Port Angeles
Shoreline Master Program

This report was funded in part through a grant from the Washington Department of Ecology.

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CITY OF PORT ANGELES
SHORELINE MASTER PROGRAM

The Port Angeles Shoreline Master Program was developed through an extensive public process under the guidance of the Harbor Planning Committee (HPC). The Committee consisted of representatives from the City, Clallam County, Lower Elwha Klallam Tribe, Port of Port Angeles, United States Coast Guard, Department of Natural Resources, Department of Ecology (ex-officio), and the Puget Sound Partnership (ex-officio). The HPC also served as the advisory committee for this SMP.

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CHAPTER 1

Introduction to the SMP

A. Introduction to the Shoreline Management Act

Washington's Shoreline Management Act (SMA) was passed by the State Legislature in 1971 and adopted by the public in a referendum. The SMA was created in response to a growing concern among residents of the state that serious and permanent damage was being done to shorelines by unplanned and uncoordinated development. The goal of the SMA was "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." While protecting shoreline resources by regulating development, the SMA is also intended to provide for appropriate shoreline use by fostering uses unique to or dependent upon use of the state's shoreline and by allowing development that provides an opportunity for the people to enjoy the shorelines of the state.

The SMA has three broad policies:

- Encourage water-dependent and water-oriented uses: "uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shorelines...."
- Promote public access: "the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the state shall be preserved to the greatest extent feasible consistent with the overall best interest of the state and the people generally."
- Protect shoreline natural resources, including "...the land and its vegetation and wildlife, and the waters of the state and their aquatic life...."

The SMA recognizes that "shorelines are among the most valuable and fragile" of the state's resources. The SMA, and the City of Port Angeles, recognize and protect private property rights along the shoreline, while aiming to preserve the quality of this unique resource for all state residents.

The Act governs the use and development of Washington's shorelines and creates a unique partnership between local and state government. Local governments develop and administer **shoreline master programs (SMPs)** based on the Act and state guidance, and the state ensures local programs consider statewide public interests.

Shoreline master programs carry out the policies of the Shoreline Management Act at the local level, regulating use and development of shorelines. Local shoreline programs include policies and regulations based on state laws and rules as well as guidance from the Department of Ecology but tailored to the unique geographic, economic, and environmental needs of each community.

The State Shoreline Management Act (SMA) provides a broad policy framework for protecting the shoreline environment. The Shoreline Master Program Guidelines adopted by rule in 2003 (WAC 173-26) establish the" no net loss" principle as the means of implementing that framework. The no-net-loss standard is designed to

ensure permitted development will not result in a net loss of shoreline ecological functions. This means that the existing condition of shoreline ecological functions needs to remain the same, and should even be improved as a result of restoration, as the updated SMP is implemented over time. This standard is to be met by appropriately regulating public and private development, implementing a Restoration Plan, and improving practices that affect the shoreline.

At a minimum, impacts of development should be identified, avoided and mitigated so as to maintain shoreline ecological functions as they exist the time of the City's shoreline inventory for the SMP update process.

A review of each SMP is called for every eight years. As needed, further revisions to policies and regulations may be made at these times, based on how well the no-net loss objective is being met, and/or for other reasons. Updates are necessary to keep SMPs current, both with physical conditions and community values.

Comprehensive updates of existing Shoreline Master Programs were required by the Washington Legislature, and funding was provided through the Department of Ecology to help local governments meet that requirement. One important objective of the update is to integrate SMP provisions with related provisions of the City's Comprehensive Plan and Environmentally Sensitive Areas Ordinance.

B. What is the Shoreline Master Program (SMP)?

The City of Port Angeles Shoreline Master Program (SMP) is a planning document that outlines goals and policies for the shorelines of the City and the City's Urban Growth Area (UGA), and also a regulatory code that establishes regulations for development occurring in "shoreline jurisdiction", generally including within two hundred feet of the shoreline. During the preparation of the SMP, the planning team developed several supporting documents that provided information necessary to complete the SMP and satisfy state requirements. These include:

- Shoreline Inventory, Characterization, and Analysis Report for City of Port Angeles Shoreline: Strait of Juan de Fuca, September 23, 2010 (revised June 2012)
- Cumulative Impacts Analysis;
- Restoration Plan (included as an appendix to the SMP); and
- No Net Loss Report.

C. Geographic Applications of the SMA

As defined by the SMA, shoreline jurisdiction encompasses all "shorelines of the state". Shorelines of the state include both "shorelines" and "shorelines of statewide significance". In Port Angeles, regulated shorelines include marine

waters of the Port Angeles Harbor, the Strait of Juan de Fuca (north to the international boundary) and tidally influenced portions of Valley, Tumwater, Peabody and Ennis Creeks. This includes water areas and their associated 'shorelands', which is generally the area within 200 feet landward of the ordinary high water mark (OHWM) and associated wetlands and river deltas (**Figure 1**).

Shorelines of statewide significance are considered major resources from which all people of the state derive benefit; therefore, special emphasis must be given to preferences and objectives that recognize and protect the statewide interest over local interests when considering management of these shorelines. Adjacent to Port Angeles, the portion of the Straits of Juan de Fuca lying seaward from the line of extreme low tide north to the Canadian line are shorelines of statewide significance.

The lateral extent of the shoreline jurisdiction shall be determined for specific cases based on the location of the ordinary high water mark (OHWM), floodway, and presence of associated wetlands or river deltas.

1. Applicable Area

The applicable area for this shoreline master program includes all land currently within the City's proposed shoreline jurisdiction. Additionally, the City has predesignated shorelines that are currently within Port Angeles' Urban Growth Area (UGA). The environment designations and provisions of this SMP will apply when the City annexes those lands.

In accordance with RCW 35.21.160, the City's SMP authority extends north to the middle of the Strait of Juan de Fuca, to the international boundary. Shoreline jurisdiction is limited to the areas outlined in Section C above; the City is not exercising optional authority under RCW 90.58.030 (2)(d)(i) and (ii) to include additional portions of the 100-year floodplain or the full extent of critical area buffers.

Figure 1. Port Angeles shoreline jurisdiction includes all shoreline areas from western City limits to Morse Creek western bluff top, and extends north to the International

D. Process to Develop this SMP

1. Coordination with other Shoreline Planning and Development Activities

This SMP was prepared concurrently with the Port Angeles Harbor Resources Management Plan (HRMP). The HRMP is a comprehensive and strategic plan that addresses overlapping geographic areas, goals, and components of Harbor planning. It is intended to fill in data gaps and recommends a cohesive strategy for Harbor improvement that integrates the many environmental management, planning and development efforts on Port Angeles's shorelines including: Port Angeles Shoreline Inventory, Characterization and Analysis Report, the Port Angeles Shoreline Master Program (SMP), the Waterfront and Transportation Improvement Plan (WTIP), City of Port Angeles' Comprehensive Plan and Draft Comprehensive Park Plan, Olympic Discovery Trail planning, Rayonier site planning, Ennis Creek Restoration Plan, the Port of Port Angeles' Marine Facilities Master Plan and Central Waterfront Master Plan, Ecology's Port Angeles Harbor Sediment Study, and the Combined Sewer Overflow (CSO) Reduction Program.

The HRMP outlines an implementation strategy that includes time frames, needed resources, possible funding sources, and key stakeholders. These elements provide direction for the City of Port Angeles' capital improvement program as well as the Port of Port Angeles, local Tribal entities (Lower Elwha Klallam, Jamestown S'Klallam, and Port Gamble S'Klallam), and private sector investment. The regulations contained within the SMP will align with the HRMP vision and support its implementation as well as SMA objectives.

The HRMP and SMP processes were approached concurrently, to allow the SMP inventory and analysis to inform the HRMP and to ensure consistency between the two efforts and the City's Comprehensive Plan. By coordinating the HRMP, the SMP, and the Comprehensive Plan, City policies, regulations, and actions for the Harbor will be unified in their support for achieving the community's Harbor vision.

2. The Public Participation Process

The SMP and the HRMP were developed through an extensive public process under the guidance of the Harbor Planning Committee (HPC). Throughout the process, the HPC met monthly to review progress and offer expert guidance. The Committee consisted of representatives from the City,

Clallam County, Lower Elwha Klallam Tribe, Port of Port Angeles, United States Coast Guard, Department of Natural Resources, Department of Ecology (ex-officio), and the Puget Sound Partnership (ex-officio). The HPC also served as the advisory committee for this SMP.

In June 2010, the City initiated the project with a community visioning open house kick-off that was attended by over 100 attendees. The City offered an online survey to gather input on goals and priorities and received 270 responses. In August, the City hosted three focus groups centered on 1) environment and ecology, 2) economic development, and 3) public access, recreation, and cultural resources. A September public open house and workshop presented the draft Shoreline Inventory, Characterization and Analysis and project priorities identified in the focus groups, and it solicited input from the approximately 100 attendees. In February 2011, the team presented the key provisions of the draft SMP at a third public open house. The public's responses to the draft SMP provisions were generally positive and provided guidance to the HPC team for completing the ecology submittal draft during the spring of 2011.

Additional public outreach activities included meetings with the Strait Ecosystem Recovery Network, the Port Angeles Downtown Association, the Port Angeles Business Association, the Kiwanis Club, the 2010 Arts Council, the Realtors Association, the Rotary, and the Lions Club; booths at the Summer Farmer's Market and Clallam County Fair; City Council and Planning Commission updates; and online, radio, and newspaper advertising.

3. Shoreline Goals

The goals and objectives described below capture the public input gathered during the City's update process, which is necessary to update the SMP as noted in WAC 173-26-201(3)(b). In terms of the SMP process, goals serve as value statements from which more specific SMP policies are derived. Policies and regulations in the SMP are also based on the requirements in the Act and in the Shoreline Master Program Guidelines, and are consistent with the concept of "no net loss" of shoreline ecological functions.

Goals and Objectives

1. Port Angeles' waterfront includes a full spectrum of natural resources, economic activities, and recreational attractions.
2. Port Angeles' shoreline ecology is protected and, where appropriate, restored.
3. The harbor contains vibrant water-oriented industrial, commercial, and recreational uses that contribute to Port Angeles' economy.
4. Port Angeles' shoreline is publicly accessible, with ample open space and connections to regional trails and the Downtown.
5. Port Angeles' shoreline is attractive and inviting, with a variety of natural, "working waterfront," and scenic amenities.
6. Cultural resources, including historical associations, on Port Angeles' shorelines are protected and, where appropriate, celebrated and interpreted for greater public appreciation.

E. How the Shoreline Master Program is Used

1. Administration

As noted earlier, the City of Port Angeles Shoreline Master Program is a planning document that outlines goals and policies for the shorelines of the City and the UGA, and also establishes regulations for development occurring within shoreline jurisdiction within the City limits. All proposed uses and development occurring within shoreline jurisdiction must conform to Chapter 90.58 RCW (the Shoreline Management Act) and this Master Program.

In order to preserve and enhance the shorelines of the City of Port Angeles, all development proposals relating to the shoreline are evaluated by the Shoreline Administrator (Administrator) and/or appointed reviewing body for consistency with this Shoreline Master Program. The Shoreline Administrator for the City of Port Angeles is the Director of Community and Economic Development or his/her designee.

The Port Angeles Shoreline Master Program addresses a broad range of uses that could be proposed in the shoreline area. Based upon the statewide policies of RCW 90.58 and local conditions, the Port Angeles Shoreline Master Program provides the regulatory parameters within which development may occur. In addition, it identifies those uses deemed unacceptable within Port Angeles shoreline jurisdiction, as well as those uses which may be considered through a discretionary permit such as a Conditional Use Permit or Shoreline Variance.

Persons proposing any shoreline development, land use, or other projects in the shoreline area should consult with the City of Port Angeles Community and Economic Development Department. A staff person will assist the project proponent by identifying the necessary permits and application procedures.

2. Relationship of this Shoreline Master Program to Other Plans and Regulations

This SMP implements the Washington State Shoreline Management Act and is integrated within the City of Port Angeles planning framework and regulatory system. The SMP policies constitute the shoreline element of the City's Comprehensive Plan in accordance with WAC 173-26-191(2)(a)(i). Once approved by the state, the regulations become part of Title 15 of the City of Port Angeles Municipal Code (PAMC).

Being part of the City's system of planning and development regulations, this SMP will be administered in concert with other provisions of the municipal code. Where this Program makes reference to any RCW, WAC, or other state, or federal law or regulation, the most recent amendment or current edition shall apply. Where Shoreline Conditional Use or Variance permits are required, the Washington Department of Ecology will review and make final determinations after the City has issued its decisions.

In addition to compliance with the provisions of the Shoreline Management Act of 1971, the Port Angeles SMP must be mutually consistent with local plans and policy documents, specifically, the Port Angeles Comprehensive Plan and the regulations developed by the City to implement its plans, such as zoning code and subdivision code, as well as building construction and safety requirements.

Provisions in the Environmentally Sensitive Areas Protection regulations pertaining specifically to fish and wildlife habitat areas, locally unique features and geologically hazardous areas (PAMC Chapter 15.20), wetlands protection (PAMC Chapter 15.24), and flood damage prevention (PAMC Chapter 15.12) shall be applicable along with regulations contained in this SMP. Please see Chapter 3 for exclusions and additional detail regarding environmentally sensitive areas in shoreline jurisdiction. If a conflict between the environmentally sensitive areas and SMP provisions occurs, the more specific regulation applies. The version of the City's Environmentally Sensitive Areas Protection regulations referenced in this document shall refer to those codified by ordinance #2655 and #2656, dated November 29, 1991 and ~~most recently amended by~~ ordinance #~~3367~~ dated ~~September 15, 2009~~.

Uses, developments and activities regulated by this Master Program may also be subject to the Washington State Environmental Policy Act ("SEPA," Chapter 43.21C RCW and Chapter 197-11 WAC), other provisions of the Port Angeles Municipal Code (PAMC), and various other provisions of local, state and federal law, as may be amended. Project proponents shall comply with all applicable laws prior to commencing any use, development or activity.

As noted earlier the draft SMP was prepared concurrently with the Harbor Resources Management Plan and where applicable and consistent with the SMA, the SMP supports and implements the recommendations in that plan.

CHAPTER 2

Environment Designation Provisions and Regulations

A. Introduction

The Shoreline Management Act (Chapter 90.58 RCW), through the Shoreline Guidelines (Chapter 173-26 WAC), provide shoreline environment designations to serve as a tool for categorizing shoreline areas and as a way to apply and tailor the general policies of the Act to local shorelines. Shoreline environment designations, sometimes referred to as shoreline "environments" (e.g., the Shoreline Residential Environment), establish specific policies and regulations applicable to shoreline segments that recognize different shoreline conditions and resources.

WAC 173-26-211 describes the method for classifying shorelines and assigning environment designations based on the "existing use pattern, the biological and physical character of the shoreline, and the goals and aspirations of the community as expressed through comprehensive plans."

Environment designations are also a way to facilitate consistency between comprehensive planning and shoreline master program provisions. By establishing specific policies and regulations for each environment designation, local jurisdictions can give preference to specific uses, provide for public access, and apply ecological protection measures most appropriate for specific shoreline segments.

The environment designations in Port Angeles' SMP were based on 1) the WAC guidelines, 2) the shoreline inventory, characterization and analysis, and 3) the public input from work sessions, surveys, and other activities.

The overarching direction emerging from public input is the community's desire to protect and enhance the shoreline ecology, to support maritime and water-oriented industries, encourage shoreline restoration, and to provide a broad spectrum of public access and water-oriented recreation opportunities. The environment designations expand the recommended classification system in WAC 173-26-211(4) and (5) because additional designations are useful in addressing the variety of conditions found on Port Angeles' shorelines.

In order to further address the complexity of the city's shorelines, specific development standards for distinct reaches or "segments" within the environment designations may be included for each environmental designation. Shoreline segments and the corresponding shoreline environment designation are depicted on **Figure 1**in **Appendix A**.

Section B of this Chapter describes the purpose, designation criteria, management policies and specific development standards for each environment designation as well as the geographic area to which they apply. Purpose statements are intended to describe

the shoreline management objectives of the designation. Designation criteria provide the basis for classifying or reclassifying a specific shoreline area with that designation. Management policies are integral to determining land uses and activities that can take place within each shoreline environment and in assisting in the interpretation of the environment designation regulations.

Section C of this chapter includes a shoreline use matrix and shoreline modification matrix, which summarize allowed, conditionally allowed and prohibited uses, activities and modifications in each environment designation. Specific use or development activities may be allowed in the shoreline setbacks or vegetation conservation areas established in this chapter; please see Chapter 3.

In the event of a mapping error, the City will rely on common boundary descriptions and the criteria contained in RCW 90.58.030 (2) rather than an incorrect or outdated map. Shoreline areas above the OHWM that are not mapped or assigned an environment designation in this SMP shall be classified with an Urban Conservancy – Recreation (UC-R) environment until the shoreline can be redesignated through an SMP amendment.

Note: The Ordinary High Water Mark (OHWM) indicated on all maps is based on the elevation line of 7 feet above sea level NADV 88. The OHWM must be determined in the field based on the criteria of RCW 90.58.030(2)(c).

B. Environment Descriptions and Specific Development Standards

1. High-Intensity Industrial (HI-I) Environment (Segments C, H and I)

a. Purpose

The purpose of the High-Intensity Industrial (HI-I) Environment is to provide for the continued use and development of high-intensity water-oriented heavy and larger scale industrial or port uses, with the potential to allow supporting uses. This designation is also intended to protect existing ecological functions and provide for restoration and public access in appropriate locations and situations.

b. Designation Criteria

A High-Intensity Industrial Environment designation will be assigned to shorelands if they currently support or are planned for intensive industrial uses related to production and processing of materials, transportation, or navigation.

c. Management Policies

1. In regulating uses in the High-Intensity Industrial Environment, first priority should be given to water-dependent industrial uses. Second priority should be given to water-related industrial uses. Non-water-oriented uses should not be allowed except for 1) as part of mixed-use developments that combine water-dependent and non-water-oriented uses or 2) in existing developed

areas in support of water-dependent uses. Non-water-oriented uses may also be allowed in limited situations on sites where there is no direct access to a shoreline with navigable waters.

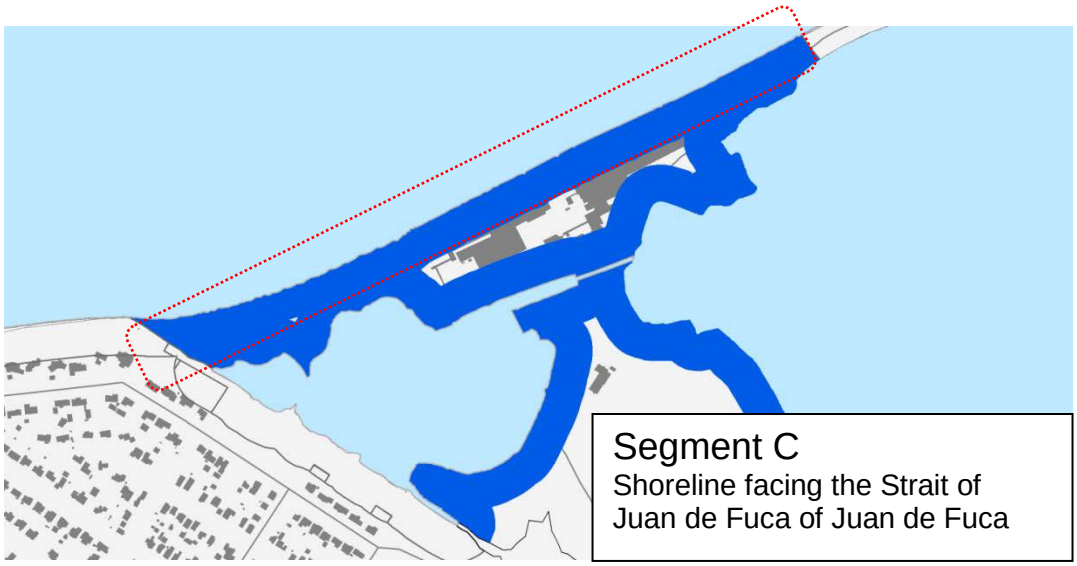
2. New development, redevelopment, and uses should include the protection and/or restoration of shoreline ecological functions, with particular emphasis on habitat for priority species and environmental cleanup.
3. Visual and physical public access should be required as part of any development where there is both a public benefit and no security or use conflicts, as provided for in SMP Chapter 3, Section 8 - Public Access.
4. Pedestrian, bicycle, and vehicular routes should be preserved and provided through these segments to public access points such as Ediz Hook, or to public access points that may be developed within these segments.
5. Sign control regulations, appropriate development siting and screening, building bulk and height restrictions, and maintenance of visual buffers should be considered with development or redevelopment to improve the aesthetic quality of the shoreline.
6. Redevelopment including ecological restoration of substandard and degraded urban shoreline areas and removal of obsolete structures is encouraged. Such redevelopment, which may occur through regulatory or capital improvement measures, should consider accommodation of future water-oriented uses.

d. Environment-Specific Development Regulations

	Vegetation Conservation Area	Structure Setbacks (from the OHWM)	Maximum Structure Height
Segment C	N/A	50 feet	75 feet
Segment H	50 feet	50 feet	45 feet
Segment I	N/A	50 feet	45 feet

Vegetation conservation areas (VCA) are areas along the shoreline in which vegetation contributing to the ecological function of shoreline areas is protected and/or restored. VCA's are measured from the shoreline in a width landward of and perpendicular to the OHWM. VCA's have generally not been applied in the HI-I designation where shoreline areas are highly armored and used for water dependent or water related industrial uses, and where there is little or no vegetation to conserve. If no VCA is assigned to a shoreline segment, parcels with frontage on waters regulated by the SMP shall preserve existing native vegetation within this area to the extent feasible and in accordance with the allowances in Chapter 3, Section 12.

Maximum structure heights are not applicable to light and utility poles, chimneys and stacks, or to equipment used for loading and unloading such as conveyors and cranes.



In this segment, vegetative restoration or mitigation for development resulting in unavoidable impacts to vegetation on parcels where a VCA has not been designated shall be focused on the existing pocket beach in the middle of the segment when feasible; see Chapter 3. Utilization of the pocket beach area for restoration or mitigation is contingent upon execution of a formal agreement (conservation easement, etc.) between the property owner and party proposing mitigation or restoration. Such agreement shall ensure access to and maintenance of the utilized area, and guarantee preservation of the utilized area in perpetuity. If an agreement meeting the conditions outlined above cannot be reached, compensatory mitigation shall occur on the same parcel where the unavoidable impact occurs or through other measures established in this SMP.

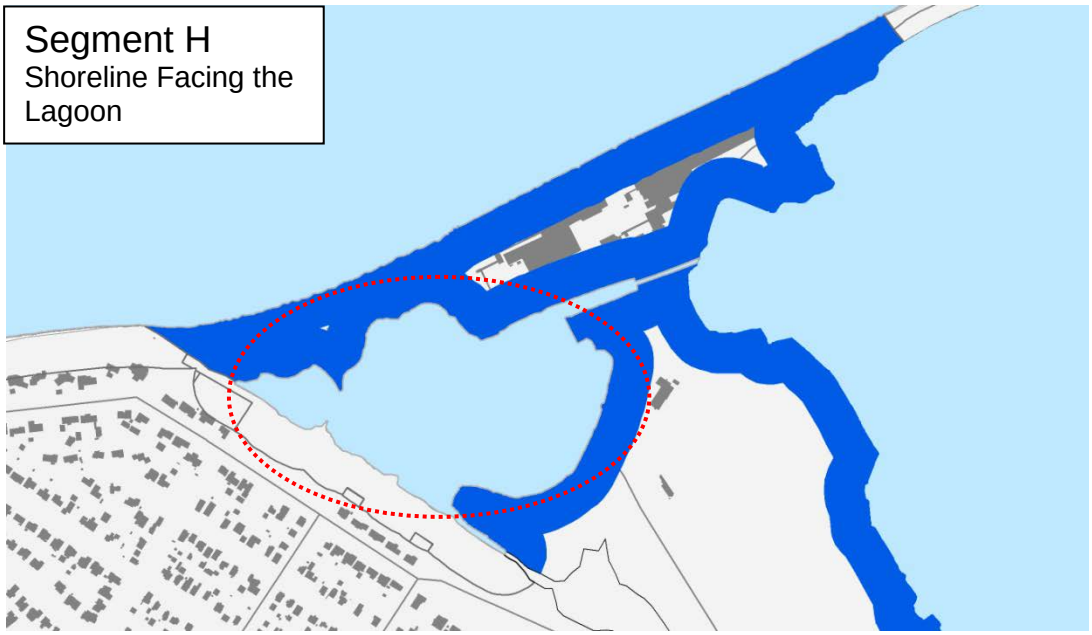
Setbacks may be averaged to maintain and provide additional open area near this pocket beach. The Administrator may allow setback averaging only when the applicant can demonstrate all of the following:

i. Averaging is necessary to avoid an extraordinary hardship to the applicant caused by circumstances unique to the property;

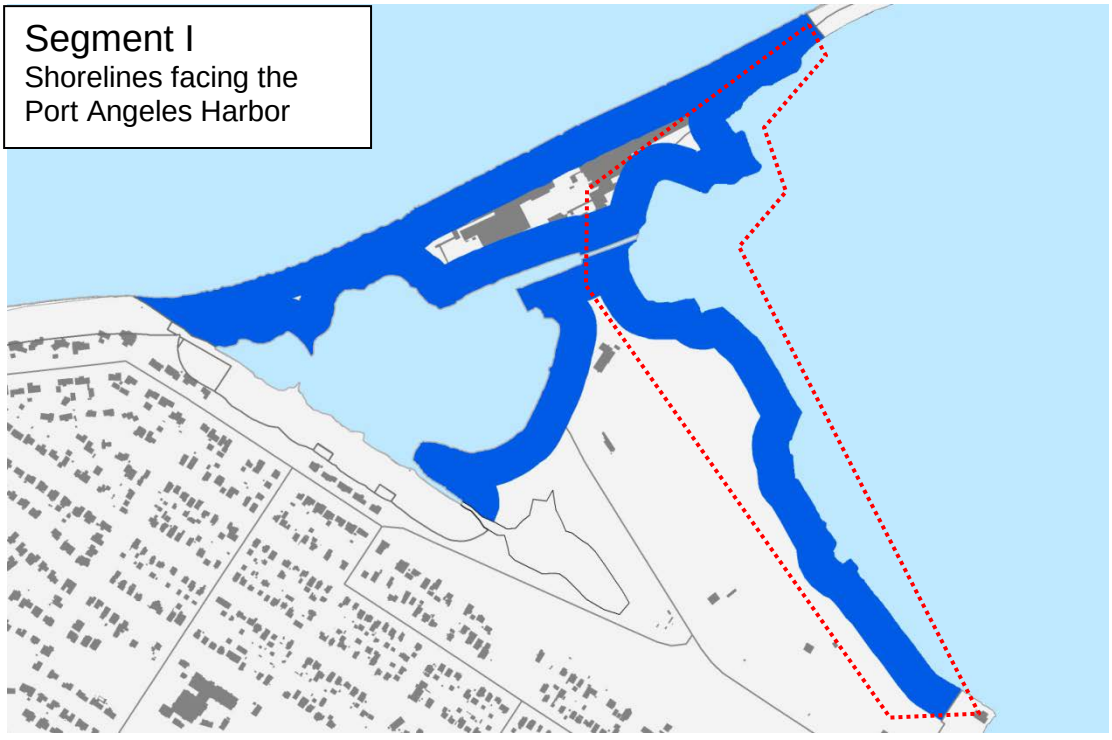
ii. The area within the setback contains existing variations in ecological function and sensitivity;

iii. Averaging will not adversely impact ecological functions; and

iv. The total area contained within the setback after averaging is no less than that contained within the standard setback prior to averaging. In no instance shall the setback be averaged more than 50% (25 feet).



In this segment, the VCA does not apply to shorelines directly facing the channelized lagoon outlet. Wetland buffers and protections may apply per Chapter 3 of the SMP. Untreated stormwater shall not be directed to the lagoon.



In this segment, vegetative restoration or mitigation for development resulting in unavoidable impacts to vegetation on parcels where a VCA has not been designated shall be focused on the existing beach area south of the lagoon channel when feasible; see Chapter 3. Utilization of the beach area for restoration or mitigation is contingent

upon execution of a formal agreement (conservation easement, etc.) between the property owner and party proposing mitigation or restoration. Such agreement shall ensure access to and maintenance of the utilized area, and guarantee preservation of the utilized area in perpetuity. If an agreement meeting the conditions outlined above cannot be reached, compensatory mitigation shall occur on the same parcel where the unavoidable impact occurs or through other measures established in this SMP.

Setbacks may be averaged to maintain and provide additional open area near this beach. The Administrator may allow setback averaging only when the applicant can demonstrate all of the following:

i. Averaging is necessary to avoid an extraordinary hardship to the applicant caused by circumstances unique to the property;
ii. The area within the setback contains existing variations in ecological function and sensitivity;
iii. Averaging will not adversely impact ecological functions; and
iv. The total area contained within the setback after averaging is no less than that contained within the standard setback prior to averaging. In no instance shall the setback be averaged more than 50% (25 feet).

The existing Olympic Discovery/Waterfront Trail provides a pedestrian corridor through the Nippon mill site in this segment for access to Ediz Hook. Provision and maintenance of the trail was a condition of the previous permits for the mill; when or where the trail is located within City right-of-way, the City shall share responsibility for ensuring the safety and viability of this important public access corridor.

If the Administrator determines that required public access within this segment for any particular project is found infeasible or undesirable in accordance with Chapter 3, Section 8, the applicant may compensate by providing off-site public access or paying a compensatory fee to the City if the City has developed such a program. The preference for public access improvements in this segment is a continuous pedestrian and bicycle trail along the roadway adjacent to the parcel on which development is proposed.

2. High-Intensity Marine (HI-M) Environment (Segments E and J)

a. Purpose

The purpose of the High-Intensity Marine (H-I M) Environment is to provide for higher-intensity shoreline uses featuring a mix of water-oriented commercial, transportation, recreation, industrial uses, boat building and repair, vessel berthing, marina facilities, the Coast Guard base, and associated support facilities. Versus heavy industrial uses in the HI-I designation, industrial uses in the HI-M designation are intended to be centered primarily on manufacturing, and the loading, storing, and transferring of cargo. This designation is also intended to protect existing ecological functions and provide for restoration and public access in appropriate locations and situations.
The Coast Guard base is located on lands considered to be a federal reserve, which has unique security and operational requirements.

b. Designation Criteria

A High-Intensity Marine Environment designation will be assigned to shorelands if they currently support or are suitable and planned for higher intensity water-oriented uses related to commerce, industry, transportation (including recreational boating), or navigation. Shorelands with industrial facilities in this designation will include manufacturing or industries of a less intense scale than those designated HI-I.

c. Management Policies

1. In regulating uses in the High-Intensity Marine (HI-M) Environment, first priority should be given to water-dependent uses. Second priority should be given to water-related and water-enjoyment uses. Non-water-oriented uses should not be allowed except for 1) as part of mixed-use developments that combine water-dependent and non-water-oriented uses such as a multi-use marina, or 2) existing developed areas supporting water-dependent uses. Non-water- oriented uses may also be allowed on sites where there is no direct access to the shoreline.
2. New development and redevelopment should include ecological restoration, including low impact development techniques and environmental cleanup of the shoreline, in accordance with state and federal requirements and the restoration plan accompanying this SMP.
3. Visual and physical public access should be required as provided for in SMP Chapter 3, Section 8 – Public Access. The U.S. Coast Guard base is exempt from this requirement.
4. Sign control regulations, appropriate development siting and screening, building bulk and height restrictions, and maintenance of visual buffers should be considered with development or redevelopment to improve the aesthetic quality of the shoreline and protect views from public properties and residences.
5. Public access should include identified points and routes for pedestrians, bicycles, and vehicles.
6. Redevelopment including ecological restoration of substandard and degraded urban shoreline areas and removal of obsolete structures is encouraged. Such redevelopment should consider accommodation of future water-oriented uses.
7. Accessories important to the Coast Guard mission and operations should be allowed on the base. The City should work with the U.S. Coast Guard to explore opportunities for ecological restoration.

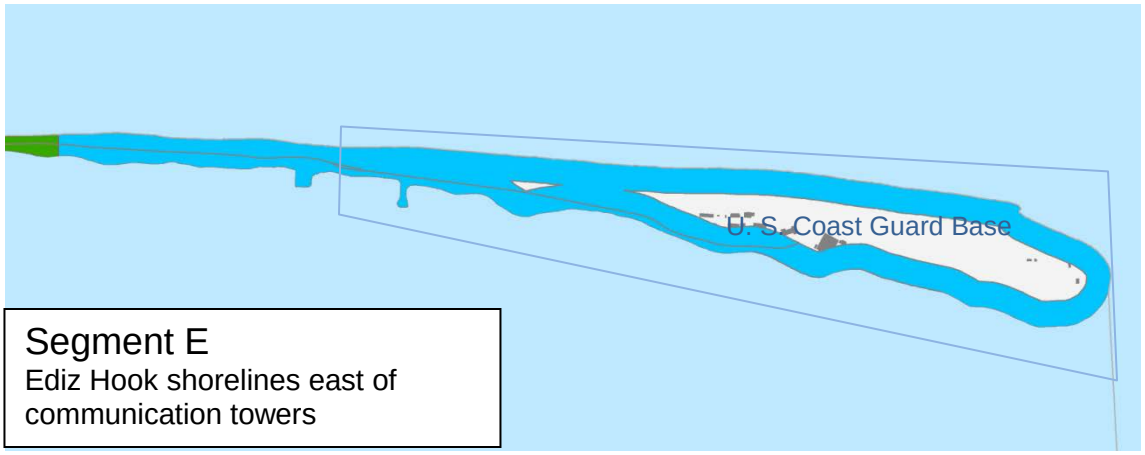
d. Environment-Specific Development Regulations

	Vegetation Conservation Area	Structure Setbacks (from the OHWM)	Maximum Structure Height
Segment E (facing the Strait)	N/A	N/A	N/A
Segment E (facing the Harbor)	OHWM to the waterward extent of new structural road foundation	15 feet	15 feet
Segment J	N/A	50 feet*	75 feet

**Setback requirements do not apply to jetties in the Boat Haven Marina. In the remainder of Segment J water-dependent uses may be built within the 50-foot setback. The 50-foot setback from the OHWM is required for non-water-dependent uses.*

Vegetation conservation areas (VCA) are areas along the shoreline in which vegetation contributing to the ecological function of shoreline areas is protected and/or restored. VCA's are measured from the shoreline in a width landward of and perpendicular to the OHWM. VCA's have generally not been applied in the HI-M designation where shoreline areas are highly armored or where there is little or no vegetation to conserve, and along the Strait side of Segment E where vegetative enhancement is not likely to be compatible with maintenance of the existing large rock stabilizing the outer shoreline of Ediz Hook. If no VCA is assigned to a shoreline segment, parcels with frontage on waters regulated by the SMP shall preserve existing native vegetation within this area to the extent feasible and in accordance with the allowances in Chapter 3, section 12.

Maximum structure heights are not applicable to light and utility poles, antennae, chimneys and stacks, or to equipment used for loading and unloading such as conveyors and cranes.



In Segment E, no new structures are allowed along the north side of Ediz Hook Road (portion of segment facing the Strait).

In the portion of this segment facing the Port Angeles Harbor, the City anticipates widening Ediz Hook Road to the south to facilitate trail improvements or public access.

The VCA extends from the OHWM to the waterward extent of any structural road foundation necessary to widen the road.

The preference for public access improvements in this segment is a continuous pedestrian and bicycle trail along the south edge of Ediz Hook road. The safety of both bicyclists and pedestrians must be addressed in the design of the trail.

Fences, poles and shelters shall be located and designed to minimize visual impacts.

In this segment, vegetative restoration or mitigation for development resulting in unavoidable impacts to vegetation on parcels where a VCA has not been designated shall be focused on shorelines east of the Boat Haven Marina, particularly the portion of the shoreline along the Valley Creek Estuary, where feasible; see Chapter 3. Utilization of the west side of the Valley Creek Estuary for restoration or mitigation is contingent upon execution of a formal agreement (conservation easement, etc.) between the property owner and party proposing mitigation or restoration. Such agreement shall ensure access to and maintenance of the utilized area, and guarantee preservation of the utilized area in perpetuity. If an agreement meeting the conditions outlined above cannot be reached, compensatory mitigation shall occur on the same parcel where the unavoidable impact occurs or through other measures established in this SMP.

3. High-Intensity Urban Uplands (HI-UU) Environment (Segments K, M and N)

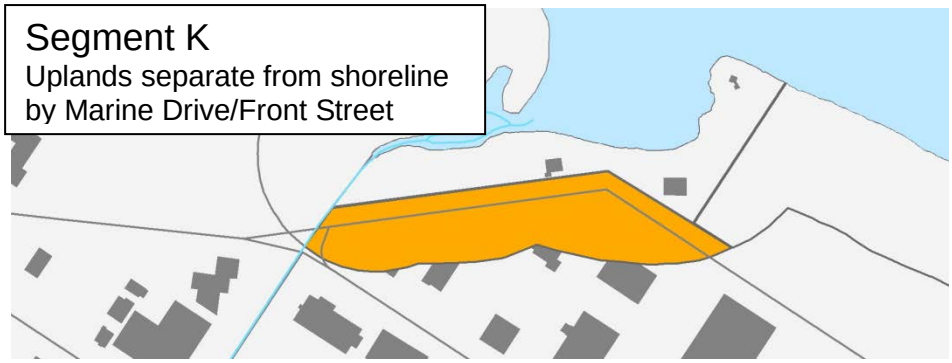
a. Purpose

The purpose of the High-Intensity Urban Uplands (HI-UU) Environment is to manage uses on sites within shoreline jurisdiction that are physically and functionally separated from the shoreline by a public right-of-way or public property and do not have direct access to the water. Areas separated from the shoreline that are predominantly single family residential are not included in this designation.

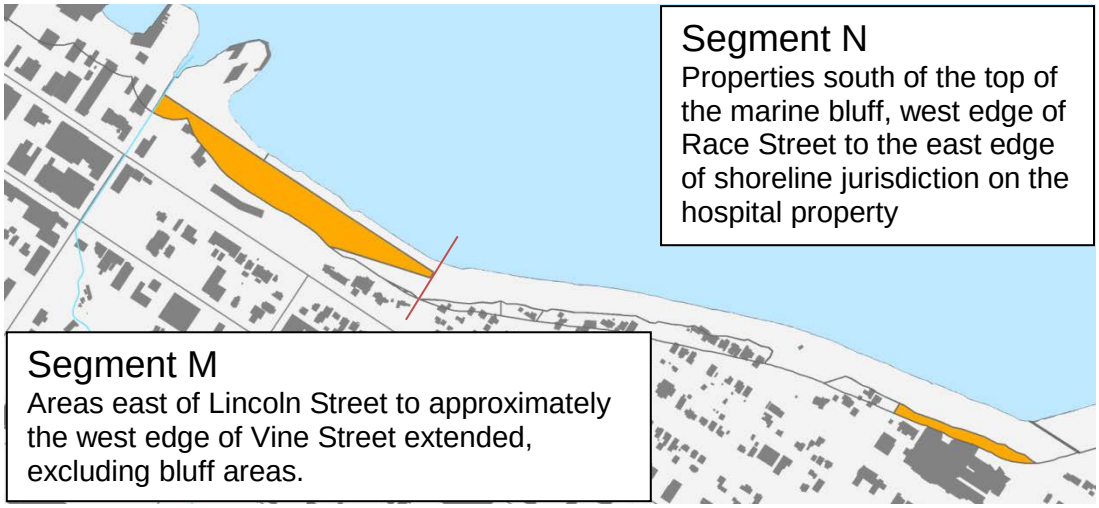
b. Designation Criteria

A High-Intensity Urban Uplands Environment designation will be assigned to shorelands featuring or planned for a variety of uses that are physically and functionally separated from the shoreline by a public right-of-way or public property. Public streets or portions of the streets separating the environment designations are included in the HI-UU Environment as described below. The HI-UU designation is a parallel designation that has no physical connection to the water.

1. **Segment K**. Area south and east of the Valley Creek estuary, including the Marine Drive and Front Street rights-of-way adjacent to the estuary. The centerline of Valley Street is the western boundary of the HI-UU Environment. The west edge of Cherry Street (extended north) is the eastern boundary of the HI-UU Environment.



2. **Segment M**. Areas east of Lincoln Street to approximately the west edge of Vine Street extended, excluding bluff areas.



3. **Segment N.** Privately owned parcels south of the Olympic Discovery/Waterfront Trail or south of the top of the marine bluff, from the west edge of the Race Street right of way east to the east edge of shoreline jurisdiction on the hospital property.

c. Management Policies

1. Uses in the High-Intensity Urban Uplands Environment should be limited to those that do not conflict with water-oriented activities and public access on the shoreline.
2. New development should not substantially diminish visual and physical public access.
3. Comfortable and attractive pedestrian, bicycle, and vehicular routes should be provided through shorelands with this designation to public access points by utilizing measures such as street and pathway improvements. Development should improve the aesthetic qualities of shorelands in this environment and consider views from public properties and adjacent residences.

d. Environment-Specific Development Regulations

	Vegetation Conservation Area	Structure Setbacks	Maximum Structure Height
Segment K	N/A	N/A from the OHWM (see zoning code)	30 feet
Segment M	N/A	N/A from the OHWM (see zoning code)	35 feet
Segment N	50 foot marine bluff buffer	15 feet from the landward edge of the 50 foot marine bluff buffer	35 feet

Vegetation conservation areas (VCA) are areas along the shoreline in which vegetation contributing to the ecological function of shoreline areas is protected and/or restored. VCA's are typically measured from the shoreline in a width landward of and perpendicular to the OHWM; however, because the HI-UU shorelands are physically separated from the water, VCA's are measured differently. The VCA in segment N reflects the 50 foot marine bluff setback required by the critical areas provisions in Chapter 3.

Viewing towers or other public access points may be allowed on street ends or other publically owned sites. In Segment K, new development and redevelopment shall maintain the City sidewalk with street trees along Marine Drive.

4. High-Intensity Mixed-Use (HI-MU) Environment (Segments L and O)

a. Purpose

The purpose of the High-Intensity Mixed-Use (HI-MU) Environment is to provide for a wide variety of urban uses and activities supporting vibrant shoreline areas as a key component of Port Angeles' character and quality of life. This designation accommodates public access and water-oriented commercial,

transportation, institutional, and recreational uses while protecting existing ecological functions and restoring ecological functions in areas that have been previously degraded.

b. Designation Criteria

A High-Intensity Mixed-Use Environment designation will be assigned to shorelands on Port Angeles's downtown waterfront and the former Rayonier Mill site that have the potential to support a variety of water-oriented uses related to commerce, transportation, navigation, and recreation.

c. Management Policies

1. Development in the High-Intensity Mixed-Use Environment should be managed so that it enhances and maintains the shorelines for public access and a variety of urban uses. Priority should be given to water-oriented uses.
2. All new development should provide public access or otherwise enhance the public's enjoyment of the shoreline.
3. New development should protect and, where feasible, restore shoreline ecological functions. Restoration should be emphasized on Ennis Creek in segment O, on creating habitat for priority species, and on environmental clean-up.
4. Visual access to the water and aesthetics should be considered in establishing height and bulk limits for new development.
5. Comfortable and attractive pedestrian, bicycle, and vehicular routes should be provided to public access points.
6. Development in shoreline areas should be compatible with surrounding uses, the level of infrastructure and services available, and other comprehensive planning considerations.

d. Environment-Specific Development Regulations

	Vegetation Conservation Area	Structure Setbacks (from the OHWM)	Maximum Structure Height
Segment L	N/A	N/A	45 feet
Segment O	100 feet	100 feet	45 feet

Vegetation conservation areas (VCA) are areas along the shoreline in which vegetation contributing to the ecological function of shoreline areas is protected and/or restored. VCA's are measured from the shoreline in a width landward of and perpendicular to the OHWM.

Segment L
Downtown Shorelines: Cherry Street to Vine Street (extended)

VCA's have not been applied in Segment L where there is little vegetation to conserve and most of the shoreline consists of facilities extending past the shoreline and out into the water (Railroad Avenue Esplanade, Coho Ferry Landing, Landings Mall). While no VCA is assigned to this shoreline segment, parcels with frontage on waters regulated by the SMP shall preserve existing native vegetation within this area to the extent feasible and in accordance with the allowances in Chapter 3, section 12. Existing street trees in this segment shall be maintained. New street trees shall be included with any new development or redevelopment.

Public shoreline views shall be protected by the use of measures, including but not limited to:

i. Decreasing the area of upper stories commensurate with increasing height.

ii. When there is an irreconcilable conflict between water-dependent uses and physical public access and maintenance of views from adjacent properties, the water-dependent uses and physical public access shall have priority, unless there is a compelling reason to the contrary.

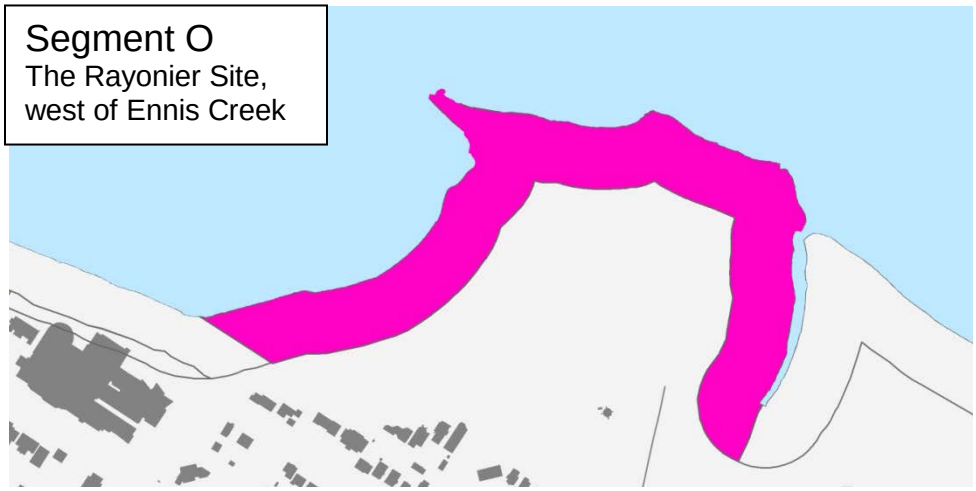
iii. Buildings shall incorporate architectural features that reduce scale such as building modulation (vertical and horizontal), pitched roofs, angled facades, and reduced massing.

iv. New development, uses and activities shall locate trash and recycling receptacles, utility boxes, HVAC systems, electrical transformers, fences and other appurtenances to minimize interference with public views.

v. Utilities and accessory structures shall be designed and installed in such a way as to avoid impacts to scenic views and aesthetic qualities of the shoreline area.

vi. Communication and radio towers shall not obstruct or destroy scenic views of the water. This may be accomplished by design, orientation and location of the tower, height, camouflage of the tower, or other features consistent with utility technology.

vii. Fences, walls, hedges and other similar accessory structures shall be limited to four (4) feet in height between the ordinary high water mark and primary structures.



Throughout this SMP update process and during previous planning for the former Rayonier Mill Site, the public has consistently indicated that the future of this parcel is a particularly important shoreline management issue because it provides a unique opportunity for a variety of shoreline uses. As of the date of this SMP's adoption, there are a number of uncertainties regarding the future of the site. SMP provisions must be flexible to accommodate a wide array of possibilities while implementing objectives of the Shoreline Management Act. However, specific standards are necessary for the purposes of evaluating cumulative impacts and determining when a shoreline variance is triggered.

In this segment, development shall not encroach on the VCA or setback adjacent to the tidally influenced portions of Ennis Creek without a variance, unless such development is for the purposes of public access or ecological restoration. In the remainder of the segment, VCA and setback encroachments may be authorized in accordance with Chapter 3, section 12.

Opportunities for moving or providing spurs off the Olympic Discovery/Waterfront Trail to the shoreline shall be explored.

Public shoreline views shall be protected by the use of measures, including but not limited to:

i. Decreasing the area of upper stories commensurate with increasing height, minimizing building heights and total lot coverage, maintaining open space between buildings, and clustering buildings to allow for broader view corridors.

ii. When there is an irreconcilable conflict between water-dependent uses and physical public access and maintenance of views from adjacent properties, the water-dependent uses and physical public access shall have priority, unless there is a compelling reason to the contrary.

iii. Buildings shall incorporate architectural features that reduce scale such as building modulation (vertical and horizontal), pitched roofs, angled facades, and reduced massing.

iv. New development, uses and activities shall locate trash and recycling receptacles, utility boxes, HVAC systems, electrical transformers, fences and other appurtenances to minimize interference with public views.

v. Utilities and accessory structures shall be designed and installed in such a way as to avoid impacts to scenic views and aesthetic qualities of the shoreline area.

vi. Communication and radio towers shall not obstruct or destroy scenic views of the water. This may be accomplished by design, orientation and location of the tower, height, camouflage of the tower, or other features consistent with utility technology.

vii. Fences, walls, hedges and other similar accessory structures shall be limited to four (4) feet in height between the ordinary high water mark and primary structures.

5. Urban Conservancy-Low Intensity (UC-LI) Environment (Segments A and G)

a. Purpose

The purpose of the Urban Conservancy-Low Intensity (UC-LI) Environment is to protect and restore ecological functions, open spaces, and other sensitive lands while allowing some low-intensity uses. This environment protects shoreline areas that include relatively intact or minimally degraded shoreline functions when compared to the rest of the shoreline areas in the City.

b. Designation Criteria

An Urban Conservancy-Low Intensity environment designation will be assigned to shorelands that are designated Open Space in the City's Comprehensive Plan and are located along active drift cells, feeder bluffs, wetlands, or other areas that should not be more intensively developed, and which retain important ecological functions even though partially developed.

c. Management Policies

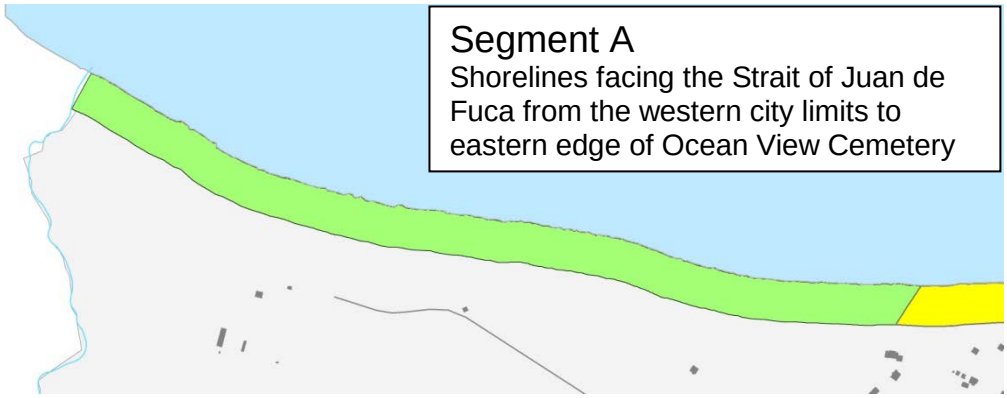
1. Uses in the Urban Conservancy-Low Intensity Environment should be limited to those which do not substantially degrade ecological functions or the natural character of the shoreline area. Development and uses that would substantially degrade or permanently deplete habitat or the physical or biological resources of the area should not be allowed.

2. Rehabilitation of existing degraded shoreline conditions, including habitat enhancement and environmental clean-up, is a preferred action.

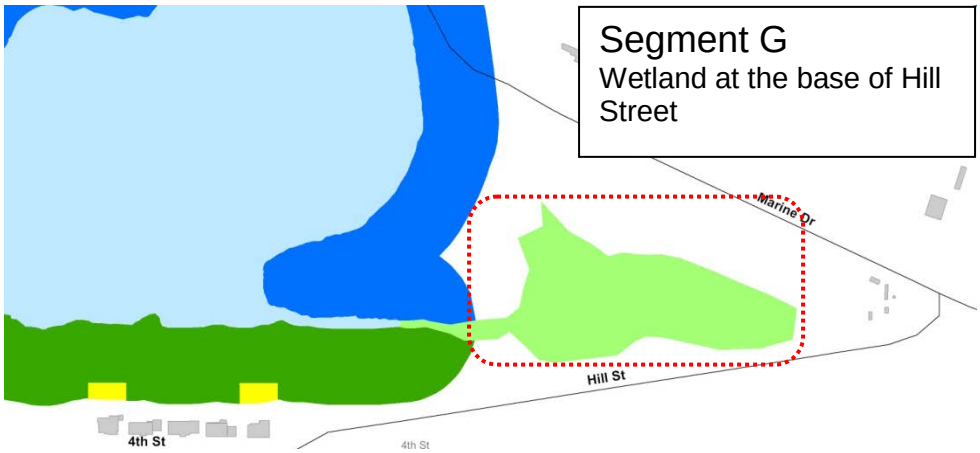
3. Activities or uses that that include significant shoreline vegetation removal, would cause substantial erosion or sedimentation, or adversely affect wildlife or aquatic life should not be allowed.

d. Environment-Specific Development Regulations

	Vegetation Conservation Area	Structure Setbacks (from the OHWM)	Maximum Structure Height
Segment A	200 feet	200 feet	N/A
Segment G	N/A	N/A	N/A



No new structures are allowed within this segment, except for shoreline stabilization structures necessary to protect existing utilities and address erosion at the closed municipal landfill site, in accordance with the provisions in Chapter 4.



Segment G is an associated wetland; see the critical areas provisions in Chapter 3 for additional requirements applying to this segment. Only the wetland is contained within shoreline jurisdiction (not its buffer). No new structures are allowed within this segment, with the exception of public access structure(s).

6. Urban Conservancy-Recreation (UC-R) Environment (Segments D, F, K, M, N and P)

a. Purpose

The purpose of the Urban Conservancy-Recreation (UC-R) Environment is to protect and restore ecological functions on sensitive lands in urban and developed settings and to provide public access and a variety of recreation and park uses. Restoration activities are a preferred action in this designation.

b. Designation Criteria

An Urban Conservancy-Recreation Environment designation will be assigned to shorelands that include public parks, designated trail corridors, and areas especially suited to public access and water-oriented recreation that is compatible with maintaining or restoring the ecological functions of the area. The UC-R designation is a parallel designation waterward of a different designation in segments F, K, M, N and P.

c. Management Policies

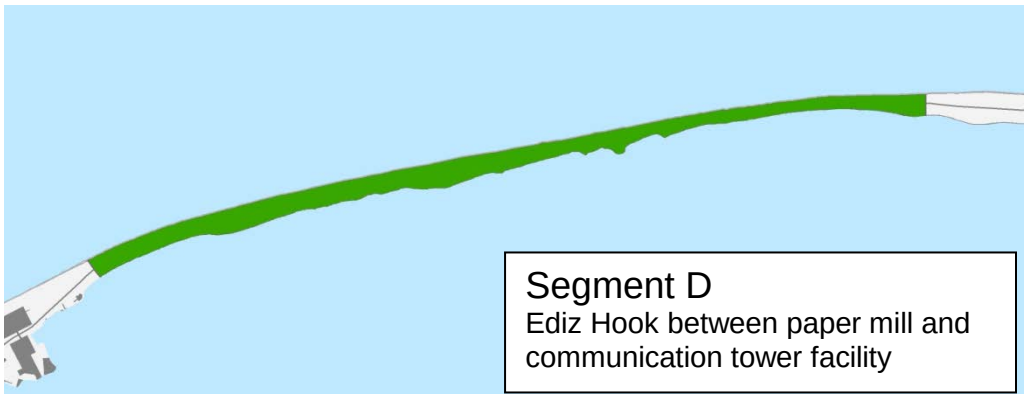
1. Water-oriented recreational uses, public access and cultural or educational uses are preferred over non- water oriented uses. Water-dependent recreational uses should be given highest priority.
2. Commercial activities specifically supporting or catering to the public's use or enjoyment of publicly accessible shorelines, such as food and beverage or boating concessions, may be allowed.
3. Water-dependent and water-enjoyment recreation facilities compatible with the protection of ecological functions, such as boating facilities, angling, wildlife viewing, trails and swimming beaches, are preferred uses, provided significant ecological impacts to the shoreline are avoided or mitigated.
4. During development and redevelopment, efforts should be taken to restore ecological functions.
5. The continuity of trail systems, including the Olympic Discovery/Waterfront Trail, should be maintained. Improvements that provide greater access and safety along the trail system are encouraged.

d. Environment-Specific Development Regulations Designated UC-R

	Vegetation Conservation Area	**Structure Setbacks (from the OHWM)**	**Maximum Structure Height**
Segment D (facing the Strait)	N/A	N/A	N/A
Segment D (facing the Harbor)	OHWM to the waterward extent of new structural road foundation	15 feet (see below)	15 feet
Segment F	200 feet	200 feet	N/A
Segment K	Waterward edge of Marine Drive/Front Street	Waterward edge of Marine Drive/Front Street	40 feet (viewing tower only, see below)

Segment M	N/A	N/A	N/A
Segment N	To the top of the marine bluff	50 feet	30 feet
Segment P	To the top of the marine bluff	N/A	N/A

Vegetation conservation areas (VCA) are areas along the shoreline in which vegetation contributing to the ecological function of shoreline areas is protected and/or restored. VCA's are measured from the shoreline in a width landward of and perpendicular to the OHWM. A VCA has not been applied along the Strait side of Segment D where vegetative enhancement is not likely to be compatible with maintenance of the existing large rock stabilizing the outer shoreline of Ediz Hook. A VCA has not been applied along Segment M which is a narrow stretch of shoreline containing the Olympic Discovery Trail, and where little to no vegetation exists and the shoreline is heavily armored. If no VCA is assigned to a shoreline segment, parcels with frontage on waters regulated by the SMP shall preserve existing native vegetation within this area to the extent feasible and in accordance with the allowances in Chapter 3, section 12.



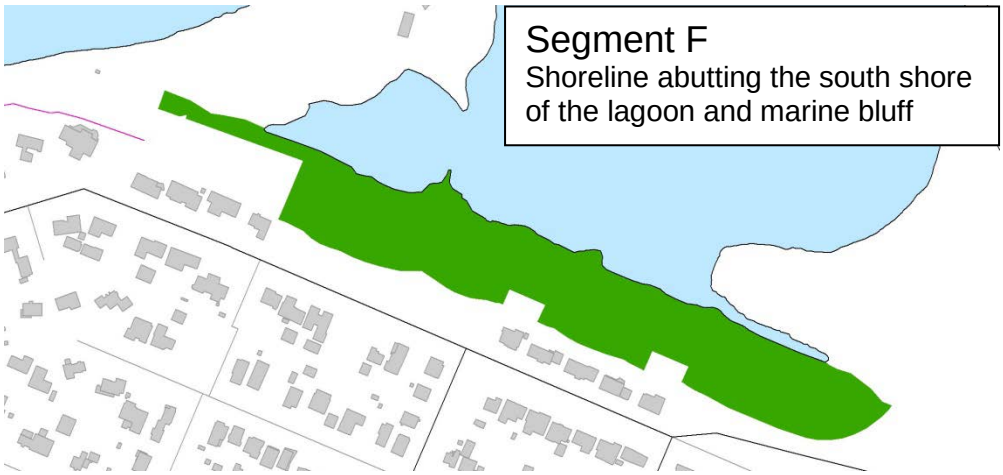
In this segment, no new structures are allowed along the north side of Ediz Hook Road (portion of segment facing the Strait). Along the portion of the segment facing the Port Angeles Harbor, only structures that directly support water dependent shoreline recreational uses shall be authorized.

In the portion of this segment facing the Port Angeles Harbor, the City anticipates widening Ediz Hook Road to the south to facilitate trail improvements or public access. The VCA extends from the OHWM to the waterward extent of any structural road foundation necessary to widen the road.

The preference for public access improvements in this segment is a continuous pedestrian and bicycle trail along the south edge of Ediz Hook Road. The safety of both bicyclists and pedestrians must be addressed in the design of the trail.

Fences, poles and shelters shall be located and designed to minimize visual impacts.

Overwater structures are prohibited in this segment.

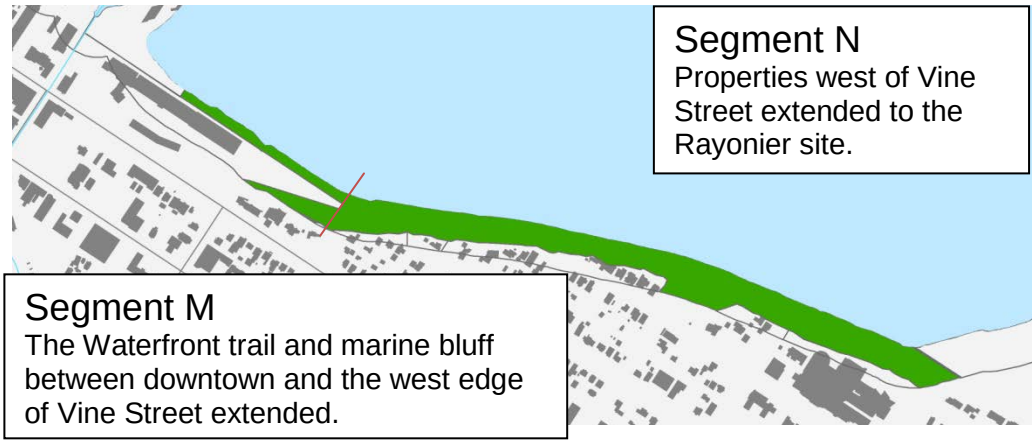


No new structures are allowed within this segment, except for shoreline stabilization structures necessary to protect existing utilities or a public access boardwalk or paths, in accordance with the provisions in Chapter 3.

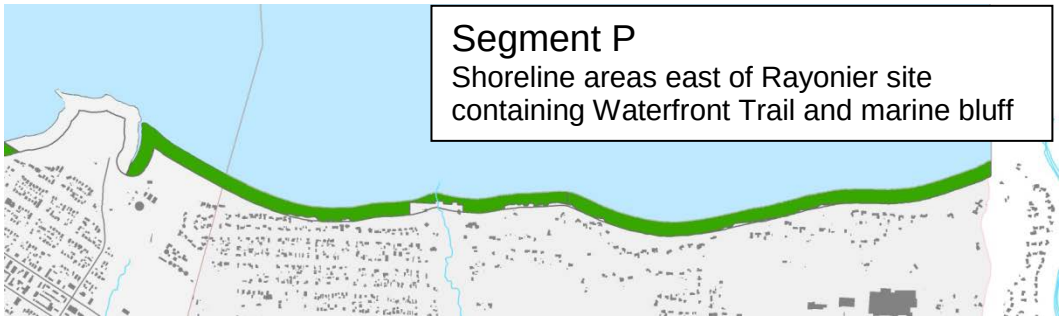
A trail from Marine Drive to the shoreline west of Ediz Hook is the preferred type of public access in this segment. Any trail or similar public access shall follow the existing Industrial Water Line (IWL) route as closely as is feasible. The design of public access facilities shall include measures to protect private industrial infrastructure and facilities.

Public viewing towers and Friendship Bridge are the only structures permitted in this segment, and may be permitted within the VCA and setback without a variance in accordance with Chapter 3. Non native plant materials may be used within landscaped portions of the park where special use requirements exist.

Any development in this segment shall maintain the continuous public access pathway/pedestrian walkway that serves as the Olympic Discovery/Waterfront Trail.



As outlined above, a VCA has not been applied along Segment M. Segment M primarily consists of a narrow stretch of shoreline containing the Olympic Discovery Trail where little to no vegetation exists and the shoreline is heavily armored. There is no setback in this segment because the trail encompasses the entire portion of the segment with this designation, and no new structures are allowed. In segment N, the VCA extends from the OHWM to the top of the marine bluff. New structures are limited to Francis Street Park only. The Olympic Discovery/Waterfront Trail must be maintained in these segments.



In segment P, the VCA extends from the OHWM to the top of the marine bluff. Adjacent to the Lee's Creek subreach where there is no bluff, the VCA extends to the landward boundary of any landslide hazard areas. New structures are prohibited in the UC-R designated portion of Segment P.

The Olympic Discovery/Waterfront Trail must be maintained in this segment.

7. Shoreline Residential (SR) Environment (Segments B, F, N and P)

a. Purpose

The purpose of the Shoreline Residential (SR) Environment is to allow residential development, uses and redevelopment while ensuring that existing ecological functions are not diminished and avoiding foreseeable risk to residential structures from hazardous geological conditions.

b. Designation Criteria

A Shoreline Residential Environment designation will be assigned to shorelands that exist as single-family residential developments or are planned and platted for residential development. The SR designation is a parallel designation, and with the exception of segment B has no physical connection to the water.

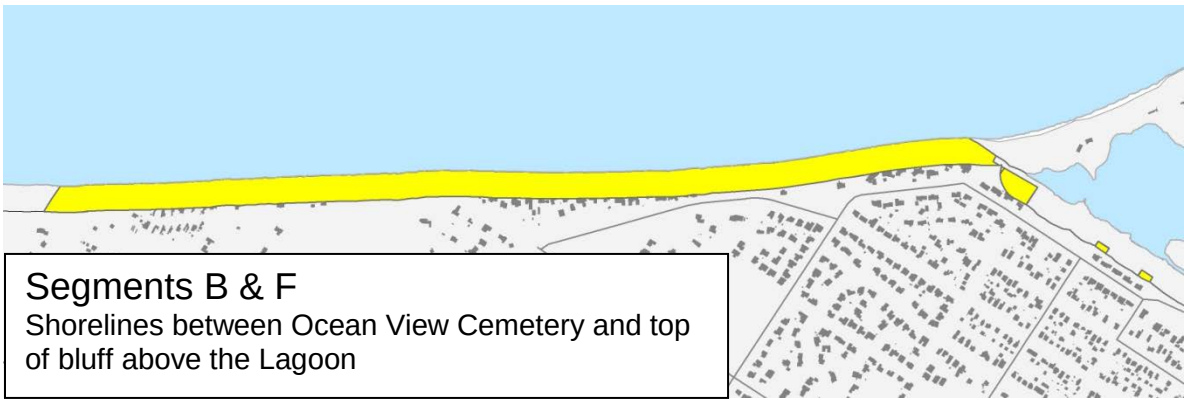
c. Management Policies

1. Development standards in the Shoreline Residential Environment should protect shoreline ecological functions, taking into account the environmental limitations and sensitivity of the shoreline area, the level of infrastructure and services available, and other comprehensive planning considerations.
2. Passive water-oriented recreational uses and public access should be allowed where feasible and where they do not cause significant ecological impacts.
3. Standards for new residential use, development, and redevelopment should protect human safety and ensure that new development will not require structural shoreline stabilization or flood protection during the projected lifetime of the development.

d. Environment-Specific Development Regulations Designated SR

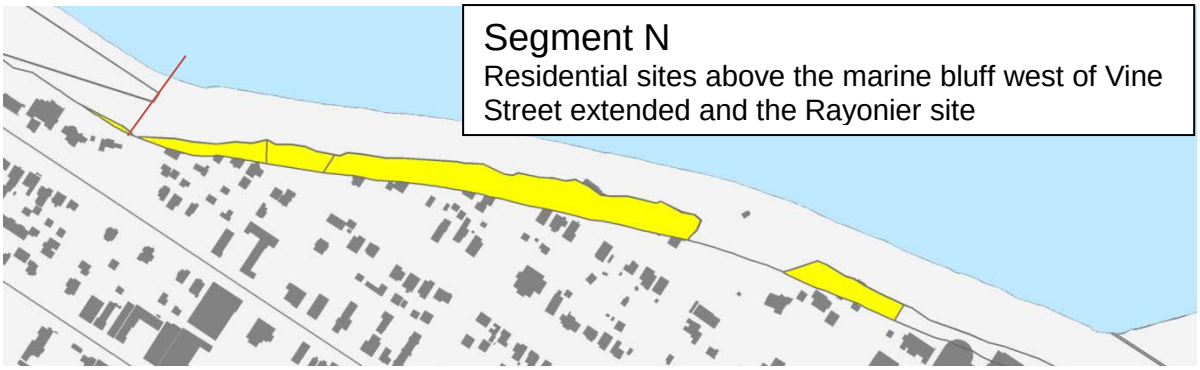
	Vegetation Conservation Area	**Structure Setbacks (from the OHWM)**	**Maximum Structure Height**
Segment B	Marine bluff plus 50 feet landward from the edge of the bluff	15 feet from the landward edge of the marine bluff buffer/VCA	35 feet
Segment F	50 feet landward from the top of the bluff	15 feet from the landward edge of the marine bluff buffer	35 feet
Segment N	50 feet landward from the top of the bluff	15 feet from the landward edge of the marine bluff buffer	35 feet
Segment P	50 feet landward from the top of the bluff In the Lee's Creek subreach, any landslide hazard area	15 feet from the landward edge of the marine bluff buffer (or landslide hazard area in the Lee's Creek subreach)	35 feet

Vegetation conservation areas (VCA) are areas along the shoreline in which vegetation contributing to the ecological function of shoreline areas is protected and/or restored. VCA's are typically measured from the shoreline in a width landward of and perpendicular to the OHWM. The SR designation occurs on shorelands upland of the UC-R designation in segments F, N and P. In these segments, the SR designation begins at the top of the marine bluff. In the Lee's Creek subreach (segment P), the SR designation begins at the waterward lot lines of the subject parcels. In accordance with critical area provisions in Chapter 3, the VCA in these areas reflects the required marine bluff buffer (or landslide hazard area in the Lee's Creek subreach).



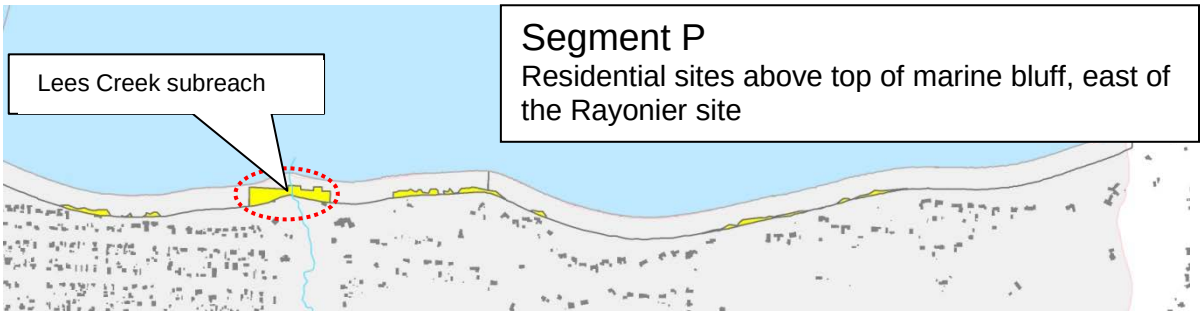
New development shall be setback from the top of the marine bluff by a minimum of 65 feet (50 foot marine bluff buffer plus 15 feet). See Chapter 3 for additional critical area provisions.

Public access viewing areas may be developed in unopened street ends. Development that provides access to the shoreline from bluff-top properties in this segment is prohibited.



New development shall be setback from the top of the marine bluff by a minimum of 65 feet (50 foot marine bluff buffer plus 15 feet).

Public access viewing areas may be developed in unopened street ends. The Olympic Discovery/Waterfront trail shall be maintained along the shoreline in the parallel UC-R designation.



As outlined above, the SR designation occurs on shorelands upland of the UC-R designation in segment P. The SR designation begins at the top of the marine bluff; because the Lee's Creek subreach is a delta and lacks a true marine bluff, the SR designation begins at the waterward lot lines of the subject parcels. In accordance with critical area provisions in Chapter 3, the VCA in these areas reflects the required marine bluff buffer, or the landslide hazard area in the Lee's Creek subreach.

New development shall be set back 15 feet from the top (landward boundary) of the marine bluff buffer, or 15 feet from the top of any landslide hazard area in the Lee's Creek subreach.

Public access viewing areas may be developed in unopened street ends. The Olympic Discovery/Waterfront trail shall be maintained along the shoreline in the parallel UC-R designation.

8. Aquatic-Harbor (A-H) Environment

a. Purpose

The purpose of the Aquatic-Harbor (A-H) Environment is to facilitate water dependent uses and restoration of ecological functions within the Port Angeles Harbor. Waters and submerged lands within the Port Angeles Harbor are heavily used for commercial and recreational navigation, industrial activities and public access.

b. Designation Criteria

An Aquatic-Harbor Environment designation will be assigned to the area waterward of the OHWM within Port Angeles Harbor, which include submerged lands lying westward of the city limit line extending from the easternmost tip of Ediz Hook southward to the Port Angeles city limits at the shoreline as of January 1, 2011. This designation excludes the lagoon at the base of Ediz Hook.

c. Management Policies

1. New overwater structures should be prohibited except for water-dependent uses, public access, or ecological restoration, unless otherwise specified for a particular segment of adjacent shorelands.
2. The size of new overwater structures should be limited to the minimum necessary to support the structure's intended use. Overwater structures should be configured and located so as to avoid and reduce impacts to ecological functions or critical saltwater habitats.
3. Provisions for the Aquatic-Harbor Environment should be directed toward accommodating appropriate water-dependent uses while maintaining ecological functions and restoring habitat for priority aquatic species.
4. All development in the Aquatic-Harbor Environment should be located and designed to minimize interference with surface navigation, minimize impacts to public views, and to allow for the safe, unobstructed passage of fish and wildlife, particularly those species dependent on migration.
5. Shoreline uses and modifications should be designed and managed to prevent degradation of water quality and alteration of natural hydrographic conditions.
6. Development of underwater pipelines and cables below the OHWM should include adequate provisions to ensure against substantial damage to the environment.

7. Abandoned and neglected structures that cause adverse visual impacts or are a hazard to public health, safety, and welfare should be removed or restored to a usable condition consistent with the provisions of this program.
8. Environmental clean-up and remediation of contaminated sediments in the Aquatic- Harbor Environment is encouraged.

9. Aquatic-Conservancy (A-C) Environment

a. Purpose

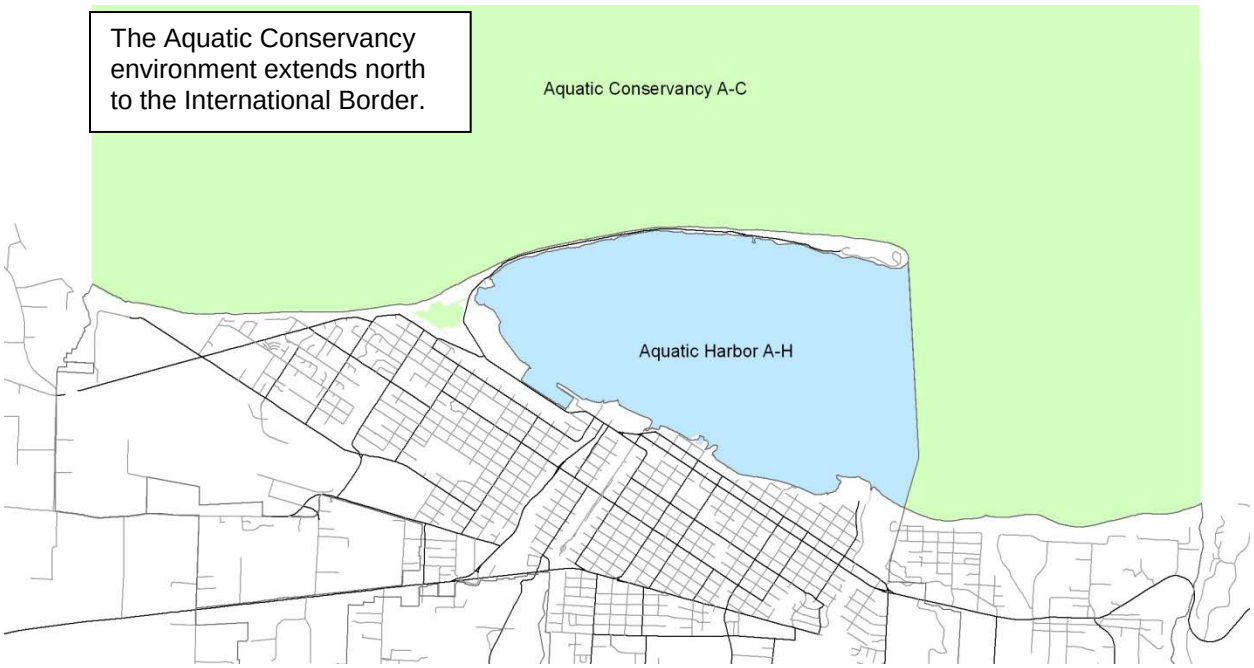
The purpose of the Aquatic-Conservancy (A-C) Environment designation is to protect and enhance the unique characteristics and functions of the areas waterward of the ordinary high water mark outside the Port Angeles Harbor.

b. Designation Criteria

An Aquatic Conservancy (A-C) designation will be assigned to areas waterward of the OHWM outside of Port Angeles Harbor within the City's Shoreline jurisdiction extending to the international boarder. The lagoon at the base of Ediz Hook is included in the Aquatic Conservancy designation.

c. Management Policies

1. Except for special situations involving a public benefit and water-dependent activities associated with the U.S. Coast Guard base on Ediz Hook, overwater structures should not be allowed.
2. Diverse public access opportunities to water bodies should be encouraged provided they are compatible with protection of the shoreline ecology.
3. In appropriate areas, fishing and recreational uses of the water should be protected from competing water dependent uses that would interfere with these activities.
4. All developments and activities using navigable waters or their beds should be located and designed to minimize interference with surface navigation, to minimize adverse visual impacts, and to allow for the safe, unobstructed passage of fish and animals, particularly those whose life cycles are dependent on migration.
5. Development of underwater pipelines and cables should not be allowed except when upland alternatives exist. When permitted, such facilities should include adequate provisions to ensure against substantial or irrevocable damage to the environment.
6. Abandoned and neglected structures should be removed or restored to a usable condition consistent with the provisions of this program.


The Aquatic Conservancy environment extends north to the International Border.
Aquatic Conservancy A-C
Aquatic Harbor A-H

C. Shoreline Use and Modification Matrices

1. Shoreline Use Matrix

The following matrix (Table 1) indicates the uses allowed in specific shoreline environments. Where there is a conflict between the matrix and the written provisions in Chapters 2, 3, 4, or 5 of this SMP, the written provisions shall apply. The numbers in the matrix refer to footnotes, which may be found immediately following the matrix. These footnotes provide additional clarification or conditions applicable to the associated use or shoreline environment designation.

Table 1. Shoreline Use Matrix

P = The use may be permitted
C = The use may be permitted as a conditional use
X = The use is prohibited

SHORELINE USE	High-Intensity-Industrial	High-Intensity-Marine	High-Intensity-Urban Uplands	High-Intensity-Mixed-Use	Urban Conservancy-Low Intensity	Urban Conservancy-Recreation	Shoreline Residential	Aquatic-Harbor [13]	Aquatic-Conservancy [13]
Agriculture	X	X	X	X	X	X	X	X	X
Mining	X	X	X	X	X	X	X	X	X
Forest practices (Not including log rafting)	X[12]	X[12]	X	X	X	X	X	NA	NA
Aquaculture	P	P	P	P	X	X	X	C	C
Commercial:									
Water-dependent	X	P	P	P	X	P[1]	X	P	C
Water-related, water-enjoyment	C	P	P	P	X	P[1]	X	C[4]	X
Non-water-oriented	C[4]	C[4]	P	P[4]	X	X	X	C[4]	X
Boating facilities (including marinas)[10]	X	P	P	P	X	P	X	P	X
Industrial:									
Water-dependent	P	P	X	C[8]	X	X	X	P	C
Water-related	P	P	P	C[8]	X	X	X	X	X
Non-water-oriented	P[4]	P[4]	P	X	X	X	X	X	X
Flood hazard management	P	P	P	P	P	P	P	NA	NA
Solid waste disposal	X	X	X	X	X	X	X	X	X
Governmental, educational, cultural and institutional facilities[9]	P	P	P	P	P[9]	P	X	C	X
Government facility – Water-Dependent	P	P	P	P	X	X	X	P	C

SHORELINE USE	High-Intensity-Industrial	High-Intensity-Marine	High-Intensity-Urban Uplands	High-Intensity-Mixed-Use	Urban Conservancy-Low Intensity	Urban Conservancy-Recreation	Shoreline Residential	Aquatic-Harbor [13]	Aquatic-Conservancy [13]
Parking									
Parking (accessory)	P	P	P	P	X	P	P	X	X
Parking (primary, including paid)	X	X	X	C[2]	X	X	X	X	X
Recreation:									
Water-dependent	P	P	P	P	P[3]	P[1]	P[3]	P	P
Water-enjoyment	P	P	P	P	P[3]	P[1]	P	P	P
Non-water-oriented	P[4]	P[4]	P[4]	P[4]	X	P[1,4]	X	X	X
Public Access	P	P	P	P	P[3]	P	P	P	P
Residential:									
Single-family residential	X	X	P	X	X	X	P	X	X
Multifamily residential	X	X	P	C[11]	X	X	P	X	X
Land subdivision	P	P	P	P	P[5]	P[5]	P	X	X
Signs:									
On premises	P	P	P	P	X	P[6]	X	P[14]	X
Off premise[14]	X	X	X	X	X	X	X	X	X
Public, highway	P	P	P	P	X	P	X	X	X
Transportation:									
Water-dependent	P	P	P	P	C[3]	P	X	P	C
Non-water-oriented	P[7]	P[7]	P	P[7]	X	C[7]	P	X	X
Utilities (primary)	P[7]	P[7]	P	C[7]	C[7]	C[7]	C	C[7]	C[7]

Shoreline Use Matrix Notes:

1. *Only park concessions and recreational uses that enhance the opportunity to enjoy publicly accessible shorelines may be allowed.*
2. *Parking as a primary use is prohibited within shoreline jurisdiction with the exception of in segment L (see chapter 3, section 7).*
3. *Only passive activities that require little development with no significant adverse impacts may be allowed.*
4. *May be allowed only as part of a mixed-use development with water dependent uses, or on a site that is physically separated from the shoreline by another property or public right of way.*
5. *Land division may be allowed only where the Administrator determines that it is for a public purpose.*

6. *Signs may be allowed only for public facilities and accessory uses within them.*
7. *Roadways and primary utilities may be allowed only if there is no other feasible alternative, as determined by the Administrator, and all adverse impacts are mitigated per the mitigation sequence detailed in chapter 3, section 1.*
8. *Small-scale water-oriented fabrication and processing, such as repair of hand-launched boats and custom fish processing, may be allowed only where the Administrator determines there are no significant adverse impacts.*
9. *May be allowed in shoreline jurisdiction only if water-oriented (see chapter 5, section 6), and may be allowed in the Urban Conservancy-Low Intensity designation only if the development and use do not cause significant ecological impacts. These types of uses and developments are allowed over water only if they are water-dependent, provide public access, or include a restoration component.*
10. *See table 2 for moorage piles and mooring buoys.*
11. *Residential uses may be allowed in the HI-MU environment only when located above an approved ground floor use. See PAMC Title 17.*
12. *Log handling and processing of forest products are allowed in the HI-I and HI-M environments. See Chapter 5. §5, Regulations 14 through 26.*
13. *Allowed in the aquatic environment only if allowed in the nearest upland environment. With regard to aquaculture, uses with no upland components may be authorized in the aquatic designations regardless of the adjacent upland designation with a CUP.*
14. *Over-water or off-premise signs may only authorized if directional, informational or providing a public warning.*

2. Shoreline Modification Matrix

The following matrix (Table ***1***) is the shoreline modification matrix. The matrix indicates the permitted, conditional, and prohibited modifications in all shoreline environmental designations. The numbers in the matrix refer to footnotes which may be found immediately following the matrix. These footnotes provide additional clarification or conditions applicable to the associated modification. Where there is a conflict between the matrix and the written provisions in Chapters 2, 3, 4 or 5, the written provisions shall apply.

Table 1. Shoreline Modification Matrix

P = May be permitted
C = May be permitted as a conditional use only
X = Prohibited; the use is not eligible for a variance or conditional use permit
NA = Not applicable

SHORELINE MODIFICATIONS	**High-Intensity-Industrial**	**High-Intensity-Marine**	**High-Intensity-Urban Uplands**	**High-Intensity-Mixed-Use**	**Urban Conservancy-Low Intensity**	**Urban Conservancy-Recreation**	**Shoreline Residential**	**Aquatic-Harbor[1]**	**Aquatic-Conservancy[1]**
Shoreline stabilization:									
Bioengineering	P	P	NA	P	P	P	P	P[3]	P[3]
Revetments	P	P	NA	P	C	P	C	P	P
Bulkheads	P	P	NA	P	X	C	C	P	P
Breakwaters/jetties/rock weirs/groins	P	P	NA	P	X	C	X	C	C
Dikes, levees	C	C	NA	C	C	C	C	P[3]	P[3]
Environmental restoration	P	P	P	P	P	P	P	P	P
Clearing and Grading	P	P	P	P	C	P	P	NA	NA
Dredging	NA	NA	NA	NA	NA	NA	NA	P	C[4]
Dredged material disposal	P	P	P	P	X	C	X	C[4]	C[4]
Hazardous waste cleanup	P	P	P	P	P	P	P	P	P
Fill	P	P	P	P	C	P	C	C[5]	C[5]
Piers, docks	P	P	NA	P	X	P	X	P	C
Moorage piles and mooring buoys	NA	NA	NA	NA	NA	NA	NA	P[2]	C[2]
Outfalls	P	P	NA	P	C	P	P	P	C

Shoreline Modification Matrix Notes:

1. *Specific to all methods of shoreline stabilization, and piers and docks - allowed in the aquatic environment only if allowed in the nearest upland environment.*
2. *Private, non commercial mooring piles and buoys are prohibited.*

3. *Soft stabilization measures may be allowed waterward of the OHWM if they restore ecological functions.*
4. *Previously unauthorized dredging and dredged material disposal may be allowed as part of construction of an approved use within the Aquatic Environments (e.g., buried outfall). Dredge material disposal according to PSDDA management plan may be allowed with a CUP.*
5. *Fill waterward of the OHWM that is for the purpose of restoring ecological functions or as part of a WDOE-approved environmental clean-up action is a permitted use and does not require a conditional use permit, unless the proposed fill material includes dredge spoils.*

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CHAPTER 3

General Policies and Regulations

1. Generally Applicable Policies and Regulations

General policies and regulations are applicable to all uses in all shoreline environments that may occur along the City's shorelines. The "policies" listed in this SMP will provide broad guidance and direction and will be used by the City in applying the "regulations." The provisions of this SMP shall be administered consistent with constitutional and legal limitations.

a. Applicability

The following policies and regulations apply to all uses and development in all shoreline environment designations.

b. Policies

1. In order to encourage shoreline restoration, the City will implement Washington State House Bill 2199 Chapter 405, 2009 Laws, codified as RCW 90.58.580. The City may grant appropriate relief from SMP provisions to applicable properties all along the City's shorelines provided they meet the conditions of RCW 90.58.580 and the policies in this SMP.
2. In accordance with RCW 90.58.580, a Substantial Development Permit is not required for development on land that is brought under shoreline jurisdiction due to a shoreline restoration project. However, projects are still required to comply with the regulations of this Master Program.
3. Projects taking place on lands that are brought into shoreline jurisdiction due to a shoreline restoration project that caused a landward shift of the OHWM may apply to the Shoreline Administrator for relief from the SMP development standards and use regulations under the provisions of RCW 90.58.580. Any relief granted will be strictly in accordance with the limited provisions of RCW 90.58.580, including the specific approval of the Department of Ecology.
4. Where there is an irreconcilable conflict between water-dependent shoreline uses or physical public access and maintenance of views from adjacent properties, the water-dependent uses and physical public access should have priority, unless there is a compelling reason to the contrary.
5. All adverse impacts to the shoreline should be avoided or, if that is not possible, minimized to the extent feasible. Mitigation should be provided for any unavoidable impacts to ensure no net loss of ecological function.

c. Regulations

1. Except when specifically exempted by statute, all proposed shoreline uses and development, including those that do not require a shoreline

permit, must conform to the Shoreline Management Act, Chapter 90.58 RCW, and to the policies and regulations of this SMP.

2. All proposed shoreline uses and development, including those that do not require a shoreline permit may be allowed only when consistent with the underlying City zoning, PAMC Title 17.
3. All new shoreline modifications must be in support of an allowable shoreline use that conforms to the provisions of this SMP.
4. Shoreline uses and modifications listed as "prohibited" shall not be authorized as a shoreline variance or shoreline conditional use permit.
5. Permit applicants shall submit management plans detailing application of pesticides, fertilizers and other chemicals as part of the permit application. Plans shall indicate the pesticide to be used and assurance that use of the chemical is approved for the intended use and that the chemicals are applied per department of Agriculture or Department of Ecology regulations. The Shoreline Administrator will require the use of best management practices for fertilizer application in order to protect water quality. The public must be notified through announcements and on-site signage when chemicals are applied.
6. All shoreline uses and developments shall analyze the environmental impacts of the proposal and include measures to mitigate environmental impacts not otherwise avoided or mitigated by compliance with the Master Program and other applicable regulations. Where required, the City will apply mitigation measures in the following sequence of steps listed in order of priority, with (a) being top priority:
    a. Avoiding the impact altogether by not taking a certain action or parts of an action;
    b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;
    c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
    d. Reducing or eliminating the impact over time by preservation and maintenance operations;
    e. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and
    f. Monitoring the impact and the compensation projects (from subsection e. above) and taking appropriate corrective measures.
7. The City may allow fee payment in lieu of physical compensatory mitigation measures provided:
    a. There is an established program to restore ecological functions using those funds;
    b. The funds are sufficient to provide mitigation so that there is no net loss of ecological function; and

c. There is a direct and demonstrated correlation between the impacted ecological functions and the restored functions that the fee will fund.

8. All shoreline development, uses and activities shall be located, designed, constructed and managed in a manner which:

    a. Minimizes adverse impacts to surrounding land and water uses and is aesthetically compatible with other existing or planned uses in the affected area;

    b. Avoids disturbance of and minimizes adverse impacts to fish and wildlife resources, including spawning, nesting, rearing and habitat areas and migratory routes;

    c. Minimizes interference with natural shoreline processes such as water circulation and sediment transport and accretion;

    d. Avoids adverse impacts to public health and safety;

    e. Minimizes the need for shoreline defense and stabilization measures and flood protection works, such as bulkheads, fill, levees, dikes, groins or substantial site regrades; and

    f. Utilizes effective erosion control methods during both project construction and operation.

2. Archaeological and Historical Resources and Sites

a. Applicability

1. The following provisions apply to standing historical structures, buildings, sites or districts and archaeological resources or sites that are either recorded at the Department of Archaeology and Historic Preservation, demonstrated or predicted by local jurisdictions, or have been discovered as part of a project action (for example the inadvertent discovery of a buried archaeological site during construction).

2. Archaeological sites located both within and outside of shoreline jurisdiction are subject to Chapter 27.44 RCW (Indian graves and records) and Chapter 27.53 RCW (Archaeological sites and records). Developments or uses that may impact such sites shall comply with Chapters 25-46 and 25-48 WAC as well as federal historical preservation laws and the provisions of this SMP.

b. Policies

1. Due to the limited and irreplaceable nature of historical and archaeological resources, all shoreline uses, activities, and development should be prevented from adversely impacting, destroying, or damaging any site having historical, cultural, scientific or educational value as identified by local, State or Tribal cultural resources or planning professionals.

2. The City's shoreline contains archaeological resources and sites demonstrating nearly 3,000 years of habitation by the Klallam People. The City will plan accordingly and apply additional, appropriate measures to ensure that important archaeological sites are identified and protected.
3. Significant archaeological and historical resources should be permanently preserved for scientific study, education and public observation.

c. Regulations

1. City Planning Staff shall review the information provided by the project applicant and consult in-house archaeological and historical reference materials, including but not limited to:
    a. City of Port Angeles' Archaeological Predictive Model;
    b. Washington State's online database of archaeological and historical resources (WISAARD).
2. Planning staff shall consult with the Lower Elwha Klallam Tribe on all shoreline projects with ground disturbing components.
3. Based upon the results of consultation with the Tribe, City planning staff or the authorized approval body may add conditions to the project permit in order to require the identification and protection of historical and archaeological resources that might otherwise be adversely affected by the project. These conditions will adhere to standard and accepted professional cultural resources practices.
4. In addition to any other conditions that may be imposed on a project, all shoreline permits shall contain provisions requiring developers and property owners to immediately cease work and notify the City Planning Department, Department of Archaeology and Historic Preservation and affected Indian Tribes if any items of possible archaeological interest are uncovered during excavations. In such cases, the developer or property owner shall be required to allow a site inspection and evaluation by an archaeologist meeting the federal secretary of the interior's standards for a professional archaeologist. The professional archaeologist shall ensure that any inadvertent archaeological discoveries are properly recorded, reported, and mitigated prior to the resumption of the project.
5. The City may require that development be postponed in such areas to allow investigation of public acquisition potential and/or retrieval and preservation of significant artifacts.
6. The City may deny a permit based upon archaeological conditions when the City determines that a site has significant archaeological, natural, scientific or historical value. No shoreline permit shall be issued which would pose a threat to a significant archaeological site.
7. In the event that unforeseen factors constituting an emergency as defined in WAC 173-27-040 (2)(d) necessitate rapid action to retrieve or preserve artifacts or data, the project may be exempted from the requirement to obtain a substantial development permit. The City shall notify the State Department

of Ecology, the State Attorney General's Office, the State Historic Preservation Office, and the Lower Elwha Klallam Tribe of the exemption in a timely manner.

