak electrical load during construction would be small relative to Tacoma Power’s system capacity. Natural gas would not be required for Project construction. All electrical and natural gas connections to the decommissioned refinery equipment would be properly disconnected and secured.
3.10.3.4 **Sewer and Solid Waste**

Construction and demolition at the Project site could result in a minor increase in the volume of sanitary sewage due to the presence of on-site construction workers unless portable toilets are used. However, this increase would be small relative to the City’s wastewater system capacity. Water that is used to clean decommissioned refinery equipment prior to removal from the site would be treated and/or disposed of properly. No impacts on the City’s wastewater treatment system are anticipated.

Construction would generate typical solid wastes such as scrap metal, concrete, asphalt, cabling, wires, piping, wood pallets, and packing materials. The Tacoma Transfer Station can accept construction debris but does not have recycling capability for these materials. The construction contractor would be required to prepare a demolition plan for City review, describing the anticipated type and amount of construction and demolition wastes, proposed recycling and reuse strategies, and arrangements to coordinate transport of the remaining waste to licensed disposal sites.

Demolition of existing structures could disturb asbestos-containing materials where present. Asbestos and other hazardous wastes used or encountered during construction would be properly disposed of in accordance with the regulations discussed in Section 3.7. The construction contractor would be required to develop a contaminated media management plan to address the characterization, segregation, and disposal of any contaminated soils encountered during excavation.

3.10.3.5 **Construction Mitigation Measures and Best Management Practices**

Potential impacts on public services and utilities from construction of the Proposed Action would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1:** All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.

- **MM-11:** Construction contractors will receive an orientation, including emergency response protocols, before beginning work on site.

- **MM-12:** SeaPort Sound’s emergency response plans will be in place to provide an immediate on-site response to an incident if one occurs. SeaPort Sound will provide emergency response providers with regularly updated maps of the Project site, access points, contact information, and response procedures during construction.

- **MM-13:** Additional security patrols will be provided, and all work areas will be fenced to prevent public access during construction. The Project site will continue to comply with its Facility Security Plan requirements.

- **MM-16:** All electrical and natural gas connections to the decommissioned refinery equipment will be properly disconnected and secured.
• **MM-24:** The construction contractor will be required to prepare a demolition plan for City review, describing the anticipated type and amount of construction and demolition wastes, proposed recycling and reuse strategies, and arrangements to coordinate transport of the remaining waste to licensed disposal sites.

### 3.10.4 Long-Term Impacts and Mitigation Measures from the Proposed Action

#### 3.10.4.1 Fire Protection and Emergency Medical Services

The Proposed Action would include the installation of new bulk liquid storage tanks. The volume of product that could be stored on the site would increase slightly (up to 11%), but this is unlikely to result in a significant increase in fire response calls because of the fire suppression, spill prevention and control, and response measures in place at the Project site that meet current codes for fire systems. None of the products stored on site are rated as explosive, as described in Section 3.7. In addition, the Proposed Action includes a new fire water loop system that will expand fire response capabilities site wide. At a minimum, SeaPort Sound conducts two field deployment drills, a tabletop exercise, and four security drills each year. Emergency shutdown is typically a topic covered during one of the drills. Training is also provided to operators and maintainers on the use of emergency shutoff devices.

The Proposed Action would not introduce any new products other than those that are already stored on site; therefore, no new types of flammable materials would be stored on site. As discussed in Section 3.7, NFPA assigns flammability ratings to materials ranging from 0 to 4. A rating of 0 means the substance will not burn, while a rating of 4 means the flash point is below 73°F (highly flammable). The products currently stored on the Project site have NFPA flammability ratings of 1 to 4. While the three market fuel mix scenarios described in Chapter 2 may result in a different mix of products being stored on site at any given time, the flammability ratings of the stored materials would remain within the current range.

With the existing fire protection services available from multiple agencies in the immediate area, and the spill prevention and response plans in place at the facility, the need for emergency fire response at the site during operation of the Proposed Action is likely to remain generally the same as under existing conditions. However, as discussed earlier, TFD response times are currently above standards. The need for a large emergency response at the Project site, or a response requiring specialized teams such as hazardous materials or technical rescue, while unlikely, could require resources from other fire stations that would then be unavailable to respond to incidents in other parts of the City. SeaPort Sound would update its emergency response plans and provide this information to TFD and other agencies to ensure they have the latest information about the new facilities. Impacts on fire protection response services would be negligible due to on-site response capabilities.
3.10.4.2 Law Enforcement
Calls for law enforcement response to the Project site under the Proposed Action would remain essentially the same as under existing conditions. SeaPort Sound would update its security practices and response plans as needed to incorporate the new tanks and other equipment and to remain compliant with its Facility Security Plan.

3.10.4.3 Public Transit
The Proposed Action would not affect the demand for public transit in the vicinity. The number of workers needed to operate the facility would remain the same as existing conditions. These workers would continue to have the option to drive, carpool, or use on-demand service (Tideflats Runner) for their commute.

3.10.4.4 Electricity and Natural Gas
Changes in electricity and natural gas use at the Project site during operation of the Proposed Action are not anticipated to result in any adverse impacts as discussed in Section 3.5.4.

3.10.4.5 Sewer and Solid Waste
The need for sewer and solid waste services at the Project site would not substantially change during operation of the Proposed Action. SeaPort Sound would update its industrial waste permit to incorporate changes to the on-site pretreatment system for contaminated water (see Section 3.3). Replacing the steam boiler would eliminate blowdown water, thus reducing the volume of water routed to the on-site treatment system and sanitary sewer. The Project site would continue to use the City’s garbage disposal services for nonhazardous materials and would continue to properly dispose of hazardous wastes off site. No adverse impacts are anticipated from the Proposed Action.

3.10.4.6 Secondary Impacts
The Proposed Action would result in an 11% increase in product storage at the Project site. Regional population growth is likely to continue, potentially leading to an increase in market demand for SeaPort Sound bulk liquid products and the need to transport them. Public services and utilities could be affected by the number of truck, rail, and marine vessel trips carrying product from the Project site under any of the three market fuel mix scenarios, which could change compared to current conditions but would remain within SeaPort Sound’s permitted throughput limits described in Chapter 2. The number of trips needed to transport fuel products in the future cannot be accurately predicted due to the extensive area covered by the supply chain, changes in market demand, fuel efficiency, and other factors.

An increase in demand could increase trips needed to transport fuel products under any of the three market fuel mix scenarios. If an increase in trips needed occurs due to market demand, it could indirectly result in increased potential for incidents requiring emergency response (fire, police,
medical). However, the number of fuel transport trips from the Project site would remain within SeaPort Sound’s permitted limits described in Chapter 2. In addition, transport-related incidents could occur anywhere the fuel products are transported along the supply chain. Incidents related specifically to transporting products from the Project site would be unlikely and if they do occur, would represent only a small percentage of incidents that occur throughout the region each year. With the regulations and emergency response plans in place at local, state, and federal levels, and the mitigation measures proposed earlier, secondary impacts on emergency response services due to transporting fuel products off site under the Proposed Action would be negligible.

3.10.4.7 Long-Term and Secondary Mitigation Measures and Best Management Practices

Potential impacts on public services and utilities would be avoided, minimized, or mitigated by implementing the following measures:

- **MM-1**: All applicable permits for the Project will be obtained prior to construction. Construction and operation will be performed according to the requirements and conditions of these permits, including compliance with permitted facility throughput and emissions limits that apply to operations.
- **MM-2**: The new tanks and infrastructure will be designed to modern building codes and standards for safety and seismic stability, consistent with City development and seismic code requirements and state AST secondary containment and fire protection requirements per WAC 173-180-320 and 173-180-330.
- **MM-3**: The tanks will be installed with a bentonite liner and sand layer inside the circular footing of each tank to seal any exposed soil from potential incidental spills.
- **MM-4**: A 4-foot-tall concrete containment berm will be installed around the tanks, meeting state and federal secondary containment requirements (per 40 CFR 112 and WAC 173-180-320).
- **MM-5**: Components for the replacement wastewater treatment system will be elevated to protect against potential geological hazards in the area.
- **MM-28**: All applicable operations manuals, plans, and permits will be updated to reflect new facilities. This includes but is not limited to the facility’s ISIP, IWDP, SPCC Plan, *SeaPort Sound Terminal LLC Facility Contingency Plan*, Facility Security Plan, Emergency Response Plans, and others as needed.
- **MM-29**: Trained personnel will operate the facility and will continue to inspect all facilities daily for potential leaks or signs of material corrosion or degradation.
- **MM-30**: Operators will be trained in proper material handling and emergency response procedures.
- **MM-31**: All facility personnel will continue to participate in SPCC Plan training as well as other safety training.
• **MM-32:** Emergency shutdown system training and drills will be updated to cover the Project vicinity infrastructure upgrades after construction and will continue to occur on a routine basis. The emergency shutdown system is designed to turn off pumps in the event of an unforeseen emergency. The emergency shutdown system is employed under a coordinated command and control facility that has established protocols in place to prevent product release. At a minimum, SeaPort Sound currently conducts two field deployment drills, a tabletop exercise, and four security drills annually. Emergency shutdown protocols are typically covered during at least one of these drills. Training is provided to operators and maintenance staff on the use of emergency shutdown systems.

• **MM-33:** SeaPort Sound’s vendors are required to adhere to local, state, and federal regulations and emergency response plans to reduce potential impacts on emergency response services during off-site fuel transport activities.
4 Cumulative Effects

This chapter describes how the effects of the Proposed Action may contribute to the environmental effects of other past, present, and reasonably foreseeable future actions. Cumulative effects are those that could result in the combination of effects from individual project actions occurring over time. If left unmitigated, the cumulative or incremental effects of these actions have the potential to result in significant environmental impacts. This analysis is also helpful for decision-makers evaluating the sustainability of a Proposed Action and how it may interact with other projects that are reasonably foreseeable but have not yet been built.

4.1 Methodology

To address the potential for cumulative effects, the direct and indirect impacts of the EIS alternatives, as described in Chapter 3, were further evaluated in the context of other past, present, or reasonably foreseeable future projects. The study area used to address direct and indirect effects for each element of the environment in Chapter 3 was also used in the cumulative effects analysis because it represents the area where the Proposed Action, in combination with other past, present, or reasonably foreseeable future development, could potentially result in cumulative impacts.

Past, present, and reasonably foreseeable future projects were identified using a variety of resources, including reviewing previous on-site projects and mitigation measures, researching proposed infrastructure projects in the area, and performing web searches through resources such as the City’s permit mapper. The following includes an analysis of the cumulative effects of these projects and actions together with the direct and indirect impacts of the Proposed Action.

4.2 Past, Present, and Reasonably Foreseeable Future Projects

As described in Section 3.8, the Proposed Action is located within the City’s industrial Tideflats Subarea and the Port of Tacoma Manufacturing and Industrial Center. The area experiences high demand for industrial land, but there is adequate capacity in most areas to accommodate future growth given proper management strategies (PSRC 2015). Present and reasonably foreseeable future projects that were identified as occurring within the area of the Proposed Action are included in Table 4-1. Present and reasonably foreseeable future projects are categorized in Table 4-1 as cleanup projects (where a Remedial Investigation/Feasibility Study [RI/FS] and Cleanup Action Plan [CAP] is being prepared), dredging projects, transportation projects, and other development projects.

A summary of previous on-site projects and mitigation measures can be found in Section 2.2.2. All past projects at the site underwent local, state, and federal environmental review and permitting where applicable, and some also required mitigation or ongoing monitoring and adaptive management to offset unavoidable environmental impacts.
### Table 4-1
Present and Reasonably Foreseeable Future Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Location</th>
<th>Description</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cleanup Projects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexander Avenue Former Tank Facilities</td>
<td>Along Alexander Avenue East, northwest of East 11th Street</td>
<td>Development of an RI/FS and CAP.</td>
<td>Underway</td>
</tr>
<tr>
<td>Arkema 2901 and 2920 Taylor Way</td>
<td>2901 Taylor Way, 2920 Taylor Way, and 3009 Taylor Way</td>
<td>Development of an RI/FS and CAP.</td>
<td>Underway</td>
</tr>
<tr>
<td>Former USG Rock Wool Plant</td>
<td>2031 Taylor Way</td>
<td>Development of an RI/FS and CAP.</td>
<td>Underway</td>
</tr>
<tr>
<td>Parcel 18 (Earley Business Center) Cleanup</td>
<td>401 Alexander Avenue</td>
<td>Development of an RI/FS and CAP.</td>
<td>Underway</td>
</tr>
<tr>
<td>Parcel 15 (Portac) Cleanup Investigation</td>
<td>4215 East Frontage Road</td>
<td>Development of an RI/FS and CAP.</td>
<td>Underway</td>
</tr>
<tr>
<td>Parcel 91 Cleanup Investigation and Cost Recovery</td>
<td>Parcel 91 (near southeast end of Sitcum Waterway)</td>
<td>Development of an RI/FS and CAP.</td>
<td>Underway</td>
</tr>
<tr>
<td>Parcel 103 Steam Plant Property Cleanup</td>
<td>West of East 11th Street and north of Taylor Way</td>
<td>Development of an RI/FS and CAP.</td>
<td>Underway</td>
</tr>
<tr>
<td>PQ Corporation</td>
<td>1201 Taylor Way</td>
<td>Development of an RI/FS and CAP.</td>
<td>Underway</td>
</tr>
<tr>
<td>Taylor Way and Alexander Avenue Fill Area</td>
<td>1500 block of Taylor Way</td>
<td>Development of an RI/FS and CAP.</td>
<td>Currently working through legal agreements</td>
</tr>
<tr>
<td><strong>Dredging Projects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blair Waterway Berth Maintenance Dredge Project</td>
<td>Within Blair Waterway at Washington United Terminals and Husky Terminal</td>
<td>Complete dredging of underwater sediment to accommodate larger cargo ships.</td>
<td>Undergoing environmental review</td>
</tr>
<tr>
<td>Blair Waterway Deepening Project (Federal Channel)</td>
<td>Within Blair Waterway</td>
<td>Deepen the federal channel in the Blair Waterway to -57 feet mean lower low water to accommodate larger container ships.</td>
<td>Undergoing environmental review</td>
</tr>
<tr>
<td><strong>Transportation Projects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puget Sound Gateway/SR 167 Project</td>
<td>Between SR 167, I-5, and SR 509</td>
<td>Construction of the remaining 4 miles of SR 167 between Meridian Ave and I-5 as well as construction of a 2-mile connection from I-5 to the Port of Tacoma.</td>
<td>In design phase</td>
</tr>
<tr>
<td>Tacoma Dome Link Extension</td>
<td>Between Federal Way and Tacoma</td>
<td>Construction of new light rail line, extending nearly 10 miles.</td>
<td>Construction scheduled for 2025 to 2030</td>
</tr>
<tr>
<td>Project</td>
<td>Location</td>
<td>Description</td>
<td>Timing</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Marine View Drive Road Improvements</td>
<td>Marine View Drive</td>
<td>Transportation improvements to Marine View Drive.</td>
<td>In design phase</td>
</tr>
<tr>
<td><strong>Other Development Projects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSE LNG Facility</td>
<td>Along Alexander Avenue East, northwest of East 11th Street on opposite side of Hylebos Waterway from Project site</td>
<td>Construction and operation of an LNG facility to fuel marine vessels and provide bunkering barges and tanker trucks.</td>
<td>Under construction</td>
</tr>
<tr>
<td>T3, T4 (Husky) Shore Power</td>
<td>Terminals 3 and 4 along Blair Waterway</td>
<td>Construction of two shore power systems at Terminals 3 and 4.</td>
<td>Unknown</td>
</tr>
<tr>
<td>Tacoma Renewable Power Generating Station</td>
<td>1171 Taylor Way</td>
<td>Construction of new renewable power generating station.</td>
<td>Preliminary permitting process initiated; awaiting application</td>
</tr>
<tr>
<td>SeaPort Sound Taylor Way Project</td>
<td>Along Taylor Way, across Hylebos Waterway from the Project site</td>
<td>Installation of four new rail spurs with transfer equipment to reduce the number of rail car switches on to and off of the site from Taylor Way, along with enhancements to rail safety and site-wide fire suppression safety.</td>
<td>Under construction</td>
</tr>
<tr>
<td>Thorne Road Property Development</td>
<td>1451 Thorne Road, 1721 Thorne Road, and 1702 Port of Tacoma Road</td>
<td>Redevelopment of property for use as empty container and chassis storage, single high reefer (refrigerated container) pretrip wash facility, and crude-by-rail discharge station.</td>
<td>Preliminary permitting process initiated; awaiting application</td>
</tr>
<tr>
<td>Wapato Creek Bridge and Culvert Removal</td>
<td>4215 SR 509 North Frontage Road</td>
<td>Replacement of a failing undersized culvert with a bridge to provide continued access to the Pierce County Terminal truck queuing area.</td>
<td>Under construction</td>
</tr>
<tr>
<td>Washington United Terminals Fender System Replacement</td>
<td>1815 Port of Tacoma Road along Blair Waterway</td>
<td>Repair and replace the fender system to accommodate modern large vessels.</td>
<td>Under construction</td>
</tr>
<tr>
<td>Washington United Terminals Utility Vault Upgrades</td>
<td>1815 Port of Tacoma Road along Blair Waterway</td>
<td>Repair and upgrade vaults that have been damaged because of uneven ground settling.</td>
<td>Under construction</td>
</tr>
</tbody>
</table>

### 4.3 Potential Cumulative Effects

#### 4.3.1 Earth

Under the No Action Alternative, some short-term increases in risk of erosion could occur from other past, present, and reasonably foreseeable future projects, mainly from construction activities. In
addition, construction of the projects listed in Table 4-1 could cause increases in risk of exposure to geological hazards. Construction of the Proposed Action and other ongoing construction projects in the area would result in minor impacts on geological resources and negligible increases in risk of exposure to geologic hazards. This contribution is not expected to result in a cumulatively significant impact because BMPs would be implemented during construction in accordance with required permits and approvals.

4.3.1.1 Mitigation Measures
Potential cumulative impacts on earth resources would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.1.

4.3.2 Air
Under the No Action Alternative, there could be short- and long-term increases in emissions as a result of construction and operation of the projects listed in Table 4-1. However, no construction would occur under the No Action Alternative and the aging refinery infrastructure and wastewater treatment system would remain in place. Under the No Action Alternative, the SeaPort Sound Terminal will continue to operate similar to existing conditions with fluctuations of on-site emissions within permitted throughput limits.

