Chapter 3 The Environment

This chapter describes existing conditions in the study area and past uses that led to these conditions. This chapter also presents the environmental effects that would likely result from the Grays Harbor new casting basin facility construction, building and launching pontoons at both the existing CTC and the proposed Grays Harbor casting basin facilities, and mooring pontoons until they are needed. Also, potential indirect and cumulative effects are described. For comparison purposes, the consequences of the No Build Alternative are also discussed.

What topics did WSDOT include in the environmental effects analysis?

To identify and evaluate the environmental effects of the proposed SR 520 Pontoon Construction Project, WSDOT studied relevant components of the built and natural environment. Following are the environmental topics included in this analysis:

- Ecosystems, including wetlands, fish and aquatic resources, and wildlife
- Geology and Soils
- Hazardous Materials
- Water Resources, including floodplains
- Air Quality
- Energy and Climate Change
- Cultural Resources
- Economics
- Navigable Waterways
- Noise
- Public Services and Utilities
- Land Use
- Social Elements, including recreational facilities and environmental justice
- Transportation
- Visual Quality and Aesthetics
- Section 4(f) Resources

WSDOT analysts—scientists, cultural resource experts, and environmental, transportation, and land use planners with specialized knowledge about the elements of the environment listed above—documented their detailed analyses in discipline reports and technical memoranda, provided in Appendices C through U of this Final EIS. The effects analyses provided in this chapter were summarized from these appendices and are presented in the order listed above.

Throughout the environmental process, WSDOT has continued to refine the build alternatives. Chapter 3 of this Final EIS includes all revisions necessary to adequately assess the project alternatives as currently designed. Appendix U, Final EIS Summary of Effects Technical Memorandum, summarizes what environmental effects have changed in this Final EIS since the Draft EIS was published.

What types of direct effects did WSDOT evaluate?

The environmental effects analyses followed WSDOT *Environmental Procedures Manual* guidance (WSDOT 2008b), which is designed to ensure compliance with NEPA and other federal, local, and state regulations. NEPA requires that an EIS disclose direct, indirect, and cumulative effects of a proposed action on the environment (40 CFR 1500-1508) and describe how the project would affect the built or natural environment. Direct effects are caused by the action and occur at the same time and place (40 CFR 1508.8(a)). Direct effects can be either short-term and temporary or long-term. For this Final EIS, the direct effects analysis for each discipline is divided into the following types of effects:

- **Construction effects**, which are effects anticipated during construction of the new casting basin, support facilities, new moorage facilities, and mitigation features, including long-term effects that would result from site development activities.
- **Operational effects**, which are effects anticipated during pontoon construction at the new casting basin and the existing CTC facility, as well as long-term effects that would result from site operation activities. The effects of mooring pontoons over an indefinite period of time, maintaining the Grays Harbor casting basin facility after the SR 520 Pontoon Construction Project is complete, and implementing mitigation features expected to remain when the project is completed are also considered operational effects.

What are indirect effects, and how did WSDOT evaluate them?

Indirect effects are caused by the action (the project) and occur later in time or are farther removed in distance but still are reasonably foreseeable (40 CFR 1508.8(b)). Indirect effects result from one project but, unlike direct effects, typically involve a chain of cause-and-effect relationships that can take time to develop and can occur at a distance from the project site. Often times, indirect effects on a resource are the result of changes to another resource in the area, so cross-resource interactions must be considered as well. This makes indirect effects difficult to predict accurately and usually require a qualitative estimate more general than predictions of direct effects.

The WSDOT analysts used FHWA and WSDOT guidance on how to assess potential indirect effects of this project on a resource. Section 412 of the WSDOT *Environmental Procedures Manual* (WSDOT 2008b) and FHWA Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (FHWA 1987) provide general guidance for identifying, evaluating, and documenting indirect effects of transportation projects. More specifically, FHWA's Indirect Effects Analysis Checklist (FHWA 2009) recommends the eight-step approach presented in National Cooperative Highway Research Program (NCHRP) Report 466, *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (Louis Berger Group Inc. 2002). See Appendix S, Indirect and Cumulative Effects Methodology Memorandum, for a summary of the eight-step approach used to evaluate the indirect effects for this project.

What are cumulative effects, and how did WSDOT evaluate them?