8. Historical or archaeological resources shall be considered in park, open space, public access and site planning, with access to such areas designed and managed so as to give maximum protection to the resource and surrounding environment.

9. Interpretation of historical and archaeological features (e.g., informational or interpretive panels along trails) shall be provided as part of public projects when the Shoreline Administrator, in consultation with the Lower Elwha Klallam Tribe, determines that it is appropriate based on the sensitivity of the features, interpretive opportunities, and other relevant circumstances.

3. Critical Areas (General)

a. Applicability

The following policies and regulations apply to all critical areas within shoreline jurisdiction, as defined in the City of Port Angeles Environmentally Sensitive Areas Protection regulations (Title 15 PAMC). As outlined in Chapter 1, provisions in Title 15 pertaining specifically to fish and wildlife habitat areas, locally unique features and geologically hazardous areas (PAMC Chapter 15.20), wetlands protection (PAMC Chapter 15.24), and flood damage prevention (PAMC Chapter 15.12) shall be applicable along with regulations contained in this SMP. Modifications to the Environmentally Sensitive Area provisions in Title 15 PAMC as they apply in shoreline jurisdiction are detailed below.

The version of the City's Environmentally Sensitive Areas Protection regulations referenced in this document shall refer to those codified by ordinance #2655 and #2656, dated November 29, 1991 and ~~most recently amended by~~ ordinance ~~#3367 dated September 15, 2009~~. (Appendix ~~D~~)

b. Policies

1. Protect unique, rare, and fragile environments, including marine bluffs, stream ravines, wetlands and fish and wildlife habitat conservation areas, from impacts associated with shoreline use and development.

2. Locate and design shoreline uses and development to minimize risks to people, property, and critical areas associated with geologically hazardous areas and frequently flooded areas.

3. Provide a level of protection to critical areas within shoreline jurisdiction that assures no net loss of shoreline ecological functions necessary to sustain shoreline natural resources. To achieve this policy, the City has incorporated

appropriate portions of its Environmentally Sensitive Areas Protection regulations into this SMP by reference.

c. Regulations

Environmentally sensitive areas in shoreline jurisdiction are regulated by the Port Angeles Environmentally Sensitive Areas Protection regulations, codified under Title 15 PAMC, which is herein incorporated into this SMP by reference, except as modified below.

1. If provisions of the Environmentally Sensitive Areas Protection regulations and other parts of the SMP conflict, the more specific regulation shall apply.
2. Provisions of the Environmentally Sensitive Areas Protection regulations that are not consistent with the Shoreline Management Act, Chapter 90.85 RCW, and supporting Washington Administrative Code chapters shall not apply in shoreline jurisdiction. In particular:
    a. Provisions of the Environmentally Sensitive Areas regulations that include a "reasonable use exception" shall not apply within shoreline jurisdiction. Specifically, Sections 15.20.080(A)(1), (3) & (6), and 15.24.070(E), PAMC, do not apply. Such requests shall require a shoreline variance.
    b. Provisions of the Environmentally Sensitive Areas Protection regulations relating to variance procedures and criteria do not apply in shoreline jurisdiction. Variance procedures and criteria have been established in this SMP, Chapter 7 Section D and in Washington Administrative Code WAC 173-27-170 (4).
    c. Provisions of the Environmentally Sensitive Areas Protection provisions relating to nonconforming activities do not apply in shoreline jurisdiction, specifically Section 15.24.090 PAMC. Nonconforming use and development provisions have been established in this SMP, Chapter 7 Section F.
3. The provisions of the Environmentally Sensitive Areas Protection regulations do not extend the shoreline jurisdiction beyond the limits specified in this SMP. For regulations addressing portions of critical areas and buffers that are outside the shoreline jurisdiction, see Environmentally Sensitive Areas Protection regulations, Chapters 15.20 and 15.24 PAMC.

4. Critical Areas (Critical Saltwater Habitats and Habitat Areas for Priority Species and Species of Concern)

a. Applicability

For the purposes of this SMP, critical saltwater habitats shall include those defined in WAC 173-26-221 (2)(iii)(A). This includes: Kelp beds, eelgrass beds, fish spawning and holding areas for herring, sand lance

and smelt, subsistence, commercial, and recreational shellfish beds, mudflats, intertidal habitats with vascular plants, and areas with which priority species have a primary association. Habitat Areas for Priority Species and Species of Concern are addressed in Section 15.20.070 D of the PAMC. Priority Habitats and Priority Species are defined in chapter 6. Areas containing Priority Habitats and Species have been identified in map series 14 in the Shoreline Inventory, Analysis and Characterization Report, dated June 2012 (Appendix B).

b. Policies

1. Protect critical saltwater habitats in recognition of their importance to the marine ecosystem of the City of Port Angeles and the State of Washington.
2. Water-dependent uses, including recreational facilities, marinas, transportation facilities, and some utility crossings may be permitted in critical saltwater habitats, provided that the proposed activity or structure will not result in a net loss of ecological functions or habitat.
3. Ecological functions of marine shorelands can affect the viability of critical saltwater habitats. Therefore, uses and development on shorelands adjacent to aquatic areas where critical saltwater habitats exist should avoid directly or indirectly changing the composition of the beach and bottom substrate. The re-establishment of natural erosion and sediment transport processes should be encouraged.
4. Shoreline uses and development should be located and designed to avoid adverse impacts to critical saltwater habitats.
5. The inclusion of commercial shellfish aquaculture in the critical saltwater habitat definition should not limit its regulations as a use.
6. Impacts to habitat supporting priority species and species of concern should be avoided and minimized to ensure such populations do not decline and so that populations of recreationally important species are maintained. Measures specific to protection of priority habitats and species, such as Marbled Murrelet, should be considered as conditions of permit approval.

c. Regulations

1. Water-dependent development and uses, including marinas, docks, piers, mooring areas, bridges, underwater parks, utility crossings, shoreline modifications, and other human-made structures shall not intrude into or be built or located over critical saltwater habitats, unless the applicant shows that all of the following conditions have been met:
    a. The use preference listing in RCW 90.58.020 for uses in Shorelines of Statewide Significance have been adhered to:
        - Recognize and protect the statewide interest over local interest;
        - Preserve the natural character of the shoreline;

- Result in long term over short term benefit;
- Protect the resources and ecology of the shoreline;
- Increase public access to publicly owned areas of the shorelines;
- Increase recreational opportunities for the public in the shoreline;
- Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary.

b. The public's need for such a development or use is clearly demonstrated and the proposal is consistent with protection of the public trust, as embodied in RCW 90.58.020.

c. An alternative alignment or location on the applicant's property that would avoid impacts to critical saltwater habitats is not feasible or would result in unreasonable and disproportionate cost to accomplish the same general purpose. This shall be documented through an alternatives analysis as part of the application process.

d. The project is consistent with the state and local interests in resource protection and species recovery.

e. Impacts to critical saltwater habitat functions are avoided and mitigated to result in no net loss of ecological function.

2. Except when associated with an authorized use, development, or restoration project aquatic herbicide and pesticide treatments and mechanical removal of vegetation shall not occur in or over critical saltwater habitats.

3. Sand, gravel, or other materials shall be neither added to nor removed from critical saltwater habitats, except when part of an authorized use or development or as allowed in Regulation 1 above.

4. New outfalls (including storm water and sewer outfalls) and discharge pipes shall not be located in critical saltwater habitats or in areas where outfall or discharge will adversely affect critical saltwater habitats or water quality unless the applicant can show that all of the following have been met:

   a. There is no alternative location for the outfall or pipe;

   b. The outfall or pipe is placed below the surface of the beach or bed of the water body;

   c. The outfall discharges waterward of the intertidal zone;

   d. The disturbed area will be revegetated with site appropriate plants;

   e. The discharge point(s) on the outfall or discharge pipe is located so the discharges, including nutrients in the discharge and currents, do not adversely affect critical saltwater habitats and water quality.

5. Prior to construction, all overwater and near-shore developments shall conduct an inventory of the project site and adjacent beach sections to assess the presence of critical saltwater habitats. The methods and extent of the inventory shall be consistent with accepted research methodology. New inventories may not be required when the Administrator determines that

existing information and studies or inventories are current, adequate, and were conducted as required and document compliance with all of the regulations set forth above.

6. Habitat Areas, Priority Species and Species of Concern shall be protected in accordance with Section 15.20.070 D of the PAMC, as incorporated into this SMP. Studies, reports and/or habitat management plans as required by that section may also address the critical saltwater habitat provisions outlined above, where the two critical areas overlap or exist concurrently. Where these areas overlap with vegetation conservation areas as identified in chapter 2 and described in section 12 of this chapter, required plans or studies may be combined as long as all provisions required by both sections are addressed.

5. Critical Areas (Geologically Hazardous Areas)

a. Applicability

Geologically hazardous areas are susceptible to severe erosion, slide activity, or other geologic events. Along the Port Angeles shoreline, high marine bluffs are the most visible type of geologically hazardous area, although other hazards also exist.

More severe hazard areas are not suitable for placing structures or locating activities or uses due to the inherent threat to public health and safety. Vegetation removal from sites with or adjacent to unstable slopes alters surface runoff and groundwater infiltration patterns, which can lead to increased slope instability.

A certain level of erosion of shorelines and marine bluffs is natural to the Puget Sound area. Erosion from “feeder bluffs” is a primary source of sand and gravel found on beaches, including accretion beaches (gravel bars, sand spits, and barrier beaches).

b. Policies

1. New development or the creation of new lots should not cause any foreseeable risk from geological conditions to people or improvements during the expected life of the development.
2. Permit development where no slope protection (e.g., bulkheads, riprap, retaining walls, etc.) is necessary and where nonstructural protection (e.g., shoreline setbacks) will be sufficient for the life of the structure (at least 75 years).

c. Regulations

Regulations for geologically hazardous areas are set forth in Chapter 15.20 PAMC, as incorporated into this SMP. Note that in addition to the setbacks from hazard areas applied therein, vegetation conservation within these areas shall be required by as outlined in Section 12 of this Chapter.

Additional standards for marine bluffs are presented below.

1. Development on properties adjacent to marine bluffs shall observe a 50-foot marine bluff buffer as established in Section 15.20.070 (B)(2) PAMC, as incorporated into this SMP. In addition, 15-foot setback for all structures is required from the landward edge of the marine bluff buffer. No development shall be allowed closer than 65 feet from the top of a marine bluff without a variance, unless otherwise allowed in Section 12 of this chapter.

2. Proposals requiring a variance for development within 65 feet of the top of a marine bluff as outlined above shall be required to submit a geotechnical engineering report, prepared in accordance with the requirements of this SMP and Title 15, PAMC.

   The geotechnical engineering report shall:

   - be prepared by a Washington State licensed professional civil engineer with a specialty in geotechnical engineering or an engineering geologist with a Washington specialty license in engineering geology as specified in RCW 18.220,
   - be professionally stamped,
   - be based upon the best available science,
   - consider existing and proposed uses,
   - include risks of slope failure,
   - include coastal erosion rates over at least 75 years, based in part on anticipated sea level rise and storm frequency,
   - Document how, and include a certification that the proposed structure will not be in danger from erosion for at least 75 years,
   - Include vegetation enhancement and low impact development measures that might be used as a means of reducing undesirable erosion.
   - address the requirements outlined in PAMC 15.20.060 (C), and
   - outline how the proposal meets all of the variance criteria in chapter 7 of this SMP.

3. Surface drainage shall be directed away from marine bluffs. When no other solution is feasible, surface drainage piping may be located on the face of a steep slope when contained in a tight line (closed, non-leaking pipe) properly secured to avoid erosion caused by movement of the pipe, and designed in such a way that erosion will not be exacerbated at the base of the bluff and

that physical access along the shoreline is not degraded. Furthermore, conditions may be applied to mitigate for aesthetic or habitat impacts of drainage systems as viewed from public areas.

4. See Chapter 4 for provisions relating to shoreline stabilization measures.
5. Development (stair towers or other structures) built over the marine bluff face to the shoreline is prohibited.
6. Vegetation management for viewshed enhancement and hazard tree removal may be allowed, as authorized by the Administrator. In addition to the standards in Section 15.20 PAMC (as incorporated into this SMP), best pruning and management practices as established by the Tree Care Industry shall be followed, no cut vegetation may remain on the bluff face, and exposed soils shall be stabilized immediately after the completion of work.

6. Critical Areas (Wetlands)

a. Applicability

Wetlands in shoreline jurisdiction shall be protected in accordance with Chapter 15.24 PAMC, as incorporated into this SMP. Modifications to Chapter 15.24 PAMC as it will be applied in shoreline jurisdiction are outlined below.

b. Policies

1. Wetlands should be protected from alterations to ensure there is no net loss of wetland acreage and functions. The greatest protection should be provided to wetlands of exceptional resource value, defined as those wetlands that include rare, sensitive or irreplaceable systems such as:
   a. Documented or potential habitat for an endangered, threatened or sensitive species;
   b. High-quality native wetland systems;
   c. Significant habitat for fish or aquatic species as determined by the appropriate state resource agency;
   d. Diverse wetlands exhibiting a high mixture of wetland classes and subclasses;
   e. Mature forested wetland communities;
   f. Estuarine wetlands, kelp beds or eelgrass beds.
2. Wetland buffers should be maintained between a wetland and any adjacent development to protect the functions and values of the wetland.
3. Wetland restoration, creation and enhancement projects should result in increased wetland acreage and/or improved wetland functions.
4. Proposals for wetland restoration, creation or enhancement should be coordinated with appropriate resource agencies to ensure adequate design and consistency with other regulatory requirements.

c. Regulations

1. General

   a. For identifying and delineating a wetland, applicants shall use Section 15.24.040(C) PAMC and the most recent edition of the U. S. Army Corps of Engineers (2010) Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). Wetland delineations are valid for five years.

   b. For the purpose of this document, the definition of wetland is:

      "Wetland" or "wetlands" means areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas created to mitigate conversion of wetlands.

   c. For the purpose of this document, the definition of hydric soils shall not apply. The definition of hydric soil shall be derived from the language in the Corps of Engineers Wetland Delineation Manual and the U. S. Army Corps of Engineers (2010) Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).

   d. For Category 1 & 2 wetlands, the applicant, in addition to complying with the provisions above, shall demonstrate that there is a compelling public need for the proposed activity or that denial of the permit would impose an extraordinary hardship on the applicant brought about by circumstances peculiar to the subject property.

   e. Wetlands - Ratings. Wetlands shall be rated according to the Washington State Department of Ecology wetland rating system found in the "Washington State Wetland Rating System for Western Washington", revised April 2004 (Ecology Publication No. 04-06-025, or as revised and approved by Ecology).

   f. The wetland rating system determines wetland buffers and replacement ratios. Wetland ratings using the system outlined in regulation 1e above shall result in wetland categories as outlined below, instead of those categories found in Section 15.20.040 (D)(1) PAMC. Additionally, the wetland functional assessment process as

outlined in Section 15.24.045 PAMC does not apply in shoreline jurisdiction.

Washington State Four-Tier Wetlands Rating System:

i. Category I wetlands are: (1) relatively undisturbed estuarine wetlands larger than 1 acre; (2) wetlands that are identified by scientists of the Washington Natural Heritage Program/DNR as high-quality wetlands; (3) bogs; (4) mature and old-growth forested wetlands larger than 1 acre; (5) wetlands in undisturbed coastal lagoons; and (6) wetlands that perform many functions well (scoring 70 points or more). These wetlands: (1) represent unique or rare wetland types; (2) are more sensitive to disturbance than most wetlands; (3) are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or (4) provide a high level of functions.

ii. Category II wetlands are: (1) estuarine wetlands smaller than 1 acre, or disturbed estuarine wetlands larger than 1 acre; (2) interdunal wetlands larger than 1 acre; (3) disturbed coastal lagoons or (4) wetlands with a moderately high level of functions (scoring between 51 and 69 points).

iii. Category III wetlands are: (1) wetlands with a moderate level of functions (scoring between 30 and 50 points); and (2) interdunal wetlands between 0.1 and 1 acre. Wetlands scoring between 30 and 50 points generally have been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.

iv. Category IV wetlands have the lowest levels of functions (scoring fewer than 30 points) and are often heavily disturbed. These are wetlands that we should be able to replace, or in some cases to improve. However, experience has shown that replacement cannot be guaranteed in any specific case. These wetlands may provide some important functions, and should be protected to some degree.

g. For purposes of the SMP, the definition of regulated wetlands in Section 15.24.020 (Y) excludes the statement “Regulated wetlands do not include Category II and III wetlands less than 2,500 square feet and Category IV wetlands less than 10,000 square feet.” In shoreline jurisdiction, all wetlands shall be regulated regardless of size.

2. Wetland Buffers
   a. Wetland buffers as required in PAMC 15.24.070 C shall be retained in their natural condition. Where buffer disturbance has occurred during construction, revegetation with native vegetation is required.

Developments and activities shall not be allowed within the buffer except for:

i. Activities outlined in Section 15.24.050 (B) PAMC, except for Class IV general Forest Practices, which shall be regulated by this chapter, provided such activities comply with SMP mitigation sequencing requirements in section 1 of this Chapter and result in no net loss of shoreline ecological function.

Timber harvesting with associated development activity involving land conversions from Forest Use, or otherwise meeting the DNR definition as a Class IV General application, shall comply with the provisions of this Ordinance including the maintenance of buffers, where required. If harvest or development is proposed within an Environmentally Sensitive Area or its buffer, a habitat management plan is required.

ii. Activities outlined in Section 15.24.050 (A)11 of the PAMC, provided such activities comply with mitigation sequencing requirements in section 1 of this Chapter and result in no net loss of shoreline ecological functions. Limited trail spurs to the water's edge, when located and designed consistent with the mitigation sequence, shall be permitted.

iii. Section 15.24.070 (C)(7)(a) shall not apply in shoreline jurisdiction.

iv. Standard wetland buffer width averaging as outlined in Section 15.24.070 (C)(4)(e) PAMC shall be limited to 25% of the standard buffer width. Buffer width averaging and buffer width reductions, as described in Section 15.24.070 (C)(3) shall not be used together.

b. The location of all required buffer zones shall be clearly and permanently marked on any project site prior to initiation of site work.

3. Mitigation and Development
   a. Mitigation shall be as required in the City's Wetland Protection Ordinance, Section 15.24.070 PAMC. However, the wetland mitigation rations in Section 15.24.070 (H)(6)(b) shall not apply; in shoreline jurisdiction, the compensatory mitigation ratios below shall apply.

   b. In shoreline jurisdiction, wetlands shall be replaced at the following ratio (acreage replaced to acreage lost).

Wetland Mitigation Ratios

Category and Type of Wetland	Creation or Re-establishment	Rehabilitation	Enhancement
Category I: Bog, Natural	Not considered possible	Case by case	Case by case

Heritage site			
Category I: Mature Forested	6:1	12:1	24:1
Category I: Based on functions	4:1	8:1	16:1
Category II	3:1	6:1	12:1
Category III	2:1	4:1	8:1
Category IV	1.5:1	3:1	6:1

Buffer impacts shall be mitigated at a ratio of 1:1.

c. Where restoration, creation or enhancement activities are proposed, the applicant shall be required to:

i. File a performance bond or other approved security in an amount equal to no less than 150% of the estimated cost of the compensation plan. The cost shall include estimated amounts associated with fulfillment of the compensations project, monitoring program, and any contingency measures; and

ii. Compensation areas shall be permanently protected through legal instruments such as sensitive area tracts, conservation easements or comparable use restrictions.

7. Parking

a. Applicability

Parking is the temporary storage of motorized vehicles and/or trailers. The following provisions apply to parking that is "accessory" to a permitted shoreline use unless otherwise noted.

b. Policies

1. Parking should be planned to achieve optimum use. Where possible, parking should serve more than one use (e.g. serving recreational use on weekends, commercial uses on weekdays).
2. Parking facilities in shorelines are not a preferred use and unless otherwise outlined below, should be located outside of shoreline jurisdiction.
3. “Low impact development” techniques, such as permeable pavements, appropriate landscaping and on-site infiltration areas are encouraged to reduce the impacts of parking facilities.

c. Regulations

1. Parking as a primary use or parking that serves a use not permitted in the applicable shoreline environment designation shall be prohibited. Primary parking in the downtown HI-MU designation (segment L) is exempt from this regulation.
2. Parking over water shall be prohibited (staging for ferry loading is exempt).
3. Parking in shoreline jurisdiction must directly serve a permitted shoreline use. Primary parking in the downtown HI-MU designation (segment L) is exempt from this regulation.
4. Except in the HI-I, HI-UU and on the US Coast Guard Base, parking facilities serving individual buildings on the shoreline shall be located landward of the primary use, to minimize adverse impacts on the shoreline.
5. Parking for shoreline activities shall provide safe and convenient pedestrian circulation within the parking area and to the shoreline.
6. Parking areas shall include facilities to prevent surface water runoff from contaminating water bodies.
7. Lighting associated with parking lots shall be beamed, hooded, or directed to minimize and avoid illumination of the skyline (light pollution), water, setback areas, wetlands, and other wildlife habitat areas.

8. Public Access

a. Applicability

Shoreline public access is the ability of the general public to reach, touch and enjoy the water's edge and the ability to have a view of the water and the shoreline from adjacent locations. Public access facilities may include parks, picnic areas, pathways and trails, viewing towers, piers and docks, bridges, boat launches, and improved street ends.

Shoreline public access should align with opportunities and priorities identified in the City of Port Angeles Comprehensive Plan, the Port of Port Angeles Strategic Plan, the Port Angeles Harbor Resources Management Plan, and the City’s Trails Plan.

b. Policies

1. Public access should be considered in all private and public development proposals, with the exception of the following:
    a. One- and two-family dwelling units or subdivisions of land into less than 4 parcels; or
    b. Where deemed inappropriate or infeasible due to incompatible uses, health, safety, security and/or environmental concerns, and constitutional or other legal limits.

2. Developments, uses, and activities on or near the shoreline should not impair or detract from the public's access to the water or the rights of navigation.
3. In all project proposals, public access should be provided as close as possible to the water's edge without causing significant ecological impacts. All public access should be designed in accordance with the Americans with Disabilities Act.
4. Opportunities for public access should be identified on publicly owned shoreline properties. Public access opportunities afforded by shoreline street ends, public utilities and rights-of-way should be preserved.
5. Public access should be designed to provide for public safety and comfort and to minimize potential impacts to private property and individual privacy.
6. Public views from shoreline upland areas should be enhanced and preserved. View enhancement does not mean the excessive removal of existing vegetation that impairs views.
7. Publicly funded public access projects should include interpretive displays.
8. Commercial and industrial development on the waterfront should be encouraged to provide a means for visual and physical access to the shoreline area wherever feasible.
9. Shoreline development by private entities should provide public access when the development would either generate a public demand for one or more forms of such physical or visual access, or would impair existing legal access opportunities or rights.
10. Public health and safety concerns associated with community or public access sites should be adequately mitigated.
11. Where feasible, providers of shoreline public access should consider:
    a. Locate and design public access improvements in a manner that is compatible with the shoreline character and avoids adverse impacts to shoreline ecological processes and functions; and
    b. Ensure public access improvements and amenities are safe, respect individual privacy, and avoid or minimize visual impacts from neighboring properties; and
    c. Provide maps, signage, and orientation information to inform the public of the presence and location of privately held shorelands, especially those adjacent to public access and recreational areas; and
    d. Incorporate programs, signage and informational kiosks into public access locations, where appropriate, to enhance public education and appreciation of shoreline ecology and areas of historical or cultural significance.

c. Regulations

1. Unless otherwise excepted or demonstrated infeasible as outlined below, public access is required for the following developments:
    a. Land division into more than four lots and planned residential developments (PRDs).
    b. Nonwater-oriented uses.
    c. Water-related and water-enjoyment commercial uses.
    d. Development on public land or by public entities, including the City, Port of Port Angeles, Olympic Medical Center, and public utility districts.
    e. Development or use that will interfere with an existing public access way. Impacts to existing public access may include blocking access or discouraging use of existing on-site or nearby access sites.
    f. When public access is required in Segment O of the HI-MU designation, opportunities for moving or providing spurs of the Olympic Discovery/Waterfront Trail to the shoreline shall be explored.
2. Public access is not required as part of development if any of the following conditions apply:
    a. The development is a single-family residence not part of a development planned for more than four parcels or the development is accessory to a single-family residence.
    b. Public access is demonstrated to be infeasible or undesirable due to reasons of incompatible uses, safety, security, or impact to the shoreline environment. In those instances, alternative means of providing public access shall be proposed.
    c. Where constitutional or legal limitations apply.

    Where on-site public access is not required because of above condition b, the City shall consider alternate methods of providing public access such as offsite improvements, viewing platforms, separation of uses through site planning and design, and restricting hours of public access.
3. Required public access shall be conditioned in the applicable shoreline permit so as to describe the impact necessitating access and how the required public access condition(s) address such impact. Public access areas or facilities shall comply with the mitigation sequence in section 1 of this Chapter.
4. Shoreline developments (including land division into more than four lots and PRDs) shall minimize adverse impacts to public views of shorelines from public land or substantial numbers of residences.
5. Public access provided by shoreline street ends, public utilities, and rights-of-way shall not diminish. Street ends and rights of way shall only be vacated in accordance with the requirements of RCW 35.79.035.

6. Public access sites shall be connected directly to the nearest public street or public right-of-way and shall include provisions for physically impaired persons, where feasible.
7. Required public access sites shall be fully developed and available for public use at the commencement of the approved use or activity.
8. Public access easements and/or permit conditions shall be recorded on the title and/or on the face of a plat. Recording of easements with the County Assessor's Office shall occur at the time the use or development is approved and prior to commencement of the approved use. Proposed public access easements shall be submitted to the Administrator for review prior to project approval.
9. The minimum width of public access corridors shall be sufficient to provide clearly marked, safe access to the shoreline. The Shoreline Administrator will consult the Harbor Resource Management Plan and the City's trail plan in determining the required type and scope of public access improvements.
10. Public access opportunities shall be included in the planning and design of ecological restoration projects.
11. Signs that indicate the public's right of access and hours of access shall be installed and maintained by the applicant in conspicuous locations at public access sites. Signs may control or restrict public access per conditions of permit approval.
12. Future actions by the applicant, successors in interest, or other parties shall not diminish the usefulness or value of the public access provided.
13. Except where precluded by specific provisions elsewhere in this SMP, public access facilities may be developed over water provided that all significant ecological impacts are mitigated to achieve no net loss of ecological functions.
14. Efforts to implement the public access provisions of this section shall be consistent with all relevant constitutional and other legal limitations on regulation of private property and the principles of nexus and proportionality.
15. Public access requirements on privately owned lands shall be commensurate with the scale and character of the development and should be reasonable, effective and fair to all affected parties including but not limited to the landowner and the public.

9. Shorelines of Statewide Significance

a. Applicability

Within the City of Port Angeles' jurisdiction, all marine waters waterward of extreme low tide are shorelines of statewide significance.

Note that, while many of the policies relate to upland development and activities, they bear directly on aquatic and shoreline resources, including those below extreme low tide.

b. Policies

In implementing the objectives of RCW 90.58.020 for shorelines of statewide significance, the City has and will continue to base decisions in preparing and administering this SMP on the following policies in order of priority, 1 being the highest and 6 being lowest.

1. Recognize and protect the statewide interest over local interest.
    a. Take into account state agencies' policies, programs and recommendations in developing and administering use regulations and in approving shoreline permits. Solicit comments, opinions and advice from individuals with expertise in ecology and other scientific fields pertinent to shoreline management.
    b. Maintain space for unique facilities of statewide importance, including institutional, industrial and navigational activities supporting the maritime economy.
2. Preserve the natural character of the shoreline.
    a. Shoreline environments and use regulations should protect and restore the ecology and environment of the shoreline.
    b. Clean up and redevelop areas where development already exists, in order to reduce adverse impact on the environment and to accommodate future growth rather than allowing high intensity uses to extend into low-intensity use or underdeveloped areas.
    c. Protect and restore habitats for State-listed “priority species.”
    d. Protect the natural characteristics of Ediz Hook. Where feasible, restore the shoreline ecology while recognizing the need for shoreline stabilization on the shoreline facing the Strait and the accommodation of preferred uses such as public access.
3. Support actions that result in long-term benefits over short-term benefits.
    a. In general, preserve resources and values of shorelines of statewide significance and restrict or prohibit uses and development that would irretrievably damage shoreline resources.
    b. Retain, to the extent possible, water-dependent industrial uses.
4. Protect the resources and ecology of the shoreline.
    a. All shoreline uses and development should be managed to ensure no net loss of ecological functions and should avoid disturbance of wildlife resources, including spawning, nesting, rearing and feeding habitats and migratory routes.
    b. Protect and enhance natural erosion and sediment transport processes.

c. Take steps to remove from the harbor area contaminated sediments and other artificially placed materials, such as wood waste, abandoned structures, etc.

d. Manage the water area for maximum benefit and environmental quality.

e. Protect and restore estuarine and riparian habitats, especially at Ennis Creek.

f. Implement the recommendations of the Environmental Restoration Plan (Appendix D).

5. Increase public access to publicly owned areas of the shoreline.

   a. Give priority to developing paths and trails to shoreline areas and linear access along the shorelines.

   b. Maintain and enhance the Olympic Discovery/Waterfront Trail through Port Angeles.

   c. Implement the public access recommendations of the 2011 Harbor Resources Management Plan (HRMP).

6. Increase public recreational opportunities on the shoreline.

   a. Plan for and encourage development of facilities for water-oriented recreational use of the shoreline areas including those along Ediz Hook, public parks and trails and along the downtown waterfront.

   b. Develop a park on publicly owned portions of the Oak Street site, which will augment the downtown waterfront as a recreational resource of statewide importance.

   c. Implement the recreational recommendations in the HRMP.

10. Signage

a. Applicability

A sign is defined as a device of any material or medium, including structural component parts, used to attract attention to the subject matter for advertising, identification or informative purposes. The following provisions apply to any commercial or advertising sign directing attention to a business, professional service, site, facility, or activity, conducted or sold either on or off premises.

b. Policies

1 Signs should be designed and placed so that they are compatible with the aesthetic quality of the existing shoreline and adjacent land and water uses.

2 Signs should not block or otherwise interfere with visual access to the water or shorelands.

c. Regulations

1 All signs in shoreline jurisdiction shall meet the requirements of the Port Angeles Sign Code; PAMC 14.36.

2 Prohibited Signs: The following types of signs are prohibited in the shoreline jurisdiction:

a. Off-premises outdoor advertising signs.

b. Spinners, streamers, pennants, flashing lights and other animated signs used for commercial purposes.

c. Signs placed on trees or other natural features.

d. Overwater signs and signs on floats or pilings advertising for goods, services, or businesses. Overwater directional, informational, or public warning signs may be permitted.

3. Allowable Signs: The following types of signs may be allowed in all shoreline environments:

a. Water navigational and highway signs necessary for operation, safety and direction.

b. Public information signs directly relating to a shoreline use or activity. Public information signs shall include public park signs, public access identification signs, and warning signs.

c. Off-premise, free-standing signs for public information or directional purposes only.

d. Temporary decorations customary for special holidays and similar events of a public nature.

e. Temporary directional signs to public or quasi-public events, when approved by the property owner and the city and removed within 10 days following the event.

4. All signs shall be located and designed to avoid interference with vistas, viewpoints and visual access to the shoreline.

5. Lighted signs shall be hooded, shaded, or aimed so that direct light will not result in glare when viewed from surrounding properties or watercourses.

6. Temporary or obsolete signs shall be removed within 10 days of the termination of the function, closures of business, or completion of elections. Examples of temporary signs include: real estate signs, directions to events, political advertisements, event or holiday signs, construction signs, and signs advertising a sale or promotional event.

11. Utilities (Accessory)

a. Applicability

Utilities are services and facilities that produce, transmit, carry, store, process, or dispose of electric power, gas, water, sewage, communications, oil, solid wastes and the like. Accessory utilities are on-site utility features serving a primary use, such as a water, sewer, or gas line or telecommunications service. Accessory utilities do not carry significant capacity to serve other users and will be considered as part of the primary use. They are addressed in this section because they concern all types of development and have the potential to impact the quality of the shoreline and its waters.

Primary utility uses and facilities, such as power generating and water treatment plants and transmission and main lines and pipes, are covered in Chapter 5.

b. Policies

1 Accessory utilities should be installed so as to protect the shoreline and water from contamination and degradation and to ensure no net loss of shoreline ecological functions.

2 Accessory utilities and -corridors should be located outside of shoreline jurisdiction to the extent feasible. When utility lines require a shoreline location, they should be placed underground if feasible.

3 Accessory utilities should be designed and located in a manner which preserves the natural landscape and shoreline ecological processes and functions and minimizes conflicts with present and planned land uses.

c. Regulations

1. Accessory utilities shall be placed outside of shoreline jurisdiction when feasible. When accessory utilities must be placed within shoreline jurisdiction, they shall be placed underground, when feasible. Such utilities shall utilize existing rights-of-way, corridors, and/or bridge crossings whenever possible. Proposals for new corridors in shoreline areas involving water crossings must fully substantiate the infeasibility of existing routes.

2. Accessory utility development shall, through coordination with government agencies, provide for compatible multiple uses of sites and rights-of-way, when feasible. Such uses include shoreline access points, trails and other forms of recreation and transportation systems, providing such uses will not unduly interfere with utility operations or endanger public health and safety.

3. Sites disturbed for accessory utility installation shall be stabilized during and following construction to avoid adverse impacts from erosion and, where feasible, restored to pre-project configuration and replanted with native vegetation.

4. Utilities that need water crossings shall be placed deep enough to avoid the need for bank stabilization during construction and in the future due to flooding and bank erosion that may occur over time. Boring is preferred over open trenching as a method of utility water crossing.

12. Vegetation Conservation

a. Applicability

The following provisions apply to any activity that results or has the potential to result in the removal of or impacts to shoreline vegetation, whether or not that activity requires a shoreline permit or exemption. Such activities include but are not limited to clearing, grading, grubbing, pruning or removal of vegetation.

Provisions in this section generally outline vegetation protection and enhancement activities. Specific provisions for vegetation conservation in specific segments of the shoreline are presented in Chapter 2.

A "vegetation conservation area" (VCA) is an area within shoreline jurisdiction where vegetation, especially native vegetation, contributing to the ecological function of shoreline areas must be protected and where it has been removed or destroyed, should be restored. VCA's are generally measured from the shoreline a specific width landward of and perpendicular to the shoreline.

A VCA is different than a setback or than an environmentally sensitive area buffer, although they may overlap. Setbacks are established to separate a building or structure from a specific feature, which features in this SMP include the OHWM or the landward edge of a critical area buffer. Activities in setback areas have fewer restrictions and may allow landscaping or non-structural features such as roads or trails.

Vegetation is critical to maintaining the shoreline ecology and helps to prevent undesirable erosion, improve water quality, reduce flooding, and provide important habitat.

This SMP includes provisions to conserve shoreline vegetation by limiting "significant vegetation removal" within "vegetation conservation areas".

"Significant vegetation removal" is defined as the removal or alteration of trees, shrubs, or ground cover by clearing, grading, cutting, burning, chemical means, or other activity that causes significant ecological impacts to functions provided by such vegetation.

The removal of invasive, non-native, or noxious weeds does not constitute significant vegetation removal.

Tree pruning, not including tree topping, where it does not affect ecological functions and meets accepted industry standards, does not constitute significant vegetation removal.

Environmentally sensitive area buffers are similar to vegetation conservation areas in that they are intended to protect ecological functions. Buffers are intended to remain undisturbed and are typically treated as 'no touch' areas. For environmentally sensitive areas in shoreline jurisdiction, this intent must be balanced with the policy goals of the Shoreline Management Act giving preference for a shoreline location to water-oriented uses, activities and public access. Not all of Port Angeles' shoreline areas are considered environmentally sensitive areas; where environmentally sensitive as defined in chapter 6 exist in shoreline jurisdiction, the buffer has often also been designated as a VCA. In some shoreline segments, no environmentally sensitive areas exist; in these cases there may not be a buffer but there may be a VCA.

As outlined in Chapter 2 - if no VCA is assigned to a shoreline segment, uses or development on parcels with frontage on waters regulated by the SMP are still required to preserve existing native vegetation within shoreline jurisdiction or the shoreline setback (as applicable) to the extent feasible and in accordance with the regulations and allowances in this section.

b. Policies

1. Vegetation within the City shoreline areas should be enhanced over time to provide a greater level of ecological functions, human safety, property protection, and aesthetic value.
2. The removal of invasive or noxious weeds and replacement with native vegetation is encouraged of all development activities. Removal of noxious or invasive weeds should be conducted using the least-impacting method feasible, with a preference given to manual removal, or if that is not practical, using mechanical rather than chemical means.
3. New development, including clearing and grading, should minimize significant vegetation removal in shoreline jurisdiction to the greatest extent feasible. Vegetation removal should be limited to the minimum necessary to accommodate the authorized use or development. When vegetation removal cannot be avoided, it should be mitigated to ensure no net loss of shoreline ecological functions.
4. Selective pruning for view maintenance should comply with the standards of Sections 15.20 and 15.24 PAMC, where applicable.
5. Ecological restoration should be considered as potential mitigation for impacts to shoreline resources and values resulting from water dependent commercial and industrial development or non-water oriented development.

c. Regulations

1. Within VCAs, all native trees over six inches in diameter at four feet above average grade shall be retained. Snags and living trees shall not be removed within the required VCA unless a Certified Arborist determines them to be hazards or unless removed in accordance with regulation 6 below. Snags and living trees within the VCA which do not present a hazard shall be retained. Vegetation removal for views within VCAs that overlap marine

bluffs and/or marine bluff buffers shall be prohibited when such removal has the potential to exacerbate erosion. Vegetation removal in these VCAs shall be authorized in accordance with Section 15.20 PAMC as incorporated into this SMP, and shall include mitigation. Tree topping is prohibited.

2. Within VCAs, native understory vegetation (shrub and herbaceous layers) shall remain intact. Exceptions are outlined in regulation 6 below.
3. Removal of invasive plant species shall be restricted to hand removal except where no reasonable alternative to herbicides exist, and weed control is demonstrated to be in the public interest. All removed plant material shall be taken away from the site and properly discarded. Revegetation with appropriate native species is required in conjunction with such removal. Replacement of non-native vegetation with native species shall be done in a manner that will not leave soil bare or vulnerable to erosion.
4. In order to create a new lot partially or wholly within shoreline jurisdiction, the applicant shall demonstrate that any VCA as required in chapter 2 will be preserved and that all construction can occur outside of and without any impacts to such areas. Exceptions may be granted for activities outlined in regulation 6 below.
5. In the absence of a development proposal, existing, lawfully established landscaping and gardens within a vegetation conservation area may be maintained in their existing conditions, including but not limited to mowing lawns, weeding, harvesting and replanting garden crops, and pruning and replacing ornamental trees or vegetation. Such areas may be maintained in the condition and appearance as they currently exist, provided this does not apply to areas previously established as mitigation sites or areas protected by conservation easements or similar restrictive covenants.
6. The following uses or activities may be allowed in VCAs and setbacks as established in chapter 2 without a shoreline variance, provided such uses are designed, located, constructed and maintained in a manner that avoids and minimizes impacts to vegetation and achieves no net loss of shoreline ecological functions.
    a. Uses and activities allowed in sections 15.20.080 (D) and 15.24.050 (B) of the PAMC, as incorporated into this SMP, when also allowed in the applicable shoreline environment.
    b. Public and pedestrian trails, pathways and boardwalks, piers, docks, launch ramps, viewing platforms, wildlife viewing blinds and other similar water oriented recreational or public access uses/developments.
    c. Authorized shoreline modifications, including shoreline restoration.
    d. Allowed water-dependent uses in all shoreline environments.

Note that provisions in chapter 2 may expressly prohibit or limit the type or location of encroachments into the VCA in specific shoreline segments or environment designations. For example, in the HI-UU designation, viewing

towers or other public access points are only allowed on street ends or other publicly owned sites. In segment O, encroachment into the VCA along tidally influenced portions of Ennis Creek is only allowed for public access or ecological restoration. Please see chapter 2 for a full list of these limitations.

7. As a requirement of encroachment into the VCA or impacts to shoreline vegetation where there is no VCA for the activities authorized in regulation 6 above, mitigation in the form of vegetative restoration within the VCA may be required. If the use or development is within a shoreline segment that has not been assigned a VCA in chapter 2 of this SMP, mitigation shall be in the form of either vegetating some portion of the project site where equal functions can be provided, or mitigating in focus areas as identified for each shoreline segment in chapter 2. Mitigation shall be provided in an area that can be planted so as to be functionally equivalent to the area impacted, and at no less than a 1 to 1 ratio (area replaced to area lost).
8. The Shoreline Administrator may allow removal of vegetation exceeding that described in 6 above by 15% of the total area of the VCA where an applicant agrees to replacement plantings that are demonstrated to provide greater benefit to shoreline ecological functions than would be provided by strict application of this section, based upon findings of a qualified professional.
9. Non water oriented uses or development authorized within shoreline jurisdiction (only allowed as part of mixed use developments with water dependent uses or in existing developed areas in support of water dependent uses; see table 1 and chapter 5) shall provide mitigation as outlined in Chapter 5, section 4. Required mitigation shall follow the same location procedure as is outlined in regulation 7 above.
10. Proposed uses or development including vegetation removal, clearing, or grading within shoreline jurisdiction must provide, as a part of the application package, a site plan, drawn to scale, indicating the extent of proposed clearing and/or grading and vegetation removal. The plan and application shall include all information required by other applicable sections of the PAMC, and at a minimum must demonstrate:;
    a. Compliance with the mitigation sequence specific to proposed vegetation removal,
    b. That clearing or grading and vegetation removal are the minimum necessary to accommodate the proposed use,
    c. The ecological functions being provided by the shoreline vegetation proposed for removal; and
    d. How erosion will be controlled during construction.

As outlined above, this plan may be combined with any other required site plan or plan set required for such project, including but not limited to critical area reports/plans or construction plans.

11. Where establishment of shoreline vegetation is required by this SMP, the applicant shall consult with a qualified professional to prepare a shoreline

revegetation and management plan. This plan may be combined with other required reports/plans necessary for the proposed use or development, as long as such plan documents compliance with all applicable requirements. In shoreline areas that are not also critical areas, a qualified professional may include a professional landscape ecologist or restoration biologist with professional training and experience related to shoreline ecology. The shoreline vegetation management plan shall include:

a. Plant list and planting scheme, including a mixture of native trees, shrubs and groundcovers designed to improve shoreline ecological functions;
b. Performance standards for evaluating the success of the mitigation or restoration project;
c. Appropriate limitations on the use of fertilizer, herbicides and pesticides as needed to protect water quality; and
d. A monitoring, reporting and maintenance program with conditions for replacement of plants that fail to survive.

This plan shall be recorded with the Clallam County Assessor's office as a covenant against the real property or other protective assurance as authorized by the Shoreline Administrator.

13. Water Quality and Quantity

a. Applicability

The following section applies to all development and uses in shoreline jurisdiction.

As used in this SMP, "water quality" means the physical characteristics of water within shoreline jurisdiction, including water quantity and hydrological, physical, chemical, aesthetic, recreation-related, and biological conditions.

Where used in this SMP, provisions relating to water quantity refer to development and uses regulated under the SMP that affect or have the potential to affect water quantity, such as impermeable surfaces and stormwater handling practices.

b. Policies

1. In conjunction with applicable agencies, the City will continue to take action to improve water quality in the Port Angeles Harbor by:
    a. Improving treatment of sewer overflows and faulty septic systems.
    b. Aggressively pursuing storm water quality measures, both within and outside shoreline jurisdiction.
    c. Other actions recommended in the Restoration Plan developed in conjunction with this SMP.
2. All shoreline uses and development should be located, designed,

constructed, and maintained to avoid significant ecological impacts that alter water quality, quantity, or hydrology.

3. The City should require appropriate setbacks, buffers, stormwater management facilities and encourage low-impact development techniques and materials to achieve the objective of avoiding negative impacts to water quality.
4. Shoreline use and development should minimize the need for chemical fertilizers, pesticides, or other similar chemical treatments to prevent contamination of surface and ground water and/or soils, and adverse effects on shoreline ecological functions and values.

c. Regulations

1. All shoreline uses and development, both during and after construction, shall avoid or minimize adverse water quality impacts.
2. All shoreline uses and development shall conform to local, state, and federal water quality regulations, provided the regulations do not conflict with this SMP. Should a conflict occur, the provision most protective of the resource shall apply.
3. The bulk storage of oil, fuel, chemicals, or hazardous materials, on either a temporary or permanent basis, shall not occur in shoreline jurisdiction without adequate secondary containment and an emergency spill response plan in place.
4. All shoreline use and development activities approved under this SMP shall be designed and maintained consistent with the City's Storm Water Management Plan and Engineering Design Standards.

CHAPTER 4

Shoreline Modification Provisions

A. Introduction and Applicability

This chapter provides policies and regulations for shoreline modifications, including shoreline stabilization measures, docks and floats. The first section, General Policies and Regulations, applies to all shoreline modification activities. The general policies and regulations section is followed by policies and regulations tailored to specific shoreline modification activities. If a shoreline development entails more than one type of shoreline modification, then all of the provisions pertaining to each type of modification apply.

Shoreline modifications are generally related to construction of a physical element such as a dike, breakwater, dredged basin, or fill, but they can include other actions such as clearing, grading, application of chemicals, or significant vegetation removal. Shoreline modifications usually are undertaken in support of or in preparation for a shoreline use; for example, fill (shoreline modification) required for a cargo terminal (industrial use) or dredging (shoreline modification) to allow for a marina (shoreline use) (WAC 173-26-231(1)).

“Shoreline Stabilization” is a class of shoreline modifications intended to address erosion impacts to property and structures. Shoreline stabilization measures can include structural measures such as sea walls, bulkheads, revetments, and breakwaters and can also include non-structural measures such as setbacks and groundwater management. Shoreline stabilization measures are addressed in section B(2) of this chapter.

Some shoreline modifications may be exempt from the requirement to obtain a shoreline substantial development permit (SSDP). Even though a shoreline modification may be exempt from requiring a shoreline substantial development permit, it must still conform to the regulations and standards in this SMP and may require a Shoreline Conditional Use permit. The City requires that a property owner contemplating a shoreline modification contact the City’s Shoreline Administrator to determine whether the activity requires a permit or is exempt. No shoreline modification shall be undertaken without either a shoreline permit or a letter of exemption.

Shoreline modifications may also be exempt from the requirement to obtain an SSDP when undertaken in emergency situations to protect property from damage by the elements. WAC 173-27-040(2)(d) defines an “emergency” as an unanticipated and imminent threat to public health, safety or the environment which requires immediate action within a time frame too short to allow full compliance with chapter 173-27 WAC” (in other words, the time to obtain a shoreline permit or statement of exemption).

Emergency construction does not include development of new permanent protective structures where none previously existed. Where new protective structures are deemed by the administrator to be the appropriate means to address the emergency situation, upon abatement of the emergency situation the new structure shall be removed, or any permit which would have been required, absent an emergency, pursuant to chapter 90.58

RCW, WAC 173-27, or this Master Program shall be obtained. All emergency construction shall be consistent with the policies of chapter 90.58 RCW and this master program. As a general matter, flooding or other seasonal events that can be anticipated and may occur but that are not imminent are not an emergency (WAC 173- 27-040(2)(d)).

The Shoreline Modification Matrix (Table 2) indicates which shoreline modifications may be permitted in each shoreline environment designation.

B. Policies and Regulations

1. General Policies and Regulations

a. Applicability

The following provisions apply to all shoreline modification activities whether such proposals address a single property or multiple properties.

b. Policies

1. Structural shoreline modifications should be allowed only where they are demonstrated to be necessary:
    a. To support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage, or;
    b. For reconfiguration of the shoreline for mitigation or enhancement purposes.
2. The adverse effects of shoreline modifications should be reduced, to the greatest extent possible, and shoreline modifications should be limited in number and extent.
3. The City should take steps to assure that shoreline modifications individually and cumulatively do not result in a net loss of ecological functions. This is to be achieved by:
    a. Preventing unnecessary shoreline modifications;
    b. Giving preference to those types of shoreline modifications that have a lesser impact on ecological functions; and
    c. Requiring mitigation of identified impacts resulting from shoreline modifications.
4. The City should consider shoreline modification proposals based on the best available scientific and technical information and a comprehensive analysis of site-specific conditions provided by the applicant, as stated in WAC 173-26-231(2)(e).
5. Where ecological functions have been impaired, the City should plan for the enhancement of the impaired functions where feasible and appropriate while accommodating permitted uses (WAC 173-26-231(2)(f)). As shoreline modifications occur, the City will incorporate all

feasible measures to protect shoreline ecological functions and ecosystem-wide processes.

6. In reviewing shoreline permit applications, the City should require steps to reduce significant ecological impacts by following the mitigation sequence in Chapter 3, Section 1.
7. Regulations for shoreline modifications should restrict shoreline armoring or other modification on shorelines which exist in their natural state.

c. Regulations

1. All new shoreline uses and development shall be located and designed to avoid the need for shoreline modifications, both at initiation and during the life of the use or development.
2. All shoreline modifications must be in support of a permitted shoreline use or to provide for human health and safety.
3. Structural shoreline modifications may be permitted only if nonstructural measures are unable to achieve the same purpose or are not feasible.
4. Proponents of shoreline modification projects shall obtain all applicable federal and state permits prior to the start of construction and shall meet all permit requirements.
5. Shoreline modification materials shall be only those approved by the City and applicable state and federal agencies. No toxic (e.g.: creosote) or quickly degradable materials (e.g., plastic or fiberglass that deteriorates under ultraviolet exposure) shall be used.
6. Shoreline modifications shall not cause significant adverse impacts to active sediment drift cells or natural geomorphic and hydrologic processes. New uses and development shall not be established where such will require future shoreline modifications.
7. Proposals for shoreline modification shall demonstrate compliance with the mitigation sequence in chapter 3, section 1 of this SMP, and with applicable critical areas and vegetation conservation area provisions in chapter 3.

<u>Permitting Requirements</u>

8. In addition to the application information required by chapter 7, the City shall require and consider the following information when reviewing shoreline modification proposals:
    a. Construction materials and methods.
    b. Project location relative to the top and toe of bluffs or steep slopes, if applicable (note that this is especially important for residential properties situated near steep bluffs or other geologically hazardous areas).

c. For marine waters, the ordinary high water mark, mean higher high, and extreme high water levels (highest recorded level or the 100-year flood elevation).
d. Net direction of littoral drift changes and tidal currents (if any).
e. General direction and speed of prevailing winds (if applicable).
f. Profile rendition of beach and uplands.
g. Beach slope and material.
h. Uplands slope and material.
i. Soil types (Soil Conservation Service).
j. Physical or geologic stability of uplands.
k. Potential impact to natural shoreline processes, adjacent properties, and upland stability.

2. Shoreline Stabilization

a. Applicability

Shoreline stabilization includes actions taken to address the impacts of erosion to property, dwellings, businesses, or essential structures caused by natural processes such as current, flood, tides, wind, or wave action. Shoreline stabilization actions include structural and nonstructural methods.

- Structural measures include constructed elements and systems such as bulkheads, revetments, seawalls (hard measures), and bioengineering measures (soft measures).
- Nonstructural methods include appropriate building setbacks, relocation of the structure to be protected, and the use of planning, management, and regulatory measures intended to control erosion, stormwater and ground water impacts.

The provisions of this section apply to new shoreline stabilization measures as well as to existing measures for which repair or replacement are proposed. Normal maintenance and normal repair may be authorized as a shoreline exemption, in accordance with WAC 173-27-040(2)(b).

Shoreline stabilization can include:

1. Bulkheads and vertical seawalls.
2. Revetments, breakwaters, rock weirs, and groins made of large boulders (rip- rap).
3. Revetments, breakwaters, rock weirs, and groins in which the rock structures have been enhanced with special sediment, large wood or other means to increase desirable ecological functions.
4. Placement of large woody debris or other natural materials.
5. Beach enhancement.
6. Bioengineering and other measures employing native vegetation.

b. Policies

1. Non-structural stabilization measures are preferred over structural measures. Structural shoreline stabilization measures with less adverse impact on natural functions, such as bioengineering, are strongly preferred over hard structural shoreline stabilization measures, such as seawalls and bulkheads. Proposals for structural solutions should be allowed only when it is demonstrated that nonstructural methods are not feasible.
2. New non-water-oriented development requiring bulkheads and/or similar protection should not be allowed. Shoreline uses should be located in a manner so that bulkheads and other structural stabilization measures are not likely to become necessary in the future.
3. The city should give preference to shoreline stabilization measures having the least impact on ecological functions and should require mitigation for of identified any adverse impacts to ecological functions.

c. Regulations

1. All proposals for new or replacement shoreline stabilization measures shall include a geotechnical report. The geotechnical report shall address the need to prevent potential damage to an existing primary structure or legally existing use and shall address the necessity for shoreline stabilization by estimating time frames and rates of erosion, and report on the urgency associated with the specific situation.
2. New development shall, to the extent feasible, be located and designed to eliminate the need for concurrent or future shoreline stabilization.
3. Structural shoreline stabilization for new non-water-dependent development, including single-family residences, shall be allowed only when all of the conditions below are met:
    a. The need to protect the development from damage due to erosion caused by natural processes, such as tidal action, currents and waves, is demonstrated through a geotechnical report;
    b. The erosion is not being caused by upland conditions, such as loss of vegetation and drainage;
    c. Nonstructural measures, such as placing the development further from the shoreline, planting vegetation, including low impact development measures, or installing on-site drainage improvements, are not feasible or not sufficient; and
    d. The development and shoreline stabilization measures will not result in a net loss of shoreline ecological functions.
4. Structural shoreline stabilization for water-dependent development shall meet all of the conditions in regulation 3 above, except that erosion does not have be caused by natural processes such as tidal action, currents and waves.

5. New development on steep slopes or bluffs shall be set back sufficiently to ensure that shoreline stabilization will not be needed during the life of the structure, as demonstrated by a geotechnical analysis completed by a licensed geotechnical engineer in good standing in the State of Washington. Setbacks shall not be less than those required in Chapter 2 without a variance (see exceptions in chapter 3, section 12).
6. New structural shoreline stabilization to protect an existing primary structure or legally existing shoreline use, including residences, shall not be allowed unless there is conclusive evidence, documented by a geotechnical analysis, that the structure or use is in danger from shoreline erosion caused by tidal action, currents, or waves. Normal sloughing, erosion of steep bluffs, or shoreline erosion itself, without a geotechnical analysis, is not demonstration of need. The geotechnical analysis shall evaluate on-site drainage issues and address drainage problems away from the shoreline edge before considering structural shoreline stabilization. Such structural shoreline stabilization measures shall not result in a net loss of shoreline ecological function.
7. New structural shoreline stabilization measures to protect restoration or hazardous substance remediation projects may be authorized when non-structural methods, such as planting vegetation or installing onsite drainage improvements, are not feasible or not sufficient. Such stabilization structures shall not result in a net loss of shoreline ecological functions.
8. An existing shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect existing primary structures or principle uses from erosion caused by currents, tidal action, or waves. The replacement structure shall be designed, located, sized and constructed to assure no net loss of shoreline ecological functions. A geotechnical report shall be required to demonstrate need, except that primary structures or principal uses located within 20 feet of the OHWM do not require a geotechnical report to demonstrate need.
9. Replacement stabilization structures or bulkheads shall not encroach waterward of the OHWM or existing structure unless there are overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing stabilization structure.
10. New or replacement structural shoreline stabilization measures for flood hazard reduction may be allowed when demonstrated by a geotechnical analysis, that they are necessary to protect an existing development, that non-structural methods are not feasible, and that impacts to ecological functions and to priority species and habitats can be mitigated so as to ensure no net loss.
11. For purposes of this section, “replacement” means the construction of a new structure to perform a shoreline stabilization function of an existing

structure which can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures.

12. Hard structural shoreline stabilization shall not be authorized except when the geotechnical report confirms that there is a significant possibility that the primary structure or principal use will be damaged within three years as a result of shoreline erosion in the absence of such hard armoring, or when waiting until the need is immediate, would foreclose the opportunity to use measures that avoid impacts on ecological functions. Where the geotechnical report confirms a need to prevent potential damage but the need is not as immediate as three years, that report may still be used to justify more immediate authorization to protect against erosion using soft measures.
13. Where structural shoreline stabilization measures are demonstrated to be necessary, as described above, the size of such stabilization measures shall be limited to the minimum necessary. Structural shoreline stabilization measures shall be the type (e.g. revetment or bulkhead) least harmful to ecological functions while still adequately protecting against undesirable erosion. The City's Shoreline Administrator may require that the proposed structure be altered in size or design or its impacts are otherwise mitigated. Impacts to sediment transport shall be avoided or minimized.
14. Soft shoreline stabilization measures that restore ecological functions (such as, in some instances, beach enhancement, placement of large wood, and vegetation enhancement) may be permitted waterward of the OHWM.
15. Following completion of any shoreline stabilization activity, all disturbed shoreline areas shall be restored to pre-project conditions to the greatest extent feasible.

<u>Design of Shoreline Stabilization</u>

16. Shoreline stabilization measures shall be located, designed and constructed in compliance with the mitigation sequence and vegetation conservation provisions in chapter 3 of this SMP.
17. Shoreline stabilization shall be designed and developed to conform to all other applicable City, state and federal agency policies and regulations, including the Washington State Department of Fish and Wildlife criteria governing the design of bulkheads.
18. Because they are inherently unstable in the marine environment, gabions (wire mesh filled with concrete or rocks) are prohibited.
19. Materials:
    a. Hard shoreline stabilization structures are not the preferred method of shoreline stabilization. Where structural shoreline measures are allowed according to the regulations above, the following are

examples of acceptable materials for shoreline stabilization structures, listed in order of preference from top to bottom:

i. Naturally occurring materials such as logs with root wads;

ii. Large stones, ideally with vegetation or habitat enhancement in the gaps between the stones;

iii. Milled timbers. Note the prohibition against toxic wood treatments;

iv. Mixtures of rock and wood;

v. Cast-in-place reinforced concrete and approved sheet piles.

b. The following materials are not allowed for shoreline stabilization structures:

i. Degradable plastics and other nonpermanent synthetic materials.

ii. Sheet materials, including metal, plywood, fiberglass, or plastic excluding (sheet piling approved by the Shoreline Administrator).

iii. Broken concrete, asphalt, or rubble.

iv. Car bodies, tires or discarded equipment.

c. Materials and construction methods shall employ best management practices established to mimic or maintain natural sediment transport and accretion patterns.

<u>Bulkheads</u>

20. Stairs may be built as integral elements to a bulkhead but shall not extend waterward of the bulkhead.

21. Bulkheads shall be designed to permit the passage of surface or ground water without causing ponding or over-saturation of retained soil/materials of lands above the OHWM.

22. Adequate toe protection and proper footings shall be provided to ensure bulkhead stability without relying on additional riprap.

23. Backfill behind bulkheads shall be limited to an average of 1 cubic yard per running foot of bulkhead. Any backfill in excess of this amount shall be considered fill and shall be subject to the provisions of section 4 in this chapter.

24. Bulkheads are prohibited when their primary purpose is to:

a. Retain or create dry land (unless this land is fill that has been specifically authorized by permit in accordance with section 4 of this chapter).

b. Protect a platted lot where no structure presently exists.

25. Bulkheads are permitted only where local physical conditions, such as foundation bearing material and surface and subsurface drainage, are suitable.

<u>Breakwaters, Rock Weirs, Jetties, and Groins</u>

26. Authorization for breakwaters, jetties, groins and weirs that substantially alter, reduce, or block littoral drift and/or cause new erosion of downdrift

shorelines shall include conditions requiring establishment and maintenance of adequate long-term beach replenishment programs to ensure no net loss.

27. Breakwaters, jetties, rock weirs, and groins shall be allowed for the following purposes only:
    a. Legal navigation.
    b. Water dependent industrial activities: as an integral component of a harbor, marina, or port.
    c. Ecological restoration.
    d. Public access.
28. Open-pile or floating breakwaters shall be preferred over solid fixed breakwaters. Fixed breakwaters that obstruct movement in the full water column are not allowed unless it can be demonstrated they will have no adverse impacts to shoreline processes or that such adverse impacts can be adequately mitigated.
29. Groin construction across tidal areas to provide access to deep water is prohibited.
30. New breakwaters, jetties, rock weirs, and groins shall provide shoreline public access (visual or physical) whenever feasible.
31. Materials used for the construction of breakwaters, jetties, rock weirs, and groins shall be durable, low-maintenance, and compatible with existing shoreline features, processes, and aesthetics.

<u>Revetments</u>

32. New revetments shall be constructed and maintained so as not to reduce water quality or adversely impact fisheries or aquatic habitats.
33. New revetments shall be designed to accommodate public access to publicly owned shorelines whenever possible.
34. Riprap revetments shall:
    a. Consist of quarried rock, free of loose dirt and pollutants, and of sufficient size and weight to prevent movement by wave or current action.
    b. Use downed logs, snags, or rockwork to enhance habitat and to provide a more natural appearance to the shoreline, when feasible.
    c. Include measures to ensure sediment transport along the revetment where determined to be feasible and beneficial.
    d. Where on-site environmental conditions allow, integrate vegetation into the riprap design to reduce erosion; provide cover, shade, and habitat; and improve the natural appearance of the shoreline.

35. Revetment shall be sited and designed in accordance with appropriate engineering principles, including guidelines from the U.S. Soil Conservation Service and the U.S. Army Corps of Engineers.

Bioengineering

36. Bioengineering projects shall use native trees, shrubs, grasses and/or ground cover, unless such an approach is not feasible. Non-native plants are allowed when native plants are not feasible, but in no case are noxious weeds or invasive plants allowed.

37. All bioengineering projects shall include a program for monitoring and maintenance, to ensure the long-term viability and function of such projects. Such projects shall be designed, installed and maintained to be self sustaining and viable within three years.

38. The City may require and utilize the following information, in addition to the standard permit information required in chapter 7, in its review of all bioengineering projects:

    a. Proposed construction timing and phasing.
    b. Hydrologic analysis, including predicted flood flows.
    c. Site vegetation, soil types, and slope stability analysis.
    d. Proposed project materials, including rock size, shape, and quantity; plant types and quantities, and soil preparations.
    e. Existing and proposed slope profiles, including location of ordinary high water mark.
    f. Proposed design for transition areas between the project site and adjacent properties.
    g. Documentation, including photos, of existing (pre-construction) shoreline characteristics.

3. Overwater Structures

a. Applicability

Overwater structures for moorage, navigation, public access, and other water-dependent uses or development, including but not limited to docks, piers, wharves, swimming/diving platforms, public access ways, fishing piers and viewpoints, shall be subject to the following policies and regulations.

b. Policies

1. New overwater structures should be permitted only when the applicant/proponent has demonstrated that a specific need exists to support the intended water-dependent or public access use.
2. Overwater structures should be sited and designed to avoid adversely impacting shoreline ecological functions or processes, and should mitigate for any unavoidable impacts to ecological functions.

3. Overwater structures should be spaced and oriented in a manner that minimizes hazards and obstructions to public navigation and corollary rights thereto such as, but not limited to, fishing, swimming and pleasure boating.
4. Overwater structures should be restricted to the minimum size necessary to meet the needs of the proposed use. The length, width and height of overwater structures regulated by this section should be no greater than that required for safety and practicality for the primary use.
5. Overwater structures should be constructed of materials that will not adversely affect water quality or aquatic plants and animals.
6. Overwater structures should allow for maximum littoral drift and should minimize interference with basic hydrological and geological-hydraulic processes.
7. Recreational piers are encouraged to provide for public docking, launching, and recreational access.
8. Moorage serving upland single-family residences should not be allowed.
9. Multiple uses of overwater structures should be encouraged.

c. Regulations

General Regulations for Private and Public Over-water Structures

1. See section 4 in chapter 3 for restrictions on overwater structures in critical saltwater habitat areas. Chapter 2 also contains restrictions on overwater structures in specific shoreline segments.
2. New and expanded overwater structures shall only be allowed in support of an allowed water-dependent use, public access use, or ecological restoration. New and expanded overwater structures must comply with all other applicable regulations as stipulated by State and Federal agencies. New piers or docks shall only be permitted when the applicant has demonstrated that a specific need exists.
3. All moorage and other overwater structures shall be designed and located in a manner that avoids or minimizes:
    a. Hazards and obstructions to navigation, fishing, swimming, and pleasure boating;
    b. Shading of beach substrates; and
    c. Impediments to longshore sediment transport and/or movement of aquatic species.
4. All floats, ells, fingers and similar structures shall be at least 30 feet waterward of the OHWM. To prevent prop scour, mooring areas at docks, marinas, shipyards, and similar facilities must be located where there is at least 7' water depth at extreme low tide or where it can be shown that

prop scour will not adversely impact aquatic vegetation or increase suspended sediments.

5. The length, width and height of overwater structures shall be no greater than that required for the safety and practicality of the proposed use. The length of mooring and similar facilities shall be no longer than that required for the draft of the largest vessel expected to moor at the facility. The shoreline administrator shall generally defer to the dimensional requirements imposed by project-specific permit conditions by the Corps of Engineers and Washington Department of Fish and Wildlife for new docks, piers and floats, provided the applicant provides justification that such requirements are the minimum necessary.
6. No skirting is permitted on any overwater structure except to contain or protect floatation material. This regulation is to prevent adverse impacts to fish migration and natural water currents.
7. Overwater structures shall float at all times on the surface of the water or shall be of fixed-pile construction. Overwater structures shall at no time rest on the submerged land substrate.
8. All overwater structures shall be constructed and maintained in a safe and sound condition.
9. Lighting associated with overwater structures shall minimize light spillage on adjacent properties or water bodies.
10. Piles, floats and other overwater structures that are in direct contact with water or over water shall be constructed of materials that will not adversely affect water quality or aquatic plants and animals. Materials for any portion of the structure that comes into or may come into contact with the water shall be approved by the Washington State Departments of Fish and Wildlife and Ecology for use in the water.
    a. Use of wood members treated with toxic materials is not allowed in any new or reconditioned overwater structures.
    b. Tires are prohibited as part of overwater structures.
    c. All foam material must be completely encapsulated.
11. To minimize adverse affects on nearshore habitats and species caused by overwater structures that reduce ambient light levels, the following shall apply:
    a. The width of overwater structures shall be the minimum necessary. For docks, piers, and floats, this means the minimum necessary to afford safe passage. Materials that allow light to pass through the deck are required where the width exceeds four feet;
    b. Grating to allow light passage or reflective panels to increase light refraction shall be used on walkways or gangways in nearshore areas; and

c. Piers and other above water structures shall be placed as high as feasible and within the height limits established in this SMP to increase light transmission.

12. Temporary moorages shall be permitted for vessels used in the construction of shoreline facilities. Temporary moorage shall be designed and constructed such that upon termination of the project, the aquatic habitat in the affected area will return to its original (pre-construction) condition within one (1) year at no cost to the environment or the public.
13. See covered moorage provisions in Chapter 5 Section B.3: Boating Facilities.
14. If an overwater structure is provided with a safety railing, such railing shall not exceed 36 inches in height and shall be an open framework that does not unreasonably interfere with shoreline views of adjoining properties.
15. Overwater structures shall be marked with reflectors, or otherwise identified to prevent unnecessarily hazardous conditions for water surface users during the day or night. Exterior finishes of structures themselves shall be generally non-reflective.
16. New piers or docks serving upland single-family residential uses are prohibited.

Mooring Buoys and Piles

17. Mooring buoys and mooring piles are permitted only where there is no conflict with navigation or significant ecological impact to submerged lands and habitats. Mooring buoys and mooring piles serving a private residential property are prohibited. Mooring buoys and mooring piles for which there is no demonstrated commercial or navigational need are prohibited.
18. Installation of new mooring buoys or relocation of existing buoys shall not impede navigation.
19. The use of buoys for moorage of vessels shall be preferred over piling or float structures.
20. Mooring buoys shall be located in a manner that minimizes impacts to eelgrass, critical saltwater habitats, and other ecologically important areas.
21. All new mooring buoy and pile installations must comply with all applicable guidelines of the Washington State Department of Fish and Wildlife.
22. Mooring buoys in the Aquatic Harbor environment designation are limited to four buoys per acre (consistent with the US Army Corps' limitation under the Endangered Species Act).

Special Facilities on Overwater Structures

23. Facilities and procedures for receiving, storing, dispensing, and disposing of oil and other toxic products shall be designed to ensure that such oil and other toxic products are not introduced into the water body.

24. Bulk storage of petroleum products for any use or purpose is prohibited on piers, wharves, and docks. Bulk storage means non-portable storage in fixed tanks.

25. Storage for boat fueling facilities shall be located landward of the OHWM and meet the applicable policies and regulations for utilities (accessory and primary) and commercial and industrial development.

26. Spill cleanup facilities shall be available for prompt response and application at all piers, wharves, and docks involved in oil and hazardous products transfer.

4. Fill

a. Applicability

Fill is the addition of soil, sand, rock, gravel, sediment, earth retaining structures, or other material to an area waterward of the OHWM, in wetlands, or on shorelands in a manner that raises the elevation or creates dry land. Fill in upland areas is differentiated from landfill. A landfill is the disposal of solid waste materials by burying, and may also be known as a sanitary landfill. Landfill is prohibited in the shoreline jurisdiction.

Any fill activity conducted within shoreline jurisdiction must comply with the following provisions.

b. Policies

1. Fill waterward of OHWM should be allowed only when necessary to support allowed water-dependent or public access uses, cleanup and disposal or capping of contaminated sediments, ecological restoration, and other water- dependent uses that are consistent with this SMP.

2. Shoreline fill should be designed and located so there will be no significant adverse ecological impacts and no alteration of local currents, surface water drainage, channel migration, or flood waters which would result in a hazard to adjacent property or natural resources. Fill is only appropriate for use in altering currents, drainage, channel migration, etc. when it is done as part of an approved ecological restoration plan or project.

3. The perimeter of fill areas should be designed to avoid or eliminate erosion and sedimentation impacts, both during initial fill activities and over time. Natural-appearing and self-sustaining control methods are preferred over structural methods.

4. Environmental cleanup actions involving excavation/fill, as authorized by Washington Department of Ecology, may be permitted.

c. Regulations

1. Fill waterward of OHWM requires a Conditional Use Permit and may be permitted only when:
    a. In conjunction with a water-dependent or public access use permitted by this SMP; or
    b. In conjunction with a levee, bridge, or navigational structure for which there is a demonstrated public need and where no feasible upland sites, design solutions, or routes exist; or
    c. As part of an approved shoreline restoration project. Fill waterward of the ordinary high water mark that is for the purpose of restoring ecological functions and habitat or as part of an approved environmental cleanup action is a permitted use and does not require a conditional use permit unless the proposed fill material includes dredge spoils.

2. Overwater structures shall be supported by piles or piers rather than fill material whenever feasible.

3. In addition to the requirements in chapter 7, applications for fill permits shall include the following:
    a. Proposed use of the fill area.
    b. Physical, chemical, and biological characteristics of the fill material.
    c. Source of fill material.
    d. Method of placement and compaction.
    e. Location of fill relative to natural and/or existing drainage patterns and wetlands.
    f. Location of the fill perimeter relative to the OHWM.
    g. Means of perimeter erosion control or stabilization.
    h. Type of surfacing and runoff control devices.

4. Fill shall be permitted only where it is demonstrated that the proposed action will not:
    a. Result in significant ecological damage to water quality, fish, wildlife, fish and/or wildlife habitat, and critical saltwater habitats.
    b. Adversely alter natural drainage and circulation patterns, currents, or significantly reduce flood water capacities.
    c. Alter channel migration, geomorphic, or hydrologic processes.

5. Sanitary landfills shall not be located in any shoreline jurisdiction.

5. Dredging and Disposal

a. Applicability

Dredging is the removal or displacement of earth or sediment (gravel, sand, mud, silt and/or other material or debris) from a stream, river, lake, marine water body, or associated wetland. Activities which may require dredging include the construction and maintenance of navigation channels, levee construction, recreation facilities, boat access, and ecological restoration.

Dredged material disposal is the depositing of dredged materials on land or into water bodies for the purpose of either creating new or additional lands for other uses or disposing of dredge spoils (the by-products of dredging).

b. Exemptions

Pursuant to WAC 173-27-040(2)(b), maintenance dredging may be exempt from the requirement for a shoreline substantial development permit.

c. Policies

1. Dredging operations should be planned and conducted to avoid and minimize interference with ecological processes and functions, navigation, and adverse impacts to other shoreline uses, properties, and values.
2. New uses and development should be located, planned and designed to avoid the need for dredging.
3. When allowed, dredging and dredged material disposal should be limited to the minimum amount necessary. Maintenance dredging of established navigation channels should be limited to maintaining previously authorized locations, depth and width.
4. Disposal of dredged material within a littoral drift zone should not be permitted unless it is associated with restoration of natural processes and functions or habitat enhancement.
5. Dredged material disposal in water bodies should be discouraged, except for habitat improvement or where depositing dredged material on land would be more detrimental to shoreline resources than deposition in water areas.
6. When dredged material has suitable organic and physical properties, dredging operations should be encouraged to recycle dredged material for beneficial use in beach enhancement, habitat creation, aggregate, or clean cover material at a landfill (where appropriate).
7. Dredging waterward of the OHWM for the primary purpose of obtaining fill should not be allowed.
8. Dredging for the purpose of establishing, expanding, or relocating or reconfiguring navigation channels should be allowed when necessary for assuring safe and efficient accommodation of existing navigational uses

and only when significant ecological impacts are minimized and when mitigation is provided.

d. Regulations

1. New uses and development shall be located and designed to avoid or minimize the need for new or maintenance dredging, where feasible.
2. Maintenance dredging of established navigation channels, public access facilities, and basins is allowed to maintain previously dredged areas and existing authorized locations. The dredging shall be restricted to previously authorized locations, depths, and widths.
3. Dredging waterward of the OHWM for the primary purpose of obtaining material for fill is prohibited, except when the material is necessary for the restoration of ecological functions. When allowed, the site where the fill is to be placed must be located waterward of the OHWM. The project must be associated with a Model Toxics Control Act (MCTA) or Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) habitat restoration project or other significant habitat enhancement project. The placement of dredge spoils waterward of the OHWM or in wetlands for such purposes shall require a Conditional Use Permit.
4. Sites approved through the Puget Sound Dredged Disposal Analysis (PSDDA) Management Plan do not require a conditional use permit when the material has been determined to be "suitable" for open water disposal after testing using PSDDA criteria and procedures.
5. Dredging and dredged material disposal shall be permitted only where it is demonstrated that the proposed actions will not:
    a. Result in significant or ongoing damage to water quality or aquatic and upland habitat;
    b. Adversely alter natural drainage and circulation patterns, currents, river flows, channel migration processes or significantly reduce flood water capacities; or
    c. Cause other significant ecological impacts.
6. Proposals for dredging and dredged material disposal shall be the minimum necessary to accommodate the proposed use, and shall include all feasible mitigating measures to protect marine habitats and to minimize adverse impacts such as turbidity, release of nutrients, heavy metals, sulfides, organic material or toxic substances, dissolved oxygen depletion, disruption of food chains, loss of benthic productivity and disturbance of fish migration and important localized biological communities.
7. Dredging and dredged material disposal shall be carefully scheduled to protect biological productivity (e.g. fish migration, spawning, benthic productivity, etc.) and to minimize interference with fishing activities.
8. Dredging and dredged material disposal shall be prohibited on or in archaeological sites that are listed on the Washington State Register of Historic Places.

9. Dredging shall be permitted only:
    a. For navigation or navigational access and recreational access;
    b. Where necessary to support a water-dependent use;
    c. As part of an approved restoration project;
    d. To improve water quality or remove contaminated sediments;
    e. In conjunction with a bridge, navigational structure or wastewater treatment facility for which there is a documented public need and where other feasible sites or routes do not exist; or
    f. To maintain existing docks, wharves, water intakes, and culverts, bridges, wastewater treatment facilities, outfalls.
10. New dredging activity is prohibited in critical saltwater habitats, unless all of the provisions in chapter 3, section 4 are met.
11. In addition to the requirements in chapter 7, applications for shoreline dredging and dredged material disposal shall include all applicable information as required by State and Federal permitting agencies.
12. Dredge spoil disposal waterward of the OHWM shall utilize techniques which limit the dispersal and broadcast of materials unless specifically designed and approved as a dispersal site.
13. When used for beach enhancement, dredge spoil placement shall be conducted so that:
    a. The spoils do not smother marsh or other shallow productive areas, and
    b. The disposed spoils maintain a stable beach profile, to the extent feasible. Spoils shall be graded at a uniform slope and contoured to reduce cove and peninsula formation and to minimize stranding of juvenile fish or other ecological impacts.
14. Dredged materials shall not be disposed of in locations that adversely affect or diminish public access to shorelines and water bodies.
15. The City's Shoreline Administrator may impose reasonable limitations on dredging operation periods and hours and may require buffers at land disposal or transfer sites in order to protect the public safety and other lawful interests from unnecessary adverse impacts.

6. Shoreline Restoration

a. Applicability

"Shoreline restoration" or "ecological restoration" is the significant re-establishment or the improvement of shoreline ecological functions through measures such as revegetation, removal of intrusive shoreline structures, and removal or treatment of toxic sediments or substances. To restore does not necessarily mean returning the shoreline area to aboriginal or pre-European settlement condition. The materials used are dependent on the condition of

and intended use of the shoreline area. Along armored shorelines, activities such as rip rap removal, slope cut-back, sediment amendment and placement of materials like wood may be necessary for restoration.

The Shoreline Restoration Plan accompanying this SMP recommends ecological restoration measures and identifies programmatic opportunities for restoration. The Shoreline Restoration Plan is not intended to limit other restoration projects. Individually, restoration projects proposed and conducted specifically for the purpose of establishing, restoring or enhancing habitat for priority species in shoreline jurisdiction are a preferred action.

b. Policies

1. The City should consider shoreline restoration as an alternative to structural shoreline stabilization and protection measures where feasible.
2. All shoreline restoration projects should protect the integrity of adjacent natural resources including aquatic habitats and water quality.
3. Where possible, shoreline restoration should use maintenance-free or low- maintenance designs.
4. The City should pursue the recommendations in the Shoreline Restoration Plan prepared as part of this SMP update. The City should give priority to projects consistent with that plan and other adopted plans. Restoration projects should pursue legitimate restoration needs and priorities.

c. Regulations

1. Shoreline restoration may be permitted if the project proponent demonstrates that no significant adverse impacts to sediment transport will result and that the restoration measure will not adversely affect ecological processes, properties, or habitat.
2. Shoreline restoration projects shall use best available science and management practices and shall comply with all federal and state regulations and procedures.
3. Shoreline restoration shall not significantly interfere with the normal public use of the navigable waters of the state without appropriate mitigation.
4. Shoreline restoration projects may be permitted in all shoreline environments. The project does not need to be noted in the Shoreline Restoration Plan but it must not be contrary to the principles and general objectives of the plan.
5. Shoreline restoration projects conducted by a public entity shall include or improve public access where feasible.
6. Shoreline restoration projects may include shoreline modification actions such as vegetation removal, shoreline stabilization, dredging, or filling provided the primary purpose of such actions is clearly restoration of the natural character and ecological functions of the shoreline.

7. Dikes and Levees

a. Applicability

Dikes and levees are manmade earthen embankments created for the purpose of flood control, water impoundment projects, or settling basins.

b. Policies

1. Structural flood hazard reduction measures should be avoided whenever possible. When evaluating alternative flood control measures, the City should consider the removal or relocation of structures in flood-prone areas.
2. Dikes and levees should be constructed or reconstructed only as part of a comprehensive flood hazard reduction program.
3. Environmental enhancement measures and, where feasible, public access improvements should be a part of levee or dike proposals.

c. Regulations

1. Dikes and levees shall be designed, constructed, and maintained in accordance with Washington State Department of Fish and Wildlife Hydraulic Project Approval requirements, federal levee criteria, and in consideration of other applicable resource agency recommendations.
2. Dikes and levees shall protect the natural processes and ecological functions associated with marine shorelines, streams and deltas, including, but not limited to, fish and wildlife habitat.
3. Dikes and levees shall be limited in size to the minimum height required to protect adjacent lands from the projected flood stage.
4. Dikes and levees shall not be placed in the floodway, except for current deflectors necessary for protection of bridges and roads.
5. Public access to shorelines shall be an integral component of all public entity levee projects. Public access shall be provided in accordance with the public access policies and regulations contained in chapter 3. New dikes or levees must not impede or diminish public access.
6. Proper diversion of surface discharge shall be provided to maintain the integrity of natural streams, wetlands, and drainages.
7. Structural flood hazard reduction measures shall only be authorized when demonstrated by a geotechnical report that they are necessary to protect existing development, that nonstructural means are not feasible, that impacts on ecological functions and habitat for priority species can be successfully mitigated so as to achieve no net loss.
8. Proposals for dikes and levees shall comply with the mitigation sequence and vegetation conservation provisions in chapter 3 of this SMP.

9. Structural flood hazard reduction measures shall be consistent with an adopted comprehensive flood hazard management plan or other comprehensive effort that considers impacts to the watershed.
10. New structural flood hazard reduction measures shall be located landward of associated wetlands and designated vegetation conservation areas, where feasible.

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CHAPTER 5

Shoreline Use Provisions

A. Introduction

The provisions in this section apply to specific common uses and types of development to the extent they occur within shoreline jurisdiction. The Shoreline Use Matrix in Chapter 2 Section C indicates in which environment designations each shoreline use is allowed.

B. Shoreline Use Policies and Regulations

1. General Policies and Regulations

a. Applicability

The following provisions apply to **all** developments and uses in the shoreline jurisdiction.

b. Policies

1. The City should give preference to those uses that are consistent with the control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shorelines.

   In implementing this provision, preference should be given first to water-dependent uses, then to water-related uses and water-enjoyment uses.

2. The City should ensure that all proposed shoreline uses and development will not diminish the public's health, safety, and welfare, or adversely impact ecological functions.

3. The City should endeavor to protect property rights while implementing the policies of the Shoreline Management Act.

c. Regulations

1. All uses not explicitly covered in the SMP require a conditional use permit. The City's Shoreline Administrator shall impose conditions on all shoreline permits and exemptions as needed to ensure that the proposed use or development meets the policies of this SMP.

2. Non-water oriented uses and development are generally not allowed in shoreline jurisdiction. There are exemptions in specific shoreline environment designations or situations (see chapter 2 and table 1). Developments that include a mix of water-oriented and non-water-dependent uses may be allowed provided the non-water-oriented uses functionally

support, are subordinate to and compatible with the water-dependent uses and otherwise comply with the provisions of this SMP.

a. In no case shall the non-water oriented use be located waterward of the water dependent use.

b. Only water dependent portions of the use that require direct shoreline access may be located within the setback or a required vegetation conservation area.

c. Encroachments into a required VCA shall be mitigated in accordance with chapter 3 section 12.

2. Aquaculture

a. Applicability

Aquaculture is the farming or culturing of fish, shellfish, or other aquatic plants and animals. The culture of aquatic plants or animals in tanks on upland shoreline areas is also considered to be an aquaculture use. Aquaculture does not include the harvest of wild geoduck associated with the State-managed wildstock geoduck fishery, or activities on private property for personal consumption.

Aquaculture activities include, but are not limited to, the hatching, cultivating, planting, feeding, stocking, disease treatment, cleaning, waste disposal, storage, staging, raising and harvesting of aquatic plants and animals, and the maintenance and construction of associated equipment, buildings and growing areas. Excluded from this definition are related industrial uses, such as final processing, packing and freezing, and commercial uses such as wholesale and retail sales. Cultivation methods include, but are not limited to, fish pens, shellfish rafts, racks and long lines, seaweed floats and nets, and the culture of clams and oysters on tidelands and subtidal areas.

b. Policies

1. Within the Port Angeles Harbor, the maintenance and improvement of water quality and other ecological functions, navigation, public access, tribal fishing activities and aesthetics are significant public objectives. These objectives should take precedence in shoreline areas, when inconsistent with new or expanded aquaculture activities.

   Consideration should be given to both the possible positive impacts and the possible adverse impacts that new and expanded aquaculture uses and development may have on these public objectives.

2. Forms of aquaculture that involve minimal environmental and visual impacts are preferred. Aquaculture uses and development that involve little or no substrate modification are preferred over those that involve substantial substrate modification.

3. Aquaculture uses and development that restore native shellfish species should be encouraged.

4. Public access to tidelands and public shellfish harvesting areas should not be adversely impacted by new or expanded aquaculture activities. Aquaculture should not be permitted where it would adversely impact eelgrass and microalgae, or significantly conflict with navigation and other water dependent uses.
5. In evaluating proposed aquaculture actions, the City should work with Washington State Department of Natural Resources (DNR), Washington State Department of Fish and Wildlife (DFW), area tribes, and aquaculture interests to determine the suitability of proposed locations, aquaculture types and design and implementation requirements for individual proposals.
6. Aquaculture projects should locate in areas where biophysical conditions, such as tidal flow, currents, water temperature and depth, will avoid and minimize adverse environmental impacts. Individual projects should be separated by a distance sufficient to ensure that significant adverse cumulative effects do not occur.
7. Chemicals and fertilizers used in aquaculture operations should only be those specifically approved for aquatic use by the Washington State Department of Ecology and used in accordance with state and federal laws and this SMP.
8. Some forms of aquaculture are dependent on the use of the water area; when consistent with control of pollution and prevention of damage to the environment, water-dependent aquaculture uses and development are a preferred use of the water area.

c. Regulations

1. Applicants shall include in their shoreline permit applications all information required by State and Federal permit applications for new and expanded aquaculture uses and development. Additional studies or information may be required by the City, which may include but is not limited to monitoring and adaptive management plans and information on the presence of and potential impacts to, including ecological and visual impacts, existing shoreline or water conditions and/or uses, vegetation, and overwater structures. For floating and above-water facilities, the City shall reserve the right to require a visual impact analysis be conducted, using a method approved by the City. Generally, the methods for identifying and analyzing potential visual and cumulative impacts will follow the principles in the Aquaculture Siting Study, Washington State Department of Ecology publication number 86-10-000 (October 1986).
2. The location of floating and submerged aquaculture structures shall not significantly:
   a. Restrict navigation to or along the shoreline;
   b. Interfere with general navigation lanes and boating traffic; or
   c. Interfere with Tribal "usual and accustomed" fishing locations.

   Floating structures associated with aquaculture uses and development shall remain shoreward of principal navigation channels.

3. No aquatic organism shall be introduced into waters regulated by this SMP without prior written approval of the Washington Department of Fish and Wildlife or other appropriate regulatory agency. Such approval shall be submitted in writing to the City prior to the granting of any shoreline permit.
4. Aquaculture structures and activities that are not water-dependent (e.g., warehouses for processing or storage of products and parking lots) shall not be located in the Aquatic environment designations and shall be located, designed and constructed to avoid and minimize adverse impacts to the shoreline.
5. All structures and equipment associated with aquaculture activities shall be of sound construction and shall be so maintained. Abandoned or unsafe structures and equipment shall be removed or repaired by the owner. Where any proposed structure has the potential to constitute a hazard to the public, the City may require the posting of a bond commensurate with the cost of removal or repair. Following notice to the owner, the City may abate an existing abandoned or unsafe aquaculture structure if the owner fails to respond in thirty days. The City may also impose a lien on the related shoreline property or other assets in an amount equal to the cost of the abatement. Bonding requirements shall not duplicate requirements of other agencies.
6. Aquaculture wastes shall be disposed of in a manner that will ensure compliance with all applicable governmental waste disposal standards. No garbage, wastes or debris shall be allowed to accumulate at the site of any aquaculture operation.
7. Aquaculture activities and facilities shall be located where they do not adversely impact native eelgrass and microalgae species or other critical saltwater habitats, priority species or species of concern, or habitat for such species as outlined in chapter 3. Aquaculture uses and activities shall observe all upland and aquatic buffers or setbacks required by applicable State or Federal regulations. Larger buffers or other protections may be required if supported by relevant resource agencies in coordination with the Administrator. Aquaculture shall not be permitted in areas where it would result in a net loss of shoreline ecological functions, or where adverse impacts to critical saltwater habitats cannot be mitigated according to the mitigation sequencing requirements of this Program (chapter 3, section 1).
8. Predator control shall not involve the intentional killing, injury or abusive harassment of birds or mammals. Control methods shall comply with federal and state regulations.
9. When a shoreline permit is issued for a new aquaculture use or development, that permit shall apply to the initial siting, construction, and~~/or~~ planting or stocking of the facility or farm. Authorization to conduct such activities shall be valid for a period of five (5) years with a possible extension per chapter 7 of this Program. After the aquaculture use or development is established under the shoreline permit, continued operation of the use or development, including, but not limited to, maintenance, harvest, replanting, restocking or

changing the culture technique or species cultivated shall not require a new, renewed or revised permit unless otherwise provided in the conditions of approval or this Program. Permit revisions shall proceed in accordance with WAC 173-27-100. Changing of the species cultivated shall be subject to applicable standards of this Program.

10. A new permit is required when:
    a. The physical extent of the use or development or associated overwater coverage is expanded by more than ten percent (10%) compared to the conditions that existed as of the effective date of this SMP. If the amount of expansion or change in overwater coverage exceeds ten percent (10%), the revision or sum of the revision and any previously approved revisions shall require the applicant apply for a new permit;
    b. The use or development proposes to cultivate a species not previously cultivated within Port Angeles' jurisdictional waters; or
    c. New chemicals not previously approved as part of the existing permit are proposed for use.
11. Floating/hanging aquaculture structures and associated equipment shall not exceed six (6) feet in height above the water's surface. The six foot height limit shall not apply to vessels or materials/apparatus removed from the site on a daily basis.
12. Floating/hanging aquaculture facilities and associated equipment, except navigation aids, shall use colors and materials that blend into the surrounding environment in order to minimize visual impacts.
13. All floating and submerged aquaculture structures and facilities in navigable waters shall be marked in accordance with U.S. Coast Guard requirements.
14. Aquaculture use and development that requires attaching structures to the bed or bottomlands shall use anchors that minimize disturbance to substrate.
15. Aquaculture projects shall avoid use of chemicals, fertilizers and genetically modified organisms except when allowed by state and federal law.
16. Aquaculture facilities are required to identify and use best management practices to minimize impacts such as light and noise from the construction and management of the facilities.
17. The rights of treaty tribes to aquatic resources within their usual and accustomed areas shall be addressed through direct coordination between the applicant/proponent and the affected tribe(s). The Administrator will notify affected tribes of new shoreline permit applications in the manner outlined in chapter 7.
18. Additional standards for commercial geoduck aquaculture:
    a. In addition to the standards above, commercial geoduck aquaculture shall only be allowed where sediments, topography, land and water access support geoduck aquaculture operations without significant clearing or grading.

b. All permits shall take into account that commercial geoduck operators have the right to harvest geoduck once planted.
c. All subsequent cycles of planting and harvest shall not require a new CUP, subject to WAC 173-27-100.
d. A single CUP may be submitted for multiple sites within an inlet, bay or other defined feature, provided the sites are all under control of the same applicant and within the Program's jurisdiction.
e. Commercial geoduck aquaculture workers shall be allowed to accomplish on-site work during low-tides, which may occur at night or on weekends. Where such activities are necessary, noise and light impacts to nearby residents shall be mitigated to the greatest extent practicable.
f. Where an applicant proposes to convert existing non-geoduck aquaculture to geoduck aquaculture, a Conditional Use permit shall be required.
g. In addition to the requirements in chapter 7, applications for commercial geoduck aquaculture shall contain all of the items identified in WAC 173-26-241 (3)(b)(iv)(F).