Construction of the Proposed Action may contribute to local short-term increases in emissions if multiple projects listed in Table 4-1 are undergoing construction simultaneously. However, the Proposed Action would occur within an active industrial facility, with impacts that are typical of the surrounding industrial setting, and BMPs would avoid or minimize potential impacts during construction of the Proposed Action.

The Proposed Action will result in a minor increase of on-site emissions to support operations. Minor cumulative adverse impacts on long-term air quality could also occur with the implementation of present and reasonably foreseeable future projects. However, under the Clean Air Act, EPA sets limits on certain air pollutants, including setting limits on how many pollutants can be in the air anywhere in the United States. Regionally, these limits are set and regulated on a project-by-project basis by PSCAA. The Proposed Action would adhere to PSCAA permit limits during both construction and operation, which are established considering many factors, including regional air quality. Any new or modified permits or NOCs issued by PSCAA for other reasonably foreseeable future projects would consider regional air quality.

The Proposed Action, under the Central and State Goal scenarios, is anticipated to carry a greater quantity of renewable and biofuels through the site to the local and regional markets, which is consistent with Washington’s LCFS goals toward reducing statewide GHG emissions through low-carbon alternatives. Mitigation measures consistent with the City’s Climate Action Plan goals (City of
Tacoma 2021a) are also proposed to offset potential air quality impacts from construction and operation. Therefore, the Proposed Action could contribute to minor cumulative effects on air quality.

The Proposed Action would result in minor benefits to air quality under the Central and State Goal scenarios, each of which shows a decrease in emissions over time relative to existing conditions (No Action Alternative) under the 2016 to 2020 baseline period (resulting from higher fractions of renewable and biofuels displacing fossil fuels). Air quality would also improve compared to the historic use of the Project site as a refining operation. Demolition of the refinery would remove the on-site potential for producing approximately 2 million barrels (84,000,000 gallons) of product per year and the potential for 89,000 tCO₂e per year of direct emissions from refinery operations. The future Tacoma Dome Link Extension Project could also contribute to beneficial cumulative impacts on air since the Project is expected to decrease vehicle miles traveled locally, which would reduce GHG emissions.

4.3.2.1 Mitigation Measures
Potential cumulative impacts on air would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.2.

4.3.3 Water
Under the No Action Alternative, demolition and construction would not occur at the site, including replacement of the damaged City stormwater line. The wastewater treatment system would not be upgraded under the No Action Alternative, possibly resulting in minor cumulative impacts on the sanitary sewer system where water is discharged from other operations in the Tideflats area. New development in the Tideflats area may include the installation of new pollution-generating impervious surfaces; however, the new surfaces would meet the current standards for flow control and water quality treatment for stormwater runoff, which could have a cumulative benefit to water quality.

The Proposed Action would result in a net decrease of 400 square feet of impervious surface on the Project site compared to existing conditions, and BMPs would be implemented during construction and operation to minimize risks to water quality. Cleanup projects listed in Table 4-1 include sites with contaminated surface water and groundwater. Cleanup of these sites would also result in a cumulative benefit to water quality. For these reasons, the Proposed Action is not expected to contribute to cumulative adverse impacts on water quality.

Present and reasonably foreseeable future projects could result in a need for additional water. The Proposed Action would not require substantial amounts of additional water during construction and would reduce facility water use during operations through replacement of the existing steam boiler
with a more efficient hot oil heater (reducing on-site water consumption by approximately 5 million gallons annually). Therefore, the Proposed Action is not expected to contribute to cumulative adverse effects on water supply.

The SeaPort Sound Terminal is located on the Hylebos Waterway, a waterbody connected to Commencement Bay that is maintained for use by commercial vessels. Development and uses at and adjacent to the Project site have occurred consistent with local permits and mitigation requirements, which also consider consistency with the City’s Comprehensive Plan (City of Tacoma 2015a). The Comprehensive Plan identifies this as a key area for commercial and industrial development and uses and the multimodal movement of goods to the region. The Proposed Action would continue existing uses of the site and waterway. It is anticipated that SeaPort Sound and other users of the waterway would continue to conduct activities consistent with state and federal regulations that enforce the protection of water quality and aquatic species. The Proposed Action is anticipated to have no cumulative impacts on nearby surface waters from construction or operation.

4.3.3.1 Mitigation Measures
Potential cumulative impacts on water would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.3.

4.3.4 Plants and Wildlife
Past, present, and reasonably foreseeable future actions would occur within industrial areas that are generally paved or graveled and where little habitat exists to support significant plant or wildlife populations. Permits obtained for these actions will include local, state, and federal permits and approvals that require avoidance, minimization, or mitigation measures. Projects that occur in water, such as dredging and shoreline terminal improvements, could have impacts on plants and wildlife.

No construction would occur under the No Action Alternative, and no adverse impacts on plants and wildlife are anticipated. Since the Proposed Action is located within an industrial area with little habitat, and includes no in-water work, it would not contribute to cumulative adverse impacts on plants or wildlife.

The SeaPort Sound Terminal is located on the Hylebos Waterway, a waterbody connected to Commencement Bay that is maintained for use by commercial vessels. The Hylebos Waterway and Commencement Bay contain sensitive shoreline environments and protected aquatic species. Development and uses at and adjacent to the Project site have occurred consistent with local permits and mitigation requirements, which also consider consistency with the City’s Comprehensive Plan (City of Tacoma 2015a). The Comprehensive Plan identifies this as a key area for commercial and industrial development and uses and the multimodal movement of goods to the region. The Proposed Action would continue existing uses of the site and waterway. The implementation of other
reasonably foreseeable future actions, such as the PSE Liquified Natural Gas (LNG) Facility, may increase the amounts of fuel products being transported through the Tideflats area and could lead to an increase in the potential for spills. It is anticipated that SeaPort Sound and other users of the waterway would continue to conduct activities consistent with state and federal regulations that enforce the protection of water quality and aquatic species. Overall, the Proposed Action could contribute to minor cumulative effects on plants and animals.

4.3.4.1 Mitigation Measures
Potential cumulative impacts on plants and wildlife would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.4.

4.3.5 Energy and Natural Resources
Under the No Action Alternative, present and reasonably foreseeable future projects could increase the demand for electricity, diesel, gasoline, and other nonrenewable natural resources. No construction would occur under the No Action Alternative and the aging refinery infrastructure and wastewater treatment system would remain in place. Energy use at the Project site would continue to fluctuate based on operational needs. No adverse impacts are anticipated from the No Action Alternative.

As noted in Section 3.5, the demand for electricity, diesel, gasoline, and other nonrenewable natural resources needed during construction of the Proposed Action is anticipated to be met by existing local and regional supplies. During operation of the Proposed Action, electricity use at the Project site would be reduced compared to current conditions. Replacement of the on-site boiler, in particular, would result in a substantial energy savings at the facility (up to 30% energy savings). Additionally, no significant use of natural resources, such as sand, gravel, timber, and steel, would be needed during facility operation. When combined with past, present, and reasonably foreseeable future actions, the demand for these resources is still expected to be met by existing supplies. Therefore, no cumulative adverse impacts on energy and natural resources are expected from the Proposed Action.

4.3.5.1 Mitigation Measures
Potential cumulative impacts on energy and natural resources would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.5.

4.3.6 Archaeological, Historical, and Cultural Resources
Under the No Action Alternative, construction impacts on archaeological, historical, or cultural resources could occur from projects listed in Table 4-1, particularly if the present or reasonably foreseeable future actions include ground disturbance of greater than 10 feet below the surface. Past projects at the site have undergone environmental review and permitting and have been determined
to have no impacts on archaeological, historical, and cultural resources. No construction or operation impacts on archaeological, historical, or cultural resources are expected from the Proposed Action; therefore, the Proposed Action is not expected to contribute to cumulative adverse impacts on archaeological, historical, or cultural resources.

4.3.6.1 Mitigation Measures

Potential cumulative impacts on archaeological, historical, and cultural resources would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.6.

4.3.7 Environmental Health and Safety

Under the No Action Alternative, short-term cumulative impacts on environmental health and safety could occur due to increases in dust and noise, particularly if multiple projects are undergoing construction simultaneously. The Proposed Action could also lead to short-term increases in noise and dust; however, the Proposed Action would occur within an active industrial facility, with impacts that are typical of an industrial setting, and BMPs would be implemented to avoid or minimize potential construction impacts.

Implementation of cleanup actions for the numerous RI/FSs and CAPs being developed near the Proposed Action could lead to beneficial cumulative impacts on environmental health and safety due to the removal of contaminants from soils, sediments, groundwater, and surface water.

The implementation of other reasonably foreseeable future actions, such as the PSE LNG Facility, may increase the amounts of fuel products being transported through the Tideflats area and could lead to an increase in the potential for spills. It is anticipated that SeaPort Sound and these other, similar facilities in the area would continue to operate in compliance with local, state, and federal regulatory guidelines for spill prevention and other environmental health and safety measures. The Proposed Action would not introduce any new products other than those that are already stored on site and would continue to operate under the permitted throughput limits. The Proposed Action would also include design and operational safety measures to avoid and minimize potential environmental impacts from operation and storage of materials. Overall, the Proposed Action could contribute to minor cumulative effects on environmental health and safety.

4.3.7.1 Mitigation Measures

Potential cumulative impacts on environmental health and safety would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.7.

4.3.8 Land and Shoreline Use

Under the No Action Alternative, none of the reasonably foreseeable future projects or actions have been identified as having significant adverse impacts on land use due to extensive planning efforts.
that have happened and are currently underway to enforce compatible uses within the Tideflats area. Similar to the No Action Alternative, the Proposed Action is consistent with land use goals and policies and planned future development, including the City’s Comprehensive Plan and SMP (City of Tacoma 2015a, 2019b). Therefore, the Proposed Action is not expected to contribute to significant adverse impacts on land and shoreline use.

Although cumulative impacts are not anticipated from the Proposed Action, the Tideflats Subarea Plan, currently under development by the City, could help mitigate potential land use impacts from the numerous projects that are being planned in the Tideflats area. The Tideflats Subarea Plan is intended to create a shared long-term vision and more coordinated approach to development, environmental review, and strategic capital investments in the Tideflats area and would be consistent with the City’s planning policies and goals.

4.3.8.1 Mitigation Measures
Potential cumulative impacts on land and shoreline use would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.8.

4.3.9 Transportation
Under the No Action Alternative, simultaneous construction of reasonably foreseeable future projects may cause cumulative impacts on road traffic and roadway surface damage due to a temporary increase in construction vehicles. The Proposed Action could have minor cumulative effects on transportation during construction. However, most of the reasonably foreseeable future projects occur on other areas of the Tideflats, such as the Blair-Hylebos Peninsula, so construction vehicles would likely use different roadways. In addition, improvements being made to Marine View Drive would provide improved roadway surfaces to accommodate existing and proposed traffic.

Changes in throughput at the SeaPort Sound Terminal may occur due to market conditions and customer demand under both the No Action Alternative and the Proposed Action, but throughput and associated transportation would not exceed permitted levels that were determined through past projects requiring review of current and projected uses in the area. Construction of the Taylor Way Project at the SeaPort Sound railyard will improve rail and vehicle transportation conditions in the Tacoma Tideflats area by increasing rail capacity under both the No Action and Proposed Action alternatives. Other transportation projects would also reduce transportation impacts locally and relieve congestion. Projects such as the Blair Waterway Deepening Project could result in larger vessels accessing the Blair Waterway, which may result in reduced vessel trips to the Tacoma area (USACE and Port of Tacoma 2021). Overall, operation of the Proposed Action may lead to minor cumulative impacts on roadway, rail, and vessel traffic; however, these impacts are not expected to be significant and would be consistent with projected uses accounted for in the permitted throughput limits.
4.3.9.1 Mitigation Measures
Potential cumulative impacts on transportation would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.9.

4.3.10 Public Services and Utilities
Under the No Action Alternative, minor cumulative effects to public services and utilities could occur due to an increased need for fire protection and EMS, as well as an increased need for utilities such as electricity, natural gas, sewer, and solid waste within the Tacoma Tideflats area. The SeaPort Sound Terminal uses various modes of transportation to transport products to and from the site, including truck, rail, and vessel transport. Transportation of products to and from the site would not exceed permitted levels that were determined through past projects requiring review of current and projected uses in the area.

Combined with present and reasonably foreseeable future projects, the Proposed Action could similarly contribute to minor cumulative impacts on public services and utilities. The Proposed Action is unlikely to result in a significant increase in fire response calls because of the fire suppression, spill prevention and control, and response measures in place at the Project site. The Proposed Action includes energy and water use reduction measures (e.g., replacement of the existing steam boiler with a more efficient hot oil heater) and would not substantially change the existing need for electricity, natural gas, sewer, or solid waste utilities. For these reasons, the Proposed Action is not expected to contribute to significant adverse impacts on public services and utilities.

4.3.10.1 Mitigation Measures
Potential cumulative impacts on public services and utilities would be avoided, minimized, or mitigated by implementing the mitigation measures described in Section 3.10.
5 References


City of Tacoma, 2021c. SeaPort Sound IWDP (TAC-035-2021).


Ecology, 2021d. *Central Puget Sound Geographic Response Plan*. Available at: 


https://www.epa.gov/dwssa/overview-drinking-water-sole-source-aquifer-program#What_Is_SSA.

https://ejscreen.epa.gov/mapper.


PSCAA (Puget Sound Clean Air Agency), 2021a. Air Graphing Tool. Available at: https://secure.pscleanair.org/airgraphing.


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Appendix A
Study Report: Inventory of Greenhouse Gases – SeaPort Sound Plant
Modernization Project
Study Report:

Inventory of Greenhouse Gas Emissions – SeaPort Sound Plant Modernization Project

*analysis period January 1, 2022 – December 31, 2063*

Prepared for: Anchor QEA

Submitted on: 29 April 2022

Hammerschlag LLC document no.: SP-003(h)

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# Table of Contents

**Goal** ........................................................................................................................................... 3
- Intended Application ........................................................................................................................... 3
- Standards ........................................................................................................................................... 3
- Reasons for Carrying Out the Study .................................................................................................. 4
- Intended Audience ............................................................................................................................ 4
- Comparative Assertions .................................................................................................................... 4

**Scope** .......................................................................................................................................... 5
- Product System ................................................................................................................................. 5
- Functions of the Product System ....................................................................................................... 5
- Functional Unit .................................................................................................................................. 5
- System Boundary ............................................................................................................................... 5
- Cut-Off Criteria and Cut-Offs .......................................................................................................... 8
- Allocation Procedures ....................................................................................................................... 8
- LCI Methodology .............................................................................................................................. 8
- Data Requirements .......................................................................................................................... 15
- Assumptions .................................................................................................................................... 15
- Value Choices and Optional Elements ............................................................................................ 15
- Limitations ...................................................................................................................................... 15
- Data Quality Requirements .............................................................................................................. 16
- Critical Review ................................................................................................................................. 21
- Report Format .................................................................................................................................. 21

**Inventory Analysis** ....................................................................................................................... 22
- Impact Categories ............................................................................................................................. 22
- Emissions of Construction ................................................................................................................. 22
- Emissions of Operations .................................................................................................................... 23
- Offsite Emissions Associated with Product Throughput ................................................................. 24

**Interpretation of Results** ............................................................................................................... 26
- Summary of Inventory ....................................................................................................................... 26
- Causality .......................................................................................................................................... 27
- Sensitivity Analysis and Uncertainty ................................................................................................. 28

**Annex A – Data Request Memo** ................................................................................................... 29
Goal

Structure of this report includes four main sections Goal, Scope, Inventory Analysis, and Interpretation of Results to comport with ISO 14044:2006 Section 4.1 “LCI studies shall include definition of the goal and scope, inventory analysis and interpretation of results.”

Subsections within this Section Goal comport with topics enumerated in ISO 14044:2006 Subsection 4.2.2 “Goal of the study.”

Intended Application

The intended application of the Study is estimating future greenhouse gas emissions (GHGs) associated with the SeaPort Sound Terminal located in Tacoma, WA, under multiple conditions.

Standards

This life-cycle inventory (LCI) report, and the analysis underlying it, are compliant with the following standards and guidelines in order of precedence from highest to lowest:

1. City of Tacoma Environmental Impact Statement scoping document LU20-0107;¹
3. International standard ISO 14044:2006, Environmental management — Life cycle assessment — Requirements and guidelines;³ and
4. Values and practices represented by GREET 2020, the Greenhouse gases, Regulated Emissions, and Energy use in Technologies model.⁴
5. Values and practices represented by MOVES 3.0.1, the MOtor Vehicle Emission Simulator.⁵

¹ Shirley Schultz and Planning and Development Services, City of Tacoma to Troy Goodman and SeaPort Sound Terminal LLC, “LU20-0107 Seaport Plant Modernization EIS Scoping Document,” March 9, 2021.
Reasons for Carrying Out the Study

A proposed terminal Plant Modernization Project (the Project) has elicited public and governmental concern regarding related increases to GHG emissions. City of Tacoma issued a Determination of Significance and scope of work for an Environmental Impact Statement. This Study Report is intended as an annex to the Environmental Impact Statement, partially satisfying requirements of the Environmental Impact Statement scope of work.

Intended Audience

This Study Report is authored for the operators of SeaPort Sound Terminal.

Comparative Assertions

The Study results are expected to be used in comparative assertions disclosed to the public. This report is not an ISO 14044:2006 Section 5.2 “third-party report” qualified for public disclosure.
Scope

Subsections within this Section Scope comport with topics enumerated in ISO 14044:2006 Subsection 4.2.3.1 “General” under 4.2.3 “Scope of the study.”

Product System

The product system includes fixed and mobile equipment managed at the SeaPort Sound Terminal facility; throughput products handled at SeaPort Sound Terminal; and equipment utilized to refine and transport the throughput products.

Functions of the Product System

General

SeaPort Sound Terminal is a coastline tank farm receiving and dispensing gasoline, ethanol, diesel fuel, biodiesel, fuel oil, asphalt, and LPG (liquefied petroleum gas, colloquially “propane”). These products are ultimately transported elsewhere by customers and combusted for transport energy or heat, or utilized as a component in downstream products.

Project and No Action Alternatives

No Action represents the product system as it currently exists. The Project alternative represents the product system after a proposed facility modernization that replaces existing tanks and unused refinery equipment with new, fixed-roof storage tanks.