Cumulative effects are effects on the environment that would result from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal), or person, undertakes such other actions. Cumulative effects can result from individually minor—but collectively significant—actions taking place over a period of time (40 CFR 1508.7). A cumulative effect is also the project's direct and indirect effects on a particular resource, combined with the past, present, and future effects of other human activities on that same resource. The result is the expected future condition of the resource when all of the external factors known or likely to affect it are taken into account.

WSDOT analysts reviewed the general guidance in Chapter 412, Indirect and Cumulative Impacts, of the WSDOT *Environmental*

Procedures Manual (WSDOT 2008b) and in FHWA Technical Advisory T 6640.8A (FHWA 1987). Specifically, they followed the Guidance on Preparing Cumulative Impact Analyses (WSDOT et al. 2008). This guidance includes an eight-step approach for a complete cumulative effects analysis. The approach begins with identifying resources to consider in the analysis and defining the study area for each resource. Then the current status and historical context are described for each resource, and direct and indirect effects are identified. Next, other current and reasonably foreseeable actions are identified. Then all of this information is reviewed, and cumulative effects are identified and assessed. The results are documented, and the need for mitigation is assessed. Please see Appendix S, Indirect and Cumulative Effects Methodology Memorandum, for a full description of these steps.

The study area used for cumulative effects analysis is the total area of the resource or discipline that could be influenced by the direct or indirect effects of the project in combination with the effects of past, current, and reasonably foreseeable actions. This study area was determined for each resource with potential cumulative effects and is presented below:

- Ecosystems: Water Resource Inventory Areas (WRIAs) 10, 22, and 23
- Geology and Soils: Grays Harbor County
- Hazardous Materials: 1-mile radius around Grays Harbor build alternative sites
- Water Resources: WRIA 22
- Air Quality: Pierce and Grays Harbor Counties
- Energy: Washington state
- Cultural Resources: Area of Potential Effect (APE) for the project
- Economics: Pierce and Grays Harbor Counties
- Navigable Waterways: waters of Puget Sound and Grays Harbor
- Noise: 500-foot radius around Grays Harbor build alternative sites and proposed haul routes
- Public Services and Utilities: city limits of Hoquiam and Aberdeen and Grays Harbor County
- Land Use: city limits of Hoquiam and Aberdeen and Grays Harbor County
- Social Elements: quarter-mile radius (half-mile radius for Environmental Justice) around Grays Harbor build alternative sites and proposed haul routes
- Transportation: proposed haul routes within Hoquiam and Aberdeen city limits
- Visual Quality and Aesthetics: project viewsheds and Grays Harbor (pontoon moorage location)

Why did WSDOT consider indirect and cumulative effects in this EIS?

Federal regulations (40 CFR 1502.16, 1508.7, 1508.8) require that indirect and cumulative effects be considered in an EIS because an analysis of these effects informs the public and decision-makers about possible unintended consequences of a project that are not always revealed by examining direct effects alone. This information helps project planners and designers to mitigate direct effects under their

control in ways that can make adverse indirect and cumulative effects less likely and less severe.

WSDOT does not mitigate cumulative effects because it does not have jurisdiction over the many non-WSDOT projects that contribute to cumulative effects. However, FHWA and WSDOT are required to disclose cumulative effects and to suggest practical mitigation options that could be implemented by the responsible parties (WSDOT et al. 2008). As a result, this chapter suggests ways that public agencies and private developers beyond WSDOT's jurisdictional responsibilities could mitigate cumulative effects. The chapter also places particular emphasis on ecosystem effects, including wetlands, fish and aquatic resources, and wildlife, because of interest expressed by the PCPACT.

How did WSDOT identify other past, current, and reasonably foreseeable actions?

In order to tell the story of the resource, WSDOT identified past actions and trends affecting the resource, characterized the baseline (current) condition of the resource, and identified future actions to evaluate how those actions could alter the resource in the future. To do this, WSDOT collected information from field surveys, interviews, and literature searches to assess the current condition of the resource; WSDOT also considered development trends in the project vicinity. WSDOT did not address the past in detail, but instead briefly summarized the history of use at each site as it relates to each resource to identify long-term trends affecting the resource's conditions.

Reasonably Foreseeable Actions

A reasonably foreseeable action is a private or public project already funded, permitted, or under regulatory review, or included in an approved final planning document. For the SR 520 Pontoon Construction Project, WSDOT defined reasonably foreseeable actions as actions or projects with a reasonable expectation of actually happening, as opposed to potential developments expected only on the basis of speculation.