3. Boating Facilities

a. Applicability

Boating facilities include marinas; dry storage and wet-moorage types; boat launch ramps; covered moorage; boat houses; mooring buoys; and marine travel lifts. Elements of boating facilities, such as piers, docks, or mooring buoys, may also be subject to the provisions for overwater structures in chapter 4. Docks, piers or boat launches associated with single-family residences are not considered boating facilities.

A marina is a water-dependent use that consists of a system of piers, buoys, or floats to provide a centralized site for extended moorage for more than four (4) vessels, including yachts, commercial or research vessels, and small pleasure craft. For regulatory purposes, yacht club facilities and camp or resort moorage areas would also be reviewed as marinas.

Marinas are usually located in the intertidal or offshore zone and may require breakwaters of open-type construction (floating breakwater and/or open pile work) and/or solid-type construction (bulkhead and fill), depending on the location.

Boat launches and businesses offering supplies and services for boaters and boat operators are often associated with marinas. These uses are considered accessory to the marina when subordinate in size and scale to the primary marina use. Other accessory uses found in marinas and boating facilities may include fuel docks and storage, boating equipment sale and rental, wash-down facilities, fish cleaning stations, vessel repair services, public launching, bait and tackle shops, potable water, waste disposal, administration and maintenance structures, parking, eateries, grocery and dry good sales.

The above listed uses and modifications are subject to the regulations established for those uses and modifications, in addition to the standards for boating facilities established in this section. If there is a conflict, the Shoreline Administrator shall determine the applicable standards in a manner most protective of shoreline resources.

b. Policies

1. Boating facilities should be located and designed so their structures and operations will be aesthetically compatible with the surrounding area and will not unreasonably impair shoreline views.
2. Boating facilities should be located in areas of low biological productivity and outside of fish migration routes to the extent feasible. Adverse impacts to ecological processes or life forms should be mitigated.
3. Launch areas for non-motorized, hand-held craft should be provided at appropriate public access sites.
4. Existing public moorage and launching facilities should be retained and maintained.
5. New marina facilities and improvements to existing marinas should be designed to include public access and enjoyment of the shoreline, for example walkways, viewpoints, restroom facilities, and other recreational uses consistent with the scale of the facility.
6. On State-owned aquatic lands, boating facilities should adhere to the standards and requirements of the Washington State Department of Natural Resources (DNR).

c. Regulations

1. The applicant is responsible for complying with all applicable state and federal agency requirements and procedures relating to the construction and operation of boating facilities and associated uses or developments.
2. New boating facilities shall not significantly impact the rights of navigation on waters of the state.
3. Boating facilities shall not be located where significant ecological impacts would result and shall not adversely affect critical saltwater habitats (see Chapter 3, section B).
4. Boating facilities shall comply with the mitigation sequence outlined in chapter 3, section 1 as well as all applicable critical area and vegetation conservation standards in Chapter 3 of this SMP.

<u>Design/Renovation/Expansion</u>

5. Boating facilities shall be located on stable shorelines and designed so as to:
    a. Provide thorough water/tidal exchange and circulation in enclosed water areas.

b. Maintain intertidal and shallow subtidal migratory pathways for juvenile fish species and other aquatic life requiring shallow water habitat.

c. Minimize interference with sediment transport or other coastal processes and disruption of existing shoreline ecological functions.

d. Minimize the adverse impacts of shade on the water's surface resulting from overwater structures through means such as (but not limited to):

   i. Minimization of overwater coverage;

   ii. Elevation of piers above the water to the maximum extent reasonable

   iii. Limiting floats in the nearshore area;

   iv. Incorporating grated decking or other materials that allow light penetration; and

   v. Other design measures.

e. Minimize the need for channel construction or dredging, maintenance dredging, filling, beach enhancement, and other shoreline modification activities.

6. Moorage of floating homes, house barges and/or houseboats in marinas is prohibited.

7. Up to 10% of the total number of slips in a new marina may be occupied by live-aboards (boats with people living on them as their primary residence). The Port of Port Angeles Boat Haven Marina may provide for up to 30 live-aboards or 10% of the total number of slips, whichever is larger. Live-aboards may provide a sense of security due to on-site human presence.

8. All marinas shall include measures for sewage pump-out and disposal. Boat waste disposal facilities (pump-outs, dump stations and toilets) shall be considered and located within marinas on an individual basis through consultation with the Departments of Health, Ecology and Parks as applicable.

9. In addition to the application requirements in chapter 7, the City shall require and utilize the following information in its review of new or expanded marina proposals:

   a. Existing shoreline and backshore features and uses.

   b. Sediment transport processes and flushing characteristics, including but not limited to volumes, rates and frequencies.

   c. Biological resources, habitats, and migratory routes of marine species within the backshore, foreshore, and aquatic environments.

   d. Bathymetric contours (1-foot increments).

   e. Ownership and lease agreements of submerged lands.

   f. Site orientation; exposure to wind, waves, flooding or tidal/storm surges; type and extent of shoreline stabilization and flood protection necessary.

g. Impact upon existing shoreline and water uses, and anticipated demand for shoreline and water uses including public access, recreation, and views.

h. Location of accessory facilities, including sewage disposal, water quality and invasive species transfer controls (e.g., wash down facilities),

i. Overwater coverage and associated shading,

j. Provisions for the prevention and control of fuel spillage and management of storm water, and

k. A landscaping plan (see regulation 12 below). The landscaping plan shall identify the size, location and species of plants that will be used. Native species are required, where feasible. Such plan shall also outline maintenance and monitoring steps, and may include a financial security requirement, to ensure all landscaping is viable and self sustaining after three years.

10. Accessory uses at marinas or public launch ramps shall be limited to those which are water-dependent, water-related or water-enjoyment or that functionally support marina activities or users (e.g., public restrooms, harbormaster offices, etc.). Accessory uses shall be consistent in scale and intensity with the marina and/or launch ramp and surrounding uses.

11. Marinas shall not locate where they would impair significant littoral drift, including adjacent to feeder bluffs, accretion beaches, points, spits and hooks, wetlands and lagoons, and estuaries. Marinas also shall not locate where they would result in adverse impacts to significant fish and shellfish spawning and rearing areas.

12. The perimeter of new or expanded parking, dry moorage and other storage areas shall be landscaped to provide and maintain a visual buffer between adjoining dissimilar uses or scenic areas.

13. Public access, both visual and physical, shall be an integral part of all new or expanded marinas or public launch ramps. The type/design of public access shall be consistent in scale and intensity with the proposed boating facility in accordance with the public access requirements in chapter 3. New and expanded boating facilities must ensure the following:

    a. Existing or potential public access along beaches is not unnecessarily blocked or made dangerous, and public use of the waters below the ordinary high water mark is not unduly impaired.

    b. Where allowed, covered moorage shall not be constructed where visual access from public access areas is significantly impaired and/or the views of significant numbers of residences are blocked.

14. Upland facilities shall be designed and managed in compliance with the Port Angeles Urban Services and Standards Guidelines manual in order to minimize or prevent negative impacts to water quality. Impervious surfaces shall be minimized to the extent feasible.

15. Boating facilities and accessory uses shall share parking facilities to the maximum extent feasible, with boating facility usage given the preference for utilizing parking within shoreline jurisdiction.

16. Public boat launch facilities shall provide and maintain rest rooms or portable toilets. All marinas with over 20 moorage slips shall provide rest rooms and showers for boaters' use. Restrooms and showers shall be located outside of shoreline jurisdiction to the extent feasible. Marinas shall provide one toilet and hand washing facility for each sex per fifty moorage sites; signs shall be posted so that the rest rooms are easily identifiable to the boating public.

17. Pipes, plumbing, wires and cables at marinas shall be placed at or below ground and dock levels.

18. Marinas shall include facilities, equipment and shall post established procedures for the containment, recovery and mitigation of spilled petroleum, sewage and/or toxic products and debris from maintenance and repair practices.

19. Garbage and recycle receptacles shall be provided and maintained by the marina operator at several locations convenient to users in sufficient numbers to properly store all solid waste generated on site. This should include separate receptacles for waste oil and other potentially hazardous or toxic waste.

20. Moorage facilities within marinas shall be equipped with functional lifesaving equipment such as life rings, hook and ropes. Adequate fire protection shall be required as per the City adopted Fire Code.

Boat Launches

21. Public launch ramps shall be located where upland and aquatic access are appropriate for the scope of the facility so that parking and circulation do not adversely impact neighboring uses or the public rights of navigation.

22. Ramps shall be placed and kept near flush with the foreshore slope to minimize the interruption of shoreline processes.

23. The maximum waterward intrusion of any portion of any launching ramp shall be the point where the water depth is sufficient for launching the type of boat for which the launch is designed.

Covered Moorage

24. Covered moorage is prohibited outside of the Port of Port Angeles Boat Haven Marina.

25. When new covered moorage or the replacement of existing covered moorage is proposed within the Boat Haven Marina, the applicant shall provide a detailed plan indicating:

    a. The location, size and general design of the proposed structure;

    b. The impact on shoreline views from public access points within the marina and from adjacent public properties and residences; and

c. That the structures will be built to conform to the City building code, withstand stresses from anticipated storm and weather conditions or damage by fire, and that exterior wall and roof coverings shall be of noncombustible or fire-retardant-treated material and so certified or labeled.

26. The maximum height for covered moorage is 20 feet above the ordinary high water mark.

Mooring Piles and Buoys

27. Mooring buoys shall be located as close to the shoreline as possible but outside of critical saltwater habitats. Mooring buoys shall be designed to eliminate damage (e.g., from the scour of anchoring chains or cables) to eelgrass and kelp beds. Consult with the Clallam Marine Resources Committee for advice and assistance in this regard. See also regulations for mooring buoys in Chapter 4, section 3.
28. Buoys shall be discernible under normal daylight conditions at a minimum of 100 yards and shall have reflectors for nighttime visibility.
29. Mooring buoys shall be clearly marked with the owner's name, contact information, and permit number(s).
30. The installation and use of mooring buoys shall be consistent with all applicable state and federal laws and standards.
31. Vessels shall not moor on waters of the state for extended periods unless a lease or permission is obtained from the state and impacts to navigation and public access are mitigated.

4. Commercial Development

a. Applicability

Commercial development means those uses that are involved in wholesale, retail, service, and business trade. Commercial uses can be water-dependent, water-related, water-enjoyment or non-water-oriented. Water dependent commercial uses include, for example, boat rental, water taxis, or eco-marine tourism where direct access to the water is necessary. Water related commercial uses include, for example, the sale of boating supplies that could occur in an upland area but which derive benefit from being proximate to the shoreline. Water-enjoyment commercial uses include those uses that help people to enjoy the shoreline, such as eating and drinking establishments and shops, where views of or public access to the water are emphasized.

Uses and activities associated with commercial development that are identified as separate uses in this program include Industry, Boating Facilities, Transportation Facilities, and Utilities (accessory). Commercial uses and development must meet all applicable requirements established by the SMP.

b. Policies

1. New commercial development located in shoreline jurisdiction should be limited to those which are water oriented as defined herein. Non- water oriented development is strongly discouraged and should not displace water-oriented development in shoreline areas. Non-water oriented uses and development should only be allowed where:

    a. It is a subordinate part of a mixed use development;
    b. The primary use in the mixed use development is water dependent;
    c. The non-water oriented portion of the development is located landward of all water oriented uses; and
    d. The non-water oriented use does not interfere with or displace a water dependent use.

Non-water oriented commercial uses and development may also be allowed on a site that is physically separated from the shoreline by another property or public right of way.

2. Water related and water enjoyment commercial development should be required to provide physical or visual access to the shoreline or other opportunities for the public to enjoy the shorelines of the state.
3. Multiple-use concepts which include ecological restoration, open space area and recreational activity should be encouraged in commercial developments.
4. All new non-water-oriented commercial development, where allowed, should be conditioned with the requirement to provide ecological restoration and public access.

c. Regulations

1. Non-water-oriented commercial uses and developments shall be permitted in shoreline jurisdiction only where they are either on a site separated from the shoreline by another property, a public trail, or street right-of- way, or where all four (4) of the following can be demonstrated:

    a. A water-oriented use is not reasonably expected to locate on the proposed site due to topography, incompatible surrounding land uses, physical features, or the site's separation from the water.
    b. The proposed use or development does not displace a water-oriented use, usurp land currently occupied by a water-oriented use, and will not interfere with adjacent water-oriented uses.
    c. The proposed use or development will provide a significant public benefit with respect to the objectives of the SMA by providing ecological restoration and/or public use of or access to the shoreline.
    d. The proposed use or development is part of a mixed use development where the primary use is water dependent.

2. Commercial uses and development shall be designed to avoid and minimize ecological impacts, to mitigate for any unavoidable ecological impacts, to

protect human health and safety, and to avoid significant adverse impacts to surrounding uses and the shoreline's visual qualities. The City may include conditions in permits for commercial uses and development to address such issues, including but not limited to conditions that limit operation intensity, require landscaping or screening, etc. as the administrator deems appropriate. Such conditions shall be based on the site and nature of the proposed use, adjacent uses, and relevant or applicable studies.

3. All new or expanded water-related and water-enjoyment commercial uses and developments shall mitigate impacts to shoreline resources and values by providing ecological restoration and public access, unless such measures are demonstrated to be infeasible. Restoration that is required as mitigation in this context shall comply with the regulations in Chapter 3, section 12.
4. All commercial loading and service areas shall be located and/or screened to minimize visual impacts to public shoreline areas. If such facilities cannot be located to avoid impacts, parking and service areas shall be screened from view from public access areas by a 10-foot strip of landscaping with shrubs that will be at least 3 feet high within two years of planting and trees a minimum of 2-inch caliper spaced at species-appropriate distances.
5. All new or expanded commercial uses or developments located adjacent to the Olympic Discovery/Waterfront Trail shall provide a minimum 10-foot-wide strip of landscaping between the building and the trail. The landscaping shall include:
    a. Shrubs that will grow to at least 3 feet high within two years of planting;
    b. Vegetative ground cover that will cover the planted area within at least two years;
    c. Trees will be required if the Administrator determines there is sufficient space depending on the setting and the desired tree species;
    d. A sight-obscuring fence is not required; and
    e. The City Shoreline Administrator may modify required landscaping patterns within these areas to avoid safety and security concerns.
6. If the setback standards in Chapter 2 conflict with those for the commercial use or zone established in the most current version of PAMC Title 17, the most restrictive shall prevail.
7. The City shall require and evaluate the following information in its review of new or expanded commercial use or development proposals:
    a. Nature of the commercial activity (e.g. water-dependent, water-related, water-enjoyment, non-water-oriented, mixed-use), including a breakdown of space requirements for each component;
    b. Need for shoreline location;
    c. Special considerations proposed to enhance the relationship of the activity to the shoreline;
    d. Provisions for public access to the shoreline, both physical and visual;
    e. Provisions to ensure that the development will not cause adverse environmental impacts; and

f. For mixed-use proposals, alternative mixes of water-oriented and non-water-oriented uses and activities, structure locations, site design and bulk considerations, alternative public access opportunities, and other considerations addressing the goals and policies of the SMP. In mixed use proposals:
   i. Water dependent uses shall be the primary use;
   ii. Uses subordinate to the primary water dependent use shall be smaller in scale and use than the primary use;
   iii. Uses subordinate to the primary water dependent use shall be located landward of the primary use; and
   iv. Uses subordinate to the primary water dependent use shall not be located within a required VCA or setback.

8. Commercial development shall be consistent with the character and features of the surrounding area.
9. Non-water dependent commercial developments are prohibited over water unless the use is part of a mixed-use development with a primary water dependent use.
10. Commercial uses authorized as water related or water enjoyment uses or developments shall incorporate appropriate design and operational elements so they meet the definition of water related or water enjoyment uses.

5. Industry

a. Applicability

Industrial developments and uses are facilities for processing, manufacturing, and storing of goods. Included in industry are such activities as log storage (upland), in-water log rafting and handling, petroleum storage and handling, transport and storage operations, paper, pulp and wood products production, concrete and asphalt batching, construction, manufacturing, and warehousing. Boat building, ship repair, and major boat repair that involves haul-out may be considered an industrial use.

b. Policies

1. Regional and statewide needs for industrial facilities should be carefully considered in reviewing proposals for new industrial uses and development as well as in designating shorelines for such uses or development. Such consideration and designation should be coordinated with the Port of Port Angeles.
2. Expansion or redevelopment of existing, legally established industrial areas, facilities and services that could incorporate mixed-use development are encouraged over new single-purpose industrial areas or facilities.
3. Joint use of piers, cargo handling, storage, parking and other accessory facilities among private or public entities is strongly encouraged in waterfront industrial areas.

4. New industrial development should be required to provide physical and/or visual access as outlined in chapter 3, when feasible and when such access does not cause significant interference with industrial operations or hazards to life and property.
5. Dry land storage of logs is preferred over in-water log storage.
6. New non-water oriented industrial developments should not be located within shoreline jurisdiction, unless the use is part of a mixed use project that includes water dependent uses and provides a significant public benefit. Non-water oriented industrial uses and development may also be allowed on a site that is physically separated from the shoreline by another property or public right of way.

c. Regulations

1. New industrial uses or developments, or significant expansion or intensification of existing industrial uses or activities, shall be consistent with the Port Angeles Harbor Resource Management Plan, and be accompanied by a feasibility or use analysis acceptable to the City that assesses regional or state-wide need.
2. Non-water oriented industrial development is only allowed within shoreline jurisdiction when:
   a. The non-water oriented industrial use or development is part of a mixed use development and is subordinate to and located landward of the primary water dependent use;
   b. The underlying zoning allows industrial uses; and
   c. A water-oriented industrial use is not reasonably expected to locate on the proposed site due to topography, incompatible surrounding land uses, physical features, or the site's separation from the water.

   Non-water oriented industrial development may also be allowed within shoreline jurisdiction when located on sites that are separated from the shoreline by another property or public right of way, and when allowed by the underlying zoning.
3. Existing non-water oriented industrial development in shoreline~~s~~ jurisdiction may be permitted to expand upland from existing structures but not parallel to or waterward toward the OHWM upon approval of a conditional use permit. Waterward expansion of existing non-water-oriented industry is prohibited.
4. Long-term storage and/or disposal of industrial wastes is prohibited within shoreline jurisdiction. Wastewater treatment systems may be allowed in shoreline jurisdiction only if alternative areas outside of shoreline jurisdiction have been proven infeasible.
5. Waste disposal, except clean soils and clean dredge spoils, is prohibited within shoreline jurisdiction. Temporary storage of waste is allowed provided all applicable regulations governing storage are a part of the design. The Shoreline Administrator shall establish the time period allowed for temporary storage in the shoreline permit or exemption.

6. New or expanded facilities for water transport of bulk, crude or other forms of petroleum in vessels over 125,000 deadweight tonnage shall be limited to segments of the shoreline designated HI-I or HI-M and adjacent aquatic areas.

7. New or expanded port and/or industrial developments shall employ the best available technology, practices and procedures for the safe handling of fuels and toxic or hazardous materials to prevent them from entering the water, and optimum means shall be employed for prompt and effective cleanup of any spills that do occur.

8. Industrial display and other exterior lighting shall, to the extent feasible, be designed, shielded, and operated to avoid illuminating the water surface and to reduce light pollution into the night sky and residential areas.

9. All industrial loading and service areas shall be located and/or screened to minimize visual impacts to public shoreline areas. If such facilities cannot be located to avoid impacts, parking and service areas shall be screened from view from public access areas by a 10-foot strip of landscaping with evergreen trees and shrubs that will provide a full visual screen within five years of planting. The Administrator may modify required landscaping patterns within these areas to avoid safety and security concerns.

10. All new or expanded industrial uses or developments located adjacent to the Olympic Discovery/Waterfront Trail shall provide a minimum 10-foot-wide strip of landscaping between buildings and the trail. The landscaping shall include:
    a. Shrubs that will grow to at least 3 feet high within two years of planting;
    b. Vegetative ground cover that will cover the planted area within at least two years;
    c. Trees will be required if the Administrator determines there is sufficient space depending on the setting and the desired tree species; and
    d. The City Shoreline Administrator may modify required landscaping patterns within these areas to avoid safety and security concerns.

11. Low Impact Development (LID) techniques shall be incorporated into the design of new industrial uses and development, where feasible.

12. Industrial activities, including ship and boat building and repair yards, shall employ Best Management Practices (BMPs) concerning the various services and activities they perform and their impacts on water quality. Industrial uses and activities shall adhere to the applicable standards in the City of Port Angeles Urban Services Standards and Guidelines.

13. The City may require that new or expanded upland industrial development be set back and buffered from adjacent shoreline properties used for nonindustrial purposes in accordance with PAMC 17.34.050 B. Such setbacks or buffers are intended to minimize conflicts between incompatible uses and to minimize the impacts of noise and dust that may be generated by industrial activities. If the Administrator determines that buffers are required as outlined above, such buffers shall be a minimum of 10 feet in width, and

planted with vegetative materials that will reach 6 feet in height within 5 years of planting. The applicant will be required to prepare and maintain landscape buffers in ways that guarantee the survivability of the vegetation, and shall be required to monitor and maintain such areas for a period of at least 5 years. Plants shall be selected to minimize visual or noise intrusion to adjacent properties, minimize erosion and protect water quality. Buffers shall not be used for storage of industrial equipment or materials, parking, or for waste disposal, but may be used for public access if consistent with provisions of the SMP.

Log Storage and Booming

14. Unpaved storage areas underlain by permeable soils shall have at least a 4-foot separation between the ground surface and the highest seasonal water table.

15. All log storage proposals shall demonstrate that State water quality standards and/or criteria will not be violated by any runoff leaving the site and entering into waters of the State. If such demonstration is not possible, treatment facilities meeting all applicable local, state and federal standards shall be provided.

16. Offshore log storage shall be located only in areas where an Aquatic Lands Lease may be obtained from the Washington State Department of Natural Resources.

17. In-water log storage shall not hinder navigation.

18. The free-fall dumping of logs into water is prohibited. Easy let-down devices shall be employed for placing logs in the water per the Port of Port Angeles BMPs approved as part of Washington State Department of Natural Resources Aquatic Lands Lease agreements.

19. Bark and wood debris shall be regularly and consistently controlled, collected and disposed of at log dumps, raft building areas and mill-side handling zones. This shall be required for both floating and sinking particles.

    Log dumps shall not be located in waters where bark and debris controls cannot be effectively provided.

20. Logs shall not be dumped, stored or rafted where they will rest on the bedlands at low tide.

21. To avoid impacts to new areas, new log booming and storage facilities shall be preferentially located in areas where the activity has historically occurred, unless such a location results in significant impacts to ecological functions.

22. New log booming and storage facilities must be located waterward of the nearshore to avoid and minimize ecological impacts to aquatic areas.

23. New log transfer sites and in-water storage facilities are prohibited in areas that do not meet state or federal water and sediment quality standards, or in areas defined as critical saltwater habitat or habitat areas for priority species and species of concern.

24. Operators must implement measures to prevent chains and ropes on anchorage, mooring, and containment boom systems from dragging on the substrate. Measures include, but are not limited to, the use of embedded anchors and midline floats.

6. Governmental, Educational, Cultural and Institutional Uses

a. Applicability

Governmental, educational, cultural and institutional uses such as centers or museums may be considered water oriented if they have an association with a specific waterfront site or activity or if they include public shoreline access.

b. Policies

1. Allow governmental, educational, cultural and institutional uses in shoreline jurisdiction when they are water oriented and there are sufficient access, utilities and public services to support them.
2. Encourage water-oriented uses that help people to understand and appreciate the environmental, cultural, historic, and economic importance of the shoreline.
3. Encourage institutional, governmental, cultural and educational activities associated with maritime navigation, security, safety, education, environmental management, and ecological restoration.

c. Regulations

1. Development of governmental, educational, cultural or institutional facilities shall comply with the mitigation sequence, public access, and critical areas and vegetation conservation sections of chapter 3 of this SMP.
2. New governmental, educational, cultural and institutional uses and developments shall be located and designed to prevent or minimize ecological impacts and the need for shoreline stabilization measures.

7. Recreational Development

a. Applicability

Port Angeles' shoreline includes several attractions that make it a significant regional recreation resource. Recreational development includes public and commercial facilities for activities such as hiking, photography, viewing, fishing/shellfishing, boating, swimming, bicycling, picnicking, and playing. This section applies to both publicly and privately owned shoreline facilities intended for use by the public or a private club, group, association or individual.

Commercial non-water-oriented recreation facilities, such as bowling alleys and fitness clubs, are addressed as commercial uses in this SMP.

b. Policies

1. Local, state, and federal recreation planning should be coordinated to satisfy recreational needs. Shoreline recreational developments should be consistent with all locally adopted park, recreation, and open space plans, including the City of Port Angeles Comprehensive Plan and the recreation component of the Harbor Resources Management Plan (most recent edition).
2. Recreational developments and plans should promote the conservation of the shoreline's natural character, ecological functions and processes, especially on Ediz Hook and in the vicinity of creeks discharging into the harbor and/or strait.
3. A variety of compatible recreational experiences and activities should be encouraged to satisfy diverse recreational needs.
4. Water-dependent recreational uses, such as angling, shellfishing, boating, and swimming, should have priority over water-enjoyment uses, such as picnicking. Water enjoyment recreational uses should have priority over non-water oriented recreational uses. Non-water oriented recreational uses such as field sports and golf should be prohibited in shoreline jurisdictions unless they are part of a mixed use recreational facility.
5. Recreation facilities should be integrated and linked with linear systems, such as hiking paths, bicycle paths, easements, and scenic drives. Of special importance is the Olympic Discovery/Waterfront Trail. Safety improvements and recreational enhancements to the Olympic Discovery/Waterfront Trail should be pursued as recommended in the Harbor Resources Management Plan.
6. Opportunities to expand the public's ability to enjoy the shoreline should be pursued in recreational uses and developments.
7. Opportunities for recreational scuba diving should be pursued where there is not a conflict with existing activities, such as the U.S. Coast Guard base. Artificial marine life habitats should be encouraged in order to provide increased aquatic life for recreational observation. Such habitats should be constructed in areas of low habitat diversity, where predation of priority species is not an issue, to avoid migratory corridors and in consultation with the Department of Fish and Wildlife and local tribes.
8. Improvements should be made to the City Pier and Hollywood Beach.
9. Recreational opportunities that are consistent with ecological restoration should be encouraged on Ediz Hook and on the Rayonier site (segment O).
10. A wildlife viewing area near Marine Drive overlooking the lagoon at the base of Ediz Hook should be pursued.
11. Public access along the pipeline between Marine Drive and the shoreline west of Ediz Hook should be pursued. Security measures should be taken to prevent trespassing into industrial areas.

12. Opportunities for interpretive displays and activities highlighting the cultural, environmental, historical, and economic aspects of the shoreline should be incorporated into all public recreation facilities. The City, in coordination with state and federal resource agencies and local tribes, should develop a system of coordinated interpretive displays.

13. Accessory structures to recreational facilities, such as restrooms, storage buildings, access roads, and parking areas should be located outside of shoreline jurisdiction, when feasible.

c. Regulations

1. Non-water-oriented recreational use and developments may shall be permitted in shoreline jurisdiction only when part of a mixed use development containing water dependent uses or when separated from the shoreline by another property or public right of way, and where it the following can be demonstrated:
   a. A water-oriented use is not reasonably expected to locate on the proposed site due to topography, incompatible surrounding land uses, physical features, or the site's separation from the water.
   b. The proposed use or development does not displace a water-oriented use, usurp land currently occupied by a water oriented use, and will not interfere with adjacent water oriented uses.
   c. The proposed use or development will provide a significant public benefit with respect to the objectives of the SMA by providing ecological restoration and/or public use of or access to the shoreline.
2. All new or expanded recreational uses and developments shall mitigate impacts to shoreline resources and values by providing ecological restoration, unless such measures are demonstrated to be infeasible. Restoration that is required as mitigation in this context shall comply with the regulations in chapter 3, section 12.
3. Accessory structures to recreational facilities, such as restrooms, storage buildings, access roads, and parking areas shall be located outside of shoreline jurisdiction, when feasible. When the Administrator determines that location of such facilities outside of shoreline jurisdiction is not feasible, accessory uses and structures shall meet all required setbacks, shall be located landward of primary recreational uses or structures, and shall comply with all other provisions applicable to the use or structure in this SMP.

8. Residential Development

a. Applicability

Residential use and development means buildings, structures, lots, or parcels that are primarily devoted to or designed for use as a dwelling. Residential uses and developments include such things as single-family residences, duplexes, floating homes, multi-family residences, mobile home parks, residential subdivisions and short subdivisions, and planned unit or residential developments. Accessory uses

and structures normally associated with residential uses are also included in this category. Residential development does not include hotels, motels, or any other type of overnight or transient housing or camping facilities.

b. Policies

1. Residential development should be prohibited in environmentally sensitive areas including, but not limited to, wetlands, steep slopes, floodways, and their buffers.
2. The overall density and design of residential uses and development within shoreline jurisdiction should be appropriate to the physical capabilities of the site and consistent with the City of Port Angeles' Comprehensive Plan, Zoning ordinance, and Environmentally Sensitive Areas ordinance as incorporated into this SMP.
3. Recognizing the single-purpose, irreversible, and space-consumptive nature of shoreline residential development, new residential uses and development should provide adequate space between such uses or developments and the water to accommodate outdoor recreation such as trails, to protect or restore ecological functions and ecosystem-wide processes, to preserve views, to preserve shoreline aesthetic characteristics, to protect the privacy of nearby residences, and to minimize use conflicts.
4. New or expanded residential use and development should include provisions for protection of groundwater supplies, erosion control, storm water drainage systems, protection of aquatic and wildlife habitat and migratory corridors, ecosystem-wide processes, and open space.
5. Sewage disposal facilities and water supply facilities should be provided in accordance with appropriate state and local health regulations.
6. New residential uses and developments should be designed and located so that shoreline armoring will not be necessary to protect the structure, at the time of construction or at any time in the foreseeable future. The creation of new residential lots should not be allowed unless it is demonstrated the lots can be developed without:
   a. Constructing shoreline stabilization structures (such as bulkheads).
   b. Causing significant erosion or slope instability.
   c. Removing existing native vegetation that helps to prevent bluff erosion.
7. New residential development should be encouraged to cluster dwelling units in order to preserve natural features, minimize physical impacts, promote consolidated community access points, encourage low-impact and natural drainage solutions, and reduce utility, public access, and road costs.
8. Accessory uses and structures should be located landward of the principal residence unless there is a compelling reason to the contrary.

c. Regulations

1. Residential uses and development shall not be approved where shoreline stabilization measures, bluff walls, or bulkheading will be required to protect residential structures, lots, or site areas. Residential uses and development shall be located and designed to avoid the need for structural shoreline stabilization and flood protection works for the life of the development.
2. New residential uses and development and accessory structures shall be prohibited overwater or floating on the water.
3. All residential shoreline uses and development shall comply with the mitigation sequence outlined in chapter 3, section 1 of this SMP and with the critical area and vegetation conservation provisions in chapter 3.
4. Accessory residential uses and structures in the shoreline jurisdiction shall be subordinate in size and intensity to and compatible with primary on-site uses and structures.
5. The creation of new residential lots within the shoreline jurisdiction shall be prohibited unless the applicant demonstrates that all of the provisions of this SMP, including critical area buffer, vegetation conservation, setback, and size restrictions, can be met on the proposed lot. Specifically, it must be demonstrated that all of the following can be met:
   a. The residence can be built in conformance with all applicable standards in this SMP.
   b. Adequate water, sewer, road access, and utilities can be provided.
   c. The intensity of development is consistent with the City's comprehensive plan.
   d. The development will not be at risk from floods or geological hazards, and will not put other properties at risk of the same.
6. Storm water runoff from all new development and redevelopment within the City of Port Angeles shall comply with the most recent version of the City's Urban Services Standards and Guidelines.

9. Transportation

a. Applicability

Transportation facilities are those structures and developments that facilitate the movement of people, goods, and services. They include roads and highways, bridges, bikeways, trails, railways, airports (including seaplane facilities), ferry terminals, heliports, public transit facilities, and other related facilities. Parking facilities are considered separately from transportation facilities (see chapter 3).

The policies and regulations in this section pertain to new transportation uses or development as well as to changes to or expansion of any existing transportation facilities.

Transportation access to Port Angeles's shorelines is important for emergency vehicle access, the movement of freight and industrial materials, access to shoreline uses, waterfront sites, and to recreational and public access attractions.

The Harbor Resources Management Plan recommends circulation and access improvements to ensure adequate circulation on and to Port Angeles's shorelines. The policies and regulations below are intended to support those improvements while protecting the shoreline ecology.

b. Policies

1. Transportation planning in the shoreline jurisdiction should consider circulation systems for pedestrian, bicycle, and public transportation as well as other modes. Circulation systems and projects should support existing and proposed shoreline uses that are consistent with the SMP.
2. Pedestrian trails and bicycle paths should be encouraged in the shoreline jurisdiction and should be constructed in a manner compatible with the natural character, resources, and ecology of the shoreline. Roadway improvements should include provisions for bicycle and pedestrian movement.
3. When existing transportation corridors are abandoned, they should be reused for water-dependent use or public access.
4. The City should pursue the recommendations in the current edition of the Harbor Resource Management Plan and other City transportation plans to ensure adequate access to shoreline areas, particularly freight access to water-oriented industrial uses.
5. All new and expanded transportation uses and development in the shoreline jurisdiction should be consistent with the City's Comprehensive Plan and applicable capital improvement plans.

c. Regulations

General

1. All new and expanded transportation uses and development in shoreline jurisdiction shall be consistent with adopted City plans.
2. All new and expanded transportation uses and development shall comply with the mitigation sequence outlined in section 1 of chapter 3 of this SMP. New or expanded transportation facilities that would result in significant ecological impacts shall not be allowed unless the development includes mitigation that ensures:
   a. Significant short- and long-term risks to the shoreline ecology from the development are eliminated.
   b. Long-term opportunities to increase the natural ecological functions and processes are not diminished.
3. The following regulation applies to shoreline road ends:

a. RCW 35.79.035 prohibits the City from vacating any City street or alley which abuts a body of salt or fresh water unless the street or alley is not currently used or suitable for beach or water access, boat moorage or launching sites, or for a park, viewpoint, recreation, educational, or other public purposes.
b. RCW 35.79.035 establishes legal procedures to vacate streets as outlined above.

4. Consult the Washington Department of Fish and Wildlife's Aquatic Habitat Guidelines documents when locating and designing transportation facilities.

Location

5. New and expanded transportation facilities shall be located outside of the shoreline jurisdiction, whenever feasible.
6. New and expanded transportation facilities shall be located and designed to prevent or to minimize the need for shoreline stabilization and shoreline modifications. Transportation facilities that must cross water bodies and wetlands shall utilize elevated, open pile, or pier structures whenever feasible. All bridges shall be constructed at an elevation that will allow the passage of debris and provide three feet of freeboard above the 100-year flood level. Bridges and other transportation facilities shall not intrude into or over critical saltwater habitats except as allowed by chapter 3.
7. Roads shall be located to minimize the need for routing surface waters into and through culverts. Culverts and similar devices shall be designed to accommodate 100-year storm flows and to allow continuous fish passage. Culverts shall be located so as to avoid relocation of the stream channel.

Design/Construction/Maintenance

8. In the design and construction of new and expanded transportation facilities, impervious surfaces shall be minimized. Areas not paved shall be planted with self- sustaining vegetation in accordance with City standards. Such vegetation shall be maintained by the agency or developer constructing or maintaining the road until fully established. Landscape design may provide opportunities to enjoy views of the water or other points of interest.
9. New and expanded transportation facilities shall include provisions for pedestrian, bicycle, and public transportation where feasible and appropriate, as determined by the City's Shoreline Administrator utilizing the plans cited in this section. Transportation projects shall support existing and proposed shoreline uses that are consistent with the SMP.
10. Transportation and primary utility facilities shall be required to make joint use of rights-of-way and to consolidate crossings of water bodies to the greatest extent feasible.
11. Fill for new or expanded transportation facilities shall generally be prohibited in water bodies and wetlands. Fill may be permitted as a Conditional Use to support new or expanded transportation facilities, only when:
    a. All structural and upland alternatives have been proven infeasible;

b. The transportation facility is necessary to support uses consistent with this SMP; and

c. All unavoidable, adverse environmental impacts are mitigated.

12. New and expanded transportation facilities shall not diminish but may modify public access to the shoreline.

13. Vegetated shoreline areas disturbed by construction or maintenance of transportation facilities shall be replanted and stabilized with native vegetation immediately upon completion of the construction or maintenance activity. Replacement vegetation shall be maintained by the party responsible for maintenance of the transportation facility or the property owner, as appropriate.

Air Transportation

15. Aircraft facilities in support of US Coast Guard activities are a permitted use in the HI-M environment. Aircraft facilities required for the support of seaplane traffic, not including fuel storage, are a permitted use in the HI-M and HI-MU environments. As an unspecified use, aircraft facilities for other purposes or in other designations shall require a conditional use permit.

10. Utilities (Primary)

a. Applicability

Utilities are services and facilities that produce, transmit, carry, store, process, or dispose of electric power, gas, water, sewage, communications, oil, solid wastes, and the like. The provisions in this section apply to primary uses and activities, such as solid waste handling and disposal, sewage treatment plants and outfalls, public high-tension utility lines, power generating or transfer facilities, and gas distribution lines and storage facilities. See Chapter 3, Section 11, "Utilities (Accessory)," for on-site accessory use utilities.

b. Policies

1. New utility facilities should be located so as not to require shoreline modifications, where feasible. Note that new shoreline stabilization may not be allowed on State-owned aquatic lands except under extraordinary circumstances, as determined by the Washington State Department of Natural Resources (DNR).

2. Utility facilities and corridors should be located so as to protect views. Whenever feasible, such facilities and corridors should be placed underground, or alongside or under bridges. Note that on State-owned aquatic lands, sewer and stormwater outfalls may be required to be installed below the substrate within nearshore areas, as determined by the Washington State Department of Natural Resources (DNR).

3. Utility facilities and rights-of-way should be designed to preserve the natural landscape and to minimize conflicts with present and planned land uses.

4. New utility facilities should preferentially be located outside of shoreline jurisdiction, if feasible.
5. Utilities should be located in existing rights of ways and corridors whenever feasible.
6. Utility pipelines and cables on tidelands should be discouraged.

c. Regulations

1. All primary utility facilities and uses shall be located outside of the shoreline jurisdiction, unless infeasible. Utility uses and facilities that must be located in the shoreline jurisdiction shall be designed to minimize harm to shoreline ecological functions, preserve the natural landscape, and minimize conflicts with present and planned land and shoreline uses. The City's Shoreline Administrator may require the relocation or redesign of proposed utility uses and development in order to avoid significant ecological impacts.
2. Utility production and processing facilities, such as power plants and sewage treatments plants or parts of those facilities that are non-water oriented, shall not be allowed in shoreline areas unless it can be demonstrated that no other feasible option is available. Energy recovery from waste products associated with nearby water-dependent shoreline uses may be allowed.
3. Transmission facilities for the conveyance of services, such as power lines, cables, and pipelines, shall be located outside of the shoreline area where feasible. When necessary, such uses and facilities shall assure no net loss of shoreline ecological functions. Utilities shall be located in existing rights-of-way and utility easements or corridors whenever feasible. New or expanded transmission lines shall be underground, unless infeasible, or unless the applicant demonstrates that above-ground transmission lines would have a lesser impact.
4. Development of pipelines and cables on tidelands, particularly those running roughly parallel to the shoreline, and development of facilities that may require periodic maintenance that disrupts ecological functions shall not be allowed unless the Shoreline Administrator determines that no other feasible option exists. When permitted, those facilities shall include provisions to assure no net loss of shoreline ecological functions. Existing above ground lines shall be moved underground during normal replacement processes, when feasible.
5. Utility development shall, through coordination with local government agencies, provide for compatible, multiple uses of sites and rights-of-way when feasible. Such uses may include shoreline access points, trail systems or other forms of recreation and transportation, providing such uses will not unduly interfere with utility operations, endanger public health and safety or create a significant liability for the owner.
6. New solid waste disposal sites and landfill facilities are prohibited. Existing solid waste disposal and transfer facilities in the shoreline jurisdiction shall

not be expanded, intensified, or substantially reconstructed unless for an environmental cleanup or ecological restoration purpose.

7. Utility transmission and distribution facilities shall cross areas of shoreline jurisdiction by the shortest, most direct route feasible, unless such route would cause significant ecological impacts.
8. Utility developments shall be located and designated so as to avoid or minimize the use of any structural shoreline stabilization or flood protection works.
9. All underwater pipelines transporting liquids intrinsically harmful to aquatic life or potentially injurious to water quality are prohibited, unless no other feasible alternative exists. Easily accessible automatic shut-off valves shall be provided on both ends of the pipeline.
10. Filling and dredging in shoreline jurisdiction for development of utility facilities or lines is prohibited, except where no other feasible option exists. Permitted crossings shall utilize pier or open pile techniques, when feasible. Boring, rather than open trenching, is the preferred method of utility water crossing.
11. Clearing of vegetation for the installation or maintenance of utilities shall be avoided and minimized; upon project completion, any disturbed areas shall be restored to their pre-project condition.
12. Telecommunication towers, such as radio and cell phone towers, shall be located outside of shoreline jurisdiction where feasible, except when in support of a water-dependent use, such as the U.S. Coast Guard installation.
13. Outfalls shall be designed and constructed according to all applicable regulations and standards.

    New and reconfigured outfalls must be located and designed to avoid impacts to native aquatic vegetation. Diffusers or discharge points must be located a sufficient distance from nearshore areas to avoid significant ecological impacts.
14. All pipelines supplying water or other liquid for industrial uses shall be metered at the source and destination to ensure there are not leaks in, or damage to, the supplying pipeline(s).

CHAPTER 6
Definitions

Accessory. Any structure or use incidental and subordinate in size, intensity, etc. to a primary structure, use or development.

Act. The Washington State Shoreline Management Act, chapter 90.58 RCW.

Adjacent lands. Lands adjacent to the shorelines of the state (outside of shoreline jurisdiction).

Administrator. The City of Port Angeles Director of Community and Economic Development or his/her designee, charged with the responsibility of administering the Shoreline Master Program.

Appurtenance. A structure or use which is necessarily connected to the use and enjoyment of a primary use or structure, and is located landward of the ordinary high water mark and the perimeter of any wetland. On a state-wide basis, normal appurtenances include a garage, deck, driveway, utilities, fences, and installation of a septic tank and drainfield. For purposes of the exemption in WAC 173-27-040(2)(g), normal appurtenances also include grading that does not exceed two hundred fifty cubic yards and which does not involve placement of fill in any wetland or waterward of the ordinary high water mark.

Aquaculture. The culture or farming of fish, shellfish, or other aquatic plants and animals. Aquaculture does not include the harvest of wild geoduck associated with the state managed wildstock geoduck fishery. For purposes of this SMP, aquaculture does not include activities on private property for personal consumption.

Aquatic. Pertaining to those areas waterward of the ordinary high water mark.

Archaeological. Having to do with the scientific study of material remains of past human life and activities.

Associated wetlands. Wetlands that are in proximity to and either influence, or are influenced by tidal waters or a lake or stream subject to the Shoreline Management Act. Refer to WAC 173-22-030(1).

Average grade level. See “base elevation.”

Base elevation. The average elevation of the natural or existing topography of the lot, parcel, or tract of real property which will be directly under the proposed building or structure. In the case of structures to be built over the water, average grade level shall be the elevation of the ordinary high water mark. Calculation of the average grade level shall be made by averaging the ground elevations at the midpoint of all exterior walls of the proposed building or structure.

Beach. The zone of unconsolidated material that is moved by waves, wind and tidal currents, extending landward to the shoreline.

Beach enhancement/restoration. Process of returning a waterfront area to a state more closely resembling a natural beach. Methods may include removal of shoreline armoring, grading, addition of beach materials, vegetation, drift sills and other nonintrusive means as applicable.

Beach nourishment. The process of replenishing a beach by artificial means, for example by the deposition of dredged materials, sediment, or sand. Also called beach replenishment or beach feeding.

Bioengineering. See shoreline modifications.

Boating facilities. Any of the following uses are considered boating facilities: marinas; dry-land boat storage; in-water moorage; boat launch ramps; covered moorage; boat houses; mooring buoys, and marine travel lifts. Any device or structure used to secure a boat or a vessel, including piers, docks, piles, or buoys are also considered moorage facilities (see moorage facility definition).

Bog. A wet, spongy, poorly drained area which is usually rich in very specialized plants, contains a high percentage of organic remnants and residues, and frequently is associated with a spring, seepage area, or other subsurface water source. A bog is a type of wetland.

Breakwater. See shoreline modifications.

Buffer or buffer area. An undisturbed area adjacent to an environmentally sensitive area that is required to permanently remain in an undisturbed and untouched condition, protects or enhances the environmentally sensitive area, and is considered part of the environmentally sensitive area. No building, clearing, grading, or filling is permitted, except as authorized by this SMP. A buffer is different than a setback or a vegetation conservation area, although they may overlap. See also "visual buffer".

Building height. Height is measured from average grade level to the highest point of a structure, provided that television antennas, chimneys and other similar appurtenances shall not be used in calculating height, except where such appurtenances obstruct the view of the shoreline of a substantial number of residences on areas adjoining such shorelines. Temporary construction equipment is also excluded in this calculation.

Building setback. See setback.

Bulkhead. See shoreline modifications.

Buoy. An anchored float for the purpose of mooring vessels.

Channel. An open conduit for water, either naturally or artificially created; does not include artificially created irrigation, return flow, or stockwatering channels.

*Channel Migration Zone (CMZ)***.** The area along a river within which the channel(s) can be reasonably predicted to migrate over time as a result of natural and normally occurring hydrological and related processes when considered with the characteristics of the river and its surroundings.

City. The City of Port Angeles, Washington.

Clearing. The destruction or removal of vegetation, ground covers, shrubs or trees, which may or may not include root material removal and topsoil removal. Limited pruning is not considered clearing.

Comprehensive Plan. Comprehensive plan means the document, including maps adopted by the city council, that outlines the City's goals and policies related to management of growth, prepared in accordance with RCW 36.70A. The term also includes adopted subarea plans prepared in accordance with RCW 36.70A.

Conditional use. A shoreline use, development, or substantial development which is classified as a Conditional Use in this SMP. A use, development, or substantial development that is not specifically classified within this SMP is treated as a Conditional Use.

Covered moorage. Boat moorage, with or without walls, that has a roof to protect the vessel.

Critical areas. Those areas listed in the City's Environmentally Sensitive Areas Protection ordinance (PAMC 15.20.030 E) and in WAC 173-26-221 (2). These include wetlands, aquifer recharge areas, fish and wildlife habitat conservation areas frequently flooded areas, and geologically hazardous areas. In Port Angeles, marine bluffs are locally unique features but are also considered geologically hazardous areas.

Current deflector. See shoreline modification.

Department of Ecology or *Department*. The Washington State Department of Ecology.

Development. A use consisting of the construction or exterior alteration of structures; dredging; drilling; dumping; filling; removal of any sand, gravel, or minerals; bulkheading; driving of piling; placing of obstructions; or any project of a permanent or temporary nature which interferes with the normal public use of the surface of the waters overlying lands subject to the SMA at any state of water level. (RCW 90.58.030(3)(a)).

Development regulations. The controls placed on development or land uses by the City of Port Angeles, including, but not limited to, zoning ordinances, environmentally sensitive areas protection regulations, all portions of a shoreline master program other than goals and policies approved or adopted under Chapter 90.58 RCW, planned unit development ordinances, subdivision ordinances, and binding site plan ordinances, together with any amendments thereto.

Dock. A structure which abuts the shoreline and is used as a landing or moorage place for watercraft. A dock may be built either as a fixed platform supported by piling (a pier), or walkway or other surface that floats on the water, or a combination.

Dredging. Removal or displacement of earth or sediment (gravel, sand, mud, silt and/or other material or debris) from a water body or associated wetland.

Drift cell. "Drift cell", "drift sector", or "littoral cell" means a particular reach of marine shore in which littoral drift may occur without significant interruption and which contains any natural sources of such drift and also any accretion shore forms created by such drift.

Ecological functions (or shoreline functions). The work performed or role played by the physical, chemical, and biological processes that contribute to the maintenance of the aquatic and terrestrial environments that constitute the shoreline's natural ecosystem.

Ecological restoration. See "restore."

Ecosystem-wide processes. The suite of naturally occurring physical and geologic processes of erosion, transport and deposition, and specific chemical processes that shape landforms within a specific shoreline ecosystem and determine both the types of habitat and the associated ecological functions.

EIS. Environmental Impact Statement.

Emergency. An unanticipated and imminent threat to public health, safety, or the environment which requires immediate action within a time too short to allow full compliance with the SMP. Emergency construction does not include development of new permanent protective structures where none previously existed. Where new protective structures are deemed by the Administrator to be the appropriate means to address the emergency situation, upon abatement of the emergency situation the new structure shall be removed or any permit which would have

been required, absent an emergency, pursuant to Chapter 90.58 RCW or this SMP, shall be obtained. All emergency construction shall be consistent with the policies of Chapter 90.58 RCW and this SMP. As a general matter, flooding or seasonal events that can be anticipated and may occur but that are not imminent are not an emergency. (WAC 173-27-040 (2)(d)).

Enhancement. Actions performed to improve the condition of an existing resource or environmentally sensitive area so that the functions and values provided are of a higher quality.

Environment designation(s). See "shoreline environment designation(s)."

Environmentally Sensitive Area. The following areas within Port Angeles and their buffers as described in Title 15.20.030 PAMC:

1. Aquifer recharge areas;
2. Streams or stream corridors;
3. Frequently flooded areas;
4. Geologically hazardous areas:
    a. Erosion hazard areas,
    b. Landslide hazard areas,
    c. Seismic hazard areas;
5. Habitat areas for priority species and species of concern, and
6. Locally unique features:
    a. Ravines;
    b. Marine bluffs;
    c. Beaches and associated coastal drift processes

Erosion. The wearing away of land by the action of natural forces.

Exemption. Certain specific developments listed in WAC 173-27-040 are exempt from the definition of substantial development and are therefore exempt from the substantial development permit process of the SMA. An activity that is exempt from the substantial development permit process must still be carried out in compliance with policies and standards of the SMA and the local SMP. Conditional Use and variance permits may also still be required even though the activity does not need a substantial development permit. (RCW 90.58.030(3)(e) and WAC 173-27-040). Exempt developments also include those set forth in RCW 90.58.140(9), 90.58.147, 90.58.355, and 90.58.515.

Fair market value. The open market bid price for conducting the work, using the equipment and facilities, and purchase of the goods, services, and materials necessary to accomplish the development. This would normally equate to the cost of hiring a contractor to undertake the development from start to finish, including the cost of labor, materials, equipment and facility usage, transportation, and contractor overhead and profit. The fair market value of the development shall include the fair market value of any donated, contributed, or found labor, equipment, or materials.

Feasible. An action, such as a development project, mitigation, or preservation requirement, is feasible when it meets **all** of the following conditions:

a. The action can be accomplished with technologies and methods that have been used in the past in similar circumstances, or when studies or tests have

demonstrated in similar circumstances that such approaches are currently available and likely to achieve the intended results;

b The action provides a reasonable likelihood of achieving its intended purpose; and

c The action does not physically preclude achieving the project's primary intended legal use.

In cases where this SMP requires certain actions unless they are infeasible, the burden of proving infeasibility is on the applicant. In determining an action's feasibility, the City and Department may weigh the action's relative public costs and public benefits, considered in the short- and long-term time frames.

Fill. The addition of soil, sand, rock, gravel, sediment, earth retaining structure, or other material to an area waterward of the ordinary high water mark, in wetlands, or on shorelands in a manner that raises the elevation or creates dry land.

Floats. An anchored, buoyed object.

Floodplain. A term that is synonymous with the one hundred-year floodplain and means that land area susceptible to inundation with a one percent chance of being equaled or exceeded in any given year. The limit of this area shall be based upon flood ordinance regulation maps or a reasonable method which meets the objectives of the SMA.

Floodway. Those portions of the area of a river valley lying waterward from the outer limits of a watercourse upon which flood waters are carried during periods of flooding that occur with reasonable regularity, although not necessarily annually, said floodway being identified, under normal condition, by changes in surface soil conditions or changes in types or quality of vegetative groundcover condition, topography, or other indicators of flooding that occurs with reasonable regularity, although not necessarily annually. The floodway shall not include those lands that can reasonably be expected to be protected from flood waters by flood control devices maintained by or maintained under license from the federal government, the state, or a political subdivision of the state.

Gabions. Structures composed of masses of rocks, rubble or masonry held tightly together usually by wire mesh so as to form blocks or walls. Sometimes used on heavy erosion areas to retard wave action or as foundations for breakwaters or jetties.

Geologically hazardous areas. Areas that, because of their susceptibility to erosion, sliding, earthquake, or other geological events, are not suited to the siting of commercial, residential, or industrial development consistent with public health or safety concerns.

Geotechnical report (or geotechnical analysis). A scientific study or evaluation conducted by a qualified expert that includes a description of the ground and surface hydrology and geology, the affected land form and its susceptibility to mass wasting, erosion, and other geologic hazards or processes, conclusions and recommendations regarding the effect of the proposed development on geologic conditions, the adequacy of the site to be developed, the impacts of the proposed development, alternative approaches to the proposed development, and measures to mitigate potential site-specific and cumulative impacts of the proposed development, including the potential adverse impacts to adjacent and down-current properties. Geotechnical reports shall conform to accepted technical standards and must be prepared by a qualified professional engineer or geologist who is knowledgeable about the regional and local shoreline geology and processes.

Grading. The movement or redistribution of the soil, sand, rock, gravel, sediment, or other material on a site in a manner that alters the natural contour of the land.

Guidelines. Those standards adopted by the Department of Ecology into the Washington Administrative Code (WAC) to implement the policy of Chapter 90.58 RCW for regulation of use of the shorelines of the state prior to adoption of shoreline master programs. Such standards also provide criteria for local governments and the Department of Ecology in developing and amending shoreline master programs. The Guidelines may be found under WAC 173-26.

Habitat. The place or type of site where a plant or animal naturally or normally lives and grows.

Height. See "building height."

House Boat or *House Barge.* A residential structure constructed on a floating foundation or barge intended for year-round, permanent occupancy. Such structure is typically moored, anchored or otherwise secured in waters and is not a vessel, even though it may be capable of being towed. Also known as floating home.

Hydrological. Referring to the science related to the waters of the earth including surface and ground water movement, evaporation and precipitation. Hydrological functions in shoreline areas include, water movement, storage, flow variability, channel movement and reconfiguration, recruitment and transport of sediment and large wood, and nutrient and pollutant transport, removal and deposition.

Intertidal zone. Refers to that area along the shoreline that is above water at the lowest low tide and below water during the highest high tide.

Letter of exemption. A letter or other official certificate issued by the City to indicate that a proposed development is exempted from the requirement to obtain a shoreline permit as provided in WAC 173-27-050. Letters of exemption may include conditions or other provisions placed on the proposal in order to ensure consistency with the Shoreline Management Act and this SMP. The letter shall indicate the specific exemption being applied to the development and provide a summary of the City's analysis of the consistency of the project with the master program and the act.

Levee. A manmade fill or wall that regulates water levels. It is usually earthen and often parallel to the course of a river in its floodplain or along low-lying coastlines.

Littoral. Living on, or occurring on, the shore.

Littoral drift. The mud, sand, or gravel material moved parallel to the shoreline in the nearshore zone by waves and currents.

Low impact development (LID). A storm water management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic pre-development hydrologic functions.

Marine. Pertaining to tidally influenced waters, including oceans, sounds, straits, marine channels, and estuaries, including the Strait of Juan de Fuca and the bays, estuaries, and inlets associated therewith.

Marina. Refers to a system of piers, buoys, or floats to provide a centralized site for extended moorage for more than four (4) vessels for a period of 48 hours or longer. For regulatory purposes, yacht club facilities and camp or resort moorage areas would also be reviewed as

marinas. Boat launch facilities and the sales of supplies and services for small commercial and/or pleasure craft users may be associated with marinas. Where such amenities are included, the marina is considered a multi-use marina.

May. Refers to actions that are acceptable, provided they conform to the provisions of this SMP and the SMA.

Mitigation (or mitigation sequencing). The process of avoiding, reducing, or compensating for the environmental impact(s) of a proposal, including the following, which are listed in the order of sequence priority, with (a) being top priority (WAC 173-26-201 (2)(e)(i)).

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations.
5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments.
6. Monitoring the impact and the compensation projects and taking appropriate corrective measures.

Mitigation Bank. A site where shoreline ecological functions are restored, created, enhanced, or in exceptional circumstances, preserved, expressly for the purpose of providing compensatory mitigation in advance of unavoidable impacts to ecological functions or other aquatic resources that typically are unknown at the time of certification.

Moorage facility. Any device or structure used to secure a boat or a vessel, including piers, docks, piles, or buoys. Moorage facilities may be located inside of or outside of marinas and other boating facilities.

Multi-family dwelling (or residence). A building containing two or more dwelling units, including but not limited to duplexes, apartments and condominiums.

Must. A mandate; the action is required.

Native plants or native vegetation. Plant species indigenous to the Olympic Peninsula region that could occur or could have occurred naturally on the site.

Nearshore. The estuarine/delta, marine shoreline and areas of shallow water from the uplands that directly influence or are influenced by the shoreline to a waterward depth of about 10 meters relative to Mean High Water. (This is the average depth limit of light penetration). This zone incorporates those ecological processes, such as sediment movement, freshwater inputs, and subtidal light penetration, which are key to determining the distribution and condition of aquatic habitats. By this definition, the nearshore extends landward into the tidally influenced freshwater heads of estuaries and coastal streams.

Nonconforming development. A shoreline use or development which was lawfully constructed or established prior to the effective date of this SMP, which no longer conforms to the present regulations or standards of the Program.

Non-water oriented uses. Those uses that are not water-dependent, water-related, or water enjoyment.

Normal maintenance. Those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition.

Normal protective bulkhead. See shoreline modifications

Normal repair. To restore a development to a state comparable to its original condition, including, but not limited to, its size, shape, configuration, location, and external appearance, within a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to shoreline resource or environment. (WAC 173-27-040 (2)(b)).

Noxious weed. The traditional, legal term for any invasive, non-native plant that threatens agricultural crops, local ecosystems or fish and wildlife habitat. The term 'noxious weeds' includes non-native grasses, flowering plants, shrubs and trees. It also includes aquatic plants that invade wetlands, rivers, lakes and shorelines. Legal requirements, definitions for control, and the state noxious weed list are found in Chapter 16-750 WAC *State Noxious Weed List and Schedule.*

Off-site replacement. To replace wetlands or other shoreline environmental resources away from the site on which a resource has been impacted by a regulated activity.

OHWM or o*rdinary high water mark*. That mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by the City or the Department of Ecology. PROVIDED, that in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining salt water shall be the line of mean higher high tide and the ordinary high water mark adjoining freshwater shall be the line of mean high water, (RCW 90.58.030(2)(c)). For mapping purposes in this SMP, the City has designated 7 feet above sea level (NADV 88) as the OHWM. The OHWM must be determined in the field based on the criteria in RCW 90.58.030 (2)(c).

PAMC. Port Angeles Municipal Code, including any amendments thereto.

Periodic. Occurring at regular intervals.

Person. An individual, partnership, corporation, association, organization, cooperative, public or municipal corporation, or agency of the state or local governmental unit however designated. (RCW 90.58.030(1)(e)).

Primary structure. The structure associated with the principal use of the property. It may also include appurtenant structures (such as a garages, attached decks, driveways, utilities, and septic tanks and drainfields) that cannot feasibly be relocated. It does not include structures such as sheds, gazebos or other ancillary improvements that can feasibly be moved landward to prevent the erosion threat.

Pier element. Sections of a pier including the pier walkway, the pier float, the ell, etc.

Priority habitat. A habitat type with unique or significant value to one or more species. An area classified and mapped as priority habitat must have one or more of the following attributes:

- Comparatively high fish or wildlife density;

- Comparatively high fish or wildlife species diversity;
- Fish spawning habitat;
- Important wildlife habitat;
- Important fish or wildlife seasonal range;
- Important fish or wildlife movement corridor;
- Rearing and foraging habitat;
- Important marine mammal haul-out;
- Refugia habitat;
- Limited availability;
- High vulnerability to habitat alteration;
- Unique or dependent species; or
- Shellfish bed.

A priority habitat may be described by a unique vegetation type or by a dominant plant species that is of primary importance to fish and wildlife (such as oak woodlands or eelgrass meadows). A priority habitat may also be described by a successional stage (such as, old growth and mature forests). Alternatively, a priority habitat may consist of a specific habitat element (such as a consolidated marine/estuarine shoreline, talus slopes, caves, snags) of key value to fish and wildlife. A priority habitat may contain priority and/or nonpriority fish and wildlife.

Priority species. Species requiring protective measures and/or management guidelines to ensure their persistence at genetically viable population levels. Priority species are those that meet any of the criteria listed below.

1. Criterion 1. State-listed or state proposed species. State-listed species are those native fish and wildlife species legally designated as endangered (WAC 232-12-014), threatened (WAC 232-12-011), or sensitive (WAC 232-12-011). State proposed species are those fish and wildlife species that will be reviewed by the department of fish and wildlife (POL-M-6001) for possible listing as endangered, threatened, or sensitive according to the process and criteria defined in WAC 232-12-297.
2. Criterion 2. Vulnerable aggregations. Vulnerable aggregations include those species or groups of animals susceptible to significant population declines, within a specific area or statewide, by virtue of their inclination to congregate. Examples include heron colonies, seabird concentrations, and marine mammal congregations.
3. Criterion 3. Species of recreational, commercial, and/or tribal importance. Native and nonnative fish, shellfish, and wildlife species of recreational or commercial importance and recognized species used for tribal ceremonial and subsistence purposes that are vulnerable to habitat loss or degradation.
4. Criterion 4. Species listed under the federal Endangered Species Act as either proposed, threatened, or endangered.

Provisions. Policies, regulations, standards, guideline criteria, or designations.

Public access. Public access is the ability of the general public to reach, touch, and enjoy the water's edge, to travel on the waters of the state, and to view the water and the shoreline from adjacent locations. (WAC 173-26-221(4)).

Public interest. The interest shared by the citizens of the state or community at large in the affairs of government, or some interest by which their rights or liabilities are affected such as an effect on public property or on health, safety, or general welfare resulting from a use or development.

RCW. Revised Code of Washington.

Residential development. Development which is primarily devoted to or designed for use as a dwelling(s).

Restore. To significantly re-establish or upgrade shoreline ecological functions through measures such as revegetation, removal of intrusive shoreline structures, and removal or treatment of toxic materials. To restore does not necessarily mean returning the shoreline area to aboriginal or pre-European settlement condition. Used in the terms shoreline restoration and ecological restoration.

Revetment. See shoreline modifications.

Riparian. Of, on, or pertaining to the shoreline.

Riprap. A layer, facing, or protective mound of stones placed to prevent erosion, scour, or sloughing of a structure or embankment; also, the stone so used.

Runoff. Water that is not absorbed into the soil but rather flows along the ground surface following the topography.

Sediment. The fine grained material deposited by water or wind.

SEPA (State Environmental Policy Act). SEPA requires state agencies, local governments and other lead agencies to consider environmental factors when making most types of permit decisions, especially for development proposals of a significant scale. As part of the SEPA process public comments are solicited and an EIS may be required.

Setback. An area in which buildings or structures shall not be permitted or allowed to project into. Landscaping and non-structural features such as trails may be allowed in setbacks. In the context of this SMP, a setback is measured horizontally landward of and perpendicular to the ordinary high water mark or from the edge of an environmentally sensitive areas buffer.

Shall. A mandate; the action must be done.

Shorelands. Those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward two hundred feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of the SMP; the same to be designated as to location by the Department of Ecology.

Shoreline Administrator. See administrator.

Shoreline areas (and shoreline jurisdiction). The same as "shorelines of the state" and "shorelands" as defined in RCW 90.58.030.

Shoreline environment designation(s). The categories of shorelines established to provide a uniform basis for applying policies and use regulations within distinctively different shoreline areas. Shoreline environment designations used in this SMP include: High-Intensity Industrial (HI-I), High- Intensity Marine (HI-M), High-Intensity Mixed Use (HI-MU), High-Intensity Urban

Uplands (HI-UU), Urban Conservancy-Low Intensity (UC-LI), Urban Conservancy Recreation (UC-R), Shoreline Residential (SR), Aquatic-Harbor (A-H), and Aquatic-Conservancy (A-C).

Shoreline functions. See "ecological functions."

Shoreline Management Act (SMA). The Shoreline Management Act of 1971, Chapter 90.58 RCW, as amended.

Shoreline master program, *master program*, or *SMP.* This Shoreline Master Program, as adopted by the City of Port Angeles and approved by the Washington Department of Ecology.

Shoreline modifications. Those actions that modify the physical configuration or qualities of the shoreline area, usually through the construction of a physical element such as a dike, breakwater, dock, weir, dredged basin, fill, bulkhead, or other shoreline structures. They can include other actions, such as clearing, grading, or application of chemicals.

- **Breakwaters** are structures constructed on coasts as part of coastal defense or to protect harbors, anchorage or basins from the effects of weather and waves.
- **Bulkhead** is a retaining wall constructed at or adjacent to the OHWM. These manmade structures are constructed along shorelines with the purpose of controlling beach erosion or to protect adjacent uplands from damage from wave action. Construction materials commonly used include wood pilings, commercially developed vinyl products, large boulders stacked to form a wall, or a seawall built of concrete or another hard substance.
- **Normal protective bulkheads** are those structural and nonstructural developments installed at or near, and parallel to, the ordinary high water mark for the sole purpose of protecting an existing single-family residence and appurtenant structures from loss or damage by erosion.
- **Bioengineering**. The use of biological elements, such as the planting of vegetation, often in conjunction with engineered systems, to provide a structural shoreline stabilization measure with minimal adverse impact to the shoreline ecology.
- **Bluff wall.** A vertical structure placed at the base of a bluff to stabilize the bluff from dynamic forces of gravity or earth movement. Bluff walls are placed upland of the OHWM and are not intended to protect bluff toes from wave action.
- **Current deflector**. An angled stub-dike, groin, or sheet-pile structure which projects into a stream channel to divert flood currents from specific areas, or to control downstream current alignment.
- **Seawall** (also written as *sea wall*). A structure separating land and water areas primarily to prevent erosion and other damage by wave action. Generally more massive and capable of resisting greater wave forces than a bulkhead. Seawalls may be constructed from a variety of materials, most commonly: reinforced concrete, boulders, steel, or gabions. Additional seawall construction materials may include: vinyl, wood, aluminum, fiberglass composite, and large biodegrable sandbags made of jute and coir.
- **Soft Armoring** See bioengineering.
- **Revetment** in coastal management means a sloping structure placed on the shoreline in such a way as to absorb the energy of incoming water. Coastal revetments are usually built to protect slopes and structures as defense against erosion.

- **Jetty** (in marine situations) is any of a variety of structures used for forming basins , protecting navigational channels and harbors, or to influence currents. Jetties contribute to prevention of long shore drift, therefore slowing down beach erosion.
- **Groin** is a structure extending from the shoreline out into the water that influences water flow and the deposition of sediment. In the ocean, groins may create beaches, or avoid having them washed away by longshore drift. Ocean groins run generally perpendicular to the shore. All of a groin may be under water, in which case it is a **submerged groin**. The areas between groups of groins are **groin fields**. Groins are generally made of wood, concrete, or rock piles, and placed in groups.

Shoreline permit. A substantial development, Conditional Use, revision, or variance permit or any combination thereof.

Shoreline property. An individual property wholly or partially within shoreline jurisdiction.

Shoreline restoration. See restore.

Shoreline segment. An area of the shoreline that is defined by distinct beginning points and end points, using parcel numbers or other descriptions (see chapter 2). Shoreline segments are used to recognize different conditions and resources along different reaches of the City's shorelines.

Shorelines. All of the water areas of the state, including reservoirs, and their associated shorelands, together with the lands underlying them; except (i) shorelines of state-wide significance; (ii) shorelines on areas of streams upstream of a point where the mean annual flow is twenty cubic feet per second or less and the wetlands associated with such upstream areas; and (iii) shorelines on lakes less than twenty acres in size and wetlands associated with such small lakes.

Shorelines Hearings Board (SHB). A six member quasi-judicial body, created by the SMA, which hears appeals by any aggrieved party on the issuance, denying or rescinding of a shoreline permit, enforcement penalty or rules, regulations, or guidelines adopted or approved by the Department of Ecology under the SMA.

Shorelines of state-wide significance. A select category of shorelines of the state, defined in RCW 90.58.030(2)(e), where special policies apply. In Port Angeles, shorelines of statewide significance include those areas of the Strait of Juan de Fuca north to the Canadian line lying seaward of the line of extreme low tide.

Shorelines of the state. The total of all "shorelines" and "shorelines of state-wide significance" within the state.

Should. The particular action is required unless there is a demonstrated, compelling reason, based on policy of the Shoreline Management Act and this SMP, against taking the action.

Sign. A board or other display containing words and/or symbols used to identify or advertise a place of business or to convey information. Excluded from this definition are signs required by law and the flags of national and state governments.

Significant ecological impact. An effect or consequence of an action if **any** of the following apply:

1. The action measurably or noticeably reduces or harms an ecological function or ecosystem-wide process.

2. Scientific evidence or objective analysis indicates the action could cause reduction or harm to those ecological functions or ecosystem-wide processes described in (a) of this subsection under foreseeable conditions.
3. Scientific evidence indicates the action could contribute to a measurable or noticeable reduction or harm to ecological functions or ecosystem-wide processes described in (a) of this subsection as part of cumulative impacts, due to similar actions that are occurring or are likely to occur.

Significant vegetation removal. The removal or alteration of native trees, shrubs, or ground cover by clearing, grading, cutting, burning, chemical means, or other activity that causes significant ecological impacts to functions provided by such vegetation. The removal of invasive, non-native, or noxious weeds does not constitute significant vegetation removal. Tree pruning where no more than 25% of the live crown of the tree is removed over any 5-year period, not including tree topping, where it does not affect ecological functions, does not constitute significant vegetation removal. Vegetation management that may include thinning to reduce plant competition does not constitute significant vegetation removal when part of a management plan developed by a qualified habitat biologist or forester and where it is shown that ecological functions will not be reduced. Removal of trees deemed by a qualified professional to be hazardous, dangerous or unstable does not constitute significant vegetation removal.

Single-family residence. A detached dwelling designed for and occupied by one family including those structures and developments within a contiguous ownership which are a normal appurtenance.

Solid waste. Solid waste includes solid and semisolid wastes, including garbage, rubbish, ashes, industrial wastes, wood wastes and sort yard wastes associated with commercial logging activities, swill, demolition and construction wastes, abandoned vehicles and parts of vehicles, household appliances and other discarded commodities. Solid waste does not include sewage, dredge material, agricultural wastes, or wastes not specifically listed above.

Solid waste disposal. The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid or hazardous waste on any land area or in the water.

Steep slope (also "bluff"). A topographic feature in which the slope is greater than 1 vertical to 1 horizontal (45° or 100% slope) and with a height from the toe of the slope greater than 10 feet.

Storm water. That portion of precipitation that does not normally percolate into the ground or evaporate but flows via overland flow, interflow, channels, or pipes into a defined surface water channel or constructed infiltration facility.

Stream. A naturally occurring body of periodic or continuously flowing water normally contained within a channel.

Structure. A permanent or temporary edifice or building, or any piece of work artificially built or composed of parts joined together in some definite manner, whether installed on, above, or below the surface of the ground or water, except for vessels.

Structure setback. See setback.

Subdivision. The division or redivision of land to create new parcels for use.

Substantial development. Any development which meets the criteria of RCW 90.58.030(3)(e). See also definition of "development" and "exemption".

Substantially degrade. To cause significant ecological impact.

Subordinate. Less important than and secondary to a primary structure or use, in this SMP meaning an accessory or ancillary use, which is physically smaller than and acts to support the primary use.

Terrestrial. Of or relating to land as distinct from air or water.

Transportation facilities. A structure or development(s), which aids in the movement of people, goods or cargo by land, water, air or rail. They include but are not limited to streets, highways, bridges, causeways, bikeways, trails, railways, ferry terminals, float plane – airport or heliport terminals, and other related facilities.

Upland. Generally described as the dry land area above and landward of the ordinary high water mark.

Utility. Utilities are services and facilities that produce, transmit, carry, store, process, or dispose of electric power, gas, water, sewage, communications, oil, solid wastes and the like. A public or private agency may provide the service or facility that is utilized or available to the general public (or a locationally specific population thereof).

Utilities (Accessory). Accessory utilities are on-site utility features serving a primary use, such as a water, sewer or gas line. Accessory utilities do not carry significant capacity to serve other users.

Variance. A means to grant relief from the specific bulk, dimensional, or performance standards set forth in this SMP and not a means to vary a use of a shoreline.

Vegetation Conservation Area or *VCA*. A vegetation conservation area (VCA) is an area along the shoreline where vegetation, especially native vegetation, contributing to the ecological function of shoreline areas must be protected, and where it has been removed or destroyed, should be restored. VCA's are generally measured from the shoreline a specific width landward of and perpendicular to the shoreline.

Vessel. A floating structure that is designed primarily for navigation, is normally capable of self propulsion and use as a means of transportation, and meets all applicable laws and regulations pertaining to navigation and safety equipment on vessels, including, but not limited to, registration as a vessel by an appropriate government agency.

Visual Access. Access with improvements that provide a view of the shoreline or water, but do not allow physical access to the shoreline.

Visual Buffer. Means of lessening or absorbing the visual impact of a use or development on an adjacent use or development, or separating uses or developments of differing intensities. Visual buffers may include but are not limited to fences or vegetative screens.

WAC. Washington Administrative Code.

Water-dependent. A use or a portion of a use which cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations. Examples of water dependent uses may include fishing, boat launching, swimming, and storm water discharges.

Water-enjoyment. A recreational use or other use that facilitates public access to the shoreline as a primary characteristic of the use; or a use that provides for recreational use or aesthetic enjoyment of the shoreline for a substantial number of people as a general characteristic of the use and which through location, design, and operation ensures the public's ability to enjoy the physical and aesthetic qualities of the shoreline. In order to qualify as a water-enjoyment use, the use must be open to the general public and the shoreline-oriented space within the project must be devoted to the specific aspects of the use that fosters shoreline enjoyment. Water-enjoyment uses may include, but are not limited to:

1. Parks with activities enhanced by proximity to the water.
2. Docks, trails, and other improvements that facilitate public access to shorelines of the state.
3. Food and beverage establishments with water views and public access improvements.
4. Museums with an orientation to shoreline topics.
5. Scientific/ecological reserves.
6. Resorts with uses open to the public and public access to the shoreline; and any combination of those uses listed above.

Water-oriented use. A use that is water-dependent, water-related, or water-enjoyment, or a combination of such uses.

Water quality. The physical characteristics of water within shoreline jurisdiction, including water quantity, hydrological, physical, chemical, aesthetic, recreation-related, and biological characteristics. Where used in this SMP, the term "water quantity" refers only to development and uses regulated under SMA and affecting water quantity, such as impervious surfaces and storm water handling practices. Water quantity, for purposes of this SMP, does not mean the withdrawal of ground water or diversion of surface water pursuant to RCW 90.03.250 through 90.03.340.

Water-related use. A use or portion of a use which is not intrinsically dependent on a waterfront location but whose economic viability is dependent upon a waterfront location because:

1. The use has a functional requirement for a waterfront location such as the arrival or shipment of materials by water or the need for large quantities of water; or
2. The use provides a necessary service supportive of the water-dependent uses and the proximity of the use to its customers makes its services less expensive and/or more convenient.

Weir: A structure generally built perpendicular to the shoreline for the purpose of diverting water or trapping sediment of other moving objects transported by water.

Wetland or wetlands. Areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or

highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas created to mitigate conversion of wetlands.

Wetland category. See chapter 3, section 6.

Wetland delineation. Identification of a wetland boundary pursuant to Section 15.24.040(C) PAMC and the most recent edition of the U. S. Army Corps of Engineers (2010) Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). Wetland delineations are valid for five years; after such date the City shall determine whether a revision or additional assessment is necessary.

Wetlands rating system. See chapter 3, section 6.

Zoning. The system of land use and development regulations and related provisions Title 17 PAMC.

In addition, the definitions and concepts set forth in RCW 90.58.030, as amended, and implementing rules shall also apply as used herein.

CHAPTER 7

Administrative Provisions

A. Administrative Authority and Responsibility

Except when specifically exempted by statute, all proposed uses and developments occurring within shoreline jurisdiction must conform to chapter 90.58 RCW, the Shoreline Management Act, and this master program.

The City or Department may attach conditions of approval to any permitted use via a permit or statement of exemption as necessary to assure consistency of a project with the Act and this master program.

Applicants requesting review for permits or statements of exemption under this master program have the burden to prove that the proposed development or activity is consistent with the criteria that must be met before a permit or statement of exemption is granted.

1. Shoreline Administrator

The Director of the City of Port Angeles Department of Community and Economic Development or his/her designee (the Administrator) is vested with authority to:

a. Administer this Master Program;

b. Conduct a thorough review and analysis of shoreline substantial development permit applications. Make written findings and conclusions and approve, approve with conditions, or deny such permits in accordance with the policies and provisions of this Master Program, unless a public hearing or appeal is involved;

c. Grant or revise written permit exemptions from Shoreline Substantial Development Permit requirements of this Master Program (see Section B.2 below);

d. Determine compliance with the State Environmental Policy Act (Chapter43.21C RCW; Chapter 197-11 WAC);

e. Specify the required application forms and submittal requirements including the type, details and number of copies;

f. Advise interested citizens and project proponents of the goals, policies, regulations and procedures of this Master Program;

g. Make administrative decisions and interpretations of the policies and regulations of this Master Program and the Shoreline Management Act. When developing administrative interpretations of its shoreline master program, the City shall consult with the Department to insure that any formal written interpretations are consistent with the purpose and intent of chapter 90.58 RCW and the applicable guidelines;

h. Collect applicable fees;

i. Determine that application submittals are substantially complete;

j. Make field inspections as necessary;

k. Submit variance and conditional use permit applications and make findings and recommendations on such permits to the appointed reviewing body for its consideration and action;

l. Assure that proper notice is given to appropriate persons and the public for all hearings;

m. Provide technical and administrative assistance to the appointed reviewing body as required for effective and equitable implementation of this Master Program and the Act;

n. Provide a summary report of the shoreline permits issued in the past calendar year to the appointed reviewing body and the City of Port Angeles City Council;

o. Investigate, develop and propose amendments to this Master Program as deemed necessary to more effectively and equitably achieve its goals and policies;

p. Seek remedies for alleged violations of this Master Program, the provisions of the Act, or of conditions of any shoreline permit issued by the City;

q. Coordinate information with affected agencies;

r. Review and grant permit revisions. If the proposed changes are determined by the Administrator to be within the scope and intent of the original permit, consistent with this Master Program and the Act, the Administrator may approve the revision.

s. Determine if a proposed development is one of public significance and/or could have a significant impact on the shoreline environment, and consider permit rescissions in accordance with RCW 90.58.140 (8). Upon making such a determination, the Administrator may forward the application for shoreline substantial development to the appointed reviewing body for a hearing and action; and

t. Forward any decision on any permit application to the Washington State Department of Ecology for filing or action.

2. Appointed Reviewing Body[1]

The appointed reviewing body (Reviewing Body) is vested with authority to:

a. Review public input on and approve, approve with conditions, or deny requests for variance permits, conditional use permits, shoreline substantial development permits (when a hearing is required) and permit rescissions after considering the findings and recommendations of the Administrator; provided that the reviewing body's decisions may be appealed to the State Shorelines Hearings Board as provided for in the Act.

b. Review and recommend to the City Council any revisions or amendments to the master program in accordance with the requirements of the Act and WAC 173-26-090.

c. Conduct public hearings as specified in the permit process or which have been requested by the Administrator.

[1] The Planning Commission is the appointed reviewing body for the City of Port Angeles, until such time as or if the city contracts with a Hearings Examiner. At that time, the Hearings Examiner shall maintain the duties and authority as outlined herein.

d. Prepare written findings and conclusions to approve, deny or condition a permit based on the criteria established in this Master Program.

e. Where required by this Master Program or other City codes, require any applicant granted a shoreline permit to post a bond or other acceptable security with the City that ensures the applicant, or the applicant's successors in interest will adhere to the approved plans and all conditions attached to the shoreline permit. Such bonds or securities shall have a face value of at least 150 percent of the estimated development cost including attached conditions. Such bonds or securities must be approved by the City Attorney.

f. Consider the Administrator's findings and conclusions pertinent to permit decisions in the case of an appeal made by interested parties or members of the pubic and render the City's final decision.

3. Port Angeles City Council

The Port Angeles City Council is vested with authority to:

a. Review and act upon any recommendations of the Administrator and/or appointed reviewing body for amendments to or revisions of the program. The Council shall enter findings and conclusions setting forth the factors it considered in reaching its decision. To become effective any amendments to the program must be reviewed and approved by the Department of Ecology, pursuant to RCW 90.58.090 and Chapter 173-26 WAC.

B. Shoreline Substantial Development Permits and Exemptions

1. Substantial Development

A substantial development permit must be obtained prior to undertaking "substantial development" as defined by the SMA and this Master Program.

"Substantial development" shall mean any development of which the total cost or fair market value exceeds $6,416 (may be adjusted for inflation by the office of financial management every 5 years), or any development which materially interferes with the normal public use of the water or shorelines of the state; except that the following are a summary of common developments not considered substantial developments in accordance with RCW 90.58.030 (3)(e):

a. Normal maintenance or repair of existing structures or developments, including damage by accident, fire, or elements.

b. Construction of the normal protective bulkhead common to single family residences.

c. Emergency construction necessary to protect property from damage by the elements (see chapter 6 for the definition of emergency).

d. Construction or modification of navigational aids such as channel markers and anchor buoys.

e. Construction of a dock, including a community dock, designed for pleasure craft only,

for the private noncommercial use of the owner, lessee or contract purchaser of a single or multiple family residence.

f. The marking of property lines or corners on state owned lands, when such marking does not significantly interfere with normal public use of the surface of the water

Note: Exemption from substantial development permit requirements does not constitute exemption from the policies and use regulations of the Shoreline Management Act, the provisions of this master program, and other applicable city, state or federal permit requirements. Exemptions shall be construed narrowly. Only those developments that meet the precise terms of one or more of the listed exemptions may be granted exemption from the substantial development permit process. The list above is a summary; for a complete list, see RCW 90.58.030 (3)(e) and WAC 173-27-040.

A development or use that is listed as a conditional use in this master program or is an unlisted use must obtain a conditional use permit even if the development or use does not require a substantial development permit. When a development or use is proposed that does not comply with the bulk, dimensional and performance standards of the master program, such development or use can only be authorized by approval of a variance. If any part of a proposed development is not eligible for exemption, then a substantial development permit is required for the entire proposed development project.

The Administrator's decision on a shoreline substantial development permit may be appealed to the appointed reviewing body as outlined in section A above. The Administrator's decision shall not require a public hearing except in accordance with section A (1)(s) above.

2. Statement of Exemption

For projects located within shoreline jurisdiction that do not require a shoreline substantial development permit, applicants shall be required to obtain a written "statement of exemption". The statement of exemption verifies that the shoreline development is exempt and provides the applicant with an itemized list of all requirements (master program and otherwise) applicable to the proposed development. For shoreline development which is exempt, the statement shall indicate the specific exemption that is being applied to the development and provide a summary of the City's analysis of the consistency of the project with the master program and the act. The City may attach conditions to the approval of exempted developments and/or uses as necessary to assure consistency of the project with the Act and this Master Program. For example, a building permit for a single-family residence can be conditioned with provisions from the master program.

The Administrator's decision on an exemption may be appealed to the appointed reviewing body as outlined in section A above.

C. Conditional Use Permits

1. Shoreline Conditional Use Permits

The Shoreline Administrator or otherwise authorized designee shall have the authority to make findings, conclusions, and recommendations on shoreline conditional use permits. The appointed reviewing body shall have the authority to hear and take action on

applications for shoreline conditional use permits as authorized by section A above. The application for a shoreline conditional use permit shall be made on forms prescribed by the Shoreline Administrator and shall be processed pursuant to the PAMC. Review will be for purposes of determining consistency with:

- The legislative policies stated in the Shoreline Management Act, RCW 90.58.020
- The Shoreline Master Program of the City of Port Angeles.

Conditional use permits require a public hearing as outlined in section A.2 above. Notice of public hearings shall be published in the same manner as provided in the Port Angeles Municipal Code.

2. Shoreline Conditional Use Permit Criteria

The purpose of a conditional use permit is to allow greater flexibility in administering the use regulations of the master program in a manner consistent with the policies of the SMA. In authorizing a conditional use, special conditions may be attached to the permit by the City or Department of Ecology to prevent undesirable effects of the proposed use and/or to assure consistency of the project with the Act and this master program. Conditional use permits may be granted in the following circumstances:

a. The uses is classified or set forth in the master program as a conditional use and the applicant can demonstrate all of the following:

   1. The proposed use will be consistent with the policies of the SMA and the policies of the City of Port Angeles Shoreline Master Program;
   2. The proposed use will not interfere with the normal public use of public shorelines;
   3. The proposed use of the site and design of the project will be compatible with other permitted uses within the area;
   4. The proposed use will cause no significant adverse effects to the shoreline environment in which it is to be located; and
   5. The public interest suffers no substantial detrimental effect.

b. Uses not classified or set forth in the master program may be authorized as conditional uses provided that the applicant can demonstrate, in addition to the criteria set forth in 2a above, consistency with any other requirements for conditional uses in this master program.

c. In the granting of all conditional use permits, consideration shall be given to the cumulative impact of additional requests or like actions in the area.

d. Uses which are specifically prohibited by the master program may not be authorized as conditional uses.

e . All Shoreline Conditional Use Permits issued by the City must be submitted to the Department of Ecology for its approval or disapproval in accordance with RCW 90.58.140 (10). Appeals of Ecology decisions on shoreline conditional use permits shall be made to the Shoreline Hearings Board as specified in section E.3 below.

3. Compliance with Conditions

When plans are approved as part of a shoreline conditional use permit, modifications of the original plans may be made only after a review has been conducted by the Shoreline

Administrator and approval granted by the designated hearing body. Revisions to permits shall be processed in accordance with section E 4 below.

In the event of failure to comply with approved plans or with any conditions imposed upon the conditional use permit, the permit shall immediately become void and any continuation of the use activity shall be construed as being in violation of Title 15 PAMC and a public nuisance.

D. Variances

1. Variances – Generally

The Shoreline Administrator or otherwise authorized designee shall have the authority make findings, conclusions, and recommendations on shoreline variances. The appointed reviewing body shall have the authority to hear and take action on applications for variances as authorized by section A above. The application for a variance shall be made on forms prescribed by the Shoreline Administrator and shall be processed and acted upon in the same manner as is provided for conditional shoreline development permits. If a variance application is not merged with a pending substantial development permit application, the applicant shall pay the City the fee established in PAMC 3.70. All variances issued by the City must be submitted to the Department of Ecology for its approval or disapproval in accordance with RCW 90.58.140 (10).

Variances require a public hearing as outlined in section A.2 above.

2. Variance Criteria

The purpose of a variance is strictly limited to granting relief to specific bulk, dimensional, or performance standards set forth in the master program when there are extraordinary or unique circumstances relating to the physical character or configuration of the property such that the strict implementation of the master program would impose unnecessary hardships on the applicant or thwart the policies set forth in the SMA. The criteria for granting variances shall be consistent with WAC 173-27-170 and include the following:

a. Variances should be granted in a circumstance where denial of the permit would result in a thwarting of the policy enumerated in RCW 90.58.020. In all instances, extraordinary circumstances must be shown, and the public interest shall suffer no substantial detrimental effect.

b. Variances for development that will be located landward of the ordinary high- water mark and/or landward of any wetland may be authorized provided the applicant can demonstrate all of the following:

   1. The strict application of the bulk, dimensional, or performance standards as set forth in the master program preclude or significantly interfere with reasonable use of the property;

   2. The hardship is specifically related to the property and is the result of unique conditions, such as irregular lot shape, size, or natural features, in the application of the master program and not, for example, from deed restrictions or the applicant's own actions;

   3. The design of the project will be compatible with other permitted activities in the area

and will not cause adverse effects to adjacent properties or the shoreline environment;

4. The variance does not constitute a grant of special privilege not enjoyed by other properties in the area, and will be the minimum necessary to afford relief; and
5. The public interest will suffer no substantial detrimental effect.

c. Variances for development located waterward of the ordinary high-water mark or within any wetland may be authorized provided the applicant can demonstrate all of the criteria specified in 2 b above and that the public rights of navigation and use of the shorelines will not be adversely affected.

d. Uses which are specifically prohibited by the master program may not be authorized as a variance.

e. In granting of all variances, consideration shall be given to the cumulative impact of additional requests or like actions in the area.

f. All shoreline variances issued by the City must be submitted to the Department of Ecology for its approval or disapproval in accordance with RCW 90.58.140 (10). Appeals of Ecology decisions on shoreline variances shall be made to the Shoreline Hearings Board as specified in section E.3 below. Appeals of Ecology decisions on variances shall be made to the Shoreline Hearings Board as specified in section E.3 below.

E. Permit Application

1. Application Process

The Administrator shall provide the necessary application forms for shoreline substantial development permits, conditional use permits, and variance permits.

a. The applicant shall provide, at a minimum, the following information:

1. The most recently updated Joint Aquatics Resource Permit Application (JARPA) form.
2. The State Environmental Policy Act (SEPA) checklist.
3. The filing fee in an amount as established in PAMC 3.70 payable at the time of the application.

b. A complete application and supporting documents for all shoreline permits shall be submitted to the Shoreline Administrator for processing and review. Any deficiencies in the application shall be corrected by the applicant prior to further processing.

c. Permit Application Review

1. Notice of Application and Permit Application Review shall occur in accordance with WAC 173-27-110 and PAMC 18.02. Public comment periods shall be 30 days in length in accordance with RCW 90.58.140 (4).

d. Public Hearings

1. Public hearings shall be held as requested or required in accordance with sections A-D above.

2. A written notice of the public hearing at which the appointed reviewing body will consider the application shall be mailed or delivered to property owners within at least 300 feet of the subject property, posted on the site and published in the local newspaper per WAC 173-27-110 and PAMC 17.96.140.

3. The appointed reviewing body shall review permit applications and make a decision based on any or all of the following:

   i. The application materials;

   ii. SEPA documentation (if required);

   iii. Written and oral comments from interested persons during the published public comment period;

   iv. Evidence presented at the public hearing;

   v. The findings, conclusions, and the recommendations of the Administrator;

   vi. This Shoreline Master Program; and

   vii. The Shoreline Management Act, RCW 90.58, and its supporting WACs.

4. Following the action taken by the appointed reviewing body, the City will send a notice of decision to Department of Ecology per WAC 173-27-200.

2. Time Requirements

a. The time requirements of this section shall apply to all substantial development permits and to any development authorized pursuant to a variance or conditional use permit.

b. Construction pursuant to permits issued shall not begin and is not authorized until twenty-one (21) days from the date of filing as provided in RCW 90.58.140 (5) and (6); or until all review proceedings are terminated if the proceedings were initiated within twenty-one days from the date of filing.

c. Construction activities shall commence or, the use or activity shall commence within two years of the effective date of the permit. The City may authorize a single extension for a period not to exceed one year based on reasonable factors, if a request for extension has been filed before the expiration date, and notice of the proposed extension is given to parties of record on the permit and to the Department of Ecology.

d. Authorization to conduct development activities will terminate five years after the effective date of the permit. The City may authorize a single extension for a period not to exceed one year based on reasonable factors, if a request for extension has been filed before the expiration date and notice of the proposed extension is given to parties of record and to the Department of Ecology.

e. The effective date of a permit shall be the date of filing as provided in RCW 90.58.140(6).

f . The permit time periods in provisions 2 c and d above do not include the time during which a use or activity was not actually pursued due to the pendency of administrative appeals or legal actions or due to the need to obtain any other government permits and approvals for the development that authorize the development to proceed, including all reasonably related administrative or legal actions on any such permits or approvals.