Functional Unit

The functional unit shall be site construction activity occurring from January 1, 2022 through December 31, 2023, plus operation of the entire SeaPort Sound Terminal facility from January 1, 2024 through December 31, 2063.

System Boundary

The physical boundary underlying the system boundary is the contiguous SeaPort Sound Terminal facility located at 4130 E 11th St., Tacoma, Washington consisting of Pierce County parcel numbers 0321263048, 0321262062, 0321262136, and 0321262137 (Figure 1).

6 The facility also has the capacity to receive and dispense crude oil, but there was no such activity during the baseline period January 1 2016 – December 31 2020. The facility also receives and dispenses a few hundred barrels of “transmix” each year, nonconforming fossil fuel mixes received via pipeline between batches of neat fuels.
Figure 1 - Physical boundary associated with the GHG inventory, consisting of Pierce County parcel numbers 0321263048, 0321262062, 0321262136, and 0321262137. The proposed Plant Modernization Project will be confined inside the thick, dashed-line boundaries shown but the GHG inventory does not recognize these and instead addresses the entire facility.

Figure 1 includes boundaries circumscribing the portion of the facility subject to the Project, but in order to allow for spillover effects the GHG inventory physical boundary is expanded to circumscribe the entire facility.

The system boundary defining inventoried unit processes appears in Figure 2.
Figure 2 – System boundary diagram. Arrows show material or energy flows. Emissions are accounted for all unit processes appearing inside the green boundary. Division into Product Throughput, Facility Operation and New Construction is for clarity only, and has no bearing on the GHG system boundary definition.

Unit processes in the system boundary are as follows:

**refining & transport** – Upstream processes related to manufacturing and delivery of products received by SeaPort Sound Terminal. This can include drilling and pumping equipment, over-the-road trucking, and pipeline operations.

**SeaPort Sound Terminal** – Equipment inside the physical boundary. This includes tanks, pumps, emissions control equipment, and vehicles housed at SeaPort Sound Terminal to support local operation.

**transport** – Ships, trains, and trucks transporting products from SeaPort Sound Terminal to their next consumer.

**combustion** – The terminal process for those products that are combustible fuels. Only those products known to be combusted contribute terminal emissions inside the system boundary.
Products that are destined for non-combustion uses, or may be destined for non-combustion uses, are outside the system boundary once transported to their consumer.

**electric generation** – Utility electric generators that supply any electricity consumed inside the physical boundary.

**construction equipment** – Equipment utilized within the physical boundary between January 1, 2022 to December 31, 2023 for the purpose of modernizing the facility.

**fabrication & transport** – Manufacturing facilities and transport vehicles utilized to fabricate and deliver materials consumed during facility modernization between January 1, 2022 and December 31, 2023.

**Cut-Off Criteria and Cut-Offs**

Any single source of GHGs judged by the study authors to represent less than 1% of total GHGs associated within the system boundary and not required for inclusion by the Scoping Document, was excluded from the analysis. Excluded sources are:

- Demolition waste

**Allocation Procedures**

The inventory includes all GHG emissions associated with the product system; allocation is unnecessary.

**LCI Methodology**

The LCI is computed for six cases: three each for the two alternatives No Action and Project. In each of the six cases, the inventory is computed by combining anticipated emissions from construction from January 1, 2022 through December 31, 2023, with anticipated emissions of facility operation and product throughput from January 1, 2024 through December 31, 2063. In the three No Action cases, emissions from construction are assumed to be zero.

The three cases associated with each alternative are forecast according to three market fuel mix scenarios that reflect potential changes in the mix of road fuels produced and consumed in the western U.S. Each fuel mix scenario describes one possible market mix of fuels that SeaPort Sound Terminal might face throughout the 40 years following facility modernization. Each scenario impacts only the mix of road fuels, because those are the fuels affected by the regulatory forecasts that drive our scenario definitions. Other fuels handled by SeaPort Sound Terminal are modeled to maintain their current, collective proportions.
Market Fuel Mix Scenarios

The starting point for constructing all three scenarios is the actual mix of road fuels produced during calendar years 2016 through 2020, inclusive (the “baseline period”). Regional fuel production mix is reported by the U.S. Energy Information Administration (EIA) to the geographic scale of Petroleum Administration for Defense Districts (PADDs). SeaPort Sound Terminal is located in PADD 5, which includes the states Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington. As of 2020, PADD 5 fuel mix was as follows, on a volume basis:  

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Volume Share</th>
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<tr>
<td>gasoline</td>
<td>73.4%</td>
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<tr>
<td>diesel</td>
<td>25.4%</td>
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<tr>
<td>ethanol</td>
<td>0.8%</td>
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<tr>
<td>other renewable fuels</td>
<td>0.4%</td>
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Table 1 – Road fuels production mix in PADD 5 during the baseline period. EIA does not break down contributors to the category “other renewable fuels,” so this analysis makes the simplifying assumption that all other renewable fuels are diesel substitutes (renewable diesel or biodiesel).

The Central scenario assumes the measured mix of fuels, but changing over time according to legislation that has been signed into law. This is the same approach utilized by the EIA for its annual energy forecasts. In Washington State, the mix of road fuels will change in response to HB 1091 (2021), the recently passed low carbon fuels standard (LCFS). The LCFS requires that the average carbon intensity of road fuels delivered in Washington State lower by up to 10% as of 2033, and by 20% as of 2038. Work already done by the California Air Resources Board utilizing GREET assigns conventional gasoline a carbon intensity of 101 grams carbon dioxide equivalent per megajoule MJ (gCO₂e/MJ), conventional diesel 100 gCO₂e/MJ, ethanol 52 gCO₂e/MJ and renewable diesel 20 gCO₂e/MJ. Using these values one can project year-by-year changes in the fuel mix through 2038 as shown in Figure 3. After 2038, the fuel mix is presumed to undergo no further changes since none are currently legislated.

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7 Based on direct reports of production within PADD 5. EIA also issues “product supplied” estimates that relate more tightly to consumption, but the methodology EIA uses for estimating these is too coarse to produce meaningful values for the renewable fuels. The EIA State Energy Data System (SEDS) derives consumption values by fuel for state-level geographies, but these lag the PADD reports (which represent primary rather than secondary data) by more than a year.

8 [citation to Annual Energy Outlook]

9 Conventional fossil fuel carbon intensities are from California LCFS rules. Ethanol and renewable diesel carbon intensities are computed from GREET.
Figure 3 – Regional market road fuel mixes expected under three scenarios. “RG” means renewable gasoline; “RD” means renewable diesel.

The **State Goal** scenario is derived from the “Transport Fuels” scenario constructed for the Washington State Department of Commerce’s 2021 *Washington State Energy Strategy*. This scenario posits less electrification of transportation than other State Energy Strategy scenarios, instead achieving GHG reduction targets by substituting biofuels and synthetic fuels for
petroleum products. Commerce’s analysis provides absolute, forecast quantities of biofuels and synthetic fuels in five-year increments from 2025 through 2050, but without distinction between gasoline substitutes and diesel substitutes. The State Goal scenario allocates Commerce’s synthetic fuels and biofuels forecasts to substitute for gasoline or diesel, proportionately to the share of gasoline vs. diesel fossil fuels in the PADD 5 baseline mix.\textsuperscript{10}

The **Static** scenario simply presumes continuation of status quo fuels mix. This is equivalent to a scenario in which the new LCFS is struck down in the courts.

**Applied Fuel Mix Scenarios**

The applied throughput forecasts for SeaPort Sound Terminal work with a six-fuel framework that recognizes three types each of spark-ignition and compression-ignition fuels (Table 2). This approach recognizes that spark-ignition and compression-ignition vehicle technologies are non-interchangeable while, given an engine of one type or the other, there is at least some capacity for displacement among similar fuel types.

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<tr>
<th></th>
<th>spark-ignition</th>
<th>compression-ignition</th>
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<td>“gasoline”</td>
<td>“diesel”</td>
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<tr>
<td>biofuel</td>
<td>“ethanol”</td>
<td>“biodiesel”</td>
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*Table 2 – Road fuels terminology used in this report.*

The conventional compression ignition fuel is ultra-low sulfur diesel (ULSD), and the substitute fuels fall into two groups: biodiesel and renewable diesel. Biodiesel differs chemically from ULSD and requires engine and handling modifications to work well in ULSD-oriented infrastructure. Renewable diesel refers to drop-in ULSD substitutes sufficiently chemically similar to ULSD that they are indistinguishable from the point of view of engine performance. Currently, SeaPort Sound Terminal handles renewable diesel separately from ULSD. Over time, the two may be normally handled as a blend, or SeaPort Sound Terminal may need to continue to handle them separately for business or regulatory reasons.

The LCFS requires the average carbon intensity of all compression-ignition fuels to follow a prescribed, downward pathway. Biodiesel is manufactured almost entirely from food and industrial waste feedstocks that are limited in supply; furthermore, the market will favor drop-in fuels since they require less capital investment by end consumers (new or modified motor vehicles paid for by their users). Hence, most of the new, renewable fuels for compression ignition will be renewable diesel, the drop-in fuel.

\textsuperscript{10} This implies an underlying assumption that the mix of compression ignition vs. spark ignition engines in the vehicle fleet remains unchanged throughout the forecast period.
A similar situation occurs with spark ignition fuels. The conventional spark ignition fuel is gasoline, and the substitute fuels fall into two groups: ethanol and renewable gasoline.\textsuperscript{11} Though also a spark-ignition fuel, ethanol differs from gasoline chemically and requires engine and handling modifications to work well in gasoline-oriented infrastructure. Renewable gasoline is a drop-in fuel that chemically resembles gasoline sufficiently, that such modifications are unnecessary.

Drop-in gasoline substitutes are still relatively rare; common nomenclature has not yet developed and “renewable gasoline” is still a tentative term. As with ULSD, drop-in fuels can, by definition, be stored in a blend with conventional gasoline.

In contrast to biodiesel, ethanol can be manufactured from a much larger array of waste, starch crops, and eventually woody crops. Hence, one can expect ethanol to increase its market share more strongly relative to biodiesel, and indeed it is already handled in much greater volumes at SeaPort Sound Terminal.

The LCFS, which governs the Central scenario, is designed such that a manufacturer of a drop-in gasoline substitute will recover the financial value of their product whether it is sold separately or blended with conventional gasoline. So it is unlikely (though possible) that SeaPort Sound Terminal will be asked to store drop-in fuels separately from conventional gasoline. Nevertheless, they are modeled as if handled separately. This allows for applied fuel mix scenarios that mirror the market fuel mix scenarios in an intuitive fashion.

The applied fuel mix scenarios allow combined biodiesel and renewable diesel deliveries to increase and displace ULSD deliveries. On the spark-ignition side, a new category for “renewable gasoline” is constrained to be handled like a spark-ignition fuel -- that is, constrained to be stored in IFR tanks. The applied fuel mix scenarios allow combined ethanol and renewable gasoline deliveries to increase and displace conventional gasoline deliveries.

The shares of drop-in and biofuels among fossil substitutes are duplicated from the shares of synthetic and biofuels reported from Washington’s State Energy Strategy report. SeaPort Sound Terminal’s existing volumes of each fossil substitute ethanol, renewable diesel, or biodiesel are held constant (as a fraction of total deliveries) until the market mix “catches up” with the existing volumes.

Applying this methodology results in the road fuel throughput forecasts for the existing SeaPort Sound Terminal as shown in Figure 4a. If tank capacities are modified by the Project, the throughput forecasts change to those shown in Figure 4b.

\textsuperscript{11} This is a simplification. There are other spark-ignition substitutes like methanol, compressed natural gas, and LPG. Our approach rests on the assumption that ethanol and renewable gasoline will make up the vast majority of liquid fuels that displace gasoline.
Figure 4a – Road fuel mixes modeled to be handled at SeaPort Sound Terminal, under the No Action alternative. “RG” means renewable gasoline; “RD” means renewable diesel.
Figure 4b – Road fuel mixes modeled to be handled at SeaPort Sound Terminal, under the Project alternative. The red dashed line represents SeaPort Sound Terminal’s maximum permitted throughput of spark-ignition fuels (the green-shaded categories). “RG” means renewable gasoline; “RD” means renewable diesel; “s.i.” means spark ignition fuels.
Data Requirements

Activity data needed is summarized in a data request memo transmitted to SeaPort Sound Terminal LLC, and available as Annex A to this Study Report. Physical properties of liquids and their emission factors are drawn from the U.S. government-steward tools cited in Section Standards above.

Assumptions

The following assumptions underlie the GHG emissions forecasts in all six cases (two action alternatives under three scenarios):

1. SeaPort Sound Terminal will remain an ethanol specialist.
2. SeaPort Sound Terminal’s mix of non-road fuel products will remain constant indefinitely.
3. SeaPort Sound Terminal will not exceed or lift any product throughput ceiling dictated by existing Puget Sound Clean Air Agency permits.
4. Tacoma Public Utilities’ fuel mix for generating electric power will remain constant indefinitely.

Value Choices and Optional Elements

Scenario Approach

Since these inventories are prospective, it is imperative to express uncertainty in a meaningful fashion. Modeling the outcome of each action alternative under three different scenarios ties uncertainty analysis to real-world policy choices.

System Expansion

Changes to throughput product storage capacities effected by the Project can induce changes to use of product storage capacities available elsewhere at the facility, as received products flow more or less to the new tanks. To provide complete data for comparative analysis, the physical boundary is expanded beyond the Project area to include the entire facility regardless of its relationship to the Project.

Limitations

Uncertainty in emissions due to market forces outside the project boundary, may be higher than differences in emissions among evaluated cases.
Offsite emissions associated with product throughput are profoundly larger than onsite emissions\textsuperscript{12} associated with construction and facility operation. LCI grand totals, and differences between them, will be driven by throughput effects that swamp construction and operation effects.

**Data Quality Requirements**

“Data quality requirements” is the 12\textsuperscript{th} item under Subsection 4.2.3.1 “General” in ISO 14044:2006. Subheadings below reflect Subsection 4.2.3.6.2 enumerated items, per the Subsection 4.2.3.6.2 directive, “Where a study is intended to be used in comparative assertions intended to be disclosed to the public, the data quality requirements stated in a) to j) ... shall be addressed.”

**(a) Time-Related Coverage**

Baseline data shall cover a five-year period beginning January 1, 2016 and ending December 31, 2020. Prospective construction activity shall be modeled beginning January 1, 2022 and ending December 31, 2023. Plant operation shall be modeled beginning January 1, 2024 and ending December 31, 2063.

**(b) Geographical Coverage**

See discussion at *System Boundary* above.

**(c) Technology Coverage**

*Construction*

Construction equipment emissions are modeled at rates relevant for January 2023. Construction equipment emissions will conform to the cross-section of equipment expected to exist at that time in Pierce County, following assumptions and data encoded in the U.S. EPA MOVES 3 model used for the analysis.

Upstream emissions of materials fabrication and transport are drawn from Argonne National Laboratory’s GREET 2020 model, which relies on previously published research for the bulk of its parameters. Upstream emissions of materials fabrication represent the states of technologies at various times prior to the forecast period of construction. But since the vast majority of construction materials are conventional (steel, concrete, and aggregate), there is no reason to believe that the associated materials fabrication or transportation technologies would differ significantly between GREET data collection and our analysis period.

\textsuperscript{12} Including offsite emissions associated with electricity consumed onsite.
Operations

Each modeled case is an extrapolation from baseline data that represent equipment in service at SeaPort Sound Terminal during calendar years 2016 - 2020. Each modeled case assumes that facility operations will continue with identical technology throughout the analysis period, with two exceptions:

1. The Project includes a wastewater treatment system upgrade that reduces wastewater treatment electricity consumption approximately 78%; and
2. The Project includes replacement of a boiler with a hot oil heater that reduces associated natural gas consumption approximately 22%.

Throughput

The three scenarios postulate three different progressions of motor vehicle fuel mix during 2024-2063. These imply, in turn, differing pathways for change in both fuel manufacturing technologies and motor vehicle technologies. The Static scenario represents technological stasis – no change in the nature of motor vehicle fuels nor in the mix of spark-ignition vs. compression-ignition demand. Both the Central and State Goal scenarios imply greater change in fuel manufacturing technologies than in motor vehicle technologies: relatively constant motor vehicle technologies demand relatively constant volumes of gasoline-like and diesel-like fuels, and fuel manufacturers alter their practices to make these meet carbon intensity goals.

Alternative technology scenarios could feature more radical changes in motor vehicle technologies such as full electrification (phasing out liquid fuels demand entirely) or mainstreaming of novel, liquid fuels such as ammonia or hydrazine.

(d) Precision

Computed deviations of gross GHG emissions from the Central scenario are +19% and -28% for the Static and State Goal scenarios, respectively (see section Sensitivity Analysis and Uncertainty below). Since the ultimate use of these LCI results will be comparative between action alternatives, the baseline activity values need only be nominally more precise than deviations due to the modeled scenarios. Baseline energy consumption and throughput product volumes data received are all accurate to ±5% or better.

(e) Completeness

The following discussion of data completeness conforms to the taxonomy utilized in the Data Request Memo transmitted to the project proponent.

---

13 Hammerschlag LLC document number SP-004(b).
Construction

1. **Project schedule.** The proposed project schedule is reported by the project proponent to the best of their ability. As a proposed project, the provided schedule is as complete as can be reasonably expected.

2. **Inventory of construction equipment.** Completeness is unknown. See discussion under *Representativeness*.

3. **Demolition waste.** Not received. See discussion under *Cut-Off Criteria and Cut-Offs*.

4. **Landfill data.** Complete.

5. **Bill of materials.** Materials estimates were provided only for steel, concrete, and aggregate,\(^{14}\) and appear to be back-of-the-envelope estimates. Construction materials data is incomplete.

Operations

6. **Piping & Instrumentation Diagram (PID) or equivalent for the entire, existing facility.** Not received.

7. **Liquid fuel consumption by fixed equipment.** The operator has reported no liquid fuel consumption by fixed equipment.

8. **Liquid fuel consumption by mobile equipment.** The operator has provided a full list of mobile equipment and distances driven. Complete.

9. **Facility electric consumption.** Totals reported from utility billing. Complete.

10. **Facility pipeline gas consumption.** Totals reported from utility billing. Complete.

11. **Inventory of all other emitting equipment.** Complete.

Operations - New Equipment

12. **Inventory of liquid-fueled equipment to be commissioned.** None (complete).