To identify other current and reasonably foreseeable actions in the project vicinity for the cumulative effects assessment, WSDOT reviewed comprehensive land use planning documents, long-range transportation plans, and agency Websites to obtain publicly available information. WSDOT also spoke with agency and Tribal officials, representatives of private companies and organizations, and members of the public during the scoping process conducted for the Draft EIS (see *How has WSDOT involved the public in the environmental process?* and *How has WSDOT included agencies and tribes in the environmental process?* in Chapter 1).

Applying criteria outlined by WSDOT, FHWA, and the U.S. Environmental Protection Agency (EPA) (WSDOT et al. 2008), WSDOT mapped and compiled lists of past, present, and reasonably foreseeable actions for the Grays Harbor and Tacoma areas to support the resource-specific cumulative effects assessments conducted for those areas. Past actions in the Grays Harbor and Tacoma areas created trends that helped shape their present conditions.

Past Actions

Because humans have settled in the project vicinity for many centuries before recorded history, past actions that could contribute to cumulative effects are incompletely documented and too numerous to be listed below in Exhibits 3-1 and 3-2, which present current and reasonably foreseeable future actions that might contribute to cumulative effects. The history of human activities and their effects on the Grays Harbor and Tacoma areas are summarized below, from the precontact era to the present, as are their contributions to cumulative effects.

EXHIBIT 3-1
Current and Reasonably Foreseeable Actions in the Grays Harbor Area

ID	Action	Year
1	City of Cosmopolis Waterfront Development Rezone	2010
N/A	Chehalis River Basinwide General Investigation	2010 to unknown
N/A	Twin Cities Flood Damage Reduction Project	2007 to present
2	City of Hoquiam Waterfront Overlay District	2010
3	City of Hoquiam Wastewater Treatment Plant	2011
4	Terminal 1: Imperium Renewables and Westway Upgrade	2011
5	Terminal 2: Ag Processing, Inc. Expansion	2011
6	New Retail and Commercial Development	2013
7	Grays Harbor Deeper Draft Project	2018
8	Paneltech International Expansion	Unknown
9	Terminal 3: Marine Industrial Development	Unknown
10	Terminal 4: Marine Industrial Development	Unknown
11	Westport Shipyard Expansion	Unknown

N/A = Not available

EXHIBIT 3-2
Current and Reasonably Foreseeable Actions in the Tacoma Area

ID	Action	Year
1	Lincoln Avenue Grade Separation	2010
2	Puyallup Bridge F16A and F16B Replacement	2015
3	Thea Foss Waterway Marriott Hotel	2012
4	I-5: Pierce and King Counties Line to 320th Street	2010
5	Lister Gulch Bicycle-Pedestrian Improvements	2010
6	Pacific Avenue Rail Grade Separation Crossing	2010
7	SR 16: Tacoma Narrows Bridge	2008
8	SR 16: I-5 to Tacoma Narrows Bridge (Westbound Nalley Valley)	2011
9	Tacoma Dome Bike Station	2010
10	Tacoma Dome Station Access Signal Priority Enhancements	2010
11	Lincoln Avenue Bridge Replacement	2012
12	Taylor Avenue Realignment	2011
13	NYK Line Container Terminal	Unknown
14	Puyallup Riverfront Trail	2012
15	SSA Marine, Inc. and Puyallup Tribe Container and Cargo Facility	Unknown
16	I-5 at SR 18 and SR 161 (Triangle)	2025
17	SR 167 Extension: Phase 1	2025
18	SR 167 Extension: Phases 2 and 3	2025
19	Expanded Sounder Service Levels	2027
20	Tacoma Link Extension to Tacoma Community College with Tacoma Link Technology	2027
21	New Express Bus Route Serving All Sounder Stations (Tacoma Dome to King Street)	2027
22	I-5: South 48th Street	2030
23	I-5: 72nd Street to SR 16	2030
24	I-5: Fife Park-and-Ride	2030
25	I-5: SR 512 to 72nd Street	2030
26	I-5: Tacoma Dome HOV Direct Access	2030
27	Link LRT Extension from Port of Tacoma to Tacoma Dome	2030
28	Narrows Bridge SR 16 Park-and-Ride	2030