3. Appeals

a. Any decision or ruling made by the Administrator on a substantial development permit, master program policy or regulation interpretation, permit revision, exemption or other action within the purview and responsibility of the Administrator may be appealed to the appointed reviewing body as outlined in section A above.

b. Any person aggrieved by the granting, denying, or rescinding of a permit on shorelines of the state may seek review from the shorelines hearings board by filing a petition for review within twenty-one days of the date of filing of the decision as defined in RCW 90.58.140 (6). Within seven days of the filing of any petition for review with the board as provided in this section pertaining to a final decision of a local government, the petitioner shall serve copies of the petition on the Department, the office of the attorney general, and the City. Request shall be in the form required by the rules for practice and procedure before the Hearings Board.

4. Revisions to Permits (See also WAC 173-27-100)

A permit revision is required whenever the applicant proposes substantive changes to the design, terms or conditions of a project from that which is approved in the permit. Changes are substantive if they materially alter the project in a manner that relates to its conformance to the terms and conditions of the permit, the master program and/or the policies and provisions of the Act. Changes which are not substantive in effect do not require approval of a revision.

When an applicant seeks to revise a substantial development, conditional use, or variance permit, the Shoreline Administrator shall request from the applicant detailed plans and text describing the proposed changes in the permit. If the Shoreline Administrator determines that the proposed changes are within the scope and intent of the original permit, the revision may be approved, provided it is consistent with Chapter 173-27 WAC, the Shoreline Management Act, and this master program. "Within the scope and intent of the original permit" means the following:

a. No additional over-water construction will be allowed except pier, dock, or float construction may be increased by five hundred square feet or ten percent of the original permit dimensions, whichever is less.

b. Lot coverage and height may be increased a maximum of 10 percent from provisions of the original permit. New structures not shown on the original site plan, however, require a new permit.

c. Landscaping may be added or revised without necessitating a new permit if consistent with the conditions attached to the original permit and with the shoreline master program.

d. The use authorized pursuant to the original permit is not changed.

e. No adverse environmental impact will be caused by the project revision.

f. The revised permit shall not authorize development to exceed height, lot coverage, setback, or any other requirements of the applicable master program except as authorized under a variance granted by the original permit or a part thereof.

If the revision, or the sum of the revision and any previously approved revisions, will violate the criteria specified above, the Shoreline Administrator shall require the applicant to apply for a new substantial development, conditional use, or variance permit, as appropriate, in the manner provided for herein.

The revision approval, including the revised site plans and text consistent with section E 1 above as necessary to clearly indicate the authorized changes, and the final ruling on consistency with this subsection shall be filed with the Department of Ecology. In addition, the City shall notify parties of record of the action. If the revision to the original permit involves a conditional use or variance, the City shall submit the revision to the Department for the Department's approval, approval with conditions, or denial, and shall indicate that the revision is being submitted under the requirements of this subsection.

The department shall render and transmit to the City and the applicant its final decision within fifteen days of the date of the Department's receipt of the submittal from the City. The City shall notify parties of record of the Department's final decision. The revised permit is effective immediately upon final decision by the City or, when appropriate upon final action by the Department.

F. Nonconforming Uses and Development

Nonconforming uses or developments are shoreline uses or structures which were lawfully constructed or established prior to the effective date of the act or the master program, or amendments thereto, but that do not conform to present regulations or standards of the master program. In such cases, the following standards shall apply:

1. Nonconforming Structures and Development

a. Legally established nonconforming structures being used for a conforming use may be maintained and repaired and may be enlarged or expanded provided such structure is not expanded in any way that increases its nonconformity.

b. Uses and developments that were legally established and are nonconforming with regard to the use regulations of the master program may continue as legal nonconforming uses. Such uses shall not be enlarged or expanded. Existing, non-water oriented industry is the only exception; such uses may be permitted to expand upland with approval of a conditional use permit. See chapter 5, section 5 (c).

c. A legal, conforming building or structure housing a nonconforming use shall be permitted to be repaired, altered, remodeled, or reconstructed providing said repairs, alteration, remodeling, or reconstruction do not expand the building space or site area used by a nonconforming use. For existing non-water oriented industry, see F 1 (b) above.

d. A nonconforming structure that is moved any distance must be brought into conformance with the master program and the Act when feasible, and at a minimum be made more conforming.

e. If a nonconforming structure is damaged to an extent not exceeding 75 percent of the assessed value of the structure, it may be reconstructed to those configurations existing immediately prior to the time the structure was damaged, so long as restoration or reconstruction is started within nine months and is completed within 18 months of the date that damage or demolition occurred, or, if such date is unknown, then the date that the damage or demolition is reported, or reasonably capable of being reported, to the City. A legal nonconforming building or structure damaged or demolished to an extent that exceeds 75 percent of the existing assessed value of the building or structure for tax purposes may be restored or reconstructed providing it conforms to all regulations of the environment designation or shoreline segment in which it is located. Reconstruction will require obtaining standard building permit prior to construction.

f. If a nonconforming use is discontinued for any period of one year or more, any subsequent use shall be conforming. It shall not be necessary to show that the owner of the property intends to abandon such nonconforming use in order for the nonconforming rights to expire.

g. A use which is listed as a conditional use but which existed prior to adoption of the master program or any relevant amendment or prior to the applicability of the master program to the site and for which a conditional use permit has not been obtained shall be considered a nonconforming use.

h A structure for which a variance has been issued shall be considered a legal nonconforming structure and the requirements of this section shall apply as they apply to preexisting nonconformities.

i. A nonconforming use shall not be changed to another nonconforming use, regardless of the conforming or non-conforming status of the building or structure in which it is housed.

2. Nonconforming Lots

An undeveloped lot, tract, parcel, site, or subdivision located landward of the ordinary high water mark that was legally established prior to the effective date of the Act or the master program but that does not conform to the present lot size or density standards may be developed so long as such development conforms to all other requirements of the master program and the Act.

G. Documentation of Project Review Actions and Changing Conditions in Shoreline Areas

The City will keep on file documentation of all project review actions, including applicant submissions and records of decisions, including conditions applied, relating to consistency with this SMP. The City shall periodically evaluate the cumulative effects of authorized development on shoreline conditions.

H. Enforcement and Penalties

The choice of enforcement action and the severity of any penalty will be based on the nature of the violation and the damage or risk to the public or to public resources. The existence or degree of bad faith of the persons subject to the enforcement action, the benefits that accrue to the violator and the cost of obtaining compliance may also be considered.

1. Civil Penalty

a. Action: The City Attorney shall bring such injunctive, declaratory, or other actions as are necessary to insure that no uses are made of the state shorelines that conflict with the provisions of the Act and this master program and to otherwise enforce the provisions of the Act and the master program.

b. Non-Compliance: Any person who fails to conform to the terms of a permit issued under this master program, or who undertakes a development or use on the shorelines of the state without first obtaining any permit required under the master program, or who fails to comply with a cease and desist order issued as outlined below shall also be subject to a civil penalty not to exceed one thousand dollars for each violation. Each permit violation or each day of continued development without a required permit shall constitute a separate violation.

c. Aiding and Abetting: Any person who, through an act of commission or omission procedures, aids or abets in the violation shall be considered to have committed a violation for the purposes of the civil penalty.

d. Notice of Penalty: The City and/or the Department of Ecology may serve written notice of the penalty, either by certified mail with return receipt requested or by personal service, on the person incurring the violation. The notice shall describe the violation, approximate date(s) of the violation, and shall order the acts constituting the violation to cease and desist, or in appropriate cases, require necessary corrective action within a specific time.

e. Remission and Joint Order: Within 30 days of the date of receipt of the penalty, the person incurring the penalty may appeal in writing such penalty. Upon receipt of the application, the City may remit or mitigate the penalty only upon a demonstration of extraordinary circumstances, such as the presence of information or factors not considered in setting the original penalty. Appeals of any penalty imposed by the City pursuant to this section shall be subject to review by the City Council. In accordance with RCW 90.58.210 (4), any penalty jointly imposed by the City and the Department of Ecology may be appealed to the Shorelines Hearings Board. When a penalty is imposed jointly by the City and the Department of Ecology, it may be remitted or mitigated only upon such terms as both the City and the Department agree.

f. Effective Date: The cease and desist order issued under this subsection shall become effective immediately upon receipt by the person to whom the order is directed.

g. Compliance: Failure to comply with the terms of a cease and desist order can result in enforcement actions including, but not limited to, the issuance of a civil penalty.

2. Delinquent Permit Penalty

Permittees applying for a permit after commencement of a use or activity may, at the discretion of the City, be required to pay a delinquent permit penalty not to exceed three times the standard permit fee. A person who has caused, aided, or abetted a violation within two years after the issuance of a regulatory order, notice of violation, or penalty by the City or the Department may be subject to a delinquent permit penalty not to exceed ten times the standard permit fee. Delinquent permit penalties shall be paid in full prior to resuming the use or activity.

3. Property Lien

Any person who fails to pay prescribed penalties as authorized in this section shall be subject to a lien upon the affected property until such time as the penalty is paid in full. The City Attorney shall file the lien against the affected property at the office of the County Assessor.

4. Mandatory Civil Penalties

Issuance of civil penalties is mandatory in the following instances:

a. The violator has ignored an order or notice of violation;

b. The violation causes or contributes to significant environmental damage to shorelines of the State as determined by the City or the Department;

c. A person causes, aids, or abets in a violation within two years after issuance of a similar regulatory order, notice of violation, or penalty by the City or the Department.

5. Minimum City Penalty Levels

a. The minimum penalty for all violations with mandatory civil penalties as outlined above is two hundred and fifty dollars ($250.00).

b. For instances requiring penalties not outlined in 4 above, the minimum penalty is one hundred dollars ($100.00)

6. General Criminal Penalty

In addition to incurring civil liability under Section 1, any person found to have willfully engaged in activities on the shorelines of the State in violation of the provisions of the Act or the master program shall be guilty of a misdemeanor and shall be punished by a fine of not less than one hundred dollars ($100.00) nor more than one thousand dollars ($1,000.00) or by imprisonment in the county jail for not more than 90 days for each separate offense, or by both such fine and imprisonment. Provided that the fine for each separate offense for the third and all subsequent violations in any five-year period shall be not less than five hundred dollars ($500.00) nor more than ten thousand dollars ($10,000.00).

7. Violator Liabilities - Damages, Attorney's Fees/Costs.

Any person subject to the regulatory program of the Act or the master program who violates any provision thereof or permit issued pursuant thereto shall be liable for all damage to public or private property arising from such violation, including the cost of restoring the affected area to its condition prior to violation. The City Attorney shall bring suit for damages under this section on behalf of the City. Private persons shall have the

right to bring suit for damages under this section on their own behalf and on the behalf of all persons similarly situated. If liability has been established for the cost of restoring an area affected by a violation, the court shall make provisions to assure that restoration will be accomplished within reasonable time at the expense of the violator. In addition to such relief, including money damages, the court in its discretion may award attorney's fees and costs of the suit to the prevailing party.

I. Amendments to this Master Program

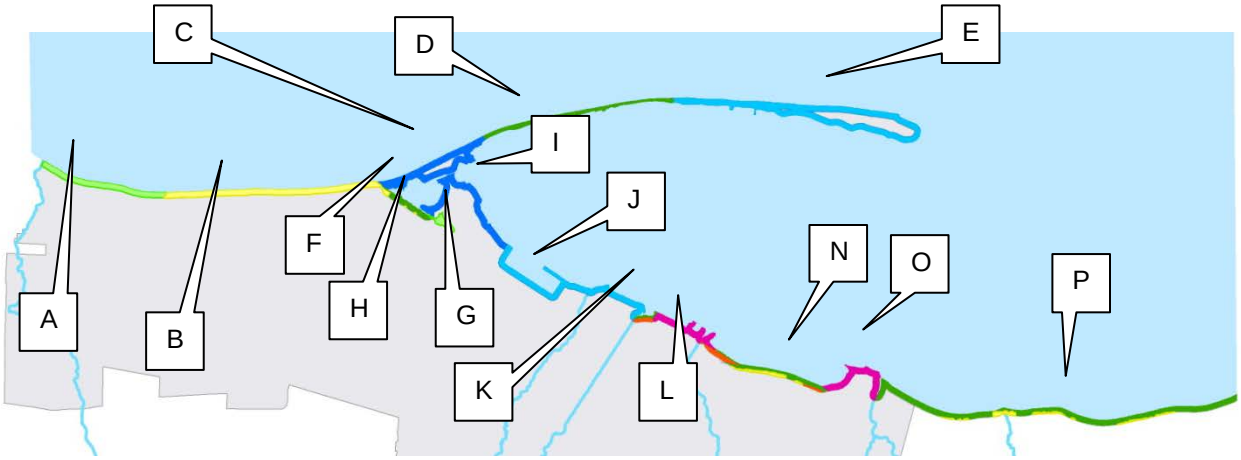
The City shall conduct a review of its master programs at least once every eight years as required by RCW 90.58.080 (4)(b). Following the required review, the City shall, if necessary, revise its master program to assure:

a. That the master program complies with applicable law and guidelines in effect at the time of the review; and

b. Consistency of the master program with the comprehensive plan, development regulations, and other local requirements.

Appendix A
City of Port Angeles Shoreline Master Program
Shoreline Environmental Designations Descriptions

Figure 1. City of Port Angeles Shoreline Reaches



Segment A: Eastern reach (UC-LI)

Segment B: Eastern residential reach (SR)

Segment C: Industrial shoreline facing the Strait of Juan de Fuca (HI-I)

Segment D: Ediz Hook both inner and outer shorelines (UC-R)

Segment E: Ediz Hook east both inner and outer shorelines (HI-M)

Segment F: Southern shoreline of Mill pond (Parallel designations UC-R and SR)

Segment G: Wetland area between Hill Street and Marine Drive (UC-LI)

Segment H: Shorelines of the mill pond (HI-I)

Segment I: Industrial shoreline facing the Harbor (HI-I)

Segment J: Boat Haven reach (HI-M)

Segment K: East shore of Valley Creek estuary (Parallel designations HI-UU and UC-R))

Segment L: Downtown Reach (HI-MU)

Segment N: Central City Reach from Lincoln Street to the Rayonier Site (Parallel designations including UC-R, SR, and HI-UU)

Segment O: Western portion of the Rayonier site east of Ennis Creek (HI-MU)

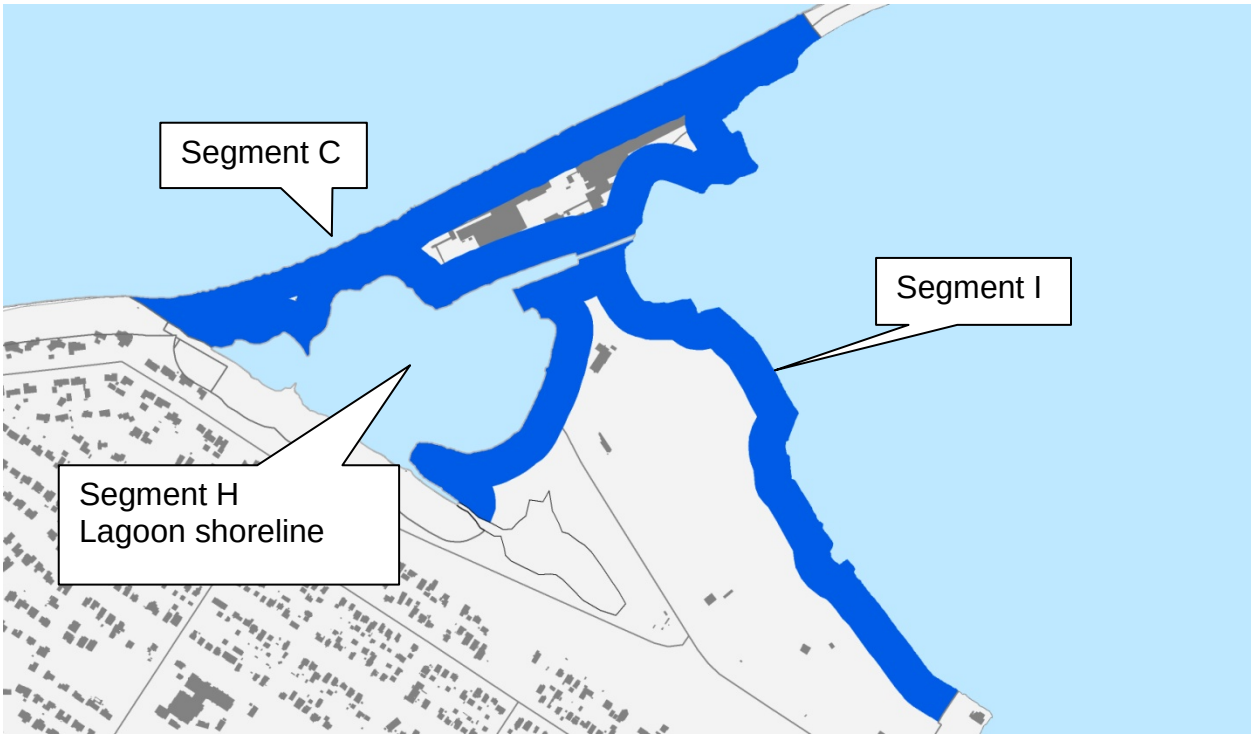
Segment P: East of Ennis Creek to eastern boundary of UGA (parallel designation UC-R and SR)

High-Intensity Industrial (HI-I) Environment

Segment C = Shoreline Designated HI-I Facing the Strait of Juan de Fuca
Begins: Western edge of parcel 063000014600
Ends: Extension of eastern edge of DNR lease 29 (DNR Port Angeles Harbor Area lease records map)

Segment H = Shoreline Designated HI-I Facing the Lagoon
Begins: Extension of eastern edge of DNR lease 29 (DNR Port Angeles Harbor Area lease records map), following north side of lagoon.
Ends: Line from lagoon to 200 ft west of lagoon 100 feet due north of northern edges of parcels 063000102905 and 063000102900

Segment I = Shorelines Designated HI-I Facing the Port Angeles Harbor
Begins: Center line of L Street right-of-way extended.
Ends: Eastern edge of parcel 063000011750

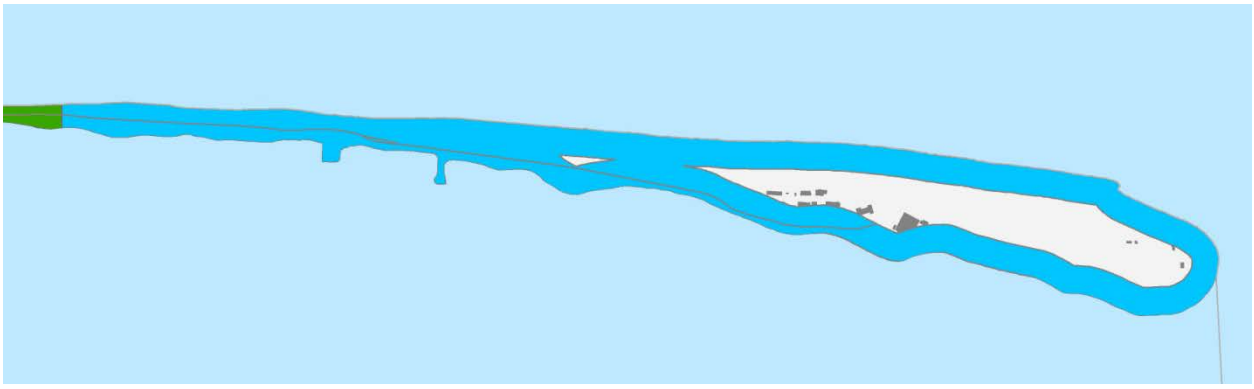


High-Intensity Marine (HI-M) Environment

Segment E. East Ediz Hook Reach

Begins: On both the north and south shores of Ediz Hook, extension of western edge of parcel 06300000410, approximately 135 feet east of the Ediz Hook radio towers.

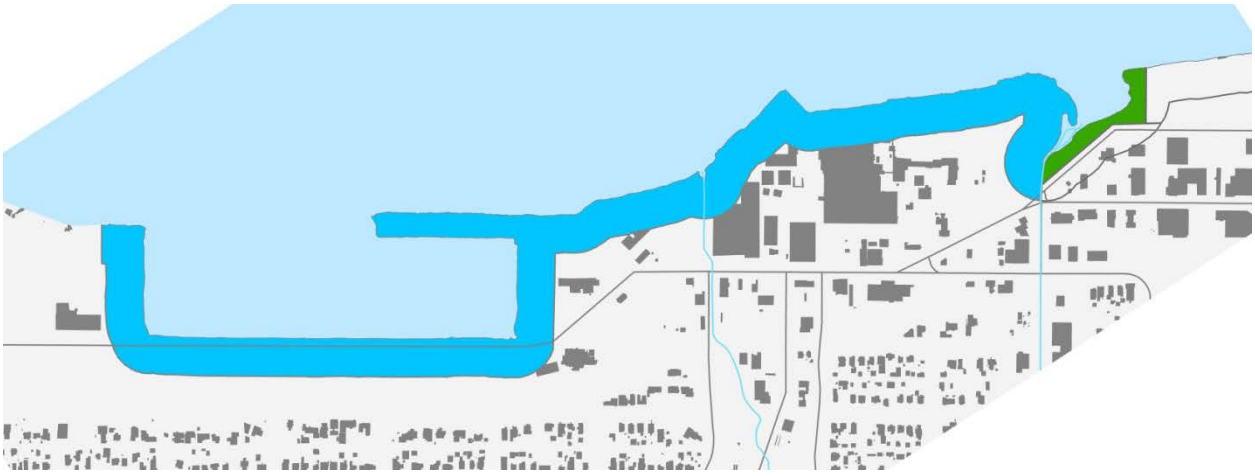
Ends: eastern tip of Ediz Hook.



Segment J. Boat Haven Reach

Begins: Western edge of parcel 063000079620 (west boundary of the Boat Haven Marina)

Ends: Southern edge of 063000001035 (center line of Valley Street).



High-Intensity Urban Uplands (HI-UU) Environment

Segment K

Parcels 063000001315, 063000001325, 063000001310, 063000001300, and 063000001302, and Front Street, 1st/Front Alley, and Marine Drive right-of-way within 200 feet of OHWM. The uplands adjacent to and east of Valley Creek Estuary Park.

Segment M. Urban Uplands.

Begins: East of Lincoln Street center line.

Ends: West edge of Vine Street extended.

Includes parcels south of the Olympic Discovery/Waterfront Trail not including the marine b0ulff.

Segment N. Urban Uplands

Begins: Western edge of parcel 063000103326 above the top of the marine bluff.

Ends: Western edge of parcel 063000530345 where 200-foot shoreline jurisdiction and top of marine bluff intersect.

High-Intensity Mixed-Use (HI-MU) Environment

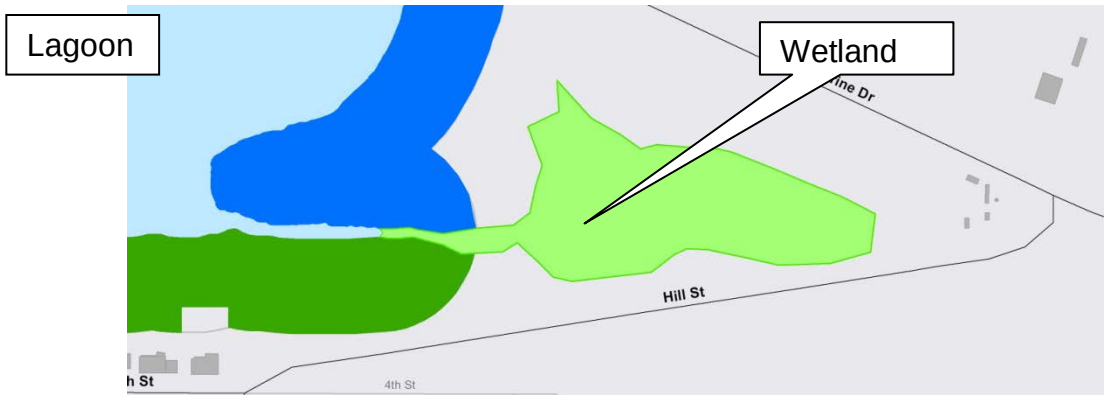
Segment L. Downtown Waterfront
Begins: West edge of Cherry Street right-of-way extended north.
Ends: East edge of Vine Street right-of-way extended north.

Segment O. Western Ennis Creek Reach (Former Rayonier Site)
Begins: The center line of the Water Street/Columbia Street alley extending from the top of the marine bluff to the OHWM.
Ends: Center line of Ennis Creek.

Urban Conservancy-Low Intensity (UC-LI) Environment

Segment A. Ocean View Reach - City Transfer Station and Ocean View Cemetery
Begins: City limits (western edge of parcel 073136330170)
Ends: East side of unopened "Q" Street right-of-way abutting the east end of Ocean View Cemetery extended. (east of parcel 063000108700)
This reach is entirely owned by the City of Port Angeles.

Segment G. Wetlands Between Marine Drive and Hill Street at the base of the marine bluff.
Begins: Extension of western edge of parcel 063000014089
Ends: Parcel 063000012524

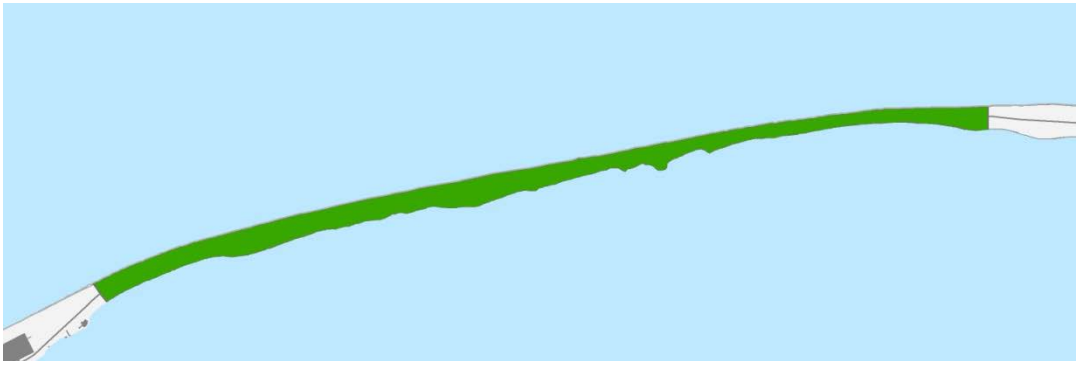


Urban Conservancy-Recreation (UC-R) Environment

Segment D. Ediz Hook Reach

Begins: North and south shore of Ediz Hook, from eastern edge of DNR lease 29 (Tesoro Tank farm entry)

Ends: Extension of western edge of parcel 063000000410, approximately 135 feet east of radio tower enclosure fence.



Segment F. Shorelines Along the Lagoon Designated UC-R

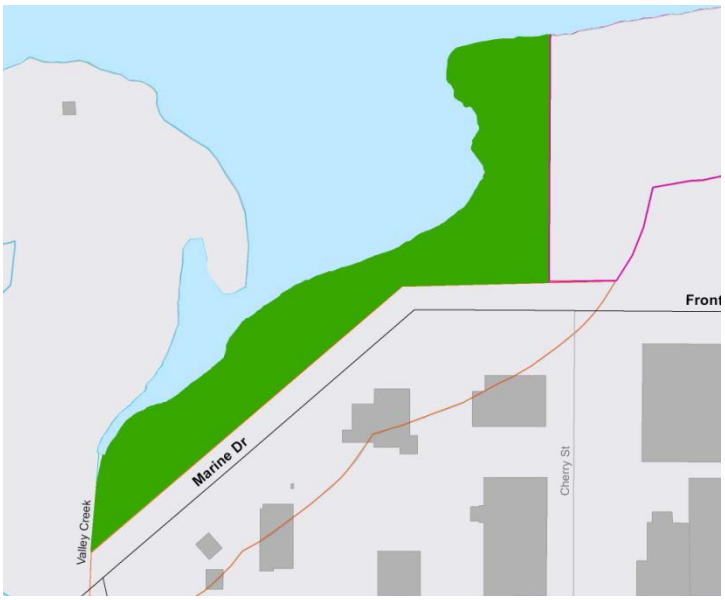
Begins: Line from lagoon to 275 ft west of lagoon. 100 feet due north of northern edges of parcels 063000102905 and 063000102900

Ends: Center line of K Street right-of-way (with the exception of parcels 063099002930, 063000102905, 063000102900, 063000014520, and 063000014575)

Segment K. Shorelines facing the Valley Creek Estuary

Begins: East shore of Valley Creek estuary, east of Valley Street center line, excluding Marine Drive ROW.

Ends: West side of Cherry Street right-of-way (extended) north of Front Street



Segment M. Urban Conservancy Recreation

Begins: East of City Pier Park, (Chase Street ROW extended north).

Ends: West edge of Vines Street extended.

Segment N. Urban Conservancy Recreation

Begins: West edge of Vines Street extended

Ends: West edge of Rayonier Mill site.

Includes area north of and including the Waterfront/Olympic Discovery Trail and the Victoria Street right-of-way to the top of the marine bluff and all of Francis Street Park.

Segment P. Shorelines east of the center line of Ennis Creek to the east UGA boundary.

Includes all lands upland of OHWM to the top of the marine bluff with the exception of the area designated as Lee's Creek Sub-Reach.

Shoreline Residential (SR) Environment

Segment B. West Bluffs Reach west of Ediz Hook

Begins: Eastern side of unopened right-of-way east of Ocean View Cemetery.

Ends: Northern edge of parcel 063000940003 and northeastern edge of 063000102925.

Segment F. Shorelines areas south of the Lagoon Designated SR

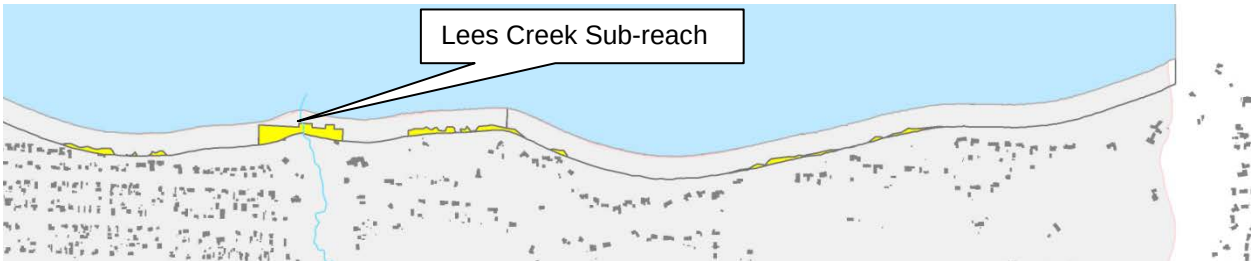
Portions of parcels 063099002910, 063099002930, 063000102905, 063000102900, 063000014520, and 063000014575 that are located within 200 feet of the OHWM.

Segment N. Shoreline Residential.

Begins: East of downtown. Includes all areas located above the top of the marine bluff including street right-of-way (Does not include Olympic Medical Center site).

Ends: East side of Race Street right-of-way.

Segment P. Eastern Reach. Rayonier site to east boundary of UGA.
Begins: East of Ennis Creek center line and above the top of marine bluff.
Ends: Eastern limit of Urban Growth Area. (east side of parcel 053008220020)



Sub-segment P. Lees Creek sub-reach
Begins: Western edge of parcel 063012581015
Ends: Eastern edge of parcel 063012640400

Aquatic-Harbor (AQ-H) Environment

All aquatic areas waterward of the OHWM within Port Angeles Harbor, which include submerged lands lying westward of the city limit line extending from the easternmost tip of Ediz Hook southward to the Port Angeles city limits at the shoreline as of January 1, 2012.

Aquatic-Conservancy (AQ-C) Environment

All aquatic areas below OHWM which are marine waters outside of Port Angeles Harbor but within the City's Shoreline Jurisdiction. The City's Shoreline Jurisdiction extends north to the international border.

The Aquatic Conservancy designation includes the lagoon at the base of Ediz Hook

Appendix B. Inventory, Characterization, and analysis

Appendix C. Cumulative Impacts Analysis

Appendix D. Shoreline Restoration Plan

Appendix E. Environmentally Sensitive Areas Protection regulations November 29, 1991 and ~~most recently amended by~~ ordinance #~~3367 dated September 15, 2009~~

CITY OF PORT ANGELES
GRANT NO. G1000051

SHORELINE INVENTORY, CHARACTERIZATION AND ANALYSIS REPORT

for City of Port Angeles' Shoreline: Strait of Juan de Fuca
June 2012

Prepared for:

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June 2012

The Watershed Company Reference Number:
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This report was funded in part through a grant from the Washington Department of Ecology.

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CITY OF PORT ANGELES SHORELINE: STRAIT OF JUAN DE FUCA

1 INTRODUCTION

1.1 Background and Purpose

The City of Port Angeles (City) received a grant from the Washington Department of Ecology (Ecology) in 2009 to complete a comprehensive Shoreline Master Program (SMP) update. One of the first steps of the update process is to inventory and characterize the City's shorelines as defined by the state's Shoreline Management Act (SMA) (RCW 90.58). This inventory was conducted in accordance with the Shoreline Master Program Guidelines (Guidelines, Chapter 173-26 WAC) and project Scope of Work promulgated by Ecology, and includes all areas within current city limits as well as the City's Urban Growth Area (UGA). Under these Guidelines, the City must identify and assemble the most current, applicable, accurate and complete scientific and technical information available. This shoreline analysis report describes existing conditions and characterizes ecological functions in the shoreline jurisdiction. This will serve as the baseline against which the impacts of future development actions in the shoreline will be measured. The Guidelines require that the City demonstrate that its updated SMP yields "no net loss" in shoreline ecological functions due to its implementation relative to the baseline (current condition) established in this report.

A list of potential information sources was compiled and an information request letter was distributed to potential interested parties and agencies that may have relevant information. Collected information was supplemented with other resources such as City documents, scientific literature, personal communications, aerial photographs, and internet data.

1.2 Shoreline Jurisdiction

As defined by the Shoreline Management Act of 1971, shorelines include certain waters of the state plus their associated "shorelands." At a minimum, the waterbodies designated as shorelines of the state are streams whose mean annual flow is 20 cubic feet per second (cfs) or greater, lakes whose area is greater than 20 acres, and all marine waters. Shorelands are defined as:

> "those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter…Any county or city may determine that portion of a one-hundred-year-floodplain to be included in its master program as long as such portion includes, as a minimum, the floodway and the adjacent land extending landward two hundred feet therefrom… Any city or county may also include in its master program land necessary for buffers for critical areas (RCW 90.58.030)"

All marine shorelines are included under shoreline jurisdiction. All areas waterward of the extreme low tide are also considered Shorelines of Statewide Significance. Wetlands associated

with the marine shorelines are also included. No other streams, lakes, or wetlands within the City of Port Angeles are considered part of shoreline jurisdiction. A detailed discussion of the entire jurisdiction assessment and determination process can be reviewed in full in Appendix A of this report.

1.3 Study Area

The City of Port Angeles is located in Clallam County, Washington. The north side of the City fronts the Strait of Juan de Fuca, and is surrounding by unincorporated Clallam County to the west, south and east. The City encompasses approximately 13.9 square miles. Of that area, 3.8 square miles are included in the Port Angeles Harbor. An urban growth area to the east of the city boundary is included in the analysis and encompasses approximately 2.8 square miles. The shoreline jurisdiction in Port Angeles includes all the aquatic lands extending north from the city limits on the west and the east boundary of the EUGA to the international boundary located in the Strait of Juan de Fuca.

The study area for this report includes all land currently within the City's proposed shoreline jurisdiction (Appendix A), as well as relevant discussion of the contributing watershed. This includes both the shoreline area within the existing city limits as well as the City's UGA. The total area subject to the City's updated SMP, not including aquatic area, is approximately 363 acres, and encompasses approximately 17.7 miles of marine shoreline.

2 CURRENT REGULATORY FRAMEWORK SUMMARY

2.1 City of Port Angeles

The Shoreline Management Act of 1971 brought about many changes for local jurisdictions, including the City of Port Angeles. The legislative findings and policy intent of the SMA states:

> "There is, therefore, a clear and urgent demand for a planned, rational, and concerted effort, jointly performed by federal, state, and local governments, to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines (RCW 90.58.020)."

While protecting shoreline resources by regulating development, the SMA is also intended to provide balance by encouraging water-dependent or water-oriented uses while also conserving or enhancing shoreline ecological functions and values. SMPs will be based on state guidelines, but should be tailored to the specific conditions and needs of the local community.

The City adopted its first Shoreline Master Program in 1979, and completed a major update in 1993. The SMP is adopted in Port Angeles Municipal Code (PAMC) Chapter 15.08. The City's 1993 SMP organizes shoreline jurisdiction into four environments: Urban Harbor, Urban Shoreline Protection, Aquatic Harbor, and Aquatic Conservancy.

The City's Comprehensive Plan contains several references to its shoreline in goals and policies of the Land Use and Parks and Recreation elements. In particular, development of a master plan for Ediz Hook that "improves public access to shorelines, abates deteriorating structures, and allows for expanded recreational and commercial uses" is desired. The Conservation Element of the Comprehensive Plan also includes the following shoreline goal, policies and objectives for the entire shoreline:

> ***Goal D.*** *To preserve and enhance the City's shoreline, its natural landscape, and flora and fauna and to minimize conflicts with present and planned uses in a manner consistent with the State Shoreline Management Act.*
>
> ***Policies***
>
> 1. *Shoreline areas should be preserved for future generations by restricting or prohibiting development that would interfere with the shoreline ecology or irretrievably damage shoreline resources.*
> 2. *Where possible, riparian vegetation in shoreline areas and on tributary streams, which affect shoreline resources, should be maintained and restored.*
> 3. *Where possible, techniques to rehabilitate degraded shorelines for the purpose of shoreline stabilization and habitat enhancement should be employed.*
> 4. *Where possible, aquatic habitats including shellfish habitat, and important marine vegetation should be preserved and protected.*

5. *Development patterns and densities on lands adjacent to shorelines should be compatible with shoreline uses and resources and reinforce the policies of the Shoreline Management Act and the City's Shoreline Master Program.*
6. *Where possible, urban service facilities located in shoreline areas should utilize common utility corridors.*
7. *Adequate shoreline area for water-oriented commercial and industrial development should be designated based on the Land Use Element.*
8. *Shoreline uses and activities should be located to avoid environmentally sensitive and ecologically valuable areas and to insure the preservation and protection of shoreline natural areas and resources.*
9. *Where possible, utility facilities and rights-of-way should be located outside of the shoreline area.*
10. *Shoreline ecology and resources should be protected when locating utilities in shoreline areas.*

Objective

1. *The City will update its 1995 Shoreline Master Program consistent with the Comprehensive Plan, the Shoreline Management Act, and the Growth Management Act by 2011.*
2. *The City will develop an Ediz Hook master plan that designates land uses, improves public access to shorelines, abates deteriorating structures, and allows for expanded recreational and commercial uses.*

The City's critical areas regulations (PAMC 15.20 and 15.24) were last thoroughly updated in 2004 with some minor amendments in 2008 to be consistent with Growth Management Act requirements for use of "best available science." In those regulations, Port Angeles specified stream buffers of 100 feet for Type 1 and 2 streams (shoreline and fish-bearing waterbodies), 75 feet for Type 3 streams (perennial, non-fish-bearing), and 50 feet for Type 4 streams (seasonal, non-fish-bearing). Marine bluffs have a buffer of 50 feet from the top and toe. Wetland buffers vary between 25 and 300 feet based on wetland classification and intensity of proposed land use, but apply to regulated wetlands only. The current regulations exempt certain Category II, III and IV wetlands when smaller than 2,500, 2,500 and 10,000 square feet, respectively.

Shoreline uses, developments, and activities regulated under the Critical Areas Regulations are also subject to the City's Comprehensive Plan, other regulations in the PAMC, the International Building Code, and various other provisions of City, state and federal laws. Any applicant must comply with all applicable laws prior to commencing any use, development, or activity. The City will ensure consistency between the SMP and other City codes, plans and programs by reviewing each for consistency during periodic updates of the City's Comprehensive Plan as required by State statute.

2.2 State and Federal Regulations

State and federal regulations most pertinent to development in the City's shorelines include the federal Endangered Species Act, the federal Clean Water Act, the state Shoreline Management Act, and the State Hydraulic Code. Other relevant federal laws include the National Environmental Policy Act, Anadromous Fish Conservation Act, Clean Air Act, and the Migratory Bird Treaty Act. State laws which address shoreline issues include the Growth Management Act, State Environmental Policy Act, Watershed Planning Act, Water Resources Act, Salmon

Recovery Act, the Water Quality Protection Act, Federal Emergency Management Act, Coastal Zone management Act, and tribal agreements and case law.

A variety of agencies (e.g., U.S. Army Corps of Engineers, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Washington Department of Ecology, Washington Department of Fish and Wildlife) are involved in implementing these regulations, but review by these agencies of shoreline development in most cases would be triggered by in- or over-water work, discharges of fill or pollutants into the water, or substantial land clearing. Depending on the nature of the proposed development, state and federal regulations can play an important role in the design and implementation of a shoreline project, ensuring that impacts to shoreline functions and values are avoided, minimized, and/or mitigated. With the comprehensive SMP update, the City will strive to ensure that Port Angeles' SMP regulations are consistent with other State and Federal requirements and explore ways to streamline the shoreline permitting process. A summary of some of the key regulations and agency responsibilities follows.

Section 10: Section 10 of the federal Rivers and Harbors Appropriation Act of 1899 provides the U.S. Army Corps of Engineers (Corps) with authority to regulate activities that may affect navigation of "navigable" waters. The Strait of Juan de Fuca is a designated navigable waterbody. Accordingly, proposals to construct new or modify existing in-water structures (including piers, marinas, bulkheads, breakwaters), to excavate or fill, or to "alter or modify the course, location, condition, or capacity of" marine waters must be reviewed and approved by the Corps.

Section 404: Section 404 of the federal Clean Water Act provides the Corps, under the oversight of the U.S. Environmental Protection Agency, with authority to regulate "discharge of dredged or fill material into waters of the United States, including wetlands" (http://www.epa.gov/owow/wetlands/pdf/ reg_authority_pr.pdf). The extent of the Corps' authority and the definition of fill have been the subject of considerable legal activity. As applicable to the City of Port Angeles' shoreline jurisdiction, however, it generally means that the Corps must review and approve most activities in streams, wetlands, and the Strait. These activities may include wetland fills, stream and wetland restoration, and culvert installation or replacement, among others. Similar to SEPA requirements, the Corps is interested in avoidance, minimization, restoration, and compensation of impacts.

Federal Endangered Species Act (ESA): Section 9 of the ESA prohibits "take" of listed species. Take has been defined in Section 3 as: "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The take prohibitions of the ESA apply to everyone, so any action that results in a take of listed fish or wildlife is strictly prohibited. Per Section 7 of the ESA, activities with potential to affect federally listed or proposed species and that either require federal approval, receive federal funding, or occur on federal land must be reviewed by the National Marine Fisheries Service (NOAA Fisheries) and/or U.S. Fish and Wildlife Service (USFWS) via a process called "consultation." As previously mentioned, a Corps permit under Section 10 of the Rivers and Harbors Appropriation Act is required for projects in the Strait of Juan de Fuca.

Section 401 Water Quality Certification: Section 401 of the federal Clean Water Act allows states to review, condition, and approve or deny certain federal permitted actions that result in discharges to state waters, including wetlands. In Washington, the Department of Ecology is the state agency responsible for conducting that review, with its primary review criteria ensuring that state water quality standards are met. Actions within the Strait, streams or

wetlands within the shoreline zone that require a Section 404 permit (see above) will also need to be reviewed by Ecology.

Hydraulic Code: Chapter 77.55 RCW (the Hydraulic Code) gives the Washington Department of Fish and Wildlife (WDFW) the authority to review, condition, and approve or deny "any construction activity that will use, divert, obstruct, or change the bed or flow of state waters." As applicable to the City of Port Angeles' shoreline jurisdiction, however, it generally means that WDFW must review and approve most activities in the Strait and any streams passing through shoreline jurisdiction. These activities may include pier and bulkhead repair or construction, stream alteration, and culvert installation or replacement, among others. WDFW can condition projects to avoid, minimize, restore, and compensate adverse impacts.

3 ELEMENTS OF THE SHORELINE INVENTORY & SPECIFIC CONDITIONS

3.1 Introduction

Development of a shoreline inventory is intended to record the existing or baseline conditions upon which the development of shoreline master program provisions will be examined to ensure the adopted regulations provide no net loss of shoreline ecological functions. At a minimum, local jurisdictions shall gather the inventory elements listed in the Guidelines, to the extent information is relevant and readily available. Table 1 lists those relevant inventory elements for which data is available for the City's shoreline. Areas of data gaps are listed in Section 3.3. The table also describes the information collected for each of the required inventory elements. Figures depicting the various inventory pieces listed in Table 1 are provided in Appendix B.

Table 1. Shoreline Inventory Elements and Information Sources.

Inventory Element	Information Gathered	Data Sources	Map Location
Land use patterns	Zoning	City	Maps 4A, B
	Current land use	City, County	Maps 5A, B
Surface water	Lines, discharge points, creeks	City	Maps 6A, B
Sewer	CSO locations, outfalls, lines, septic tanks	City	Maps 7A, B
Soils	Soils, wetland hydric soils	City	Maps 8A, B
Geologic hazards	Coastal slope stability	City, Ecology	Maps 9A-D
	Liquefaction susceptibility, tsunami inundation	City, DNR	Maps 10A-D
Vegetation	Terrestrial vegetation type and land cover	NOAA Coastal Change Analysis Program (C-CAP)	Maps 11A, B
	Kelp distribution	DNR	
Impervious surfaces	General impervious surface from 2001 aerial photo interpretation at 30-m resolution	USGS	Maps 12A, B
Floodplain & wetlands	Wetlands	NWI, City	Maps 13A, B
	Floodplains	FEMA	
WDFW Priority Habitats & Species	Priority fish, priority wildlife, priority habitats	WDFW	Maps 14A(1), 14A(2),14 B(1), 14B(2)
Shoreline modifications & drift cells	Overwater structures	DNR	Maps 15A, B
	Shoreline percent modified	DNR	
	Drift cells	Ecology	
Historic shoreline	Shoreline between 1864 and 2006	City, Wengler Surveying and Mapping	Maps 16A,B
Water quality	303(d)/305(b) waters	Ecology	Maps 17A, B

Inventory Element	Information Gathered	Data Sources	Map Location
impairment and regulated sites	Regulated sites	Ecology	Maps 18A, B
Marine sediment	Responsible Ecology program	Ecology	Maps 19A, B
Public access	Parks, trails	City	Maps 20A, B
	View corridors, shoreline access	Project meetings and other reference documents	
Restoration opportunities	Potential restoration actions	Strait Ecosystem Recovery Network (Strait ERN)	Maps 22A, B
		Project meetings and other reference documents	

3.2 Assessment Unit Conditions

In order to break down the shoreline into manageable units and to help evaluate differences between discrete shoreline areas, the Strait of Juan de Fuca shoreline has been divided into eleven assessment reaches based on a combination of factors, including sediment drift cells, land use and shoreline condition, and exposure as follows and as illustrated on Exhibit 1.

- Reach 1: Landfill. This reach extends east from the western City limits to the eastern edge of the landfill parcel. Off shore kelp beds occur in the waterward portion of this reach.
- Reach 2: Western City. This reach extends east from the eastern edge of the landfill to the western edge of the Nippon industrial site. Off shore kelp beds occur in the waterward portion of this reach.
- Reach 3: Outer Industrial. This reach extends east to the eastern edge of the Nippon industrial development on the north side of Ediz Hook. Off shore kelp beds occur in the waterward portion of this reach.
- Reach 4: Outer Ediz Hook. This reach extends east from the Nippon industrial development on the north side of Ediz Hook, and around the tip of the Hook consistent with a mapped drift cell boundary. Off shore kelp beds occur in the waterward portion of this reach.
- Reach 5: Inner Ediz Hook. This reach extends west along the south side of Ediz Hook to the eastern edge of the Nippon industrial development.
- Reach 6: Inner Industrial. This reach encompasses the Nippon industrial development on the south side of Ediz Hook on Port Angeles Harbor.
- Reach 7: Mill Pond. This reach consists of the old mill pond that is currently connected via a canal to Port Angeles Harbor.
- Reach 8A: Downtown – Tse-whit-zen. This reach is primarily Port-owned property that extends east from the Nippon industrial area to the western edge of Boat Haven marina.
- Reach 8B: Downtown – Marina. This reach consists of the Boat Haven marina and adjacent Port properties.
- Reach 8C: Downtown - Transition. This reach extends from the Boat Haven marina to the west side of the Valley Creek estuary.
- Reach 8D: Downtown – Mixed Use. This reach extends east from the west side of the Valley Creek estuary to the South Vine Street road end.

- Reach 9: Olympic. This reach extends east along the Olympic Discovery Trail and the adjacent wooded bluff. Off shore kelp beds occur in the waterward portion of this reach.
- Reach 10: Ennis Delta. This reach encompasses the properties which formerly housed the Rayonier Mill.
- Reach 11: Eastern City (UGA). This reach extends east from the eastern edge of the Rayonier properties and City limits to the eastern limits of the urban growth area.

Table 2 expands upon the relevant above required inventory elements, providing specific detail and data for each of the assessment units.

Table 2. Summary of Inventory by Assessment Unit.

Reach # Reach Name Reach Length (ft) Reach Area (acres)	Inventory Elements					
	Land Use Patterns	**Vegetation**	**Impervious Surfaces**	**Shoreline Modification**	**Overwater Cover**	**Critical Areas Present**
Reach 1 Landfill **1,388 feet** **6.48 acres**	**Zoning Type:** Public building – park: 100% **Existing Land Use:** City owned – closed landfill: 98% No data: 2%	Forest: 20% Palustrine wetland: 3% Grassland: 36% Developed: 4% Scrub-shrub: 18% Unconsolidated shore: 19%	<1%	The data pre-dates the recent armoring. More than 400 feet (~30%) of the reach is armored by seawall.	0	**Wetlands:** City-mapped: 51% NWI marine intertidal: 60% NWI marine subtidal: 1% **Geologically Hazardous Areas:** Modified land (fill): 18% Marine bluff: 69% Ravine: 1% **Priority habitats/species:** cliff/bluffs, abalone, red sea urchin **Streams:** Dry Creek **Floodplain:** 46%
Reach 2 Western City **9,969 feet** **46.18 acres**	**Zoning Type:** Public building – park: 30% Residential, single-family: 62% Residential trailer park: 8% **Existing Land Use:** City owned Cemetery: 6% MF mobile home: 7% Parks and open	Forest: 30% Developed open space: 2% Estuarine wetland: 1% Palustrine wetland: 1% Grassland: 2% Developed: 3% Scrub-shrub: 6% Unconsolidated shore: 54%	<1%	~77% of the reach is armored with rock. The armoring protects the Industrial Waterline.	0	**Wetlands:** City-mapped: 18% NWI marine intertidal: 10% NWI marine subtidal: 4% **Geologically Hazardous Areas:** Modified land (fill): 1% Marine bluff: 66% Ravine: 3% **Priority habitats/species:** cliff/bluffs, bald eagle nest and

Reach # Reach Name Reach Length (ft) Reach Area (acres)	Inventory Elements					
	Land Use Patterns	**Vegetation**	**Impervious Surfaces**	**Shoreline Modification**	**Overwater Cover**	**Critical Areas Present**
	space: 2% Single-family: 36% State or County exempt: 27% Undeveloped land: 13% No data: 9%					buffer, abalone, red sea urchin, geoduck offshore **Floodplain:** 28%
Reach 3 **Outer Industrial** **3,863 feet** **16.63 acres**	**Zoning Type:** Industrial, heavy: 94% Public building – park: 5% Residential, single-family: 1% **Existing Land Use:** Resources: 57% State or County exempt: 39% No data: 4%	Bare land: 86% Developed: 10% Unconsolidated shore: 3%	3%	The entire reach is armored with rock.	0	**Wetlands:** NWI marine subtidal: 22% **Geologically Hazardous Areas:** Modified land (fill): 80% **Priority habitats/species:** bald eagle, red sea urchin and abalone. **Floodplain:** 85%
Reach 4 **Outer Ediz Hook** **16,043 feet** **53.33 acres**	**Zoning Type:** Industrial, heavy: 6% Public building – park: 94% **Existing Land Use:** State or County exempt: 34% No data: 66%	Bare land: 54% Grassland: 15% Developed: 30% Unconsolidated shore: 3%	14%	92% of the reach is armored. Large stone rip-rap is maintained by USACOE.	0	**Wetlands:** NWI marine subtidal: 18% **Geologically Hazardous Areas:** Modified land (fill): 50% **Priority habitats/species:** bald eagle, red sea urchin and abalone. **Floodplain:** 100%

Reach # Reach Name Reach Length (ft) Reach Area (acres)	Inventory Elements					
	Land Use Patterns	**Vegetation**	**Impervious Surfaces**	**Shoreline Modification**	**Overwater Cover**	**Critical Areas Present**
Reach 5 Inner Ediz Hook **14,972 feet 46.80 acres**	**Zoning Type:** Commercial, arterial: 5% Industrial, heavy: 36% Public building – park: 59% **Existing Land Use:** Exempt or unclassified: 3% Indian exempt: 10% State or County exempt: 31% No data: 56%	Bare land: 54% Grassland: 17% Developed: 29%	29%	~44% of the reach is armored. The Ediz Hook Road is protected from erosion by armoring through most of its length.	5.36 acres	**Wetlands:** NWI marine subtidal: 4% **Geologically Hazardous Areas:** Modified land (fill): 7% **Priority habitats/species:** hardshell clam and abalone, harbor seal, harlequin ducks, and shorebird concentrations **Floodplain:** 99%
Reach 6 Inner Industrial **3,177 feet 10.85 acres**	**Zoning Type:** Industrial, heavy: 100% **Existing Land Use:** Resources: 29% State or County exempt: 52% No data: 19%	Bare land: 64% Grassland: 15% Developed: 21%	21%	~96% of the reach is armored	1.30 acres	**Wetlands:** NWI marine subtidal: 7% **Geologically Hazardous Areas:** Modified land (fill): 90% **Priority habitats/species:** abalone, nesting bald eagle buffer **Floodplain:** 48%
Reach 7 Mill Pond **7,189 feet 30.01 acres**	**Zoning Type:** Industrial, heavy: 59% Public building – park: 38% Residential, single-	Bare land: 40% Forest: 24% Developed open space: 6% Palustrine wetland: 4%	14%	~70% of the reach is armored. Armoring includes stone rip rap and sheet pile.	0.15 acre	**Wetlands:** City-mapped: 33% NWI estuarine subtidal: 3% NWI palustrine: 1% **Geologically Hazardous**

Reach # Reach Name Reach Length (ft) Reach Area (acres)	Inventory Elements					
	Land Use Patterns	**Vegetation**	**Impervious Surfaces**	**Shoreline Modification**	**Overwater Cover**	**Critical Areas Present**
	family: 4% **Existing Land Use:** Resources: 75% Single-family: 2% State or County exempt: 22% No data: 1%	Grassland: 4% Developed: 21% Unconsolidated shore: 1%				**Areas:** Modified land (fill): 84% Marine bluff: 15% **Priority habitats/species:** abalone, nesting bald eagle buffer **Floodplain:** 54%
Reach 8A Downtown – Tse-whit-zen **2,689 feet** **12.91 acres**	**Zoning Type:** Industrial, heavy: 100% **Existing Land Use:** State or County exempt: 43% No data: 56%	Bare land: 3% Forest: 4% Developed open space: 2% Grassland: 40% Developed: 50%	28%	The entire reach is armored	1.36 acres	**Wetlands:** NWI marine subtidal: 15% **Geologically Hazardous Areas:** Modified land (fill): 93% **Priority habitats/species:** Offshore shellfish, nesting bald eagle buffer **Floodplain:** 33%
Reach 8B Downtown - Marina **7,281 feet** **20.05 acres**	**Zoning Type:** Industrial, heavy: 76% Public building, park: 24% **Existing Land Use:** State or County exempt: 48% Undeveloped land: 15%	Bare land: 4% Developed open space: 3% Palustrine wetland: 4% Grassland: 6% Developed: 81% Unconsolidated shore: 2%	60%	The entire reach is armored	8.83 acres	**Wetlands:** NWI marine subtidal: 5% **Geologically Hazardous Areas:** Modified land (fill): 92% Marine bluff: 2% **Priority habitats/species:** Offshore shellfish **Floodplain:**

Reach # Reach Name Reach Length (ft) Reach Area (acres)	Inventory Elements					
	Land Use Patterns	**Vegetation**	**Impervious Surfaces**	**Shoreline Modification**	**Overwater Cover**	**Critical Areas Present**
	No data: 37%					15%
Reach 8C Downtown - Transition **2,344 feet 11.29 acres**	**Zoning Type:** Industrial, heavy: 100% **Existing Land Use:** Manufacturing: 7% State or County exempt: 49% No data: 45%	Developed open space: 2% Grassland: 13% Developed: 86%	61%	Ninety percent of the entire reach is armored. A segment approximately 350 of feet on the west side of the Valley Creek estuary is not armored.	4.44 acres of overwater cover	**Wetlands:** City-mapped: 13% NWI estuarine subtidal: 12% NWI marine subtidal: 3% **Geologically Hazardous Areas:** Modified land (fill): 77% **Priority habitats/species:** Offshore shellfish **Streams:** Tumwater Creek **Floodplain:** 32%
Reach 8D Downtown – Mixed Use **6,313 feet 26.11 acres**	**Zoning Type:** Commercial, arterial: 21% Central business district: 44% Industrial, heavy: 24% Industrial, light: 9% Public building – park: 2% **Existing Land Use:**	Forest: 3% Estuarine wetland: 3% Grassland: 5% Developed: 89%	60%	The entire reach is armored, with the exception of 230 feet segment of Hollywood Beach.	2.81 acres	**Wetlands:** City-mapped: 6% NWI estuarine subtidal: 4% NWI marine intertidal: 2% NWI marine subtidal: 4% **Geologically Hazardous Areas:** Modified land (fill): 90% Marine bluff: 1% **Priority habitats/species:** Offshore shellfish, common

Reach # Reach Name Reach Length (ft) Reach Area (acres)	Inventory Elements					
	Land Use Patterns	**Vegetation**	**Impervious Surfaces**	**Shoreline Modification**	**Overwater Cover**	**Critical Areas Present**
	Hotels and motels: 8% Manufacturing: 1% Offices and services: 1% Parking: 1% Retail: 3% State or County exempt: 31% Undeveloped land: 9% Water areas: 4% No data: 43%					loon, eelgrass meadow, waterfowl concentrations **Streams:** Valley Creek and Peabody Creek **Floodplain:** 71%
Reach 9 **Olympic** **3,084 feet** **14.00 acres**	**Zoning Type:** Industrial, heavy: 30% Industrial, light: 2% Public building – park: 50% Residential, single-family: 18% **Existing Land Use:** Duplexes/fourplexes: 1% Single-family: 12% State or County exempt: 16% Undeveloped land: 2% Water areas: 1% No data: 68%	Bare land: 7% Forest: 14% Estuarine wetland: 56% Grassland: 3% Developed: 18% Scrub-shrub: 2%	4%	98% of the reach is armored	.01 acre	**Wetlands:** NWI marine subtidal: 2% **Geologically Hazardous Areas:** Modified land (fill): 19% Marine bluff: 55% Ravine: 3% **Priority habitats/species:** Red sea urchin, offshore shellfish, common loon, eelgrass meadows, harbor seal **Floodplain:** 53%
Reach 10	**Zoning Type:**	Bare land: 5%	53%	61% of the	5.24 acres	**Wetlands:**

Reach # Reach Name Reach Length (ft) Reach Area (acres)	Inventory Elements					
	Land Use Patterns	**Vegetation**	**Impervious Surfaces**	**Shoreline Modification**	**Overwater Cover**	**Critical Areas Present**
Rayonier **4,051 feet** **17.65 acres**	Industrial, heavy: 98% Public building – park: 2% **Existing Land Use:** Exempt or unclassified: 29% Undeveloped land: 42% No data: 29%	Developed open space: 1% Estuarine wetland: 2% Grassland: 1% Developed: 85% Unconsolidated shore: 7%		reach is armored		City-mapped: 12% NWI marine intertidal: 4% NWI marine subtidal: 15% NWI palustrine: 5% **Geologically Hazardous Areas:** Modified land (fill): 89% Marine bluff: 1% **Priority habitats/species:** Red sea urchin, harbor seal and seal haulouts, bald eagle nest buffer, and seabird colony. **Streams:** Ennis Creek **Floodplain:** 80%
Reach 11 **Eastern City (UGA)** **11,037 feet** **50.73 acres**	**Zoning Type:** Urban low density: 3% Open space: 97% **Existing Land Use:** Exempt or unclassified: 2% Parks and open space: 1% Resources: 2% Single-family: 24% State or County	Forest: 40% Developed open space: 1% Estuarine wetland: 37% Palustrine wetland: 4% Grassland: 5% Developed: 5% Scrub-shrub: 2% Unconsolidated shore: 6%	2%	79% of the reach is armored	--	**Wetlands:** City-mapped: 6% NWI marine intertidal: 2% NWI marine subtidal: 2% NWI palustrine: 1% **Geologically Hazardous Areas:** Modified land (fill): 30% Marine bluff: 6% Unstable Slope: 10% Unstable – Recent Slide: 4%

Reach # Reach Name Reach Length (ft) Reach Area (acres)	Inventory Elements					
	Land Use Patterns	**Vegetation**	**Impervious Surfaces**	**Shoreline Modification**	**Overwater Cover**	**Critical Areas Present**
	exempt: 47% Undeveloped land: 16% Water areas: 3% No data: 6%					**Priority habitats/species:** Red sea urchin, abalone, bald eagle nests and buffers, urban natural open space, and cliff/bluff habitat. **Streams:** Lees Creek **Floodplain:** 32%

3.3 Data Gaps

Although information was obtained for vegetation and impervious surfaces, the scale and accuracy of the data may not be useful quantitatively in the cumulative impacts analysis. Otherwise, no gaps in information essential to crafting a locally relevant and Shoreline Management Act-compliant Shoreline Master Program were identified.

4 ANALYSIS OF ECOLOGICAL FUNCTIONS AND ECOSYSTEM WIDE PROCESSES

4.1 Geographic and Ecosystem Context (WRIA 18)

The City of Port Angeles is located in Clallam County and contains marine shoreline associated with the Strait of Juan de Fuca and Washington State's Water Resource Inventory Area (WRIA) 18 – Elwha-Dungeness (Exhibit 1).

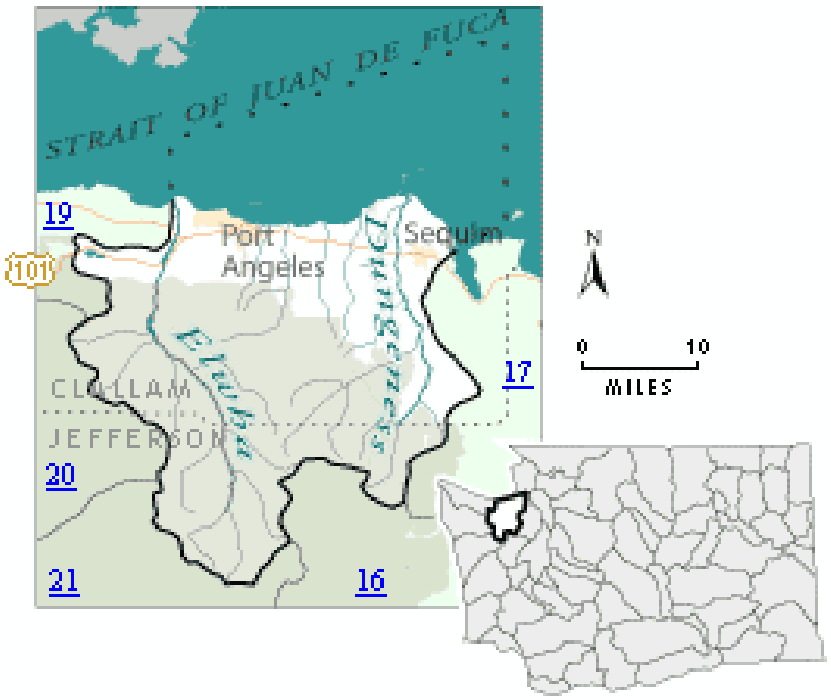

Exhibit 1. City of Port Angeles Setting in WRIA 18 – Elwha-Dungeness (http://www.ecy.wa.gov/apps/watersheds/wriapages/18.html).

Spit/marsh Complexes

The dominant feature of the shoreline area is Ediz Hook, a 3.5-mile-long natural spit that shelters Port Angeles Harbor. A spit is a depositional feature, connected to land at one end, which is formed by longshore (or littoral) drift, the migration of sediment laterally along a shoreline driven by waves approaching predominately at an oblique angle. Ediz Hook represents the terminus of a drift cell that begins near the mouth of the Elwha River to the west, though it might also receive sediments derived from the west of the river along Freshwater Bay. Ediz Hook is a spit formed by the erosion and transport of bluff sediments and the transport of fluvial sediments from the Elwha River located to the west, processes which have occurred over the course of thousands of years since the last continental glaciation. The material forming Ediz Hook consists of sand, gravel and cobbles derived from sediment eroded from bluffs immediately to the west of the spit, and from sediment carried by the Elwha River (USACE 2002).

Two of the longest spit formations in the Puget Sound region occur in the Eastern Strait sub-region, the Dungeness and Ediz Hook, Historically, both spits protected productive estuarine habitats within the lee-side embayments. While the Dungeness Spit complex remains in much the same condition as 150 years ago (not considering changes in eelgrass community and water quality conditions within Dungeness Bay), Ediz Hook has been heavily modified by at least a century of industrial development.

The Ediz Hook habitat complex comprises the spit itself, as well as a tidally-connected lagoon and marsh at its base. The spit partly envelops, and indeed is responsible for the presence of Port Angeles Harbor, a natural deepwater bay that collects drainage from several small streams along its shoreline (see the Port Angeles Harbor complex below).

In August 1862, Ediz Hook was described as "barren, the only growth is a species of Salt grass" (Henry 1862). Gilbert (1900) provided this description of Ediz Hook based on his recollection of the 1892 coast survey: "Ediz Hook is a remarkable spit of gravel and sand and only two or three feet above the highest tides..."

Gilbert described the entire spit as a "Light House reserve". A lighthouse was built near the point of Ediz Hook around 1863-1865 [Sloan 1863, Morse in Nesbit (1885), Johnson 1997]. Gilbert (1900) wrote, that without the reserve, "it is probable that considerable of the business; wharves, etc. might have gone to the base of the spit where the wharves would be shortest and the water the quietest. The best anchorage is up the middle of the Harbor in 12 to 16 fathoms of water".

The tidally accessible lagoon and fringing salt marsh at the base of the spit was shown in the earliest maps of Port Angeles Harbor, including an 1853 U.S. Coast Survey hydrographic map (Alden 1853). The August 1862 GLO survey described the mouth of the sinuous tidal channel connecting to the lagoon as 60 links (40 ft.) wide (Henry 1862). The following year, surveyors described the "soundings" (in the lagoon) as "... sufficiently deep for the accommodation of vessels to anchor in safety."

Changes to the Ediz Hook spit complex are the result of both direct and indirect impacts of human activity during the past 100-150 years. A reduction of fine sediment recruitment to the spit contributed by the Elwha River began with construction of the Elwha dams in 1910 and 1927. In 1929-30, an industrial water pipeline was buried beneath fill along 3.3 miles of shoreline beginning near Dry Creek and extending to the base of Ediz Hook.

Built over several thousands of years by sediments transported from the Elwha River and derived from coastal bluffs that occur between the river and the base of the spit, both sources have been substantially reduced by dams on the Elwha and a buried pipeline and associated armoring along the base of the bluffs.

To contend with the loss of sediment supplied to the spit and consequent erosion, the spit has been heavily armored along the windward side and a road and other structures occupy the length of the spit.

Massive modifications to the connected lagoon and associated tidal marsh at the base of the spit have resulted from a long history of industrial development. The lagoon and associated tidal marsh have been considerably reduced in size from the historical period. The historical tidal lagoon and marsh at the base of the Ediz Hook has been reduced from 27 to 11.4 hectares (Figure 3), and what remains is likely degraded by adjacent industrial activity.

A bulkhead built in the late 1950s (Shaffer et al. 2006) that protects the buried pipeline directly impacts the upper intertidal zone and disrupts natural sediment delivery from high steep bluffs. In combination, the Elwha dams and shoreline armoring have decreased

considerably the sediment supply to the nearshore and deposition to the spit (Shaffer et al. 2006), resulting in beach profile steepening and substrate coarsening of the west side of the spit and corresponding growth at the tip of the spit. Erosion of the west side of the spit has necessitated repeated bank armoring to protect a Coast Guard station. (see Haring 1999 who cites Galster 1978 and US Army Corps of Engineers 1971).

In addition to the massive bank armoring, a road, power lines, and numerous structures extend the length of the spit, reaching the end where a Coast Guard station resides. The leeward side of the spit and inner harbor has historically been used extensively for log storage in preparation for processing at Port Angeles mills (see 1942 air photo). In recent years, the beach along the south shoreline of Ediz Hook, near a documented sand lance spawning beach, has been impacted by oil spills, unpermitted wood removal, and extensive recreational off-road vehicle use (Shaffer 2003).

A restoration project took place in September-October 2003 in an attempt to remedy some of these impacts along 1,500 feet of shoreline. Measures included the removal of 50 creosote piles and railroad debris, a derelict boat ramp, and excavation of 2200 cubic yards of material. The restoration site was then re-graded, hydro-seeded with native grass, and large wood was placed along the shore (Shaffer 2003).

Ediz Hook spit/marsh complex in the sub-region historically showed surface water connectivity with adjacent open waters, however, this connectivity has been impacted since historical times. Though the complex retains a surface connection today, the degree of connectivity has been impaired.

Freshwater inputs at the base of Ediz Hook are derived primarily from seeps in the marine bluff.

The construction of dams on the Elwha River and the installation of bank protection associated with utilities along the base of the bluff just west of Ediz Hook have interrupted the process of sediment delivery to Ediz Hook, resulting in erosion. Beginning as early as 1977, rock protection and beach nourishment activities have occurred on Ediz Hook (Ebbesmeyer et al. 1979) in an ongoing effort to maintain the spit. Dams on the Elwha are being removed at the time of this writing, which have the potential to reduce the need for nourishment.

Ediz Hook protects and creates Port Angeles Harbor, the only deepwater port on the northern shore of the Olympic Peninsula, making this area attractive for industrial activity since the early 1900s. Most of these industrial activities were focused on either wood products (including pulp mills, plywood manufacturing, or whole-log export facilities) or marine uses (shipping, shipbuilding and various types of fishing) (Ecology and Environment 2008).

These industrial activities have had an impact on the habitat in the harbor. Extensive log booms have, over time, deposited a great deal of wood detritus on the harbor floor. Effluent from various mills has been discharged to the harbor (all such effluent is now treated and discharges farther out into the Strait of Juan de Fuca). Fueling storage facilities have leaked, and materials from shipbuilding and ship renovation have been spilled. One study of salmonid habitat found a strong correlation between industrial or former industrial sites and degraded salmonid habitat (Pentec 2001).

Stormwater

The City of Port Angeles Public Works Department maintains 65 miles (105 km) of stormwater mains (separate from the sanitary sewer) and provides collection and treatment of stormwater from residential, commercial, and industrial users. The stormwater infrastructure in the vicinity of the terrestrial portion of the proposed project is near capacity.

The *City of Port Angeles Stormwater Management* Plan (Economic and Engineering Services, Inc. 1996) provides extensive information on then current and planned activities to improve stormwater handling throughout the eleven drainage management areas that are, in the aggregate, roughly equivalent to the WRIA 18W area. Stormwater impacts to Valley Creek are considered severe (Haring 1999). Sixty percent of the watershed is in urban use, with fifty percent of that land in impervious surface (Tetra Tech 1988). Watershed impervious surfaces exceeding three to ten percent have been shown to cause degradation of salmonid habitat (WDFW and WWTIT 1997, as quoted in Haring 1999)."

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The City has long been engaged in a combined sewer overflow (CSO) reduction program to eliminate CSOs in the City, and currently only has four remaining CSO outfalls. These outfalls, as of 2009, experienced 30 to 100 events per year, ranging from minutes to days each, and discharging 10 gallons to 12 million gallons per event (City of Port Angeles Public Works and Utilities 2009). To comply with its National Pollutant Discharge Elimination System (NPDES) permit for wastewater, the City must reduce its CSOs so that only an average of one untreated event would occur per year. One element of the City's plan to control the remaining CSOs is the purchase of a 5-million-gallon tank located on the former Rayonier Mill property to provide increased CSO holding capacity, and connect it to the City's wastewater treatment plant (City of Port Angeles Public Works and Utilities no date). Purchase of the tank was completed in 2011. New sewer transmission pipes will be installed into the existing 48" concrete industrial waterline that follows the Port Angeles Harbor shoreline from the downtown area to the holding tank on the former mill property. The project is expected to be completed by February 2014.

Stormwater impacts to Valley Creek are considered severe (Haring 1999). Sixty percent of the watershed is in urban use, with fifty percent of that land in impervious surface (Tetra Tech 1988). Watershed impervious surfaces exceeding three to ten percent have been shown to cause degradation of salmonid habitat (WDFW and WWTIT 1997, as quoted in Haring 1999)."

The Valley Creek estuary has undergone many changes since it discharged to the harbor over an intertidal flat, shortly after passing through the bluffs (Haring 1999). A log pond occupied a large portion of the estuary for over 40 years. Around 1989, K-Ply started using cottonwood, a wood that doesn't float very long, in their manufacturing of plywood. The need for the log pond was eliminated and it became a hindrance to mill operations. Restoring the log pond to somewhat natural conditions became part of K-Ply's mitigation plan for further development and took place in 1998 (Watershed Dynamics, 1993). In 1998, an estuary was constructed with the help of the Soroptomists, the Port of Port Angeles, the City of Port Angeles, and the Lower Elwha Klallam Tribe. The estuary is 1.5 acres and is bordered by the waterfront trail and a wildlife viewing structure.

"Extensive loss and impairment of estuarine habitat has occurred along the Port Angeles shoreline. Much of downtown Port Angeles was filled with upland and nearshore dredge materials in the 1950s *(see* Table *2),* and creeks discharging to the harbor have been channelized and otherwise altered to varying degrees. All presently are lacking in significant estuarine habitat. At least 42 sites in or adjacent to shoreline jurisdiction have reported hazardous substances (see Table 2 of the Shoreline Analysis Report)".

The marine environment has been altered or affected by shoreline modification including port development and shoreline armoring, by toxic contaminants from terrigenous sources, by

dredging and filling, fishing practices, cable and pipeline installation, bridge construction, and vessel operations. These stressors can alter sediment flow within the harbor area, cause diseases in fish and wildlife, and diminish the productive capacity of plant and animal communities.

Marine shipping and oil transport are major activities in the region, where the transboundary corridor is one of the most active shipping areas in the world. The potential for chronic and catastrophic spills or contamination through air pollution plagues some of the most diverse and critical habitats in the region. Federal, state, provincial, and local governments serve as managers of these activities, coordinating scientific and management tasks through a number of forums, for example, the Environmental Coordination Committee.

Port Angeles has been designated as the pilotage station for all vessels en route to U.S. ports from the sea or departing U.S. ports to sea. Vessels desiring a pilot should proceed with caution to a point at least 1.0 mile NNE (1.5 mile NNE if a loaded petroleum tanker) of the east end of Ediz Hook where the pilot will board the vessel. There are two pilot boats, each 22 meters in length with white hulls and red deck houses. The pilot station and pilot boats are equipped with radar and AIS to locate and track vessels. Pilot boats have their own lights to illuminate the pilot ladder, but a standby light should be ready in the event of an emergency.

The waters of Puget Sound and the Strait of Juan de Fuca are environmentally sensitive and a precious environmental and economic resource. Bunkering operations, while routine in many parts of the country, do in fact pose risks different than those normally expected of standard shore to ship refueling operations. Coast Guard Sector Seattle, the State of Washington Department of Ecology and representatives of the petroleum industry have jointly developed guidelines to address those risks and ensure safe bunkering operations in the Puget Sound region.

Port Angeles is located in such a manner that seven stream drainages flow through the city and designated shoreline areas. Morse Creek flows into the Strait of Juan de Fuca just east of the Port Angeles shoreline jurisdiction. All of the urban independent streams originate in the foothills of the Olympic Mountains, a major environmental feature of the area. These small streams result in four small stream-deltas; Tumwater, Valley, Peabody, and Ennis. The streams are perennial, with base flow in most area streams is maintained by springs and seeps. Water quality in the area has been significantly affected by present levels of development and use. Valley Creek is listed as a Category 5 (303d) water body due to fecal coliform and a Category 2 water due to dissolved oxygen and bioassessment. Peabody Creek is listed as Category 5 water for fecal coliform and bioassessment. The Port Angeles Harbor near Hollywood Beach is listed as a Category 5 and Category 2 water due to fecal coliform.

Vegetation along streams reduces bank erosion and diminishes the impacts of flooding. Streamside vegetation filters nutrients and sediment from surface runoff, preventing or slowing their entry into surface or groundwater. Maintenance of stream flows is extremely important, especially during times of low precipitation. Several streams in the watershed have limited fish production because of low flows. Stream corridors within the Port Angeles regional watershed display a wide variety of conditions from densely wooded and undisturbed to heavily impacted.

Estuaries, which include the area from the uppermost limit of tidal influence within the stream to the upper intertidal line on the delta face, provide exceptionally valuable fish habitat (WSCC 1999). Abundant food supply, wide salinity gradients, and diverse habitat make them particularly valuable to salmonid and other anadromous species, providing acclimatization habitat during the transition from fresh and marine water.

Extensive loss and impairment of estuarine habitat has occurred along the Port Angeles shoreline (WSCC 1999). Prior to European settlement in the early 1900s, much of what is now downtown

Port Angeles was low-lying marine waterfront and shallow subtidal area. These areas were filled with upland and nearshore dredge materials through the 1950s. Ennis Creek, which appears to have historically discharged to the harbor over an alluvial fan and a broad intertidal flat, has been channelized by fill associated with the former Rayonier Mill. Peabody Creek presently discharges to a confined intertidal area with less than an acre of fine-grained substrate bounded by heavily armored seawall. Tumwater Creek flows in a narrowly confined channel through an industrial site and discharges directly to the harbor, with a small sandy intertidal flat that is periodically dredged. Lees Creek, in the eastern Urban Growth Area portion of the City's shoreline, and Dry Creek, on the western edge of shoreline jurisdiction, while not as significantly altered as the other streams in the shoreline area, are naturally lacking in estuarine habitat (WSCC 1999).

Valley Creek has also been impacted by development, having been culverted and filled to accommodate waterfront development. In 1998, Valley Creek was the site of an estuary restoration project that created a 1.5-acre opening in the armored Port Angeles Harbor shoreline. While it is unlikely that this project replicates historic conditions, it has likely improved salmonid habitat.

In the late 1980s, the K-Ply plywood mill at the port lost its source of cedar logs due to logging restrictions in the region, and turned to cottonwood. Loggers previously floated the cedar along the shore and into the mill's log pond; after the change, truckers shipped in the cottonwood and unloaded it at a staging area located where Valley Creek's estuary had been filled and culverted years ago, on the other side of the log pond from the mill. Moving the logs around the now useless log pond was costing the mill an extra $150,000 a year. The K-Ply mill and the Port proposed in 1993 to fill the log pond so that the staging area could be relocated there, next to the mill. State regulators insisted on mitigation for loss of the open water habitat of the log pond. Recreating the Valley Creek estuary at the to-be-abandoned staging area provided an obvious opportunity. Excavation to recreate the estuary would also provide much of the necessary fill for the log pond. The mill, the Port, and the Port's engineering consultant Parametrix, Inc. enlisted the help of the City of Port Angeles and local volunteer groups such as the Soroptimist Club (a women's service organization) and Rotary Clubs to design a restoration plan and public park. Public enthusiasm for the project was strong. Local engineering companies NTI and Polaris and the Lindberg local architectural firm donated professional services. Four years of permit negotiations and planning led to construction in late 1997.

The project involved removing nearly 400 feet of the seawall along the Port Angeles harbor, excavating a 2.8-acre estuary, filling the log pond with the spoils, removing the lower 490 feet of culvert pipe, and installing habitat enhancement features such as shading logs, beach logs, and root masses. The creek now flows from the shortened culvert in a stream-like but tidally influenced channel for its first 50 feet. It then meanders through the estuary and empties into the strait in a manner that closely resembles the original natural flow. The estuary is largely open water, with some marsh along its banks. Some of the banks are reinforced with rip-rap to prevent erosion from wave action.

The remaining 1.2 acres of the four-acre project surround the estuary in upland areas for the new park. Local volunteer groups are landscaping this area as funds become available. They have routed the Port Angeles waterfront trail around the estuary and installed a viewing tower, and are now raising funds for interpretive signage.

Marine Bluffs

Much of the Port Angeles marine shoreline is characterized by steep marine bluffs. These bluffs are located on the portion of the shoreline west of Ediz Hook and east of the downtown area. Beaches and bluffs provide critical habitat for the region's fish and wildlife. Coastal bluffs are the

primary source of beach sediment along the Puget Sound shore, and their natural erosion is critical for maintaining beaches and spits over the long term. Landward erosion of the bluff is a natural and ongoing process, which has been occurring since the retreat of the last glacier. Bluff retreat rates are highly dependent upon the nature of the substrate and the energy of the environment. In the case of the bluffs between the Elwha River and Port Angeles, the bluff is composed of easily erodible materials, in a high energy environment. Bluff retreat rates for these settings regionally range from about 3 to 18 inches per year. A reasonable approximation for the long term (hundreds of years) rate is about 6 inches per year. Bluff retreat is typically episodic, with no observable change for years or decades punctuated by loss of several to 10 or more feet in one season. (McCormack)

Riparian vegetation growing on coastal bluffs and in the backshore shades the upper beach, provides large wood to the shoreline and contributes organic material to nearshore food webs (Brennan 2007).

Beaches and associated habitats, such as eelgrass beds and salt marshes, serve as the linkage between rivers and the marine environment for migratory species such as salmon, and are important habitat for surf smelt, herring and other forage fishes (Freshy 2006, Mumford 2007, Pentilla 2007). Beaches are habitat for most of Puget Sound's shellfish (Dethier 2006).

Beaches and bluffs are critical for feeding, roosting and, in some cases, nesting of a wide variety of marine and shorebirds (see Buchannan 2006, Eissinger 2007). Rocky shores, common in the northern part of the region, serve as habitats for other species, including kelp and many valued fishes.

Extensive development on coastal bluffs and near beaches in Puget Sound and along the Strait of Juan de Fuca has placed considerable valuable property at risk from erosion and landslides. Low lying coastlines near river or stream estuaries are sensitive to flooding, to ocean erosion from storm waves, and to variation in the amount and type of sediment carried by the rivers or streams. Other stresses in coastal regions presently include loss of wetlands to development or erosion and invasion by exotic (non-native) species, particularly in coastal estuaries.

The Olympic Peninsula is renowned for its extensive conifer stands of Douglas fir, Western red cedar, Sitka spruce, and Western hemlock. The fir, cedar, and spruce are the largest tree species in the watershed. Located within the conifer stands are deciduous trees: red alder, bigleaf and vine maples, willows, and black cottonwoods. They thrive in bottom land environments, particularly alongside streams, but occasionally grow elsewhere. Many locations in the higher elevations and a few locations in the lower elevations of the watershed contain special plants and plant communities. Some plants are listed by Washington State's Natural Heritage Program as sensitive or monitor species. Vegetative cover can reduce pollutant loads, by slowing, detaining, or even absorbing water containing quantities of bacteria, chemicals, sediment, and even heavy metals.

Many different mammals, amphibians, reptiles, birds, and insects use one or more habitats found within the watershed. Marine mammals commonly found near the shoreline include sea and river otters (also in rivers and streams), harbor seals, gray whales, and harbor porpoises. Cavity nesting ducks found in the watershed feed on animal matter in wetlands and require snags and emergent/woody vegetation in swamps. Buffers areas with large trees and woody vegetation for breeding and rearing of their young are beneficial. Many other species of birds either live entirely in the watershed or use it as a resting/feeding area during annual migrations. Many shore birds use the Port Angeles regional watershed shoreline to feed during spring and fall migrations.

Marine Waters

Port Angeles regional watershed provides habitat for a variety of marine and freshwater fishes. The marine shoreline of most of the watershed is fairly steep with large cobble and rock. Nearshore habitats are important nurseries for many kinds of juvenile fish. Many commercially and recreationally important species of shellfish are found immediately offshore of the Port Angeles regional watershed. Dungeness crab, shrimp, sea cucumbers, and red sea urchins are the primary species harvested. Other species found and harvested to a limited extent are octopus, green sea urchins, squid, and pink shrimp. Subtidal commercial concentrations of geoducks and hardshell clams occur in the Strait.

Historically, the Port Angeles Harbor was a site of shellfish harvest by indigenous peoples. Port Angeles Harbor is now classified as prohibited for shellfish harvest by DOH, due to the limited intertidal areas and the nearness of pollution sources in the harbor. Regardless of their commercial harvestability or fitness for human consumption, shellfish serve an important ecological function. They filter pollutants from water, and are a food source for other creatures, such as birds, waterfowl, and marine mammals. Port Angeles Harbor is on the State 303(d) list for water bodies with limited water quality due to levels of dissolved oxygen in water and PCBs in edible fish. Net pens in the harbor are currently utilized for the commercial production of salmon.

The Port Angeles regional watershed has a wealth of wetlands which contribute to the overall health, diversity, and function of the area. Three hundred sixty-six (366) wetlands are mapped in the Port Angeles regional watershed. The estimated acreage of deepwater in the watershed is 633 acres. Wetlands cover about four (4) percent (3,043 acres) and additional hydric soils four (4) percent (2,696 acres) of the total acreage of the watershed. Together, wetlands and additional hydric soils make up eight (8) percent of the watershed. The vast majority of wetlands are classified in the palustrine system.

Common plants in wetland areas include mosses, wire grass, reeds, cattails, rushes, willows, sedges, and many other water-loving plants. According to the Washington Natural Heritage Program, the Olympic Peninsula has the greatest diversity in kinds of wetlands of any place in western Washington, and Peninsula wetlands support more rare plants than any other part of the State.

Groundwater withdrawals for both industrial and domestic use occur in the watershed (Morse Creek, Elwha River). Aquifers are naturally recharged by precipitation falling over a region, and by surface water infiltration. In the Port Angeles watershed, most recharge may be attributed to fractured rock areas in the mountains (especially since precipitation is greater in the higher elevations) and flat areas with gravel or alluvial deposits. Because it is an “invisible” resource, we know little about the quantity of water available for beneficial uses, about the quality of water underground, or how it moves through the watershed. Available groundwater quality information for the watershed is limited to monitoring conducted at active and inactive landfills, and that conducted by public water systems utilizing wells.

Characterizations of the shoreline and beaches in the Eastern Strait sub-region are difficult to find prior to large-scale industrial development that began in earnest during the late 1800s in Port Angeles. The beach from Port Angeles to the bluff was described early in the 1900s as a "narrow sand or pebble beach at low water" (Dibrell 1908).

Even without detailed descriptions of the pre-development shoreline, we are certain that shoreline conditions have been heavily modified in a large segment of the Eastern Strait sub-region. This is

the case from Dry Creek to Morse Creek (see Figure 1), which is nearly entirely armored, most resulting in fill being placed well seaward of the historical high tide line. This shoreline development is associated with industrial, commercial, and transportation activities that had taken shape by WWII. The current shoreline at the former Rayonier site is approximately 200 feet north of the natural shoreline.

Armoring that protects a buried water pipeline that runs from Dry Creek to the base of Ediz Hook, industrial development along the entire shoreline of Port Angeles, and a railroad grade that runs from near Morse Creek to Port Angeles are the major marine shoreline modifications in the region.

In striking contrast, most of Freshwater Bay and the long stretch of shoreline extending from just east of Morse Creek to the Dungeness Spit are considered intact, or at least much less altered compared with the remainder of the Eastern Strait. In many respects these shorelines probably function physically much as they did 150 years ago. Indeed, some have suggested the stretch between Morse and Dungeness Spit as a reference shoreline when comparing it with the modified shoreline occurring just west of Ediz Hook.

4.2 Environmental Contamination Conditions

This section discusses the potential for environmental contamination to be present in and near the Port Angeles Area shoreline. This section identifies sites and measures to limit impacts from environmental contaminants during development.

Environmental contamination may result from a release of hazardous substances. Hazardous substances are materials that present a threat to human health or the environment if released into the environment, and are defined by Washington State Chapter 70.105 RCW and the Model Toxics Control Act regulations (MTCA, Chapter 173-340 WAC). A release may occur when hazardous substances are introduced to media such as soil, surface water, groundwater, and aquatic sediment. A site is defined (Chapter 173-340 WAC) as an "…area where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, placed, or otherwise come to be located". When a release of a hazardous substance is identified, it must be reported to the Washington State Department of Ecology (Ecology) pursuant to the MTCA regulations. Once evaluated, the site is included in one or more of the databases maintained by Ecology (Ecology 2010a).

A second source of marine contamination in Port Angeles Harbor is the result of log storage practices. Several areas of seabed in the Harbor are covered with wood waste. The depth exceeds 3 feet of depth in some areas. No detailed inventory of the extent of wood waste is available.

The existence of wood waste has resulted in the loss of aquatic vegetation and habitat. Several areas of the Harbor floor have been described as "dead zones" or "moonscapes" by local dive enthusiasts.

Remediation of environmental contamination in upland areas may be addressed under MTCA as an independent action or under a legal agreement with Ecology, such as an Agreed Order. In aquatic or marine areas, remediation of sediments may also be addressed independently or under a legal agreement, and sediment remediation activities will be guided by the Ecology's Sediment Management Standards (SMS, Chapter 173-204 WAC). In shoreline areas, both the SMS and MTCA regulations may apply.

Development in marine areas may include in-water activity such as dredging, pile driving, shoreline stabilization, and other activities. The Dredged Material Management Program (DMMP) represents a coordinated inter-agency [U.S. Army Corps of Engineers - Seattle District (USACE); U.S. Environmental Protection Agency - Region 10 (EPA); Ecology, and Washington Department of Natural Resources (DNR)] approach to evaluate conditions at proposed dredge locations and manage disposal of dredged materials. The process includes sampling and analysis to assess potential sediment contamination conditions, review and reporting of results, and preparation of a suitability determination for dredging and in-water disposal site use.

4.2.1 Upland Sites in the Shoreline Zone

Sites that are in or adjacent to the shoreline area identified by Ecology, where hazardous substances have been reported, are shown on Maps 18A-18D. Table 3 provides an inventory of locations in and near the shoreline where a release of hazardous substances has been reported. The locations of the selected sites presented in this section are located both near the shoreline and south to approximately U.S. Highway 101. The information on properties with reported environmental conditions presented in this section was obtained from Ecology databases. The listings were confirmed using an Environmental Data Report for the vicinity of Port Angeles (Ecology 2010a).

Table 3. Sites in or adjacent to shoreline jurisdiction with reported hazardous substances.