13. **Inventory of electric-fueled equipment to be commissioned.** Complete.

14. **Inventory of pipeline gas-fueled equipment to be commissioned.** Complete.

Throughput

15. **All currently enforceable permits or other documents implying limits to the throughput of petroleum products of any type, or renewable fuel products of any type.** Complete.

16. **Tank inventory.** Complete.

\(^{14}\) Aggregate as a fill material. Aggregate incorporated within concrete was included in the estimate of concrete quantity.
17. **Inbound products registry.** Receipts of products by volume are known and reported to high precision. However, the distances traveled by each delivery are only reported approximately according to product type. Sufficiently complete.

18. **Outbound products registry.** Distributions of products by volume are known and reported to high precision. However, the distances traveled by each distribution to the next consumer are only reported approximately according to product type. Sufficiently complete.

(f) **Representativeness**

**Construction**

Demolition, Construction & Commissioning data were reported by the project proponent to the best of their ability, and were based on a project design documented by the project proponent’s engineering consultant. Hence these data are maximally representative of the modeled project.

The project is in a proposal stage, so there is no general contractor available to offer accurate assessments of estimated construction activity. The **inventory of construction equipment** is a best-guess by the project proponent, which is only partially representative of what an eventual general contractor will estimate, but is the most reasonable proxy available.

**Operations**

Historical operations data were all supplied by the project proponent and facility operator, and hence are maximally representative of actual operations at the facility.

New equipment to be installed as a part of the project was described by the project proponent and facility operator, and hence is maximally representative of planned changes at the facility.

**Throughput**

Historical throughput data were all supplied by the project proponent and facility operator, and hence are maximally representative of actual throughput at the facility.

Sources and fates of throughput products were reported by the project proponent to the best of their ability. Products are owned and handled by other parties before they arrive and after they depart from SeaPort Sound Terminal. Hence, the project proponent can only estimate based on experience, as to the most likely sources and destinations of products. Data regarding sources and fates of throughput product are partially representative of actual sources and fates (and their associated transport distances).
**Scenario Parameters**

Baseline market fuel mixes are generated from PADD 5 production data. PADD 5 includes six western U.S. states that correlate relatively well with the domain from and to which SeaPort Sound Terminal receives and ships products. It is ambiguous whether production or consumption data most appropriately represent product flows at SeaPort Sound Terminal, so production was favored because it is more precisely measured by the U.S. EIA than consumption.

The Central scenario is based on legislation that has been signed into law, following the convention of U.S. federal energy forecasting. This is the most representative (most likely) forecast of the future available. Only Washington State legislation is considered, which means that Washington legislation is functioning as a proxy for the collective, weighted impacts of all PADD 5 states’ legislation at SeaPort Sound Terminal. Among the PADD 5 states, Washington tends to be less environmentally progressive than the most populous state California but more environmentally progressive than the balance of states, so Washington alternative fuels legislation can be representative of alternative fuels policy in PADD 5 as a whole.

The State Goal scenario is based on Washington’s State Energy Strategy. It is aspirational, and represents only SeaPort Sound Terminal’s home state rather than PADD 5. Among the PADD 5 states California tends to lead alternative fuels policy by example, so aspirational goals developed for California could be argued to be more representative than those developed for Washington. Nevertheless, SeaPort Sound Terminal’s location inside Washington State combined with a fairly heavy weighting toward Western Washington sources and destinations for products, gave the edge to Washington’s State Energy Strategy.

The Static scenario is based on no change in market fuel mixes, which grounds the scenario in measured, real, baseline period data. The static scenario is maximally representative of regressive energy policy, that is repeal or legal stays of the legislation underlying the Central scenario.

**(g) Consistency**

Historical data relating to all five years of the baseline period were gathered simultaneously, under a shared methodology. Hence there are no concerns related to consistency.

**(h) Reproducibility**

The analysis is fully reproducible. All tables and figures in this report match identical tables found in a single, underlying, Microsoft Excel electronic workbook. Each datum contributing to a figure or table is connected via a formulaic path to historical operating or market data,

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emission factors, assumptions, or other constants. Each constant is associated with its respective source, and sources are supplied in a bibliography.

(i) Sources of the Data

The project proponent provided all facility operating data, including baseline period product throughputs. The project proponent is also the facility operator, so operating data was compiled from its primary source. Audit-quality checks of data (comparisons against third-party records or instrument readings) were considered outside the scope of this study.

Emission factors and scenario parameters were obtained from the highest-quality available, federal resources whenever possible. If federal data were unavailable, values from peer-reviewed literature were utilized instead.

(j) Uncertainty

See discussion at Sensitivity Analysis and Uncertainty below.

Critical Review

Critical review was supplied by the supervising consultant, Anchor QEA.

Report Format

The report format is consistent, to the maximum extent possible, with requirements of ISO 14044:2006, and specifically those requirements applicable to life-cycle inventories.
Inventory Analysis

Impact Categories

The inventory includes the single impact category: greenhouse gases (GHGs).

GHGs included are carbon dioxide (CO\textsubscript{2}), methane (CH\textsubscript{4}), and nitrous oxide (N\textsubscript{2}O). Individual gas emissions are converted to metric tons of carbon dioxide equivalent (tCO\textsubscript{2}e) according the 100-year global warming potentials (GWP) reported in the IPCC Fifth Assessment\textsuperscript{16}. One metric ton of CO\textsubscript{2} emissions equals one tCO\textsubscript{2}e. One metric ton of CH\textsubscript{4} emissions equals 28 tCO\textsubscript{2}e. One metric ton of N\textsubscript{2}O emissions equals 265 tCO\textsubscript{2}e.

Emissions of Construction

Emissions of construction were derived from the inventory of equipment provided by the project proponent. For each piece of equipment, energy demand in horsepower-hours (hp-h) was computed as:\textsuperscript{17}

\[
\text{energy demand (hp-h)} = \text{power (hp)} \times \text{service (wk)} \times \text{utilization (h/wk)} \times \text{load factor}
\]

Service was set at 26 weeks (wk) for all machinery, and utilization at 40 hours per week (h/wk). Power in horsepower (hp) is an engine specification unique to each piece of equipment. Load factors are unitless and were provided by the project proponent as reported in Table 3.

Emissions of each greenhouse gas due to each piece of equipment was related to energy demand as follows:

\[
\text{emissions (tCO}\textsubscript{2}e) = \text{energy demand (hp-h)} \times \text{emission factor (g/hp-h)} \times \text{GWP (gCO}\textsubscript{2}e/g)} \times 10^{-6} \text{ t/g ,}
\]

with each emission factor in grams per horsepower-hour (g/hp-h) drawn from a Pierce County-specific run of the U.S. EPA MOVES model in the cases of CO\textsubscript{2} and CH\textsubscript{4}, and from a U.S. EPA table of national-average emission factors\textsuperscript{18} in the case of N\textsubscript{2}O.

\textsuperscript{16} Greenhouse Gas Protocol, “Global Warming Potentials” (World Resources Institute, 2016).
\textsuperscript{17} Units used in equations throughout the section Inventory Analysis are illustrative – calculations in the underlying workbook may utilize different units, or incorporate conversion factors to match units. The illustrative units reported here are chosen to be those occurring most frequently in the workbook.
Table 3 – On-site emissions of construction.

Emissions for fabrication & transport of materials consumed in construction were derived from the bill of materials utilizing emission factors drawn from the Argonne National Laboratory GREET model:

\[ \text{emissions (tCO}_2\text{e)} = \text{material demand (ton)} \times \text{emission factor (g/ton)} \times \text{GWP (gCO}_2\text{e/g)} \times 10^6 \text{ t/g} , \]

with results shown in Table 4.

<table>
<thead>
<tr>
<th>construction equipment</th>
<th>power factor</th>
<th>emissions (tCO(_2)e)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>hp</td>
<td>CO(_2) kg</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>CH(_4) kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N(_2)O kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GHGs tCO(_2)e</td>
</tr>
<tr>
<td>John Deere 345G Excavator</td>
<td>249</td>
<td>56,143</td>
</tr>
<tr>
<td>John Deere 644K Front End Loader</td>
<td>249</td>
<td>55,935</td>
</tr>
<tr>
<td>Ingersol Rand VR-530G Forklift</td>
<td>100</td>
<td>38,464</td>
</tr>
<tr>
<td>John Deere 50G Excavator</td>
<td>36</td>
<td>5,073</td>
</tr>
<tr>
<td>Volvo EC140 Excavator</td>
<td>121</td>
<td>20,462</td>
</tr>
<tr>
<td>Sky Jack VR1044F Forklift</td>
<td>110</td>
<td>42,311</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>218,388</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>material</th>
<th>quantity</th>
<th>GHGs (tCO(_2)e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>steel</td>
<td>1,300</td>
<td>3,495</td>
</tr>
<tr>
<td>concrete</td>
<td>1,620</td>
<td>141</td>
</tr>
<tr>
<td>aggregate</td>
<td>16,605</td>
<td>98</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>3,734</td>
</tr>
</tbody>
</table>

Table 4 – Upstream emissions of materials consumed during construction.

**Emissions of Operations**

Emissions of operations are different under the Project alternative versus No Action because the project replaces some of the facility equipment, and because the project expands the facility’s capacity. However, operations emissions are largely unaffected by the quantity of renewable versus fossil fuels in the throughput product mix, so the operations emissions are considered to be responsive only to action not to scenario.

Project emissions are computed by assigning emission factors to measured natural gas, electricity, and liquid fuels consumption at the SeaPort Sound Terminal facility (Table 5).
Table 5 – Emissions of Operation under the two modeled actions.
“cum.” means cumulative; “MtCO₂e” means million tCO₂e.

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>No Action annual 2063</th>
<th>No Action cum. 2024-2063</th>
<th>Project annual 2063</th>
<th>Project cum. 2024-2063</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>tCO₂e</td>
<td>MtCO₂e</td>
<td>tCO₂e</td>
<td>MtCO₂e</td>
</tr>
<tr>
<td>Natural gas</td>
<td>7,107</td>
<td>0.28</td>
<td>7,596</td>
<td>0.30</td>
</tr>
<tr>
<td>Electricity</td>
<td>170</td>
<td>0.01</td>
<td>186</td>
<td>0.01</td>
</tr>
<tr>
<td>Gasoline</td>
<td>12</td>
<td>0.00</td>
<td>13</td>
<td>0.00</td>
</tr>
<tr>
<td>Diesel</td>
<td>9</td>
<td>0.00</td>
<td>10</td>
<td>0.00</td>
</tr>
<tr>
<td>TOTALS</td>
<td>7,298</td>
<td>0.29</td>
<td>7,805</td>
<td>0.31</td>
</tr>
</tbody>
</table>

Average annual emissions during the baseline period are computed from utility bill data and equipment records. Under the No Action alternative, the average annual emissions continue unchanged throughout the analysis period. Under the Project alternative, average annual emissions of electricity and natural gas are initially decremented according to energy savings of the wastewater treatment equipment and boiler change-outs, respectively. From that point forward, facility consumption of all fuels is modeled to increase proportionally to volume-basis, gross throughput.

**Offsite Emissions Associated with Product Throughput**

Offsite emissions associated with product throughput arise from three unit processes: upstream refining & transport; downstream transport; and combustion. Within each market scenario, the quantities of products handled each year are computed in volume units of barrels (bbl) according to the method outlined in Section Applied Fuel Mix Scenarios above. From quantities of product handled, emissions are computed according to the formula:

\[
\text{net combustion emissions (tCO}_2\text{e)} = \text{fuel quantity (bbl)} \times \left[ \text{EF}_\text{combustion (tCO}_2\text{e/bbl)} + \text{EF}_\text{feedstock cultivation (tCO}_2\text{e/bbl)} - \text{feedstock sequestration rate (tCO}_2\text{e/bbl)} \right]
\]

where \(\text{EF}_\text{combustion}\) is the emission factor of combustion, and \(\text{EF}_\text{feedstock cultivation}\) is the emission factor of feedstock cultivation, including planting, harvesting, and fertilizer decay. For fossil fuels \(\text{EF}_\text{feedstock cultivation}\) and \(\text{feedstock sequestration rate}\) are zero, but for biogenic fuels these two values are summed with \(\text{EF}_\text{combustion}\) to create the sense of “net combustion” that has become the convention in biofuels policy discussions.

Non-combustion emissions are computed as follows:

\[
\text{non-combustion emissions (tCO}_2\text{e)} = \text{fuel quantity (bbl)} \times \left[ \text{EF}_\text{upstream (tCO}_2\text{e/bbl)} + \text{EF}_\text{downstream (tCO}_2\text{e/bbl)} \right]
\]

\(\text{EF}_\text{upstream}\) is drawn directly from GREET,\(^{19}\) while \(\text{EF}_\text{downstream}\) is computed manually according to transport distances estimated by the project proponent.

\(^{19}\) GREET defaults to nominal values for fuel and feedstock transportation distances appropriate for applications in the United States.
Total emissions during the analysis period under each of the three scenarios are shown for No Action in Table 6.

<table>
<thead>
<tr>
<th>Product</th>
<th>Static scenario</th>
<th>Central scenario</th>
<th>State Goal scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>com-bustion</td>
<td>non-com-bustion</td>
<td>total</td>
</tr>
<tr>
<td></td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
</tr>
<tr>
<td></td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
</tr>
<tr>
<td></td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
</tr>
<tr>
<td>gasoline</td>
<td>105.0</td>
<td>22.5</td>
<td>127.5</td>
</tr>
<tr>
<td>renewable gasoline</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>ethanol</td>
<td>6.2</td>
<td>12.9</td>
<td>19.1</td>
</tr>
<tr>
<td>diesel</td>
<td>40.7</td>
<td>8.5</td>
<td>49.2</td>
</tr>
<tr>
<td>renewable diesel</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>biodiesel</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>fuel oil</td>
<td>42.0</td>
<td>8.6</td>
<td>50.6</td>
</tr>
<tr>
<td>asphalt</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>crude</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>propane</td>
<td>1.8</td>
<td>0.3</td>
<td>2.1</td>
</tr>
<tr>
<td>transmix</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>TOTALS</td>
<td>196</td>
<td>53</td>
<td>249</td>
</tr>
</tbody>
</table>

Table 6 – Emissions associated with product throughput, under No Action. Emissions from spark ignition and compression ignition road fuels respond to the policy environment. In contrast, emissions from other throughput products are identical under all three scenarios. “MtCO$_2$e” means million tCO$_2$e.

Emissions under the Project action are shown in Table 7. Emission factors used to generate Table 7 are identical to those used to generate Table 6; only the quantities of throughput products differ.

<table>
<thead>
<tr>
<th>Product</th>
<th>Static scenario</th>
<th>Central scenario</th>
<th>State Goal scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>com-bustion</td>
<td>non-com-bustion</td>
<td>total</td>
</tr>
<tr>
<td></td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
</tr>
<tr>
<td></td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
</tr>
<tr>
<td></td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
<td>MtCO$_2$e</td>
</tr>
<tr>
<td>gasoline</td>
<td>115.3</td>
<td>24.7</td>
<td>139.9</td>
</tr>
<tr>
<td>renewable gasoline</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>ethanol</td>
<td>6.8</td>
<td>14.2</td>
<td>20.9</td>
</tr>
<tr>
<td>diesel</td>
<td>44.7</td>
<td>9.3</td>
<td>54.0</td>
</tr>
<tr>
<td>renewable diesel</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>biodiesel</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>fuel oil</td>
<td>46.1</td>
<td>9.5</td>
<td>55.6</td>
</tr>
<tr>
<td>asphalt</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>crude</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>propane</td>
<td>1.9</td>
<td>0.3</td>
<td>2.3</td>
</tr>
<tr>
<td>transmix</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>TOTALS</td>
<td>215</td>
<td>58</td>
<td>273</td>
</tr>
</tbody>
</table>

Table 7 – Emissions associated with product throughput, under the Project action.
Interpretation of Results

Summary of Inventory

SeaPort Sound has control over emissions of construction and emissions of plant operations, but has nearly no control over emissions associated with product throughput (see discussion in Causality below). The two groups of emissions are treated separately here.

Emissions over which SeaPort Sound has control are summarized in Figure 5, for both the No Action and Project alternatives. Emissions are shown as cumulative values, for consistency with eventual assessments of gross Project impact to the atmosphere.

Figure 5 – Cumulative emissions associated with Project construction and SeaPort Sound Terminal operation from January 1 2024 through December 31 2063. To simplify presentation of results Project-case construction emissions accrue as of January 1 2024, though they occur between January 1 2022 and December 31 2023.

Emissions over which SeaPort Sound has little to no control are summarized in Figure 6, for both the No Action and Project Alternatives.
Figure 6 – Cumulative throughput emissions. The blue region represents the range of possible outcomes under the No Action alternative, and the green region represents the range of possible outcomes under the Project alternative.

Figure 6 describes the range of cumulative, throughput emissions that could result under the suite of scenarios evaluated. Potential throughput emissions associated with the No Action alternative appear as a blue wedge, and potential emissions associated with the Project alternative appear as a green wedge. The upper edge of each wedge represents the Static scenario, and the lower edge of each wedge represents the State Goal scenario. The two wedges overlap substantially, visible as a turquoise-colored area.

Numeric values for cumulative emissions in the six cases (the right-hand ends of the traces in Figure 5 and Figure 6) are summarized in Table 8.

<table>
<thead>
<tr>
<th>action</th>
<th>Static scenario cumulative emissions, million tCO₂e</th>
<th>Central scenario cumulative emissions, million tCO₂e</th>
<th>State Goal scenario cumulative emissions, million tCO₂e</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>construction operation</td>
<td>operation</td>
<td>throughput</td>
</tr>
<tr>
<td>No Action</td>
<td>0.292</td>
<td>249</td>
<td></td>
</tr>
<tr>
<td>Project</td>
<td>0.313</td>
<td>273</td>
<td></td>
</tr>
</tbody>
</table>

Table 8 – Cumulative emissions over the 2022-2063 analysis period.

Causality

This report presents six attributional GHG inventories, which beg comparison through computing their differences. However, great care should be taken in inferring a consequential
inventory from attributional inventories. Indeed, substantial literature has been published warning specifically against this tempting exercise.\(^{20}\)

In the specific case here, the principal guiding document (City of Tacoma Scoping Document) requires consideration of upstream and downstream emissions of product throughput, that are largely if not entirely out of SeaPort Sound Terminal's control. Changes at SeaPort Sound Terminal are unlikely to impact either the regional demand for product liquids, or the manner in which those products are manufactured. Indeed, the only likely impact on the greater fossil fuels market is to change the pathways that the fixed quantities of fuels take from their manufacturers to their consumers.