EXHIBIT 3-2
Current and Reasonably Foreseeable Actions in the Tacoma Area

ID	Action	Year
29	South Tacoma Station Park-and-Ride	2030
30	SR 167 Capacity Improvements: SR 410 in Sumner to South 180th Street in Renton	2030
31	SR 509 Corridor Completion and Freight Improvements	2030
32	Tacoma Dome Station Phase II Park-and-Ride	2030

N/A = Not available

Grays Harbor Area

Prior to the arrival of Euro-American settlers in the Grays Harbor area in the 1840s, the region was inhabited by populations of Native Americans. Both build alternatives sites have a history of Native American use and development. Few excavated archaeological sites exist in the Grays Harbor region, and nearly all of those date to within the past 1,000 years. Older, unidentified sites likely exist locally as well because they are found elsewhere on the Pacific Northwest (Wessen 1983, 1990). The local archaeological sites and evidence of fish traps (which are fully discussed in Chapter 3.7, Cultural Resources) contribute to the gradual cumulative effect of human development in the Grays Harbor area, including fishing, hunting, and settlement.

The present communities of Aberdeen and Hoquiam represent a couple hundred years of industrial development history. Beginning in the mid 1800s, lumber mills were established along the Grays Harbor and Chehalis River waterfronts. By the early 1900s, railroads had extended into the region and there were lumber mills on both build alternative sites. With the capability to transport goods by both rail and ship, Aberdeen quickly grew into the commercial hub of the region, with an emphasis on fisheries, lumber, and shipbuilding.

The timber and shipbuilding industries in Grays Harbor peaked in the 1920s and then declined throughout the Great Depression. The region saw little commercial development after the Great Depression, and these industries never regained their momentum.

The mills on both build alternatives sites remained active until the 1960s. Since then, both sites have been used mostly to store logs. The Aberdeen Log Yard site continues to be used for log storage, but the Anderson & Middleton site has been idle since the late 1980s, when the sites gradually fell into disuse.

Activities at the build alternative sites and in the region contributed to the cumulative effect of general development and industrialization of the

area, including clearing and conversion of forest land for logging and urban growth, and conversion of estuarine shoreline habitat to shipyards, canneries, and wharves through backfilling with dredged sediments, imported dirt, and wood waste. The industrial development of the region brought with it the prolific use of petroleum-based fuels and storage of lubricants, when spill prevention practices were less stringent than today. Also, timber mills produced large quantities of wood waste that was often disposed of by burning or through use as fill material along the shoreline. The decline of industry that began in the 1920s and 1930s has resulted in the landscape of idle industrial tracts and wharf remnants that line the Hoquiam and Aberdeen waterfronts today. The two build alternative sites lie among these properties.

CTC Facility

As with the Grays Harbor region, the Tacoma region was inhabited by precontact populations of Native Americans prior to settlement. By the mid 1800s, Euro-American settlers had encroached on the native population and affected their traditions, which ultimately led to tribes being relocated onto reservations. The Puyallup reservation originally encompassed the area occupied by the Port of Tacoma and the CTC facility.

By the late 1800s, tribal landowners lost much of the reservation through sales, auctions, and its automatic inclusion in railroad right-of-ways. In 1873, the Milwaukee and Union Pacific Railroad linked the region's first transcontinental railroad from Milwaukee, Wisconsin, and the mudflats that are the present day Port of Tacoma. By the turn of the twentieth century, much of the northern portion of the tidal mudflats had been dredged to create eight waterways and filled with dredge materials to create upland for shipping terminals, lumber and shingle mills, shipyards, and electrometallurgical and electrochemical plants. The CTC facility was added to the Port of Tacoma on the Blair Waterway in the 1970s. The area continued to grow into a major center of commerce and industry, laying the foundation for the Port of Tacoma's current status as an important U.S. port.

Similar to early industrial development activities at Grays Harbor, activities at the Port of Tacoma and CTC facility contributed to the cumulative effect of general development and industrialization of the area, including clearing and conversion of forest land for logging and urban growth, and conversion of estuarine shoreline habitat to shipyards and wharves through backfilling with dredged sediments. The industrial development of the region brought with it the prolific use of petroleum-based fuels and lubricants under storage and spill prevention practices of the time that were less stringent than those of today. Also, timber mills

based fuels and lubricants under storage and spill prevention practices of the time that were less stringent than those of today. Also, timber mills produced large quantities of wood waste that was often disposed of by burning or through use as fill material along the shoreline.