Map ID	Site Name	Contaminants/Status	Permit/Ecology Agreed Order (as applicable)
1	Port Angeles Landfill	Solid Waste Landfill, Cell Closure completed, Post-closure monitoring.	CCEHS Solid Waste Post Closure Permit SLW-08-001
2	Daishowa America; Nippon Paper Industries	CSCSL, ICR: confirmed TPH & phenolic release to soil, groundwater, and surface water; with status of "awaiting RA".	
3	Levaque Co Inc Port Angeles Shingle	LUST: TPH release	
4	Unocal #0601	TPH release from former bulk storage facility, refer to Ecology website for additional details.	AO# DE 4086
5	Marine Trades Area (MTA)	TPH release from former bulk storage facility, refer to Ecology website for additional details.	AO# DE 03TCPSR-5738
6	Port Angeles Port	LUST: TPH release	
7	Chevron Bulk Plant 61001372, Pettit Oil Company Port Angeles WHS	CSCSL: TPH release to groundwater, status is "RA in progress"	
8	ITT Peninsula Plywood Corp	LUST: TPH release, reported cleaned up. Formerly and currently Peninsula Plywood.	
9	K-Ply	Hydraulic oil spill. Formerly and currently Peninsula Plywood.	RAO# DE 90S255
10	Tire Town Kolk	LUST: TPH release to soil, status is	

Map ID	Site Name	Contaminants/Status	Permit/Ecology Agreed Order (as applicable)
		"cleanup started"	
11	436 Marine Drive Property	LUST: TPH release to soil	
12	Marine Drive Exxon and Grocery	ICR: TPH release to soil	
13	Fuds Port Angeles AAF	CSCSL: suspected release of TPH, base/neutral/acid organics, metals & cyanide into soil	
14	Jackpot Foodmart 356	LUST, VCP: TPH release to soil and groundwater, NFA date is 3/20/2001	
15	Armory Square	VCP: chemical and medium not reported, NFA date is 1/12/2001	
16	City of Port Angeles, PW Dept	SPILLS: TPH release	
17	AT&T Port Angeles	NFA: chemical and medium not reported, NFA date is 7/26/06	
18	Richard J Nichel	NFA, ICR: TPH release	
19	City Parking Lot – Port Angeles	ICR, NFA: TPH release to soil	
20	Port Angeles Gull 275	TPH release to groundwater and soil	
21	Alpine Realty Jiffy Cleaners Safeway	VCP: chemical and medium not reported	
22	Lincoln Square Apartments	SCS, VCP: chemical and medium not reported	
23	Sadler Mobil	LUST: TPH release	
24	Stoddard Property	LUST: TPH release	
25	Habit Cleaners	LUST: TPH release	
26	Port Angeles City Senior Center	VCP: chemical and medium not reported	
27	Exhaust Shop of Port Angeles	LUST: TPH release to soil, reported cleaned up	
28	Albert Substation	VCP: chemical and medium not reported	
29	Rudy's Automotive Inc.	TPH release to soil, final cleanup report received	
30	Port Angeles Rayonier Mill Site	Former pulp mill, for details on contaminants and medium, refer to Ecology website.	AO# DE 6815
31	FIRST & RACE CAR WASH	LUST: TPH release to soil, final cleanup report received	
32	CHEVRON 90089	LUST: TPH release	
33	OLYMPIC MEDICAL CENTER	SPILLS: chemical and medium not reported	
34	St Marys Texaco	LUST: TPH release	
35	Nebert Brothers Inc.	VCP: chemical and medium not reported	
36	Berts Small Car	LUST: TPH release,	

Map ID	Site Name	Contaminants/Status	Permit/Ecology Agreed Order (as applicable)
	Repair		
37	Truck Town 1921 Hwy 101	SCS, VCP: chemical and medium not reported	
38	Jiffy Lube 793	VCP, LUST: TPH release	
39	Quality 4x4	SCS: chemical and medium not reported	
40	Ediz Hook Drum II	VCP: suspected TPH release to sediment; TPH release to soil and groundwater; TPH "remediated" in soil and groundwater and "RA in Progress"	
41	Ediz Hook Salmon Club	LUST: TPH release	
42	USCG Air Station	ICR: TPH release to groundwater and soil, received interim cleanup reports	

Abbreviations and Ecology Data Base Acronyms:

TPH = Total Petroleum Hydrocarbons
LUST = Leaking Underground Storage Tank
CSCSL = Confirmed and Suspected Contaminated Site List
VCP = Voluntary Cleanup Program
ICR = Independent Cleanup Report
RA = Remedial Action
SPILLS = Ecology sites database
SCS = State Cleanup Site
NFA = No Further Action

Five cleanup sites and one sediment investigation are identified in the Port Angeles shoreline zone that are managed by Ecology using either legal agreements, a landfill permit, or, in the case of the Port Angeles Harbor Sediment Study, managed as an active Ecology-led investigation under the Puget Sound Initiative. Maps 18A-18D show the boundaries of sites listed in Agreed Orders and Solid Waste Permits. Table 1 includes these upland sites, which are, from west to east, the Port Angeles Landfill, the Unocal Bulk Plant, the Marine Trades Area, the K-Ply Mill site, and the Rayonier Mill site. The Ecology Port Angeles Harbor Sediment Study, an on-going investigation of marine sediment conditions, may at some point be connected to a strategy, marine cleanup action(s), and upland source control and clean up actions as summarized below.

4.2.2 Marine Aquatic Conditions

Port Angeles Harbor is one of several Puget Sound bays being targeted for priority cleanup by the Puget Sound Initiative (Ecology 2010b). As part of the cleanup, Ecology has focused on source control, sediment cleanup, and restoration. Various locations in the Harbor are classified as Category 5 (significant impairment that requires development of a Total Maximum Daily Load (TMDL)) for sediment bioassay. Ecology started an investigation of aquatic sediment conditions and will develop a strategy for cleanup of the harbor. The contaminants and deleterious substances in Port Angeles Harbor that Ecology reports may pose a threat to human health and the environment are pilings with creosote, dioxins and furans, polychlorinated biphenyls (PCBs), and wood debris accumulations. These contaminants and deleterious substances can impact aquatic habitat and the quality of fisheries and shellfish.

Map 19 in Appendix B shows locations of environmental samples in the vicinity of Port Angeles Harbor that are being considered by Ecology in conjunction with the Port Angeles Harbor Sediment Study (Ecology 2010b). The evaluation of data from the investigation, determination of cleanup levels, strategy for cleaning up the harbor, and implementation of source control measures have not been completed.

Contaminants may move to the marine environment through several pathways. Some may be deposited directly from past industrial practices and/or spills. Contaminants may be associated with both residential and commercial activities, and some may be associated with permitted industrial outfalls. Stormwater can dissolve and/or transport substances and soil that are exposed during storms, and may flow directly or indirectly to the harbor. Groundwater contamination can move toward and discharge to marine water or sediments directly, or into adjacent creeks that flow to the harbor. Control of the sources of contaminants is an important element of the future harbor cleanup and the health of the shoreline zone and marine environment.

In addition to the sediment contamination, the water column has also been adversely impacted. The waters of Port Angeles Harbor are in various places designated as Category 5 for fecal coliform and dissolved oxygen. Sources of water column contamination include stormwater runoff from the immediately adjacent industries and other basin developments, waterfowl (fecal coliform), combined sewer overflows (CSOs), and faulty septic systems (fecal coliform) outside of the City (Ecology and Environment 2008).

An additional source of impairment is the substantial areas of sunken logs and wood waste on the bottom of the Port Angeles Harbor that were a byproduct of the various wood-based industries (saw mills, pulp and paper mills, and plywood). Intact logs may be present in sediment and may be able to be reused in stream rehabilitation projects if they can be recovered. Concentrations of wood waste are found in the embayment on the west side of the Rayonier properties, along the west and northwest sides of the Harbor, and in front of the Boat Haven marina. Decomposing wood waste has high biological oxygen demand, lowering dissolved oxygen in the area to nearly anoxic levels and potentially releasing hazardous substances during decomposition. The wood waste also essentially forms a blanket over the benthic habitats, making them inhospitable to invertebrates and other aquatic organisms (Ecology and Environment 2008). Finally, the amount of wood debris may present impediments to dredge material disposal based on a high percentage of included wood debris.

4.3 Geology

The surficial geologic units in the vicinity of the City of Port Angeles shoreline were interpreted from the *Geologic Map of the Port Angeles and Ediz Hook 7.5-minute Quadrangles, Clallam County, Washington* (Schasse et al. 2004) and data from shoreline area explorations. The geology of the northern Olympic Peninsula has been shaped by various glacial advances and retreats, as well as by subsequent sedimentation and recent filling and industrial-related land modification of the shoreline. A substantial portion is historical beach along the Port Angeles Harbor that was filled in the past.

General descriptions of the primary geologic units that are identified on the above-referenced geologic map as being present at, or in the vicinity of, the City of Port Angeles shoreline are presented below.

4.3.1 Fill and Modified Land

Much of the City of Port Angeles shoreline is mapped as either fill or modified land that consists of fill material (described as consisting of soil, sediment or other material including demolition rubble) that was locally reworked by excavation and/or redistribution to modify topography or protect the shoreline from erosion. The fill and modified land along the City of Port Angeles shoreline primarily consists of fill associated with historical and recent industrial development and is held in place by shoreline armoring in the form of large stone rip rap.

Armoring modifies the natural transition between terrestrial and aquatic ecosystems. This can affect movement of materials and organisms between systems, reduce the quality of riparian functions, and introduce discontinuities to this narrow ecotone and ecological corridor. Structures also tend to result in alterations to the pattern of natural drainage to the beach.

One measure of the amount of modified land is the amount of shoreline change. Map 16, which was adapted from information obtained from the Port of Port Angeles, shows historical shorelines as development progressed since the late 1800s.

4.3.2 Beach Deposits

Beach deposits are mapped along portions of the City of the Port Angeles shoreline. These deposits are described as generally consisting of sand and cobbles that may include silt, pebbles and boulders.

4.3.3 Mass Wasting and Landslide Deposits

Mass wasting and landslide deposits are mapped along the lower portions of the marine bluffs and ravines that are present along the City of Port Angeles shoreline. These deposits are described as generally consisting of loose boulders, gravel, sand, silt and clay that are generally unsorted but may be locally stratified. These deposits occur at the bases of slopes that are potentially unstable.

Factors Affecting Slides

The occurrence of landslides is governed by numerous factors, though geology, hydrology, and slope steepness are the most significant. Most landslides on Puget Sound occur in response to either heavy precipitation or elevated groundwater conditions (Thorsen, 1987). Different rainfall regimes may lead to different kinds of slides, reflecting the ability of heavy precipitation to saturate shallow soils or of extended wet periods to lead to a rise in regional groundwater levels. During the winter of 1996-1997, two major episodes of landsliding followed heavy rainfall, a majority of which were relatively shallow failures. In contrast, during the winter of 1998-1999, shallow landslides were infrequent, but prolonged wet conditions led to the reactivation of numerous large, deep-seated landslides (Shipman, 2001).

The geology of the bluffs affects the geotechnical properties of the bluff soils, but its most significant impact on stability appears to be stratigraphic and hydrologic. Most landslides in the region occur where permeable sand and gravel units lie directly on top of less permeable silts and clays, allowing a perched water table to develop and soils to become locally saturated (Tubbs, 1974). The most common scenario is where advance outwash overlies proglacial lakebed clay. Groundwater percolates downward in the porous outwash and laterally toward the bluff face along the contact with the finer grained underlying material. When water levels rise, increased pore pressures lead to weakness and failure. Similar geologic conditions exist where glacial sediments overlie bedrock and where recessional outwash is found above impermeable glacial till.

Steeper slopes are generally more prone to failure as gravitational stresses are greater, but variations in rock strength and differences in hydrologic conditions make it difficult to predict landslides based on slope alone. On coastal bluffs, erosion of the toe by wave action ultimately leads to steepening of the slope and the increasing likelihood of failure, but whereas toe erosion is a relatively slow process on most Puget Sound bluffs, landslides typically occur in response to transient increases in groundwater or soil saturation. As a result, wave action and undercutting may set the stage for future slope failures but rarely precipitate landslides. The common practice

of constructing shoreline bulkheads to prevent coastal bluff erosion often overemphasizes the role of waves in determining slope stability

Human-induced Erosion

The third driver of bluff erosion is human-induced erosion, which comes in many forms. Bluff erosion can be exacerbated and initiated by overloading the top of a bluff, cutting into the toe of the slope, grading and removing stabilizing soil, removing dunes and vegetation and, most importantly, adding water (Emery and Kuhn 1982, Shipman 2004).

Common problematic water additions include increased surface water runoff resulting from impervious surfaces, vegetation removal, and poorly designed drainage, lawn watering, and septic tank leach lines.

Surface water volumes often increase and become more concentrated as a result of housing and road development, causing decreased infiltration and interception of water (Montgomery et at. 2000). Concentrated surface water can locally erode bluff crests and saturate soils, which exacerbates slope stability problems and can trigger. Landslides (Shipman 2004).

Runoff flowing down a driveway and rapidly across a lawn (which can absorb little water when wet) as sheet flow to the bluff face is an example of this process. Failed tightlines on a bluff face (constructed out of low strength corrugated pipe) have often contributed to initiating coastal landslides. Overall, more than 70 percent of slope failures that occurred during the heavy rainfall events in Seattle in 1997 were at least partially due to human actions (Shannon and Wilson 2000).

4.3.4 Alluvium

Within the City of Port Angeles shoreline area, alluvium is mapped along both sides of creeks. This unit is described as typically consisting of loose, variably sorted, bedded gravel, sand, silt, clay and peat that was deposited in stream beds and estuaries and on floodplains. Alluvium may also include lacustrine and beach deposits.

4.3.5 Recessional Outwash and Glaciomarine Drift

Recessional outwash and glaciomarine drift are mapped along the higher portions of the bluff along the City of Port Angeles shoreline. Recessional outwash is described as typically consisting of loose, well rounded, generally well sorted, mostly stratified gravel, sand, silt and clay that was deposited by glacial meltwater (as opposed to nonglacial streams). The recessional outwash locally grades up into, or interfingers with, post-glacial alluvium. The glaciomarine drift is described as consisting of pebbly silt and clay with discontinuous layers of silty sand that is weakly stratified to nonstratified.

4.4 Geologic Hazards

Washington's Growth Management Act (GMA) (Chapter 36.70A RCW) requires all cities and counties to identify critical areas within their jurisdictions and formulate development regulations for their protection. Among the critical areas designated by GMA are geologically hazardous areas defined as such because of their potential susceptibility to landsliding, erosion, seismic or other geologic events, or because of their past use (e.g., landfill). These areas may not be suited for development consistent with public health and safety without conducting specific studies during the design and permitting process.

The City of Port Angeles Municipal Code (PAMC) (15.20.030) defines geologically hazardous areas and the City has developed a map of the geologically hazardous areas. In general, before development is allowed in or immediately adjacent to mapped geologically hazardous areas, detailed geotechnical studies must be conducted as part of the permit process to address specific standards relating to site geology and soils, seismic hazards and facility design.

A discussion of potential geologic hazards along the City of Port Angeles shoreline is provided below.

4.4.1 Flooding Hazards

Flooding of lowland areas by storm precipitation runoff, snow melt and/or storm tides, is one of the most common natural hazards. Furthermore, floods throughout the world are historically responsible for the greatest economic losses due to natural hazards. Consequently, the utilization of land located in close proximity to marine shorelines, rivers and creeks must take into consideration the natural geohydrologic principles and geologic processes that are at work in order to limit the potential for economic loss associated with flooding.

Creeks flow north off the flanks of the forested uplands to the shoreline in the Port Angeles vicinity (USGS 1965, photo revised 1985). Existing grades are such that portions of the creeks near the marine shoreline (some designated as within the 100-year floodplain) could flood during extreme storm events or as a result of rain-on-snow events. Depending on future grading activities and storm events, other portions of the City of Port Angeles shoreline could also be vulnerable to flooding.

The long-term effects of climate change on the coastal zones of the Pacific Northwest are likely to be similar and even more serious than those climate impacts already felt in the region. Port Angeles' shoreline armoring generally may be said to have served to protect the City's low lying elevation areas from coastal high water events in the past. An anticipated acceleration of regional sea level rise has been predicted. Expected changes in the frequency and intensity of storms may change both the frequency and magnitude of storm surges.

Beaches and bluffs currently armored are expected to have increased water depths and be subject to greater wave energy, storm run-up, beach loss, and probability of structural damage, requiring construction to repair and improve structures (Bray and Hooke 1997). Soft shore protection strategies are recommended for mitigating sea level rise, as hard protection does not respond to the fundamental problem of diminishing sediment sources (Neumann et al. 2000).

Additional implications of global climate change result from warmer ocean conditions, including more frequent and greater magnitude storm events, increased precipitation, and more frequent and longer lasting El Nina(s). Sea level rise (SLR) due to El Nino often results in increased frequency and magnitude of coastal erosion, increased precipitation and storm surge flood events (Canning 2001). Allen and Komar (2002) have documented a progressive increase in winter wave heights and periods in the Pacific Ocean off the coast of Washington and Oregon over the past 25 years. This suggests that increases in wave energy may also be attributed to global climate change.

Management Implications

In most cases, the impacts of SLR can be mitigated by forward-looking state or local land-use policies. A major obstacle that must be overcome includes improving our integration of

these concepts into Puget Sound socio-economic and environmental context, as well as the accessibility and application of the science by state and local decision-makers who are most able to prepare coastal areas to respond to the threat of sea level rise (Neumann et al. 2000).

4.4.2 Landslide Hazards

Landslide hazard areas may be prone to landslides and/or subsidence that could include movement of soil, fill, rock or other geologic strata. Specific landslide hazard areas may include, but are not limited to, the following.

- Slopes that rise at an inclination of 40 percent or more (typically with a vertical change in elevation of at least 10 feet)
- Slopes that are parallel or subparallel to planes of weakness in subsurface materials
- Marine bluffs along present and historical shorelines of Port Angeles Harbor
- Areas mapped as unstable in the 1978 Coastal Zone Atlas of Washington.

The degree of potential sloughing and sliding varies with the steepness, height groundwater conditions, and potential planes of weakness of the slope. Steeper, higher slopes are more likely to create larger slides, whereas shorter slopes tend to produce smaller surficial sloughs. Slopes that are susceptible to movement under non-earthquake (static) conditions also present a hazard under earthquake (dynamic) loading conditions.

In the vicinity of the City of Port Angeles shoreline, the stability of the bluff along Port Angeles Harbor west of Ennis Creek is mapped in the Coastal Zone Atlas of Washington as intermediate. East of Ennis Creek, and west of Ediz Hook, the bluff is mapped as unstable. These areas of intermediate and unstable slopes generally coincide with the areas mapped as marine bluff and ravine on Maps 9A through 9D. Consequently, a moderate landslide potential that could affect existing development and future redevelopment may exist along the bluffs that are located within the limits of the shoreline area.

4.4.3 Erosion Hazards

Erosion hazard areas are defined as those areas containing soils that may experience severe to very severe erosion from construction activity. The susceptibility to erosion is generally a function of soil type, topography, occurrence of groundwater seepage or surface runoff and the built environment. Certain soil types along the City of Port Angeles shoreline may be susceptible to erosion when disturbed by construction activities, or when exposed to wave and tidal processes, particularly on slopes exceeding 15 percent. This potential erosion hazard primarily applies to the bluff and steeper slope areas (see Maps 9A through 9D).

4.4.4 Seismic Hazards

General

Seismic hazard areas are generally defined as those areas subject to severe risk of earthquake damage as a result of ground shaking, ground rupture, soil liquefaction or tsunamis. Ground shaking can occur far from the earthquake source; ground rupture typically only occurs near the active fault trace; liquefaction requires a certain combination of soil and groundwater conditions at the site; and tsunamis can occur far from a fault rupture or massive landslide in a water basin.

The U.S. Geological Survey (USGS) and other researchers continue to evaluate the presence and potential effects of fault systems in the Pacific Northwest that could affect seismic hazard

assessments. Accordingly, seismic hazard assessments conducted during the design phase of future shoreline improvements should use USGS seismic hazard maps and data that have been updated to reflect potential ground shaking from nearby fault systems.

Ground Shaking and Ground Motion Amplification

The entire Puget Sound and Strait of Juan de Fuca region lies within a seismically active area, and moderate to high levels of ground shaking should be anticipated during the design life of structures constructed along the City of Port Angeles shoreline. Portions of the shoreline are underlain by deposits of relatively soft to loose soils that may amplify earthquake ground motions at various frequencies. Consequently, the near-surface soils along the shoreline could affect the level of earthquake ground shaking felt in the area. In addition, certain soil deposits along the shoreline may be subject to ground motion amplification and subsequent liquefaction during a significant earthquake event.

Ground Rupture

The Puget Sound and Strait of Juan de Fuca region contain numerous fault zones. The Lower Elwha Fault thrust fault, located approximately 1 mile south of Port Angeles, is currently considered the closest reported fault zone (Schasse et al. 2004). However, due to the distance between the City of Port Angeles shoreline and this fault zone, it is unlikely that ground rupture would occur along the shoreline. Therefore, it is anticipated that design against ground surface rupture along the shoreline during a seismic event will not be a significant part of the site-specific seismic design for future improvements.

Liquefaction and Lateral Spreading

When shaken by a significant earthquake, certain soils lose strength and temporarily behave as if they were liquid. This phenomenon is known as liquefaction. The seismically-induced loss of strength can result in loss of bearing capacity for shallow foundations, reduction in vertical and lateral capacities of deep foundations, downdrag forces on deep foundations, ground surface settlement, embankment instability, sand boils, and lateral spreading. Seismically-induced liquefaction typically occurs in loose, saturated, sandy material commonly associated with recent river, lake and beach sedimentation. In addition, seismically-induced liquefaction can occur in areas of loose, saturated fill.

The Washington State Department of Natural Resources (WDNR) Division of Geology and Earth Resources has published liquefaction susceptibility maps for Washington. The results of the WDNR study (Palmer et al. 2004) entitled *Liquefaction Susceptibility Map of Clallam County, Washington* indicate that the filled shoreline areas of Port Angeles have a high liquefaction susceptibility, whereas the remainder of the shoreline has a very low to moderate liquefaction susceptibility (see Maps 10A through 10D).

The depth and extent of potentially liquefiable soil deposits depends on specific soil and groundwater conditions and could be highly variable along the City of Port Angeles shoreline. The actual magnitude and extent of soil liquefaction will depend on many factors, including the duration and intensity of the ground shaking during the seismic event and specific soil and groundwater conditions. At this time, it is anticipated that the filled shoreline area of Port Angeles will be vulnerable to the effects of liquefaction. Therefore, a site-specific liquefaction analysis would need to be conducted during the design process for specific site improvements in order to estimate the expected impact due to soil liquefaction (and lateral spreading) and evaluate potential mitigation measures.

Tsunamis

Tsunamis are earthquake-generated waves that occur in open water bodies. A tsunami can be generated by permanent ground displacements in a water basin caused by a fault rupture (or landsliding). The extent and severity of a tsunami will depend on many factors, including site location and elevation, fault offset, ground motions and tide stage. A tsunami could be generated by a large earthquake in the Pacific Ocean basin.

WDNR's Division of Geology and Earth Resources and the National Oceanic and Atmospheric Administration (NOAA) have published estimates of tsunami inundation in the Port Angeles Harbor area based on a computer model of ground deformations and waves that may be generated by two different scenario earthquakes, both moment magnitude 9.1, on the Cascadia Subduction Zone. The results of the WDNR and NOAA modeling study (Walsh et al. 2002), entitled *Tsunami Inundation Map of the Port Angeles, Washington, Area,* indicate that under Scenario 1A (the worst case scenario), the entire northern portion of Port Angeles shoreline may experience inundation as a result of a tsunami (see Maps 10A through 10D.

It should be noted that the study acknowledges certain limitations, with the largest source of uncertainty being the initial deformation of the earthquake, which is poorly understood. Additionally, the model does not include the influences of changes of tides, and tide stage and tidal currents, all of which can amplify or reduce the impact of a tsunami at a specific site. Thus, the study states, "While the modeling can be a useful tool to guide evacuation planning, it is not of sufficient resolution to be useful for land-use planning."

The dominant wave period of 25 seconds and significant wave height of 3.5 m from the summary plot statistics of Station 46088, New Dungeness, WA were used in a simple swell model. Ediz Hook does shelter the project site (the Port Angeles waterfront) from Pacific Ocean swell. The average swell height of 1.5 m with the average swell period of 10.2 seconds from the summary plot statistics for Station 46088, New Dungeness, WA were also modeled with the same result of having no impact inside Ediz Hook. Therefore, the average and large Pacific Ocean swell do not need to be part of design criteria." (**Coastal Geologic Services' report** on waves and wind conditions affecting Port Angeles, completed as part of research for the Waterfront Transportation Plan:)

4.5 Sea Level Rise

A recent study by the University of Washington Climate Impacts Group and Ecology (University of Washington Climate Impacts Group and Washington Department of Ecology 2008) suggests that on the northwest Olympic Peninsula, very little relative sea level rise during the 21st century will be apparent due to estimated rates of tectonic uplift that currently exceed projected rates of global sea level rise. Therefore, over the next 90 years, the apparent sea level in Port Angeles Harbor may rise by between 0 and several feet over current levels. This study relied on the 2007 IPCC report that are now considered very questionable given that they did not include a contribution to SLR from global ice melt, which is now viewed as a potentially significant contributor to overall rates of global sea level rise.

Sea level rise may prove to have profound implications for stream delta and spit/marsh complexes is the risk to tidal wetland habitat from sea level rise given global climate change projections (see Snover et al. 2005). Habitat complexes that occur immediately adjacent to steep topography or where encroachment from human infrastructure or fill has taken place, would likely be at greater risk of habitat loss through erosion and inundation of wetlands than complexes that are adjacent to relatively flat topography and those relatively free of human encroachment.

Sea level rise could have important implications on coastal erosion and sediment processes that might at least partially offset the erosion or inundation of down-drift spit and marsh features. Therefore, spits and marshes associated with drift cells that are heavily armored by bulkheads, for example, might be particularly vulnerable to erosion under sea-level rise projections (Beamer et al. 2005). Thus, restoration practitioners and long-term planners need to seriously consider the implications of sea-level rise in their development of policies/regulations and restoration strategies and plans.

If the sea level in Port Angeles Harbor rises by several feet over current levels by 2100, lower-lying upland portions along the City of Port Angeles shoreline could be inundated in the future. If such a trend occurs, grades along the shoreline could be raised to mitigate the potential impact of a long-term sea level rise in Port Angeles Harbor.

4.6 Historical and Current Land Use

At the base of the Olympic Mountains, Port Angeles sits on a harbor naturally sheltered by Ediz Hook, a long sand spit jutting into the Strait of Juan de Fuca. The harbor area has been inhabited for over 2,700 years and was home to two major Klallam villages for at least 400 years. Founded by white settlers in 1862 and incorporated in 1890, Port Angeles grew as Clallam County's civic, commercial and industrial center. For most of the twentieth century, Port Angeles was largely dependent on the old growth forests to support lumber, pulp, paper and plywood mills along the waterfront. More recently, tourism to the Olympic National Park and nearby attractions has become an important part of the economy.

Several notable European explorers plied the waters of the Strait of Juan de Fuca during the Seventeenth and Eighteenth centuries. One of these explorers, a Spaniard named Don Francisco Eliza, named the harbor "Puerto de Nuestra de Senora de Los Angelos"; or Port Angeles as it was later shortened. The harbor also appears on English language charts as "False Dungeness" until at least 1853.

From 1800 until about 1850 the area was traversed infrequently by trappers, traders and explorers while the Olympic Peninsula remained the last frontier of America. After 1850, the European settlement of the harbor began slowly causing the regions to be considered the Last Frontier in America. The first white settlers appeared during the early 1850s. According to local historian Paul Martin (1983), they were likely Captain Alexander Sampson who settled in the elbow of Ediz Hook (over the Tse-whit-zen village site and possibly with Klallam Chief Norman's permission) with Rufus Holmes and William Winsor. Martin (1983: 11) also suggests that Angus Johnson may also have been the earliest non-native settler of the harbor according to other sources. Regardless of the earliest, by 1859 a group of men from Port Townsend had staked claims on the beachfront of the harbor and formed the speculative land agency they called the Cherbourg Land Company. Among notable early profiteering schemes centered around Port Angeles' location were moving the Port of Entry from Port Townsend to Port Angeles and getting Port Angeles recognized, by President Lincoln, as the Second National City (technically as a Federal Reserve; Martin 1983: 23).

For the most part, Port Angeles was little more than these schemes of a few entrepreneurs through the middle of the nineteenth century with construction of only a handful of homes, small businesses and the lighthouse on Ediz Hook. But by 1885 the mechanisms that would turn Port Angeles into a Washington city were reinvigorated. Important events included the short-lived, but none-the-less important, establishment of the Puget Sound Cooperative Colony along the Ennis Creek estuary at what is now the former Rayonier Mill, the construction of schools, churches and the opera house in downtown; the 1890 land grab after the Federal Reserve was

opened up for purchases, and the establishment of Port Angeles as the county seat that same year. From this point on, Port Angeles was thrust into the modern age with a focus on waterfront industry including a cannery, a long series of water dependent mill constructions and failures, the raising of the elevation downtown after periods of tidal flooding in 1914, and a period of general industrial success based on the harbor location and access to the old growth forests of the Olympic Peninsula. Of special note to the history of Port Angeles' waterfront in additional to those previously mentioned are the completion of the Milwaukee, St. Paul and Pacific Railroad line on trestles stretching across town in 1914, the establishment of the Port of Port Angeles in 1923 and completion of Port Terminal 1 in 1926, the formation of Olympic National Park in 1938, and the general period of military fear during World War II when the peninsula, and Port Angeles, were on the forefront of preparations for potential attack by the Japanese Navy.

4.6.1 Klallam

Port Angeles Harbor was historically populated by the Klallam People. The Klallam are a part of the larger Central Coast Salish culture group whose traditional territory included the Strait of Juan de Fuca on both the northern shore (including Beecher Bay and Victoria on Vancouver Island) and the southern shore (from the Hoko River to Port Townsend) (Suttles 1990). The Klallam (also *S'Klallam*) are most often described as the groups residing on the northern slope of the Olympic Peninsula from the Hoko River to Discovery Bay. Historic interactions with the United States government lead to the formation of three units of the Klallam residing in three geographically distinct areas including the Lower Elwha Klallam, Jamestown S'Klallam, and Port Gamble S'Klallam Tribes.

The Klallam and their ethnographers generally agree that there were two villages present on Port Angeles Harbor during the ethnographic period and archaeological evidence indicates the harbor shores have been populated off and on for the last 2500 years. One village, "Tcīwī'tsen" or Tse-whit-zen, is located at the base of Ediz Hook and the other, "I'ē'nis," at the mouth of Ennis Creek (Gunther 1927 and Suttles 1990: 456). Both Ediz Hook and Ennis Creek derive their names from "I'e'nis," meaning "good beach." In the mid to late 1800s, I'e'nis had between 200 and 1,500 residents and was fortified with a double stockade. Tse-whit-zen had at least six longhouses, a stockade similar to I'e'nis', and a large cemetery. Into the late 1800s, the cemetery was a prominent feature with canoes hung from trees or built structures and decorated with blankets and other possessions.

Historic maps of the harbor, the drawings and descriptions of early white settlers and explorers, and archaeological research have identified both village locations. A third village, likely a small inter- or sub-tidal camp, is depicted on an 1853 hydrographic map of Port Angeles Harbor prepared by Lt. James Alden and placed near the historic channel of Tumwater Creek. Other ethnographic or archaeological evidence regarding this village is not currently published. Regardless, it is highly likely that the hunter-fisher-gatherer Klallam traversed the entire Port Angeles shoreline as part of their movement between villages and economic resource areas.

4.6.2 Cultural Resources

Archaeological sites in and near Port Angeles and along its harbor have demonstrated well over 5,000 years of occupation of the uplands and at least 2,500 years of occupation in select areas of the shoreline through archaeological contexts. Classic Northwest Coast archaeology is present in Port Angeles at the recently excavated Tse-whit-zen site located at the base of Ediz Hook. The Ennis Creek site at the former Rayonier Mill may also contain archaeologically significant deposits, though to what extent is currently undetermined. Isolated finds of stone tools and other

archaeological artifacts across the waterfront suggest that the entire harbor was once a bustling center for hunter-fisher-gatherers; a story also promoted in the oral traditions of the Klallam.

The City of Port Angeles has conducted an analysis of the probability of areas along the Port Angeles Harbor shoreline to contain archaeologically intact Pre-Contact habitation sites. This analytical process is a part of the stipulations that resulted from the August 14, 2006 Settlement Agreement Among the State of Washington, Lower Elwha Klallam Tribe, City of Port Angeles, and Port of Port Angeles as enacted after the occurrences surrounding construction of a Washington Department of Transportation graving dock at the base of Ediz Hook. Since the acceptance of the Settlement Agreement, the City has treated all areas of the waterfront as high probability areas for archaeological resources until the installation of the City's Archaeological Predictive Model. This Archaeological Predictive Model demonstrates the most up-to-date professional archaeological understanding of shoreline areas denoting high, medium and low probability areas for intact archaeological resources along the waterfront. It is to be consulted for all development purposes and municipal permitting actions within the shoreline area. The Archaeological Predictive Model is accompanied by regulatory conditions for ground disturbing activities within areas designated above the "low" probability level.

The City of Port Angeles recently contracted an architectural study of the downtown business district and a historic district was recommended (Eysaman and Company Architecture 2000). To date, none of the buildings, save for the Naval Elks Lodge and the Federal Building, are listed on the State or National Registers. Other state or nationally registered historic buildings and sites within Port Angeles include St. Andrew's Episcopal Church, the Masonic Lodge, the Joseph Paris House and the Clallam County Courthouse. Along the waterfront, The Puget Sound Cooperative Colony and Klallam Ennis Creek Village Site on the east side of the harbor are listed on the State Register. Also listed are the now removed Ediz Hook Lighthouse and Engine Repair Shop/A-frame on Ediz Hook. The former Chicago, Milwaukee, St. Paul and Pacific Railroad and Seattle and North Coast Railroad (45CA458) are listed on the State Register with important features present in other areas of Clallam County. However, within the City limits the once-raised timber trestle railroad grade has been filled and converted into the Olympic Discovery Trail and exhibits little historical integrity beyond its setting. Additionally, Hollywood Beach downtown is listed on the State Register based on historic accounts of Native American encampments; however, archaeological materials have not been reported there.

All of these cultural resources combine to illustrate the history of Port Angeles and are a remarkable and integral piece of the story of Washington State's maritime heritage. Historic and archaeological resources are non-renewable and careful consideration should be devoted to projects that result in losses of historical association or archaeological information. The City's Archaeological Predictive Model must be consulted for any development issues along the entirety of the waterfront and will identify conditions and regulations for ground disturbing projects that fall under municipal and state regulatory compliance. Historical preservation goals for buildings along the waterfront should also be considered during shoreline permit-able actions.

4.6.3 Recent Land Use

West Harbor Area

The west Harbor Area is described as the shoreline from the Valley Creek Estuary to the base of Ediz Hook (Reach segments 6, 8A, 8B, & 8C). This portion of the harbor shoreline has supported mostly industrial, commercial, and recreational uses over the years. Four major mills—Crown Zellerbach, Merrill & Ring, Fibreboard/Peninsula Plywood, and Rayonier—were

the backbone of Port Angeles' economy for many years. Due to rising freight costs, reduced timber supplies and increased expenses, all but one mill has closed.

The mills occupied four general areas of the Port Angeles Harbor waterfront and changed name/ownership several time over their history. The Zellerbach mill is now owned by the Nippon Paper Group, Inc., which occupies the base of Ediz Hook (Reaches 3, 6, & 7) .

Peninsula Plywood started as Crescent Boxboard, became Fibreboard Products Corp. (circa 1926), Pen Ply (1941 -1989) and K-Ply (1989). This mill, situated just west of downtown (Reach 8C) closed in 2011. The Port of Port Angeles currently owns the site and much of the waterfront land between Downtown and Ediz Hook, including the land used by the Boat Haven, Marine Trades areas (terminals 1, and 3) and a large log handling/storage yard.

The area surrounding the mouth of Ennis Creek (Reach 10) was originally developed by the Puget Sound Cooperative Colony. The original mill only operated for a few years. That mill was replaced by the U. S. Spruce Corp. Mill, which became Olympic Forest Products and later ITT Rayonier Mill. Located east of Downtown, the Rayonier site is currently undergoing remediation for cleanup and will be available for future development.

The fourth mill site, located just east of the Nippon site, was most recently occupied by the Merrill & Ring Mill (reach 8A). This site has served a number of uses including ship/barge manufacturing during the second world war.

In 2004, the State Department of Transportation proposed a project to build a graving dock on the former Merrill & Ring site (Reach 8A) at the base of Ediz Hook. The project, located on the former Tse-whit-zen village site, was halted when human remains and artifacts were discovered. A remediation process followed, and balancing the cultural resource considerations and impacts on the local economy has been controversial. The future land use of this site may include a cultural artifacts curation facility.

The U.S. Coast Guard Base is a longstanding major land use, located on the eastern end of Ediz Hook. The stretch of Ediz Hook between the Nippon property and the Coast Guard Base is currently used for recreation purposes. The recreational purposes all focus on the harbor side of the Hook and include a Sail and Paddle Park at the west end, a boat launch ramp, Harborview Park at the east end, and an extension of the Olympic Discovery/Waterfront Trail running the length of the Hook.

Industrial/commercial uses on the hook include the Pilot's facility, an aquaculture (previously American Gold Seafood, now Icicle Seafoods) operation, and a currently vacant structure on the east end of the Hook. Tesoro Petroleum operates a marine fueling operation (including storage tanks and berthing facility for a fuel barge and tug boat) near the base of the Hook. A former log dump structure, known locally as the "A-Frame", was removed in 2008. The YMCA of Clallam County leases a building near the Sail and Paddle Park to house rowing shells.

Land uses located along the southern harbor waterfront include several marine commercial/industrial uses. A major section (Reach 8B) is occupied by the Boat Haven Marina operated by the Port of Port Angeles. The Boat Haven is sheltered inside Port Angeles Harbor and provides easy access to the Strait and to Victoria, BC. Port Angeles Boat Haven is located on 16.1 acres and has moorage space for more than 410 pleasure and commercial boats. This includes 52 boat houses. Slips range from 24 to 50 feet and up to 200 feet broadside. The Boat Haven offers many marine services and is adjacent to local businesses that cater to Boat Haven users. Services at the Boat Haven include moorage, electricity, refueling, and a boat yard with haulout facilities, including a travel lift. Private firms provide boat maintenance; there are 10 to 12 shipwrights working independently at the marina. Local marine services at the Haven include

welding, mechanics, hydraulic services, fiberglass and wood repair, and painting. Additional amenities include charter services, bait shops, and restaurants.

One large boat building operation (Westport Marine) and one large boat repair company (Platypus Marine) occupy a seven acre site immediately east of Tumwater Creek. Directly north of the marine construction/repair site, the Port of Port Angeles operates Terminal 1 for large ship top-side repair and Terminal 3, a materials loading dock.

Directly west of the Boat Haven Marina, the Port of Port Angeles has consolidated its entire log storage operation to an approximately 20 acre site (Reach 8A). This has removed log storage from several other locations on the waterfront. The site also includes a dock and chip loading structure. The chip loader has not been used in years and has been sold to an out of town interest. The structure remains on the shoreline at the writing of this document.

Utilities in this portion of the waterfront include sanitary sewer (pressure mains and gravity lines), water, storm drains, and overhead power. The abandoned industrial waterline branches at the Nippon Paper Mill and extends through this portion of the city. The Olympic Discovery/Waterfront Trail follows city streets on developed sidewalks through downtown to Hill Street. From Hill Street to the end of Ediz Hook, the trail follows Marine Drive along a divided shoulder.

Downtown

The downtown reach is that area extending from the west side of the Peabody Street right-of-way (extended) to Valley Creek centerline on the west. Currently, the Downtown shoreline accommodates the City Pier, a public pier and park with transient moorage; the Feiro Marine Life Center, an aquarium and educational facility; the Hollywood Beach swimming area; the Landing mixed use development; and two ferry terminals. The underutilized Oak Street property on the waterfront between Oak Street and Cherry Street may be redeveloped to offer a park in the Department of Natural Resources-owned and City-leased portion and a park or other uses in the privately owned portion.

Plans for shoreline improvements along the entire downtown waterfront from Hollywood Beach on the east to the Valley Creek Estuary on the west are being developed in the Waterfront and Transportation Improvement Plan. Local approval of the first phase of construction (Coho Ferry Terminal west to Oak Street) was obtained in February 2012. Two existing uses, the Coho Ferry Terminal and the Landing Mall will not be altered by the plan. This plan, titled the Waterfront and Transportation Improvement Plan (WTIP) will result in enhanced public access and shoreline restoration.

Outside of the shoreline jurisdiction, the Downtown features the City's municipal campus, Clallam County building and courthouse, and the Carnegie Library. Community shopping opportunities exist along Lincoln Street, and the Waterfront Trail and a number of parks provide recreation opportunities along the waterfront. In addition, much of the city's multifamily housing is in the downtown area.

"Utilities within the downtown area include sanitary sewer (pressure mains and gravity lines), water, storm drains, and overhead power. The unused Port Angeles Industrial Water line is within the project limits, and major construction using the industrial water line pipe as a carrier for the new pressure sewer lines will occur within the downtown area and east to the former Rayonier site. The existing pressure sewer line will be abandoned when the new system is completed. Storm drain facilities within the downtown include the CSO control structure and discharge piping at the north end of North Oak Street as well as incidental storm drain facilities for runoff from Railroad Avenue and North Oak Street.

Water system distribution mains are located within the Railroad Avenue and North Oak Street rights of way; a main also extends west from North Oak Street in the Department of Natural Resources property to serve Terminal 4. Gravity sanitary sewer collection lines are located with the Railroad Avenue and North Oak Streets rights of way. The gravity sewer line is quite deep (approx 14 feet below ground level) and flow westerly along Railroad Avenue and then southerly along North Oak Street. The line feeds to the City's pump station at the Valley Creek Estuary."

East and West of the Harbor

The area west of Ediz Hook is dominated by single-family residences and undeveloped land. Development is underway in some places, and this area is likely to gain more housing on the bluffs above the shoreline. A cemetery and former landfill at the northwestern edge of the city are other major land uses. There is the potential to redevelop the landfill to support community uses in the future.

East of downtown, a mix of older and newer housing is the primary use, with the Olympic Memorial Center hospital being the only existing commercial use near the waterfront. Only portions of these uses exist within the shoreline jurisdiction. The former Rayonier Mill site is located within this section of the shoreline, however, no land use exists on the site at the writing of this document. In the Urban Growth Area east of the City's boundary, the County has designated most of the land near the shoreline as Rural Character Conservation, which is intended primarily for residential use, but allows some agricultural and commercial uses. Along the shore, this area also includes a portion of the recreational Olympic Discovery Trail, which will eventually extend from Port Townsend to the Pacific Coast. As in other portions of the shoreline, the Olympic Discovery/Waterfront Trail exists on an abandoned railroad grade that is heavily armored for protection against erosional forces of the Strait of Juan de Fuca.

City of Port Angeles Land Use Map

4.7 Analysis of Ecological Functions and Processes

4.7.1 Current Ecological Function and Process Conditions

This analysis of ecological processes and functions provides the context for management of the City of Port Angeles' marine shoreline. This analysis follows Ecology's *Shoreline Master Program Guidelines* (173-26 WAC) and evaluates the functions of the Port Angeles shoreline at a reach scale. Conceptually, ecosystem functions are those aspects of the ecosystem that are beneficial either biologically, economically, or aesthetically. Ecosystem functions are dependent on a number of ecosystem processes, which are influenced or determined by the regime of ecosystem stressors acting on the system. Effectively managing ecosystem stressors is necessary to maintain ecosystem processes that allow the ecosystem to sustain a suite of beneficial functions.

Ecosystem processes, defined as "…the suite of naturally occurring physical and geological processes of erosion, transport, and deposition; and specific chemical processes that shape landforms within a specific shoreline ecosystem and determine both the types of habitat and the associated ecological functions (WAC 173-26-020-12)," are dependent on natural and anthropogenic controlling factors or ecosystem stressors. In a properly functioning ecosystem, the controlling factors occur within the naturally occurring range under which the ecosystem evolved, and the ecosystem in turn provides the suite of naturally occurring functions associated with that ecosystem.

Ecosystem processes can be categorized as geomorphic, chemical, and biological. These processes are interrelated, with each process interacting with the others. Table 4 summarizes the primary ecosystem processes and stressors considered to be relevant to management of the Port Angeles shoreline.

Table 4. Marine Shoreline Processes and Stressors

1. Geomorphic Processes • Bluff erosion • Beach erosion • Sediment transport • Sediment deposition • Sediment stabilization • Flow and movement of water including wave energy and tidal currents • Recruitment, redistribution and reduction of woody debris and other organic material	**Geomorphic Stressors** • Ground clearing • Excavation • Bank alteration • Impervious surfaces • In-water structures • Riparian vegetation removal • Shoreline alterations
2. Chemical Processes • Nutrient cycling • Energy cycling • Toxic substance removal	**Chemical Stressors** • Point source pollution • Non-point source pollution • Impervious surfaces • Riparian vegetation removal • Freshwater inputs

3. Biological Processes	Biological Stressors
• Physical space and conditions for naturally occurring species and life history stages • Access to spawning, rearing, and migration habitat for naturally occurring species • Temperature maintenance • Food production and delivery	• In-water structures • Overwater structures • Riparian vegetation removal • Shoreline alterations • Seafood harvesting • Invasive species

Ecological functions of the City of Port Angeles's shoreline are summarized in Tables 7 through 17. These tables are organized around the functions of marine systems described in Ecology's *Comprehensive Process to Prepare or Amend Shoreline Master Programs* (WAC 173-26-201).

The list includes the evaluation of three major categories of functions:
1) hydrologic; 2) vegetative; and 3) habitat. These are further broken down into the following functions (Table 5) which are in turn used to evaluate reach performance.

Table 5. Marine Shoreline Functions

1. Hydrologic Functions • Transporting and stabilizing sediment • Attenuating wave and tidal energy • Removing excess nutrients and toxic compounds • Recruitment, redistribution and reduction of woody debris and other organic material
2. Vegetative Functions • Maintaining temperature • Removing excessive nutrients and toxic compounds • Attenuating wave energy • Sediment removal and stabilization • Providing woody debris and other organic matter
3. Habitat Functions • Physical space and conditions for life history • Food production and delivery

Assessment of each function is based upon both quantitative data results derived from the GIS inventory information described in Chapter 3 and a qualitative assessment based on aerial photography. As described above, the shoreline has been divided into reaches based on sediment transport drift cells and land use/shoreline condition factors. In the ensuing tables, each reach or group of reaches has been given an overall "rating" for ecological functions based on the available and relevant GIS information and the corresponding quantitative and qualitative evaluation. Rating was completed using a "low" to "high" function scale. The level categories are:

- 1 - Low
- 2 - Low/Moderate
- 3 - Moderate
- 4 - Moderate/High
- 5 - High

Ecosystem functions were scored on a scale of 1 to 5 corresponding to the level categories listed above (i.e. 1 being the lowest level of function and 5 the highest). Similarly, stressors that influence the processes listed in Table 4 were evaluated and scored for each reach. Criteria for scoring are shown in Table 6. The function elements in Table 5 do not always translate directly to the scoring categories in Table 6 because some of the functions needed to be assessed using the inventory information available for this analysis.

The following summary of scores is organized by reach in descending order of function rating (see Maps 21A and B).

Rank		Score
1.	Reach 5: Inner Ediz Hook	3.1
2.	Reach 11: Eastern City (UGA)	3.0
3.	Reach 7: Mill Pond	2.8
4.	Reach 1: Landfill	2.7
5.	Reach 2: Western City	2.6
6.	Reach 9: Olympic	2.5
7.	Reach 10: Rayonier	2.4
8.	Reach 8D: Downtown – Mixed Use	2.3
9.	Reach 8C: Downtown - Transition	2.1
10.	Reach 4: Outer Ediz Hook	2.1
11.	Reach 8A: Downtown – Tse-whit-zen	2.0
12.	Reach 6: Inner Industrial	1.9
13.	Reach 8B: Downtown - Marina	1.7
14.	Reach 3: Outer Industrial	1.7

Table 6. Ecological Function Scoring Criteria.

Functions	Score Criteria				
	1	2	3	4	5
Hydrologic - Sediment					
Erosion	Extensive anthropogenic shoreline erosion (>25%)	Minor anthropogenic shoreline erosion (<25%)	Extensive natural shoreline erosion (>25%)	Minor natural shoreline erosion (<25%)	100% stable shoreline
Interference with sediment transport (barriers to longshore drift)	Significant impediment to sediment transport (e.g. jetty, groin)		Minor impediment to sediment transport		No impediment to sediment transport
Hydrologic - Wave and Tidal Energy					
Interference with natural current patterns	Current blocked or restricted (e.g. at jetty)		Some anthropogenic features that could influence local currents		No alteration of current patterns
Wave and/or tidal attenuation	100% armored shoreline	50-100% armored shoreline	25-50% armored shoreline	0-25% armored shoreline	Natural shoreline
Remove excess nutrients & toxic compounds	303d Category 5 - Impaired, require TMDL	303d Category 5 - Impaired, do not require TMDL	303d Category 2, waters of concern OR suspected sources of water quality concern	303d Category 1, but with some naturally occurring issue	303d Category 1, no problems
Redistribution and cycling of LWD & other organic material	Shoreline segments physically isolated preventing movement of organic inputs		Partial impediment to lateral or vertical movement of organic inputs		Shoreline allows continuous lateral and vertical movement of organic inputs

Functions	Score Criteria				
	1	2	3	4	5
Vegetative					
Shade	No shoreline vegetation	Shoreline vegetated, but <25% of shoreline with overhanging vegetation	25-50% of shoreline with overhanging vegetation	50-75% of shoreline with overhanging vegetation	>75% of shoreline with overhanging vegetation
LWD and other organic recruitment	No shoreline vegetation	Vegetated shoreline, but no riparian trees	<50% Forested shoreline; OR >50% forested, but no evidence for organic recruitment, or a known impediment to organic recruitment	50-75% forested shoreline with evidence of organic recruitment	75-100% Forested shoreline with evidence of organic recruitment
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	0 - 20	20-50	50-100	100-300	>300
Shoreline soil stabilization	No stabilizing shoreline vegetation	0 - 25% stabilizing vegetated shoreline	25 - 75% stabilizing vegetated shoreline	75 - 100% stabilizing vegetated shoreline	100% stabilizing vegetated shoreline
Wave attenuation	Armored shoreline		Natural shoreline with LWD or submerged vegetation		Natural shoreline with plentiful LWD and submerged vegetation to attenuate wave energy.

Functions	Score Criteria				
	1	2	3	4	5
Physical Habitat					
Estuary/Wetland/ Riparian (freshwater) Habitat	No estuary, wetland or riparian habitat	0%-5% estuary/wetland/ riparian habitat	5% - 15% estuary/wetland/ riparian habitat	15%-30% estuary/wetland/ riparian habitat	>30% estuary/wetland/ riparian habitat
Shoreline vegetation	No significant vegetation	Some vegetation, but primarily non-native	Some vegetation, primarily native OR mostly vegetated with non-native species	Mostly vegetated with primarily native vegetation	Fully vegetated with intact and/or restored native vegetation
Direct shoreline alterations	>75% developed/armored	50% - 75% developed/armored	25% - 50% developed/armored	<25% developed/armored	No shoreline alterations
Alteration to shoreline inputs	Severe sediment and water quality disruptions		Severe sediment OR water quality disruptions		Little or no sediment or water quality disruptions
Priority habitats/species - (e.g. forage fish spawning, eelgrass, estuarine)	Impaired habitat, no priority species or habitats mapped	Low potential use by priority species	Potential habitat use by a priority species	Potential use by multiple priority species	Documented priority habitat or use by one or more priority species

4.7.2 Opportunities for Restoration of Ecological Functions and Processes

The assessment of processes and functions for each reach is followed by identification of opportunities and recommendations for protecting existing functions and processes or restoring impaired functions and processes. Ecology's *Shoreline Master Program Guidelines* (173-26 WAC) includes the following definition:

> *"Restore," "Restoration" or "ecological restoration" means the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including but not limited to re-vegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions.*

Another definition of restoration is provided by the National Research Council (1992).

> *"the return of an ecosystem to a close approximation of its condition prior to disturbance...The goal is to emulate a natural, functioning, self regulating system that is integrated with the ecological landscape in which it occurs".*

Consistent with Ecology's definition, use of the word "restore," or any variations, in this document is not intended to encompass actions that re-establish historic conditions. Instead, it encompasses a suite of strategies that can be approximately delineated into four categories: creation (of a new resource), restoration (of a converted or substantially degraded resource), enhancement (of an existing degraded resource), and protection (of an existing high-quality resource).

There is a critical distinction between restoration and mitigation. Mitigation will require applicants whose shoreline proposals will have adverse impacts to complete actions to mitigate those impacts or provide compensation in other ways for losses of ecological function. Degraded wetland buffers are required to be restored under the City's CAO. The City can encourage applicants to implement restoration actions that will improve ecological functions relative to the applicant's pre-project condition. As stated in WAC 173-26-201(2)(c):

> *It is intended that local government, through the master program, along with other regulatory and nonregulatory programs, contribute to restoration by planning for and fostering restoration and that such restoration occur through a combination of public and private programs and actions. Local government should identify restoration opportunities through the shoreline inventory process and authorize, coordinate and facilitate appropriate publicly and privately initiated restoration projects within their master programs. The goal of this effort is master programs which include planning elements that, when implemented, serve to improve the overall condition of habitat and resources within the shoreline area of each city and county."*

The opportunities and recommendations identified below present options for "restoration" that would improve ecological functions. For example, enhancement of riparian vegetation, reductions or modifications to shoreline hardening, minimization of in- and over-water structures, and improvements to fish passage would each increase one or more ecological parameters of the City's shoreline. The City or private property owners could implement these options voluntarily or, depending on specific project details, they could be require measures to mitigate adverse impacts of new shoreline projects.

A preliminary map of restoration opportunities has been prepared (Maps 22A, and 22B), utilizing information from the Strait of Juan de Fuca Ecosystem Recovery Network (Strait ERN), other reference documents, and public input. Where restoration opportunities are site-specific, an identification number has been placed on the map at the site location. However, many of the opportunities are more general, applying to large areas of the shoreline or basin. In those instances, the number is only approximately placed on the map. Where applicable, the reach-specific opportunities identified in Sections 4.7.3 through 4.7.13 refer to the identification number on Maps 22A and 22B.

The projects/programs identified on Figures 22A and 22B, as well as other opportunities identified in this chapter, will be discussed in greater detail in the Shoreline Restoration Plan (see Section 7.2).

4.7.3 Reach 1 - Landfill

Existing Condition

Reach 1 is located at the western edge of the City limits, bounded on the west by Dry Creek (Exhibit 2). As the name implies, this reach is dominated by a closed landfill (now transfer Station), with the portion adjacent to the shoreline a no longer active, and unlined cell. This is a high-bluff shoreline, most of which is nearly vertical, but with the western portion, nearest to Dry Creek, with a more stable slope near the angle of repose. Dry Creek is relatively steep with little fan development and little estuary habitat. According to WDFW, it is used by four priority fish species: chum and coho salmon, coast resident cutthroat trout, and steelhead trout. Trees dominate the shoreline near Dry Creek, but are sparse in the remainder of the reach. A seawall was installed at the toe of the bluff in 2007 (Exhibit 3) to prevent continued erosion of landfill material into the Strait. The seawall extends the entire 620 feet of the landfill beach cell and rises 15 feet above the beach. The seawall is located approximately 100 feet east of the mouth of Dry Creek. As a condition of the approval for the seawall is the annual placement of beach materials to replace the sediment that is no longer provided by the marine bluff.

Dry Creek and the Strait in the area are the subject of ongoing study to identify whether landfill leachate entering the water at two known points is having significant adverse affects on either the stream or the Strait.

Exhibit 2. Reach 1 facing south, prior to seawall construction (Ecology Coastal Atlas, June 2006).

Exhibit 3. Seawall constructed in 2007 at toe of slope (photo taken by Dry Creek Coalition, http://drycreekcommunity.org/index.php/gallery/image_full/262/)

Table 7. Function Summary of Reach 1 - Landfill

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	The steep bluff is naturally an erosion area, except in the area protected by the seawall since 2007. However, it appears that a significant portion of the bluff (near Dry Creek) has failed, and the failure is likely associated with the landfill operations.	1
Interference with sediment transport (barriers to longshore drift)	Sediment transport is significantly impaired in this reach, affected by the lack of historic sediment volume from the Elwha River, the loss of sediment supply from the bluffs now partially protected by the seawall, and presumably an alteration in the rate or type of sediment movement as affected by the interaction of the armoring with the water. However, there are no barriers to movement of sediment along the shoreline. Regular beach nourishment is required as a condition of the seawall.	4
Wave and Tidal Energy		
Interference with natural current patterns	The presence of some shoreline armoring likely influences natural current patterns.	4
Wave and/or tidal attenuation	Shoreline armoring covers approximately 30% of the reach. Armoring is a seawall constructed at the toe of the marine bluff to contain materials in an abandoned landfill cell.	3
Remove excess nutrients & toxic compounds	The presence of an unlined landfill cell in the reach indicates a potential for water quality impairment.	3
Redistribution and cycling of LWD & other organic material	Organic inputs from this reach limited by the existence of bluff armoring and presence of sparsely vegetated steep bluff in non-armored areas. However, Dry Creek is a source of LWD and organic material.	3
Vegetative		
Shade	Less than a quarter of the shoreline has vegetation capable of casting significant shade.	2
LWD and other organic recruitment	Trees are present on less than half of the shoreline.	3
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	While some of the reach has a relatively wide vegetated buffer area, most of the shoreline is limited in shoreline vegetation.	2
Shoreline soil stabilization	Much of the vegetation that does exist in this reach is not in a position to stabilize soil effectively.	2
Wave attenuation	The limited amount of shoreline LWD and	2

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
	vegetation is not in a position to effectively attenuate wave energy.	
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	While Dry Creek does exist in this reach, it is steep and in a narrow gully, with little delta, and provides little estuarine habitat.	2
Shoreline vegetation	Vegetation near Dry Creek appears to be predominately native species, but remainder is vegetated primarily with grasses and a few native or non-native trees.	3
Direct shoreline alterations	Approximately one-third of the reach is armored and the entire reach is impacted directly or indirectly by the landfill.	1
Alteration to shoreline inputs	This reach may provide both sediment and water quality disruptions, but neither is documented.	3
Priority habitats (e.g. forage fish spawning, eelgrass, estuarine)	Documented use by several priority species, including abalone, red sea urchin, chum and coho salmon, cutthroat and steelhead trout. Bluffs are also considered a PHS habitat area.	5
	Average Score	**2.7**

Restoration Opportunities

Restoration opportunities along Reach 1 include:

1. Explore opportunities to further limit influence of landfill on shoreline area, and continue to remove existing landfill debris that is embedded in the beach. (See Map 22B, #26 and #27)
2. Improve vegetation on bluff and at base of bluff with native species.

4.7.4 Reach 2 – Western City

Existing Condition

Reach 2 extends approximately 2 miles, from the eastern edge of the landfill to the base of Ediz Hook. With the exception of approximately 1,200 feet of shoreline near the western edge, this reach consists of high-bluff shoreline, composed of glacial sands and gravel (Elwha-Dungeness Planning Unit 2005). The remainder of the reach is lower bluff shoreline. Along the base of the bluff, a water line was installed to supply industrial properties at Ediz Hook. Armoring to protect this water line also serves to protect the toe of the bluff from erosion. This armoring encompasses all but the western 800' or so of the reach. The configuration of the water line, armoring and cover for the water line has resulted in a broad pathway along the base of the bluff (see Exhibits 4 and 5).

The eastern portion of this reach is occupied by single family residences located at the top of the marine bluff. A small residential area of manufactured homes also exists in the area. The manufactured home park covers approximately 800 feet of the shoreline and remains as one of the last sub-dividable properties in this reach. The remainder of the bluff top properties have

been subdivided creating 49 single family residential lots. Of those, only 16 remain undeveloped. Those lots meet the minimum lot size allowed by the underlying zone and may not be further subdivided. They also provide adequate area outside of the shoreline jurisdiction to construct homes with little shoreline impacts. Many of these lots have been created during the last decade and therefore supporting infrastructure has been created and/or upgraded to support any anticipated development of these lots.

Exhibit 4. Reach 2 photo of bank armoring and pathway (photo taken by Makers, July 2010).

Exhibit 5. Reach 2 facing south (Ecology Coastal Atlas, June 2006).

Table 8. Function Summary of Reach 2 – Western City

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	Most of the shoreline is protected from erosion by the armoring associated with the water line. However, high, nearly vertical bluffs likely still provide periodic and limited sediment supply.	4
Interference with sediment transport (barriers to longshore drift)	Sediment transport is significantly impaired in this reach, affected by the lack of historic sediment volume from the Elwha River, the loss of sediment supply from the bluffs now protected by the water line and armoring, and presumably an alteration in the rate or type of sediment movement as affected by the interaction of the armoring with the water. However, there are no barriers to movement of sediment along the shoreline.	4
Wave and Tidal Energy		
Interference with natural current patterns	Armoring influences local current patterns	3

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Wave and/or tidal attenuation	Approximately 77% of the shoreline is armored	2
Remove excess nutrients & toxic compounds	No known sources of water quality concern, nor is water quality known to be impaired.	5
Redistribution and cycling of LWD & other organic material	Armoring serves as at least a partial impediment to movement of organic inputs.	3
Vegetative		
Shade	Much of the shoreline area has trees to provide shade, though they are sparsely distributed and there is no overhanging vegetation due to the bluff and armoring.	2
LWD and other organic recruitment	Much of the shoreline area has trees, though they are sparse, but recruitment potential is limited by the presence of armoring.	3
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	While a few places along the shoreline have several hundred feet of vegetated width, the reach is dominated by areas with one or two individual trees making up the vegetated buffer. Much of this reach is developed with single family dwellings and the associated nonnative landscape materials and the intent to allow uninhibited views.	1
Shoreline soil stabilization	Vegetation is sparse, and high, nearly vertical banks make what vegetation does exist ineffective at stabilizing shoreline soils.	1
Wave attenuation	No shoreline vegetation	1
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	No estuary habitat or wetland habitat exists in this reach.	1
Shoreline vegetation	Some sparse vegetation exists along the entire shoreline, and in some places it is well vegetated with native species.	3
Direct shoreline alterations	Well over 75% of the shoreline is armored with large stone rip rap protecting the industrial water line.	1
Alteration to shoreline inputs	Armoring severely impairs sediment input	3
Priority habitats/species (e.g. forage fish spawning, eelgrass, estuarine)	Documented use by several priority species, including abalone, red sea urchin, bald eagle nest and buffer. Bluffs are also considered a PHS habitat area.	5
	Average Score	**2.6**

Restoration Opportunities

Restoration opportunities in Reach 2 include:

1. Explore opportunities to improve vegetation at the top of the bluff and at the toe of the bluff near the water supply line.
2. Evaluate the feasibility of re-routing the water supply line and removing the bank armoring. Bluff erosion is a key component to providing sediment to the Hook, and should be allowed to occur at a relatively natural pace. However, development at the top of the bluff makes it exceptionally difficult to remove armoring and allow natural erosion to occur. (See Map 22B, #28)
3. Seek ways to mitigate some of the negative impacts of armoring, by including LWD in the armoring or possibly providing beach nourishment along the armored segment to simulate natural sedimentation rates.

4.7.5 Reach 3 – Outer Industrial

Existing Condition

Reach 3 extends three-quarters of a mile along the highly altered, industrial portion of the base of Ediz Hook occupied by Nippon Paper Industries. Virtually the entire reach is armored (Exhibit 6). A small area approximately 650 feet in length remains unarmored and forms a pocket beach. This small beach area is located at the western end of the Nippon Mill site.

Exhibit 6. Central portion of Reach 3 facing south (Ecology Coastal Atlas, June 2006).

Table 9. Function Summary of Reach 3 – Outer Industrial

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	Extensive shoreline armoring has been installed to prevent erosion, but erosion continues in this reach.	1
Interference with sediment transport (barriers to longshore drift)	Sediment transport is significantly impaired in this reach, affected by the lack of historic sediment volume from the Elwha River and presumably an alteration in the rate or type of sediment movement as affected by the interaction of the armoring with the water. However, there are no barriers to movement of sediment along the shoreline.	4
Wave and Tidal Energy		
Interference with natural current patterns	Shoreline armoring likely influences local currents	3
Wave and/or tidal attenuation	Very nearly all the shoreline is armored	2
Remove excess nutrients & toxic compounds	Category 5 for Dissolved Oxygen; Category 2 for 1,2,4-Trichlorobensene; Category 2 for Fecal Coliform. No TMDL	2
Redistribution and cycling of LWD & other organic material	Shoreline contains no natural source of LWD or other natural organic material (aside from ground wood products).	1
Vegetative		
Shade	No shoreline vegetation	1
LWD and other organic recruitment	No shoreline vegetation	1
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	No shoreline vegetation	1
Shoreline soil stabilization	No shoreline vegetation	1
Wave attenuation	No shoreline vegetation	1
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	No estuary habitat. Adjacent to lagoon, but no direct surface water connection.	1
Shoreline vegetation	No shoreline vegetation.	1
Direct shoreline alterations	Virtually entire shoreline is armored and developed.	1
Alteration to shoreline inputs	Severe disruption to sediment and water quality inputs.	1
Priority habitats/species (e.g.	Priority habitat for bald eagle, red sea urchin and abalone.	5

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
forage fish spawning, eelgrass, estuarine)		
	Average Score	**1.7**

Restoration Opportunities

Restoration opportunities in Reach 3 include:

1. Explore opportunities to improve vegetation.
2. Seek ways to mitigate some of the negative impacts of armoring, by including LWD in the armoring or possibly providing beach nourishment along the armored segment to simulate natural sedimentation rates.
3. The placement of LWD along the north shore of Ediz Hook may help retain sediment from the longshore drift following Elwha Dam removal.

4.7.6 Reach 4 – Outer Ediz Hook

Existing Condition

The 3-mile-long Reach consists of the north shore of Ediz Hook facing the open water of the Strait of Juan de Fuca. The Hook is a 90- to 750-foot-wide natural breakwater originally created by sediments from the Elwha River and coastal bluffs in Reaches 1 and 2 and points further west. It protects the Port Angeles Harbor from waves approaching from the north and west. Almost the entire reach is armored with stone, fronted by cobbles, gravels, and patches of sand (Exhibits 7 and 8) (USACE 2002). The beach and armoring collect large woody debris and aquatic vegetation transported by waves. In spite of the revetment, the Hook is at risk due to loss of materials that historically originated from bluff erosion (now limited by armoring), and the Elwha River (sediment supplies trapped above two dams), and the shoreline waterward of the armoring is becoming steeper, potentially eliminating the intertidal habitat. Accordingly, the U.S. Army Corps of Engineers has conducted maintenance work consisting of beach nourishment and relocation of fallen revetment rock back into the structure in two locations – one in this reach and one further west in Reach 3 (USACE 2002). Sediment supplied by the Elwha River is being returned to the system as both dams are being removed at the time of this documents writing.

Exhibit 7. Central portion of Reach 4 facing south (Ecology Coastal Atlas, June 2006).

Exhibit 8. Eastern tip of Reach 4 facing south (Ecology Coastal Atlas, June 2006).

Table 10. Function Summary of Reach 4 – Outer Ediz Hook

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	Ediz Spit has been eroded by past human activities, including the construction of the dams on the Elwha River (one now removed with the second removal scheduled for 2013) and armoring along the toe of the feeder bluffs immediately west of the spit. Armoring and nourishment projects have been installed to counteract this erosion.	1
Interference with sediment transport (barriers to longshore drift)	The armoring on the spit interferes with sediment transport, but overall this reach is impaired by other, off-site interruptions in the sediment transport process. However, there are no barriers to movement of sediment along the shoreline.	4
Wave and Tidal Energy		
Interference with natural current patterns	Bank armoring influences local current patterns	3
Wave and/or tidal attenuation	Entire shoreline is armored with the exception of the eastern most 800 feet.	1
Remove excess nutrients & toxic compounds	No known 303(d) or 305(b) impairments.	5
Redistribution and cycling of LWD & other organic material	Armoring and road combine to isolate about half of the reach from organic input. The remaining area is vegetated primarily with grasses.	3
Vegetative		
Shade	No shade-producing vegetation in this reach	1
LWD and other organic recruitment	No potential LWD recruitment on this reach	1
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	Most of the area has less than a 20'-width of vegetation.	1
Shoreline soil stabilization	Where vegetation does exist, it is primarily grasses which are less effective at shoreline stabilization than more woody species.	2
Wave attenuation	Entire shoreline is armored with the exception of the eastern most 800 feet.	1
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	No estuary or wetland habitat.	1
Shoreline vegetation	Much of the reach is lacking in vegetation; where vegetation does exist, it is limited to grasses with a few small shrubs.	2
Direct shoreline	Entire shoreline has been altered: directly with	1

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
alterations	armoring and development, and indirectly via sediment input interruptions.	
Alteration to shoreline inputs	Severe sediment interruption, but water quality is unimpaired.	3
Priority habitats/species (e.g. forage fish spawning, eelgrass, estuarine)	Priority habitat for red sea urchin and abalone.	5
	Average Score	**2.1**

Restoration Opportunities

Restoration opportunities in Reach 4 include:

1. Explore opportunities to improve vegetation.
2. Seek ways to mitigate some of the negative impacts of armoring, by including LWD in the armoring or continuing and expanding beach nourishment activities conducted by the Corps along the armored segment to simulate natural sedimentation rates. (See Map 22A, #7 and #14)
3. The placement of LWD and finer grain stone along the north shore of Ediz Hook may help retain sediment from the longshore drift following Elwha Dam removal.

4.7.7 Reach 5 – Inner Ediz Hook

Existing Condition

The 2.8-mile-long Reach consists of the south shore of Ediz Hook facing the Port Angeles Harbor. Stretches of the reach are armored, particularly around waterfront Coast Guard facilities, but armoring is not nearly as prevalent as on the north shore. However, this reach has other shoreline modifications, including jetties and numerous over-water structures associated with the Coast Guard Station, the Puget Sound Pilots facility, the YMCA Rowing Club building, a city owned boat launch, and Sail & Paddle Park (Exhibit 9). The beach and armoring collect large woody debris and aquatic vegetation transported by waves (Exhibit 10).

Similar to Outer Ediz Hook, Inner Ediz Hook is also at risk but for different reasons. According to a WDFW memo (Shaffer, 20 October 2003), the south shore has experienced several degrading events since 2001:

> *"… including two oil spills, heavy unpermitted wood removal along the shoreline, and an extremely damaging off road vehicle course that included at least two 'ponds' (approximately 10 'x 20' by 2-3' deep) and long straight away for four wheel drive off roading activities. Water ponding in the ponds and tracks was a significant concern and, left unattended, would have caused this area of the spit to fail and wash away. Runoff from this ponded contaminated water and total loss of vegetative cover was a significant concern to the sand lance spawning beach that is in immediate proximity to this site. The area had been severely degraded and if not restored, a significant portion of the Hook was at risk of being lost…"*

In response to that degradation, WDFW, the Port, the Lower Elwha Klallam Tribe, and the Department of Transportation partnered to restore 1,500 feet of the central portion of the south shore. Restoration actions included removal of old structures and debris, excavation, hydroseeding, and placement of large amounts of wood. The south shore continues to be the subject of restoration proposals, including a recent project by Washington Department of Natural Resources to remove creosote piles and other structures from the inner hook. Additional shoreline restoration at that site is planned for in 2012.

Port Angeles Harbor is unusual in that the majority of shoreline and aquatic parcels are publicly-owned. Major property owners include the City, the Port of Port Angeles, the Washington State DNR, the U.S. federal government, and the Lower Elwha Klallam Tribe. Public agencies lease much of their land, and aquatic areas to others. For example, the DNR leases aquatic property to public and private owners, including the City, the Port, who manage port terminals, log storage and log transfer operations, and lease properties to Port Angeles Landing, LLC who operate the Landing mall, Black Ball Ferry Line and Icicle Seafoods for fish net pens and upland support. In addition, federally-owned property west of the USCG base is leased to the City, who then subleases a portion to Nippon.

Ediz Hook Road extends the entire length of Ediz Hook, running through the center of the Nippon Paper mill site and continuing onto the USCG base at the east end of the hook. This road provides the only access to the USCG base, the Puget Sound Pilots facility, Harbor View Park, Sail and Paddle Park, the YMCA Rowing Club building, and the public boat launch. A small area located approximately 2,500 west of the USCG base is a communications facility 'cell farm' containing antennae towers for a number of public and private users.

Ediz Hook Road also acts as a corridor for water and sewer lines supplying the uses at the east end of the hook. Electric power is supplied in overhead lines. It is a primary concern of the city to ensure that these utilities and structures are maintained in proper working condition. Regular storm events bring heavy wave action from the northeast which cause erosion on the inner Ediz Hook shoreline. These storm events often undercut the road base and threaten the utilities, requiring regular maintenance activities.

Ediz Hook is an important water access area for both local residents and visitors alike. An extension of the Waterfront/Olympic Discovery Trail extends the length of the hook. Two parks and a public boat launch are provided in this reach, and public restrooms exist at both the east and west ends of the hook in association with the parks. Walking, biking, bird watching, kayaking, SCUBA diving, sail boarding, or just being there are activities that attract many visitors to the hook each year. Several areas provide off-street parking, however, some of these areas are informal and would benefit by improvements and organization.

This reach is an important habitat area, including mapped eelgrass beds, sand lance spawning areas, harbor seal haulouts, harlequin ducks, and high shorebird concentrations. A portion of the south shore is identified as a reservation for native birds.

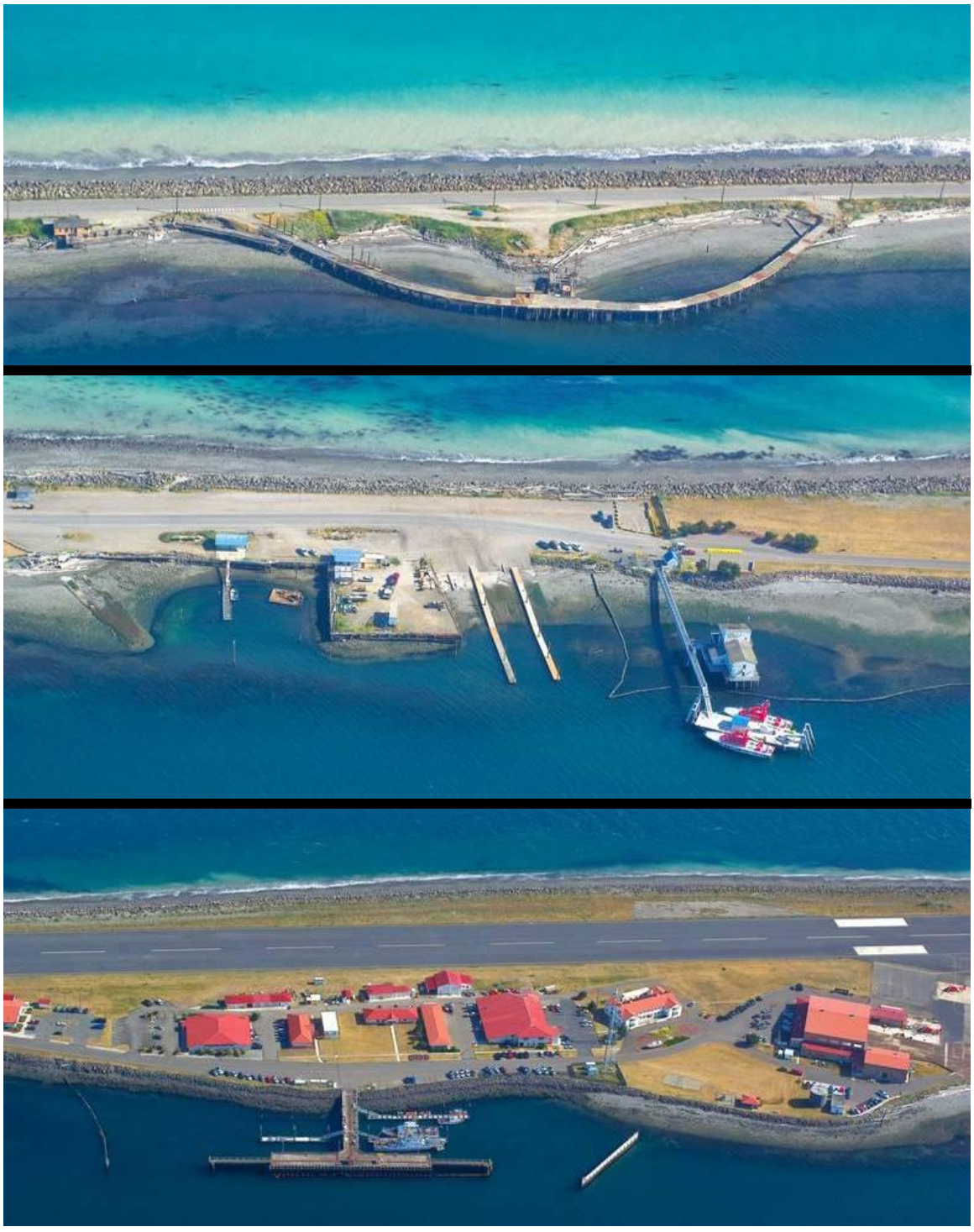

Exhibit 9. Variety of shoreline modifications along Reach 5, all facing north (Ecology Coastal Atlas, June 2006). The structure in the top picture has been removed.

Exhibit 10. Reach 5 photo of unarmored beach and collected large woody debris at the location of the now removed "A-Frame" structure shown in the top photo of Exhibit 9. (photo taken by Makers, July 2010).

Table 11. Function Summary of Reach 5 – Inner Ediz Hook

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	This is naturally a depositional area, but some bank armoring has been placed, indicating some level of erosion.	4
Interference with sediment transport (barriers to longshore drift)	Short jetties likely cause some impediment to sediment transport.	3
Wave and Tidal Energy		
Interference with natural current patterns	Some armoring and jetties in the reach likely influence local currents.	3

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Wave and/or tidal attenuation	Shoreline is largely unarmored, though some armoring exists in the vicinity of the Coast Guard base and around other developments at the east end of the Hook. The Ediz Hook Road is protected with rip rap armoring in several areas where the road is in close proximity to the OHWM.	4
Remove excess nutrients & toxic compounds	No known 303(d) or 305(b) impairments.	5
Redistribution and cycling of LWD & other organic material	Some structures at the Coast Guard base form a partial impediment to transport of LWD and other organic material	3
Vegetative		
Shade	No shade-producing vegetation in this reach	1
LWD and other organic recruitment	No LWD recruitment potential and only minor potential for recruitment of other organic material	2
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	The typical width where vegetation exists is in the range of 30-50 feet, but many places have none. Overall the average is likely near 20'.	2
Shoreline soil stabilization	Where it exists, given the low topography and protected nature of the reach, grasses are likely somewhat effective at stabilizing the shoreline.	3
Wave attenuation	Some armoring near the Coast Guard base, but much of the reach waterfront edge is relatively unaltered and contains some LWD, beach grasses and eel grass for wave attenuation.	3
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	No estuary habitat	1
Shoreline vegetation	Some grassy areas with minor shrubs	2
Direct shoreline alterations	Some shoreline armoring, piers, boat launch, etc.	4
Alteration to shoreline inputs	Neither sediment nor water quality significantly impaired	5
Priority habitats/species (e.g. forage fish spawning, eelgrass, estuarine)	Priority habitat for hardshell clam and abalone, harbor seal, harlequin ducks, and shorebird concentrations	5
	Average Score	**3.1**

Restoration Opportunities

Restoration opportunities in Reach 5 include:

1. Support as feasible continued efforts of WDFW, the Corps, WDNR and other entities to restore this reach. (See Map 22B, #7)

2. At City facilities, explore restoration of armored areas (removal, beach nourishment, LWD placement), design upgrades to any in- and over-water structures (such as launches, piers, etc), removal of any abandoned structures or debris, and revegetation. (See Map 22B, #7)

4.7.8 Reach 6 – Inner Industrial

Existing Condition

Reach 6 extends 0.6 mile along the west shore of Port Angeles Harbor. This reach is the industrial portion of the Nippon Paper Industries facility that fronts the Harbor rather than the Strait (Reach 3). Virtually the entire reach is armored, except for a small beach area at the south end of the reach (Exhibit 11). This portion of the shoreline is highly altered, resulting from the construction of upland fill areas behind shoreline armoring to create facilities to support industrial uses in the area.

This reach contains the opening to the lagoon area at the base of the hook. This channel, also known as the "Drive Ditch" is armored by sheet pile walls on both sides. A small jetty is located to the south of the channel opening to the harbor, further impacting shoreline functions in the reach. A small portion of the shoreline, approximately 300 feet in length and just south of the lagoon channel is not armored and creates a small pocket beach.

In addition to the Nippon paper mill, a marine fueling facility, including a 'tank farm' and moorage for a fuel barge and tug boat, and a facility for Marine Spill Response Corp are located in this reach.

Exhibit 11. View of Reach 6, facing south-west (Ecology Coastal Atlas, June 2006).

Table 12. Function Summary of Reach 6 – Inner Industrial

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	Armoring of most of the reach precludes natural erosion. Armoring is primarily large stone rip rap.	4
Interference with sediment transport (barriers to longshore drift)	Several large modifications, including apparent fills jutting into the Harbor, likely cause some impediment to sediment transport.	2
Wave and Tidal Energy		
Interference with natural current patterns	Industrial infrastructure likely causes significant interference with natural current patterns	1
Wave and/or tidal attenuation	Shoreline has one small unarmored segment approximately 300 feet in length.	2
Remove excess nutrients & toxic compounds	Category 5 for Dissolved Oxygen; Category 2 for 1,2,4-Trichlorobensene; Category 2 for Fecal Coliform. No TMDL	2
Redistribution and cycling of LWD & other organic material	Shoreline is segmented and artificially irregular in shape, impeding circulation of organic material	1
Vegetative		
Shade	No shade-producing shoreline vegetation	1
LWD and other organic recruitment	No trees at shoreline and only a small segment has any vegetation, primarily grass.	2
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	Most areas have no vegetation.	1
Shoreline soil stabilization	Vegetation serves little stabilization function	2
Wave attenuation	Almost entirely armored shoreline, with no significant LWD.	1
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	Some estuary-type habitat near mouth of the lagoon. The mouth of the lagoon has been altered by sheet pile walls on both sides creating a 15-foot wide channel. No natural delta conditions exist.	2
Shoreline vegetation	Little vegetation near the mouth of the lagoon. Nonnative landscape materials exist on the southeast bank of the drive ditch.	2
Direct shoreline alterations	Most of the shoreline is highly altered.	1
Alteration to shoreline inputs	Sediment and water quality disruptions at site.	1
Priority habitats/species (e.g.	Priority habitat for abalone, and part of a bald eagle buffer	5

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
forage fish spawning, eelgrass, estuarine)		
	Average Score	**1.9**

Restoration Opportunities

Restoration opportunities in Reach 6 include:

1. As opportunities arise, modify existing shoreline structures to incorporate design elements that minimize impact.
2. Protect and enhance the remaining area of unarmored shoreline at the south end of the reach.

4.7.9 Reach 7 – Mill Pond

Existing Condition

Reach 7 is the old Nippon log storage pond (Exhibit 12), that is no longer used for that purpose. The pond was once a natural lagoon (Ecology and Environment 2008). It is connected to Port Angeles Harbor by a narrow, sheet pile lined canal (Exhibit 13). As characterized by Pentec (2001), the pond is shallow with large areas of mud flat utilized by crabs and clams. A bald eagle historically nests in the forested area to the south. The pond is associated with forested wetlands to the southeast.

Current ownership and use surrounding the lagoon limits public access to this reach. Portions of this shoreline are armored with sheet pile or large stone rip rap, while other areas are more natural with little armoring. The entire west side is occupied by the Nippon paper mill and portions of the east side is reserved for parking for Nippon employees or temporary storage of materials, with Marine Drive lying close to the lagoon shoreline. The south side of the lagoon is close to the base of the bluff and is partially fed with fresh water seeping out of the bluff face and collecting in a wetland area at the base of the bluff and running into the lagoon. The industrial water line that once supplied water to the Rayonier mill on the east side of the city is located at the base of the bluff. The industrial waterline in this reach has been abandoned in place and no longer supplies water to Rayonier. The pipe line will be left in place for the possible use as a conduit for new utilities. It could also provide a structure on which an elevated public access walkway might be constructed. Such a walk way could provide access to the western beach areas. Whether public ownership or access is eventually enacted here or not, the pond is an area that is vitally significant from an ecological standpoint, and warrants adequate protection.

Exhibit 12. View of Reach 7, facing south (Ecology Coastal Atlas, June 2006).

Exhibit 13. Aerial photograph of the channel outlet of the Nippon mill pond to Port Angeles Harbor (Google maps).

Table 13. Function Summary of Reach 7 – Mill Pond

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	No appreciable erosion	5
Interference with sediment transport (barriers to longshore drift)	This area is isolated from longshore drift.	NA
Wave and Tidal Energy		
Interference with natural current patterns	The outlet may cause some interference with natural current patterns. In addition to the outlet's armoring, a jetty exists approximately 15 feet to the southeast of the outlet, further interfering with currents.	3
Wave and/or tidal attenuation	This area is not well suited to attenuate wave or tidal energy, but some shoreline armoring exists	3
Remove excess nutrients & toxic compounds	Category 5 with respect to Dissolved Oxygen and Fecal Coliform. No TMDL	2
Redistribution and cycling of LWD & other organic material	Site has been used for log storage, and therefore likely contributes to some organic content in nearby water. However, shoreline alterations likely make input of new material difficult. The area is also not well located for distribution of organic material.	1
Vegetative		
Shade	Some shoreline vegetation along the south bank may provide minor shade	2
LWD and other organic recruitment	Some trees in vegetated buffer area, as well as in the associated wetlands. However, the apparent connection between the pond and the associated wetland does not appear to allow substantial inputs of material into the pond.	3
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	Where a vegetated strip exists along the south side of the pond, it is about 200' wide and extends to the top of the marine bluff. However most areas are lacking in shoreline vegetation.	2
Shoreline soil stabilization	The south-west shoreline has some vegetation.	3
Wave attenuation	Wave attenuation occurs primarily at the mouth of the lagoon as waves enter the lagoon.	1
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	Much of the area functions as marsh/wetland, and the old mill pond is associated with forested wetlands to the southeast.	5
Shoreline vegetation	Shoreline vegetation is sparse to nonexistent along most of the shoreline	2

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Direct shoreline alterations	Most of the shoreline has been altered	2
Alteration to shoreline inputs	Water quality is an identified problem	3
Priority habitats/species (e.g. forage fish spawning, eelgrass, estuarine)	Identified as abalone habitat, and also within the buffer of nesting bald eagles. An eagle nest is located near the east end of Crown Park on the forested slope.	5
	Average Score	**2.8**

Restoration Opportunities

Pentec (2001) identifies the following opportunities:

1. Improve channel to allow fish passage at all tides. (See Map 22B, #16)
2. Remove wood debris from the deeper areas of the lagoon.
3. Plant saltwater marsh vegetation and native riparian vegetation.

4.7.10 Reaches 8A-8D - Downtown

Existing Condition

Reach 8 consists of four segments, totaling 3.5 miles in length, of largely industrial area that share in common a high degree of upland development or modification, substantial shoreline armoring, extensive over- and in-water structures, and limited shoreline vegetation (Exhibits 14 through 19). However, Reaches 8C and 8D each contain the outfalls of at least one stream. The estuaries/deltas at the ends of these streams present some of the greatest opportunities for shoreline restoration in the City. Valley Creek, (which separates reach 8C and 8D) in particular, has already been the subject of at least two restoration efforts, likely because it can be accommodated by the existing land use at the downstream end.

Upper reaches of Valley Creek are managed by the Washington State Department of Natural Resources. Lands in the middle reaches of Valley Creek south of 8th Street are zoned for single family residential use and managed for low-density development by Clallam County.

The City of Port Angeles manages the majority of the lands within the lower Valley Creek watershed, north of 8th Street. The most recent Port Angeles Zoning Map (2009) indicates three zoning classifications in the lower watershed. The lands immediately adjacent to the stream course extending to the top of the bluffs enclosing Valley Creek are zoned Public Buildings and Parks. Scattered single-family dwellings are included in this zone in some instances. The culverted section of Valley Creek (from Sixth Street to Second Street) is zoned light industrial. This zone includes a mix of uses including single family residences, light industries, the City's food bank and an electric substation. The lowest reach between 2nd Street and Marine Drive where the stream daylights into the harbor is zoned Commercial Arterial. Currently the estuary area is located within the Industrial Heavy zone. From Eighth to Second Street, the eastern upper watershed above the top of the bluff is zoned Residential High-Density.

Habitat Use and Availability

Fish Passage Barriers (Haring 1999) reports significant impediments to fish passage have been constructed in Valley Creek. The 2,062-foot series of box and metal culverts (explained above) were placed at gradients of up to 3.4 percent and contain at least one hydraulic jump. This culvert system almost certainly limits fish access, particularly at low tidal stages. At the Highway 101 crossing (RM 1.2), Valley Creek flows through an eight foot by seven-foot smooth-bottomed culvert, 58 feet long. Baffles were added to the culvert bottom in 2000, potentially opening 4,158 square meters of spawning habitat and 7,725 square meters of rearing habitat (Haring 1999). The Laurel Street culvert, on the East Fork of Valley Creek may also have fish passage problems.

Culverts provide a paradox for migrating salmon: as flows increase, depth conditions improve slowly, while velocity increases dramatically. In other words, at times of low flow, depths are insufficient for fish passage. As flows increase, depths become adequate, but the velocity of the water inhibits fish passage. In culverts, WDFW recommends a minimum depth of one foot and a maximum flow of three feet per second to ensure passage of coho salmon.

In natural channels, Bjorn and Reiser (1991) found that chum, coho, and steelhead cannot migrate with less than a minimum depth of 0.6', and velocities greater than 7.97 fps (McHenry and Odenweller 1998). Average velocity conditions within the culvert system at flows expected during migration exceed these standards. At low flows water depths are insufficient to pass salmon. In order to ensure passage of salmonids, significant changes will be required of the culvert system. Renovation of the reach between 9th Street and the estuary is in the planning stages. A complete plan set for enhancement of the section has been completed. The section from 9th Street to 6th Street will be re-meandered and will include additions of LWD and riparian vegetation. The section between 5th and 6th Streets will be day-lighted, with the remaining culverted section being enhanced for fish passage by the insertion of baffles in the culvert.

According to WDFW, Valley Creek and Tumwater Creek are used by four priority fish species: chum and coho salmon, coast resident cutthroat trout, and steelhead trout. Peabody Creek is reportedly only used by cutthroat and steelhead.

Land Use History

Reach 8A contains the site of the historic Lower Elwha Klallam Tribe village, Tse-whit-zen. More recent history has seen the site used for a variety of industrial uses, including sawmills and boat building during the second world war. Most recently, the State of Washington Department of Transportation purchased the area with the intent of constructing a 'graving yard' for the purpose of building pontoons for floating bridges on state roads. When the remains of the Klallam village were discovered, the project was abandoned and the land was returned to the Tribe after a period of negotiation and an agreement reached between the involved parties. Since that time, the human remains that were disturbed from the site during the state's excavation have been reinterred at the site and the surface returned to the pre-excavation condition. The Tribe is planning for a future development of the site.

Reach 8B contains the Boat Haven Marina. The Boat Haven is an important economic engine for the City, occupying 34.5 acres of the waterfront. The marina, developed in the 1950's includes two boat launches, and slips for 520 boats of varying sizes ranging from 24 to 50 feet and up to 200 feet broadside, an area for upland boat repair, a 70-ton mobile straddle boat hoist, and related marine services including marine supply, charter services, bait and tackle shop, restaurants, showers, waste/trash disposal for tenants, fueling facilities and the Harbor Master's office. Private

firms provide boat maintenance; there are 10 to 12 shipwrights working independently at the marina. The Port of Port Angeles owns and operates the marina and in 2004 created the Port Angeles Boat Haven Master Plan and in 2008 created the Port of Port Angeles Strategic Plan.

The marina is located between two highly industrialized areas on the harbor shoreline. To the west, the Port of Port Angeles has consolidated its log handling operations (reach 8A), and to the east (reach 8C) Westport Marine operates a yacht building operation and Platypus Marine operates a major boat repair facility. The Port of Port Angeles operates terminal 1 conducting topside repair on large ocean going vessels and Terminal 3, where export logs are loaded onto ships. The now vacant K-Ply/PenPly mill is located immediately east of Terminals 1 & 3. The vacant plywood mill has recently closed and the Port has begun the process of demolition with the intent of redeveloping the site for unspecified marine trade uses.

The location of the marina has created issues of access and how the Waterfront/Olympic Discovery Trail and bicycle lanes interact with vehicle access to the marina and other uses in the area. The only waterfront access is along Marine Drive on the south side of the marina, while no direct public access to the water is available throughout the more industrialized portions of the reach. Redevelopment on the plywood mill site may result in better shoreline access, however, conflicts with future uses may preclude shoreline access. Any redevelopment in the area must consider the Waterfront/Olympic Discovery trail and make improvement for the safety and comfort of trail users.