Quantifying an apparent change to global GHGs as a difference between two throughput inventories would lead to profound overestimates of real-world impact.

**Sensitivity Analysis and Uncertainty**

The scenarios approach to this prospective LCI satisfies the requirement for sensitivity analysis given in the guiding ISO standards. Under the Project alternative, cumulative, absolute emissions from Table 8 vary from the Central scenario by +18.5% to -28.1% for the Static and State Goal scenarios, respectively. Under the No Action alternative, emissions vary +18.3% to -27.9%.

---

Annex A – Data Request Memo
MEMO

Subject: Carbon footprint study data requirements – SeaPort Sound plant modernization project.

From: Roel Hammerschlag

To: Matthew Kolata, TransMontaigne Partners LLC
    Troy Goodman, TransMontaigne Partners LLC

Date: July 8, 2021

Doc. no.: SP-004(b)

Background

The City of Tacoma has requested that SeaPort Sound Terminal provide an Environmental Impact Statement (“EIS”) as a condition of authorizing the SeaPort Sound Terminal Modernization Project (“the Project”), city of Tacoma file number LU20-0107. An EIS Scoping Document issued by the City of Tacoma requires that the EIS include a “Life-cycle greenhouse gas analysis of the additional products stored on site – extraction, transportation, and consumption.” (“Carbon Footprint Study” or “the Study”)

Additionally, EIS Scoping Document item E(2)(b) requires assessment of greenhouse gas (GHG) emissions “from demolition, construction and decommissioning of onsite facilities.” Not stated in the EIS Scoping Document, but included for completeness, will be GHG emissions from facility operation.

This memo describes my best estimate at this time, of data needed to complete the Carbon Footprint Study and to assess GHG emissions from demolition, construction, decommissioning, and operation. As the Study proceeds I may discover additional data requirements, or I may need to adjust the definitions of some datasets.

Data Period

Historical operating and throughput data must cover a single five-year data period for conformance with EIS Scoping Document item D(2)(d). Provide historical data disaggregated by year, as five-point time series’ for calendar years 2016 through 2020 inclusive.

Demolition, construction and (de)commissioning data must cover the entire, planned period of demolition, construction & (de)commissioning. Temporal disaggregation is unnecessary.

Prospective operating data should be modeled to represent one complete year of stable operation following commissioning of the project. Do not include any transient operations related to commissioning.
Dataset

Please provide the most complete possible dataset as follows:

Demolition, Construction & Commissioning

1. Project schedule.
   This can be very high level. Its primary purposes are to (a) validate (“idiot-check”) deployment and duty reported in item (2) Inventory of Construction Equipment; and (b) document & justify the anticipated start date of project operation.

2. Inventory of construction equipment.
   For each piece of equipment used in construction supply:
   a) short description (e.g. “dump truck, 14 CY”)
   b) engine size (hp)
   c) fuel use rate (gal/hr)
   d) deployment (months)
   e) duty while deployed (hours/week)
   f) average load factor when on duty (%)

   *Hammerschlag LLC will assume each engine combusts diesel fuel unless you indicate otherwise.*

3. Demolition waste.
   Demolition waste should be disaggregated into the default taxonomy given for item (5) Bill of Materials below (except, that cement and aggregate will appear as “concrete” instead), with additional rubrics as necessary. Including a rubric for mixed waste is acceptable, as long as that rubric is designated to be 100% landfilled. For each rubric, provide:
   a) description of material type (e.g. “structural steel”)
   b) total mass produced by demolition (lb, ton, or kg)
   c) fraction of mass that will be re-used on site;
   d) fraction of mass that will be recycled off site;
   e) fraction of mass that is landfilled.

   *Items (c) (d) and (e) should sum to 100%, unless a special exception has been communicated to Hammerschlag LLC.*

4. Landfill data.
   a) name;
   b) location; and
   c) methane recovery fraction, if known.
5. **Bill of materials.**

Please provide masses (e.g. lb, ton, or kg) of each material expected to be used in new construction. The mass quantities should be inclusive of re-used demolition waste. The following taxonomy of materials is customary and adequate for life-cycle assessment of typical industrial projects, but finer taxonomies and/or additional rubrics are acceptable:

   a) structural steel;  
   b) stainless steel;  
   c) aluminum;  
   d) copper;  
   e) rebar;  
   f) cement;  
   g) aggregate;  
   h) asphalt; and  
   i) wood.

**Historical Operations**

6. **Piping & Instrumentation Diagram (PID) or equivalent for the entire, existing facility.**

This serves two purposes. (a) We will use it as our primary exhibit in discussions toward defining the analysis boundary; and (b) it will be used to validate the equipment inventories.

*PID should represent the facility as of December 31, 2020, but provide notes if any significant changes occurred between January 1, 2016 and December 31, 2020.*

7. **Liquid fuel consumption by fixed equipment.**

For each unit of fixed equipment provide:

   a) short description or identifier;  
   b) continuing vs. legacy; *(see explanation at item (9))*  
   c) type of fuel (gasoline, diesel, etc.); and  
   d) fuel consumption during the data period (disaggregated by year); or  
      if fuel consumption is unknown, then operating characteristics:  
      - horsepower + duty, or  
      - operating hours + fuel flow rate (gal/hr).

8. **Liquid fuel consumption by mobile equipment.**

Provide combined, mobile equipment fuel consumption during the data period, disaggregated by year and disaggregated by fuel. If bio-fossil fuel blends are used, inventory each blend (B10, E85, etc.) separately.

9. **Facility electricity consumption.**
Disaggregate consumption between *continuing* equipment that will operate after the project, versus *legacy* equipment that will cease to operate as a consequence of the project. If any electric meters host both continuing and legacy equipment, then provide engineering estimates of the meter share drawn by each.

10. **Facility pipeline gas consumption.**

Disaggregate consumption between continuing and legacy equipment. If any gas meters host both continuing and legacy equipment, then provide engineering estimates of the meter share drawn by each.

11. **Inventory of all other emitting equipment.**

Describe any other equipment that is known to emit either conventional air pollutants or GHGs. Distinguish between continuing and legacy equipment.

**New Equipment**

12. **Inventory of liquid-fueled equipment to be commissioned.**

Fixed and mobile equipment may be mixed in a single inventory. Multiple units meeting a single equipment specification may be combined in a single record. For each inventory record provide:

a) short description or identifier;
b) number of units to be commissioned;
c) type of fuel (gasoline, diesel, etc.); and
d) annual fuel consumption; or
   - if fuel consumption is unknown, then operating characteristics:
     • horsepower + duty, or
     • operating hours + fuel flow rate (gal/hr).

13. **Inventory of electric-fueled equipment to be commissioned.**

For each inventory record provide:

a) short description or identifier;
b) number of units to be commissioned;
c) power rating (kW); and
d) operating hours per year.

14. **Inventory of pipeline gas-fueled equipment to be commissioned.**

For each inventory record provide:

a) short description or identifier;
b) number of units to be commissioned;
c) gas demand (mmBtu/hr or therm/hr); and
d) operating hours per year.

Sources, Throughput, and Fates

15. All currently enforceable permits or other documents implying limits to the throughput of petroleum products of any type, or renewable fuel products of any type.

We are already in possession of Puget Sound Clean Air Agency Orders of Approval for NOC 11069 and NOC 11403, so you may omit those two documents from your response.

16. Tank inventory.

Inventory of existing tanks, indicating for each:

a) unique name, number, or other designator;
b) volume capacity;
c) product categories the tank is physically capable of accepting;
d) product category the tank contained on December 31, 2020;
e) any authorized restrictions on the tank’s use; and
f) a description of changes to the tank’s disposition expected during or after the plant modernization project, if any.

17. Inbound products registry.

Registry of all inbound products. Data must be disaggregated by year and cover the standard data period. Each registry record should include the following fields:

a) unique name of the source (o.k. to disguise confidential business information (“CBI”) as needed);
b) calendar year covered;
c) total volume;
d) product category;
e) mode of transport to SeaPort (pipeline, rail, truck, or marine); and
f) distance to source.

Where sources are unknown or ambiguous, bundle like receipts into any convenient, named grouping of your choice. A valid value of (c) total volume is required for every registry record. The remaining fields may contain unknown or ambiguous values as needed.

If it is more convenient, you are welcome to provide disaggregated data at the BOL level. In this case, replace field (b) calendar year covered with (b) date of receipt.

18. Outbound products registry.

Registry of all outbound products. Data must be disaggregated by year and cover the standard data period. Each registry record should include the following fields:
a) unique name of the destination (o.k. to disguise CBI as needed);
b) calendar year covered;
c) total volume;
d) product category;
e) character of use (distribution, refinery feedstock, fuel, lubricant, solvent, other);
f) mode of transport (truck or marine);
g) distance to destination.

Where destinations are unknown or ambiguous, bundle like loadings into any convenient, named grouping of your choice. A valid value of (c) total volume is required for every registry record. The remaining fields may contain unknown or ambiguous values as needed.

If it is more convenient, you are welcome to provide disaggregated data at the BOL level. In this case, replace field (b) calendar year covered with (b) date of loading.

Respectfully submitted,

Roel Hammerschlag, Principal
Hammerschlag LLC
tel. 360-339-6038
roel@hammerschlag.llc
Appendix C
Cost of GHG Mitigation for the SeaPort Sound Plant Modernization Project Memorandum
MEMO

Subject: Cost of GHG Mitigation for the SeaPort Sound Plant Modernization Project

From: Roel Hammerschlag

To: Matthew Kolata, SeaPort Sound Terminal LLC
    Josh Jensen, Anchor QEA

Date: April 14, 2022

Doc. no.: SP-009(c)

Background

The proposed SeaPort Sound plant modernization project (the Project) will induce greenhouse gas (GHG) emissions in the City of Tacoma due to project construction and due to increased operating emissions after project completion. The City of Tacoma is requesting mitigation of those GHG emissions that would accrue to the City of Tacoma GHG inventory. The most straightforward approach to such GHG mitigation would be the purchase of third-party verified, voluntary GHG offsets. However, SeaPort Sound Terminal LLC (SeaPort Sound) wishes to offer a financial contribution to the City of Tacoma that supports the City of Tacoma Climate Action Plan,¹ and supports urban or watershed forestry in particular. SeaPort Sound would like to know the dollar size of such a contribution that would make it commensurate with the purchase of equivalent GHG offsets.

Quantity of GHG Offsets Required

GHG mitigation is typically achieved through the purchase of GHG offsets. One offset is valued at -1.0 tCO₂e, or negative one metric ton of carbon dioxide equivalent. That is, GHG neutrality is achieved when the number of offsets to purchase equals the incremental tCO₂e caused by the project.

Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Terminal Modernization Project (the GHG Study Report)² estimates that the Project will induce 221 tCO₂e of on-site emissions from construction equipment. All construction emissions are incremental, since the construction activities would not have happened without the Project.

The GHG Study Report estimates cumulative, incremental emissions of operation to be 16,800 tCO₂e. The incremental emissions are computed as the difference between the Project’s gross, cumulative operating emissions from 2024 through 2063; and gross, cumulative operating emissions without the Project from 2024 through 2063. These two values are

¹ City of Tacoma, “2030 Tacoma Climate Action Plan” (City of Tacoma, November 2021).
² Hammerschlag LLC document number SP-003(f).
308,700 tCO$_2$e and 291,900 tCO$_2$e respectively, leading to the incremental result
308,700 tCO$_2$e – 291,900 tCO$_2$e = 16,800 tCO$_2$e.

The total emissions requiring mitigation are the combined, incremental construction and
operation emissions, that is 221 tCO$_2$e + 16,800 tCO$_2$e = 17,021 tCO$_2$e.

**Temporal Effect**

The 221 tCO$_2$e construction emissions will occur relatively immediately, but the 16,800 tCO$_2$e
incremental operations emissions will occur over the course of forty years from 2024 through
2063. Because the climate system contains positive feedbacks, a reduction in emissions sooner
has more value to climate stabilization than the same reduction later. The magnitude of this
effect is unknown, but its sign is certain. Hence, the GHG reductions or removals represented
by purchased offsets should occur simultaneously with or prior to the GHG emissions that they
are intended to balance.

If SeaPort Sound were to purchase the entire 17,021 tCO$_2$e of offsets at the project outset, then
the offsets would precede the emissions and the intended zero (or negative) GHG balance
would be achieved. If SeaPort Sound were to purchase offsets gradually throughout the plant
life, then those purchases may precede or coincide with the emissions but should not lag them.

**Offset Pricing**

In the United States there is negligible government regulation or tracking of the voluntary
offsets market. The market for voluntary, third-party verified GHG offsets is best monitored
with annual *State of the Voluntary Carbon Markets* reports published by Ecosystem
Marketplace, a project of the non-profit organization Forest Trends.

Selling prices of GHG offsets tracked by Ecosystem Marketplace tend to break across the class
of offset projects. Projects that avoid emissions are called “reductions,” and Ecosystem
Marketplace reports that reductions sold at an average price of $1.60/tCO$_2$e in 2020 and
$1.71/tCO$_2$e in 2021. Projects that draw down and sequester atmospheric CO$_2$ are called
“removals,” and Ecosystem Marketplace reports that removals sold at an average price of
$7.93/tCO$_2$e in 2020 and $7.98/tCO$_2$e in 2021.\(^3\)

**Cost of Mitigation**

Forestry projects, including urban forestry projects, are removals not reductions. Hence, it is
appropriate to fund them at the rate offset markets indicate for removals. The most recent

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\(^3\) Stephen Donofrio et al., “Markets in Motion: State of the Voluntary Carbon Markets 2021 Installment 1”
(Ecosystem Marketplace, 2021), 15. 2021 prices are based on trading January 1 – August 31 only; the final 2021
report has not yet been published.
The reported rate for removals is $7.98/\text{tCO}_2\text{e}. Hence, the anticipated cost of the Project GHG mitigation is 17,021 \text{tCO}_2\text{e} \times 7.98/\text{tCO}_2\text{e} = 136,000 (rounding to three significant digits).

Respectfully submitted,

Roel Hammerschlag, principal
Hammerschlag LLC
tel. 360-339-6038
roel@hammerschlag.llc
MEMO

Subject: Seaport Sound Plant Modernization: Increment to Product Transport Emissions in Pierce County

From: Roel Hammerschlag

To: Matthew Kolata, SeaPort Sound Terminal LLC
    Josh Jensen, Anchor QEA

Date: October 9, 2022

Doc. no.: SP-011(b)

Background

The proposed SeaPort Sound plant modernization project (the Project) increases gross product storage capacity, which in turn may allow for increased product throughput. An increase in transport of products from the plant would create an increment to greenhouse gas (GHG) emissions of commercial transport in Pierce County. SeaPort Sound would like to know the gross size of this potential emissions increment over the 40-year Central Scenario activity forecast developed for the Draft Environmental Impact Statement.

Assumptions

Products handled by SeaPort Sound depart from the plant either by truck or marine. The increment in Pierce County transport emissions is assumed to arise from increases to truck or marine activity proportional to the increase in weight of product throughput.

Product transport GHG emissions are due to combustion of fossil fuels in internal combustion engines. On a 100-year global warming potential (GWP) basis, GHG emissions of internal combustion engines are dominated by carbon dioxide (CO₂). This analysis is restricted to CO₂ emissions.

Methodology

Hammerschlag LLC duplicated the transport emission factors coded in Argonne National Laboratory’s GREET model, 2020 edition.¹ For each unit of fuel transported by a given mode GREET assigns: emissions of fuel combustion while transporting from source to destination, emissions of fuel combustion while backhauling the transport vehicle, and production (upstream) emissions of the fuels combusted during transport. SeaPort Sound is concerned only with direct emissions in Pierce County, so GREET-assigned fuel production emissions are

omitted. Hammerschlag LLC derived the following product transport emission rates utilizing the constants provided in GREET:

<table>
<thead>
<tr>
<th>mode</th>
<th>EF $\text{gCO}_2/\text{ton-mi}$</th>
<th>1-way dist. mi</th>
</tr>
</thead>
<tbody>
<tr>
<td>truck</td>
<td>107.9</td>
<td>24</td>
</tr>
<tr>
<td>marine</td>
<td>7.1</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 1 – GREET-based emission factors of product transport modes, and characteristic transport distances. “EF” means emission factor. “gCO$_2$/ton-mi” means grams carbon dioxide per imperial ton-mile.

Table 1 also includes the nominal transport distances assumed for each mode. The distance assumed for truck transport is the characteristic radius of Pierce County, equal to the radius of a circle having the same geographic area as the county. The distance assumed for marine is the measured distance from the SeaPort Sound terminal to the extension of Pierce County's northern boundary into the Puget Sound shipping lanes.

The mix of transport modes for each throughput product was provided by SeaPort Sound, except for renewable gasoline which has not yet been handled at the Tacoma facility. Hammerschlag LLC assumed outbound renewable gasoline would behave identically to conventional gasoline (Table 2).

<table>
<thead>
<tr>
<th>throughput product</th>
<th>outbound transport</th>
<th>truck</th>
<th>marine</th>
</tr>
</thead>
<tbody>
<tr>
<td>gasoline</td>
<td>100%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>RG</td>
<td>100%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>ethanol</td>
<td>50%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>diesel</td>
<td>75%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>RD</td>
<td>100%</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>biodiesel</td>
<td>100%</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>fuel oil</td>
<td>5%</td>
<td>95%</td>
<td></td>
</tr>
<tr>
<td>asphalt</td>
<td>100%</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>propane</td>
<td>100%</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>transmix</td>
<td>100%</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 – Transport mode shares for all throughput products. Shares are based on SeaPort Sound historical experience except for renewable gasoline. “RG” means renewable gasoline, “RD” means renewable diesel.

The mode shares were applied to throughput product forecasts generated to support Study Report: Inventory of Greenhouse Gas Emissions – SeaPort Sound Terminal Modernization Project.

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The GHG Study Report forecasts throughput volumes from calendar year 2024 through calendar year 2063 inclusive. Product throughput weights were computed for each year and mode, by multiplying the forecast volumes by GREET fuel densities.

The GHG Study Report posits three future scenarios, but SeaPort Sound requires a single-valued result in order to govern the GHG offsets purchase decision. For this reason only the Central Scenario is considered in the remainder of this transport emissions estimate.