Current and Reasonably Foreseeable Actions

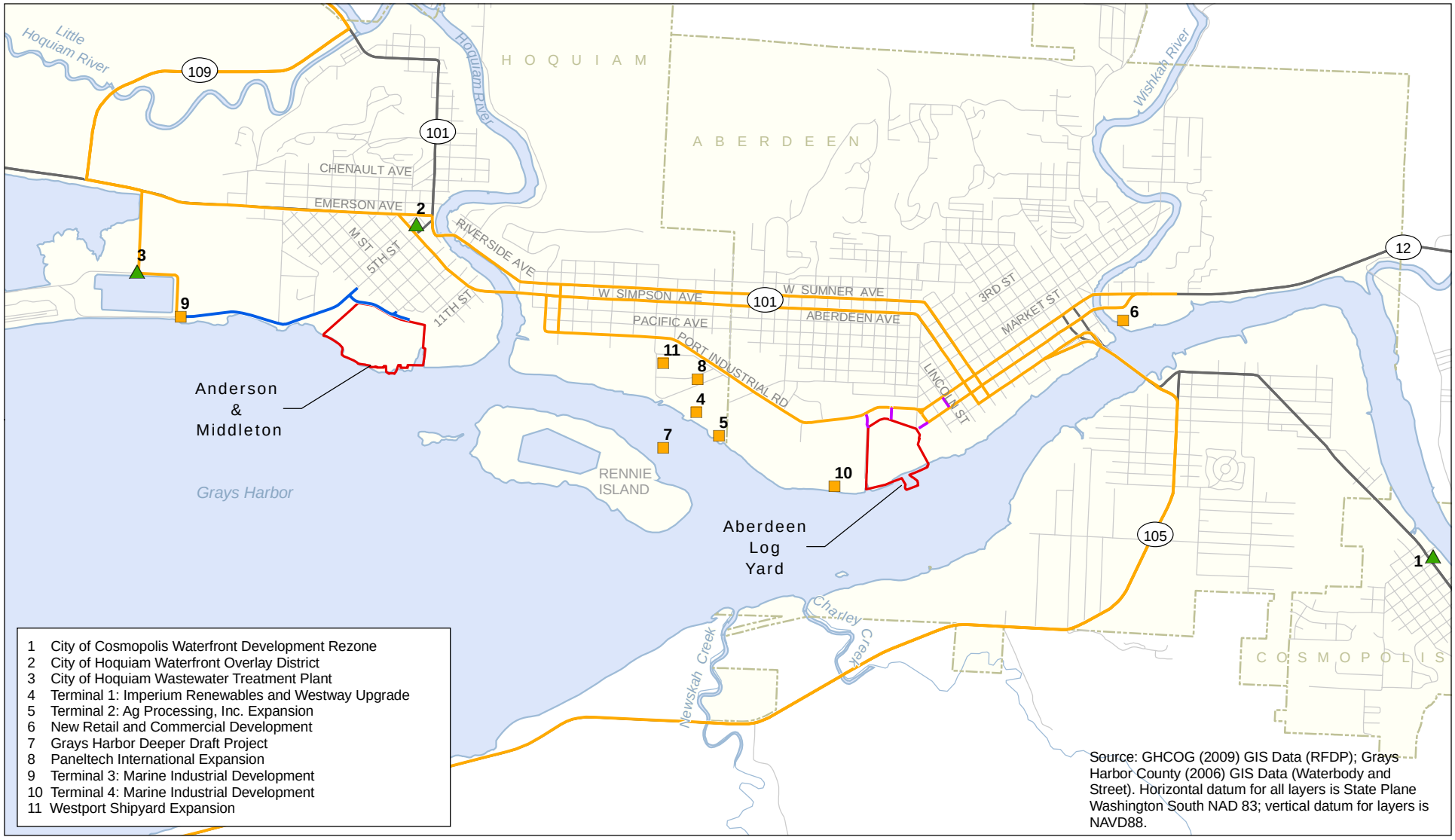
Exhibits 3-1 and 3-2 list the current and reasonably foreseeable actions for the Grays Harbor and Tacoma regions. Exhibits 3-3 and 3-4 show the approximate locations of present and reasonably foreseeable actions that WSDOT has identified for the Grays Harbor and Tacoma areas, respectively. All of these actions would contribute to further development and industrialization of Grays Harbor and Tacoma, including gradual cumulative effects on the natural and built environments.