Reach 8C includes the Port terminals, plywood mill site, and marine trades mentioned above. In addition, Tumwater Creek empties into the harbor in this reach. Tumwater Creek watershed is approximately 5.6 square miles (-3600 acres) in size, with headwaters in the lower foothills at the northern boundary of Olympic National Park. The upper portion of the watershed has been modified by past and ongoing forest harvest, resulting in a mosaic of timber ages and altered hydrologic character. The central and lower portions of the stream have been modified by residential, agricultural, road, and commercial/industrial development (Economic and Engineering Services, Inc. 1996).

Tumwater Creek is heavily impacted by urban and industrial development in the lower reaches. Rural development and impacts of stormwater runoff have created serious habitat problems throughout the watershed. Sediment yield from a stormwater related massive gully head-cutting off Black Diamond Road through late 2002 was so great that Tumwater Creek remained highly turbid throughout the winter. Although this had been a long-standing problem, the extent of impact worsened as a result of increased slide and erosion activity in 1997 and again in 2002.

The continuing severity of this problem resulted in an extensive repair and stabilization of the slopes, the drainage, and the associated slide area. This repair was completed in Fall, 2004 and is expected to fully resolve the decades-old slide/sediment problems.

Tumwater Creek, which is adjacent and immediately to the west of Valley Creek, is very similar to Valley Creek. Although the upland subwatersheds of Tumwater Creek are smaller in area than those of Valley Creek, these subwatersheds reach to elevations in excess of 2,200 feet at the crest of the western end of the foothills. The upland subwatershed and the adjacent upper part of the lowland subwatershed show a well integrated drainage network that supports flow in Tumwater Creek. The streamcourse within this lowland subwatershed flows within a broad valley having an open valley floor.

As the streamcourse passes into the lower part of the lowland subwatershed, the valley of Tumwater Creek narrows and becomes more ravine-like. This character is carried into the

somewhat elongate, yet broad, coastal lowland subwatershed. Here, the streamcourse of Tumwater Creek parallels that of Valley Creek (Perry 2001).

Urbanization is very evident within the coastal lowland subwatershed of Tumwater Creek. Virtually the entire subwatershed has been developed, with very little undeveloped area remaining, except within the narrow riparian corridor along the stream. Within the coastal lowland subwatershed areas of the streams, Tumwater Creek does not have a well preserved green-belt corridor protecting the stream. Somewhat above Highway 101, Tumwater Creek lies within a green-belt corridor.

As Tumwater Creek reaches the harbor, it becomes increasingly contained in first an armored channel, then through a culvert under Tumwater Street and Marine Drive before daylighting into a sheet pile lined channel that eventually empties into the harbor with few delta or estuary characteristics. The mouth of Tumwater Creek does offer potential restoration potential, however, its location between two heavily industrialized parcels of land complicates restoration efforts.

Reach 8D is the current downtown of Port Angeles. The western portion of this reach is relatively undeveloped at this writing, however, plans for redevelopment of the entire waterfront of this subreach have been developed with permitting underway. First phase construction is scheduled to begin in 2012 or 2013. Subsequent phases of the plan will create two small beach areas and a new park area between downtown and Valley Creek Estuary park, a reconfiguration of both the Laurel Street and Lincoln Street intersections with Railroad Avenue, and reconfigure the existing shoreline armoring to better facilitate public shoreline access.

The downtown segment includes the Black Ball Ferry company's ferry dock and the adjacent Landing Mall. Both of these structures extend into the harbor on artificial fill behind large stone rip rap. To the east of Lincoln Street (which covers the culverted Peabody Creek) is the City owned City Pier Park. The park includes the city pier, seasonal moorage floats, Hollywood beach, and the Fiero Marine Life Center. This area is a major attraction for local citizens seeking waterfront activities. The park hosts the January 1, Polar Bear Dip, the Arts In Action Sand Sculpture contest, the City's Fourth of July celebration, weekly concerts on the pier during summer months and a wide variety of other activities throughout the year.

A major motel, (the Red Lion Motor Inn) lies directly south of the Hollywood Beach and is within 50 feet of the OHWM. The property occupies approximately 1,000 feet along the shoreline on a 5.9 acre site. This motel hosts a wide variety of activities in their banquet and restaurant areas, and lodges a large number of visitors throughout the year.

Exhibit 14. View of the northern portion of Reach 8A, facing west (Ecology Coastal Atlas, June 2006).

Exhibit 15. View of the southern portion of Reach 8A, facing west (Ecology Coastal Atlas, June 2006). The Port of Port Angeles currently uses this area for log handling operations.

Exhibit 16. View of Reach 8B, facing south (Ecology Coastal Atlas, June 2006).

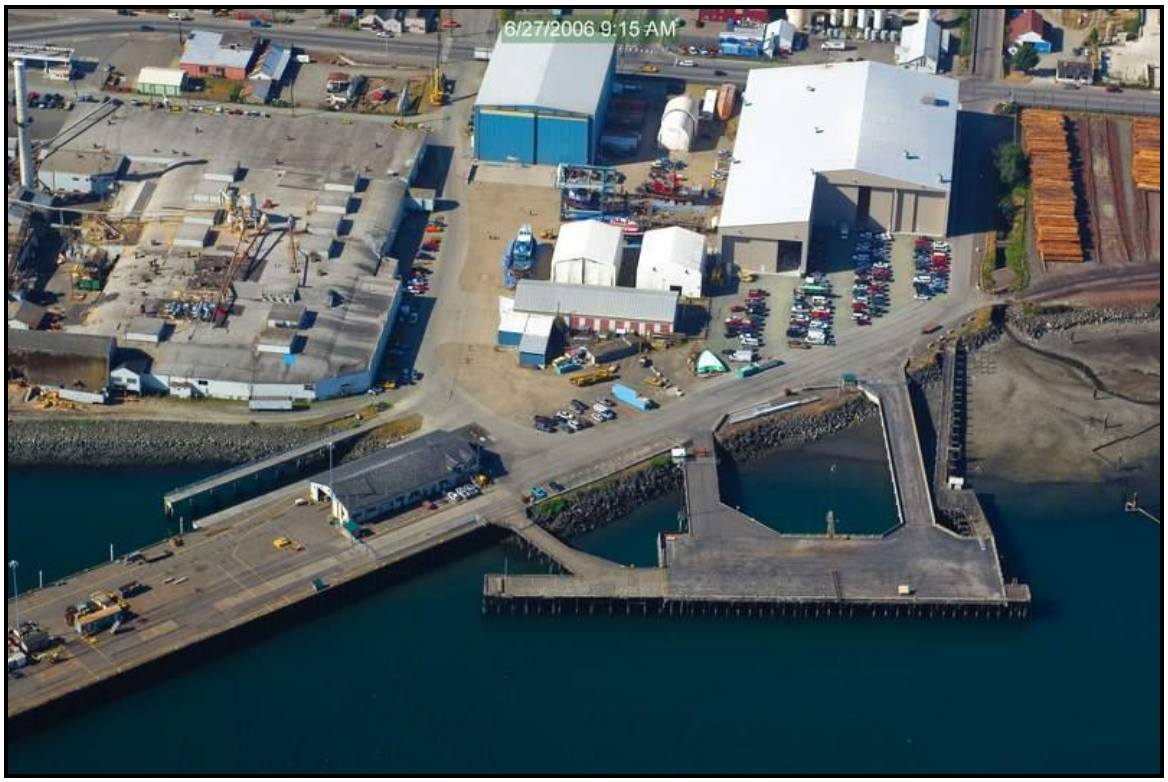

Exhibit 17. View of Reach 8C, facing south (Ecology Coastal Atlas, June 2006). Note the delta of Tumwater Creek on the right side of the photo. Terminal 3 is shown on the lower right and Terminal 1 on the left.

Exhibit 18. View of western portion of Reach 8D, facing south (Ecology Coastal Atlas, June 2006). Note the delta of Valley Creek in the center of the photo.

Exhibit 19. View of eastern portion of Reach 8D, facing south (Ecology Coastal Atlas, June 2006). Note the delta of Peabody Creek in the center of the photo.

Table 14. Function Summary of Reaches 8A-8D – Tse-whit-zen, Marina, Transition and Mixed Use

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	With the exception of the mouth of Valley Creek, the entire shoreline of all four sub-segments is armored. Armoring is primarily large stone rip rap.	A-C = 5 D = 4
Interference with sediment transport (barriers to longshore drift)	Each segment has at least one barrier to longshore drift. Seven docks extend from points of artificial fill. The Boat Haven Marina also impairs long shore drift.	3
Wave and Tidal Energy		
Interference with natural current patterns	All segments have some structures that influence local currents.	3
Wave and/or tidal attenuation	Except for part of segment D, the Valley Creek estuary and Hollywood Beach, all shorelines are armored	A-C = 1 D = 2
Remove excess nutrients & toxic compounds	Category 2 for Fecal Coliform in segments A, B, and D.	A, B, D = 3 C = 5
Redistribution and cycling of LWD & other organic material	Jetties, piers, and other shoreline alteration interfere with the movement of organic debris in all segments	1
Vegetative		
Shade	Virtually no shade-producing vegetation exists in any of the segments	1
LWD and other organic recruitment	Lack of vegetation precludes input of LWD and other organic material	1
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	No vegetated buffer on these reaches.	1
Shoreline soil stabilization	No vegetation to provide stabilization	1
Wave attenuation	No vegetation to provide attenuation	1
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	Reaches C and D have estuary habitat. Reach C (Tumwater Creek) is a small delta. Reach D (Valley Creek) is the site of an estuarine habitat restoration project.	A, B = 1 C = 2 D = 4
Shoreline vegetation	Shoreline vegetation is severely limited on all reaches, but Reach D has some small native plantings associated with the Valley Creek restoration project.	A-C = 1 D =3
Direct shoreline	All reaches are predominantly altered.	1

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
alterations		
Alteration to shoreline inputs	Reaches A and B are impacted by water quality problems issued from Tumwater Creek, which is a 303(d) listed water for fecal coliform. Reach C, where Tumwater Creek outfalls, is NOT included in the 303(d) listing except for the Creek itself. Reach D receives water from Peabody Creek, also listed for fecal coliform.	3
Priority habitats/species (e.g. forage fish spawning, eelgrass, estuarine)	Dungeness crab habitat exists just off shore from these reaches, but not at the shoreline. Reach A is part of a bald eagle buffer. Reaches C and D contain priority fish in tributary streams.	A = 5 B = 1 C = 5 D = 5
Average Scores		**A = 2.0** **B = 1.7** **C = 2.1** **D = 2.3**

Restoration Opportunities

Pentec (2001) generally identifies the following opportunities in Reaches 8A-8D:

1. Improve stream/estuarine habitat in the streams entering Port Angeles Harbor, similar to what was recently accomplished on Valley Creek. Actions could include: (See Map 22B, #15, #20, #21)
   - "recontouring to increase the area of shallow water habitat,
   - placement of LWD, and
   - planting of native marsh and riparian vegetation."
2. Improve conditions along armored shorelines where feasible by implementing one or more of the following:
   - "riprap removal,
   - slope cut-back,
   - additions of finer-grained sediments,
   - placement of LWD, and
   - riparian plantings."
3. Establish or reestablish eelgrass beds, including areas of wood accumulation once they have been capped with sand.
4. Clean up and restore Unocal Bulk site. (See Map 22B, #3)
5. Restore Hollywood Beach. (See Map 22B, #9)

Additional restoration opportunities are available at the Oak Street waterfront property, which is currently owned by the City of Port Angeles. (See Map 22B, #13)

Restoration of this entire reach is planned for in the City's Waterfront and Transportation Improvement Plan (WTIP), which is currently in the permit review phase of development.

4.7.11 Reach 9 – Olympic (Francis Street Reach)

Existing Condition

Reach 9 extends approximately 0.6 mile, from the eastern edge of the highly developed Downtown area to the western edge of the former Rayonier Mill site. The reach is entirely armored, with the Waterfront/Olympic Discovery Trail running along the one time railroad grade just landward of the armored shoreline (Exhibit 20). Except for the Francis Street Park, the reach is generally forested on the bluff above of the trail, with a few residential developments at the outer fringe of shoreline jurisdiction. The residential development is all located at the top of the marine bluff with only small setbacks from the bluff top. This reach also includes the Olympic Medical Center Hospital, also located at the top of the bluff.

Exhibit 20. View of Reach 9, facing south (Ecology Coastal Atlas, June 2006). Francis Street Park is shown in the left portion of the picture.

Table 15. Function Summary of Reach 9 – Olympic (Francis Street Reach)

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	Entire shoreline is armored. Armor material is large stone rip rap.	5

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Interference with sediment transport (barriers to longshore drift)	Sediment transport is presumably altered in the rate or type of sediment movement as affected by the interaction of the armoring with the water. However, there are no barriers to movement of sediment along the shoreline, other than a storm sewer outfall pipe that extends from Francis Street Park and acts as a groin.	4
Wave and Tidal Energy		
Interference with natural current patterns	Armoring may interfere with local currents somewhat.	3
Wave and/or tidal attenuation	Entire shoreline armored.	1
Remove excess nutrients & toxic compounds	Category 5 for fecal coliform and sediment bioassay; no TMDL.	2
Redistribution and cycling of LWD & other organic material	Armoring may interfere somewhat with vertical movement of organic input. Vegetation is set back from the shore by the armoring and a trail, but is likely close enough to allow some input to the water. Small slides from the marine bluff onto the trail are cleared by deposition onto the waterside of the shoreline armoring.	3
Vegetative		
Shade	Shoreline well-vegetated with trees, but they are set back some from the shore.	1
LWD and other organic recruitment	Nearby vegetation provides an opportunity for recruitment, but is limited by the trail and armoring. LWD is deposited waterward of the trail as slides occur.	3
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	Moderately wide buffer, but separated from the shoreline by a paved trail.	3
Shoreline soil stabilization	Vegetation, while abundant, is separated from the shoreline and plays no role in shoreline stabilization	2
Wave attenuation	Shoreline armored	1
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	No estuary or wetland habitat	1
Shoreline vegetation	Mostly vegetated with what appears to be primarily native species upland of the trail. Some nonnative tree species have been planted as memorials on the waterside of the trail. Many of these memorial trees are not robust and show signs of the harsh shoreline conditions.	4
Direct shoreline alterations	Shoreline armored	1

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Alteration to shoreline inputs	Significant water quality and sediment quality problems	1
Priority habitats/species (e.g. forage fish spawning, eelgrass, estuarine)	Priority habitat for red sea urchin in eastern portion of reach. Also eelgrass meadow and common loon.	5
	Average Score	**2.5**

Restoration Opportunities

Pentec (2001) generally identifies the following opportunities in Reach 9:

1. Improve conditions along armored shorelines where feasible by implementing one or more of the following:
    - "riprap removal,
    - slope cut-back,
    - additions of finer-grained sediments,
    - placement of LWD, and
    - riparian plantings."

2. Establish or reestablish eelgrass beds, including over areas of wood accumulation once they have been capped with sand.

4.7.12 Reach 10 - Rayonier

Existing Condition

Reach 10 comprises the upland Rayonier properties which contained an operating sawmill and associated facilities until 1997. After the upland facilities were dismantled in 1999, Rayonier, Inc. and the Washington Department of Ecology began working together to identify and cleanup contaminants on the site under the Washington Model Toxics Control Act (BergerABAM 2010). Some of the contaminants requiring cleanup include: dioxins, furans, total petroleum hydrocarbons, carcinogenic polynuclear aromatic hydrocarbons, PCBs, metals, and others (BergerABAM 2010). The site remains highly altered, with areas of shoreline armoring, a breakwater/jetty, significant overwater cover, impervious surfaces, and very sparse shoreline vegetation (Exhibits 21 through 23). Detailed information about the Rayonier properties investigations, including areas outside of shoreline jurisdiction, can be found at http://paharborworks.org/Final%20Due%20Diligence6_10_10/duediligenceindex.html.

Ennis Creek (Exhibit 22) is an important tributary of the Harbor in this reach, containing four priority fish species: chum and coho salmon, coast resident cutthroat trout, and steelhead trout (WDFW 2010). The riparian area in the nearshore 100 feet of Ennis Creek is mostly unvegetated except for recent plantings of willow, red alder, and blue wildrye (BergerABAM 2010). Upstream, the riparian area "consists of a 5- to 10-foot-wide band of red alder and few understory shrubs" (BergerABAM 2010).

The floodplain of Ennis Creek is moderately confined by urban development (Haring 1999). The lower portion of Ennis Creek is constrained to the east by the City of Port Angeles wastewater treatment plant (Haring 1999).

Development along the stream corridor has led to the management or removal of some riparian vegetation. These activities in turn may result in the destabilization of streambanks and increased streambank erosion.

Mature deciduous trees have replaced the historic coniferous vegetation along parts of the stream. The deciduous riparian zone provides less and lower quality large woody debris to the stream and alters the streamside canopy (Goin personal communication 2002). In addition, livestock access to the corridor has trampled streambanks, increased streambank erosion, and increased the likelihood of animal wastes and associated pollutants in the aquatic environment (Economic and Engineering Services, Inc. 1996).

Ennis Creek is a significant drainage to salt water, entering the Straits at the eastern end of Port Angeles Harbor (Haring 1999). With a length of 8.65 miles, it is the smallest snowfed stream on the Olympic Peninsula, draining approximately 10.5 square miles (Walton 1983, Haring 1999, Port Angeles Stormwater Management Plan 1996). The southernmost headwaters of Ennis Creek exceed a level of 6,000 feet (Tetra Tech 1988, Haring 1999). From its highest elevations along Klahane Ridge, the valley wall drops abruptly more than 2,200 feet to its first step in the valley floor, at an elevation of about 4,150 feet (Perry 2001).

Lake Dawn, created some time in the early 20th century, lies at approximately 2,000 feet in the uplands subwatershed. Ennis Creek is generally steep and is confined within much of its length by valley side slopes (Haring 1999). Both Ennis Creek and White Creek, its major tributary, pass through forested parcels, agricultural and pasture lands, commercial, and residential communities (Economic and Engineering Services, Inc. 1996).

The 4.35 mile long White Creek enters Ennis Creek at RM 0.3, is heavily degraded from urbanization, and has little production potential due to extensive culverting and impassable culverts (Haring 1999). The floodplain immediately downstream from the confluence of White and Ennis creeks is channelized and fully constrained by dikes, armored banks, culverts, the Rayonier Mill parking lot, and several bridges associated with the mill (Haring 1999).

The mill was dismantled by 2001 is continuing to be rehabilitated, with a completion date still unspecified. Future use of the reclaimed site, especially the new use, if any, of the floodplain area will have a major impact on the long term health of the watershed and on the prospects for successful habitat and fisheries restoration. As mentioned earlier, portions of the site have recently been purchased by the City to facilitate remediation of the CSO issue. That project will remove one of the bridges crossing Ennis Creek and will replace that bridge with one designed to provide adequate floodway functions. The project will also change the course of the Waterfront/Olympic Discovery Trail.

Major Subwatersheds

A comprehensive overview of watershed conditions completed by the Bureau of Reclamation (Perry 2001) defines five unnamed subwatersheds within the Ennis Creek drainage area. Perry calculated that the largest contributor to flow is the highland subwatershed covering the southern third of Ennis Creek. This area is defined by a steep glacial valley flanked by alpine and subalpine mountain ridges.

A second upland subwatershed includes a small highland region with a well-integrated drainage network. The lowland and coastal lowland subwatersheds together constitute slightly less than one third of the watershed drainage. White Creek represents two subwatersheds of the Ennis Creek watershed including upland and lowland areas. Flow is primarily developed in the small upland subwatershed area and much larger lowland subwatershed area, amounting to less than one-third of the Ennis Creek watershed.

The lower channel and estuary have been significantly altered. It is thought that Ennis Creek historically emerged from the bluff over an alluvial fan discharge into Port Angeles Harbor. There is no evidence that Ennis Creek flow lost an open connection to marine waters, even during summer low flows. Historic photographs would indicate that Ennis Creek discharged directly to the harbor over a broad intertidal flat (Freudenthal, as quoted by Haring 1999).

Randy Johnson of the Washington Department of Fish and Wildlife (personal communication 2001) suggests that the mill site has completely consumed the natural estuary of Ennis Creek. He references historic photographs to show that estuary conditions included about eight acres of salt marsh, with thirteen acres of sand and gravel flats. These twenty-one acres of intertidal flats associated with Ennis Creek were filled and covered over by the mill. Buildings built on pilings covered areas that were not filled. On the east bank where a building was removed, a portion of the former salt marsh, is now exposed but prolific with pilings. Fill material prevents stream and tidal flow from entering this area.

The Rayonier Mill also extended into the subtidal area. Seaward of the intertidal area, the mill covered about five acres of subtidal flats. Seaward of the mill itself, the industrial pier covers another five acres. The development of the mill site has limited the natural mixing of salt and fresh water from Ennis Creek, altering hydrology and habitat.

Rayonier, Inc. has recently applied for permits to repair 800 creosote treated pilings and 300 fender pilings of the existing 5,000 pilings supporting its industrial pier, located at 700 North Ennis Street. The City of Port Angeles approved the associated Shoreline Substantial Development Permit No. SMA 01-05 (City of Port Angeles 2001). The Washington Department of Fish and Wildlife denied Rayonier's hydraulics permit due to Rayonier's failure to mitigate for the negative impacts of actions (Johnson personal communication 2002).

The following excerpt from the Ennis Creek Watershed Characterization (Costello 2002) described the historic estuary condition and subsequent impacts:

> *"... estuary conditions included about eight acres of salt marsh, with thirteen acres of sand and gravel flats. These twenty-one acres of intertidal flats associated with Ennis Creek were filled and covered over by the mill. Areas that were not filled were covered by buildings built on pilings. On the east bank where a building has been removed, a portion of the former salt marsh, is now exposed but prolific with pilings. Fill material prevents stream and tidal flow from entering this area."*

As part of the Rayonier cleanup, restoration of Ennis Creek and the former Ennis Creek estuary is anticipated in a partnership between Rayonier, Inc. and the Lower Elwha Klallam tribe (Costello 2002). Conceptual plans have been developed, and include removal of the jetty and dock, and other remaining impervious surfaces and structures.

East of Ennis Creek is a stretch of gravel beach that is not armored. Although there is no substantial shoreline vegetation, the beach has collected abundant woody debris and has some grass and shrub vegetation landward.

Exhibit 21. View of Reach 10, facing south (Ecology Coastal Atlas, June 2006).

Exhibit 22. View of the central portion of Reach 10, facing south (Ecology Coastal Atlas, June 2006). Note the Ennis Creek delta and stream corridor.

Exhibit 23. View of the eastern portion of Reach 10 east of Ennis Creek, facing south (Ecology Coastal Atlas, June 2006).

Table 16. Function Summary of Reach 10 - Rayonier

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	A good portion of the shoreline is armored; unarmored parts show little evidence of erosion.	4
Interference with sediment transport (barriers to longshore drift)	A breakwater or jetty on the western portion of the reach likely interferes with longshore drift patterns, though this only impacts a relatively small drift cell.	3
Wave and Tidal Energy		
Interference with natural current patterns	Armoring, breakwater and pier interfere with natural current patterns on the western portion of the reach.	3
Wave and/or tidal attenuation	Approximately half the shoreline is armored.	2
Remove excess nutrients & toxic compounds	Category 5 for sediment bioassay; no TMDL	2
Redistribution and cycling of LWD & other organic material	Western shoreline is segmented. Eastern shoreline is not.	3
Vegetative		
Shade	No shade-producing shoreline vegetation.	1
LWD and other organic recruitment	No potential for LWD recruitment other than what may pass down Ennis Creek. Some potential for other organic recruitment.	2
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	Buffer in eastern portion is nearly 300 feet wide, but very sparsely vegetated. Remainder of site has no functional vegetated buffer.	2
Shoreline soil stabilization	Vegetation at shoreline is not a significant contributor to stabilization.	2
Wave attenuation	Primarily armored shoreline	1
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	Significant delta at mouth of Ennis Creek.	3
Shoreline vegetation	Sparse vegetation, where present.	2
Direct shoreline alterations	Entire reach is a former industrial site, and had been developed.	1
Alteration to shoreline inputs	Severe sediment quality issues in portions. The pier at the site creates approximately 4 acres of overwater shaded area.	3
Priority habitats (e.g. forage fish spawning, eelgrass, estuarine)	Priority habitat for red sea urchin. Also harbor seal and seal haulouts, bald eagle nest buffer, and seabird colony.	5
	Average Score	**2.4**

Restoration Opportunities

Restoration is currently in the planning and/or implementation stages by Rayonier, Inc. and the Lower Elwha Klallam tribe, including elements related to contaminant cleanup, structure/modification removal (dock and jetty), and Ennis Creek/estuary restoration. (See Map 22B, #2, #22, #23)

4.7.13 Reach 11 – Eastern City (UGA)

Existing Condition

Reach 11 extends approximately 2.1 miles, from the eastern City limits near the edge of the Rayonier properties east to the boundary of the City's urban growth area. The Waterfront/Olympic Discovery Trail continues along the water's edge the length of the reach, protected by large rock armoring (Exhibit 24). Upland of the trail, the often steep bluffs are covered with what appears to be native forest. This native forest is recent succession growth following earlier logging operations and is comprised primarily of red alder and big leaf maple trees with some Douglas firs interspersed. Tree removal for view enhancement is a popular activity for bluff top residents throughout the eastern reaches of the Port Angeles area. Lees Creek, which segments the eastern reach, contains four priority fish species: chum and coho salmon, coast resident cutthroat trout, and steelhead trout (WDFW 2010).

The Lee's Creek neighborhood is located within the narrow confines of the area between Highway 101 and the Strait. The neighborhood has a distinctly low density, rural residential character with most residences located north of Myrtle Street. The average density is less than two units per acre due to large areas being in wetlands. It is unlikely that densities higher than two units per acre could be supported north of Columbia Street due to the number of developed parcels and the constrained nature of much of the remaining land.

The neighborhood has several large wetlands which must be protected and retained in order to control the volume of stormwater which is currently being generated from commercial development near Highway 101. A 20-acre wetland site on Brook Avenue was recently purchased by a neighborhood landowner in order to protect this area in its natural state. In addition, drainage ditches in the fields west of Brook Avenue and on Bay Street and Larch Avenue must be regularly maintained as they tend to become blocked and cause road damage in high rainfall events.

The appearance of the commercial area near Highway 101 concerns neighborhood residents. They support efforts to upgrade the appearance of Highway 101 with street trees, landscaping and new neighborhood scale businesses along the neighborhood commercial corridor. Providing for a mix of moderate density residential in the neighborhood commercial areas would enhance the trend already apparent in this neighborhood. While the commercial businesses on Highway 101 provide needed neighborhood services, the neighborhood would like to retain its essentially residential character by ensuring that commercial development does not encroach north of an east/west line extending from either end of Myrtle Street The Lee's Creek neighborhood does not want to develop like the hospital area in Port Angeles and see commercial businesses force residential dwelling from the neighborhood (see land use section for goal addressing commercial development in Lee's Creek).

The steep-sided creek ravines and creek bottom lands of Lee's Creek as well as the marine bluffs on the Strait should be protected for public safety, maintenance of water quality and as linear wildlife corridors through the neighborhood. These areas when left in a natural state stabilize the geologically unstable ravine and bluff environments, filter out sediments before they reach

streams and shorelines and provide critical habitat for eagles, falcons, and other birds utilizing trees for perch or nesting. Allowing transfer of development rights from these areas and providing open space tax benefits to owners will further the protection of these critical areas.

Stormwater runoff is causing considerable bluff-front gully erosion and deposition. Controlling the scale of commercial development in urban neighborhood commercial land use designations located on Highway 101 should limit the impacts of stormwater on adjacent residential developments to the north. When developments are reviewed, maintenance of natural water control in the form of wetlands should be a prime concern along with ensuring on-site retention and slow release of stormwater from urban development.

Exhibit 24. View of west-central portion of Reach 11 including the Lees Creek outfall and estuary, facing south (Ecology Coastal Atlas, June 2006).

Table 17. Function Summary of Reach 11 – Eastern City (UGA)

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Hydrologic		
Sediment		
Erosion	Bank armored to protect trail at base of bluff. No significant erosion	5

Shoreline Functions within Reach	Alterations and Assessment of Functions	Shoreline Function Score
Interference with sediment transport (barriers to longshore drift)	Sediment transport is presumably altered in the rate or type of sediment movement as affected by the interaction of the armoring with the water. However, there are no barriers to movement of sediment along the shoreline.	4
Wave and Tidal Energy		
Interference with natural current patterns	Armoring may produce minor influence on natural current patterns	3
Wave and/or tidal attenuation	Much, but not all, of shoreline is armored	2
Remove excess nutrients & toxic compounds	Lees Creek is Category 2 for fecal coliform, and Category 5 for dissolved oxygen. No listings in the marine waters.	3
Redistribution and cycling of LWD & other organic material	Armor and trail may interfere somewhat with natural cycling of organic inputs	3
Vegetative		
Shade	Shoreline well-vegetated with trees, but they are set back some from the shore.	3
LWD and other organic recruitment	Nearby vegetation provides an opportunity for recruitment, but is limited by the trail and armoring.	3
Width (feet) of vegetated buffer to remove nutrients, fine sediment, and toxic substances.	Wide buffer, but separated from the shoreline by a paved trail and bank armoring	3
Shoreline soil stabilization	Vegetation, while abundant, is separated from the shoreline and plays no role in shoreline stabilization	2
Wave attenuation	Shoreline mostly armored, but unarmored portions have abundant LWD.	2
Habitat		
Estuary/wetland/ riparian (freshwater) habitat	Small estuary formed at mouth of Lees Creek	2
Shoreline vegetation	Mostly vegetated with native species	4
Direct shoreline alterations	Armoring along trail through most of reach	1
Alteration to shoreline inputs	Lees Creek is a known water quality issue	3
Priority habitats (e.g. forage fish spawning, eelgrass, estuarine)	Priority habitat for red sea urchin, bald eagle nests and buffers, urban natural open space, and cliff/bluff habitat.	5
	Average Score	**2.9**

Restoration Opportunities

Restoration opportunities in Reach 11 include:

1. Seek ways to mitigate some of the negative impacts of armoring, by including LWD in the armoring or possibly providing beach nourishment along the armored segment to simulate natural sedimentation rates.
2. Implement Lees Creek watershed restoration. (See Map 22B, #25)

5 LAND USE ANALYSIS AND IMPLICATIONS

Introduction

The City of Port Angeles has an estimated population of 19,080 people (2010 census), with associated municipal wastewater and stormwater infrastructure to support the local community. Historically and currently, the Harbor has received discharges from combined sewer overflows, the City of Port Angeles wastewater outfall, septic systems in various stages of disrepair outside the city limits, and non point source runoff from stormwater (CPAPWD 2006, CCMRC 2001). The Harbor also receives direct surface water discharge from the six freshwater creeks in the area, all of which have varying degrees of residential and commercial land-use influences.

Five of the creeks are listed as impaired in terms of water quality and biological quality by the Clallam County Stream Keepers (CCDCD 2004). Shellfish harvesting and fishing historically have been important commercial and subsistence activities in the Harbor, particularly for the Lower Elwha Klallam Tribe (LEKT), who are subsistence-level consumers of shellfish (ATSDR 2000a, Ecology 2008a). Harbor fisheries have been impacted due to environmental quality issues (Beaverson 1998, Clallam County Marine resources Interactive Workshop 2001). Anthropogenic impacts from various sources including wastewater pollution, industrial-based contaminants, and stormwater runoff may have contributed to apparent declines in shellfish and fish populations, as well as to the closure of historic shellfish tracts for commercial harvesting (Beaverson 1998; Clallam County Marine Resources Interactive Workshop 2001).

Land use patterns are an important consideration in SMP analysis because such analysis can identify opportunities for "preferred uses," especially water-dependent, water-related and water-enjoyment uses. Land uses adjacent to the water are also a determinant in assigning environment designations to specific sections of the shoreline. Additionally, an analysis of land use conditions is necessary to determine potential land use changes and their effect on shorelines with respect to SMA objectives. Finally, the existing land uses and proposed environment designation boundaries and provisions must be mutually consistent with the City's comprehensive plan.

Businesses which provide regional services have been grouped at convenient locations at major intersections within the urban growth area and conform to visually pleasing landscape and building design standards. These regional service center sites have been identified both within the City of Port Angeles and within the unincorporated urban growth area. Developers seeking to build a regional business facility are directed to these community approved sites. All neighborhood and regional business centers are linked by an efficient local transit system. Tribal business centers have also grown to become major employers within Clallam County.

Most new manufacturing and industrial concerns are located at the expanded Airport Industrial Park. A major push to provide infrastructure and prebuilt manufacturing sites combined with a major marketing effort in the mid-1990's proved fruitful with several small to mid-size manufacturers relocating to Clallam County. These industries, along with local industries that were encouraged to grow with local support, now supply jobs and have replaced jobs lost in other manufacturing sectors. The Airport Industrial Park has maintained a campus-like appearance which provides an attractive site to relocate a business.

Port activity has also increased markedly in the last 20 years. Cruise ships and high speed passenger ferries now regularly stop in Port Angeles with visitors connecting to various points of interest in the County. Many value-added wood products, other manufactured products and

specialty food products are being shipped from plants in the County to the Pacific Rim Nations. The Port has become a major marine repair and oil spill response center.

The urban area of Port Angeles provides a mixture of employment, residential, commercial, cultural and recreational opportunities. Peninsula College is now offering advanced four-year degrees in some program areas. Much of the new development and redevelopment which occurred after 1995 took place within the existing urban center of Port Angeles where infrastructure was in place or could be easily extended. Today, there is still ample room for development within that original urban growth area. The City of Port Angeles recently extended a sewer main line through the urban growth area and new developments in the area will be required to hook into the city sewer system. The Clallam County Public Utility District supplies water and electricity to the urban growth area and Clallam County Sheriffs provide police protection. Fire protection is provided by the mostly volunteer Clallam County Fire District #2.

Port Angeles is linked to all other urban growth areas in the County by an efficient transit system. Many hybrid and electric cars now are used for local trips. The airport has become the center for commuter, visitor and freight shipment with convenient connections to transit, ferry and freight haulers.

Further, as noted previously, the Strait of Juan de Fuca shoreline waterward of extreme low tide is a Shoreline of Statewide Significance. As such, RCW 90.58.020 establishes a specific order for use preferences as follows:

1. Recognize and protect the statewide interest over local interest;
2. Preserve the natural character of the shoreline;
3. Result in long term over short term benefit;
4. Protect the resources and ecology of the shoreline;
5. Increase public access to publicly owned areas of the shorelines;
6. Increase recreational opportunities for the public in the shoreline;
7. Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary.

The SMA requires a "higher level of effort in implementing its objectives on shorelines of statewide significance" (WAC 173-26-251).

As part of SMP development, the shoreline is to be classified into specific shoreline environment designations based upon existing land use patterns, baseline inventory and analysis results, goals stipulated in the City's Comprehensive Plan, Harbor Resource Management Plan, and Department of Ecology criteria. Ecology Guidelines include six recommendations for shoreline environment designations (listed below). However, each jurisdiction may use alternate or parallel environment designations, as appropriate, as long as they provide equal or better protection than the standard.

- Natural
- Urban Conservancy
- Rural Conservancy
- Aquatic
- High Intensity
- Shoreline Residential

5.1 Land Supply and Demand Analysis Summary

As part of the SMP update, BST Associates performed a waterfront inventory and analyzed the supply and demand of waterfront property for water-dependent uses. For a full discussion, please refer to the draft *Inventory of Current Use* (BST Associates 2010a) and *Supply and Demand of Land for Water Dependent Uses* (BST Associates 2010b). In general, the supply of land for water-dependent uses appears to be adequate, and some detail for specific industries is outlined below.

Table 18. Summary of Demand for Water-dependent Uses

Industry	Demand for Additional Land
Ship Repair and Boat Building	• Topside repair is sufficiently handled by Terminal 1 and probably will not expand unless cruise ship traffic increases. • Port Angeles probably does not need additional boat repair facilities. • There may be a need for additional mega-yacht boat yard land in the future.
Passenger Vessels	• The ferry operations do not need more land. • The Blackball terminal requires approximately $9 million in repairs, primarily for wood pilings. • There is opportunity for increased large and small cruise ship vessel calls, primarily in the spring and fall, but no additional land is needed.
Commercial and Recreational Boats	• The marina will most likely not need to expand for at least 10 years.
Fish Processing	• There is a small market for fish processing, but facilities could be build on the Port property.
Forest Products	• There is currently no need to expand forest product handling facilities.
Waterborne Cargo	
Containers	• Local cargo moving by barge through Port Angeles could potentially increase, but non-local cargo traffic will most likely not increase.
Breakbulk	• There is currently excessive capacity for breakbulk cargo.
Autos	• There is no need for expansion.
Log Imports and Exports	• Log volumes may increase slightly, but existing facilities are adequate.
Grain	• There are no opportunities for grain exports.
Dry Bulks	• Lakeside Industries, which leases 1 acre on Terminal 6, has interest in expanding their gravel storage yard to 5 to 10 acres.
Liquid Bulks	• Port Angeles is ideally positioned for fueling commercial vessels heading into Puget Sound. This is likely to continue at the current level.

5.2 Reach Conditions

This section examines the data gathered in the inventory and describes for each reach the (1) likely future land uses and activities, and (2) implications for shoreline management (Table 19). Likely or appropriate environment designations are listed for each reach.

Table 19. Possible changes in land use and implications for shoreline management.

Reaches	Possible Changes in Land Use	Implications for Shoreline Management
Reach 1: Landfill	This area is zoned Public Buildings and Parks and may be redeveloped as a park, golf course, or other public use with potential access to the beach and water's edge. Pending further research and available funding, the wall and contaminated material may be removed.	Urban Conservancy appears to be the most appropriate environment designation for this reach. It will be important to ensure that there are provisions for golf courses or other potential uses in the SMP.
Reach 2: Western City	This area has two distinct segments: (a) the Ocean View Cemetery and (b) the residences on the bluffs. a) Ocean View Cemetery is zoned Public Buildings and Parks, and land use change is unlikely. Switchback trails may be developed to provide improved access to the beach. b) East of the cemetery, land is zoned for single family and trailer park residential uses. Residential development is underway, and as this fits the Comprehensive Plan designation, land use change is unlikely.	a) Urban Conservancy appears to be the most appropriate designation for the cemetery. It will be important to ensure that there will be provisions to accommodate trail improvements between the bluffs and beach in the SMP. b) A Shoreline Residential designation seems to be most appropriate, but regulations should address impacts due to new development, setbacks from the bluffs, and public access to the beach. In addition, the beach below these areas may be most appropriately designated Natural, or provided for in the designations listed above.
Reach 3: Outer Industrial	This area is zoned Industrial Heavy, and land uses are unlikely to change.	High-Intensity appears to be an appropriate environment designation for this reach.
Reach 4: Outer Ediz Hook	This area is zoned Public Buildings and Parks and is likely to remain public open space. The eastern portion of Ediz Hook is likely to remain the U.S. Coast Guard Base.	Urban Conservancy appears to be the most appropriate environment designation for this reach.
Reach 5: Inner Ediz Hook	This area is mostly zoned Public Buildings and Parks with two spots of Commercial Arterial. Along Harborview Park, boat launching uses will most likely remain, kayaking and sailing uses may increase over time, and near the western U.S. Coast Guard Base boundary, a scuba diving area may	Urban Conservancy seems to be the most appropriate environment designation for the majority of this reach, but may need to accommodate some commercial uses in the small Commercial Arterial zones. It will be important to ensure provisions for a variety of

Reaches	Possible Changes in Land Use	Implications for Shoreline Management
	develop. The eastern portion of Ediz Hook is likely to remain the U.S. Coast Guard Base.	recreational activities in the SMP, but regulations should address the impacts of a more intense use of the water and shoreline. Commercial development or redevelopment impacts should also be regulated in the SMP.
Reach 6: Inner Industrial	This area is zoned Industrial Heavy, and land uses are unlikely to change in the majority of the reach, although Nippon Paper Industries may redevelop portions of their property. The Waterfront Trail will likely remain in this reach, although its route and wayfinding may be improved. In addition, opportunity exists for a public access corridor along the east boundary of the Nippon property.	High-Intensity appears to be the most appropriate environment designation for the majority of this reach. Special consideration should be given to the possibility of a new public access route in this reach and to the impacts of log rafting.
Reach 7: Mill Pond	This area is zoned Public Buildings and Parks and is unlikely to change land uses. There is potential for restoration of the pond and a new public access corridor connecting the eastern shore of Ediz Hook to the western beach around the south edge of the pond.	Urban Conservancy appears to be the most appropriate environment designation for this reach and special consideration should be given to the possibility of a new public access route.
Reach 8A: Downtown – Tse-whit-zen	This reach is zoned Industrial Heavy, but its use is likely to change due to cultural resources on the property. Potential uses may include an approximately 20,000 sq. ft. artifact curation facility and/or an international research institute and could include public access around the perimeter as appropriate.	Some form of High-Intensity seems to be an appropriate environment designation with special provisions to allow a wide range of possible uses, including civic/cultural, industrial, marine, and commercial. Alternatively, Urban Conservancy may be appropriate if it is determined that the site remain largely undeveloped.
Reach 8B: Downtown – Marina	The marina is zoned Industrial Heavy and will likely remain a boat moorage facility and boat launch, with some commercial uses, and additional marine commercial development is likely. The Port of Port Angeles is the owner/manager of the Marina, and produced a master plan for the Boat Haven in 2004. In that plan, the breakwater may be reconfigured, additional boat slips created, and public access improved over time.	High-Intensity appears to be the most suitable environment designation. The SMP should provide for redevelopment of the breakwater and additional commercial development.

Reaches	Possible Changes in Land Use	Implications for Shoreline Management
Reach 8C: Downtown – Transition	This reach is zoned Industrial Heavy, but may contain more of a mix of uses in the future. Topside repair and vessel berthing uses will most likely remain. Boatyards for mega-yacht construction may expand. If uses change in some areas, public access may be improved. In addition, the port's Terminal 3 pier may be extended.	High-Intensity would be an appropriate environment designation for this reach. However, if the Waterfront Trail is rerouted into the shoreline jurisdiction, a parallel Urban Conservancy environment designation may be appropriate for the trail corridor. It will also be important to ensure provisions for the extension of the pier and expansion of boat construction yards.
Reach 8D: Downtown – Mixed Use	This area is mostly zoned Central Business District with some Commercial Arterial. Some properties may intensify their uses, increase recreational activities on the water, and establish water taxis. The City Pier may improve transient moorage, and the Feiro Marine Life Center may be upgraded, refurbished to include expanded uses, or relocated. The Oak Street property may be redeveloped to include a public park on the City-leased Department of Natural Resources portion and more park or other fairly intense uses on the privately owned portion. The Waterfront Trail is likely to remain and possibly be rerouted closer to the water through the Oak Street property. Likewise, the Valley Creek Estuary Park and Hollywood Beach Park are likely to remain parks. Existing piers and docks may be redeveloped over time to support existing or expanded uses. In addition, residential uses may increase in and adjacent to the shoreline jurisdiction.	High-Intensity appears to be the most appropriate environment designation for this reach, although Urban Conservancy may be appropriate for the Waterfront Trail corridor, Valley Creek Estuary Park, Hollywood Beach Park, and possibly the City-owned portion of the Oak Street property, depending on its redevelopment. The SMP should include provisions for redevelopment of the City Pier's transient moorage, increased recreational uses of the water, pier and dock repair, potential redevelopment, and redevelopment of docks to be used for water taxis, but also consider their impacts. Special consideration should be given to the impacts of higher density residential uses in the area, especially on the water quality at Hollywood Beach Park.
Reach 9: Olympic (Francis Street Reach)	The Public Buildings and Park zone stretches along the waterfront, accommodating the Waterfront Trail. The landward residential uses are in a Residential Single Family zone and are unlikely to change. Some small areas are zoned Commercial Office around the Olympic Memorial Hospital (which is zoned	Natural or Urban Conservancy seem the most appropriate environment designations for the Waterfront Trail corridor and Francis Street Park, with provisions for light recreational use of the trail, park, and water. Shoreline Residential appears to be most appropriate for the residential areas, while the

Reaches	Possible Changes in Land Use	Implications for Shoreline Management
	for Public Buildings and Parks), and over time, some of the residences in this area may be redeveloped as offices. None of the parcels zoned Commercial Office are located within the 200-foot shoreline jurisdiction. Francis Street Park is partially located on land zoned for single family residential uses, but its use is not likely to change.	commercial offices and hospital may be best served with an Urban Conservancy environment designation.
Reach 10: Rayonier (Ennis Creek Reach)	This reach is zoned for Industrial Heavy and Public Buildings and Parks. The Rayonier site will most likely be redeveloped with a mix of uses that may include a park and restored estuary, waterfront public access, cultural, high density residential, commercial, and industrial.	High-Intensity seems appropriate for this reach, but may need special natural or conservation areas around Ennis Creek or new park land. The SMP should provide for a wide range of potential uses.
Reach 11: Eastern City (UGA)	This reach is outside of the City's boundary and contains residential uses in the uplands, which are unlikely to change. The Olympic Discovery Trail runs along the beach and will most likely remain.	Natural or Urban Conservancy would be appropriate for the Olympic Discovery Trail corridor, while Shoreline Residential seems appropriate for the uplands.

6 PUBLIC ACCESS ANALYSIS AND IMPLICATIONS

6.1 Introduction

Public access includes the ability of the general public to reach, touch, and enjoy the water's edge, to travel on the waters of the state, and to view the water and the shoreline from adjacent locations.

WAC 173-26-221(4)(c) states that:

> *"Local governments should plan for an integrated shoreline area public access system that identifies specific public needs and opportunities to provide public access... This planning should be integrated with other relevant comprehensive plan elements, especially transportation and recreation."*

To support this planning, WAC 173-26-201(3)(c) calls for local governments to inventory existing and potential shoreline public access sites, including public rights-of-way and utility corridors. Because shoreline access includes visual access, important views of the water from shoreline areas were also identified.

Information about public access sites in the City was drawn from site visits, aerial photographs, the City's Comprehensive Plan, the City's park and recreation staff and website, the City's land use and parks maps, the Olympic Discovery/Waterfront Trail maps and website, and local knowledge through community workshops and focus groups.

6.2 Existing City Parks and Open Space

The City of Port Angeles provides nearly continuous public access to the shoreline through public trails and parks. The existing public access sites provide for a number of water-oriented uses. These include water-dependent uses, such as swimming and boat launching, and water-related and water-enjoyment uses, such as trails, viewpoints, picnic areas, seating, and open lawns that benefit from a visual connection to the water. The trails connect most of the parks along the waterfront, providing an interconnected system of open space and access to the shoreline. Views from the bluffs above visually connect the uplands to the waterfront.

Beginning from the western City limits, the following public properties provide public access to the shoreline (see Maps 20A and B):

6.2.1 Reaches 1 and 2 – Landfill and Western City

The 41-acre Ocean View Cemetery and rights-of-way in the uplands provide views of the water. The beach along the length of this reach provides physical access to the water's edge. However, physical access is limited and in some instances difficult. The access through the Dry Creek ravine requires access through the City's Transfer Station and is not widely known as an access point. The access trail at the east end of Ocean View Cemetery is steep, and somewhat difficult to negotiate if a person is not in good physical condition. Access to both the Transfer Station and the cemetery are limited.

A second issue regarding public access to this reach is the possible stranding during high tides. Occasionally the tide will reach the toe of the marine bluff and if a beach walk is not well planned, a person may have difficulty reaching upland areas in a timely manner.

The proposed Dry Creek Trail and Bridge project will connect the Waterfront Trail with the regional Olympic Discovery Trail Adventure Route west of the city, increasing pedestrian and bicycle access to the water.

6.2.2 Reach 3 – Outer Industrial

Although public access is extremely limited along the shoreline in this reach, the 1.7-acre Crown Park provides views overlooking the Nippon site, Ediz Hook, and the water. Crown Park is located at the top of the marine bluff and gains access from 4th Street. An informal social trail leads down the bluff from the park to the base of the bluff and to the beach.

The Olympic Discovery Trail, as proposed, will run through this park, incorporating it into the open space system. The trail currently follows Hill Street up to 4th Street, then along 4th Street to Milwaukee Drive. The rerouting of the trail up Hill Street will move the trail to the one-time railroad grade and separate it from the street system, providing a more gradual climb and improved safety for trail users.

Public access to this reach was discussed at length during public visioning meeting as the Harbor Resource Management Plan and Shoreline Master Program were being updated. A trail connection from the base of Hill Street, following the industrial water line, to the Strait of Juan de Fuca shoreline was proposed and generally agreed on. The properties along the shoreline in this reach accessed by such a trail are all in private ownership and concerns were raised regarding potential vandalism to industrial facilities.

6.2.3 Reach 4 – Outer Ediz Hook

Direct shoreline access exists between the Nippon site and the U.S. Coast Guard Base, as well as views over the Strait of Juan de Fuca to Mount Baker, the San Juan Islands, and Vancouver Island, Canada. Ediz Hook Road provides year round access to the hook, with the exception of the USCG base, which is closed to the public for security reasons. Parking areas are available throughout the length of Ediz Hook Road, primarily on the south side. Many of the parking areas are informal or not well maintained.

Physical and visual access to the northern shoreline in this segment is inhibited by the large rock used as shoreline protection. The rip rap in this reach is stacked so high that the shoreline is not visible from a car window as it travels along Ediz Hook Road. Although no formal access is developed, the shoreline can be reached by scrambling over the large stones.

6.2.4 Reach 5 – Inner Ediz Hook

The Olympic Discovery/Waterfront Trail extends the length of Ediz Hook Road to the U.S. Coast Guard Base. The majority of the Hook provides unobstructed views of the inner harbor, downtown, and the Olympic Mountains and physical access to the water. Three parks are located along the inner edge of the Hook: the mostly undeveloped Ediz Hook open space (19 acres), Sail and Paddle Park (.46 acres), and Harborview Park (.40 acres). The latter two offer picnic areas and boat launches, and scuba divers enjoy the area near the Coast Guard Base. Public restrooms are provided at the Sail and Paddle Park on the west end and near Harborview Park and the public boat launch at the east end of the Hook. According to the City of Port Angeles Parks and Recreation *Draft Comprehensive Park Plan*, the Harborview Park will transfer to the control of

the Bureau of Indian Affairs at some point in the future for the eventual development of a marina. The plans maintain park-like public access and provide for improvement of the waterfront trail.

An existing building located east of the Sail and Paddle Park has been leased by the YMCA of Clallam County and is used for the storage of rowing shells. A large group of people participated in the rowing activities provided. The shells are launched at the neighboring Sail and Paddle Park.

6.2.5 Reaches 6, 7, and 8A – Inner Industrial, Mill Pond, and Downtown: Tse-whit-zen

Although the Waterfront Trail passes through this area, it is not adjacent to the waterfront in much of this reach. Shoreline properties are typically privately owned and use for industrial purposes. Due to safety concerns, public access to the Port Angeles Harbor shoreline is restricted. The lagoon at the base of Ediz Hook is also privately owned industrial property which also limits public access.

Many opportunities exist for improvements to shoreline access in this area. It has been suggested that a connecting trail between Hill Street/Marine Drive intersection to the beach west of Nippon be developed. Many conversations about improvements to the Waterfront/Olympic Discovery Trail through the Nippon Mill site have occurred. Enhancements to the lagoon shoreline to attract wildlife and thus bird watching or similar activities is a popular idea.

6.2.6 Reach 8B – Downtown: Marina

The Port of Port Angeles Boat Haven provides moorage for pleasure and commercial boats. A viewpoint at South C Street and West 4th Street overlooks the marina, water, and Ediz Hook. The Waterfront/Olympic Discovery Trail is located adjacent to the south side of the Boat Haven Marina in this area, as it follows Marine Drive.

6.2.7 Reach 8C – Downtown: Transition

The Waterfront Trail shies away from the water's edge in this area because of security requirements and potential conflicts with industrial operations, and public access is limited. Viewpoints at South A Street and West 4th Street and from the West 8th Street bridge over Tumwater Street visually connect people to the water and water-related uses.

This reach has contained a plywood mill for many years. The most recent mill has been closed due to market conditions and the site owner, that Port of Port Angeles, intends to demolish the mill structures and develop a marine trades campus on the site. This redevelopment may provide new opportunity to provide increased public access to the harbor shoreline and to the west side of the Valley Creek estuary.

As a transition area between the Boat Haven Marina and the downtown area, a better physical connection is needed. The area is highly industrialized and portions of it are adjacent to the Hwy 117 Truck Route, which carries large amounts of truck traffic and funnels a large amount of vehicle traffic into a single corridor. This tends to make for an unwelcoming environment for pedestrians and bicyclist alike. This trail segment is the least friendly portion of the entire trail system and will require significant improvements to bring it into consistent quality of the remainder of the trail.

6.2.8 Reach 8D – Downtown: Mixed-use

This reach has continuous shoreline access, two parks, the Waterfront Trail, and numerous viewpoints. The 3.5-acre Valley Creek Estuary Park provides viewing of the harbor and a restored creek estuary. It is also a major access point for the Waterfront Trail and has public amenities such as an interpretive pavilion, viewing tower, viewing platform, pathways, landscaping, public art, and interpretive signage.

The 2.2-acre City Pier and Hollywood Beach Park located at the east end of this reach, provide opportunities for community activities (e.g., performances and festivals) at the water's edge and on the pier, swimming, and boating. The park also has a children's playground, the Feiro Marine Life Center, a viewing tower, moorage for transient boaters, and is a major access point to the Olympic Discovery/Waterfront Trail.

The Red Lion Motel is situated on the south side of the Olympic Discovery/Waterfront Trail, opposite Hollywood beach. The motel offers views of the harbor, direct access to the beach, and eating and drinking facilities adjacent to downtown and the waterfront.

The downtown section of the Olympic Discovery/Waterfront Trail has already been enhanced with public art, seating, and landscaping, and planning is in progress for further improvements. Moreover, people can access the ferry docks for another type of water-related experience.

The waterfront walk along Railroad Avenue now connects to the larger Olympic Peninsula Discovery Trail, a valuable amenity for the community and visitors. Streetscape and walkway improvements with new furnishings, lighting and signage would make the experience more compelling for residents to use and visitors to explore. There are plans for the ferry landing redevelopment and the replacement of an existing parking lot with a pedestrian esplanade. These projects, if designed well, can successfully tie the waterfront to the downtown while enhancing connectivity and wayfinding.

City Pier, the main waterfront park, is in need of renovation and reorganization. It could become the focal point of the city, providing a strong sense of arrival and welcome. Currently, its entry is a parking lot and its viewshed is comprised primarily of blank building walls, the overlook tower and the waterfront in general. The performance venue used in the summer is particularly challenged by wind conditions and should be relocated in a more sheltered place nearby in the downtown. The city needs a special focal point of arrival on the waterfront.

The intersection of Lincoln and Railroad Streets, the City Pier and the entrances to The Landing Mall and Red Lion Hotel could all be redesigned as a multi-modal gathering place and community focal point plaza on the waterfront that gives unique identity and an undated character to Port Angeles. Adjacent to the Visitor's Center, the plaza can also act as a trailhead, including directional signage and a regional map for visitors. Portions of Peabody Creek's outfall at the foot of Lincoln Street need to be daylighted in a more attractive and environmentally beneficial way and should be included as part of the plaza design.

Daylighting the creek through large sections of downtown is not possible due to a low invert of the flow line and existing development but is possible that one or two sections could be daylighted. Army Corps of Engineers funding for such a scheme could be pursued. Private properties can contribute positively to the waterfront if well designed and in scale with the city. The Oak Street parcel west of downtown is a unique site that holds many possibilities for development or as public open space.

A large portion of the parcel along the waterfront is owned by the state and can connect to the waterfront trail. The Landing Mall is also a great opportunity site for mixed-use redevelopment, given its size, location and relative scale. Its entries are currently uninviting for pedestrians, particularly on the southeast side due to the landscape, signage and a confusing vehicular entry. The Red Lion Hotel has developed in a linear form that acts as a "wall" along the waterfront, limiting views and pedestrian connectivity to the waterfront. If the site is redeveloped in the future, more aesthetic ways to mass buildings, design parking, enhance views and add open space should be considered.

Currently, plans for redevelopment of the downtown waterfront, from Hollywood beach to the Valley Creek estuary Park have been developed, and permit review is on-going at the time of this writing. Many of the improvements to parking, signage, pedestrian access and other aesthetic considerations mentioned above are include in the plan.

Inland, the West 8th Street bridge over Valley Street provides a view toward the water. The Oak Street and James Park viewpoints and pedestrian connections visually connect viewers to the water, provide seating, and pathways for walking down to the water. Likewise, the Haynes Viewpoint Park provides wide views of the harbor.

6.2.9 Reach 9 – Olympic (Francis Street Reach)

The Olympic Discovery/Waterfront Trail follows the shoreline in this reach and passes through the 5.8-acre Francis Street Park. This park is a major trail access point and provides public amenities such as seating, a viewing pavilion, children's play area, a sculptural element, a 9-11 memorial, landscaped areas and open lawn with views of the water. It also provides a convenient link with State Hwy 101. Parking is provided at the south side of the park (outside of the 200 foot shoreline jurisdiction), which provides a convenient access point to the trail. Currently no restroom facilities are located in the park.

6.2.10 Reach 10 – Rayonier (Ennis Creek Reach)

The Olympic Discovery/Waterfront Trail passes through the Rayonier site, but is located away from the shoreline and takes a circuitous route. Shoreline access is currently restricted in this reach, but views to the east and west from the uplands provide visual access to the water.

The City of Port Angeles recently purchased a 5-million gallon storage tank on the Rayonier site for use in remediating its combined sewer overflow problem. As part of this project, the City will be relocating the Waterfront Trail to a more direct line crossing the site. This change will shorten the trail somewhat and move it closer to the shoreline, however, the trail will remain a significant distance from the marine shoreline for the near term. Future development of the site is anticipated to include additional rerouting of the trail closer to the shoreline.

Much study has been done regarding the Rayonier site and specifically Ennis Creek. Restoration of Ennis Creek has been planned for and a Restoration Plan is in place and will be followed during any site restoration projects.

6.2.11 Reach 11 – Eastern City (UGA)

The Olympic Discovery/Waterfront Trail runs along the beach for the extent of this reach. It provides direct access to the shoreline and views of the water. It is important to note that this trail continues east of the City to Port Townsend, connecting the local Waterfront Trail with the regional trail system.

6.3 Public Access Needs or Opportunities

6.3.1 Rayonier Site

Future development has the potential to provide more public access to the shoreline. The Olympic Discovery/Waterfront Trail through the Rayonier site will be improved with the more direct route planned with the CSO project. A new route at the water's edge would also improve access to the water. Ennis Creek, if restored, would provide unique opportunities for nature viewing.

6.3.2 Oak Street Property

Opportunities at the Oak Street property for improved public access include extending the Olympic Discovery/Waterfront Trail along the shoreline to Valley Creek Estuary Park and creating a public park on the City-leased portion of the property or purchasing the whole site for public use.

6.3.3 Nippon Area

Public access would be improved with the creation of a public access corridor along the east edge of the Nippon property and around the southern edge of the mill pond to the western beach. In addition, the route through the Nippon property could be enhanced with an improved trail alignment and signage.

6.3.4 Trail Improvements

Completion of the Dry Creek Bridge and Trail project will improve the connection from the central waterfront to the western areas of the City and to the region. In particular, the current route on West Hill Street between Marine Drive and West 4th Street requires a bicycler to cross to the "wrong" side of the street for climbing the hill. The railroad grade route will be a great improvement over the existing route.

The existing Olympic Discovery/Waterfront Trail is an excellent amenity, but could be improved in a few places. The route through the industrial area at the base of Ediz Hook discourages waterfront access and would benefit from better signage. The trail could also be improved by altering the route so that it does not require two street crossings in the Nippon area.

Pedestrian and bicycle connections from the Boat Haven (marina) to downtown are currently limited due to some precarious intersections at Marine Drive and Boat Haven Drive, and Marine Drive and West 2nd Street. Route alignment at those intersections could be improved. In addition, offering an alternative to the Front Street route on the city-owned portion of the Oak Street property would extend the Olympic Discovery/Waterfront Trail along the water's edge and away from automobile traffic.

As mentioned above, the Olympic Discovery/Waterfront Trail route through the Rayonier site could also be improved.

The city will develop an east/west waterfront walk that connects to Olympic Discovery/Waterfront Trail. There are many other opportunities for pedestrian and bike trails that will give residents new, more sustainable transportation and recreation infrastructure. An east-west trail at the top of the bluff could link the viewpoints and the Olympic Discovery/Waterfront Trail while taking advantage of the topographic break in the city. Some portions would need to be on local streets and sidewalks that parallel the bluff if public

access cannot be accommodated at the top of bank.

North/south foot trails may be feasible at the top of banks along the five ravines. Due to steep banks and sensitive environmental conditions, bike connections may need to be on local streets to avoid impacts to the slopes and vegetation. A trail along Peabody Creek could connect the waterfront to the Olympic National Park Visitor Center and Hurricane Ridge, for example. A trail along White Creek could connect the waterfront with Peninsula College, serving student populations well. It could also link to the Fine Arts Center, a high quality cultural resource and special "diamond in the rough" destination. Again, signage is the key to making a coherent trail system.

6.3.5 Western Beach

Access to the western beach is difficult due to limited trails from the uplands. The cemetery and landfill are opportune sites for better pedestrian and bicycle routes to the water's edge. In addition, an existing trail from Crown Park to the western beach could be formalized and improved. A new route around the mill pond, especially useful because it would remain at the grade below the bluffs, would provide another option for accessing the west beach.

6.3.6 Scuba Diving

Although scuba divers already access the area near the Coast Guard Base by boat, moving the fence east would provide easier land-side access to the desirable diving spot. Other potential areas for scuba diving could be explored if the Coast Guard Base area is unfeasible.

6.3.7 Fishing

The existing public access sites do not explicitly provide fishing opportunities, and the community has expressed interest in more fishing areas. This option should be explored but may be dependent on water quality and clean-up.

6.3.8 Views

Visitors and residents of Port Angeles enjoy scenic sweeping panoramas due the natural topography. In general, the paucity of large trees and the downtown building scale allow for open viewsheds. The bluff offers an interesting break in the city and an opportunity for many view points over the Strait. Some neighborhoods and the commercial district on the bench have views of both the waterfront and the Olympic Mountains.

As the city grows and adds density over time, new buildings will be constructed and trees will mature. These elements will tend to either frame or block many views. While all views cannot be preserved without encouraging the disinvestment downtown has already experienced, a focus on ensuring that new development frames views and preserves character defining views is critical.

7 SHORELINE MANAGEMENT RECOMMENDATIONS

The following are recommended actions for translating inventory and characterization findings into the draft SMP policies, regulations, environment designations, and restoration strategies for areas within shoreline jurisdiction.

7.1 Shoreline Master Program

7.1.1 Shoreline Environment Designation Provisions

- See Section 5.2 for recommendations by reach.

7.1.2 General Policies and Regulations

Critical Areas

- Consider whether the City's critical areas regulations should be incorporated into the SMP by reference or through direct inclusion of required elements as an appendix. The latter is recommended to provide maximum flexibility to the Cities in development and modifications of critical areas regulations outside of shoreline jurisdiction.

- The City currently requires use of the latest version of Ecology's *Washington State Four-Tier Wetland Rating System*. If the City's critical areas regulations are incorporated into the SMP as an appendix, then reference to and incorporation of relevant information from the current guidance documents should be included for classification, mitigation ratios, etc.

- The City's critical areas regulations as included in the appendix should also regulate all jurisdictional wetlands regardless of size, exclude the reasonable use exception and any other exceptions or exemptions inconsistent with the Shoreline Management Act, and provide any other critical updates based on recent scientific information.

Flood Hazard Reduction

- Sea level rise and its myriad consequences have some potential to impact the water-dependent, water-enjoyment, and other water-related private and public uses on Port Angeles' shoreline through possible increases in frequency and severity of coastal flooding. As identified in Appendix A (Addressing Sea Level Rise in Shoreline Master Programs) of Ecology's Shoreline Master Program Handbook (http://www.ecy.wa.gov/programs/sea/shorelines/smp/handbook/sea_level_guidance.pdf), much of Port Angeles would fall into categories of landforms that are "particularly vulnerable … to the impacts of sea level rise…" These categories include, among others, historically filled lands, spits, and coastal bluffs. The SMP should include goals and policies that recognize possible sea level rise and require a suitable level of project-level planning and design to address that potential.

Public Access

- Work with the Parks and Recreation department to continue to enhance Port Angeles' wealth of public access features and identify potential locations for new public access sites. The Waterfront Trail and Promenade, Olympic Discovery Trail, Ediz Hook open space and parks, Valley Creek Estuary Park, City Pier, Hollywood Beach, Francis Street Park and multiple viewpoints from the uplands already provide a high quality of public access to the shorelines. SMP provisions should address:

  - Public access enhancements to the bluffs and beach west of the harbor, along Ediz Hook, in the Downtown and at the Rayonier Site
  - Potential view blockages from shoreline development
  - Opportunities to improve transient moorage in the downtown
  - Opportunities for hand-held craft launching
  - Ensure prominent signage of the Olympic Discovery/Waterfront Trail and all its access trails and paths.
  - Develop a prominent system of bicycle/pedestrian feeder trails connecting US 101 to the Olympic Discovery/Waterfront Trail utilizing, among other options, creek bottom corridors such as Tumwater and Valley Creek Trails to provide efficient non-motorized transportation options in the Port Angeles urban growth area.
  - Maintain working relationship with Pacific Northwest Trails Association in the development of feeder trails and lowland alternatives to their primary Pacific Northwest Trail Route (PNT). As a lowland option to the PNT, the Olympic Discovery/Waterfront Trail Route may be designated a National Recreation Trail where it qualifies and not a National Scenic Trail should the PNT achieve that status.
  - Encourage further development of saltwater access points for recreation, such as trails, boating, and passive uses.
  - Provide public access on the south side of the lagoon linking Marine Drive to beaches west of Ediz Hook. Utilize the existing but incomplete route along the industrial pipeline. Coordinate with restoration of the lagoon. Improve the connection from Crown Park to western beaches.
  - Mark a Trail offshoot between Marine Drive and the beach adjacent to the lagoon outlet channel. Provide bicycle racks and maintain seating and picnic tables at the beach. Coordinate with tree plantings.

Vegetation Conservation

- Craft regulations that are consistent with requirements in the WAC Guidelines. Consider special incentives to encourage re-establishment of eelgrass meadows and other aquatic vegetation communities.

Water Quality, Stormwater, and Nonpoint Pollution

- Include policies and regulations that appropriately incorporate recommendations of the City's, County's, Ecology's or others' water quality-related studies, particularly as related to impaired parameters listed by Ecology.
- Consider whether special stormwater management provisions may be necessary beyond the standard City requirements contained in the latest version of the *Stormwater Management Manual for Western Washington*. The City has already strengthened Ecology's Best Management Practices Manual for use in the City. The City has also recently developed a stormwater incentives program, which may provide a model for SMP incentives.
- Site, design and maintain marinas and marine facilities to protect *against* adverse *effects on* shellfish resources, wetlands, submerged aquatic *vegetation, or* other important riparian and aquatic habitat areas. The design of marinas and marine facilities should consider the migration, survival, and harvestability of food fish and shellfish.

7.1.3 Shoreline Modification Provisions

Shoreline Stabilization

- The City's shoreline is heavily armored in places, and additional armoring proposals are expected, particularly given the potential for sea level rise. Regulations in the SMP should fully implement the intent and principles of the WAC Guidelines and provide clear provisions for new, repair and replacement stabilization. Incentives should be included in the SMP that would encourage modification of existing armoring, where feasible, to improve habitat while still maintaining any necessary site use and protection.

Piers and Docks

- Port Angeles does not have any private residential pier or dock facilities, likely because of residential access issues directly to the shoreline and the steep bluffs. Consider prohibiting these in the SMP. Other pier or dock facilities would be covered under the Boating Facilities shoreline use category below.

Fill

- Restoration fills should be encouraged, including improvements to shoreline habitats, material to anchor LWD placements, and as needed to implement other shoreline restoration.
- The potential for upland fill proposals, rather than aquatic, may increase in the future if the sea level rise expectations are realized. Detailed regulations governing upland fills should be developed.

Breakwaters, Jetties, Groins and Weirs

- Consider prohibiting new modifications in the SMP except where they are essential to restoration or maintenance of existing water-dependent uses.

Dredging and Dredge Material Disposal

- Dredging is an important modification activity in Port Angeles, both for furthering restoration and cleanup and for maintaining existing uses. Regulatory requirements in the WAC Guidelines are quite specific. In addition to compliance with those requirements, consider crafting regulations that reference and incorporate as appropriate recommendations and information provided in various studies related to Harbor cleanup.

Shoreline Habitat and Natural Systems Enhancement Projects

- The SMP should include incentives to encourage restoration projects, particularly in areas identified as having lower function. Emphasize that certain fills can be an important component of some restoration projects.

7.1.4 Shoreline Uses

Agriculture

- The County allows some agricultural uses in the eastern Urban Growth Area, and there may be some small agricultural activities in the shoreline jurisdiction in this area. Consider including provisions for agricultural uses in this area.

Aquaculture

- Consider prohibiting this use and removing it from this section. This issue will require further discussion.

Boating Facilities

- Public and private, commercial boating facilities are prevalent in Port Angeles Harbor and an important part of the City's economy and culture. Regulations should be crafted that are consistent with the WAC, as well as accommodate any known plans for modifications of any of these facilities. Incentives should be used where appropriate to encourage site restoration.

Commercial Development

- Coordinate policies and regulations for commercial development with the City of Port Angeles' Comprehensive Plan, Waterfront and Transportation Improvement Plan and Harbor Resource Management Plan (currently under development); and the Port of Port Angeles' Central Waterfront Master Plan and Marine Facilities Master Plan, while ensuring that new commercial development will achieve no net loss of shoreline ecological functions. Accommodate a wide range of maritime commercial uses west of Downtown.

Forest Practices

- Provide general policies and regulations for forest practices according to the WAC Guidelines.

Industry

- Include provisions for industrial uses while ensuring no net loss of shoreline ecological functions. Consider requiring vegetated windbreaks in key locations to capture dust from mill and logging operations.

Mining

- Consider prohibiting this use and removing it from this section.

Recreational Development

- Policies and regulations related to parks management should provide clear preferences for shoreline restoration consistent with public access needs and uses. Existing natural parks should be protected and enhanced.
- Include provisions for existing and potential recreational uses, including boating, a golf course, scuba diving, swimming, and surfing.

Residential Development

- Address building setbacks and shoreline armoring for residential properties on the bluffs. In new developments on the water's edge, also address piers and docks and vegetation conservation. A standard buffer and/or setback should be developed for the properties on the bluffs, and an effective but practical list of buffer/setback reduction options that would result in a net improvement in shoreline functions should be developed for new development or redevelopment at the water's edge. The SMP should consider developing regulations that encourage or require shoreline restoration when specific new development or redevelopment activities are proposed.
- Include a policy to educate waterfront homeowners about the use of fertilizers and landscape chemicals and encourage natural lawn care and landscaping methods to reduce chemical output into surrounding shorelines.
- Encourage low impact development techniques that reduce impervious surface areas and use of ecologically responsible stormwater management.

Transportation/Parking and Utilities

- Include provisions for public transportation and utilities development in the shoreline jurisdiction. There are some roadways in SMA jurisdiction. Goals, policies and regulations for these activity types should require careful consideration of short-term and long-term impacts on shoreline functions and processes, particularly in their management of stormwater runoff, shoreline hardening and potential for generating a later need for shoreline hardening, and placement of in-water structures which can affect flows and substrates, among others.

7.1.5 Design and Construction Geotechnical Engineering Considerations

The following is a summary of *geotechnical* design and construction considerations related to future development in the shoreline area of Port Angeles. As needed, a corresponding SMP recommendation can be found after the consideration.

Geotechnical *Design* Considerations

Settlement – Portions of the City of Port Angeles shoreline are underlain by loose/soft compressible soil. Constructing heavy structures or placing significant heights of fill (more than 3 or 4 feet) directly on these soils could cause varying amounts of settlement. Such settlement could potentially result in damage to adjacent structures and underground utilities. In order to preclude adverse settlement impacts, special construction measures may need to be implemented. Such measures could include using deep foundation systems to support heavy structures and preloading a building site prior to construction of relatively light structures (buildings under about two stories) on shallow spread foundations. The presence of existing subsurface foundation elements in some areas along the shoreline may locally reduce the likelihood of settlement.

- Recommendation: In the Critical Areas chapter or in the Critical Areas Regulations appendix of the SMP, consider requiring analysis of and mitigation for settlement.

Flooding Hazards – Portions of the Port Angeles shoreline in the vicinity of creeks could be susceptible to flooding during extreme storm events or as a result of rain-on-snow events. Impacts associated with flooding can be reduced in a number of ways. Examples of possible methods that could be used include incorporating stormwater controls into the future development plans and adjusting grades adjacent to creeks. Adjustment to grades could be accomplished either through area-wide filling or construction of dikes.

- Recommendation: As needed and consistent with WAC Guidelines, integrate regulations into the SMP addressing potential for supplementary stormwater controls beyond that typically required by City regulations. Flood Hazard Reduction, Fill and Critical Areas Regulations chapters of the SMP may also require special attention to craft regulations that address possible unavoidable fills and other shoreline modifications in stream buffers and shoreline jurisdiction to protect against flooding, particularly associated with water-dependent uses. Any such uses or modifications should be balanced with the requirement to utilize mitigation sequencing to avoid and minimize impacts to ecological functions. Special stream or shoreline setbacks should be considered to minimize conflicts.

Landslide Hazards – There is a moderate potential for landsliding of portions of the existing steeper slopes present along the marine bluffs and the ravines along the City of Port Angeles shoreline. Landsliding could potentially be triggered by a seismic event, the natural process of stabilization of a steep slope to a flatter profile, an increase in pore-water pressure from excessive rainfall that could destabilize a portion of a slope, or construction that traverses or cuts into a steep slope (especially if planes of weakness in the slope are adversely affected). Accordingly, the stability of unsupported steep slopes should be evaluated and addressed as necessary.

- Recommendation: Assess whether the City's existing geologically hazardous area regulations require adequate analysis and mitigation of landslide hazards. It should be noted that landsliding along marine waters can be an important natural process that supplies much-needed gravels and other material for maintaining and establishing landforms and habitats.

Ground Shaking and Ground Motion Amplification – Seismic design using the most recent design codes and generally accepted engineering standards and practices should be conducted during the design phase of the future improvements. This includes conducting site-specific seismic analyses, when appropriate, and using the most recent version of the International Building Code, which contains provisions to address life safety issues and incorporates data obtained from recent seismic events in the seismic design standards.

- Recommendation: Assess whether the City's existing geologically hazardous regulations require adequate analysis of and design for ground shaking and ground motion amplification hazards. Consider providing supplementary regulations in the SMP as needed.

Ground Rupture – It is anticipated that designing against ground surface rupture along the City of Port Angeles shoreline during a seismic event will not be a significant part of the site-specific seismic design for future improvements.

Liquefaction – Soil liquefaction, should it occur, would likely lead to consolidation of loose, saturated soil deposits, resulting in some surface settlement. Impacts associated with soil liquefaction can be reduced in a number of ways. Examples of possible methods that could be used include ground improvement, use of deep foundations, installing wick drains, and/or designing for potential soil liquefaction impacts. The specific measure(s) to reduce soil liquefaction impacts should be determined during the site-specific design and permit process for future improvements. The presence of existing subsurface foundation elements in the shoreline area may locally reduce the likelihood of soil liquefaction.

- Recommendation: Assess whether the City's existing geologically hazardous area regulations require adequate analysis and mitigation of liquefaction potential. Consider providing supplementary regulations in the SMP as needed.

Lateral Spreading – Lateral spreading is a phenomenon where lateral ground displacements occur as a result of soil liquefaction. Lateral spreading is typically observed on very gently sloping ground or on virtually level ground adjacent to slopes. Lateral spreading displacements can range from a few centimeters to a few meters, depending on the magnitude and duration of the seismic event and the local soil and groundwater conditions. From accounts of recent large earthquakes, lateral spreading at waterfront facilities typically appears to be more prevalent in upland areas within about 300 feet of the shoreline; however, case histories have documented lateral spreading occurring up to about 1,200 feet from the unsupported face of a soil mass. Lateral spreading should be specifically evaluated during the site-specific design and permit process for future buildings located within (at a minimum) 300 feet of the shoreline. The presence of existing subsurface foundation elements in some areas may locally reduce the likelihood of lateral spreading.

- Recommendation: Assess whether the City's existing geologically hazardous area regulations require adequate analysis and mitigation of lateral spreading. Consider providing supplementary regulations in the SMP as needed.

Tsunamis – Depending on the height of any tsunami wave produced by a major rupture along the Cascadia Subduction Zone, a tsunami could potentially pose a temporary hazard along the City of Port Angeles shoreline; however, the return period for large earthquakes along the Cascadia Subduction Zone that might generate a large tsunami is on the order of several hundreds of years. Measures to address the potential impact of a tsunami could include public notification and warnings; additionally, raising grades for other redevelopment purposes would also serve to reduce this potential impact.

- Recommendation: The potential need or demand for large upland fills to address tsunamis should be considered in SMP regulations. However, given the long return period, tsunami hazard might not provide adequate justification for large-scale upland fills.

Sea Level Rise – As previously discussed, the sea level in Port Angeles Harbor could rise by between 0 and several feet over current levels by 2100. Grades along the shoreline could be raised to reduce the potential impact of a long-term sea level rise in Port Angeles Harbor.

- Recommendation: Track sea level rise information to assess impact on Port Angeles shoreline

Geotechnical *Construction* Considerations

Erosion Hazards – Certain soil types along the City of Port Angeles shoreline may be susceptible to erosion when disturbed by construction activities, particularly on slopes exceeding 15 percent. Fill material placed to raise grades along the shoreline may also be susceptible to erosion. Therefore, construction activities should include employing temporary erosion control measures and Best Management Practices (BMPs) to reduce erosion impacts. In addition, the exposed shoreline along the northern limits of the Port Angeles Harbor could be protected from erosion due to storm and wave action by providing shoreline protection measures in areas that are currently not armored.

- Recommendation: In Port Angeles, retention of Ediz Hook is an important element of the regional economy and critical to enabling operation of the many water-dependent uses on Port Angeles Harbor. Armoring may be a necessary tool, but regulations consistent with the WAC Guidelines should be crafted that strongly favor armoring designs that combine the necessary structural elements with habitat elements, and that support long-term sustainability of Ediz Hook (e.g., such as structures that capture and retain material to balance ongoing erosion).

Buried obstructions and foundations – As previously discussed, buried portions of former foundation elements (e.g., piles, pile caps, and grade beams) may be present in the uplands area near former shoreline structures. As a result, these buried elements may be encountered during future excavation, dredging and construction activities. Depending on the location of future improvements, the buried foundation elements could either be beneficial for some aspects of the development or make it difficult to construct other subsurface features such as installing new pile foundations, new underground utilities and/or conduct dredging.

Sunken material - Sunken logs may be on or in marine sediments in areas of former log rafting. Decomposing wood material may be present in intertidal and subtidal sediments. Sunken material can present impediments to dredging, dredged disposal and marine construction activities.

- Recommendation: Consult with natural resources agencies, such a Washington Department of Fish and Wildlife, to craft an SMP regulation that addresses treatment of sunken logs during authorized dredging, dredge disposal, and marine construction activities.

7.1.6 Environmental Contamination Considerations for Design and Construction

The following is a summary of *environmental contamination considerations* for design and construction related to future development in the shoreline area of Port Angeles. This section offers planning elements that can limit impacts from environmental conditions in the upland and marine portions of the shoreline zone during development. As needed, a corresponding SMP recommendation can be found after the consideration.

Environmental Cleanup *Design* Considerations

Upland Environmental Contaminants. Portions of the City of Port Angeles shoreline have documented releases of hazardous substances associated with past practices. Subsurface

activities related to development could encounter hazardous substances in soil, groundwater, and/or marine sediments. Such activities have the potential to make hazardous substances accessible for transport to the marine environment. Future commercial and industrial development in the shoreline area will require Ecology construction stormwater and industrial stormwater general permits.

- Recommendation. Consider whether the Critical Areas Regulations appendix of the SMP should address an environmental contamination component of grading permit applications in shoreline industrial areas, such as the need to evaluate and document whether subsurface earthwork activities will encounter contaminated soil or groundwater.
- Recommendation: In the Critical Areas chapter or in the Critical Areas Regulations appendix of the SMP, consider requirements for analysis of appropriate mitigation measures (including Construction Stormwater Management, and dewatering water disposal) to anticipate environmental contamination in industrial areas.
- Recommendation. In many instances, control of upland contaminant sources can provide significant benefits to the marine environment. Make upland source control a publicized City of Port Angeles goal in conjunction with the Ecology Harbor Sediment Study and cleanup strategy.

Marine Sediment Conditions - Ongoing Harbor Study. Ecology started an investigation of aquatic sediment conditions, including the 2008 sampling, and will develop a strategy for cleanup of the harbor.

- Recommendation. Review Ecology Harbor Study findings and strategy. Determine if any changes are appropriate to the SMP. Marine sediment contamination can originate from a variety of upland sources in and beyond the shoreline area. In many instances, control of contaminant sources from development and commerce must start well inland of the shoreline zone.

Marine Sediment Conditions - Dredging Design Considerations. Dredging can encounter contaminated sediments, and can suspend and re-distribute contaminants. Dredging can remove sediment with contaminants and accumulations of organic material. Dredged sediment characterization sampling should be conducted to obtain data that can be used to obtain permit approval for in-water work and open-water disposal of dredged sediments. Sediment characterization data will be reviewed by the DMMP Agencies (DMMP 2008).

- Recommendation: Require use of dredge methods and best management practices (BMPs) to reduce sediment suspension and distribution during dredging.

Environmental Cleanup *Construction* Considerations

Uplands. Properties in and beyond the City of Port Angeles shoreline area have documented releases of hazardous substances associated with past practices. Subsurface activities related to development could expose hazardous substances during the construction phase in soil, groundwater, and/or marine sediments at or near the sites. Construction in the shoreline zone can disturb soil with contaminants that may be more easily transported to the marine environment by stormwater runoff.

- Recommendation. Inspect implementation of construction stormwater plans prepared in accordance with Ecology's Construction Stormwater General Permit. Anticipate requirements for excavated soil management and control of any extracted

groundwater (dewatering water) to limit the potential for a release of contaminants that may impact human health or the Port Angeles Harbor environment.

Marine Sediment, Dredging, and Source Control. Dredging can encounter contaminated sediments, sunken logs and pilings, and can suspend and re-distribute materials.

- Recommendation: In the Critical Areas chapter or in the Critical Areas Regulations appendix of the SMP, consider whether to note the expectation that projects use dredge methods and best management practices (BMPs) to reduce sediment suspension and distribution during dredging.
- Recommendation: Consult with natural resources agencies, including the Washington Department of Fish and Wildlife, to craft an SMP regulation that addresses handling of marine pilings and sunken logs during authorized dredging, dredge disposal, and marine construction activities.

7.2 Restoration Plan

A Restoration Plan document will be prepared as a later phase of the Shoreline Master Program update process, consistent with WAC 173-26-201(2)(f). The Shoreline Restoration Plan must address the following six subjects (WAC 173-26-201(2)(f)(i-vi)) and incorporate findings from this analysis report:

(i) Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration;

(ii) Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions;

(iii) Identify existing and ongoing projects and programs that are currently being implemented, or are reasonably assured of being implemented (based on an evaluation of funding likely in the foreseeable future), which are designed to contribute to local restoration goals;

(iv) Identify additional projects and programs needed to achieve local restoration goals, and implementation strategies including identifying prospective funding sources for those projects and programs;

(v) Identify timelines and benchmarks for implementing restoration projects and programs and achieving local restoration goals; and

(vi) Provide for mechanisms or strategies to ensure that restoration projects and programs will be implemented according to plans and to appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals.

The Restoration Plan will "include goals, policies and actions for restoration of impaired shoreline ecological functions. These master program provisions should be designed to achieve overall improvements in shoreline ecological functions over time, when compared to the status upon adoption of the master program." The Restoration Plan will mesh potential projects identified in this report (see Maps 22A and 22B, as well as Chapter 4) with additional projects, regional or City-wide efforts, and programs of the City, watershed groups, and environmental organizations that contribute or could potentially contribute to improved ecological functions of the shoreline.

Key documents in development of the Shoreline Restoration Plan are expected to consist of the following:

- Management measures for protecting and restoring the Puget Sound Nearshore. Prepared in support of the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP)
- Elwha-Dungeness Watershed Plan, Water Resource Inventory Area 18 (WRIA 18) and Sequim Bay in West WRIA 17.
- Port Angeles Harbor Shoreline Habitat Assessment
- Salmon and Steelhead Habitat Limiting Factors, Water Resource Inventory Area 18
- Materials from the Strait of Juan de Fuca Ecosystem Recovery Network (Strait ERN), including the Port Angeles Harbor High Priority Actions Matrix.

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9 LIST OF ACRONYMS AND ABBREVIATIONS

Corps ..... U.S. Army Corps of Engineers
CSO ..... combined sewer overflow
DMMP..... Dredged Material Management Program
DNR ..... Washington Department of Natural Resources
Ecology..... Washington Department of Ecology
GMA..... Growth Management Act
HPA ..... Hydraulic Project Approval
LWD..... Large Woody Debris
MLLW..... Mean lower low water
NOAA ..... National Oceanic and Atmospheric Administration
NPDES ..... National Pollutant Discharge Elimination System
NRCS..... Natural Resources Conservation Service
OHWM..... Ordinary high water mark
PAMC..... Port Angeles Municipal Code
PHS..... Priority Habitats and Species
SMA ..... Shoreline Management Act
SMP ..... Shoreline Master Program
USFWS..... U.S. Fish and Wildlife Service
USGS..... U.S. Geological Service
WAC..... Washington Administrative Code
WDFW ..... Washington Department of Fish and Wildlife

The Watershed Company, Makers, and Landau
September 2010
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APPENDIX A

Assessment of Shoreline Jurisdiction

APPENDIX B

Inventory and Analysis Map Folio

Cumulative Impacts Analysis for City of Port Angeles' Shoreline: Strait of Juan de Fuca

Grant No. G1000051

Prepared June 2011 for:

City of Port Angeles
Community and Economic Development
321 East 5th Street
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The Watershed Company

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architecture · planning · urban design

CITY OF PORT ANGELES
GRANT NO. G1000051

CUMULATIVE IMPACTS ANALYSIS
for City of Port Angeles' Shoreline: Strait of Juan de Fuca

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1 INTRODUCTION

1.1 Shoreline Management Act Requirements

The Shoreline Management Act guidelines (Guidelines) require local shoreline master programs (SMPs) to regulate new development to "achieve no net loss of ecological function." The Guidelines (WAC 173-26-186(8)(d)) state that, "To ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs shall contain policies, programs, and regulations that address adverse cumulative impacts and fairly allocate the burden of addressing cumulative impacts."

The Guidelines further elaborate on the concept of net loss as follows:

> *"When based on the inventory and analysis requirements and completed consistent with the specific provisions of these guidelines, the master program should ensure that development will be protective of ecological functions necessary to sustain existing shoreline natural resources and meet the standard. The concept of "net" as used herein, recognizes that any development has potential or actual, short-term or long-term impacts and that through application of appropriate development standards and employment of mitigation measures in accordance with the mitigation sequence, those impacts will be addressed in a manner necessary to assure that the end result will not diminish the shoreline resources and values as they currently exist. Where uses or development that impact ecological functions are necessary to achieve other objectives of RCW 90.58.020, master program provisions shall, to the greatest extent feasible, protect existing ecological functions and avoid new impacts to habitat and ecological functions before implementing other measures designed to achieve no net loss of ecological functions." [WAC 173-206-201(2)(c)]*

In short, updated SMPs shall contain goals, policies and regulations that are designed to direct actions in a manner to prevent degradation of ecological functions relative to the existing conditions as documented in that jurisdiction's analysis report. For those projects that result in degradation of ecological functions, the required mitigation must at a minimum return the resultant ecological function back to the baseline. This is illustrated in the figure below. The jurisdiction must be able to demonstrate that it has accomplished that goal through an analysis of cumulative impacts that might occur

through implementation of the updated SMP. WAC 173-26-186(8)(d) states "[e]valuation of such cumulative impacts should consider:

(i) current circumstances affecting the shorelines and relevant natural processes;
(ii) reasonably foreseeable future development and use of the shoreline; and
(iii) beneficial effects of any established regulatory programs under other local, state, and federal laws."

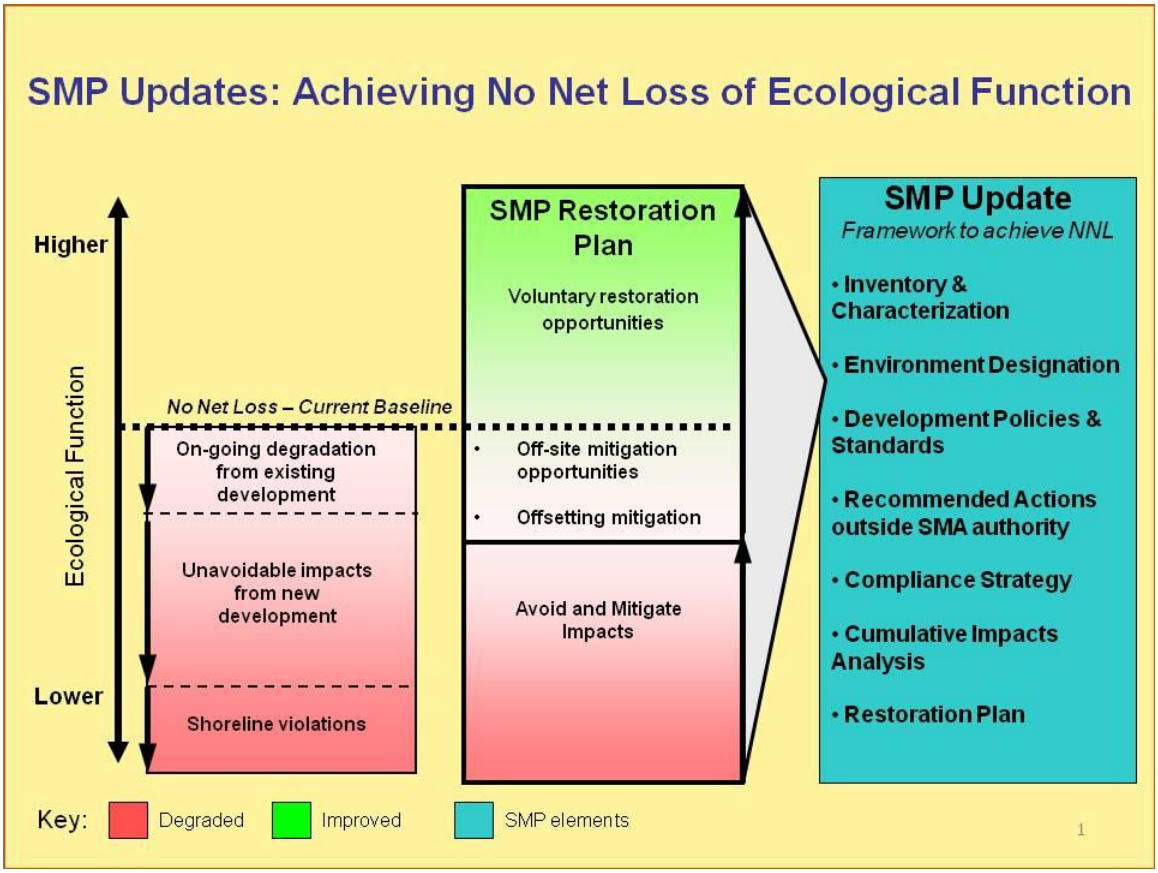

Figure 1. Achieving the no-net loss standard through the Shoreline Master Program process. Source: Department of Ecology

As outlined in the *Shoreline Restoration Plan* (Appendix A of the SMP) prepared as part of this SMP update, the SMA also seeks to restore ecological functions in degraded shorelines. This cannot be required by the SMP at a project level, but Section 173-26-201(2)(f) of the Guidelines says: "master programs shall include goals and policies that provide for restoration of such impaired ecological functions." See the *Shoreline Restoration Plan* for additional discussion of SMP policies and other programs and activities in the City that contribute to the long-term restoration of ecological functions relative to the baseline condition.