**Result**

Multiplying the mode-assigned throughput weight forecasts by the Table 1 emission factors and transport distances, and then summing across all 40 years, produces results as shown in Table 3. The gross increment to product transportation emissions in Pierce County is estimated to be (rounding to three significant digits) **18,500** metric tons of CO₂.

<table>
<thead>
<tr>
<th>mode</th>
<th>transport mm ton-mi</th>
<th>emissions tCO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>truck</td>
<td>168</td>
<td>18,107</td>
</tr>
<tr>
<td>marine</td>
<td>51</td>
<td>363</td>
</tr>
<tr>
<td>ALL MODES</td>
<td>219</td>
<td>18,471</td>
</tr>
</tbody>
</table>

*Table 3 – Throughput product transport activity and emissions. All values are gross, calendar years 2024 through 2063 inclusive. “mm” means million, “tCO₂” means metric tons carbon dioxide.*

GHG offsets are traded in units of metric tons carbon dioxide equivalent (tCO₂e). The quantity of offsets required to cover the entire project will simply equal the 40-year emissions forecast in metric tons CO₂ reported in **Result** above.

Respectfully submitted,

Roel Hammerschlag, principal
Hammerschlag LLC
tel. 360-339-6038
roel@hammerschlag.llc

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3 Hammerschlag LLC document number SP-003(h).

4 See calculations in Hammerschlag LLC document number SP-008(c).
Appendix D
Notices of Construction Summary
## Notices of Construction Summary

<table>
<thead>
<tr>
<th>NOC No.</th>
<th>Issued</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>11917</td>
<td>12/24/2020</td>
<td>Added ability to blend butane into gasoline storage at the facility. No change to to permit limit thresholds, carried forward from NOC 11403: Gasoline facility throughput – 501,875,000 gal/yr</td>
</tr>
<tr>
<td>11265</td>
<td>2/7/2018</td>
<td>Specifies marine throughput limits. All limits based on a consecutive 12-month period: Natural Gasoline – 151,500,000 gal/yr Crude oil marine loading – 613,267,200 gal/yr Gasoline and ethanol marine loading – 107,310,000 gal/yr Isooctane marine loading – 126,000,000 bbl/yr Loading limit rate: All dock products - 7,000 bbl/hr or less</td>
</tr>
<tr>
<td>11069</td>
<td>3/8/2016</td>
<td>Provides the terminal with inert loading of vessels at the dock. Limit on throughput carried forward to NOC 11265</td>
</tr>
<tr>
<td>10697</td>
<td>1/13/2016</td>
<td>Provides the terminal the ability to use a rolling 3-hr averaging period for the truck rack VOC CEMS. Limit throughputs are carried forward in future permits.</td>
</tr>
<tr>
<td>10688</td>
<td>3/10/2014</td>
<td>Allows for the terminal to re-install a floating roof into tank 152 and enables that tank for storage of ethanol.</td>
</tr>
<tr>
<td>10582</td>
<td>7/15/2013</td>
<td>Issued during phase II build out of the Renewable Fuels Project, allowed for construction of tank 212 with a floating roof for storage of gasoline.</td>
</tr>
</tbody>
</table>

### Active Permits

<table>
<thead>
<tr>
<th>NOC No.</th>
<th>Issued</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>11403</td>
<td>7/31/2018</td>
<td>Superseded by NOC 11917. Issued for installation of new asphalt demisters, carries truck rack limits for emissions and physical limitations for facility wide gasoline throughput.</td>
</tr>
<tr>
<td>10965</td>
<td>6/29/2015</td>
<td>Superseded by NOC 11069. Modified the loading procedures for marine vessels requiring the use of the MVCU.</td>
</tr>
<tr>
<td>10554</td>
<td>2/28/2014</td>
<td>Superseded by NOC 10956. Issued for the MVCU and carried original designation for crude four tanks.</td>
</tr>
<tr>
<td>10325</td>
<td>7/17/2012</td>
<td>Canceled/superceded by 10697. Issued for phase I of the Renewable Fuels Project and relating to pipeline connection. Provided for gasoline storage in six tanks.</td>
</tr>
<tr>
<td>10152</td>
<td>3/18/2010</td>
<td>Canceled by NOC 11403. Issued for construction of a tank, required emissions generated through filling of that tank be routed to a demister.</td>
</tr>
<tr>
<td>9758</td>
<td>7/31/2008</td>
<td>Canceled by NOC 10697. Provided for a 3-lane gasoline terminal and a loading limit of 95 million gal per year. Upgrades and improved modeling which followed through for NOC 10325 canceled out this permit.</td>
</tr>
<tr>
<td>5992</td>
<td>6/21/1995</td>
<td>Canceled by NOC 10697. Placed a synthetic minor on the terminal limiting the combustion of fuel oil for heating purposes to 628,000 gal/yr.</td>
</tr>
<tr>
<td>5078</td>
<td>8/3/1993</td>
<td>Issued for the installation of a demister, referenced equipment has been removed from the site with the issuance of NOC 11403.</td>
</tr>
<tr>
<td>4974</td>
<td>12/15/1994</td>
<td>Canceled by NOC 10697. provided for upgrade of two process heaters for the refinery.</td>
</tr>
<tr>
<td>4889</td>
<td>--</td>
<td>Canceled by NOC 10697. No record available, issued in realtion to the refinery.</td>
</tr>
<tr>
<td>3893</td>
<td>5/7/1991</td>
<td>Provided for installation of an oil firing boiler, referenced equipment was removed with the issuance of NOC 10697.</td>
</tr>
<tr>
<td>2447</td>
<td>10/17/1983</td>
<td>Issued with regard to the refinery and various tanks/on-site storage. Unknown if the tanks/on site storage were ultimately constructed</td>
</tr>
<tr>
<td>2434-2447</td>
<td>10/17/1983</td>
<td>Canceled by NOC 10697. Included upgrades and modernization permits for the refinery.</td>
</tr>
</tbody>
</table>

### Canceled/Superceded Permits

<table>
<thead>
<tr>
<th>NOC No.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>10697</td>
<td>6/29/2015</td>
<td>Superseded by NOC 11069. Modified the loading procedures for marine vessels requiring the use of the MVCU.</td>
</tr>
<tr>
<td>10554</td>
<td>2/28/2014</td>
<td>Superseded by NOC 10956. Issued for the MVCU and carried original designation for crude four tanks.</td>
</tr>
<tr>
<td>10325</td>
<td>7/17/2012</td>
<td>Canceled/superceded by 10697. Issued for phase I of the Renewable Fuels Project and relating to pipeline connection. Provided for gasoline storage in six tanks.</td>
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</table>
### Notices of Construction Summary

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<tr>
<th>NOC No.</th>
<th>Issued</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2172</td>
<td>7/17/1980</td>
<td>Issued to retrofit several tanks, likely that work was not completed and construction period lapsed.</td>
</tr>
<tr>
<td>1953</td>
<td>7/12/1979</td>
<td>Equipment is no longer applicable due to NOC 11403. Provided for a mist eliminator to control emissions from truck loading.</td>
</tr>
<tr>
<td>1836</td>
<td>4/20/1979</td>
<td>Issued as part of a North Slope project to reduce emissions by converting tanks to handle distillate.</td>
</tr>
<tr>
<td>1793</td>
<td>11/29/1977</td>
<td>Equipment is longer on-site due to NOC 11403. Installation of demisters at the truck loading rack.</td>
</tr>
</tbody>
</table>

Note:

- unknown date
- bbl/hr = barrels per hour
- bbl/yr = barrels per year
- CEMS = continuous emission monitoring system
- gal/yr = gallons per year
- MVCU = Marine Vapor Construction Unit
- VOC = volatile organic compound
Appendix E
Project Laws and Regulations
# Appendix E