If either of the Grays Harbor build alternatives is selected for the proposed SR 520 Pontoon Construction Project, WSDOT anticipates providing mitigation for aquatic resources and compensatory mitigation for wetlands effects. The proposed 66-acre Grass Creek mitigation site is located about 8 miles northwest of Hoquiam (see Chapter 5, Mitigation, for a description of the Grass Creek site and the proposed mitigation activities). Any potential effects of these mitigation activities on the environment would be considered indirect effects of the proposed action. Therefore, any potential effects on the environment from these mitigation activities are discussed in the indirect effect sections for each element of the environment.

Proposed SR 520, I-5 to Medina: Bridge Replacement and HOV Project

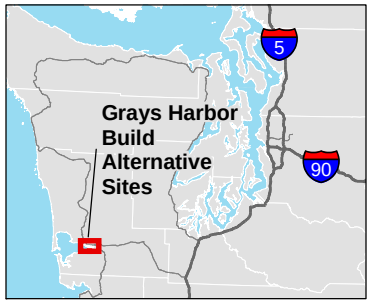
Because the proposed SR 520, I-5 to Medina: Bridge Replacement and HOV Project is not in the Grays Harbor or Tacoma area, it is not included in the cumulative effects analysis. WSDOT analysts assessed potential cumulative effects from transporting the pontoons from both Grays Harbor sites and the CTC facility in Tacoma. For all elements of the environment, the cumulative effects from pontoon transport would be negligible.

The SR 520, I-5 to Medina Project has a separate purpose and need and would provide an independent benefit to the region. The proposed bridge project is currently undergoing environmental review to comply with NEPA. The *SR 520, I-5 to Medina: Bridge Replacement and HOV Project Supplemental Draft EIS* published in January 2010 (WSDOT 2010) discloses the potential environmental effects that WSDOT anticipates when using the pontoons constructed as part of the SR 520 Pontoon Construction Project to replace the floating bridge.



1 City of Cosmopolis Waterfront Development Rezone
2 City of Hoquiam Waterfront Overlay District
3 City of Hoquiam Wastewater Treatment Plant
4 Terminal 1: Imperium Renewables and Westway Upgrade
5 Terminal 2: Ag Processing, Inc. Expansion
6 New Retail and Commercial Development
7 Grays Harbor Deeper Draft Project
8 Paneltech International Expansion
9 Terminal 3: Marine Industrial Development
10 Terminal 4: Marine Industrial Development
11 Westport Shipyard Expansion

Source: GHCOG (2009) GIS Data (RFDP); Grays Harbor County (2006) GIS Data (Waterbody and Street). Horizontal datum for all layers is State Plane Washington South NAD 83; vertical datum for layers is NAVD88.



Action

- Past
- Present
- Reasonably foreseeable
- Proposed project haul route common to all project sites
- Proposed project haul route: Aberdeen Log Yard
- Proposed project haul route: Anderson & Middleton