1.2 Methodology

Using the textual, numerical and graphical information developed and presented in the *Final Shoreline Analysis Report*, this cumulative impacts analysis was prepared consistent with direction provided in the Guidelines as described above. To the extent that existing information was sufficiently detailed and assumptions about possible new or re-development could be made with reasonable certainty, the following analysis is quantitative. However, in many cases information about existing conditions and/or redevelopment potential was not available at a level that could be assessed quantitatively or the analysis would be unnecessarily complex to reach a conclusion that could be derived more simply. Further, ecological function does not have an easy metric. For these reasons, much of the following analysis is more qualitative. Any future analysis will incorporate new information and scientific findings to ensure that SMP implementation is in accord with the latest understanding of ecological functions and impacts.

2 EXISTING CONDITIONS

A complete summary of existing conditions can be found in the City of Port Angeles' *Final Shoreline Analysis Report*. This report includes an in-depth discussion of specific reach characteristics and information including geologic hazards, cultural resources, sea level rise, and other topics.

The City's shoreline along the Strait of Juan de Fuca has a wide variety of land uses, including, but not limited to: industrial uses (typically designated High Intensity – Industrial (HI-I) or High Intensity – Commercial (HI-C)); commercial uses (typically designated High Intensity – Commercial (HI-C)), a US Coast Guard base (designated High Intensity – Marine USCG (HI-M)); recreational uses such as parks and trails (typically designated Urban Conservancy – Open Space (UC-OS); a landfill site (designated Urban Conservancy –Landfill (UC-L)); and residential uses (typically designated Shoreline Residential (SR)).

For the purposes of analyzing ecological functions and existing land uses, the City's marine shoreline is divided into 11 primary reaches based on variations in land use and shoreline features (Figures 2a and b). A discussion of the ecological functions in each reach, along with corresponding ratings, can be found in Tables 7 through 17 of the *Final Shoreline Analysis Report*. The ratings of ecological functions in these reaches generally range from "Low/Moderate" to "Moderate." The lack of higher functioning reaches in Port Angeles is due a number of factors, such as extensive shoreline armoring, lack of vegetation, and the large number of over- and in-water structures.

Figure 2a. Shoreline reaches in the Central City portion of the City of Port Angeles.

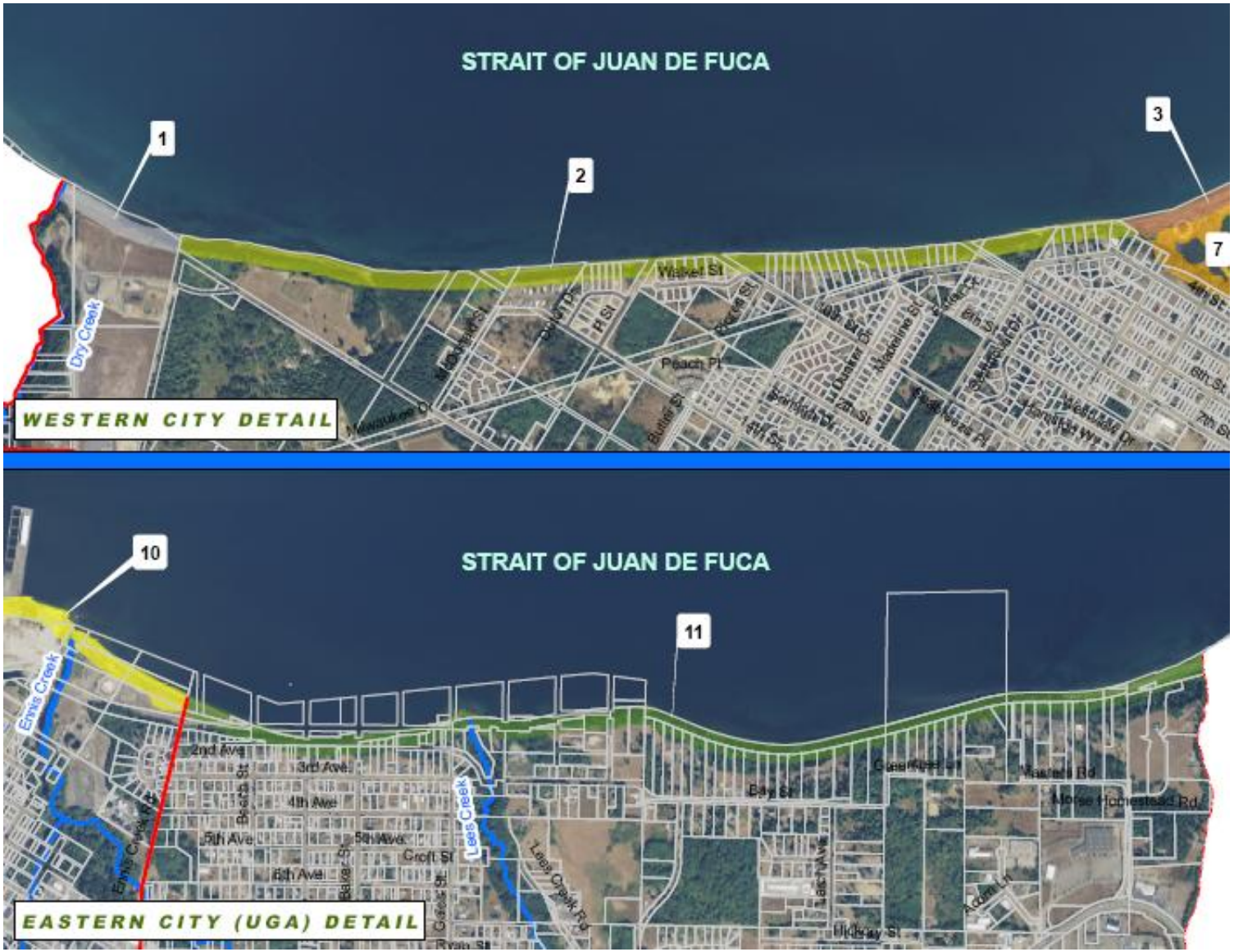

Figure 2b. Map of shoreline reaches for the Western City and Eastern City UGA

Port Angeles Harbor provides the only deepwater port on the northern shore of the Olympic Peninsula. As such, it has attracted industrial activity since the early 1900s. Over time, these industrial activities have degraded habitat and water quality through wood waste, effluent discharge from mills, seepage from the former landfill, and fuel leaks and other contamination from storage and boatyard facilities. Presently, five cleanup sites and one sediment investigation identified in the Port Angeles shoreline are managed by the Department of Ecology. These sites are presented in detail in the *Final Shoreline Analysis Report*.

3 DEVELOPMENT POTENTIAL

The following table includes excerpts from Table 18 in Chapter 5 of the *Final Shoreline Analysis Report*.

Table 1. Existing land use and likely changes in land use along Port Angeles' marine shorelines by reach.

Reaches	Existing Land Use and Likely Changes in Land Use
Reach 1 Landfill	This reach contains a former landfill and current solid waste transfer station. It is zoned Public Buildings and Parks and may be redeveloped as a park, golf course, alternative energy site, or other public use with potential access to the beach and water's edge. Steep bluffs and exposed shoreline make this area unlikely for water-dependent uses. Pending further research and available funding, a seawall and contaminated material from the inactive landfill area along the bluff may be removed.
Reach 2 Western City	This area has two distinct segments: (a) the Ocean View Cemetery and (b) the residences on the bluffs. Again, water-dependent uses are unlikely in this reach due to steep bluffs and exposed shoreline. a) Ocean View Cemetery is zoned Public Buildings and Parks, and land use change is unlikely. Switchback trails may be developed to provide improved access to the beach. b) East of the cemetery, land is zoned for single family and mobile home residential uses. Residential development is underway, and as this fits the Comprehensive Plan designation, land use change is unlikely. Current residences are set back from the OHWM approximately 200 feet, so the buildings are typically just outside of the shoreline jurisdiction. However, the buildings range between 35' and 100' from the top of the bluff, with most of them less than 70' from the top of the bluff.
Reach 3 Outer Industrial	The Nippon Paper plant is located in this reach. The area is zoned Industrial Heavy, and land uses are unlikely to change in the near-term.
Reach 4 Outer Ediz Hook	This area is zoned Public Buildings and Parks and is likely to remain public open space. The Waterfront Trail runs through the center of Ediz Hook, so it is a use applicable to both the Outer and Inner Ediz Hook reaches. The eastern portion of Ediz Hook is likely to remain the U.S. Coast Guard Base.

Reaches	Existing Land Use and Likely Changes in Land Use
Reach 5 Inner Ediz Hook	Along the shoreline, this reach is mostly zoned Industrial Heavy with two spots of Commercial Arterial near the U.S. Coast Guard Station, and a Public Buildings and Parks zone near Nippon at Sail and Paddle Park. American Gold Seafood has offshore floating net pens for raising juvenile salmon south of the Coast Guard and supporting structures on land west of the public boat launch. The Puget Sound Pilots Association has a float for mooring several pilot boats and an office building just east of the boat launch. Although Ediz Hook is typically zoned Industrial Heavy along the southern shoreline, most of Ediz Hook is owned by the City (outside of the Coast Guard Station), is considered part of Ediz Hook open space, and no longer has industrial or commercial uses except for the two mentioned above and the Port's log raft storage offshore. At Sail and Paddle Park, the YMCA now has a boat storage facility. The Lower Elwha Klallam Tribe owns Harborview Park and the parcel around it, and this may be redeveloped to include a marina and improve existing public access. The public Ediz Hook Boat Launch just west of the U.S. Coast Guard will most likely remain, and kayaking and sailing opportunities may increase over time here, on the Lower Elwha Klallam Tribe (LEKT) property and/or at Sail and Paddle Park. There is public interest in a scuba diving area near the western U.S. Coast Guard base, but this potential use conflicts with the Coast Guard's needs. Instead, the former A-frame site, located 2,000 feet east of Sail and Paddle Park, could serve as a dive park if incorporated with ongoing restoration efforts. The eastern portion of Ediz Hook is likely to remain the U.S. Coast Guard Base.
Reach 6 Inner Industrial	This area is zoned Industrial Heavy, and land uses include the Nippon Paper plant, storage facility, and pier used to transfer paper products onto barges; and a Tesoro Petroleum fuel distribution pier and tanks. These uses are unlikely to change in the majority of the reach, although Nippon Paper Industries may redevelop portions of their property to include a biomass cogeneration energy plant. The Waterfront Trail will likely remain in this reach, although its route and wayfinding may be improved per the in-progress Waterfront and Transportation Improvement Plan (WTIP). In addition, opportunity exists for a public access corridor and restoration along the east boundary of the Nippon property.
Reach 7 Lagoon	This area is a natural lagoon and is zoned Public Buildings and Parks. It is unlikely to change land uses. There is potential to restore fish passage through the inlet/outlet channel of the lagoon at all tides, and to restore aquatic and riparian vegetation within the lagoon. Potential also exists for a new public access corridor connecting the eastern shore of Ediz Hook to the western beach around the south edge of the lagoon and some restoration along the drive ditch.
Reach 8A Downtown – Tse-whit-zen	This reach contains Terminal 5, used for cargo and the Port's log yard, and Terminal 7, used as a lay berth facility for vessels up to 750 feet and occasionally for military vessel moorage. The Port-owned shoreline is currently used as a cargo staging area. The land is zoned Industrial Heavy, and the Port's area will likely continue to have industrial uses in the future. The Port owns the property within the 200' shoreline jurisdiction, and the Tse-whit-zen site is inland. The Tse-whit-zen village site is a tribal cemetery and designated by the state as a Cultural and Historic site. The Tse-whit-zen site's zoning is likely to change due to cultural resources on the property. Potential uses of the adjacent lot leased to the tribe by the state of Washington may include an approximately 20,000 sq. ft. artifact curation facility and/or an international research institute and could include public access around the perimeter as appropriate.

Reaches	Existing Land Use and Likely Changes in Land Use
Reach 8 Downtown – Marina	The Boat Haven marina, Yacht Club, and boat ramp are found in this reach. The area is zoned Industrial Heavy and will likely remain a boat moorage facility and boat launch, with some commercial uses, and additional marine commercial development is likely. The breakwater may be reconfigured, and public access may be enhanced to improve safety and usability over time.
Reach 8C Downtown Transition	This reach contains Terminal 3, used for loading cargo on ships; Terminal 1, used for topside repair of ships, loading cargo, and large-vessel (such as cruise ships) moorage; the Westport Shipyard, which manufactures yachts and operates the 500-ton Travelift on the dock adjacent to T-1; Platypus Marine, which provides boat repair services; and Peninsula Plywood, a manufacturing plant that includes a log lift over water. This reach is zoned Industrial Heavy, but may contain more of a mix of uses in the future. Topside repair and vessel berthing uses will most likely remain. Boatyards for mega-yacht construction may expand. If uses change in some areas, public access may be improved. In addition, the Port's Terminal 3 pier may be extended. The outfall of Tumwater Creek, located in this reach, provides habitat and water quality restoration potential.
Reach 8D Downtown Mixed Use	This area is mostly zoned Central Business District with some Commercial Arterial and a small zone of Industrial Light between Peabody Street and Vine Street. Land uses include the Valley Creek Estuary Park, the Waterfront Trail, the currently vacant Oak Street property, Terminal 4 (used for offloading seafood, mooring fishing vessels, and handling supplies for fishing vessels), the Black Ball ferry terminal, the Landing Mall (whose dock is used by Expeditions Northwest and Arrow Launch Services for vessel mooring), the Peabody Creek estuary, the City Pier (which provides summertime transient moorage), the Feiro Marine Life Center, Hollywood Beach, and Haynes Viewpoint. Landward of the shoreline jurisdiction, most properties are commercial north of the bluffs between Valley Creek and Peabody Creek. Above the bluffs in the whole area, more residential uses are found. Some properties may intensify their uses, increase recreational activities on the water, and operate water taxis. The Black Ball ferry terminal may be redesigned. The City Pier may improve their transient moorage, and the Feiro Marine Life Center may be upgraded, refurbished to include expanded uses, or relocated. The Landing Mall may extend its dock and increase its number of tenants, while Expeditions Northwest may move from there to Terminal 4 at the Oak Street property. The Oak Street property will most likely be redeveloped to include a public park and possibly a beach on the City-leased Department of Natural Resources portion per the ongoing Waterfront and Transportation Improvement Plan, with possibly more parkland or other fairly intense uses on the privately owned portion. The Waterfront Trail is likely to remain and possibly be rerouted closer to the water through the Oak Street property. Likewise, the Valley Creek Estuary Park and Hollywood Beach Park are likely to remain parks. Hollywood Beach will be redesigned and expanded, also per the Waterfront and Transportation Improvement Plan, and the City may increase or improve its transient moorage on the City Pier. Some public access improvements are expected at the end of Lincoln Street in association with waterfront redevelopment.
Reach 9 Olympic	This reach contains the Waterfront Trail and residential uses. The Public Buildings and Park zone stretches along the waterfront, accommodating the Waterfront Trail. The landward residential uses are in a Residential Single Family zone and are unlikely to change. Some small areas are zoned Commercial Office around the Olympic Memorial Hospital (which is zoned for Public Buildings and Parks), and over time, some of the residences in this area may be redeveloped as offices. Francis Street Park is partially located on land zoned for single family residential uses, but its use is not likely to change.

Reaches	Existing Land Use and Likely Changes in Land Use
Reach 10 Rayonier	This reach is zoned for Industrial Heavy and Public Buildings and Parks and contains the former Rayonier Mill site. The Rayonier site will most likely be redeveloped with a mix of uses that may include a park and restored estuary, waterfront public access, cultural, high density residential, and commercial. Because historical records provide evidence of cultural resources on the property, future development may be influenced by concerns for not displacing or disturbing a likely village site. Ennis Creek is an important tributary of the Harbor in this reach. Restoration of Ennis Creek and the former Ennis Creek estuary is anticipated in conjunction with the cleanup of the Rayonier site (See Port Angeles Shoreline Restoration Plan). Conceptual plans have been developed, and they include removal of a jetty (over 600 feet long) and dock (over 200,000 square feet in size), as well as other impervious surfaces and structures. Future use and development of the site may include some water-oriented uses and public access. This would likely include replacement of the existing over-water structure, albeit with a much smaller pier.
Reach 11 Eastern City (UGA)	This reach is outside of the City's boundary but included in the Urban Growth Area. Most of the shoreline jurisdiction is zoned Clallam County's Open Space Overlay/Open Space Corridors. The Olympic Discovery Trail runs along the beach in that zone and will most likely remain. Residential uses are found above the bluffs in Urban Low Density and Urban Very Low Density zones. Although these zones barely extend into the shoreline jurisdiction, the residential parcels do cross into the jurisdiction. The distance between the buildings in these parcels and the top of the bluff varies widely from approximately 35 feet to almost 200 feet. Steep bluffs along the shoreline prevent water-dependent uses in this reach, so the beach and bluffs will likely remain predominately open space with residences above the bluffs.

4 PROTECTIVE PROVISIONS

4.1 Environment Designations

The first line of protection of the City's shorelines is the environment designation assignments (see Figure 3).

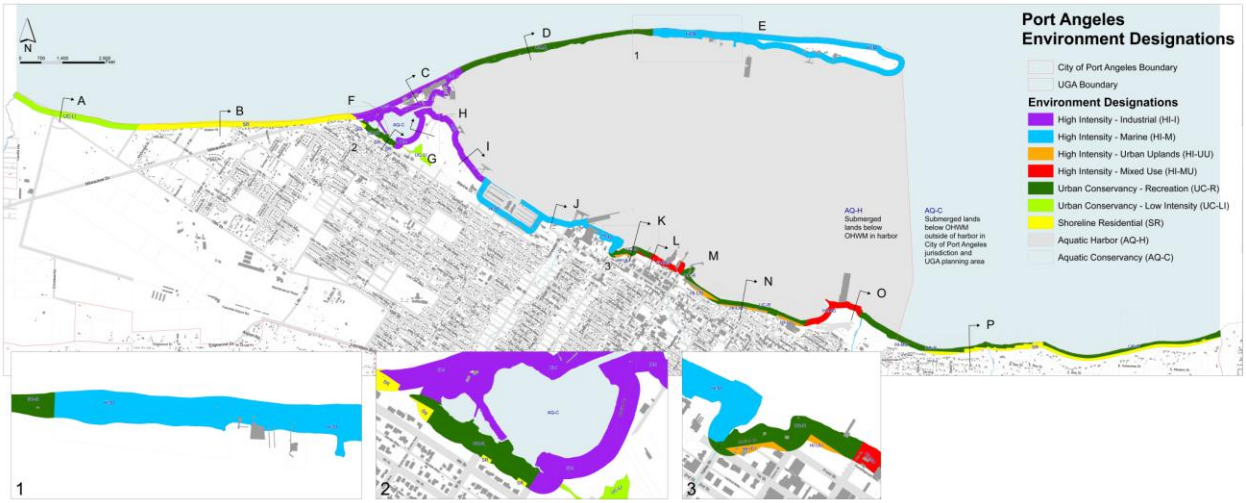

Figure 3. Environment designations for the City of Port Angeles

Environment designations proposed for the City of Port Angeles include: High Intensity – Industrial (HI-I), High Intensity – Marine - (HI-M), High Intensity – Urban Uplands (HI-UU), High Intensity – Mixed Use (HI-MU), Urban Conservancy – Low Intensity (UC-LI), Urban Conservancy – Recreation (UC-R), Urban Conservancy –Landfill (UC-L), Shoreline Residential (SR), Aquatic-Harbor (AQ-H), and Aquatic-Conservancy (AQ-C).

Tables 2 (Table 2 in the SMP) and 3 (Table 1 in the SMP) below identify the prohibited and allowed uses and modifications in each of the shoreline environments.

Table 2. Shoreline Use Matrix (Table 1 in Chapter 2 of the Shoreline Master Program)

P = The use may be permitted
C = The use may be permitted as a conditional use
X = The use is prohibited

SHORELINE USE	High-Intensity-Industrial	High-Intensity-Marine	High-Intensity-Urban Uplands	High-Intensity-Mixed-Use[15]	Urban Conservancy-Low Intensity	Urban Conservancy-Recreation[19]	Shoreline Residential	Aquatic-Harbor[16]	Aquatic-Conservancy[16]
Agriculture	X	X	X	X	X	X	X	X	X
Aquaculture	P	P	P	P	X	X	X	C	X
Boating facilities (including marinas)[17]	X	P	P	P	X	P	X	P	X
Commercial:									
Water-dependent	X[9]	P	P	P	X	P[1]	X	P	X
Water-related, water-enjoyment	X[9]	P	P	P	X	P[1]	X	P[13]	X
Non-water-oriented	X[9]	C[4]	P	P[4]	X	X	X	P[13]	X
Flood hazard management	P	P	P	P	P	P	P	C	X
Forest practices	X[18]	X[18]	X	X	X	X	X	X[18]	X
Industrial:									
Water-dependent	P	P	NA	C[8]	X	X	X	P	X
Water-related, water-enjoyment	P	P	P[12]	C[8]	X	X	X	X	X
Non-water-oriented	P[4]	P[4]	P[12]	X	X	X	X	X	X
Cultural and educational facilities	P	P	P	P	P[10]	P	X	P	X
Government facility – Water-Dependent	P	P	P	P	X	X	X	P	C
Mining	X	X	X	X	X	X	X	X	X
Parking (accessory)	P	P	P	P[2]	X	P[2]	P	X	X
Parking (primary, including paid)	X	X	X	X	X	X	X	X	X
Public Access	P	P	NA	P	P[3]	P	P	P	P
Recreation:									
Water-dependent	P	P	P	P	P[3]	P	P	P	P
Water-enjoyment	P	P[9]	P	P	P[3]	P	P	P[13]	X
Non-water-oriented	P[4,9]	P[9]	P[14]	P[4]	X	P[4]	X	P[13]	X
Single-family residential	X	X	P[12]	X	X	X	P	X	X
Multifamily residential	X	X	P[12]	X	X	X	P[12]	X	X
Land subdivision	P	P	P	P	P[5]	P[5]	P	X	X
Signs:									
On premises	P	P	P	P	X	P[6]	X	X	X
Off premise	X	X	X	X	X	X	X	X	X
Public, highway	P	P	P	P	X	P	X	X	X
Solid waste disposal	X	X	X	X	X	X	X	X	X
Transportation:									
Water-dependent	P	P	P	P	C[3]	P	X	P	C
Non-water-oriented	P[7]	P[7]	P[14]	P	X	C[7]	P	X	X
Roads, railroads	P[7]	P[7]	P[14]	P[7]	X	P[7]	P	X	X
Utilities (primary)	P[7]	P[7]	P[14]	C[7]	C[7]	C[7]	C	C[7]	C[7]

Shoreline Use Matrix Notes:

1. *Only park concessions and uses that enhance the opportunity to enjoy publicly accessible shorelines may be allowed.*
2. *Accessory parking is allowed in shoreline jurisdiction only if there is no other feasible option, as determined by the City.*
3. *Only passive activities that require little development with no significant adverse impacts may be allowed.*
4. *Non-water-oriented uses may be allowed only (a) where the City determines that water-dependent or water-enjoyment use of the shoreline is not feasible due to the configuration of the shoreline and water body or the underlying land use classifications in the comprehensive plan or (b) as part of a mixed-use development with water-dependent uses.*
5. *Land division may be allowed only where the City determines that it is for a public purpose.*
6. *Signs may be allowed only for public facilities and accessory uses within them.*
7. *Roadways and public utilities may be allowed only if there is no other feasible alternative, as determined by the City, and all adverse impacts are mitigated.*
8. *Small-scale water-oriented fabrication and processing, such as repair of hand-launched boats and custom fish processing, may be allowed only where the City determines there are no significant adverse impacts.*
9. *May be allowed only as an accessory use to an otherwise allowed use.*
10. *May be allowed only if the development and use do not cause significant ecological impacts.*
11. *Use may be allowed only if part of a government facility or maritime navigation support facility with water-dependent activities.*
12. *May be allowed only if consistent with the City's zoning ordinance and significant adverse impacts are avoided.*
13. *Allowed only as an accessory use to water-dependent uses and where the development is also adjacent to a High-Intensity – Mixed-Use upland environment.*
14. *May be allowed only if separated from the shoreline (OHWM) by a public right-of-way, trail, or public access walk.*
15. *Special provisions for the Ennis Creek area (former Rayonier Mill site).*
16. *Uses may be allowed in the aquatic environments if they are indicated as "may be permitted" in both the applicable aquatic environment and the adjacent upland environment. Uses may be allowed as a conditional use if indicated as either "may be permitted" or "the use may be permitted as a conditional use" in both the applicable aquatic environment and the adjacent upland environment.*
17. *Dry-land boat storage requires a conditional use permit.*
18. *Log handling and processing of forest products are allowed in the HI-I and HI-M environments. Water-dependent log handling may be allowed in the AQ-H environment adjacent to the HI-I and HI-M environments. See regulations 5.C.15 through .26.*

Table 3. Shoreline Modifications Matrix (Table 2 in Chapter 2 of the Shoreline Master Program)

P = May be permitted
C = May be permitted as a conditional use only
X = Prohibited; the use is not eligible for a variance or conditional use permit
NA = Not applicable

SHORELINE MODIFICATIONS	High-Intensity-Industrial	High-Intensity-Marine	High-Intensity-Urban Uplands	High-Intensity-Mixed-Use	Urban Conservancy-Low Intensity	Urban Conservancy-Recreation	Shoreline Residential	Aquatic-Harbor	Aquatic-Conservancy
Shoreline stabilization:									
Bioengineering	P	P	NA	P	P	P	P	P[1,2,5]	P[1,2,5]
Revetments	P	P	NA	P	C	P	C	P[1,2,5]	P[1,2,5]
Bulkheads	P	P	NA	P	X	C	X	P[1,2,5]	P[1,2,5]
Breakwaters/jetties/rock weirs/groins	P	P	NA	P	X	C	X	P	X
Dikes, levees	C	C	NA	C	C	C	C	P[1,2,5]	P[1,2,5]
Bluff walls	X	X	C[7]	X	X	X	X	NA	NA
Environmental restoration	P	P	P	P	P	P	P	P	P
Clearing and Grading	P	P	P	P	C	P	P	NA	NA
Dredging and dredged material disposal	NA	NA	NA	NA	NA	NA	NA	P[3]	X[6]
Hazardous waste cleanup	P	P	NA	P	P	P	P	P	P
Fill	P	P	P	P	P	P	C	C[1,2,8]	C[8]
Piers, docks	P	P	NA	P	X	P	X	P[1]	C[1]
Moorage piles and mooring buoys	NA	NA	NA	NA	NA	NA	NA	P[4]	C[4]
Outfalls	P	P	NA	P	P	P	P	P	C

Shoreline Modification Matrix Notes:

1. *Allowed in the aquatic environment only if allowed in the nearest upland environment.*
2. *Allowed only to the extent necessary for construction and geometric requirements.*
3. *Dredged material disposal is by conditional use only.*
4. *Private, non commercial mooring piles and buoys are prohibited.*
5. *Modification may be allowed waterward of the OHWM if it enhances ecological functions.*
6. *Dredging and dredged material disposal may be allowed as part of construction of an approved use within the Aquatic Environments (e.g., buried outfall).*
7. *Bluff walls and similar measures may be allowed to protect public roadways and utilities.*
8. *Fill waterward of the OHWM that is for the purpose of restoring ecological functions or as part of a WDOE-approved environmental clean-up action is a permitted use and does not require a conditional use permit.*

4.2 General Goals, Policies and Regulations

The SMP contains numerous general policies, with supporting regulations (see SMP), intended to protect the ecological functions of the shoreline and prevent adverse cumulative impacts. These policies are summarized below.

- The City should give preference to those uses that are consistent with the prevention and control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon uses of the state's shoreline areas.

- The City should ensure that all proposed shoreline development will not diminish the public's health, safety, and welfare, as well as the land or its vegetation and wildlife, and should endeavor to protect property rights while implementing the policies of the Shoreline Management Act.

- The City should reduce use conflicts by prohibiting or applying special permit conditions to those uses which are consistent with the prevention and control of pollution and prevention of damage to the natural environment or are not unique to or dependent upon use of the state's shoreline. In implementing this provision, preference should be given first to water-dependent uses, then to water-related uses and water-enjoyment uses, as defined in Chapter 6, Definitions.

- The City should encourage the full use of existing urban areas before expansion of intensive new development area is allowed, and should adopt an infill-policy for the entire City.

4.3 Shoreline Restoration Plan

As discussed above, one of the key objectives that the SMP must address is "no net loss of ecological shoreline functions necessary to sustain shoreline natural resources" (Ecology 2004). However, SMP updates seek not only to maintain conditions, but to improve them:

> *"…[shoreline master programs] include planning elements that when implemented, serve to improve the overall condition of habitat and resources within the shoreline area of each city and county (WAC 173-26-201(c))."*

The guidelines state that "master programs shall include goals, policies and actions for restoration of impaired shoreline ecological functions. These master program provisions should be designed to achieve overall improvements in shoreline ecological functions over time, when compared to the status upon adoption of the master program" (WAC

173-26-201(2)(f)). Pursuant to that direction, the City has prepared a *Shoreline Restoration Plan*, which is a non-regulatory part of the SMP (Appendix A).

Practically, it is not always feasible for shoreline developments and redevelopments to achieve no net loss at the site scale, particularly for those developments on currently undeveloped properties or those developing a new pier or bulkhead. The *Shoreline Restoration Plan*, therefore, can be an important component in making up that difference in ecological function that would otherwise result just from implementation of the SMP. The *Shoreline Restoration Plan* represents a long-term vision for restoration that will be implemented over time, resulting in ongoing improvement over the existing conditions. Development or preservation that maximizes the amount of ecologically restored and protected area, within the context of allowable commercial uses, is the ideal.

The *Shoreline Restoration Plan* identifies a number of project-specific opportunities for restoration on both public and private properties inside and outside of shoreline jurisdiction, and also identifies ongoing City programs and activities, non-governmental organization programs and activities, and other recommended actions consistent with a variety of watershed-level efforts (see Appendix A in the SMP).

4.4 General Cumulative Impacts Assessment

The following table (Table 4) summarizes for each environment designation and reach segment: the existing conditions, anticipated development, relevant Shoreline Master Program (SMP) provisions, other regulatory provisions and development/restoration programs, and the expected net impact on ecological function. Certain special topics are discussed and analyzed in greater detail in Chapter 5 following the table. The discussion of existing conditions is based on the *Final Shoreline Analysis Report*.

In addition to the environment designations discussed in the following tables, the Aquatic-Harbor and Aquatic-Conservancy designations will apply to those applicable areas of shoreline jurisdiction:

> The purpose of the Aquatic-Harbor Environment is to manage development and uses, and to protect, and, where applicable, restore ecological functions of the areas waterward of the ordinary high water mark within the Ediz Hook Harbor.. An Aquatic-Harbor Environment designation will be assigned to shoreline areas waterward of the ordinary high water mark within Port Angeles Harbor.
>
> The purpose of the Aquatic-Conservancy Environment designation is to protect and enhance the natural characteristics and functions of the areas waterward of the ordinary high water mark outside the Port Angeles Harbor. As opposed to aquatic areas within the AQ-H Environment, those in the AQ-C generally lie outside Ediz Hook and feature much less in-water uses and development. Consequently, the provisions for the AQ-C Environment emphasize ecological

protection and restoration and are generally more restrictive in terms of allowed shoreline uses and modifications. Aquatic-Conservancy areas include:

- Marine waters outside the Port Angeles Harbor as defined in the Aquatic-Harbor designation.
- The lagoon at the base of Ediz Hook.
- Any non-marine water body within the City of Port Angeles' shoreline jurisdiction.

Table 4. General Cumulative Impacts Assessment.

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
High Intensity – Industrial (HI-I)					
Reach 3 (in full)	**Existing Development:** The Nippon Paper plant is located in this segment. **Existing Functions/Processes:** Hydrologic: Virtually the entire shoreline is armored, presumably altering the rate or type of sediment movement. However, there are no barriers to movement of sediment along the shoreline. Listed as Category 5 for Dissolved Oxygen impairment; No TMDL. Vegetative: No substantive shoreline vegetation. Habitat: In bald eagle buffer.	**Future Development:** Land uses are not expected to change. **Functions/Processes Impacted:** Water Quantity: No change is expected in impervious surface coverage or runoff generated within this reach. Water Quality: No change is expected in water quality in this reach based on ongoing operations alone. The development and implementation of a TMDL to address low dissolved oxygen would likely improve water quality. Vegetation and Habitat: Given the cleared and very developed nature of this shoreline, little degradation of shoreline vegetation and habitat is anticipated.	SMP policies for the HI-I environment (Chapter 2.B 1.c) provide the following guidance: 1. Give priority to water-oriented uses over non-water-oriented uses. First priority should be given to water-dependent uses. Second priority should be given to water-related and water-enjoyment uses. 2. "New development, redevelopment, and uses should include the protection and, where feasible, restoration of shoreline ecological functions, with particular emphasis on habitat for priority species and environmental cleanup." 3. "Visual and physical public access should be required as part of a non-water-oriented development where there are both a public benefit and no security or use conflicts, as provided for in SMP Section 3.B.9" 4. Provide pedestrian, bicycle, and vehicular routes to public access points by establishing shoreline management provisions, as well as undertaking other measures such as street and pathway improvements. 5. The redevelopment or ecological restoration of substandard and degraded urban shoreline areas and obsolete structures should be encouraged. Additionally, general provisions apply for the HI-I environment depending on the location (Chapter 2.C). For reaches 3, 6, and 8A (SMP Segments C, I, and J) facing the Strait of Juan de Fuca or the Harbor, these requirements include a minimum 50 foot vegetation conservation area (VCA) and 50 foot building setback. In SMP Segment C, repair or replacement of shoreline stabilization is allowed; however, non-structural or soft- structural approaches must be used as feasible. In SMP Segment I, new shoreline stabilization may be allowed if necessary to prevent erosion or support water dependent uses. For HI-I environments facing the lagoon (SMP Segment H, reach 7), the minimum VCA and setback are 20 feet. Additionally, existing structures, improvements to existing structures and public access pathways may extend into the VCA and setback areas. Any untreated sewage must be directed away from the lagoon. Any development projects in Section C must consider ecological restoration opportunities. Generally, the SMP does not allow projects that would have a significant impact on ecological functions unless impacts are mitigated according to mitigation sequencing (Chapter 3.B.6.c). Chapter 5.B.5 identifies policies and regulations specific to industrial uses. These regulations provide the following standards relevant to ongoing industrial activities: 4. Long-term storage and/or disposal of industrial wastes is prohibited within shoreline jurisdiction, except that waste water treatment may be allowed in shoreline jurisdiction only if alternate, inland areas have been adequately proven infeasible. 5. Waste disposal, except clean soils and clean dredge spoils, is prohibited within shoreline jurisdiction. The Shoreline Administrator will establish the time period allowed for temporary storage.	Any in- or over-water proposals would require review not only by the City of Port Angeles, but also by the Washington Department of Fish and Wildlife (WDFW), the U.S. Army Corps of Engineers (Corps), and/or the Washington Departments of Ecology and Natural Resources. Each of these agencies is charged with regulating and/or protecting shorelines and the waters of Puget Sound, and would impose certain design or mitigation requirements on applicants. A project that includes in-water fill would require Corps review and permitting. For similar projects along the Puget Sound, a Biological Evaluation would be prepared to assess project impacts on listed fish and wildlife, and that document would be routed to U.S. Fish and Wildlife Service and National Marine Fisheries Service for Endangered Species Act review. These agencies would also impose certain design and mitigation requirements on a proposed project to minimize adverse impacts. The Washington Department of Fish and Wildlife also specifies permit conditions to develop within a bald eagle buffer area. The City maintains a GIS database of all known discharges, outfalls, and receiving waters owned, operated, or maintained by the City. Planned actions include a field assessment of impacted receiving waters, a plan to trace and remove sources of discharges, and program evaluation and assessment. The City's draft Stormwater Management Plan (2010) addresses runoff from new development, redevelopment, and construction activities at sites one acre or greater in size. The City may reduce the size threshold in the future. Actions include employing Ecology's manual for design criteria and best management practices, conducting stormwater plan review and oversight, pre- and post-construction site inspection, and compliance and maintenance standards for stormwater	Significant changes in land use are not anticipated in this reach. Any future redevelopment would need to comply with vegetation, setback, and shoreline modification standards. Any impacts to ecological function would need to be mitigated. Implementation of the draft Stormwater Management Plan will help the City identify and address sources of water quality problems. Restoration activities, including the removal of wood waste from the lagoon will improve water quality and nearshore habitat. Given the above potential impacts and mitigation measures, **no net loss of shoreline functions is expected**.
Reach 6 (in full)	**Existing Development:** Land uses include the Nippon Paper plant, storage facility, and pier used to transfer paper products onto barges; and a Tesoro Petroleum fuel distribution pier and tanks. The Waterfront Trail is also located within this reach. **Existing Functions/Processes:** Hydrologic: Industrial infrastructure likely causes significant interference with natural current patterns. Category 5 for Dissolved Oxygen; Category 2 for 1,2,4-Trichlorobensene; Category 2 for Fecal Coliform. No TMDL. Vegetative: Most areas have no vegetation.	**Future Development:** These uses are unlikely to change in the majority of the reach, although Nippon Paper Industries may redevelop portions of their property to include a biomass cogeneration energy plant. The Waterfront Trail will likely remain in this reach, although its route and wayfinding may be improved. In addition, opportunity exists for a public access corridor along the east boundary of the Nippon property. **Functions/Processes Impacted:** Water Quantity: Slight increase in impervious surface coverage is possible with development of the energy plant. Opportunities to offset this impact include increased shoreline vegetation and adherence to stormwater management requirements.			

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
	Habitat: In bald eagle buffer, listed as priority abalone habitat.	Water Quality: No change is expected in water quality in this reach based on ongoing operations alone. The development and implementation of a TMDL to address low dissolved oxygen would likely improve water quality. Vegetation and Habitat: Given the cleared and very developed nature of this shoreline, little degradation of shoreline vegetation and habitat is anticipated. Air Quality: Emissions from the proposed energy plant are likely to reduce air quality. This may be of concern to nearby Olympic National Park, which is under pressure to reduce air pollution and associated impacts.	8. New display and other exterior lighting shall, to the extent feasible, be designed, shielded, and operated to avoid illuminating the water surface and reducing light pollution into the night sky and residential areas. 12. Industrial activities, including ship and boat building and repair yards, shall employ Best Management Practices (BMPs) concerning the various services and activities they perform and their impacts on the surrounding water quality. Additionally, new development, expansion or redevelopment of existing facilities would trigger the following requirements (Chapter 5.B.5): 1. Proposed industrial developments or major expansions shall be consistent with Port Angeles Harbor Management Plan, or, if not, be accompanied by a feasibility or use analysis acceptable to the City. 7. At new or expanded port and/or industrial developments, the best available facilities practices and procedures shall be employed for the safe handling of fuels and toxic or hazardous materials to prevent them from entering the water, and optimum means shall be employed for prompt and effective cleanup of those spills that do occur. 9. All industrial loading and service areas shall be located or screened to minimize adverse impacts to the shoreline environment (including visual impacts) and public access facilities, including the Waterfront Trail and Olympic Discovery Trail. 11. Low Impact Development (LID) techniques shall be incorporated where appropriate. The following regulations apply specifically to upland log storage (Chapter 5.B.5): 15. "Unpaved storage areas underlain by permeable soils shall have at least a 4-foot separation between the ground surface and the highest seasonal water table." 16. "Berms, dikes, grassy swales, vegetated buffers, retention ponds or other means shall be used to ensure that surface runoff is collected and discharged from the storage area at one point, if possible. It shall be demonstrated that State water quality standards and/or criteria will not be violated by such runoff under any conditions of flow leaving the site and entering into nearby water courses. If such demonstration is not possible, treatment facilities for runoff shall be provided, meeting city, state, and federal standards." A discussion of overwater structures and shoreline stabilization regulations is included in Section 5, below. Chapter 4.B.6.b, identifies the City's objective to pursue recommendations identified in the Shoreline Restoration Plan (TWC and Makers 2011).	discharge. The City's Sensitive Areas regulations (PAMC 15.20) establish wetland buffers ranging from 25-300 feet depending on wetland rating and intensity of proposed land use. Waters placed on the 303(d) list (Category 5) require the preparation of Total Maximum Daily Loads (TMDLs), a planning tool to clean up polluted waters. TMDLs identify the maximum amount of a pollutant to be allowed to be released into a waterbody so as not to impair uses of the water, and allocate that amount among various sources. In addition, even before a TMDL is completed, the inclusion of a water on the 303(d) list can reduce the amount of pollutants allowed to be released under permits issued by Ecology. The draft Port Angeles Harbor Management Plan identifies priorities and sets a course for improving shoreline habitat, public access, and economic development in the City's core. As identified in the *Shoreline Restoration Plan* (Appendix A of the SMP), several opportunities for improvements to shoreline ecological functions exist: • Planting native vegetation; • Improve conditions along armored shorelines where feasible; • Mitigate effects of armoring by incorporating LWD or through beach nourishment; • Remove wood waste from the lagoon; and • Restore tidal connectivity at all tides to the lagoon.	
Reach 7 (in part)	**Existing Development:** The area around the lagoon includes industrial facilities and parking. **Existing Functions/Processes:** Hydrologic: Outlet may interfere with natural current patterns. Little organic material input. Category 5 with respect to Dissolved Oxygen and Fecal Coliform. No TMDL. Vegetative: Lagoon in this area is buffered by a strip of low-growing vegetation. Habitat: In bald eagle buffer zone.	**Future Development:** Land use change unlikely. Restoration activities may take place at the lagoon. **Functions/Processes Impacted:** Water Quantity: No change is expected in impervious surface coverage or associated runoff. Water Quality: No change is expected in water quality in this reach based on ongoing operations alone. Vegetation and Habitat: Ongoing uses are unlikely to further degrade vegetation or habitat. Restoration of vegetation surrounding the lagoon is possible, in which case, vegetative functions would be improved.			
Reach 8A	**Existing Development:** The shoreline in this segment is highly modified. The uplands in this reach are intensely used for cargo staging and log storage. Two major port terminals are located in this segment, along with several other smaller	**Future Development:** The area within shoreline jurisdiction is expected to continue to serve industrial uses. Zoning at the Tse-whit-zen site, which is adjacent to, but outside of shoreline jurisdiction, is likely to change due to cultural resources on			

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
	structures. The entire shoreline is armored. **<u>Existing Functions/Processes</u>:** Hydrologic: Altered by terminals and fully armored shoreline. Category 2 for Fecal Coliform. Vegetative: Very limited vegetation exists in this reach to provide functions/processes. Habitat: Part of bald eagle buffer.	the property. Potential uses of the adjacent lot leased to the tribe by the state of Washington, and also outside of the City's shoreline jurisdiction, may include an approximately 20,000 sq. ft. artifact curation facility and/or an international research institute and could include public access around the perimeter as appropriate. **<u>Functions/Processes Impacted</u>:** Hydrologic: Given the highly altered state of the shoreline, the continued use of this area for industrial purposes would not be expected to markedly alter current hydrologic functions/processes. Increased impervious surfaces adjacent to the shoreline associated with the artifact facility would likely increase runoff, however, such development would need to adhere to stormwater regulations. Vegetative/Habitat: Given the highly altered state of the shoreline, the continued use of this area for industrial purposes would not be expected to markedly alter current vegetative or habitat functions/processes.			

High Intensity – Marine (HI-M)					
Reach 4 (in part)	**Existing Development:** Existing development in this segment consists primarily of a runway associated with a Coast Guard base. **Existing Functions/Processes:** Hydrologic: Nearly the entire length of this reach is armored. Vegetative: Most of the area has less than a 20'-wide band of vegetation that consists primarily of grass. Habitat: Though identified as priority habitat by WDFW, unlikely to provide much valuable functions/processes.	**Future Development:** The Coast Guard base is likely to remain. No specific future development activities at the Coast Guard base are known. However, any development in this segment would be minimal as the runway occupies the majority of this segment. **Functions/Processes Impacted:** As no specific future development activities at the Coast Guard base are known, no specific impacts to functions/processes can be determined for the Coast Guard base.	The SMP provides the following management policies for the HI-M environment (Chapter 2.B 2.c): 1. First priority should be given to water-dependent uses. Second priority should be given to water-related and water-enjoyment uses. 2. Where applicable, new development shall include environmental cleanup and restoration of the shoreline in accordance with state and federal requirements and the restoration plan accompanying this SMP. 3. Except at the U.S. Coast Guard base, visual and physical public access should be required as provided for in SMP Section 3.B.8. 4. Provide pedestrian, bicycle, and vehicular routes to public access points. 5. Establish shoreline management provisions to improve the visual qualities in this environment and the views from public properties and substantial numbers of residences. 6. Development in the High-Intensity Marine Environment should be managed so that it enhances and maintains the shorelines for a variety of water-oriented uses, with an emphasis on industrial, maritime, and boating activities. 7. The redevelopment and renewal of substandard and degraded urban shoreline areas and obsolete structures should be encouraged. 8. In regulating uses at the U.S. Coast Guard base, the City recognizes that the U.S. Coast Guard is a use intrinsically essential to achieving the objectives of the Shoreline Management Act. Specifically, the U.S. Coast Guard supports maritime commerce, marine safety, environmental cleanup efforts (e.g., spill response), and water recreation. The Coast Guard also has unique security and operational requirements, so that public access provisions do not apply to the U.S. Coast Guard base property. Additionally, uses accessory to the Coast Guard mission and operations should be allowed on the base. Specific to Reach 4 (SMP Segment E.a), "On Ediz Hook facing the Strait" (Chapter 2.C), but not applicable to the Coast Guard base, the vegetation conservation area (VCA) and building setback extend from the OHWM to the edge of road pavement. The road may be widened, and one rest stop, view point or picnic area up to 200 square feet in area may be constructed within the setback and VCA for every 1200 linear feet of shoreline. Repair of shoreline stabilization measures is permitted; however, mitigation such as beach enhancement or large woody debris placement may be required if shoreline stabilization is enlarged. For Reach 5 (SMP Segment E.b), "On Ediz Hook facing the harbor," the VCA standards also extend from the OHWM to the road, but the minimum structure setback is 15 feet from OHWM for non-water-dependent structures (Chapter 2.C). Furthermore, on the harbor-side, a continuous public access trail must be constructed along the length of the shoreline. In this reach, shoreline stabilization shall be allowed only if it is necessary to protect existing structures or roadways. For Reaches 8B, 8C, and 8D (SMP Segment I), the minimum VCA and structural setback is 50 feet for non-water dependent uses (Chapter 2.C). Structures that are part of a marina or similar water-dependent use may intrude on the VCA and setback. New or enhanced shoreline stabilization may be allowed if necessary to prevent erosion or to support water-	Any in- or over-water proposals would require review not only by the City of Port Angeles, but also by the Washington Department of Fish and Wildlife (WDFW), the U.S. Army Corps of Engineers (Corps), and/or the Washington Departments of Ecology and Natural Resources. Each of these agencies is charged with regulating and/or protecting shorelines and the waters of Puget Sound, and would impose certain design or mitigation requirements on applicants. A project that includes in-water fill would require Corps review and permitting. For similar projects along the Puget Sound, a Biological Evaluation would be prepared to assess project impacts on listed fish and wildlife, and that document would be routed to U.S. Fish and Wildlife Service and National Marine Fisheries Service for Endangered Species Act review. These agencies would also impose certain design and mitigation requirements on a proposed project to minimize adverse impacts. The City's draft Stormwater Management Plan (2010) addresses runoff from new development, redevelopment, and construction activities at sites one acre or greater in size. The City may reduce the size threshold in the future. Actions include employing Ecology's manual for design criteria and best management practices, conducting stormwater plan review and oversight, pre- and post-construction site inspection, and compliance and maintenance standards for stormwater discharge. The City's sensitive areas regulations require wetland buffers varying between 25 and 300 feet based on wetland classification and intensity of proposed land use. Removal of the Elwha dam is planned to commence in September 2011. This action is expected to improve sediment delivery to and beach accretion on the outer side of Ediz Hook. The removal of the dam and sediment delivery will occur over 3 years to ensure that the restoration of sediment processes happens at a rate that will not overwhelm existing conditions. This should	The primary changes anticipated in the HI-M environment include additional marine commercial development and water-dependent industrial development. Reconfiguration of the existing breakwater in Reach 8B could also allow for expanded marina facilities. VCAs and setback standards will generally not apply to these water dependent uses. Shoreline conditions along Ediz Hook are expected to improve substantially through the Elwha dam removal process and continued shoreline restoration along Ediz Hook should also help improve shoreline conditions. A new or reconfigured bulkhead would likely be either open-pile or floating, and existing impacts on sediment movement would be reduced. Redevelopment or expansion of the marina would require review and the City's Shoreline Administrator may require ecological restoration to mitigate for environmental impacts and to ensure no net loss of ecological function. Regulations on overwater structures should minimize the extent of nearshore shading and interference with sediment transport processes. Furthermore, any marina redevelopment would need to comply with vegetation, setback, and shoreline modification standards.
Reach 5 (in part)	**Existing Development:** Existing development in this segment consists of facilities associated with a Coast Guard base. These facilities include several buildings, paved roads and parking areas, and boating infrastructure. **Existing Functions/Processes:** Hydrologic: Extensive armoring and jetties in this segment alter hydrologic processes. Vegetative: Vegetative buffering in this segment is highly variable and consists primarily of grasses. Habitat: Listed by WDFW as priority habitat for hardshell clam, eelgrass, abalone, and shorebird concentrations.	**Future Development:** The Coast Guard base is likely to remain. No specific future development activities at the Coast Guard base are known. However, it is likely that at least some facility renovations will occur. **Functions/Processes Impacted:** As no specific future development activities at the Coast Guard base are known, no specific impacts to functions/processes can be determined.			
Reach 8B (in full)	**Existing Development:** This area consists of a marina, boat launch, and associated upland facilities.	**Future Development:** Existing uses are expected to continue. Additional marine commercial development is likely. The breakwater may be reconfigured			

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
	<u>Existing Functions/Processes</u>: Hydrologic: Altered by fully armored shoreline a variety of in-water structures. Category 2 for Fecal Coliform. Vegetative: Very limited vegetation exists in this reach to provide functions/processes. Habitat: This reach generally provides poor habitat.	to increase the size of the marina and public access improved over time. **<u>Functions/Processes Impacted</u>:** Hydrologic: Given the highly altered state of the shoreline, the continued use of this area for existing purposes would not be expected to markedly alter current hydrologic functions/processes. Additional commercial development could increase the amount of impervious surfaces slightly; however, such development would need to comply with stormwater regulations. Vegetative/Habitat: Given the highly altered state of the shoreline, the continued use of this area for existing purposes would not be expected to markedly alter current vegetative or habitat functions/processes.	dependent uses. Generally, the SMP does not allow projects that would have a significant impact on ecological functions unless impacts are mitigated according to mitigation sequencing (Chapter 3.B.6.c). The following Shoreline Stabilization Modification Regulations (Ch.4.B.2.c) would apply to the reconfiguration of the breakwater: 28. The effect of proposed breakwaters, rock weirs, and groins on sand movement shall be evaluated during permit review. The beneficiaries and/or owners of large-scale works that substantially alter, reduce, or block littoral drift and cause new erosion of downdrift shores shall be required to establish and maintain an adequate long-term beach replenishment program. 30. Open-pile or floating breakwaters shall be preferred over solid fixed breakwaters. Fixed breakwaters that obstruct movement in the full water column are not allowed unless it can be demonstrated that solid breakwaters will have no significant adverse impacts to natural shoreline processes or that such adverse impacts can be adequately mitigated. 35. Materials used for the construction of breakwaters, jetties, rock weirs, and groins shall be durable, low-maintenance, and compatible with existing shoreline features, processes, and aesthetics. Expansion of the marina, and any overwater structures associated with the boatyards would need to comply with the following regulations (Chapter 4.B.3.c): 4. Only piers and ramps are permitted in the first 30 feet waterward of the OHWM. All floats, ells and fingers must be at least 30 feet waterward of the OHWM. 5. The proposed length must be the minimum necessary to support the intended use. 6. No skirting is permitted on any over-water structure except to contain or protect floatation material. 9. Lighting associated with overwater structures shall minimize light spillage on adjacent properties or waterbodies. 10. Piles, floats and other over water structures that are in direct contact with water or over water shall not be treated or coated with herbicides, fungicides, paint, or pentachlorophenol. Use of wood members treated with arsenate compounds or creosote is prohibited. Furthermore, the following regulations apply to boating facilities specifically (Chapter 5.B.3.c): 5. Boating facilities shall not be located where their development would reduce the quantity or quality of critical aquatic habitat or where significant ecological impacts would occur. On degraded shorelines, the City's Shoreline Administrator may require ecological restoration measures to account for environmental impacts and risks to the ecology and to ensure no net loss of ecological function.	greatly enhance the nearshore function in Reach 4 in the next decade and beyond. As identified in the *Shoreline Restoration Plan* (Appendix A of the SMP), several opportunities for improvements to shoreline ecological functions exist within the HI-M environment. Nearshore restoration of a 1,200 foot section of Ediz Hook, sponsored by DNR and LEKT, is also scheduled to begin in early summer 2011. Restoration of the mouth of Tumwater Creek and riparian revegetation are identified as possible enhancement approaches in the more developed reaches of the HI-M environment. Enhancement of existing shoreline armoring by incorporating bioengineering approaches is also proposed.	Implementation of the draft Stormwater Management Plan will help the City identify and address sources of water quality concerns. Ultimately, the combination of SMP regulations, planned and ongoing restoration projects, and state and federal regulations are expected to result in **no net loss of shoreline functions**.
Reach 8C (in full) and Reach 8D (in part)	**<u>Existing Development</u>:** This reach contains two port terminals, a shipyard with associated Travelift, a boat repair business, and a manufacturing plant that includes a log lift over water. **<u>Existing Functions/Processes</u>:** Hydrologic: Altered by fully armored shoreline and a variety of in-water structures. Vegetative: Very limited vegetation exists in this reach to provide functions/ processes. Habitat: Tumwater Creek contains priority species and provides minimal estuarine/riparian habitat.	**<u>Future Development:</u>** Topside repair and vessel berthing uses will most likely remain. Boatyards for mega-yacht construction may expand. If uses change in some areas, public access may be improved. In addition, the Port's Terminal 3 pier may be extended. **<u>Functions/Processes Impacted</u>:** Hydrologic: Given the highly altered state of the shoreline, the continued use of this area for industrial purposes would not be expected to markedly alter current hydrologic functions/processes. Vegetative/Habitat: Given the highly altered state of the shoreline, the continued use of this area for industrial purposes would not be expected to markedly alter current vegetative or habitat functions/processes.			

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
			6. Boating facility design shall: a. Provide thorough flushing of all enclosed water areas and shall not restrict the movement of aquatic life requiring shallow water habitat. b. Minimize interference with geohydraulic processes and disruption of existing shoreline ecological functions. c. Minimize the adverse impacts of shading of the water surface by over-water structures through means such as but not limited to: i. Minimization of over-water coverage, ii. Elevation of the pier above the water to the maximum extent reasonable and limiting floats in the nearshore area, iii. Incorporating grating that allows light penetration. Further discussion of the likely effects of overwater structures and shoreline stabilization regulations is included in Section 5, below. New or expanded boatyards fall under industrial development, and the following regulations apply (Chapter 5.B.5.c): 7. At new or expanded port and/or industrial developments, the best available facilities practices and procedures shall be employed for the safe handling of fuels and toxic or hazardous materials to prevent them from entering the water, and optimum means shall be employed for prompt and effective cleanup of those spills that do occur. 8. New display and other exterior lighting shall, to the extent feasible, be designed, shielded, and operated to avoid illuminating the water surface and reducing light pollution into the night sky and residential areas. 11. Low Impact Development (LID) techniques shall be incorporated where appropriate. 12. Industrial activities, including ship and boat building and repair yards, shall employ Best Management Practices (BMPs) concerning the various services and activities they perform and their impacts on the surrounding water quality. Chapter 4.B.6.b. identifies the City's objective to pursue recommendations identified in the Shoreline Restoration Plan (TWC and Makers 2011).		
High Intensity – Urban Uplands (HI-UU)					
Reach 8D (in part)	**<u>Existing Development</u>:** Includes retail, commercial, industrial/manufacturing, and hotel/motel uses. There also are nine undeveloped/vacant parcels, one of which includes a parking lot. All of these parcels are generally separated from the shoreline by street or trail ROW. In one case, a parcel is separated from the shoreline by a public parcel. **<u>Existing</u>**	**<u>Future Development</u>:** Parcels with existing development can be expected to undergo typical renovations or potentially structure replacement. Commercial development in the nine undeveloped parcels should be expected at a level similar to the surrounding development. **<u>Functions/Processes Impacted</u>:** New development in the existing undeveloped lots is expected to increase impervious surface cover and reduce vegetation slightly. Any	General management policies for the HI-UU environment (Chapter 2.B.3.c) include: 1. Uses should be limited to those that do not conflict with water-oriented activities and public access on the shoreline. 2. New development should not substantially diminish visual and physical public access. 3. Provide comfortable and attractive pedestrian, bicycle, and vehicular routes to public access points by establishing shoreline management provisions, as well as undertaking other measures such as street and pathway improvements. General Policies and Regulations (Ch.5.B.1.b):	The primary action identified in the Shoreline Restoration Plan (Appendix A of the SMP) applicable to the HI-UU environment is to remediate stormwater management in the watershed to collect, treat, and discharge stormwater in a manner that avoids adverse impacts to surface waters. The City's draft Stormwater Management Plan (2010) addresses runoff from new development, redevelopment, and construction activities at sites one acre or greater in size. The City may reduce the size threshold in the future. Actions include employing Ecology's manual for design criteria and best management practices,	Likely future development in the HI-UU environment is generally separated from the shoreline by a street or trail. This limits the direct effects of the development on shoreline habitat; however the potential exists for degradation of water quality or for generating increased surface water by increasing impervious surfaces. Overall, the level of new development potential in the HI-UU environment is quite

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
	Functions/Processes: These highly developed urban parcels are separated from the shoreline and do not contribute significantly to shoreline functions/ processes.	new development would need to comply with stormwater regulations, encouraging on-site infiltration and limiting runoff. Additionally, because these parcels are separated from the shoreline, impacts to functions/processes would be minimal.	1. The City should give preference to those uses that are consistent with the control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon uses of the state's shoreline areas. 2. The City should ensure that all proposed shoreline development will not diminish the public's health, safety, and welfare, or adversely impact ecological functions. The vegetation conservation area (VCA) extends 50 feet beyond the top of the bluff (Chapter 2.C) for Segment N "From City Pier Park to Rayonier Property") and 70 feet from the OHWM for Segment K "Shorelines from Valley Creek Estuary to Oak Street." Furthermore, setback standards apply based on geologically hazardous area regulations (Chapter 3.B.5.c). These requirements include review by a licensed geotechnical professional; certification that the structure will not be in danger from erosion for at least 75 years; and a marine bluff setback at least equal to the annual erosion rate times 75 years plus 20 feet. Regulations specific to commercial development (Chapter 5.B.4.c): 2. Commercial development shall be designed to avoid or minimize and mitigate ecological impacts, to protect human health and safety, and to avoid significant adverse impacts to surrounding uses and the shoreline's visual qualities 3. All new non-water-oriented commercial development, where allowed, shall be conditioned with the requirement to provide ecological restoration and public access, unless such measures are demonstrated to be not feasible. Additionally, Chapter 5.B.8.c requires that all new and redeveloped residences control stormwater runoff according to the most recent version of the City's Urban Services Standards and Guidelines, current edition. Chapter 4.B.6.b. identifies the City's objective to pursue recommendations identified in the Shoreline Restoration Plan (TWC and Makers 2011).	conducting stormwater plan review and oversight, pre- and post-construction site inspection, and compliance and maintenance standards for stormwater discharge. The draft Port Angeles Harbor Management Plan identifies priorities and sets a course for improving shoreline habitat, public access, and economic development in the City's core. The City's Sensitive Areas regulations require wetland buffers varying between 25 and 300 feet based on wetland classification and intensity of proposed land use (PAMC15.20).	low, and stormwater management and LID practices should minimize the risk of increased water quality and hydrologic impacts to the extent such that **no net loss of shoreline function is anticipated**.
Reach 9 (in part)	**Existing Development:** Includes single- and multi-family residential and commercial land uses. There also is one undeveloped vacant parcel. All parcels are separated from the shoreline by at least trail ROW. **Existing Functions/Processes:** These parcels are separated from the shoreline do not contribute significantly to shoreline functions/ processes.	**Future Development:** Parcels with existing development can be expected to undergo typical renovations or potentially structure replacement. **Functions/Processes Impacted:** Because these parcels are separated from the shoreline, impacts to functions/processes would be minimal.			
High Intensity – Mixed Use (HI-MU)					
Reach 8D (in part)	**Existing Development:** Piers (Black Ball ferry terminal) and (the Landing Mall). **Existing Functions/Processes:** Hydrologic: Heavily altered by fully armored shoreline and piers. Category 2 for Fecal Coliform in segments A, B, and D. Vegetative: Virtually no	**Future Development:** Some properties may intensify their uses, increase recreational activities on the water, and establish water taxis. The Black Ball ferry terminal may be redesigned. The Landing Mall may extend its dock and increase its number of tenants, while Expeditions Northwest may move from the Landing to Terminal 4 at the Oak Street property. Development along this reach may also include items being included in the WTIP, which include the possibility of some	General management policies for the HI-MU environment (Chapter 2.B.4.c) include: 3. New development should protect and, where feasible, restore shoreline ecological functions, with particular emphasis on habitat for priority species and environmental clean-up. The development of new transportation facilities, such as a ferry terminal or water taxi facility requires the following (Chapter 5.B.9.c): 2. Development of new or expanded transportation facilities that cause significant ecological impacts shall not be allowed unless the development includes shoreline mitigation/restoration that increases the ecological functions being impacted to the point where: a. Significant short- and long-term risks to the shoreline ecology from the	Any in- or over-water proposals would require review not only by the City of Port Angeles, but also by the Washington Department of Fish and Wildlife (WDFW), the U.S. Army Corps of Engineers (Corps), and/or the Washington Departments of Ecology and Natural Resources. Each of these agencies is charged with regulating and/or protecting shorelines and the waters of Puget Sound, and would impose certain design or mitigation requirements on applicants. A project that includes in-water fill would require Corps review and permitting. For similar projects along the	A substantial amount of redevelopment is anticipated in the HI-MU environment. Several restoration activities are planned in association with future redevelopment. At the Rayonier site in particular, contaminant and derelict structure removal should improve water quality conditions, as well as aquatic habitat. Even with future redevelopment,

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
	vegetation to provide functions/processes. Habitat: This area is of scant habitat value.	overwater viewing areas, recreated beach areas at the Oak St. property, parking, landscaping, and enhanced pedestrian opportunity. **Functions/Processes Impacted:** Further development is not likely to significantly alter the existing degraded state of hydrologic and vegetative functions in this reach. Some improvement in vegetation or shoreline habitat may occur through mitigation for any redevelopment.	development are eliminated. b. Long-term opportunities to increase the natural ecological functions and processes are not diminished. 5. New transportation facilities shall be located and designed to prevent or to minimize the need for shoreline protective measures such as riprap or other bank stabilization, fill, bulkheads, groins, jetties, or substantial site grading. 13. All shoreline areas disturbed by construction and maintenance of transportation facilities shall be replanted and stabilized with native, drought-tolerant, self-sustaining vegetation by seeding, mulching, or other effective means immediately upon completion of the construction or maintenance activity. Recreational development regulations (Chapter 5.B.7.c) require review of any new recreational development proposal by the City's Shoreline Administrator for ecological restoration and public access opportunities. When restoration or public access plans indicate opportunities exist for these improvements, the City's Shoreline Administrator may require that those opportunities are either implemented as part of the development project or that the project design be altered so that those opportunities are not diminished. VCA and setback standards were not established for the downtown waterfront (SMP Segment L, reach 8D). New shoreline stabilization is also allowed in this area to protect a water-oriented use or public structure. Only water-oriented uses are allowed on the ground flood of buildings facing the water. Standards applicable to SMP Segment O (reach 10), the Rayonier site have not been established due to the uncertainty surrounding the future of the site. Instead, the SMP establishes the following guiding principles for land use at the site. 1. Development and significant vegetation removal is not allowed within the Vegetation Conservation Area running parallel to Ennis Creek. The VCA shall be sufficiently wide to effectively protect and restore applicable shoreline ecological processes and functions. 2. Development must include opportunities for public access. 3. New non-water-dependent development must be set back sufficiently and separated from the marine shoreline OHWM and a VCA established to provide for the protection and the restoration of ecological processes and functions. As a default, the setback/vegetation conservation area shall be 100 feet from OHWM unless scientific studies indicate that a lesser setback is sufficient to maintain the same level of ecological functions, 4. Water-dependent development may intrude into the setback/VCA along the marine shoreline provided that development does not cause unmitigated adverse impacts to ecological functions. Development within the shoreline shall be permitted in a manner that minimizes intrusions into the setback/VCA. The likely effects of overwater structures and shoreline stabilization based on SMP provisions are discussed in detail in section 5, below. The following regulations apply to over-water structures (Ch.4.B.3.c): 5. The proposed length must be the minimum necessary to support the intended use.	Puget Sound, a Biological Evaluation would be prepared to assess project impacts on listed fish and wildlife, and that document would be routed to U.S. Fish and Wildlife Service and National Marine Fisheries Service for Endangered Species Act review. These agencies would also impose certain design and mitigation requirements on a proposed project to minimize adverse impacts. The Washington Department of Fish and Wildlife also specifies permit conditions to develop within a bald eagle buffer area. The draft Port Angeles Harbor Management Plan identifies priorities and sets a course for improving shoreline habitat, public access, and economic development in the City's core. The City maintains a GIS database of all known discharges, outfalls, and receiving waters owned, operated, or maintained by the City. Planned actions include a field assessment of impacted receiving waters, a plan to trace and remove sources of discharges, and program evaluation and assessment. The City's draft Stormwater Management Plan (2010) addresses runoff from new development, redevelopment, and construction activities at sites one acre or greater in size. The City may reduce the size threshold in the future. Actions include employing Ecology's manual for design criteria and best management practices, conducting stormwater plan review and oversight, pre- and post-construction site inspection, and compliance and maintenance standards for stormwater discharge. The City's Sensitive Areas regulations require wetland buffers varying between 25 and 300 feet based on wetland classification and intensity of proposed land use (PAMC 15.20). The former Rayonier site is a focus of upcoming shoreline restoration in the City. Contaminant cleanup at the site is in the planning stage, and a survey and removal	substantial reductions in shoreline armoring and overwater structures are expected. Furthermore, new standards to minimize the impacts of new or expanded overwater structures should reduce the overall impact on shoreline functions. Mitigation is also likely to improve shoreline vegetative functions. The SMP provisions, combined with planned and ongoing restoration projects, and state and federal regulations are expected to result in **no net loss of ecosystem functions** in the HI-MU environment.
Reach 10 (in part)	**Existing Development:** This reach contains the former Rayonier mill site. Upland structures have been removed; however, the site remains highly altered, with areas of shoreline armoring, a 600-foot-long breakwater/jetty, over 5 acres of overwater cover, impervious surfaces, and very sparse shoreline vegetation **Existing Functions/Processes:** Hydrologic: Armoring and jetties interfere with sedimentation and current patterns. Category 5 for sediment bioassay; no TMDL. Vegetative: Site generally has no functional vegetated buffer. Habitat: Priority habitat for red sea urchin. Also harbor seal and seal haul outs, bald eagle nest buffer, and seabird colony.	**Future Development:** The Rayonier site will most likely be redeveloped with a mix of uses that may include a park and restored estuary, waterfront public access, cultural, high density residential, and commercial. A conceptual plan for restoration of the site includes the removal of the jetty and pier. Significant restoration is also planned for the mouth of Ennis Creek. Future use and development of the site may include some water-oriented uses and public access. This would likely include replacement of the existing 200,000 square foot over-water structure, albeit with an extremely smaller pier. Note: the existing City Pier is approximately 20,000 square feet (not including fingers). **Functions/Processes Impacted:** Hydrologic: The development of new structures and utilities within upland areas will likely increase the current level of impervious surface coverage in those upland areas and areas outside of shoreline jurisdiction. Stormwater standards to control runoff should minimize any hydrologic impacts from development. Shoreline hydrologic functions will vastly improve upon the removal of the 600-foot-long jetty, pull-back of shoreline armoring both east and west of the existing pier, and replacement of the existing 5-acre pier (including ~10,000 piles) with a significantly smaller structure.			

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
		Water and sediment quality issues should be addressed and substantially improved through restoration and redevelopment actions. Vegetative: Planned park development and estuarine restoration should significantly improve vegetative functions at this site. Restoration of nearshore vegetation is planned for the Ennis Creek delta, as well as the shoreline to the east. It is also expected that nearshore vegetation would be provided along the majority of the shoreline west of Ennis Creek upon redevelopment of the site. Habitat: Nearshore and terrestrial habitat should be substantially improved from their existing states through the planned estuarine and Ennis Creek restoration.	9. Lighting associated with overwater structures shall minimize light spillage on adjacent properties or waterbodies. 10. Piles, floats and other over water structures that are in direct contact with water or over water shall not be treated or coated with herbicides, fungicides, paint, or pentachlorophenol. Use of wood members treated with arsenate compounds or creosote is prohibited. 25. Bulk storage for gasoline, oil, and other petroleum products for any use or purpose is prohibited on piers, wharves, and docks. Bulk storage means non-portable storage in fixed tanks. Chapter 4.B.6.b. identifies the City's objective to pursue recommendations identified in the Shoreline Restoration Plan (TWC and Makers 2011).	of derelict structures at the site is also planned. The Ennis Creek Conceptual Restoration Plan, co-authored by the LEKT and Rayonier, includes recommendations and conceptual designs to remove the pier, jetty, all concrete structures, an asphalt parking lot, and return lower Ennis Creek to its natural meander and estuary habitat. The future use of the Rayonier site remains uncertain; some restoration and some future shoreline development are likely. A conservative estimate of changes that will result from restoration and development in the near term includes: • Full restoration of the lower Ennis Creek system including the "delta" and any channel migration that might happen in shoreline jurisdiction. • Removal of the existing, approximately 200,000 square foot pier is likely. Development of a smaller pier for water dependent uses (likely a public access pier, similar to Union Wharf or the Port Angeles City Pier, which are approximately 12,000 and 20,000 square feet respectively). • The existing jetty will be removed, but there may need to be some soft stabilization for the resulting beach. Removal of the existing jetty will have a substantial impact on restoring natural currents and hydrologic processes to the City's nearshore area. • It is also reasonable to assume that substantial nearshore riparian restoration will occur over significant sections of the Rayonier shoreline west and east of Ennis Creek.	
Urban Conservancy – Recreation (UC-R)					
Reach 4 (in part)	**<u>Existing Development</u>:** Currently public open space. The Waterfront Trail runs through the center of Ediz Hook.	**<u>Future Development</u>:** No development known. **<u>Functions/Processes Impacted</u>:** Existing functions are not likely to change since no development is	General management policies for the UC-R environment (Chapter 2.B.6.c) include: 2. Commercial activities enhancing the public's use or enjoyment of publicly accessible shorelines, such as food or boating concessions, may be appropriate if set back from the shoreline to allow for public access and	Any in- or over-water proposals would require review not only by the City of Port Angeles, but also by the Washington Department of Fish and Wildlife (WDFW), the U.S. Army Corps of Engineers (Corps), and/or the Washington Departments of	Much of the anticipated development in the UC-R environment is associated with the development or expansion of recreational uses. Since the SMP

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
	Existing Functions/Processes: Existing Functions/Processes: Hydrologic: Nearly the entire length of this reach is armored. Vegetative: Most of the area has less than a 20'-wide band of vegetation that consists primarily of grass. Habitat: Though identified as priority habitat by WDFW, unlikely to provide much valuable functions/processes.	anticipated in this reach.	ecological restoration. 3. Water-dependent and water-enjoyment recreation facilities compatible with the protection of ecological functions, such as boating facilities, angling, wildlife viewing trails, and swimming beaches, are preferred uses, provided significant ecological impacts to the shoreline are avoided or mitigated. 4. During development and redevelopment, all reasonable efforts, as determined by the City, should be taken to restore ecological functions. Specific to Reach 4 and 5 (SMP Segment D "Ediz Hook Shoreline"), the VCA and setback extend from the OHWM to the road (Chapter 2.C). An exception is made in Reach 4 for rest stops, view points, and picnic areas, which may occupy a maximum of 200 square feet within the setback for every 1,200 feet of shoreline. For Reach 5, a continuous public access trail must be constructed along the length of shoreline. VCA and setback distances cover all of the shoreline jurisdictional area (200 feet from OHW) in the UC-R sections of Reaches 7, 9, and 11 (SMP Segments F & N). VCA and setbacks for Reach 8D (SMP Segments K & M) are 70 feet and existing structures may remain and be improved within the parkland setback. In reach 11 (SMP Segment P), the VCA and setback of 60 feet beyond the top of bluff generally covers all of shoreline jurisdiction. Vegetation removal is allowed within the VCA in Segment P if a certified licensed professional arborist, biologist, or landscape architect certifies that vegetation removal will not cause significant ecological impacts. Chapter 5.B.2.c of the SMP states that fish net-pens are allowed as a conditional use only. Additionally, aquaculture shall avoid use of chemicals, fertilizers and genetically modified organisms except when allowed by state and federal law. Log storage and booming is regulated under Chapter 5.B.5.c of the SMP: 18. Log storage shall not be permitted in public waters where the Shoreline Administrator determines that water quality standards cannot be met at all times or where these activities are a hindrance to other beneficial water uses such as navigation. 19. The free-fall, violent dumping of logs into water shall be prohibited. Easy let-down devices shall be employed for placing logs in the water per the Port of Port Angeles BMP approved as part of Washington State Department of Natural Resources harbor area lease agreements. 20. Positive bark and wood debris control, collection and disposal methods shall be employed at log dumps, raft building areas and mill-side handling zones. This shall be required for both floating and sinking particles. 21. Log dumps shall not be located in waters where bark and debris controls cannot be effectively provided. 22. Logs shall not be dumped, stored or rafted where they will rest on the bedlands at low tide. The following regulations apply to water oriented recreational development (Chapter 5.B.7.c): 3. All new recreational development proposals will be reviewed by the City's	Ecology and Natural Resources. Each of these agencies is charged with regulating and/or protecting shorelines and the waters of Puget Sound, and would impose certain design or mitigation requirements on applicants. A project that includes in-water fill would require Corps review and permitting. For similar projects along the Puget Sound, a Biological Evaluation would be prepared to assess project impacts on listed fish and wildlife, and that document would be routed to U.S. Fish and Wildlife Service and National Marine Fisheries Service for Endangered Species Act review. These agencies would also impose certain design and mitigation requirements on a proposed project to minimize adverse impacts. The Washington Department of Fish and Wildlife also specifies permit conditions to develop within a bald eagle buffer area. The draft Port Angeles Harbor Management Plan identifies priorities and sets a course for improving shoreline habitat, public access, and economic development in the City's core. The City has developed and implemented a program with the goal of preventing or reducing pollutant runoff from municipal operations. It includes annual inspections, spot checks, road runoff control and maintenance, public land runoff control, and maintenance, and a stormwater pollution prevention plan (SWPPP). The City's Sensitive Areas regulations require wetland buffers varying between 25 and 300 feet based on wetland classification and intensity of proposed land use. Removal of the Elwha dam is planned to commence in September 2011. This action is expected to improve sediment delivery to and beach accretion on the outer side of Ediz Hook. The removal of the dam and sediment delivery will occur over 3 years to ensure that the restoration of sediment processes happens at a rate that will not	requires that the development of recreational uses consider restoration opportunities, priority restoration projects identified in the Shoreline Restoration Report are likely to be implemented in this environment. Shoreline conditions along outer Ediz Hook are expected to improve substantially through the Elwha dam removal process. Continued restoration along the inner Ediz Hook will reduce shoreline armoring, reduce impervious surface coverage, and increase vegetative and shoreline habitat functions. Revegetation of the area east of Ennis Creek on the Rayonier site is also expected. These revegetation efforts are likely to significantly improve shoreline functions in the Creek and on the marine shoreline. Overall, SMP regulations, and state and federal requirements will limit the impacts of development along the UC-R environment. Furthermore, planned restoration of vegetation and habitat will likely result in **a net improvement of shoreline ecosystem function**.
Reach 5 (in part)	**Existing Development:** Development in this segment includes a float for mooring pilot boats used by The Puget Sound Pilots Association and an associated office building, a public boat launch. This area also includes a Port log raft storage area and an aquaculture operation with offshore floating net pens for raising juvenile salmon and supporting structures on land west of the public boat launch. A vacant city owned building (once used as a restaurant) also occurs in the area. **Existing Functions/Processes:** Hydrologic: Extensive armoring and jetties in this segment alter hydrologic processes. Vegetative: Vegetative buffering in this segment is highly variable and consists primarily of grasses. Habitat: Listed by WDFW as priority habitat for hardshell clam, eelgrass, abalone, and shorebird concentrations.	**Future Development:** The public boat launch will likely remain. Beginning in the summer of 2011, restoration of 1,200 linear feet of shoreline is planned, led by DNR and the LEKT. Restoration will include removal of fill, concrete, asphalt, riprap, piles, and bulkheads. Large wood, gravel, sand, and native vegetation will be added to the site to protect the existing road and restore shoreline functions. A former A-frame site located 2,000 feet east of Sail and Paddle Park could serve as a dive park if incorporated with ongoing restoration efforts. The vacant restaurant structure may be redeveloped as a future commercial use. A public trail will be constructed along the road. **Functions/Processes Impacted:** Hydrologic: The development of a public trail will likely reduce permeability of the soils, generating a slight increase in runoff within the reach. Shoreline restoration will reduce armoring and restore sediment processes. Vegetative and Habitat: Vegetative functions and shoreline and aquatic habitat will improve through restoration actions.			

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
Reach 7 (in part)	**Existing Development:** This land consists of open space surrounding the lagoon. **Existing Functions/Processes:** This portion of the reach provides high vegetative function through forested wetlands. These wetlands provide bald eagle habitat and other terrestrial habitats. Shoreline habitat within the lagoon is limited by wood debris and limited tidal connectivity.	**Future Development:** The Waterfront Trail is likely to remain and possibly be rerouted closer to the water. There is potential for restoration of the lagoon and a new public access corridor connecting the eastern shore of Ediz Hook to the western beach around the south edge of the lagoon. **Functions/Processes Impacted:** Significant changes to shoreline functions are not anticipated in this reach. Revegetation as mitigation for rerouting the trail or adding public access routes may result in improved vegetative functions.	Shoreline Administrator for ecological restoration and public access opportunities. When restoration or public access plans indicate opportunities exist for these improvements, the City's Shoreline Administrator may require that those opportunities are either implemented as part of the development project or that the project design be altered so that those opportunities are not diminished. 4. Non-water-oriented structures, such as restrooms, recreation halls and gymnasiums, recreational buildings and fields, access roads, and parking areas, shall be preferentially located outside of the shoreline jurisdiction. If the City's Shoreline Administrator deems this not feasible, then these structures shall be set back from the OHWM at least 70 feet unless it can be shown that there is no feasible alternative. Chapter 4.B.6.b. identifies the City's objective to pursue recommendations in the Shoreline Restoration Plan (TWC and Makers 2011).	overwhelm existing conditions. This should greatly enhance the nearshore function in Reach 4 in the next decade and beyond. In February, 2011, the City council adopted the Waterfront Transportation Improvement Plan. The Plan includes several planned actions for the UC-R environment in Reach 8D. These actions include redevelopment of several public parks into public beach parks. As identified in the *Shoreline Restoration Plan* (Appendix A of the SMP), several opportunities for improvements to shoreline ecological functions exist: • Restoration of a 1,200 foot section of shoreline, including shoreline armoring removal, on inner Ediz Hook; • Incorporating LWD into shoreline armoring to retain sediment along the shoreline; • Removing wood waste from the lagoon; • Improving tidal connectivity to the lagoon; and • Riparian planting along the shoreline. Based on planned restoration at the Rayonier site, it is reasonable to assume that substantial upland riparian restoration will occur over all of the Rayonier site east of Ennis Creek.	
Reach 8D (in part)	**Existing Development:** Valley Creek Estuary Park, the vacant Oak Street Property, port terminal 4, Hollywood Beach Park, city pier. **Existing Functions/Processes:** Hydrologic: Heavily altered by fully armored shoreline and piers. Category 2 for Fecal Coliform in segments A, B, and D. Vegetative: Shoreline vegetation is limited to sparse, shrubs and small trees. Habitat: This area provides minimal habitat value.	The Waterfront Trail is likely to remain and possibly be rerouted closer to the water through the Oak Street property. The Victoria Express may move from The Landings Mall to Terminal 4 at the Oak Street property. The Oak Street property will most likely be redeveloped to include a public park and beach on the City-leased Department of Natural Resources portion, and Hollywood Beach will be redesigned and expanded, both per the Waterfront and Transportation Improvement Plan, with possibly more parkland or other fairly intense uses on the privately owned portion. The City Pier may improve transient moorage, and the Feiro Marine Life Center may be upgraded, refurbished to include expanded uses, or relocated. **Functions/Processes Impacted:** Hydrologic and Habitat: The redevelopment of publically owned parks into beach parks will reduce armoring and restore a more natural shoreline gradient in portions of this environment. Vegetative: Vegetation in this reach will likely improve only slightly though park redevelopment and			

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
		possible mitigation for redevelopment activities, since public access and views are central drivers of the redevelopment plan. Vegetation.			
Reach 9 (in part)	**Existing Development:** This reach contains the Waterfront Trail and Francis Street Park. **Existing Functions/Processes:** The reach is entirely armored, with the trail running along the reach just landward of the armoring. Except for the Francis Street Park, the reach is generally forested landward of the trail.	Francis Street Park is partially located on land zoned for single family residential uses, but its use is not likely to change. **Functions/Processes Impacted:** Functions are not expected to change in this reach.			
Reach 10 (in part) and Reach 11 (in part)	**Existing Development:** The Olympic Discovery Trail runs along the beach in that zone and will most likely remain. **Existing Functions/Processes:** Most, but not all of the shoreline is armored. Upland of the trail, the bluffs are forested. Lees Creek provides habitat for priority fish species.	Land use changes are not expected in this reach. **Functions/Processes Impacted:** Existing functions are not expected to change in this reach.			
Urban Conservancy – Low Intensity (UC-LI)					
Reach 1 (in full)	**Existing Development:** Existing development in this designation consists of a former landfill and current solid waste transfer station. **Existing Functions/Processes:** Hydrologic: Approximately one-third of this segment is impaired by the presence of a seawall installed to prevent the erosion of landfill material into the Strait. Vegetative: Much of this reach is characterized by	**Future Development:** Future development in this environment designation might include a park, golf course, alternative energy site, or other public use with potential access to the beach. In addition, the seawall and contaminated material may be removed. **Functions/Processes Impacted:** Hydrologic: Future development would likely involve minimal impervious cover, and therefore minimal hydrologic impacts. Removal of the seawall would provide a source of sediment and	General management policies for the UC-LI environment (Chapter 2.B.5.c) include: 1. Uses in the "Urban Conservancy–Low Intensity" environment should be limited to those which are non-consumptive (i.e., do not deplete over time) of the shoreline area's physical and biological resources and uses that do not substantially degrade ecological functions or the rural or natural character of the shoreline area. Shoreline habitat restoration and environmental enhancement are preferred uses. 2. Developments and uses that would substantially degrade or permanently deplete habitat or the physical or biological resources of the area should not be allowed. 3. During development and redevelopment, all reasonable efforts should be taken to restore ecological functions. Where feasible, restoration should be required of all non water-dependent development on previously	Any in- or over-water proposals would require review not only by the City of Port Angeles, but also by the Washington Department of Fish and Wildlife (WDFW), the U.S. Army Corps of Engineers (Corps), and/or the Washington Departments of Ecology and Natural Resources. Each of these agencies is charged with regulating and/or protecting shorelines and the waters of Puget Sound, and would impose certain design or mitigation requirements on applicants. A project that includes in-water fill would require Corps review and permitting. For similar projects along the Puget Sound, a Biological Evaluation would be prepared to assess project impacts on listed fish and wildlife, and that document	Similar to the UC-R environment, much of the anticipated development in the UC-LI environment is associated with the development or expansion of recreational uses. Since the SMP requires that the development of recreational uses consider restoration opportunities, priority restoration projects identified in the Shoreline Restoration Report are likely to be implemented in this environment.

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
	sparse vegetation. While some of the reach has a relatively wide vegetated buffer area, most of the shoreline is limited in shoreline vegetation. Habitat: Reach includes documented use by several aquatic priority species. Bluffs also a priority habitat. Dry Creek is relatively steep and provides little estuary habitat.	other organic inputs, and may restore natural sediment movement patterns. Removal of contaminated material could improve water quality. Overall, an improvement in hydrologic function could be anticipated. Vegetative: Future development at the top the bluffs would likely include an improved vegetative buffer. A project to remove the seawall would likely include a revegetation component. Habitat: Would likely be increased and improved due to an increased vegetated buffer at the top of the bluffs and/or revegetation at the toe of the bluffs. Removal of the seawall would likely improve beach habitat. Any public access project should be planned and designed to minimize habitat impacts.	developed shorelines. 4. Construction of new structural shoreline stabilization and flood control works should not be allowed except where there is a documented need to protect public safety or ecological functions and mitigation is applied. New development should be designed and located to preclude the need for structural shoreline stabilization or flood control during the projected lifetime of the development. 5. Activities or uses that would remove shoreline vegetation, cause substantial erosion or sedimentation, or adversely affect wildlife or aquatic life should not be allowed. The VCA and setback requirements for reaches 1 and 2 (SMP Segment A) are 200 feet from OWHM (Chapter 2.C). Utilities and ecological enhancement are allowed within the setback areas, Shoreline stabilization measures are only allowed for utilities or ecological restoration. VCA and setbacks for wetlands (found in Section 3.B.3) are applicable in reach 7 (SMP Segment G). Chapter 3.B.12.c of the SMP provides that minor vegetation removal may be done for parks, public access, and trails on public property provided impacts are mitigated. If provisions of the Environmentally Sensitive Areas Protection regulations and other parts of the SMP conflict, the provisions most protective of the ecological resource shall apply, as determined by the City (Chapter 3.B.3.c).	would be routed to U.S. Fish and Wildlife Service and National Marine Fisheries Service for Endangered Species Act review. These agencies would also impose certain design and mitigation requirements on a proposed project to minimize adverse impacts. The City's Sensitive Areas regulations require wetland buffers varying between 25 and 300 feet based on wetland classification and intensity of proposed land use (PA 15.20). Marine bluffs have a buffer of 50 feet from the top and toe. As identified in the *Shoreline Restoration Plan* (Appendix A of the SMP), several opportunities for improvements to shoreline ecological functions exist; these include: • Improving habitat conditions in Dry Creek; • Limiting influence of landfill on shoreline; • Evaluating rerouting industrial water supply line; • Improving riparian vegetation; • Enhancing tidal connectivity to the lagoon; and • Mitigating the effects of armoring by incorporating LWD or through beach nourishment.	Furthermore, strict VCA and setback requirements apply to the UC-LI environment, such development other than public access, trails, or parks will be outside of shoreline jurisdiction. Overall, SMP regulations, and state and federal requirements will limit the impacts of development along the UC-LI environment. Proposed restoration projects and restoration of vegetation and habitat in association with development of recreational or public access facilities is likely to result in **no net loss or an improvement in shoreline ecosystem function**.
Reach 2 (in part)	**Existing Development:** Ocean View cemetery occupies this reach. **Existing Functions/Processes:** Hydrologic: Hydrologic functions/process impaired by fully armored shoreline. No known water quality impairments. Vegetative: The low bluffs here are highly vegetated. However, the armoring separates the vegetation from the shoreline and limits functions/processes. Habitat: Bluffs considered priority habitat. Shoreline area red sea urchin priority habitat.	**Future Development:** Cemetery expected to remain. Switchback trails to provide improved access to the beach may be provided. **Functions/Processes Impacted:** Any changes to functions from the development of switchback trails would be very minor, and any impacts would be mitigated.			