## Project Laws and Regulations

<table>
<thead>
<tr>
<th>Law or Regulation</th>
<th>Description</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maritime Security: Facilities (33 CFR 105)</td>
<td>Requires marine facilities meeting specific requirements to prepare a Facility Security Plan that must be approved by the U.S. Coast Guard.</td>
<td>Public Services and Utilities</td>
</tr>
<tr>
<td>Facilities Transferring Oil or Hazardous Materials in Bulk (33 CFR 154)</td>
<td>Requires facilities transferring oil or other hazardous materials in bulk to submit an operations manual to USCG for approval.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>Oil and Hazardous Material Transfer Operations (33 CFR 156)</td>
<td>Specifies procedures and requirements for transferring oil and other hazardous materials to/from vessels.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>Oil Pollution Prevention (40 CFR 112)</td>
<td>Requires facilities to prepare and implement a spill prevention control and countermeasure plan in accordance with good engineering practices.</td>
<td>Environmental Health and Safety, Earth</td>
</tr>
<tr>
<td>Oil Pollution Act of 1990 (33 USC 40)</td>
<td>Expands the federal government's ability to prevent and respond to oil spills and preserves state authority to establish laws governing oil spill prevention and response.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>Limits on Liability (33 USC 2704)</td>
<td>Establishes limits on liability of a responsible party to incur costs from an incident.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>Clean Air Act of 1970 (42 USC 7407)</td>
<td>Delegates to states primary responsibility for assuring air quality within the geographic area comprising the state by submitting an implementation plan which will specify the manner in which primary and secondary ambient air quality standards will be achieved and maintained within each air quality control region within the state.</td>
<td>Air</td>
</tr>
<tr>
<td>Hazardous Materials Transportation Act (49 USC 51)</td>
<td>Regulates all aspects of hazardous materials packaging, handling, and transportation for vessel, truck, and rail.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
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</tr>
<tr>
<td>Clean Water Act (CWA) Sections 401 and 402 (33 USC 1251 et seq.)</td>
<td>The Proposed Action does not include any in-water work requiring a permit under Section 401 of the CWA. Discharge of stormwater from the Project site requires a permit under Section 402 of the CWA. Stormwater discharges are regulated by EPA through the National Pollutant Discharge Elimination System (NPDES), which is administered in Washington by Ecology. Separate stormwater permits are required for construction and operation. <strong>NPDES Construction Stormwater General Permit.</strong> Construction site operators are required to obtain an NPDES Construction Stormwater General Permit if their activities disturb 1 acre or more and discharge stormwater to a surface water of the state. Construction of the Proposed Action would require coverage under Ecology’s current Construction Stormwater General Permit for work occurring over approximately 1.4 acres. <strong>NPDES Industrial Stormwater Individual Permit (ISIP).</strong> The Project site has been operating under an Ecology-issued ISIP for its stormwater discharges to Hylebos Waterway (NPDES Permit No. WA0003204). The ISIP, which was last updated in 2018, states that stormwater discharges from the site must not cause or contribute to a violation of state surface water, groundwater, or sediment management standards or human health-based criteria in the National Toxics Rule (40 CFR 131.36). In accordance with ISIP condition G.4, SeaPort Sound may be required to inform Ecology of planned changes to on-site facilities under the Proposed Action. In accordance with ISIP condition G.5, modification to stormwater treatment facilities may require submittal of engineering reports, plans, and specification submittals that require Ecology approval.</td>
<td>Water</td>
</tr>
<tr>
<td>Clean Water Act Section 404 (33 USC 1251 et seq.)</td>
<td>Section 404 of the CWA regulates discharge of dredge or fill materials into wetlands and waters of the U.S. The Proposed Action does not include any activities affecting wetlands or waters of the U.S.; however, wetlands and waters of the U.S. (Hylebos Waterway) are located near the Project site.</td>
<td>Plants and Animals</td>
</tr>
<tr>
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<tr>
<td><strong>Safe Drinking Water Act (SDWA) (42 USC 300f et seq.)</strong></td>
<td>The SDWA was established to protect the quality of the nation’s drinking water. It applies to actual and potential sources of drinking water, both surface water and groundwater. EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards. The Washington Department of Health (DOH) regulates Group A public water systems under state law and as delegated by EPA under the SDWA. Group A water systems have 15 or more service connections or serve 25 or more people 60 or more days per year. Tacoma Water supplies water to the study area and is a Group A public water system. State regulations for Group A systems are provided in Chapter 246-290 WAC. The Project site is served by Tacoma Water. The SDWA also requires every state to develop a wellhead protection program. DOH administers the wellhead protection program in Washington. All Group A public water systems must prepare a water system plan that includes a wellhead protection plan. Local wellhead protection programs must delineate wellhead protection zones and determine their susceptibility to pollution. The study area lies outside of any designated wellhead protection zones.</td>
<td>Water</td>
</tr>
<tr>
<td><strong>Endangered Species Act (ESA) (16 USC 1536)</strong></td>
<td>The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. It is administered by USFWS and NOAA Fisheries. USFWS has primary responsibility for terrestrial and freshwater organisms, and NOAA Fisheries addresses marine fish and wildlife such as whales and anadromous fish. Under the ESA, species may be listed as either endangered or threatened. “Endangered” means a species that is in danger of extinction throughout all or a significant portion of its range. “Threatened” means a species that is likely to become endangered within the foreseeable future. The proposed Project would not require permitting under the ESA because the project has no federal nexus, but because ESA-listed species occur near the Project site, it is included for reference.</td>
<td>Plants and Animals</td>
</tr>
<tr>
<td><strong>Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801)</strong></td>
<td>The objectives of this act are to prevent overfishing, rebuild overfished stocks, increase long-term economic and social benefits, and ensure a safe and sustainable supply of seafood. The act governs Essential Fish Habitat, which is defined to include “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The proposed Project would not require permitting under the act because the project has no in-water work, but because fish species and habitats covered by the act occur near the Project site, it is included for reference.</td>
<td>Plants and Animals</td>
</tr>
<tr>
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</table>
| **Marine Mammal Protection Act**  
(16 USC 1361 et seq.) | The act prohibits, with certain exceptions, the “take” (including harassment, hunting, capturing, collecting, or killing) of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. The Project does not include any in-water work, but the site is connected by Hylebos Waterway to Commencement Bay, which is used by marine mammals. | Plants and Animals |
| **Bald and Golden Eagle Protection Act**  
(16 USC 668-668c) | This act prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald or golden eagles, including their parts, nests, or eggs. The act provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or in any manner, any bald eagle... [or any golden eagle], alive or dead, or any part, nest, or egg thereof.” The act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” There are no documented bald or golden eagle nests on or within 0.25 mile of the Project site, but bald eagles are present along Commencement Bay and likely use the Project area as part of larger foraging areas. | Plants and Animals |
| **Migratory Bird Treaty Act**  
(16 USC 703–712) | The Migratory Bird Treaty Act prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by USFWS. The Project site itself does not provide migratory bird habitat, but wetlands, shorelines, and forested areas in the vicinity may be used by migratory birds. | Plants and Animals |
| **State** | | |
| **Archaeological Sites and Resources (RCW 27.53)** | Prohibits unpermitted excavation of an archaeological site. | Archaeological, Historical, and Cultural Resources |
| **Project Review Under the Growth Management Act**  
(RCW 43.21.240) | When requirements of this section are satisfied, a county, city, or town reviewing a project action shall determine that the requirements for environmental analysis, protection, and mitigation measures in the county, city, or town’s development regulations and comprehensive plans provide adequate analysis of and mitigation for the specific adverse environmental impacts of the project action to which the requirements apply. | Transportation |
| **Transportation Regulations**  
(RCW 81) | Regulates transportation in Washington State and administers railroad safety provisions allowed under 49 USC 20106 and state law (RCW 81.04.540), rules for the equipment used by common carriers (RCW 81.44), and railroad crossings (RCW 81.53). | Environmental Health and Safety |
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<td>Pilotage Act (RCW 88.16)</td>
<td>Creates a state board of pilotage commissioners that regulates pilot licenses, training, and rest periods. Requires large oil tankers on Puget Sound to employ licensed pilots and have a tug escort to reduce the risk of oil spills.</td>
<td>Environmental Health and Safety, Water, Plants and Animals</td>
</tr>
<tr>
<td>Transport of Petroleum Products – Financial Responsibility (RCW 88.40)</td>
<td>Defines and prescribes financial responsibility requirements for vessels that transport petroleum products across state waters and facilities that store, handle, or transfer oil or hazardous substances near navigable waters of the state.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>Vessel Oil Spill Prevention and Response (RCW 88.46)</td>
<td>Establishes rules and regulations for tank vessels that carry oil and enter navigable waters of the state.</td>
<td>Environmental Health and Safety, Water, Plants and Animals</td>
</tr>
<tr>
<td>Oil and Hazardous Substance Spill Prevention and Response (Oil Spill Act) (RCW 90.56)</td>
<td>Establishes programs to reduce the risk and develop an approach to respond to oil and hazardous substance spills; provides a simplified process to calculate damages from an oil spill; holds responsible parties liable for damages resulting from injuries to public resources.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>Hazardous Chemical Emergency Response Planning and Community Right-to-Know Act of 1986 (WAC 118-40)</td>
<td>Establishes requirements for federal, state, and local governments, and industry to improve hazardous chemical preparedness and response through coordination and planning; provisions include public notification about chemicals used at facilities.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>Facility Oil Handling Standards (WAC 173-180)</td>
<td>Establishes minimum standards for safe oil transfer operations to meet a zero spill goal established by the legislature.</td>
<td>Environmental Health and Safety, Earth</td>
</tr>
<tr>
<td>Oil Spill Contingency Plan Requirements (WAC 173-182)</td>
<td>Requires larger oil handling facilities and commercial vessels to have state-approved oil spill contingency plans that describe their ability to respond to oil spills.</td>
<td>Environmental Health and Safety, Transportation</td>
</tr>
<tr>
<td>Oil Spill Natural Resources Damage Assessment (WAC 173-183)</td>
<td>Establishes procedures for convening a resource damage assessment committee, pre-assessment screening of damages, and selecting the damage assessment method.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>Vessel Oil Transfer Advance Notice and Containment Requirements (WAC 173-184)</td>
<td>Requires facility operators who transfer oil to provide Ecology with a 24-hour advance notice of transfer.</td>
<td>Environmental Health and Safety</td>
</tr>
<tr>
<td>Growth Management Act (RCW 36.70A)</td>
<td>Requires many cities and counties in Washington to adopt comprehensive plans which articulate goals, objectives, policies, actions, and standards to manage and plan for population growth.</td>
<td>Land Use</td>
</tr>
<tr>
<td>Shoreline Management Act (RCW 90.58)</td>
<td>Establishes regulations for managing the use, environmental protection, and public access of the state’s shorelines.</td>
<td>Land Use</td>
</tr>
<tr>
<td>State and Protected Species (Chapter 220-610 WAC)</td>
<td>Designates the list of state endangered species.</td>
<td>Plants and Animals</td>
</tr>
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</tr>
<tr>
<td>Bald Eagle Protection Rules (WAC 220-610-100)</td>
<td>The purpose of these rules is to protect the bald eagle habitat and populations so that the species is not classified as threatened, endangered, or sensitive in Washington State. The rules promote cooperative efforts with landowners to manage for eagle habitat needs. There are no documented bald or golden eagle nests on or within 1 mile of the Project site, but bald eagles likely use the Project area as part of larger foraging areas.</td>
<td>Plants and Animals</td>
</tr>
<tr>
<td>Priority Habitats and Species (PHS) Program</td>
<td>The WDFW PHS list includes species and habitats for which special conservation measures should be taken. Priority habitats are habitat types or elements with unique or significant value to a large number of species. A priority habitat may consist of a unique vegetation type, dominant plant species, or a specific habitat feature. Priority species include State Endangered, Threatened, Sensitive, and Candidate species; vulnerable animal groups (e.g., seabird concentrations, heron rookeries, bat colonies); and vulnerable species of recreational, commercial, or tribal importance. Species are often considered a priority only within a nesting, roosting, foraging, or breeding area, regular gathering area, or migration corridor. (WDFW 2021a). The PHS list does not carry regulatory authority but is used by local governments in creating and administering critical areas and shoreline regulations, and in assessing potential impacts of projects. Some PHS habitats are located in the Project area. (WDFW 2021b).</td>
<td>Plants and Animals</td>
</tr>
<tr>
<td>Washington Natural Heritage Program (WNHP)</td>
<td>Established in 1977, WNHP catalogs the plants, animals and ecosystems of the state and prioritizes conservation needs. This information helps to guide state conservation funding and the designation of state natural areas. WNHP maintains the Natural Heritage Information System, a database and mapping of rare species and rare/high-quality ecological communities. The program does not have regulatory authority, but this information is used by governments and others to support code development and guide conservation activities (WNHP 2021).</td>
<td>Plants and Animals</td>
</tr>
<tr>
<td>Hydraulic Code Rules (Chapter 220-660 WAC)</td>
<td>The rules were established to protect fish life. They require project proponents to obtain a Hydraulic Project Approval permit from WDFW for activities that will use, divert, obstruct, or change the natural flow or bed of any of the salt or fresh waters of the state. The Project does not propose any in-water work.</td>
<td>Plants and Animals</td>
</tr>
<tr>
<td>Washington State Constitution, Article XI, County, City, and Township Organization</td>
<td>Section 11, Police and Sanitary Regulations, states that any county, city, town or township may make and enforce within its limits all such local police, sanitary, and other regulations as are not in conflict with general laws.</td>
<td>Public Services and Utilities</td>
</tr>
<tr>
<td>Public Health and Safety (Title 70 RCW)</td>
<td>Establishes state standards for healthcare facilities, health departments, hospital districts, jails, and others.</td>
<td>Public Services and Utilities</td>
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</tr>
<tr>
<td>Public Utilities (Title 80 RCW 80)</td>
<td>Creates the Washington Utilities and Transportation Commission, which regulates the rates, services, facilities, and practices of businesses that supply utility services to the public.</td>
<td>Public Services and Utilities</td>
</tr>
<tr>
<td>Water Quality Standards for Surface Waters of the State of Washington (WAC Chapter 173-201A)</td>
<td>Section 401 of the CWA requires certification by Ecology that a permitted activity meets state water quality standards that have been established consistent with public health and public enjoyment of the waters and the propagation and protection of fish, shellfish, and wildlife. The standards specify “designated uses” for waterbodies in Washington, including recreation, aquatic life, drinking water supply, and other miscellaneous uses. Criteria are set that limit chemical and bacterial pollutant levels in both marine and freshwaters and specify allowable physical parameters, such as oxygen, turbidity, and temperature, that affect aquatic life. Compliance with state surface water standards is required under SeaPort Sound’s ISIP.</td>
<td>Water</td>
</tr>
<tr>
<td>Regulation of Public Groundwaters (RCW 90.44)</td>
<td>The state groundwater quality standards are intended to prevent degradation of groundwater in the state and to protect beneficial uses such as drinking water. They establish numerical limits for the allowable levels of contaminants in state groundwaters. The standards apply to any activity that has potential to contaminate groundwater quality. If Ecology determines there is a potential for groundwater pollution, it can require groundwater monitoring or other measures. Compliance with state groundwater standards is required under SeaPort Sound’s ISIP. Ecology has the authority to designate special groundwater management areas where the aquifer is a primary source of public water supply, is being overused, is at risk of contamination, or has been designated as a sole-source aquifer by EPA. The study area lies outside of any special groundwater management areas.</td>
<td>Water</td>
</tr>
<tr>
<td>Water Quality Standards for Groundwaters of the State of Washington (WAC Chapter 173-200)</td>
<td>The state sediment management standards were established to reduce and ultimately eliminate adverse effects on biological resources and significant human health threats from surface sediment contamination. Criteria are set that limit chemical pollutant levels in sediments in both marine and freshwaters. Ecology maintains a list of contaminated sediment sites based on their relative risk to human health and the environment and determines where cleanup is needed. Numerous sediment cleanup projects have been undertaken in Hylebos Waterway. Compliance with state sediment management standards is required under SeaPort Sound’s ISIP.</td>
<td>Water</td>
</tr>
<tr>
<td>Law or Regulation</td>
<td>Description</td>
<td>Applicability</td>
</tr>
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<td>-------------------------------------------------------</td>
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<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Local</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy Haul Industrial Corridor (TMC 11.55)</td>
<td>Authorizes issuance of special permits for movement and operation of vehicles in excess of the legal weight limits within the heavy haul industrial corridor in such circumstances wherein the load is a sealed ocean-going container and an applicant can show good cause for such movements.</td>
<td>Transportation</td>
</tr>
<tr>
<td>City of Tacoma Zoning (TMC 13.06)</td>
<td>Provides descriptions of the zoning regulations and criteria for the City.</td>
<td>Land Use</td>
</tr>
<tr>
<td>Archaeological, Cultural, and Historic Resources (TMC 13.12.570)</td>
<td>Requires documentation if recorded cultural resources are present within 500 feet of a City-permitted project, or if structures older than 50 years will be demolished.</td>
<td>Archaeological, Historical, and Cultural Resources</td>
</tr>
<tr>
<td>City of Tacoma Comprehensive Plan</td>
<td>The City's official statement concerning future growth and development, including goals, policies and strategies for the health, welfare, safety and quality of life of Tacoma.</td>
<td>Land Use</td>
</tr>
<tr>
<td>City of Tacoma Shoreline Master Program (SMP)</td>
<td>Carries out responsibilities imposed by the Shoreline Management Act. No in-water work is proposed as part of the Proposed Action. However, the Proposed Action would include work within upland shoreline areas regulated under the SMP. Proposed work would occur within the Hylebos Waterway 200-foot shoreland area designated as S-10 Port Industrial, High-Intensity. A small portion of the work would also occur within the 50-foot marine buffer for Hylebos Waterway, including the replacement of flow and pH meters, trenching in the stormwater pipeline relocation area, and the installation of new manholes for the stormwater line alignment.</td>
<td>Land Use, Water, Plants and Animals</td>
</tr>
<tr>
<td>Law or Regulation</td>
<td>Description</td>
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</tr>
<tr>
<td>-------------------</td>
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</tr>
</tbody>
</table>
| Critical Areas Preservation (TMC 13.11) | The City’s critical areas code regulates the following types of critical areas:  
**Wetlands (TMC 13.11.300).** The code classifies wetlands and provides buffers, development standards, and mitigation requirements for wetlands or buffer impacts.  
**Streams and riparian habitats (TMC 13.11.400).** The code classifies stream types and provides buffers, development standards, and mitigation requirements for stream or buffer impacts.  
**Fish and Wildlife Habitat Conservation Areas (TMC 13.11.500).** Defined to include areas identified as being of critical importance to the maintenance of fish and wildlife species. Relevant to this Project, they include lands and waters containing State Priority Habitats and Species; waters of the state; and areas with which state- or federally designated endangered, threatened, and sensitive species have a primary association.  
**Flood hazard areas (TMC 13.11.600).** Flood hazard areas are classified according to flood insurance rate maps (TMC 13.11.610). Flood hazard area development standards are provided in TMC 13.11.620. The study area is located outside of any mapped flood hazard areas.  
**Aquifer recharge areas (TMC 13.11.800).** These areas are classified based on the susceptibility of the aquifer to degradation and contamination (TMC 13.11.810). Standards for development in aquifer recharge areas (TMC 13.11.820) are in accordance with TMC 13.09 for the South Tacoma Groundwater Protection District. The study area is located outside of the South Tacoma Groundwater Protection District.  
**Geologically hazardous areas (TMC 13.11.700):** This section contains the general provisions, including designation, applicability, and classification of geologically hazardous areas. | Earth, Water, Plants and Animals |
<p>| City of Tacoma Charter, Article IV, Public Utilities | Establishes the City’s powers, as granted by state law, to create and operate public utilities for supplying water, light, heat, power, and transportation, as well as sewage and refuse collection, treatment, and disposal services. | Public Services and Utilities |
| TMC Title 2, Building and Development Code | Sets minimum standards for construction, light, ventilation, heating, sanitation, security, fire, and life safety in structures. Adopts the International Building, Residential, and Plumbing Codes. | Public Services and Utilities, Earth |
| TMC Title 3, Fire and Emergency Medical Services | Provides the City’s Fire Prevention Code, which adopts the International Fire Code. Establishes responsibilities for emergency medical transportation in the City. | Public Services and Utilities |
| TMC Title 7, Police | Defines the authority of the Chief of Police, designates the location of the City jail. | Public Services and Utilities |</p>
<table>
<thead>
<tr>
<th>Law or Regulation</th>
<th>Description</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMC Title 12, Utilities</td>
<td>Establishes the City’s electrical code and adopts the National Electric Code and provisions of RCW 19.28 and WAC 296.46B related to electrical installations. Regulates use of the City’s sanitary sewer and sets forth requirements for pretreatment of industrial waste. Regulates stormwater, including all direct and indirect discharges to receiving waters and the municipal stormwater system. Regulates the collection, management, and proper handling of all solid waste, including recyclable materials, originating from residential, commercial, agricultural, and industrial operations and other sources within the City; defines prohibited materials (toxic, extremely hazardous, dangerous and hazardous, or liquid waste), and establishes regulation of water utility services by the municipal water supply system of the City.</td>
<td>Public Services and Utilities</td>
</tr>
<tr>
<td>Industrial Wastewater Pretreatment Program (TMC Subchapter 12.08C)</td>
<td>The City prohibits industrial users from discharging certain pollutants to the City’s sewer system. This includes substances that create fire or explosive hazards, wastewater with very high or low pH, viscous or solid substances that can cause blockage, high-temperature wastewater, substances that can cause toxic fumes, large volumes of noncontact cooling water, pesticides, sludge, and other substances that can cause a violation of the City’s NPDES municipal discharge permit for its wastewater treatment plants. Industrial users discharging wastewater to the municipal sewer system are required to provide wastewater treatment and obtain an industrial wastewater permit from the City. SeaPort Sound has an Industrial Wastewater Discharge Permit (IWDP; Permit No. TAC-035-2021) for its on-site wastewater treatment system, which discharges to the City’s sewer system. The IWDP was issued in 2021 and expires in 2026. The permit may need to be updated for the new on-site wastewater treatment system under the Proposed Action. In accordance with IWDP condition IV.G and standard condition J, changes to the currently authorized pretreatment system or volume of discharge, respectively, may require notification to the City.</td>
<td>Water</td>
</tr>
<tr>
<td>Stormwater Management (TMC Subchapter 12.08D)</td>
<td>The City has a municipal NPDES permit that includes requirements for developing, operating, and managing stormwater infrastructure.</td>
<td>Water</td>
</tr>
</tbody>
</table>
Appendix F
Species Included on the Priority Habitats and Species List for Pierce County
<table>
<thead>
<tr>
<th>Species</th>
<th>State/Federal Listing Status</th>
<th>Criteria for Inclusion on PHS List</th>
<th>Areas Considered Priorities in PHS List</th>
<th>Potential Habitat Use in Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Loon (Gavia immer)</td>
<td>SS/None</td>
<td>VA</td>
<td>Breeding sites, migratory stopovers, and regular concentrations</td>
<td>Foraging in Hylebos Waterway and Commencement Bay.</td>
</tr>
<tr>
<td>Marbled Murrelet (Brachyramphus marmoratus)</td>
<td>SE/FT</td>
<td>VA</td>
<td>Any occurrence in suitable habitat</td>
<td>Unlikely; nearest mapped nesting areas are more than 20 miles away on public lands containing old-growth forest; densities of the species in south Puget Sound are very low (Lance and Pearson 2021).</td>
</tr>
<tr>
<td>Western Grebe (Aechmophorus occidentalis)</td>
<td>SC/None</td>
<td>VA</td>
<td>Breeding areas, migratory stopovers, regular concentrations, and regular occurrences in winter</td>
<td>Observed in Commencement Bay during winter and may also use Hylebos Waterway for foraging on fish (EEI 2015). Breeds during the summer on lakes in eastern Washington.</td>
</tr>
<tr>
<td>Great Blue Heron (Ardea herodias)</td>
<td>None/None</td>
<td>VA</td>
<td>Breeding areas</td>
<td>Foraging in wetlands near Hylebos Waterway and Commencement Bay; known to perch on structures near Hylebos Waterway and move to shoreline and mudflats during low tide (EEI 2015). Rookery recorded 0.9 mile from project site in forested area by WDFW; last recorded activity was in 2000.</td>
</tr>
<tr>
<td>Harlequin Duck (Histrionicus histrionicus)</td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Breeding areas and regular concentrations in salt water</td>
<td>Foraging in Hylebos Waterway and Commencement Bay</td>
</tr>
<tr>
<td>Western High Arctic Brant (Branta bernicla)</td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Regular concentrations in foraging and resting areas and migratory stopovers</td>
<td>Unlikely; species prefers eelgrass, and none is mapped within 1 mile of the Project site.</td>
</tr>
<tr>
<td>Golden Eagle (Aquila chrysaetos)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Breeding and foraging areas</td>
<td>No</td>
</tr>
<tr>
<td>Northern Goshawk (Accipiter gentilis)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Breeding areas, including alternate nest sites and post-fledging foraging areas</td>
<td>No</td>
</tr>
<tr>
<td>Mountain Quail (Oreortyx pictus)</td>
<td>None/None</td>
<td>RCT</td>
<td>Any occurrence</td>
<td>No</td>
</tr>
<tr>
<td>Sooty Grouse (Dendragapus fuliginosus)</td>
<td>None/None</td>
<td>RCT</td>
<td>Breeding areas and regular concentrations</td>
<td>No</td>
</tr>
<tr>
<td>Species</td>
<td>State/Federal Listing Status</td>
<td>Criteria for Inclusion on PHS List</td>
<td>Areas Considered Priorities in PHS List</td>
<td>Potential Habitat Use in Study Area</td>
</tr>
<tr>
<td>---------------------------------------------</td>
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</tr>
<tr>
<td>Band-tailed Pigeon (Columba fasciata)</td>
<td>None/None</td>
<td>RCT</td>
<td>Regular concentrations and occupied mineral sites</td>
<td>Possible in forested areas north of Marine View Drive.</td>
</tr>
<tr>
<td>Yellow-billed Cuckoo (Coccyzus americanus)</td>
<td>SE/FT</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat (densely vegetated riparian areas); believed extirpated in Washington.</td>
</tr>
<tr>
<td>Northern Spotted Owl (Strix occidentalis)</td>
<td>SE/FT</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat (old-growth forest).</td>
</tr>
<tr>
<td>Vaux’s Swift (Chaetura vauxi)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Breeding areas and communal roosts</td>
<td>No</td>
</tr>
<tr>
<td>Black-backed Woodpecker (Picoides arcticus)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Breeding areas and regular occurrences</td>
<td>No</td>
</tr>
<tr>
<td>Pileated Woodpecker (Dryocopus pileatus)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Breeding areas</td>
<td>Possible in forested areas north of Marine View Drive.</td>
</tr>
<tr>
<td>Oregon Vesper Sparrow (Pooecetes gramineus affinis)</td>
<td>SE/FP</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat (grassland, shrub-steppe, agricultural areas).</td>
</tr>
<tr>
<td>Slender-billed White-breasted Nuthatch (Sitta carolinensis aculeata)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No</td>
</tr>
<tr>
<td>Streaked Horned Lark (Eremophila alpestris strigata)</td>
<td>SE/FT</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat (grasslands).</td>
</tr>
<tr>
<td>Western Washington breeding concentrations of Cormorants (Phalacrococaridae), Storm-petrels (Hydrobatidae), Terns (Laridae), and Alcids (Alcidae)</td>
<td>None/None</td>
<td>VA</td>
<td>Breeding areas</td>
<td>Pigeon guillemot breeding site mapped by WDFW north of Marine View Drive. Double-crested Cormorants (Phalacrococorax auritus) are known to use Hylebos Waterway and nearby structures for roosting (EEI 2015).</td>
</tr>
<tr>
<td>Cavity-nesting Ducks: Wood Duck (Aix sponsa)</td>
<td>None/None</td>
<td>RCT</td>
<td>Breeding areas</td>
<td>Bufflehead and Barrow’s Goldeneye are known to use Hylebos Waterway (EEI 2015).</td>
</tr>
<tr>
<td>Barrow’s Goldeneye (Bucephala islandica)</td>
<td></td>
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<tr>
<td>Common Goldeneye (B. clangula)</td>
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<tr>
<td>Bufflehead (B. albeola)</td>
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</tr>
<tr>
<td>Hooded Merganser (Lophodytes cucullatus)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Species</td>
<td>State/Federal Listing Status(^1)</td>
<td>Criteria for Inclusion on PHS List(^2)</td>
<td>Areas Considered Priorities in PHS List</td>
<td>Potential Habitat Use in Study Area</td>
</tr>
<tr>
<td>---------</td>
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<td>---------------------------------</td>
</tr>
<tr>
<td>Waterfowl concentrations: (Anatidae excluding Canada Geese in Urban Areas)</td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Significant breeding areas and regular concentrations in winter</td>
<td>Cackling geese are known to use Hylebos Waterway and nearby structures for roosting (EEI 2015).</td>
</tr>
<tr>
<td>Western Washington nonbreeding concentrations: Barrow's Goldeneye Common Goldeneye Bufflehead</td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Regular concentrations</td>
<td>Bufflehead and goldeneye are known to use Hylebos Waterway (EEI 2015).</td>
</tr>
<tr>
<td>Western Washington nonbreeding concentrations: Charadriidae, Scolopacidae, and Phalaropodidae</td>
<td>None/None</td>
<td>VA</td>
<td>Regular concentrations</td>
<td>Foraging may occur in wetlands and mudflats along Hylebos Waterway and Commencement Bay during low tide.</td>
</tr>
</tbody>
</table>