- Build Alternative Site
- City limits

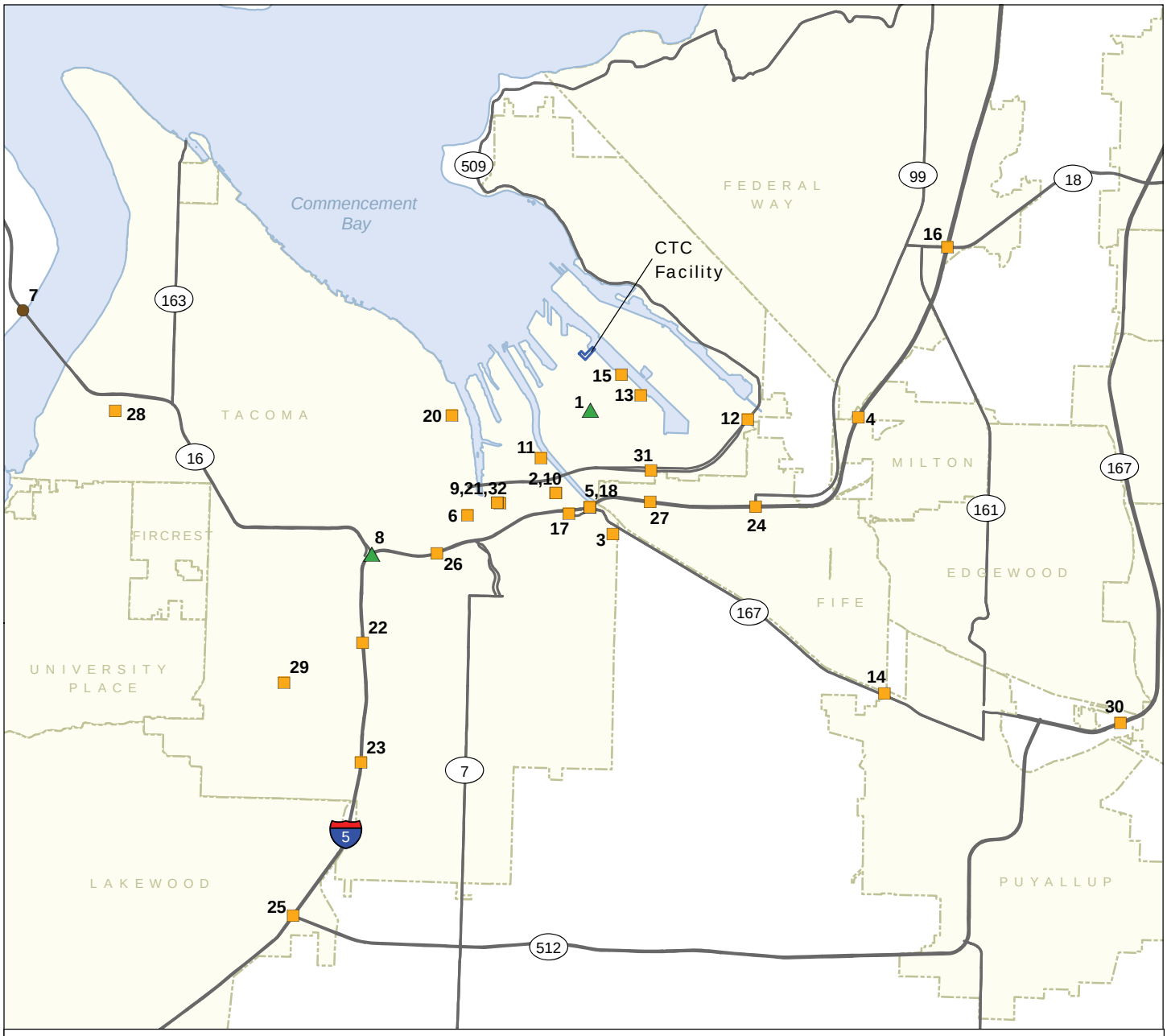
N

0 0.5 1 Miles

Exhibit 3-3. **Locations of Past, Present, and Reasonably Foreseeable Actions in the Grays Harbor Area**

SR 520 Pontoon Construction Project

Washington State Department of Transportation



1 Lincoln Avenue Grade Separation
2 Puyallup Bridge F16A and F16B Replacement
3 Thea Foss Waterway Marriott Hotel
4 I-5: Pierce and King Counties Line to 320th Street
5 Lister Gulch Bicycle-Pedestrian Improvements
6 Pacific Avenue Rail Grade Separation Crossing
7 SR 16: Tacoma Narrows Bridge
8 SR 16: I-5 to Tacoma Narrows Bridge (WB Nalley Valley)
9 Tacoma Dome Bike Station
10 Tacoma Dome Station Access Signal Priority Enhancements
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14 Puyallup Riverfront Trail
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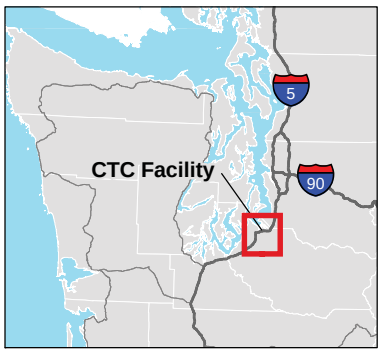

Action

- Past
- Present
- Reasonably foreseeable
- Existing CTC facility
- City limits

N

0 0.75 1.5 3 Miles

Source: WSDOT (2002) GIS Data (City Limit) and WSDOT (2004) GIS Data (State Route). Horizontal datum for all layers is State Plane Washington South NAD 83; vertical datum for layers is NAVD88.

Exhibit 3-4. **Locations of Past, Present, and Reasonably Foreseeable Actions in the Tacoma Area**

SR 520 Pontoon Construction Project

Washington State Department of Transportation