Notes:
\(^1\) Listing status abbreviations:
FP: Petitioned for federal listing
FT: Federal Threatened
SC: State Candidate
SE: State Endangered
SS: State Sensitive

\(^2\) Criteria for PHS listing abbreviations:
RCT: Species of Recreational, Commercial, and/or Tribal Importance.
VA: Vulnerable aggregations

Sources (unless otherwise noted in table): WDFW 2021a, 2021b; USFWS 2021b; NOAA Fisheries 2021
<table>
<thead>
<tr>
<th>Species</th>
<th>State/Federal Listing Status¹</th>
<th>Criteria for Inclusion on PHS List²</th>
<th>Areas Considered Priorities in PHS List</th>
<th>Potential Habitat Use in Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keen’s myotis (Myotis keenii)</td>
<td>SC/None</td>
<td>VA</td>
<td>Any occurrence</td>
<td>Potentially use tree cavities in forested area north of Marine View Drive</td>
</tr>
<tr>
<td>Townsend’s big-eared bat (Corynorhinus townsendii)</td>
<td>SC/None</td>
<td>VA</td>
<td>Any occurrence</td>
<td>Potentially use tree cavities in forested area north of Marine View Drive</td>
</tr>
<tr>
<td>Western gray squirrel (Sciurus griseus)</td>
<td>ST/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (Garry oak woodlands)</td>
</tr>
<tr>
<td>Mazama (Western) pocket gopher (Thomomys mazama)</td>
<td>ST/FT</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (prairie soil types)</td>
</tr>
<tr>
<td>Cascade red fox (Vulpes vulpes cascadensis)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (alpine and subalpine areas)</td>
</tr>
<tr>
<td>Fisher (Pekania pennanti)</td>
<td>SE/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (undisturbed forest)</td>
</tr>
<tr>
<td>Pacific marten (Martes caurina)</td>
<td>None/None</td>
<td>RCT</td>
<td>Regular occurrences</td>
<td>No suitable habitat present (forested mountain areas)</td>
</tr>
<tr>
<td>Wolverine (Gulo gulo)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (alpine and subalpine forest)</td>
</tr>
<tr>
<td>Columbian black-tailed deer (Odocoileus hemionus columbianus)</td>
<td>None/None</td>
<td>RCT</td>
<td>Regular concentrations and migration corridors</td>
<td>Potential foraging, movement, breeding, and refuge area in forest north of Marine View Drive</td>
</tr>
<tr>
<td>Elk (Cervus elaphus)</td>
<td>None/None</td>
<td>RCT</td>
<td>Calving areas, migration corridors, and regular concentrations in winter and foraging areas along coastal waters</td>
<td>No suitable habitat present (grasslands, meadows, or clearcuts, interspersed with closed-canopy forests)</td>
</tr>
<tr>
<td>Mountain goat (Oreamnos americanus)</td>
<td>None/None</td>
<td>RCT</td>
<td>Breeding areas and regular concentrations</td>
<td>No suitable habitat present (alpine and subalpine areas)</td>
</tr>
<tr>
<td>Species</td>
<td>State/Federal Listing Status&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Criteria for Inclusion on PHS List&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Areas Considered Priorities in PHS List</td>
<td>Potential Habitat Use in Study Area</td>
</tr>
<tr>
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</tr>
<tr>
<td>Roosting concentrations of Big brown bat (<em>Eptesicus fuscus</em>), Myotis bats (<em>Myotis</em> spp.), and pallid bat (<em>Antrozous pallidus</em>)</td>
<td>None/None</td>
<td>VA</td>
<td>Regular concentrations in naturally occurring breeding areas and other communal roosts</td>
<td>Potentially use tree cavities in forested area north of Marine View Drive</td>
</tr>
</tbody>
</table>

Notes:

<sup>1</sup> Listing status abbreviations:
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<sup>2</sup> Criteria for PHS listing abbreviations:
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Sources (unless otherwise noted in table): WDFW 2021a, 2021b; USFWS 2021b; NOAA Fisheries 2021
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Amphibians</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cascade torrent salamander (<em>Rhyacotriton cascadae</em>)</td>
<td>SC/Petitioned for federal listing</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (areas near freshwater mountain streams)</td>
</tr>
<tr>
<td>Larch Mountain salamander (<em>Plethodon larselli</em>)</td>
<td>SS/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (steep rocky slopes, talus)</td>
</tr>
<tr>
<td>Van Dyke’s salamander (<em>Plethodon vandykei</em>)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (mountain forests and streams)</td>
</tr>
<tr>
<td>Oregon spotted frog (<em>Rana pretiosa</em>)</td>
<td>SE/FT</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (perennial waterbodies with zones of shallow water and abundant emergent or floating vegetation); USFWS states the species is not known to currently occur in Pierce County (USFWS 2021)</td>
</tr>
<tr>
<td>Western toad (<em>Anaxyrus boreas</em>)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>Could potentially use forests north of Marine View Drive for dispersal or overwintering</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western pond turtle (<em>Actinemys marmorata</em>)</td>
<td>SE/ Petitioned for federal listing</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (ponds or lakes with grasslands or open woodlands nearby); largely extirpated from Puget Sound lowlands (WDFW 2021)</td>
</tr>
<tr>
<td><strong>Insects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pacific clubtail (<em>Gomphus kurilis</em>)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>Uses ponds, lakes, slow streams; unlikely to be present, only two known populations in Washington (Xerces Society 2021)</td>
</tr>
<tr>
<td>Johnson’s hairstreak (<em>Callophrys johnsoni</em>)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (prairies)</td>
</tr>
<tr>
<td>Mardon skipper (<em>Polites mardon</em>)</td>
<td>SE/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (prairies)</td>
</tr>
<tr>
<td>Species</td>
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</tr>
<tr>
<td>Puget blue (Icaricia icarioides blackmorei)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (prairies)</td>
</tr>
<tr>
<td>Taylor’s checkerspot (Euphydryas editha taylori)</td>
<td>SE/FE</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (prairies)</td>
</tr>
<tr>
<td>Valley silverspot (Speyeria zerene bremnerii)</td>
<td>SC/None</td>
<td>State listing</td>
<td>Any occurrence</td>
<td>No suitable habitat present (prairies)</td>
</tr>
</tbody>
</table>

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<th>Areas Considered Priorities in PHS List</th>
<th>Potential Habitat Use in Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forage Fish</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pacific herring <em>(Clupea pallasi)</em></td>
<td>SC/None</td>
<td>RCT, VA</td>
<td>Regular concentrations and breeding areas</td>
<td>No spawning areas mapped in study area; pre-spawner herring holding areas present in Commencement Bay off of Maury Island (WDFW 2021c).</td>
</tr>
<tr>
<td>Longfin smelt <em>(Spirinchus thaleichthys)</em></td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Regular concentrations and breeding areas</td>
<td>Unlikely to occur in study area; rarely found in central or southern Puget Sound (Penttila 2007).</td>
</tr>
<tr>
<td>Surf smelt <em>(Hypomesus pretiosus)</em></td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Regular concentrations and breeding areas</td>
<td>No spawning areas mapped in study area. Nearest mapped spawning sites are at Brown’s Point and near mouth of Sitcum Waterway and Puyallup River (WDFW 2021c).</td>
</tr>
<tr>
<td>Pacific sand lance <em>(Ammodytes hexapterus)</em></td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Regular concentrations and breeding areas</td>
<td>No sand lance spawning areas mapped in study area. The nearest mapped spawning sites are near the mouth of Puyallup river and along Commencement Bay near Ruston and Brown’s Point (WDFW 2021c).</td>
</tr>
<tr>
<td>Species</td>
<td>State/Federal Listing Status¹</td>
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</tr>
<tr>
<td><strong>Rockfish</strong></td>
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<tr>
<td>Black rockfish (Sebastes melanops)</td>
<td>SC/Federal listings for Puget Sound Georgia Basin DPS of the following: Bocaccio rockfish (FE) Canary rockfish (FT) Yelloweye rockfish (FT)</td>
<td>RCT, VA</td>
<td>Regular concentrations</td>
<td>Commencement Bay, potentially Hylebos Waterway</td>
</tr>
<tr>
<td>Bocaccio rockfish (S. paucispinis)</td>
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<tr>
<td>Brown rockfish (S. auriculatus)</td>
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<tr>
<td>Canary rockfish (S. pinniger)</td>
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<tr>
<td>Copper rockfish (S. caurinus)</td>
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<tr>
<td>Greenstriped rockfish (S. elongatus)</td>
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<tr>
<td>Quillback rockfish (S. maliger)</td>
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<tr>
<td>Redstripe rockfish (S. proriger)</td>
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<tr>
<td>Yelloweye rockfish (S. ruberrimus)</td>
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<tr>
<td>Yellowtail rockfish (S. flavidus)</td>
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</tr>
<tr>
<td><strong>Bottomfish</strong></td>
<td></td>
<td>RCT</td>
<td>Breeding areas</td>
<td>Commencement Bay, potentially Hylebos Waterway</td>
</tr>
<tr>
<td>English sole (Pleuronectes vetulus)</td>
<td>None/None</td>
<td>RCT</td>
<td>Breeding areas</td>
<td>Commencement Bay, potentially Hylebos Waterway</td>
</tr>
<tr>
<td>Rock sole (P. bilineatus)</td>
<td>None/None</td>
<td>RCT</td>
<td>Regular concentrations and breeding areas</td>
<td>Commencement Bay, potentially Hylebos Waterway</td>
</tr>
<tr>
<td><strong>Other Marine Fish</strong></td>
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</tr>
<tr>
<td>Pacific cod (Gadus macrocephalus)</td>
<td>SC/None</td>
<td>RCT, VA</td>
<td>Regular concentrations and breeding areas</td>
<td>Commencement Bay, potentially Hylebos Waterway</td>
</tr>
<tr>
<td>Pacific hake (Merluccius productus)</td>
<td>SC/None</td>
<td>RCT, VA</td>
<td>Regular concentrations and breeding areas</td>
<td>Commencement Bay, potentially Hylebos Waterway</td>
</tr>
<tr>
<td>Walleye pollock (Gadus chalcogrammus)</td>
<td>SC/None</td>
<td>RCT, VA</td>
<td>Regular concentrations and breeding areas</td>
<td>Commencement Bay, potentially Hylebos Waterway</td>
</tr>
<tr>
<td>Lingcod (Ophiodon elongatus)</td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Any occurrence</td>
<td>Commencement Bay, potentially Hylebos Waterway</td>
</tr>
</tbody>
</table>
Notes:
1 Listing status abbreviations:
   FP: Petitioned for federal listing
   FT: Federal Threatened
   SC: State Candidate
   SE: State Endangered
   SS: State Sensitive
2 Criteria for PHS listing abbreviations:
   RCT: Species of Recreational, Commercial, and/or Tribal Importance.
   VA: Vulnerable aggregations
Sources (unless otherwise noted in table): WDFW 2021a, 2021b; USFWS 2021b; NOAA Fisheries 2021
### Table F-5
Anadromous and Freshwater Fish Species Included on the Priority Habitats and Species List for Pierce County

<table>
<thead>
<tr>
<th>Species</th>
<th>State/Federal Listing Status¹</th>
<th>Criteria for Inclusion on PHS List²</th>
<th>Areas Considered Priorities in PHS List</th>
<th>Potential Habitat Use in Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific lamprey (<em>Lampetra tridentata</em>)</td>
<td>None/None</td>
<td>RCT</td>
<td>Any occurrence</td>
<td>Potentially present in Commencement Bay and Hylebos Waterway</td>
</tr>
<tr>
<td>River lamprey (<em>L. ayresi</em>)</td>
<td>SC/None</td>
<td>RCT, VA</td>
<td>Any occurrence</td>
<td>Potentially present in Commencement Bay and Hylebos Waterway</td>
</tr>
<tr>
<td>White sturgeon (<em>Acipenser transmontanus</em>)</td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Any occurrence</td>
<td>Potentially present in Commencement Bay and Hylebos Waterway</td>
</tr>
<tr>
<td>Bull trout-Dolly Varden trout (<em>Salvelinus confluentus/ S. malma</em>)</td>
<td>SC/FT (Bull trout)</td>
<td>RCT, VA</td>
<td>Any occurrence</td>
<td>Potentially present in Commencement Bay and Hylebos Waterway</td>
</tr>
<tr>
<td>Chinook salmon (<em>Oncorhynchus tshawytscha</em>)</td>
<td>SC/FT (Puget Sound ESU)</td>
<td>RCT, VA</td>
<td>Any occurrence</td>
<td>Fall Chinook salmon have been documented in Hylebos Creek (WDFW 2021d) and are likely to be present in Hylebos Waterway at some times of year</td>
</tr>
<tr>
<td>Chum salmon (<em>O. keta</em>)</td>
<td>SC/None</td>
<td>RCT, VA</td>
<td>Any occurrence</td>
<td>Fall chum salmon have been documented in Hylebos Creek (WDFW 2021d) and are likely to be present in Hylebos Waterway at some times of year</td>
</tr>
<tr>
<td>Coastal resident-searun cutthroat trout (<em>O. clarki clarki</em>)</td>
<td>None/None</td>
<td>RCT</td>
<td>Any occurrence</td>
<td>Potentially present in Commencement Bay and Hylebos Waterway</td>
</tr>
<tr>
<td>Coho salmon (<em>O. kisutch</em>)</td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Any occurrence</td>
<td>Coho salmon have been documented in Hylebos Creek (WDFW 2021d) and are likely to be present in Hylebos Waterway at some times of year</td>
</tr>
<tr>
<td>Kokanee (<em>O. nerka</em>)</td>
<td>None/None</td>
<td>RCT</td>
<td>Any occurrence</td>
<td>Not present; move between streams and lakes</td>
</tr>
<tr>
<td>Pink salmon (<em>O. gorbuscha</em>)</td>
<td>None/None</td>
<td>RCT, VA</td>
<td>Any occurrence</td>
<td>Potentially present in Commencement Bay and Hylebos Waterway</td>
</tr>
<tr>
<td>Species</td>
<td>State/Federal Listing Status¹</td>
<td>Criteria for Inclusion on PHS List²</td>
<td>Areas Considered Priorities in PHS List</td>
<td>Potential Habitat Use in Study Area</td>
</tr>
<tr>
<td>------------------------------------------------</td>
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</tr>
<tr>
<td>Rainbow trout, Steelhead, inland redband trout (O. mykiss)</td>
<td>SC/FT (Puget Sound DPS)</td>
<td>RCT</td>
<td>Any occurrence</td>
<td>Winter steelhead have been documented in Hylebos Creek (WDFW 2021d) and are likely to be present in Hylebos Waterway at some times of year</td>
</tr>
<tr>
<td>Sockeye salmon (O. nerka)</td>
<td>SC/None</td>
<td>RCT, VA</td>
<td>Any occurrence</td>
<td>Potentially present in Commencement Bay and Hylebos Waterway</td>
</tr>
</tbody>
</table>

Notes:

¹ Listing status abbreviations:
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Sources (unless otherwise noted in table): WDFW 2021a, 2021b; USFWS 2021b; NOAA Fisheries 2021
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<tr>
<th>Species</th>
<th>State/Federal Listing Status¹</th>
<th>Criteria for Inclusion on PHS List²</th>
<th>Areas Considered Priorities in PHS List</th>
<th>Potential Habitat Use in Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>California sea lion (Zalophus californianus)</td>
<td>None/None</td>
<td>VA</td>
<td>Haul outs</td>
<td>Possible foraging in study area; known to haul out on buoys, floats, and log booms in Commencement Bay near the mouth of Hylebos Waterway (WDFW 2000).</td>
</tr>
<tr>
<td>Dall’s porpoise (Phocoenoides dalli)</td>
<td>None/None</td>
<td>VA</td>
<td>Regular concentrations in foraging areas and migration routes</td>
<td>Possible but unlikely to occur in study area; species appears to be declining and is uncommon in Puget Sound (Smultea et al. 2017).</td>
</tr>
<tr>
<td>Gray whale (Eschrichtius robustus)</td>
<td>SS/FE (Western North Pacific DPS)</td>
<td>VA</td>
<td>Any occurrence</td>
<td>Possible but unlikely to occur in Commencement Bay; major feeding areas are in northern Puget Sound.</td>
</tr>
<tr>
<td>Harbor porpoise (Phocoena phocoena)</td>
<td>SC/None</td>
<td>VA</td>
<td>Regular concentrations in foraging areas and migration routes</td>
<td>Possible foraging in study area; commonly observed in Puget Sound during recent aerial surveys (Smultea et al. 2017).</td>
</tr>
<tr>
<td>Harbor seal (Phoca vitulina)</td>
<td>None/None</td>
<td>VA</td>
<td>Haul outs</td>
<td>Possible foraging in study area; known to haul out on buoys, floats, and log booms in Commencement Bay near the mouth of Hylebos Waterway (WDFW 2000). Harbor seals have been observed in the waterway (EEI 2015).</td>
</tr>
<tr>
<td>Killer whale (Orca) (Orcinus orca)</td>
<td>SE/FE (Southern Resident DPS)</td>
<td>VA</td>
<td>Vulnerable aggregations; regular concentrations in foraging areas and migration routes</td>
<td>Known to occur in Commencement Bay; unlikely in Hylebos Waterway.</td>
</tr>
<tr>
<td>Steller (Northern) sea lion (Eumetopias jubatus)</td>
<td>None/FT</td>
<td>VA</td>
<td>Haul outs</td>
<td>Possible foraging in study area; known to be relatively common Puget Sound (Smultea et al. 2017).</td>
</tr>
</tbody>
</table>

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