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
Reach 7 (in part)	**Existing Development:** This area consists of a potentially associated wetland. Surroundings highly vegetated. **Existing Functions/Processes:** Hydrologic, vegetative, and habitat functions are high in this wetland area.	**Future Development:** There is potential for restoration of the lagoon and a new public access corridor connecting the eastern shore of Ediz Hook to the western beach around the south edge of the lagoon. **Functions/Processes Impacted:** If restoration and public access are pursued, water quality and habitat functions are expected to improve in this reach.			
Shoreline Residential (SR)					
Reach 2 (in part)	**Existing Development:** In the western designation, an armored water line runs along the base of the bluff. Atop the bluff, this area consists of single-family and mobile home uses. Current residences are set back from the OHWM approximately 200 feet, so the buildings are typically just outside of the shoreline jurisdiction. However, the buildings range between 35' and 100' from the top of the bluff, with most of them less than 70' from the top of the bluff. **Existing Functions/Processes:** Hydrologic: Sediment transport is significantly impaired in this reach, particularly due to the loss of sediment supply from the bluffs now protected by the water line and armoring. Vegetative: While a few places along the shoreline have several hundred feet of vegetated width, the segment is dominated by areas with one or two individual trees making up the vegetated buffer. Residential development above the bluff has led to the removal of	**Future Development:** New residential development is expected. There is also potential for structure expansion or renovation. Given proposed SMP regulations, the VCA would generally extend from the bluff top to the outer limits of shoreline jurisdiction. It is assumed that the setback requirement would extend beyond the VCA, and that residential development would generally be limited to outside shoreline jurisdiction; exceptions may occur on five parcels on the eastern end of the reach where the bluff and bluff top are less distinct. These five parcels are presently developed with existing structures outside of shoreline jurisdiction; therefore, the likelihood of redevelopment in shoreline jurisdiction is low. **Functions/Processes Impacted:** Hydrologic: Future development could conflict with functions/ processes provided by the bluffs in this segment. Continued development would result in additional impervious surface coverage. Vegetative: Potential exists for the continued removal of vegetation at residential locations. However clearing could only occur beyond 75 feet from the top of bluff.	General management policies for the SR environment (Chapter 2.B.7.c) include: 1. Minimum frontage width standards in the Shoreline Residential Environment should be set to protect the shoreline ecological functions, taking into account the environmental limitations and sensitivity of the shoreline area, the level of infrastructure and services available, and other comprehensive planning considerations. 2. Development standards for setbacks or buffers, shoreline stabilization, vegetation conservation, critical area protection, and water quality should be established to protect and, where significant ecological degradation has occurred, restore ecological functions over time. 4. Standards for new residential development should protect human safety and ensure that new development will not require structural shoreline stabilization or flood protection during the projected lifetime of the development. In reach 7 (SMP Segment F), the setback and VCA cover all of shoreline jurisdiction. The minimum VCA is 75 feet from the top of bluff for Reach 2 (SMP Segment B) and 60 feet from the top of bluff for Reach 11 (SMP Segment P) (Chapter 2.C). Furthermore, setback standards apply based on geologically hazardous area regulations (Chapter 3.B.5.c): 1. Applicants proposing development adjacent to a marine bluff with a slope greater than 45 degrees vertical to horizontal and a height greater than 10 feet from the toe of the slope shall submit a geotechnical engineering report, prepared in accordance with the requirements of this SMP and the shoreline-specific Environmentally Sensitive Areas Protection regulations when development is proposed within 200 feet from the OHWM. The geotechnical engineering report shall be prepared by a Washington State licensed professional civil engineer with a specialty in geotechnical engineering or an engineering geologist with a Washington specialty	The City has developed an ordinance addressing runoff from new development, redevelopment, and construction activities at sites one acre or greater in size. The City may reduce the size threshold in the future. Actions include employing Ecology's manual for design criteria and best management practices, conducting stormwater plan review and oversight, pre- and post-construction site inspection, and compliance and maintenance standards for stormwater discharge. The City's Sensitive Areas regulations require wetland buffers varying between 25 and 300 feet based on wetland classification and intensity of proposed land use (PAMC 15.20). Marine bluffs have a buffer of 50 feet from the top and toe. The Washington Department of Fish and Wildlife also specifies permit conditions to develop within a bald eagle buffer area. As identified in the *Shoreline Restoration Plan* (Appendix A of the SMP), several opportunities for improvements to shoreline ecological functions exist; these include: • Improving vegetation at the top and toe of the bluff; • Evaluating the feasibility of rerouting the water supply line to allow for natural bluff erosion; • Mitigating the effects of armoring by incorporating LWD or through beach nourishment; and • Improving habitat conditions in Lees	Vegetation Conservation Areas and structural setback standards are such that new development and redevelopment will be setback further than average existing conditions, and will generally fall outside of shoreline jurisdiction. Impacts to bluff stability and erosion rates should be minimal to absent because of strict standards for geologically hazardous areas. Stormwater management regulations should minimize impacts from additional impervious surfaces within and adjacent to shoreline jurisdiction. Restoration opportunities could improve natural bluff erosion processes and natural beach accretion. SMP provisions, together with other City plans and regulations should limit development within shoreline jurisdiction and minimize effects of any development to **maintain existing shoreline functions.**

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
	vegetation in places. Interaction of vegetation with the shoreline is limited due to the bluff and armoring. Habitat: Documented use by several WDFW priority species, including abalone, red sea urchin, and bald eagle (nest and buffer). Bluffs are also considered a priority habitat.	Habitat: Development would not be expected to markedly affect existing habitat, as priority habitat is generally below the bluff, and regulations prohibit development that would require stabilization or affect erosion rates.	license in engineering geology as specified in RCW 18.220. The report shall be based upon the best available science, existing and proposed uses, risks of slope failure, and coastal erosion rates over at least 75 years. The report shall be professionally stamped and include the certification that the structure will not be in danger from erosion for at least 75 years. The report shall recommend a marine bluff setback at least equal to the annual erosion rate times 75 years plus 20 feet. All proposed development on a marine bluff or in the required setback shall be prohibited, except minor development to provide public access (e.g., public trails, stairs, or view points), provided that impacts are mitigated and the development can be shown to be safe. 2. All habitable structures shall be set back from the top of the bluff so that the structure is not threatened by erosion for at least 75 years or the life of the building, whichever is longer. Additionally, habitable structures shall be set back t least the minimum distance noted in Section 2.C. 3. Surface drainage shall be directed away from marine bluffs. When no other solution is feasible, surface drainage piping may be located on the face of a steep slope when contained in a tight line (closed, non-leaking pipe) and in such a way that erosion will not be exacerbated at the base of the bluff and that physical access along the shoreline is not degraded. Furthermore, conditions may be applied to mitigate for aesthetic or habitat impacts of drainage systems as viewed from public areas. Residential Development Use Regulations (Ch.5.B.8.c): 1. Residential development shall not be approved where shoreline stabilization measures, bluff walls, or bulkheading will be required to protect residential structures, lots, or site area. Residential development shall be located and designed to avoid the need for structural shore defense and flood protection works for the life of the development. 2. Prior to issuance of a building permit, plat or short plat or other shoreline development approval, the developer shall submit adequate plans for preservation of shore vegetation and for control of erosion during and after construction. Such plans shall be a part of the shoreline permit, if one is required. 6. No accessory structure except swimming pools shall cover more than 150 square feet within shoreline jurisdiction or the required setback. Overwater structures are not allowed in the shoreline residential environment (Ch. 4.B.3.c). Further discussions of residential use, shoreline armoring, and overwater structure policies and regulations are provided in Section 5, below.	Creek.	
Reach 7 (in part)	**<u>Existing Development</u>:** Consists of four single-family residential parcels above the bluff.	**<u>Future Development</u>:** All parcels currently have structures. Future development would consist of structure renovation, expansion, or replacement. Development below the bluff is highly unlikely. **<u>Functions/Processes Impacted</u>:** Hydrologic: Little change in impervious surface coverage or hydrologic conditions is expected. Vegetative: Clearing should be limited, although some clearing of vegetation for views could occur. Habitat: Little change in habitat quality or availability is expected in this reach.			
Reach 11 (in part)	**<u>Existing Development</u>:** The eastern portion of this area consists of single-family residential parcels; however, very few structures are within shoreline jurisdiction. The distance between the buildings in these parcels and the top of the bluff varies widely from approximately 35 feet to almost 200 feet. All but two parcels are separated from the shoreline by the Urban Conservancy-Recreation environment.	**<u>Future Development</u>:** New residential development is expected, either on existing vacant parcels or parcels to be subdivided in the future. There is also potential for structure expansion or renovation. Given proposed SMP regulations, the VCA would generally extend from the bluff top to the outer limits of shoreline jurisdiction. It is assumed that the setback requirement would extend to or beyond the VCA, and that residential development would generally be limited to outside shoreline jurisdiction. **<u>Functions/Processes Impacted</u>:**			

Shoreline Segment	Existing Conditions	Likely Development / Functions or Processes Potentially Impacted	Effect of SMP Provisions	Effect of Other Development and Restoration Activities / Programs	Net Effect
		Hydrologic: Little change in impervious surface coverage or hydrologic conditions is expected. Vegetative: Clearing should be limited, although some clearing of vegetation for views could occur. Habitat: Little change in habitat quality or availability is expected in this reach.			

5 DEVELOPMENT IMPLICATIONS

In addition to the general cumulative impacts analysis presented in the table above, this section below will expand on three specific key areas related to direct affect on functions that can be assessed through more quantitative means. These include issues related to Shoreline Residential development (i.e. setbacks and development potential), overwater structures (quantity, size, and new potential), and shoreline armoring (extent of new, repaired, or modified structures).

5.1 Shoreline Residential

With the possible exception of limited additional residential-zoned lands being acquired for public open space, planned land use in the Shoreline Residential environment is not expected to change over the next 20 years, although new residential development and substantial remodels are anticipated. Typically, development of vacant lots into residential uses would result in replacement of pervious, vegetated areas with impervious surfaces and a landscape management regime that often includes chemical treatments of lawn and landscaping. These actions can have multiple effects on shoreline ecological functions, including:

- Reduction in ability of site to improve quality of waters passing through the untreated vegetation and healthy soils.
- Potential contamination of surface water from chemical and nutrient applications.
- Increase in surface water runoff due to reduced infiltration area and increased impervious surfaces, which can lead to excessive soil erosion and subsequent in-water sediment deposition.
- Elimination of upland habitat occupied by wildlife that use riparian areas.

Residential Development Use Policies (Ch.5.B.8.b) establish that the overall density of development, lot coverage, and height of structures should be appropriate to the physical capabilities of the site and consistent with the comprehensive plan. The comprehensive plan designates residential shoreline land in Reaches 2 & 7 as low density residential, which allows up to 7 units per acre, and zoning varies between 7,000 to 11,000 square foot minimum lot sizes. Residential land use for the Urban Growth Area (Reach 11) is zoned Urban Low Density (4,840 sf lot) and Urban Very Low Density (12,500 sf lot) by Clallam County. These designations could allow for substantial subdivision of existing shoreline parcels; however, vegetation would be retained within shoreline

jurisdiction based on Vegetation Conservation Area (VCA) requirements, and presumably, structural setbacks would be greater than the VCA, and would be built outside of shoreline jurisdiction.

Other policies pertinent to shoreline residential development include, 1) providing for adequate setbacks or open space from the water to provide space for public access, views, and to protect or restore ecological functions and processes; 2) recognizing the inevitability and ecological importance of bluff erosion, and provide for setbacks that avoid shoreline stabilization structures (such as bulkheads or bluff walls), significant erosion or slope instability, and the removal of native vegetation that helps to prevent bluff erosion; and 3) encouraging clustering of dwelling units in order to preserve natural features, minimize physical impacts, and reduce utility and road costs.

According to the City's GIS data, the number or residential parcels within shoreline jurisdiction for each residential reach is listed in Table 5. This table identifies structures within and outside of shoreline jurisdiction, as well as vacant parcels. The analysis indicates that structures are located outside of shoreline jurisdiction for half of all residential parcels within shoreline jurisdiction, and only 15% of the shoreline residential parcels have structures within shoreline jurisdiction.

Table 5. Development in Shoreline Residential by reach.

	Reach 2	Reach 7	Reach 11	Total
Total number of parcels intersecting shoreline jurisdiction	53	5	78	136
Number of parcels with structure in shoreline jurisdiction	19[1]	0	1[2]	20
Number of parcels with structure outside of shoreline jurisdiction	16	5	47	68
Number of undeveloped parcels	18	0	30	48

[1] In Reach 2, for those lots with structures within shoreline jurisdiction, structure setbacks from OHWM range from 157 to 200 feet. One lot has an accessory structure located 64 feet from OHWM, but nearly all structures are setback at least 150 feet.

[2] In Reach 11, only one parcel contains a structure within shoreline jurisdiction and it is 185 feet landward of OHWM.

The amount of space between the shoreline and a structure is an excellent quick evaluation of shoreline condition; furthermore, many residential properties in Port Angeles are located above a bluff, and the proximity to the bluff, the extent of native vegetation, and the amount of impervious surfaces are often even more precise indicators of the effects on shoreline function than the overall structure setback since these factors contribute to the rate of bluff erosion and sediment delivery to the nearshore. The City's SMP accounts for the significance of setbacks from the bluff and vegetation conservation through setbacks based on geotechnical analyses and Vegetation Conservation Areas (VCAs) of 75 feet beyond the top of bluff in Reach 2, 60 feet from the top of bluff in Reach 11, and 200 feet from the OHWM in Reach 7. These VCAs are generally greater than average existing setbacks, and for all but a few parcels on the eastern portion of Reach 2, these VCAs extend to or beyond the landward edge of shoreline jurisdiction. These regulations promote the conservation and continued development of vegetative functions within shoreline jurisdiction. Typically, shoreline setbacks in conjunction with revegetation standards are an excellent means to improve overall shoreline ecological functions in developed areas.

The amount of impervious surface coverage is less significant along a marine shoreline environment where water quantity is less of a factor than in more confined water bodies like streams and rivers. Furthermore, single-family or multi-family homes generally have clean roof and sidewalk runoff. Driveways are typically pollution-generating surfaces only to the extent that vehicle-related pollutants are deposited on them. The City has not established impervious surface coverage standards for residential development, but encourages development to reduce impervious surfaces through water quality regulations **(Chapter 3.B.14)**.

As noted above, VCAs extend over the entire structural setback distance for virtually all of the residential reaches. Vegetation conservation standards for clearing and grading within shoreline jurisdiction include limiting clearing within the VCA, mitigating for any clearing following mitigation sequencing, and revegetating cleared areas with native plants **(Chapter 3.B.13)**. Where shoreline restoration is required, property owners must prepare and adhere to a vegetation management and maintenance plan.

It is important that the impervious surfaces be separated from the waterbody to the extent that those surfaces replace vegetation, which can have a variety of ecological benefits. The setback provisions described above continue to maintain separation between the homes and the water, leaving the nearshore area available for vegetation. Relative to the existing conditions in the Shoreline Residential environment, the implementation of 60-foot, 75-foot and 200-foot setbacks (depending on reach location), vegetation conservation, and

revegetation standards will likely result in improvements to ecological functions over time (benefiting terrestrial and aquatic species).

In summary, new residences and substantial remodels/additions are expected in the Shoreline Residential environment over the next 20 years. The protective setbacks, VCAs, and other measures in the SMP, will maintain or improve ecological functions of the shoreline over the long term, thereby resulting in no net loss of shoreline ecological function within the environment.

5.2 Overwater Structures

The term overwater structures, as used here, includes both overwater and in-water structures. Common overwater structures in Port Angeles include piers and floating docks. Less common overwater structures in Port Angeles include boathouses and floating net pens. All overwater structures are located within Port Angeles Harbor and no overwater structures are directly associated with single-family residential uses.

Piers, docks, and other overwater structures can adversely affect ecological functions and habitat in the following ways:

- Alter patterns of light transmission to the water column, affecting macrophyte growth and altering habitat for and behavior of aquatic organisms, including juvenile salmon.

- Interfere with long-shore movement of sediments, altering substrate composition and development.

- Contribute to contamination of surface water from chemical treatments of structural materials.

- Floating net pens and associated aquaculture practices pose concerns for water quality and benthic habitat conditions. Any new or expanded net pens would require a conditional use permit.

Currently, overwater structure coverage in the harbor is 29.5 acres. Expansion of overwater structures (associated with marina expansion, dock extension at the Landing Mall, and the creation of overwater viewing areas) is expected in the HI-M and HI-MU environments. In other cases, the redevelopment of overwater structures is anticipated (e.g., ferry pier redevelopment). New overwater structures are not allowed in the Shoreline Residential environment. The SMP limits overwater coverage in the first 30 feet from OHWM to piers and ramps **(Chapter 4.B.3.c)**. Although the SMP does not provide specific dimensional criteria for new or redeveloped overwater structures, it does require that pier and dock "length must be the minimum necessary to support the intended use."

Skirting is prohibited except to contain or protect flotation material in order to minimize interference with light transmission and fish migration. The SMP also limits lighting and materials to minimize impacts to ecological functions.

Mitigation measures for overwater structures encouraged by the Washington Department of Fish and Wildlife (WDFW) includes the installation of grated decking, removal of unused piles (especially those formerly treated with creosote), reduction of pile size and quantity on modified structures, and general reduction in overall square footage of cover. Any new or replacement structure would require a Hydraulic Project Approval (HPA) from WDFW and a Section 10 Rivers and Harbors Act permit from the Corps of Engineers. Because of the presence of listed salmonids, a Corps permit would also entail consultation with the National Marine Fisheries Service to comply with the Endangered Species Act. These agencies would likely require similar mitigation measures noted above for WDFW.

Although expansion, reconfiguration, and repair of several overwater structures is expected, the removal of some existing overwater structures is also anticipated. Rayonier and the LEKT have developed conceptual plans for the removal of derelict structures, including the 200,000 square-foot pier, at the Rayonier site, which will substantially reduce or eliminate the 5.2 acres of overwater coverage in Reach 10. The existing structure is supported by an estimated 10,000 creosote piles. Overall, the overwater structure coverage that will be removed as a part of the Rayonier site restoration is expected to be far greater than the combined coverage of any new proposed overwater coverage, including any replacement structure located at the former Rayonier mill site. Furthermore, new structures will need to minimize overwater coverage dimensions, eliminate skirting, and comply with HPA requirements.

The combined effects of the City's proposed SMP, planned restoration, and permit review by WDFW and the Army Corps of Engineers is expected to result in a reduction of shoreline impacts from overwater structures over time.

5.3 Shoreline Stabilization

Presently, over 94% of the City's shoreline jurisdiction is armored by some type of shoreline stabilization, including bulkheads, seawalls, breakwaters, jetties, and groins. New shoreline armoring typically has the following effects on ecological functions:

- Reduction in nearshore habitat quality for both aquatic and terrestrial species. Specifically, shoreline complexity and emergent vegetation that provide forage and cover may be reduced or eliminated. Elimination of shallow-water habitat, including eelgrass and other vegetation, may also increase vulnerability of juvenile salmonids to aquatic predators.

- Reduction of natural sediment recruitment from the shoreline. This recruitment is necessary to replenish substrate and preserve shallow water conditions.

- Increase in wave energy at the shoreline if shallow water is eliminated, resulting in increased nearshore turbulence that can be disruptive to aquatic resources.

The SMP sets standards for new and repaired shoreline armoring, as well as conditions and uses where new shoreline armoring is allowed or prohibited **(Chapter 4.B.2)**. The proposed SMP establishes a preference for non-structural stabilization measures over structural measures. Structural shoreline stabilization measures with less adverse impact on natural functions, such as bioengineering, are strongly preferred over hard structural shoreline stabilization measures, such as seawalls and bulkheads.

Under the proposed SMP, new shoreline stabilization is not allowed unless it is proven to be necessary to protect an existing structure or new water dependent development. New or expanded armoring is not permitted for new non-water dependent structures unless the structure cannot be sited or designed in such a way to eliminate the need for new armoring, and it is demonstrated that the armoring will not result in a net loss of shoreline function. New armoring may also be permitted for existing structures, only if geotechnical analysis completed by a licensed geotechnical engineer or related licensed professional indicates that the structure is in danger because of erosion caused by currents, waves, or boat wakes, and furthermore, that the armoring will not impair fluvial hydrological or geomorphologic processes. Where stabilization is deemed necessary, the size of the structure must be the minimum necessary to achieve necessary stabilization. Replacement bulkheads may also be permitted if there is a demonstrated need to protect structures provided that these structures minimize harm to ecological functions and are not constructed waterward of existing bulkheads, although a geotechnical analysis is not needed in these cases. Replacement structures may be built waterward of the existing bulkhead (if within their existing footprint), but only far enough to accommodate new footings.

The SMP specifies that shoreline stabilization that incorporates shoreline restoration is permitted, but it does not require or state a preference for such approaches. On the other hand, mitigation of adverse impacts is required of new or expanded armoring.

The Army Corps of Engineers and WDFW have jurisdiction over new shoreline stabilization projects, and repairs or modifications to existing shoreline stabilization. As part of their efforts to minimize and compensate for shoreline stabilization-related impacts, both agencies encourage implementation of native

shoreline enhancement for new shoreline stabilization projects. Further, they also strongly promote shoreline restoration and additional impact compensation measures for many shoreline armoring modification projects, including placement of gravel at the toe of the armoring to create shallow-water habitat, angling the armored face landward to reduce wave turbulence, and shifting the armoring as far landward as feasible.

Based on an evaluation of the City's GIS data, the majority of the City's shoreline is already armored (over 94%). Therefore, the need for new shoreline stabilization is expected to be limited to none. On the other hand, given the abundance of armoring structures in the City, the need for repair and replacement armoring is likely more substantial. As mentioned above, bulkhead repair and replacement is only permitted where there is a need to protect existing development from damage due to erosion caused by natural processes, such as currents, waves, or boat wakes. Furthermore, given the stated preference for non-structural and bioengineered stabilization, the ecological impacts of stabilization may decline as bulkheads are replaced.

Several projects anticipated through the recently adopted Waterfront Transportation Improvement Plan and the planned restoration of the Rayonier site include the restoration of armored shorelines. The Waterfront Transportation Improvement Plan includes the redevelopment of City Pier Park and Hollywood Beach. Redevelopment of this one park would include the removal of existing shoreline armoring to reestablish a more natural beach gradient and provide improved recreational access to the shoreline. The Oak Street property at the west end of the project area will be developed into a new park with a beach construction component. The conceptual plan for the Rayonier site restoration, prepared through a partnership between Rayonier and the LEKT, includes the removal of the existing large pier and jetty structures. Removal of the over 600-foot-long jetty could require some new stabilization measures for the resulting beach; regardless, removal of the existing jetty will offer significant progress toward restoring the natural currents and hydrologic processes to the City's nearshore area. Together, these projects will help reduce the cumulative ecological effects of shoreline armoring on ecological functions within the City.

Finally, the removal of the Elwha Dam is expected to provide re-nourishment of outer Ediz Hook, potentially covering over 3 miles of exposed armoring. Future restoration of this stretch of shoreline may include the installation of large woody debris, rocks, and vegetation aimed at collecting some of the sediment drift expected to move along the shoreline.

Over time, the combined effects of the City's proposed SMP, implementation of the Shoreline Restoration Plan, permit reviews from the WDFW and the Corps,

and planned restoration actions are expected to result in a reduction over time of the net amount of hardened shoreline at the ordinary high water mark, a reduction in the effects of armoring on hydrologic and geomorphic processes, and an increase in shallow-water habitat within the Shoreline Residential environment.

NET EFFECT ON ECOLOGICAL FUNCTION

On its own, the proposed SMP, which includes the Shoreline Restoration Plan, is expected to protect shorelines within the City of Port Angeles while accommodating reasonable foreseeable future shoreline development that results in, at a minimum, no net loss of shoreline ecological function. State and federal regulations, acting in concert with this SMP, will provide further assurances of maintaining shoreline ecological functions over time.

As discussed above, major elements of the SMP that ensure no net loss of ecological functions fall into generally five categories: 1) environment designations (Chapter 2), 2) general provisions (Chapter 3), 3) shoreline modification provisions (Chapter 4), 4) shoreline use provisions (Chapter 5), and 5) Shoreline Restoration Plan (Appendix A).

Environment designations: The *Final Shoreline Analysis Report* provided the information necessary to assign environment designations along the Puget Sound shorelines (see **Chapter 2** of SMP). Shoreline uses and modifications were then individually determined to be either permitted (as substantial developments or conditional uses) or prohibited in each of those environment designations. The most uses and modifications are allowed in descending order of potential impact in the High Intensity Industrial, High Intensity Marine, High Intensity Urban Uplands, High Intensity Mixed-Use, Urban Conservancy Low Intensity, Urban Conservancy Recreation, and Shoreline Residential environments.

General provisions: **Chapter 3** of the SMP contains a number of regulations on a variety of topics that contribute to protection and restoration of ecological functions, including **Chapter 3.B.3 and 3.B.4** (Critical areas and Critical saltwater habitats), **Chapter 3.B.5** (Geologically Hazardous Areas), **Chapter 3.B.6** (Environmental Impacts), **Chapter 3.B.13** (Vegetation Conservation), and **Chapter 3.B.14** (Water Quality and Quantity).

Shoreline modification provisions: **Chapter 4** contains a number of regulations on a variety of topics that contribute to protection and restoration of ecological functions, including **Chapter 4.B.2** (Shoreline stabilization), **Chapter 4.B.3**

(Overwater structures)**, Chapter 4.B.6** (Shoreline restoration)**, and Chapter 4.B.7** (Dikes and levees). All of these shoreline modification regulations emphasize minimization of size of structures, use of designs that minimize impacts to shoreline functions, and mitigation sequencing to avoid degradation of shoreline functions.

Shoreline use provisions: Regulations in **Chapter 5** focus on exclusion of uses that are incompatible with the existing land use and ecological conditions, and emphasize appropriate location and design of the various uses. These regulations also emphasize avoidance and minimization of ecological impacts via appropriate setbacks, protection and enhancement of vegetation, and use of innovative designs (such as LID techniques) that do not degrade and may even enhance shoreline functions. These factors are balanced with water-dependent uses that are essential to the City's waterfront use and development, primarily in the High Intensity environments, where these uses are recognized for their economic benefit and social value. While allowing water-dependent uses and developments to continue along the shoreline, the proposed SMP emphasizes protection and enhancement of shoreline resources such that no net loss of ecological functions will be achieved over time.

Shoreline Restoration Plan: The *Shoreline Restoration Plan* identifies a number of planned and ongoing restoration projects, as well as more conceptual project-specific opportunities for restoration on both public and private properties inside and outside of shoreline jurisdiction. The Plan also identifies ongoing City programs and activities, non-governmental organization programs and activities, and other recommended actions consistent with a variety of watershed-level efforts. *The City is an active proponent for restoration along the City's shorelines.*

Summary: The following are some of the key features identified in the proposed SMP and this evaluation which protect and enhance shoreline ecological functions.

- Much of the shoreline is highly developed, and expected new development is limited. Regulations associated with redevelopment of existing degraded shorelines will likely help improve overall shoreline functions.

- Vegetation conservation areas and structural setbacks throughout the City are based on environment designation and existing conditions. Larger setbacks are required in areas with a higher need for protection of shoreline resources.

- Any projects with potential for significant adverse ecological effects will need to follow mitigation sequencing to avoid, minimize and mitigate any impacts.

- Contaminant cleanup at the Rayonier site will improve water and sediment quality. The planned removal of approximately 5 acres of overwater structure and a large jetty, as well as restoration of floodplain function at the mouth of Ennis Creek will substantially improve shoreline habitat and restore natural shoreline processes.

- Planned redevelopment associated with the City's recently adopted Waterfront Transportation Improvement Plan will replace armoring with an unarmored beach at City Pier Park and Hollywood Beach but also create a beach component at the currently armored but undeveloped Oak Street property. This will improve sediment transport processes and restore shallow water shoreline habitat in the City's core.

- Removal of the Elwha dam will restore a natural sediment source and improve sediment processes and shoreline habitat on Ediz Hook. Restoration on the inner portion of Ediz Hook will reduce shoreline armoring and use bioengineering approaches, including LWD and native vegetation, to ensure shoreline stability. Together, these restoration efforts will greatly enhance the overall shoreline ecosystem functions on Ediz Hook.

- Emphasis on achieving no net loss of shoreline ecological functions throughout shoreline jurisdiction, including development of water-dependent uses.

Given the above provisions of the SMP, including implementation of the *Shoreline Restoration Plan* and the key features listed above, implementation of the proposed SMP is anticipated to achieve **no net loss of ecological functions in the City of Port Angeles' shorelines**.

CITY OF PORT ANGELES
GRANT NO. G1000051

SHORELINE RESTORATION PLAN
for City of Port Angeles' Shoreline: Strait of Juan de Fuca

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CITY OF PORT ANGELES

1.0 INTRODUCTION

Port Angeles' Shoreline Master Program applies to activities in the shoreline jurisdiction zone. Activities that have adverse affects on the ecological functions and values of the shoreline, when permitted, must be mitigated. By law, the proponent of that activity is required to return the subject shoreline to a condition equivalent to the baseline level at the time the activity takes place. It is understood that some individual uses and developments cannot always be mitigated fully; some impacts may be sufficiently minor on an individual level, such that mitigation is not required, other unregulated activities (such as operation and maintenance of existing legal developments) may not require mitigation, still other actions occurring outside of shoreline jurisdiction may have offsite impacts on shoreline functions. Together, these actions could result in incremental and unavoidable degradation of the baseline condition. However, in the aggregate, the Shoreline Master Program must ensure that development will not cause a net loss of shoreline ecological functions. The subsequent challenge is to improve the shoreline over time in areas where the baseline condition is currently degraded, severely or marginally. In the long-term, the ideal is to improve the conditions along the entire shoreline, and thereby incrementally raise the baseline condition. The implementation of the Shoreline Master Program needs to be balanced with goals of the Growth Management Act which encourages development within concentrated urban areas such as Port Angeles.

WAC Section 173-26-201(2)(f) of the Shoreline Master Program Guidelines (Guidelines)1 says:

> "master programs shall include goals and policies that provide for restoration of such impaired ecological functions. These master program provisions shall identify existing policies and programs that contribute to planned restoration goals and identify any additional policies and programs that local government will implement to achieve its goals. These master program elements regarding restoration should make real and meaningful use of established or funded nonregulatory policies and programs that contribute to restoration of ecological functions, and should appropriately consider the direct or indirect effects of other regulatory or nonregulatory programs under other local, state, and federal

[1] The Shoreline Master Program Guidelines were prepared by the Washington Department of Ecology and codified as WAC 173-26. The Guidelines translate the broad policies of the Shoreline Management Act (RCW 90.58.020) into standards for regulation of shoreline uses. See http://www.ecy.wa.gov/programs/sea/sma/guidelines/index.html for more background.

> laws, as well as any restoration effects that may flow indirectly from shoreline development regulations and mitigation standards."

Degraded shorelines are not just a result of pre-Shoreline Master Program activities, but also of unregulated activities and exempt development. The new Guidelines also require that "[l]ocal master programs shall include regulations ensuring that exempt development in the aggregate will not cause a net loss of ecological functions of the shoreline." While some actions within a shoreline jurisdiction are exempt from a permit, the Shoreline Master Program should clearly state that those actions are not exempt from compliance with the Shoreline Management Act or the local Shoreline Master Program. Because the shoreline environment is also affected by activities taking place outside of a specific local master program's jurisdiction (e.g., outside of city limits, outside of the shoreline area within the city), assembly of out-of-jurisdiction actions, programs and policies can be essential for understanding how the City fits into the larger watershed context. The latter is critical when establishing realistic goals and objectives for dynamic and highly inter-connected environments.

Restoration of shoreline areas, in relation to shoreline processes and functions, commonly refers to methods such as re-vegetation, removal of invasive species or toxic materials and removal of bulkhead structures, piers, and docks. Consistent with Ecology's definition, use of the word "restore," or any variations, in this document is not intended to encompass actions that reestablish historic conditions. Instead, it encompasses a suite of strategies that can be approximately delineated into four categories:

- Creation (of a new resource)
- Restoration (of a converted or substantially degraded resource)
- Enhancement (of an existing degraded resource)
- Protection (of an existing high-quality or previously restored resource).

As directed by the Guidelines, the following discussions provide a summary of baseline shoreline conditions, list restoration goals and objectives, and discuss existing or potential programs and projects that positively impact the shoreline environment. In total, implementation of the Shoreline Master Program (with mitigation of project-related impacts) in combination with this Restoration Plan (for restoration of lost ecological functions that occurred prior to a specific project) should result in a net improvement in the City of Port Angeles' shoreline environment in the long term.

In addition to meeting the requirements of the Guidelines, this Restoration Plan is also intended to support the City's or other non-governmental organizations' applications for grant funding, and to provide the interested public with information for the various entities working within the City to enhance the environment.

2.0 SHORELINE INVENTORY SUMMARY

2.1 Introduction

The City recently completed a comprehensive inventory and analysis of its shorelines (December 2010) as an element of its Shoreline Master Program update. The purpose of the shoreline inventory and analysis was to gain a greater understanding of the existing condition of Port Angeles' shoreline environment to ensure the updated Shoreline Master Program policies and regulations are well-suited in protecting ecological processes and functions. The inventory describes existing physical and biological conditions in the shoreline zones within City limits and includes recommendations for restoration of ecological functions where they are degraded. The Shoreline Analysis Report for the City of Port Angeles' Shoreline: Strait of Juan de Fuca (The Watershed Company, Makers Architecture + Urban Design, and Landau Associates 2010) is summarized below.

2.2 Shoreline Boundary

As defined by the Shoreline Management Act of 1971, shorelines include certain waters of the state plus their associated "shorelands." At a minimum, the waterbodies designated as shorelines of the state are streams whose mean annual flow is 20 cubic feet per second (cfs) or greater and lakes whose area is greater than 20 acres. Shorelands are defined as:

> "those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter…Any county or city may determine that portion of a one-hundred-year-floodplain to be included in its master program as long as such portion includes, as a minimum, the floodway and the adjacent land extending landward two hundred feet therefrom… Any city or county may also include in its master program land necessary for buffers for critical areas (RCW 90.58.030)."

The City's Shoreline Master Program was first adopted in 1979 and most recently updated in 1993. This SMP consists of the goals and policies in the city's Comprehensive Plan and provisions in the City's Municipal Code. Together these documents represent the City's current SMP.

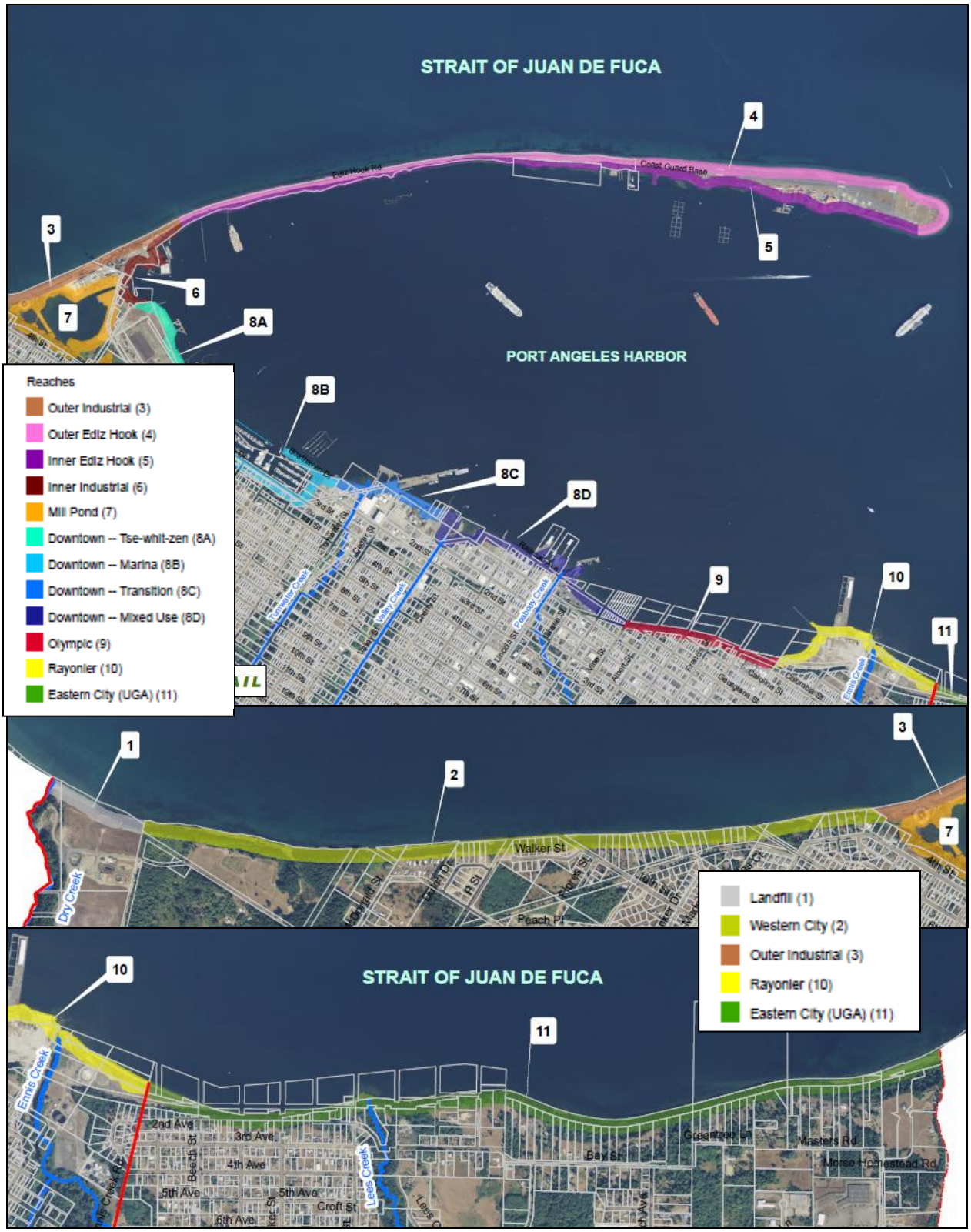
The City's existing shoreline management area includes all adjoining marine shorelines and shorelands extending 200 feet from the ordinary high water mark (OHWM). This shoreline management area has been adjusted (subject to City Council and Ecology approval) concurrent with this SMP update (for more details see the Shoreline Inventory Report Appendix A (The Watershed Company et al. 2010)). Modifications to the

jurisdiction boundary, as summarized below, are based on new information regarding associated wetlands.

2.3 Inventory

The City of Port Angeles' shoreline inventory includes all land currently within the City's proposed shoreline jurisdiction (see the Shoreline Analysis Report – Appendix A (The Watershed Company et al. 2010)). The total area subject to the City's updated SMP, not including aquatic area, is approximately 363 acres (0.57 square miles), and encompasses approximately 17.7 miles of marine shoreline. In order to address the shoreline in manageable units and to help evaluate the differences between discrete shoreline areas, the Strait of Juan de Fuca shoreline has been divided into eleven assessment units based on a combination of factors, including sediment drift cells, land use, shoreline condition, and exposure. The reaches are depicted in Figure 1. The following inventory and analysis information is summarized from detailed information presented in the Shoreline Analysis Report.

Figure 1. Shoreline reach breaks



2.3.1 Land Use and Physical Conditions

The City of Port Angeles is located in Clallam County, Washington. The north side of the City fronts the Strait of Juan de Fuca and is surrounding by unincorporated Clallam County to the west, south and east. The City encompasses approximately 10.7 square miles of land and approximately 53 square miles of surface water (NOAA 2010).

The study area for this report includes all lands and waters currently within the City's proposed shoreline jurisdiction (Appendix A), as well as relevant discussion of the contributing watershed. This includes both the lands and waters within the existing city limits, as well as the lands and waters within the City's Urban Growth Area UGA. The total land area subject to the City's updated SMP, (not including submerged lands, which are also subject to the City's updated SMP), is approximately 363 acres, and encompasses approximately 17.7 miles of marine shoreline. The dominant feature of the shoreline is Ediz Hook, a 3.5-mile-long natural spit that shelters Port Angeles Harbor. Ediz Hook creates and protects Port Angeles Harbor, making this area attractive for industrial and commercial activity since the early 1900s. Most industries focus on wood products or marine uses. Land use in the west harbor area presently includes two mills, a marina, boat manufacturing and repair facilities, commercial facilities, restaurants, a U.S. Coast Guard base, and more than one log storage yard.

The downtown Port Angeles area includes several creek outfalls, and land use consists of a public pier with transient moorage, viewing tower, an aquarium and educational facility, a public beach area, a public trail, two ferry terminals, and mixed-use development.

Land use west of the harbor is dominated by single-family residential and undeveloped land. A cemetery, a retired landfill, and a solid waste transfer station are the other major land uses in this area. East of the harbor is a mix of older and new housing, some commercial development, and the Olympic Memorial Hospital. Outside of the City boundary, in the UGA to the east, most of the land is zoned Rural Character Conservation, intended primarily for residential use but allowing some agricultural and commercial uses. The Waterfront Trail runs along the shoreline on abandoned railroad right-of-way in this area as well. Summary details for area, impervious surface, shoreline modification, and land use patterns are listed in Table 1.

Table 1. Main land use features in shoreline reaches.

Shoreline Reach and area (ac)	Impervious Area (%)	Shoreline Modification	Main Land Uses [1, 2]
Reach 1 Landfill; 6.48	<1	~30% rock seawall	State/County exempt[3] 98%
Reach 2 Western City; 46.18	<1	~77% rock armor	State/County exempt[3] 27% Single-family 36% Undeveloped 13%
Reach 3	3	~100% rock armored	Resources 57%

Shoreline Reach and area (ac)	Impervious Area (%)	Shoreline Modification	Main Land Uses [1, 2]
Outer Industrial; 16.63			State/County exempt[3] 39%
Reach 4 Outer Ediz Hook; 53.33	14	~92% rock armor	No data[4] 66% State/County exempt[3] 34%
Reach 5 Inner Ediz Hook; 46.80	29	~100% rock armor, fill	No data[4] 56% State/County exempt 31% Indian exempt 10%
Reach 6 Inner Industrial; 10.85	21	~96% rock armor, fill, sheet pile	State/County exempt[3] 52% Resources 29% No data[4] 19%
Reach 7 Lagoon; 30.01	14	~100% rock armor, fill, sheet pile	Resources 75% No data[4] 56% State/County exempt[3] 22%
Reach 8A Downtown Tse-whit-zen; 12.91	28	~100% rock armor, fill, sheet pile	No data[4] 56% State/County exempt[3] 43%
Reach 8B Downtown – Marina; 20.05	60	~100% rock armor, fill, sheet pile	State/County exempt[3] 48% No data[4] 37% Undeveloped land 15%
Reach 8C Downtown Transition; 11.29	61	Nearly ~100% rock armor, fill, sheet pile	State/County exempt[3] 49% No data 45%
Reach 8D Downtown – Mixed Use; 26.11	60	~100% rock armor, fill, sheet pile	No data[4] 43% State/County exempt[3] 31%
Reach 9 Olympic; 14.00	4	~98% rock armor, fill, sheet pile	No data[4] 68% State/County exempt 16% Single-family 12%
Reach 10 Rayonier; 17.65	53	~61% rock armor, fill, sheet pile	Undeveloped land 42% No data[4] 29% State/County exempt[3] 29%
Reach 11 Eastern City (UGA); 50.73	2	~79% rock armor	State/County exempt[3] 47% Single-family 24% Undeveloped land 16%
Total	**21.4%**	**~82%**	

[1]Other land uses may be present but account for less than 10% of total
[2]Land use categorized by County assessor data
[3]Tax exempt parcels
[4]No data available on land use in County assessor database

2.3.2 Biological Resources and Critical Areas

Geologically hazardous areas include modified (filled) land, marine bluffs, unstable slopes, and ravines. Much of the shoreline area is within floodplain, and each reach consists of wetlands and Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) occurrences. Table 2 shows species, habitats, and proportions of critical areas by reach.

Table 2. Land in critical areas by shoreline reach.

Shoreline Reach	Wetland (NWI)	GHA[1]	Streams	Flood-plain	PHS
Reach 1 Landfill	61% (City-mapped=51%)	88%	Dry Creek	46%	Cliff/bluffs, abalone, red sea urchin
Reach 2 Western City	14% (City-mapped=18%)	70%	-	28%	Cliff/bluffs, bald eagle nest and nest buffer, abalone, geoduck, red sea urchin
Reach 3 Outer Industrial	22%	80%	-	85%	Bald eagle, red sea urchin[2], abalone[3]
Reach 4 Outer Ediz Hook	18%	50%	-	100%	Bald eagle, red sea urchin[2], abalone[3]
Reach 5 Inner Ediz Hook	4%	7%	-	99%	Hardshell clam, abalone, harbor seal, harlequin duck, shorebird concentration
Reach 6 Inner Industrial	7%	90%	-	48%	Bald eagle nest buffer, abalone
Reach 7 Lagoon	4% (City-mapped=33%)	99%	-	54%	Bald eagle nest buffer, abalone[3]
Reach 8A Downtown Tse-whit-zen	15%	93%	-	33%	Offshore shellfish, bald eagle nest buffer
Reach 8B Downtown – Marina	5%	94%	-	15%	Offshore shellfish
Reach 8C Downtown Transition	15% (City-mapped=13%)	77%	Tumwater Creek	32%	Offshore shellfish
Reach 8D Downtown – Mixed Use	10% (City-mapped=6%)	91%	Valley Creek, Peabody Creek	71%	Offshore shellfish, common loon, eelgrass beds, waterfowl concentrations
Reach 9 Olympic	2%	77%	-	53%	Red sea urchin, offshore shellfish, common loon, eelgrass beds, harbor seal
Reach 10 Rayonier	24% (City-mapped=12%)	90%	Ennis Creek	80%	Red sea urchin, harbor seal, seal haul outs, bald eagle nest buffer, seabird colony
Reach 11 Eastern City (UGA)	5% (City-mapped=6%)	50%	Lees Creek	32%	Red sea urchin, abalone, bald eagle nest and buffer, urban natural open space, cliff/bluffs
Total					

[1] Geologically hazardous areas

[2] While mapped in WDFW PHS data, a representative of the Lower Elwha Klallam Tribe indicates that the species is unlikely to be present in the specified reach.

[3] While mapped in WDFW PHS data, a representative of the Lower Elwha Klallam Tribe indicates that the species is not present in the specified reach.

Extensive loss and impairment of estuarine habitat has occurred along the Port Angeles shoreline. Much of downtown Port Angeles was filled with upland and nearshore dredge materials in the 1950s (see Table 2), and creeks discharging to the harbor have been channelized and otherwise altered to varying degrees. All presently are lacking in significant estuarine habitat. At least 42 sites in or adjacent to shoreline jurisdiction have reported hazardous substances (see Table 2 of the Shoreline Analysis Report).

An analysis of shoreline ecological functions for each reach was reported in the Shoreline Analysis Report. The resulting scores are presented below, in descending order of function rating (5 = high quality functions and 1 = low quality functions).

Rank	Score
1. Reach 5: Inner Ediz Hook	3.1
2. Reach 11: Eastern City (UGA)	2.9
3. Reach 1: Landfill	2.8
4. Reach 7: Lagoon	2.6
5. Reach 2: Western City	2.5
6. Reach 9: Olympic	2.3
7. Reach 10: Rayonier	2.3
8. Reach 8D: Downtown – Mixed Use	2.2
9. Reach 4: Outer Ediz Hook	2.1
10. Reach 8C: Downtown - Transition	2.0
11. Reach 8A: Downtown – Tse-whit-zen	1.8
12. Reach 6: Inner Industrial	1.7
13. Reach 3: Outer Industrial	1.6
14. Reach 8B: Downtown - Marina	1.5

3.0 RESTORATION GOALS AND OBJECTIVES

Shoreline restoration that is compatible with continued water dependent uses is a fundamental component of the goals and objectives of the proposed SMP. Goal 2 of the proposed Shoreline Master Program is directly relevant to shoreline restoration. It is as follows:

> Port Angeles' shoreline ecology is protected and, where appropriate, restored.

This overall restoration goal can be broken into the following more specific goals related to shoreline functions:

- Protect and restore water quality;
- Protect and restore native shoreline vegetation, habitat functions, and habitat forming processes; and

- Encourage restoration that allows for continued water dependent uses and public access.

Objectives that assist in defining actions or projects to restore the natural processes and ecological functions are found in policies throughout the proposed SMP. The following policies, in particular, help guide restoration priorities in the City.

- Protect critical saltwater habitats in recognition of their importance to the marine ecosystem of the City of Port Angeles and the State of Washington. These habitats provide critical reproduction, rearing, and migratory nursery areas for valuable recreational and commercial species. They also provide habitat for many marine plants, fish, and animals (SMP 3.B.4.b.1).

- Protect and restore existing diversity of vegetation and habitat values, wetlands and riparian corridors associated with shoreline areas (SMP 3.B.9.b.2.c).

- Protect and restore habitats for State-listed "priority species" (SMP 3.B.9.b.2.c).

- Enhance and restore the natural characteristics of Ediz Hook (SMP 3.B.9.b.2.c).

- Protect and enhance natural erosion and sediment transport processes (SMP 3.B.9.b.4.d).

- Protect and restore estuarine habitats, especially at Ennis Creek (SMP 3.B.9.b.4.g).

- In conjunction with applicable agencies, the City will continue to take action to improve water quality in the harbor by:

    - Improving treatment of sewer overflows and faulty septic systems.

    - Aggressively pursuing storm water quality measures, both within and outside shoreline jurisdiction (SMP 3.B.13.b.1).

Opportunities and strategies can be identified based on the objectives. At this level, no specific performance standards are applied to goals. For example, one overall goal is to improve water quality to meet the vision of a restored ecosystem, not to improve it by a particular measure. Individual restoration projects that may be implemented as part of this plan will generally identify specific measurable goals. Ultimately, most restoration priorities will be in some part opportunistic based on site access, available funding, and feasibility. Given the many factors necessary to implement restoration projects, implementation of the restoration plan will not fall to the City alone, rather, it will rely on involvement, funding, partnerships, and collaboration among federal, state, and local agencies, profit and non-profit organizations, and private entities.

Table 3 shows the relationship of main goals, objectives, natural processes, and ecological functions. The first column lists the goals, the second column shows the objectives associated with those goals and the third column shows the natural process and ecological function that will be enhanced by completing the objectives. Objectives are found under multiple goals affecting different natural processes and ecological functions. Potential metrics for monitoring each objective are listed in the right hand column.

Table 3. Main restoration goals and objectives addressing natural processes in the City of Port Angeles.

Restoration goal	**Objective(s)**	**Natural process(es)** ***Ecological function(s) addressed***	**Potential metrics**
Protect Critical Areas	Inventory, identify, and conserve Habitats of Local Importance	**Hydrologic processes, sediment/nutrient transport, habitat function** *Support vegetation* *Woody debris recruitment* *Organic material availability* *Terrestrial and aquatic habitat* *Migration corridors* *Food production and delivery*	Habitat diversity Species abundance and diversity Connectivity/areas of isolation Woody debris density Wetland acreage Wetland functions Wetland ratings Water quality
	Inventory, identify, and conserve wetlands		
	Protect and restore native vegetation		
Protect natural erosion processes of marine bluffs	Restore beach deposits and processes, including connections of feeder bluffs to marine systems	**Sediment transport, habitat function** *Support vegetation* *Wood debris recruitment* *Terrestrial and aquatic habitat* *Beach formation and maintenance*	Linear feet of bulkhead Beach accretion over time
Protect Ediz Hook	Develop an Ediz Hook master plan	**Hydrologic processes, sediment/nutrient transport, habitat function** *Support vegetation* *Woody debris recruitment* *Terrestrial and aquatic habitat* *Food production and delivery*	Extent of tree canopy Density of woody debris Linear feet of bulkhead
Develop and implement sustainable resource management practices for shoreline	Develop shoreline zoning to protect intact, unique, or major physical shoreline resources, to avoid hazardous areas, or to preserve open space.	**Hydrologic processes, sediment/nutrient transport, habitat function** *Migration corridors* *Terrestrial and aquatic habitat* *Beach formation and maintenance*	Habitat patch size and condition Beach accretion or loss over time

Restoration goal	Objective(s)	**Natural process(es)** ***Ecological function(s) addressed***	Potential metrics
resources	Review and revise the Harbor Resource Management Plan	**Sediment/nutrient transport, Hydrologic processes** *Toxic compound removal* *Vegetation support* *Nutrient removal* *Water and sediment storage*	Number of creosote pilings Water quality Soil contamination Contaminant levels in marine biota Storm flows
Ensure minimum adverse impact to the shoreline environment	Identify and implement requirements to mitigate negative impacts of development	**Hydrologic processes, sediment/nutrient transport, habitat function** *Support vegetation* *Terrestrial and aquatic habitat* *Beach formation and maintenance processes* *Water and sediment storage*	Connectivity/areas of isolation Linear feet of bulkhead Water quality measurements Storm flows
	Develop innovative land management to preserve open space	**Hydrologic processes, sediment/nutrient transport, habitat function** *Migration corridors* *Support vegetation* *Woody debris recruitment* *Terrestrial and aquatic habitat*	Connectivity/areas of isolation Habitat patch size and condition Habitat diversity
Encourage shoreline restoration and enhancement	Rehabilitate degraded shorelines for stability and habitat enhancement	**Hydrologic processes, sediment/nutrient transport, habitat function** *Terrestrial and aquatic habitat* *Beach formation* *Support vegetation* *Woody debris recruitment*	Fish & shellfish abundance and diversity Acreage of vegetation Density of woody debris Linear feet of bulkhead
	Preserve and protect aquatic habitats	**Hydrologic processes, sediment/nutrient transport, habitat function** *Aquatic habitat* *Beach formation*	Fish & shellfish abundance and diversity Beach aggradation over time Aquatic habitat patch size and condition
	Reduce and remove shoreline hardening and overwater structures	**Hydrologic processes, sediment/nutrient transport, habitat function** *Beach formation* *Terrestrial and aquatic habitat* *Migration corridors* *Support vegetation*	Linear feet of bulkhead Number of overwater structures Extent of tree canopy Fish & shellfish abundance and diversity
Protect water quality	Adopt and enforce adequate regulations	**Hydrologic processes, sediment/nutrient transport** *Water storage*	% impervious surface Water quality Wetland acreage

Restoration goal	Objective(s)	**Natural process(es)** ***Ecological function(s) addressed***	Potential metrics
	Identify and address existing sources of pollution	*Sediment storage* *Toxic compound removal* *Nutrient removal*	Storm flows Number of creosote pilings Soil contamination levels Contaminant levels in marine species
Promote environmental conservation through outreach, education, and stewardship	Inform the public on long-term benefits of conservation and protection	**Hydrologic processes, sediment/nutrient transport, habitat function** *Support vegetation* *Terrestrial and aquatic habitat* *Habitat migration corridors* *Water and sediment storage* *Nutrient removal*	Public support for public restoration projects Number of restoration projects implemented on private property Acreage or number of restored/remaining impaired areas Linear feet of bulkhead Water quality
	Partner with local, state, and federal groups to inform public		
	Educate builders and realtors on environmental and economic benefits of conservation		
Enhance fisheries resources	Participate in watershed planning and salmon recovery efforts	**Hydrologic processes, sediment/nutrient transport, habitat function** *Terrestrial and aquatic habitat* *Habitat migration corridors* *Water and sediment storage* *Nutrient removal*	Acreage or number of restored/remaining impaired areas Species abundance and diversity

4.0 ONGOING CITY PLANS AND PROJECTS

4.1 Comprehensive Plan

The Port Angeles Comprehensive Plan (City of Port Angeles 2009) defines goals addressing the environment in its Land Use and Conservation elements. Each goal is accompanied by policies and/or objectives intended to guide progress toward the goal. Many of these objectives are identical or closely related to the objectives presented in Section 3.

4.2 Port Angeles Harbor Shoreline Habitat Assessment

The 2001 evaluation of shoreline and nearshore salmonid habitat extended from east of the former Rayonier mill to the end of Ediz Hook (Pentec Environmental 2001). The assessment of habitat quality utilized aerial photographs and field verification to gather information for use in a Tidal Habitat Model (THM) designed to score shoreline and nearshore areas salmonid habitat quality, particularly for juveniles. The results of the THM aided in identifying areas with the highest potential for improvement. Specifically, the Daishowa Lagoon (now the Nippon Lagoon) and nearshore assessment

units were identified as having high potential to increase habitat value for salmon. Project recommendations for these areas are as follows:

- Daishowa (Nippon) Lagoon: improving fish passage through the channel, removing large woody debris from deeper parts of the lagoon, planting saltwater marsh vegetation and native riparian species.

- Nearshore assessment units: improve stream and estuarine habitat in lower streams reaches (Ennis, Peabody, and Tumwater) by recontouring to increase area of shallow water habitat, establishing large woody debris, planting native marsh and riparian vegetation; reestablishing beach habitat at Francis Park; restoring other beach sites where possible through riprap removal, recontouring, and placement of sand/gravel; establishing or reestablishing eelgrass beds; planting riparian vegetation where armoring cannot be removed; shading upper shore.

4.3 Stormwater Management Program (SWMP)

The City's SWMP is a set of planned actions designed to protect water quality by reducing the discharge of pollutants. Components of the SWMP related to shoreline restoration include the following:

- Illicit Discharge Detection and Elimination

  The City maintains a GIS database of all known discharges, outfalls, and receiving waters owned, operated, or maintained by the City. Planned actions include a field assessment of impacted receiving waters, a plan to trace and remove sources of discharges, and program evaluation and assessment. The City has adopted Ecology's Stormwater Management Manual for Western Washington maintenance standards and is currently implementing them.

- Controlling Runoff from New Development, Redevelopment, and Construction Sites

  The City has developed an ordinance addressing runoff from new development, redevelopment, and construction activities at sites one acre or greater in size. The City may reduce the size threshold in the future. Actions include employing Ecology's manual for design criteria and best management practices, conducting stormwater plan review and oversight, pre- and post-construction site inspection, and compliance and maintenance standards for stormwater discharge.

- Pollution Prevention and Operation and Maintenance for Municipal Operations

The City has developed and implemented a program with the goal of preventing or reducing pollutant runoff from municipal operations. It includes annual inspections, spot checks, road runoff control and maintenance, public land runoff control, and maintenance, and a stormwater pollution prevention plan (SWPPP).

4.4 Community and Economic Development Department

The Department is overseeing the process of updating both the SMP and the Harbor Resource Management Plan of 1989, as well as being the department that developed the revised Comprehensive Plan (see Section 4.1.1). The SMP Analysis Report (The Watershed Company et al. 2010) collated and summarized potential restoration projects and opportunities for the shoreline area throughout the City and UGA. These projects, among others, are included in Table 5.

5.0 PARTNERSHIPS

Federal, state, regional, and local agencies and organizations are actively involved in shoreline restoration, conservation, and protection in and around Port Angeles. These partners and their local roles in shoreline protection and/or restoration are identified below and organized in order by the scope of the organization (federal, state, regional, and local).

5.1 U.S. Army Corps of Engineers (USACE)

5.1.1 Outer Ediz Hook

The USACE has conducted maintenance work consisting of relocation of fallen revetment rock back into the armoring of the north shore of Ediz Hook facing the Strait of Juan de Fuca. (USACE 2002), and beach nourishment in the same area. The shoreline in this area is presently almost entirely armored with stone, fronted by cobbles, gravels, and patches of sand. Although the beach and armoring collect large woody debris and aquatic vegetation transported by waves, the Hook is at risk due to loss of materials that once originated from bluff erosion (now limited by armoring) and the Elwha River (on which sediment supplies are trapped above two dams).

5.1.2 Elwha Dam

Removal of the Elwha Dam is expected to begin in September 2011. Goals of the removal include a reduction in coastal erosion in delta and nearshore areas as sedimentation processes return. Dam removal will take place over approximately three years so that release of trapped silt, gravel, and rock is gradual and does not overwhelm the delta, beaches, and nearshore areas.

Additional restoration approaches and measures have been identified as necessary for realizing the full environmental benefits of dam removal (Shaffer et al. 2008). To identify these, some initial work will be needed: defining movement of sediment once it reaches the nearshore; investigating historic habitat, key fish, and vegetation conditions and distribution; identifying habitat distribution and resource use; and modeling future conditions based on the preceding elements. Once the degree of restoration still needed after dam removal is identified and the continuing impact of the remaining shoreline alterations is determined, further restoration actions can be defined and prioritized. Other participants in the planning effort post-removal restoration are the U.S. Geological Survey (USGS), the National Park Service (NPS), and the Lower Elwha Klallam Tribe.

5.2 U.S. Geological Survey (USGS)

The USGS has been a partner in studying a number of restoration issues and ecological processes in advance of Elwha Dam removal. These are ongoing efforts and include beach surveys and characterization in the Elwha River delta, nearshore substrates and habitat mapping and characterization offshore of the Elwha River mouth, Chinook habitat use in the Elwha River estuary, nutrient sampling in the river, freshwater movement as it relates to sediment dispersal at the mouth of the river, vegetation mapping in the Elwha estuary, surface and groundwater measurement in the estuary, and biological surveys in the estuary.

5.3 Washington State Department of Natural Resources (DNR)

The DNR works with lessees on their public aquatic lands, including those in Clallam County, to protect habitat to the extent possible. As well, the agency's Aquatic Restoration Program identifies, plans, and implements restoration projects. The Program also offers support to private and public entities working on restoration projects on or adjacent to State-owned aquatic lands. Project interests include creosote and derelict vessel removal and other cleanup efforts.

5.4 Strait of Juan de Fuca Ecosystem Recovery Network (ERN)

The Strait of Juan de Fuca ERN comprises elected officials and upper-level staff of governments, agencies, institutions, organizations, and key business groups from Clallam and Jefferson Counties. The group's common goal is to "Recover and sustain the ecological health of the Strait of Juan de Fuca and North Olympic Peninsula using an ecosystem-based management approach, while connecting with and enhancing our socio-economic well-being." The ERN partnership produced an action agenda aimed at, among other subjects and issues, marine hazards and toxins, ocean acidification and air emissions, stormwater issues, salmon recovery, watershed planning, migration corridors, aquaculture, and sewage discharge. The Clallam Work Group of the ERN focuses on providing assistance to members' government and non-government organizations and agencies implement the local and regional actions and strategies listed

in Tables 5 & 6. These actions and strategies are designed to promote the following goals:

A. Protect intact ecosystem processes, structures, and functions

B. Restore ecosystem processes, structures, and functions

C. Prevent sources of water pollutants

D. Work effectively and efficiently together on priority issues

E. Assist the Partnership in implementing the Performance Management System.

The Port Angeles SMP/Harbor Management Plan (HMP) Steering Committee prioritized projects recommended by ERN in May 2010.

5.3 North Olympic Peninsula Lead Entity (NOPLE)

NOPLE consists of a Technical Review Group (TRG) made up of scientist and people with special knowledge of salmon, a Lead Entity Group (LEG) of government staff, and four citizens groups. The groups developed the NOPLE Habitat Recovery Strategy in 2001, updating it continuously as new information becomes available. The strategy acts to gather local salmon information and priorities, build a network of salmon habitat recovery entities, provide information to grant applicants, and list priorities for SRFB project proposals to be used by SRFB to guide funding amounts. The mission of NOPLE is "to recover priority salmon habitat from Sequim Bay west along the Strait of Juan de Fuca to Cape Flattery."

The TRG meets monthly to develop and recommend NOPLE Strategy updates, to provide technical assistance and feedback to applicants for SRFB funding, and to provide the CFGs and LEG with scores, ranks and comments on proposed projects. Current projects that are part of or are under consideration by NOPLE are included in Table 5.

5.6 Water Resource Inventory Area (WRIA) 18 Participation

5.6.1 Elwha-Dungeness Planning Unit

The Elwha-Dungeness Planning Unit, in development of the Elwha-Dungeness Watershed Plan, utilized the results of a series of workshops and Planning Unit meetings to compile recommendations for restoration in WRIA 18 and Sequim Bay in west WRIA 17 (Elwha-Dungeness Planning Unit 2005). Recommendations address both WRIA 18 as a whole and some groups of smaller sub-basins, as well as the nearshore marine environment. Table 6 lists fish- and habitat-related conservation and restoration recommendations from the plan.

5.6.2 Washington State Conservation Commission

The WRIA 18 Salmon and Steelhead Limiting Factors Final Report (Haring 1999) made action recommendations for the watershed and each sub-unit within WRIA 18 based on a limiting factors analysis. A number of recommendations address subtidal and nearshore marine areas adjacent to the Port Angeles shoreline; others are aimed at improving conditions in streams that enter shoreline jurisdiction, and impact water quality in the nearshore. These recommendations are included in Table 5.

5.7 Clallam Marine Resource Committee (MRC)

The MRC includes participants from the Lower Elwha Klallam Tribe (LEKT), the City of Port Angeles, and other tribe and local government representatives, as well as citizens from the academic, development, commercial fishing, conservation, and recreation communities. The 2009-2013 Clallam County Marine Resources Committee Strategic Plan (MRC 2009) states the MRC mission "To protect and restore the marine waters, habitat, and species of Clallam County along the Strait of Juan de Fuca and to achieve ecosystem health and sustainable resource use." Among the group's near-term objectives are to continue monitoring the Elwha nearshore, monitor water quality changes resulting from the Elwha River dam removals, and to assist other efforts to clean up and restore Port Angeles Harbor. The Strategic Plan includes projects aimed at restoring the Elwha nearshore environment and suggests partners and potential funding agencies. Recommended projects for nearshore restoration are reversing the loss of the Angeles point shoreline, monitoring nearshore habitats associated with dam removal, and developing and implementing an Elwha nearshore restoration plan. The Plan also proposes the removal of fill material from the Port Angeles landfill, with the City and Ecology as potential partners. The MRC also partners with WDFW, the LEKT, Olympic National Park, Peninsula College, Puget Sound Partnership (PSP), and others to provide restoration information to the Elwha Nearshore Consortium for inclusion in yearly newsletters.

5.8 Lower Elwha Klallam Tribe

A main goal of the LEKT is to restore the Elwha river system and all runs of native fish in the Elwha River and other watersheds that drain into the Strait of Juan de Fuca as well as related nearshore areas, including Port Angeles Harbor. For the Elwha River, a primary strategy for attaining this goal is the removal of the Elwha Dam and subsequent restoration projects. Efforts include current and ongoing beach substrate, elevation, and profiling monitoring, as well as fish and biological surveys of the estuary for baseline data. The LEKT is also planning revegetation as a component of the restoration.

The LEKT is also involved in coordination and oversight of cleanup activities at the former Rayonier mill site. The Ennis Creek Conceptual Restoration Plan (Ennis Technical Team 2010), co-authored by the LEKT and Rayonier, includes

recommendations to remove the pier, jetty, all concrete structures, an asphalt parking lot, and return lower Ennis Creek to its natural meander, floodplain and forested riparian habitat. The Plan also includes restoration of estuary habitat to improve sediment transport processes, remove barriers to nearshore salmonid migrations, and restore natural vegetation communities. LEKT plans to lead the management of restoration related projects on the site. Other related projects include exotic plant eradication, protection of existing intact habitats, the replacement of fish-barrier culverts in Port Angeles with bridges, and the placement of engineered log jams along Ennis Creek. Restoration would also include improved public access to the site. It should be noted that future use of the former Rayonier mill site has not been finalized by the City. While planned restoration activities mentioned above and included in the final Ennis Creek Conceptual Restoration Plan are proposed, future use and development of the site may include some water-oriented uses and public access. This would likely include replacement of the existing over-water structure, albeit with a much smaller pier.

Other planned and ongoing shoreline restoration related activities by the LEKT include annual exotic plant eradication projects along the Elwha River and connection to the City of Port Angeles' wastewater system to collect and treat water coming from reservation lands. This latter project is funded as mitigation for anticipated increased groundwater levels in the Elwha River valley.

5.9 Puget Sound Partnership

The Puget Sound Partnership consists of representatives from a variety of interests from the Puget Sound region including business, agriculture, the shellfish industry, environmental organizations, local governments, tribal governments, and the Washington state legislature. Some of the Partnership's key tasks are as follows:

- Develop a set of recommendations for the Governor, the Legislature and Congress to preserve the health of Puget Sound by 2020 and ensure that marine and freshwaters support healthy populations of native species as well as water quality and quantity to support both human needs and ecosystem functions.

- Engage citizens, watershed groups, local governments, tribes, state and federal agencies, businesses and the environmental community in the development of recommendations.

- Review current and potential funding sources for protection and restoration of the ecosystem and, where possible, make recommendations for the priority of expenditures to achieve the desired 2020 outcomes.

The Partnership through the Leadership Council released an Action Agenda in December 2008. Implementation of this Action Agenda has resulted in State and Federal funding of restoration and protection initiatives and projects. This includes integrating

the work of the Puget Sound Nearshore Restoration Project to increase focus on completing work necessary to request Puget Sound restoration funds under the Water Resources Development Act slated for 2012.

5.10 Puget Sound Nearshore Ecosystem Restoration Project (PSNERP)

The Army Corps of Engineers and WDFW co-lead PSNERP as an effort to evaluate ecosystem degradation in the Puget Sound Basin, to develop and assess potential solutions to identified problems, and to recommend actions and projects to restore and preserve the nearshore ecosystem. The 2009 technical report Management Measures for Protecting and Restoring the Puget Sound Nearshore (Clancy et al. 2009) defines and describes 21 general management recommendations focusing on actions for improving degraded nearshore areas (Table 4).

Table 4. PSNERP Management Measures for restoring Puget Sound nearshore areas (from Clancy et al. 2009).

Management Measure	Description
Armor Removal or Modification	Removal, modification, or relocation of coastal erosion protection structures such as rock revetments, bulkheads, and concrete walls on bluff-backed beaches, barrier beaches, and other shorelines.
Beach Nourishment	The intentional placement of sand and/or gravel on the upper portion of a beach where historic supplies have been eliminated or reduced.
Berm or Dike Removal or Modification	Removal or modification of berms, dikes and other structures to restore tidal inundation to a site that was historically connected to tidal waters. Includes dike/berm breaching and complete dike/berm removal.
Channel Rehabilitation or Creation	Restoration or creation of channels in a restored tidal wetland to change water flow, provide habitat, and improve ecosystem function.
Contaminant Removal and Remediation	Removal or remediation of unnatural or natural substances (e.g., heavy metals, organic compounds) harmful to the integrity or resilience of the nearshore. Pollution control, which is a source control measure, is a different measure.
Debris Removal	The removal of solid waste (including wood waste), debris, and derelict or otherwise abandoned items from the nearshore.
Groin Removal or Modification	Removal or modification of groins and similar nearshore structures built on bluff-backed beaches or barrier beaches in Puget Sound.
Habitat Protection Policy or Regulations	The long-term protection of habitats (and associated species) and habitat-forming processes through zoning, development regulations, incentive programs and other means.
Hydraulic Modification	Modification of hydraulic conditions when existing conditions are not conducive to sustaining a more

Management Measure	Description
	comprehensive restoration project. Hydraulic modification involves removing or modifying culverts and tide gates or creating other engineered openings in dikes, road fills, and causeways to influence salt marsh and lagoon habitat. This measure is used in managed tidal systems (as opposed to naturally maintained systems).
Invasive Species Control	Eradication and control of nonnative invasive plants or animals occupying a restoration site and control measures to prevent introduction or establishment of such species after construction is complete.
Large Wood Placement	Installment of large, unmilled wood (large tree trunks with root wads, sometimes referred to as large woody debris) within the backshore or otherwise in contact with water to increase aquatic productivity and habitat complexity.
Overwater Structure Removal or Modification	Removal or modification of overwater structures such as piers, floats and docks to reduce shading and restore wave regimes.
Physical Exclusion[1]	Installation of exclusionary devices (fences, barriers, mooring buoys, or other devices) to direct or exclude human and/or animal use of a restoration site.
Pollution Control	Prevention, interception, collection, and/or treatment actions designed to prevent entry of pollutants into the nearshore ecosystem.
Property Acquisition and Conservation	Transfer of land ownership or development rights to a conservation interest to protect and conserve resources, enable restoration or increase restoration effectiveness.
Public Education and Involvement	Activities intended to increase public awareness of nearshore processes and threats, build support for and volunteer participation in restoration and protection efforts, and promote stewardship and responsible use of nearshore resources.
Revegetation	Site preparation, planting, and maintenance to manipulate soils and vascular plant populations to supplement the natural development of native vegetation.
Species Habitat Enhancement	Installation or creation of habitat features (sometimes specific structures) for the benefit of native species in the nearshore.
Reintroduction of Native Animals	Reestablishment of native animal species at a site where they existed or as replacement for lost habitat elsewhere.
Substrate Modification	The placement of materials to facilitate establishment of desired habitat features and improve ecosystem functions, structures, or processes.
Topography Restoration	Dredging, excavation and /or filling to remove or add layers of surface material so that beaches, banks, tidal wetlands, or mudflats can be created.

1. Public access is a key principle of SMA; therefore, exclusionary devices for humans are not a management measure supported under the SMA or in the Port Angeles SMP.

5.11 Clallam County Streamkeepers

Streamkeepers is a citizen-based volunteer program of the County's Department of Community Development that involves Clallam County residents in projects to protect and restore salmon habitat. The primary goal of providing useful data to aid decision-makers in restoring local watersheds is approached through projects describing current conditions, identifying trends in watershed conditions, screening for potential problems, determining restoration priorities, and monitoring the effectiveness of restoration projects.

6.0 POTENTIAL PROJECTS AND PRIORITIZATION

Several site or reach specific restoration, enhancement, or protection projects have been identified within the City's shoreline jurisdiction. Projects were identified in Haring's (1999) analysis of salmon habitat limiting factors, the Strait of Juan de Fuca Ecosystem Recovery Network (ERN), the North Olympic Peninsula Lead Entity (NOPLE), the City's Waterfront and Transportation Improvement Plan (WTIP), and through the Port Angeles Shoreline Inventory and Analysis Report, which summarized recommendations from several resources (TWC 2010). These projects are listed by reach in Table 5. Each project has been given a prioritization level (high – medium – low). Projects received a high prioritization if they are located within the City or UGA and (1) were previously identified as high priority by one of the above review efforts and/or (2) clearly provide a high restoration value that is reasonably feasible in the future. Conversely, projects received a low prioritization if they (1) have a low level of perceived long-term benefit, (2) are located well outside of shoreline jurisdiction, and/or (3) are not readily feasible. New information, as well as changes in ecosystem condition or land use could affect the assessment of ecological benefits and/or feasibility of individual projects, resulting in changes to the prioritization identified here.

Table 5. Restoration project recommendations and opportunities in the City of Port Angeles' shoreline jurisdiction listed by shoreline reach.

Reach	Restoration Opportunity	Source	Prioritization
Reach 1 Landfill	Develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity to Dry Creek until full riparian function is restored	Haring 1999	Medium
	Restore functional riparian zones throughout the Dry Creek watershed	Haring 1999	Medium
	Remediate stormwater impacts to Dry Creek; ensure that stormwater impacts resulting from future construction in the watershed are fully addressed at the time of construction	Haring 1999	Medium
	Explore opportunities to further limit influence of landfill on shoreline area, and continue to remove existing landfill debris that is embedded in the beach and upland's abandoned landfill cell.	TWC 2010	High
	Improve vegetation on bluff and at base of bluff with native species.	TWC 2010	Medium
Reach 2 Western City	Explore opportunities to improve vegetation at the top of the bluff and at the toe of the bluff near the water supply line.	TWC 2010	Medium

Reach	Restoration Opportunity	Source	Prioritization
	Evaluate the feasibility of re-routing the industrial water supply line and removing the bank armoring. Bluff erosion is a key component to providing sediment to the Hook, and should be allowed to occur at a relatively natural pace. However, development at the top of the bluff makes it exceptionally difficult to remove armoring and allow natural erosion to occur.	TWC 2010	High
	Seek ways to mitigate some of the negative impacts of armoring, by including LWD in the armoring or possibly providing beach nourishment along the armored segment to simulate natural sedimentation rates.	TWC 2010	Medium
	Restore drift processes and recruitment of marine sediments from the Elwha River and between the Elwha River and the west-end of Ediz Hook.	Haring 1999	Medium
	Elwha River Estuary Restoration	ERN, NOPLE Work Plan	Medium
	Elwha River Nearshore Biodiversity Investigations	ERN, NOPLE Work Plan	Medium
Reach 3 Outer Industrial	Explore opportunities to improve vegetation.	TWC 2010	Medium
	Seek ways to mitigate some of the negative impacts of armoring, by including LWD in the armoring or possibly providing beach nourishment along the armored segment to simulate natural sedimentation rates.	TWC 2010	Medium
	The placement of LWD or alternative bioengineering enhancements along the north shore of Ediz Hook may help retain sediment from the longshore drift following Elwha Dam removal.	TWC 2010	High
Reach 4 Outer Ediz Hook	Explore opportunities for active control/elimination of non-native vegetation and replanting with native vegetation.	TWC 2010	Medium
	Seek ways to mitigate some of the negative impacts of armoring, by including LWD in the armoring or continuing and expanding beach nourishment activities conducted by the Corps along the armored segment to simulate natural sedimentation rates.	TWC 2010	Medium
	The placement of LWD or alternative bioengineering enhancements along the north shore of Ediz Hook may help retain sediment from the longshore drift following Elwha Dam removal.	TWC 2010	High
Reach 5 Inner Ediz Hook	Support as feasible continued efforts of WDFW, the Corps, WDNR, LEKT and other entities to restore this reach.	TWC 2010	Medium
	DNR harbor habitat restoration. Partial creosote removal conducted in 2008; identify and prioritize remaining creosote removal opportunities with goal of eliminating them. Ediz Hook nearshore restoration ongoing. Project underway.	ERN	High

Reach	Restoration Opportunity	Source	Prioritization
	Ediz Hook Restoration Phase III and beyond. Phases I and II completed	ERN	High
	At City facilities, explore restoration of armored areas (hard armor removal, beach nourishment, LWD placement), design upgrades to any in- and over-water structures (such as launches, piers, etc), removal of any abandoned structures or debris, and revegetation. Any design must ensure protection of the road prism, utilities, and City facilities.	TWC 2010	Medium
Reach 6 Inner Industrial	As opportunities arise, modify existing shoreline structures to incorporate design elements that minimize impact.	TWC 2010	Low
	Protect and enhance the remaining area of unarmored shoreline at the south end of the reach.	TWC 2010	Medium
Reach 7 Lagoon	Restore unrestricted tidal flow and fish passage	TWC 2010, Haring 1999	Medium
	Remove wood debris from the deeper areas of the lagoon.	TWC 2010	High
	Plant saltwater marsh vegetation and native riparian vegetation in the areas surrounding the lagoon.	TWC 2010	Medium
Reach 8A Downtown Tse-whit-zen; Reach 8B Downtown – Marina; Reach 8C Downtown Transition; Reach 8D Downtown – Mixed Use	Improve stream/estuarine habitat in the streams entering Port Angeles Harbor (Tumwater and Peabody Creeks), similar to what was recently accomplished on Valley Creek. Actions could include: recontouring to increase the area of shallow water habitat, placement of LWD, planting of native marsh and riparian vegetation, daylighting streams, remeandering stream channels, and identifying and addressing sources of pollution to streams	TWC 2010	High
	Improve conditions along armored shorelines where feasible by implementing one or more of the following: riprap removal, slope cut-back, additions of finer-grained sediments, and placement of LWD, and riparian plantings	TWC 2010	Medium
	Establish or reestablish eelgrass beds, including over areas of wood accumulation that have been removed and/or capped with sand.	TWC 2010	High
	Clean up and restore Unocal Bulk site.	TWC 2010	Medium
	Enhance and enlarge Hollywood Beach. The small pond east of the Red Lion motel could be reconnected to the harbor.	TWC 2010, WTIP, ERN	High
	Additional restoration/enhancement opportunities may be available at the privately owned Oak Street waterfront property, a portion of which is leased by the City of Port Angeles.	TWC 2010, WTIP	Medium

Reach	Restoration Opportunity	Source	Prioritization
	Remediate stormwater management in the watershed to collect, treat, and discharge stormwater in a manner that avoids adverse impacts to Tumwater Creek and other surface waters; particular attention should be given to eliminating stormwater discharges that are creating major sediment contribution off Black Diamond Road, and taking measures to stabilize erosion from the gully	Haring 1999	Medium
	Restore functional estuary processes	Haring 1999	Low
	Remove channel constrictions in the lower channel of Tumwater Creek and restore functional floodplain processes	Haring 1999	Low
	Develop and implement a short-term LWD strategy to provide LWD presence and habitat diversity to Tumwater Creek until full riparian function is restored	Haring 1999	Medium
	Restore functional riparian zones throughout the Tumwater Creek watershed	Haring 1999	Medium
Reach 9 Olympic	Improve conditions along armored shorelines where feasible by implementing one or more of the following: riprap removal, slope cut-back, additions of finer-grained sediments, and placement of LWD, and riparian plantings.	TWC 2010	Medium
	Establish or reestablish eelgrass beds, including over areas of wood accumulation that have been removed and/or capped with sand.	TWC 2010	High
Reach 10 Rayonier	Rayonier Mill Cleanup and Restoration: Contaminant cleanup. Planning stage.	TWC 2010, ERN, ETT 2010[1]	High
	Rayonier Mill Cleanup and Restoration: Derelict harbor structure survey and removal	TWC 2010, ERN, Haring 1999, ETT 2010	Medium
	Acquiring beach areas east of Rayonier Mill site	ERN	Medium
	Feasibility study to remove beach fill and armoring west of Rayonier Mill site	ERN, ETT 2010	Medium
	Restoration of natural floodplain function in the lower channelized portions of Ennis Creek	Haring 1999	Medium
	Secure fish passage through Highway 101 by maintaining fishway/replacing culvert with bridge. 3 culverts exist below Hwy 101 at 2 locations.	Haring 1999	Medium
	Collect and treat stormwater from Highway 101 and other impermeable surfaces	Haring 1999	Medium
	Restore damaged riparian areas and LWD presence and function throughout the Ennis Creek channel	Haring 1999, ETT 2010	Medium
	County/City should monitor water quality in the vicinity of the golf course, downstream, and near storm drains	Haring 1999	Medium
	Evaluate flow and water quality impacts of runoff from	Haring 1999	Medium

Reach	Restoration Opportunity	Source	Prioritization
	the mill landfills, Highway 101, and agricultural areas of concern; remediate identified problems		
Reach 11 Eastern City (UGA)	Improve passage conditions in Lees Creek, initially at Highway 101 and at RM 0.1, and subsequently at other locations	Haring 1999	Low
	Restore riparian presence and function in Lees Creek, develop and implement a short-term LWD recovery strategy, and fence livestock away from the channel in agricultural areas on both the East and West forks	Haring 1999	Low
	Identify and remove/correct floodplain constrictions in Lees Creek	Haring 1999	Low
	Enhance shoreline with native vegetation	TWC 2010	Medium
	Add LWD in pocket areas along shoreline to improve conditions along the Olympic Discovery Trail	TWC 2010	Medium
	Restore drift processes and recruitment of marine sediments to the west of Morse Creek.	Haring 1999	Medium
Aquatic	Port Angeles Harbor marine wood waste analysis/characterization and removal/remediation	ERN, Haring 1999	High
	Remove derelict fishing gear and structures within the harbor	ERN	Medium
	Pollutant load assessment and feasibility study to reconnect inner harbor lagoon at west end of harbor	ERN	Medium
	Reduce potential impacts from aquaculture activities	ERN	Low
	Clean up and restore Marine Trades area of harbor. Project underway; feasibility study next.	ERN	Medium
	Eliminate remaining combined sewer overflows	ERN	High

[1] ETT 2010: Ennis Technical Team. 2010. Ennis Creek & Estuary Restoration Conceptual Plan

Those projects receiving a High Priority status are listed and summarized below. Those projects which were listed in multiple reaches are combined to better represent overall restoration objectives and priorities for Port Angeles shorelines. These are not ranked in order of preference.

- Eliminate remaining combined sewer overflows.
- Port Angeles Harbor marine wood waste analysis/characterization and removal/remediation, including the lagoon.
- Establish or reestablish eelgrass beds, including over areas of wood accumulation that have been removed and/or capped with sand.
- Enhance and enlarge Hollywood Beach. The small pond east of the Red Lion motel could be reconnected to the harbor.
- Improve stream/estuarine habitat in the streams entering Port Angeles Harbor (Tumwater and Peabody Creeks), similar to what was recently accomplished on Valley Creek. Actions could include: recontouring to increase the area of shallow water habitat, placement of LWD, planting of native marsh and riparian vegetation, daylighting streams, and identifying and addressing sources of pollution to streams.
- Restoration of Ediz Hook (Phases I and II completed). The placement of LWD or alternative bioengineering enhancements along the north shore of Ediz Hook may help retain sediment from the longshore drift following Elwha Dam removal.
- DNR harbor habitat restoration. A partial removal of creosote pilings was conducted in 2008; additional creosote recovery needs should be prioritized and implemented. Ediz Hook nearshore restoration ongoing. Project underway.
- Rayonier Mill Cleanup and Restoration: Contaminant cleanup. Planning stage.
- Evaluate the feasibility of re-routing the industrial water supply line and removing the bank armoring. Bluff erosion is a key component to providing sediment to the Hook, and should be allowed to occur at a relatively natural pace. However, development at the top of the bluff makes it exceptionally difficult to remove armoring and allow natural erosion to occur.
- Explore opportunities to further limit influence of landfill on shoreline area, and continue to remove existing landfill debris that is embedded in the beach and upland's abandoned landfill cell.

7.0 STRATEGIES TO ACHIEVE LOCAL RESTORATION GOALS

This section discusses programmatic measures for the City of Port Angeles designed to foster shoreline restoration and achieve a net improvement in shoreline ecological processes, functions, and habitats. The City's SMP represents an important vehicle for

facilitating and encouraging restoration projects and programs that could be led by private and/or non-profit entities, or the City itself. The discussion of restoration mechanisms and strategies below highlights programmatic measures that the City may potentially implement as part of the proposed SMP, as well as parallel activities that would be led by other governmental and non-governmental organizations. A number of these strategies are promoted and supported by the City's Comprehensive Plan (See Section 4.1.1).

7.1 Capital Facilities Program

The City could develop shoreline restoration as a new section of the City's Capital Facilities Program (CFP) to facilitate implementation. Current CFP projects that may be prime candidates for immediate consideration due to interest and potential outside support are listed in Table 7.

7.2 Development Opportunities

When shoreline development occurs, the City has the ability to look for opportunities to conduct restoration in addition to minimum mitigation requirements as part of the SMP. Development may present timing opportunities for restoration that would not otherwise occur and may not be available in the future. Mitigation may also allow for "banking" opportunities. However, banking opportunities should be focused in rural areas outside of the UGA. In certain cases, on-site mitigation opportunities are limited due to building site constraints, limited potential ecological gains, or other site-specific factors. In these instances, the City shoreline administrator could identify an off-site restoration site that could be contributed to in lieu of on-site mitigation.

7.3 Development Incentives

Through the SMP, the City may provide development incentives for restoration, including the reduction or relaxation of standards (e.g., setback reduction incentives) or the waiving of some or all of the development application fees, infrastructure improvement fees, or stormwater fees. This may serve to encourage developers to try to be more imaginative or innovative in their development designs to include more access and preservation.

7.4 Shoreline Restoration Fund

A second possibility is a Shoreline Restoration Fund. A chief limitation to implementing restoration is local funding, which is often required as a match for State and federal grant sources. To foster ecological restoration of the City's shorelines, the City may establish an account that may serve as a source of local match monies for non-profit organizations implementing restoration of the City's shorelines. This fund may be administered by the City shoreline administrator and be supported by a levy on new shoreline development proportional to the size or cost of the new development project.

Monies drawn from the fund would be used as a local match for restoration grant funds, such as the SRFB, Aquatic Lands Enhancement Account (ALEA), or another source.

7.5 Resource Directory

Development of a resource list would be helpful in aiding property owners who want to be involved in restoration. Examples of grant programs that could be included are:

Landowner Incentive Program (LIP): This is a competitive grant process through Washington Department of Fish and Wildlife that provides financial assistance to private individual landowners for the protection, enhancement, or restoration of habitat to benefit species-at-risk on privately owned lands.

Salmon Recovery Funding Board (SRFB) Grant Programs: SRFB administers two grant programs for protection and/or restoration of salmon habitat. Eligible applicants can include municipal subdivisions (cities, towns, and counties, or port, conservation districts, utility, park and recreation, and school districts), tribal governments, state agencies, nonprofit organizations, and private landowners.

7.6 Volunteer Coordination

The City will continue to emphasize and accomplish restoration projects by using community volunteers and coordinate with organizations such as Clallam County Streamkeepers and People for Puget Sound.

7.7 Regional Coordination

The City will continue its association and active involvement with NOPLE, the Elwha Dungeness Planning Unit, and ERN. The City should also look for other opportunities for involvement in regional restoration planning and implementation. In addition to site or reach specific projects, several regional partners have identified program oriented recommendations to improve the water quality and water quantity, as well as habitat in the Port Angeles area. These programs are listed in Table 6, and they offer numerous opportunities to develop or continue regional partnerships.

Table 6. General program recommendations for the restoration, enhancement, and protection of water quality, water quantity, and habitat along the City's shorelines. Recommendations were drawn from WRIA 18, the Strait of Juan de Fuca Ecosystem Recovery Network (ERN), and from the Shoreline Inventory and Analysis report (TWC 2010).

Habitat Function	Program	Source
Water Quantity	Increased setbacks to allow for more natural erosion rates while decreasing threats to structures.	TWC 2010
	Develop an information clearinghouse to facilitate access to monitoring information	WRIA

Habitat Function	Program	Source
	Measure water use	WRIA
	Report and update GIS information on public water systems; work to meet WAC 246-290-100 requirements	WRIA
	Resolve inconsistencies in water rights data	WRIA
	Strive to keep surface water in basins of origin	WRIA
	Follow groundwater withdrawal guidelines in the WRIA 18/West 17 Plan	WRIA
	Develop seawater intrusion policy, plans, and testing	WRIA
	Drill exempt wells only when public alternatives do not exist	WRIA
	Pursue WRIA 18 groundwater modeling and research	WRIA
Water Quality	Complete and implement septic system investigation, operation, and maintenance program	WRIA
	Include remediation and enhancement in animal-keeping pollution control.	WRIA
	Reduce pollutant loadings by protecting and restoring riparian areas, regularly reviewing critical areas regulations, and using biological and innovative stormwater controls.	WRIA
	Clean up industrial sites, collect hazardous waste, review point-source permits and consider NPDES revisions to meet water quality goals.	WRIA
	Implement City NPDES Phase II permit	ERN
	Identify and protect critical aquifer recharges areas; require nitrate reduction where groundwater exceeds 3 mg/L; require and enforce stormwater pre-treatment; encourage well decommissioning	WRIA
	Fish and shellfish monitoring and consumption advisories	ERN
	Enhance conditions for shellfish by removing bacterial pollution sources in the nearshore; implement water cleanup plans/strategies; support PSP State and local monitoring programs	WRIA
	Prioritize water quality monitoring, assessment, and correction actions; implement surface water field monitoring; consider a facility to process organic wastes or a disposal site for “vactor” waste in stormwater	WRIA
Habitat	Develop and implement management of native and wild fish stocks, fish habitat, and hatcheries while instream flow and habitat improvement projects are implemented.	WRIA
	Strive to maintain or restore important fish and wildlife habitats in all management actions	WRIA
	Identify according to habitat importance rivers, riparian corridors, and wetlands	WRIA
	Protect, maintain, enhance, or restore high-functioning streams, riparian areas, floodplains, estuaries, and historical wetlands	WRIA
	Identify, study, and restore degraded river, riparian, and wetland areas	WRIA
	Develop a plan to increase value and make better use of existing water resources	WRIA
	Prepare an annual WRIA 18 habitat restoration and salmon recovery monitoring report	WRIA
	Conduct regular reconnaissance of streams to identify factors that might affect restoration and rehabilitation actions	WRIA
	Continue to update salmon productivity limiting factors information per the WRIA 18 Limiting Factors Analysis	WRIA
	Initiate restoration where there is adequate fish and habitat information;	WRIA

Habitat Function	Program	Source
	update characterization of streams where needed	
	Restore nearshore connections at stream mouths	WRIA
	Monitor flows, pollutant loads, habitat factors, and water use in streams	WRIA
	Identify causes of degradation in urban streams and rehabilitate	WRIA
	Develop approaches to minimize human impacts on streams	WRIA
	Follow wetland mitigation sequencing to avoid impacts	WRIA
	Monitor and assess riparian areas regularly, include marine riparian	WRIA
	Use native plants to restore riparian areas	WRIA
	Integrate riparian management with planning processes and other habitat restoration efforts	WRIA
	Redraw FEMA delineations to reflect actual fluvial geomorphology	WRIA
	Elwha Nearshore Action Plan	ERN

8.0 PROPOSED IMPLEMENTATION TARGETS AND MONITORING METHODS

8.1 Project Evaluation

When a restoration project is proposed for implementation by the City, other agency, or by a private party, the project should be reviewed to assess whether the project's objectives are consistent with those of this Restoration section of the SMP and, if applicable, whether the project warrants funding and implementation above other candidate restoration projects. If the project is fully funded and applicable permitting is in process then this added review will not be necessary. (It is recognized that, due to funding sources or other constraints, the range of any individual project may be narrow.) It is also expected that the list of potential projects may change over time, that new projects will be identified and existing opportunities will become less relevant as restoration occurs and as other environmental conditions, or our knowledge of them, change.

When reviewing potential restoration projects, priority for allocation of public resources should be accorded to projects that most effectively meet the following criteria:

- Restoration meets the goals and objectives for shoreline restoration.
- Restoration that addresses underlying ecological processes is of a higher priority than restoration of functions.
- Restoration avoids residual impacts to other functions or processes.
- Projects address a known degraded condition.

- Conditions that are progressively worsening are of greater priority.
- Restoration has a high benefit to cost ratio.
- Restoration has a high probability of success.
- Restoration is feasible, such as being located on and accessed by public property or private property that is cooperatively available for restoration.
- There is public support for the project.
- The project is supported by and consistent with other restoration plans.
- Restoration is consistent with the goals of the Shoreline Management Act (e.g., accommodates water dependent uses) and Growth Management Act.

The City should consider developing a project "score card" as a tool to evaluate and prioritize the implementation of unfunded projects consistent with these criteria.

8.2 Monitoring and Adaptive Management

In addition to project monitoring required for individual restoration and mitigation projects, the City should conduct system-wide monitoring of shoreline conditions and development activity, to the degree practical, recognizing that individual project monitoring does not provide an assessment of overall shoreline ecological health. The following three-pronged approach is suggested:

1. Track information using the City's GIS and permit system as activities occur (development, conservation, restoration and mitigation), such as:

    a. New shoreline development

    b. Shoreline variances and the nature of the variance

    c. Compliance issues, particularly repeated violations

    d. New impervious surface areas or replacement of impervious surfaces with pervious alternatives

    e. Number and type of pilings

    f. Removal of fill

    g. Vegetation retention/loss

    h. Bulkheads/armoring

    The City may require project proponents to monitor as part of project mitigation, which may be incorporated into this process. Regardless, as development and restoration activities occur in the shoreline area, the City should seek to monitor shoreline conditions to determine whether both project specific and SMP overall goals are being achieved.

2. Periodically review and provide input to the regional ongoing monitoring programs, such as DNR monitoring, Puget Sound Ambient Monitoring Program, and additional information provided by local organizations (e.g., Streamkeepers) to identify any major environmental changes that might occur.

3. Re-review status of environmental processes and functions at the time of periodic SMP updates to, at a minimum, validate the effectiveness of the SMP. Re-review should consider what restoration activities actually occurred compared to stated goals, objectives and priorities, and whether restoration projects resulted in a net improvement of shoreline resources.

   Under the Shoreline Management Act, the SMP is required to result in no net loss of shoreline ecological functions. If this standard is found to not be met at the time of review, Port Angeles will be required to take corrective actions. The goal for restoration is to achieve a net improvement. The cumulative effect of restoration over time between reviews should be evaluated along with an assessment of impacts of development that is not fully mitigated to determine effectiveness at achieving a net improvement to shoreline ecological functions.

   Evaluation of shoreline conditions, permit activity, GIS data, and policy and regulatory effectiveness should occur at varying levels of detail consistent with the Comprehensive Plan update cycle. A complete reassessment of conditions, policies and regulations should be considered every seven years. To conduct a valid reassessment of the shoreline conditions every seven years, it is necessary to monitor, record, and maintain key environmental metrics to allow a comparison with baseline conditions. As monitoring occurs, the City should reassess environmental conditions and restoration objectives. Those ecological processes and functions that are found to be worsening may need to become elevated in priority to prevent loss of critical resources. Alternatively, successful restoration may reduce the importance of some restoration objectives in the future.

8.3 Reporting

This document includes summaries of opportunities and projects to restore shoreline conditions based upon a detailed inventory and analysis of shoreline conditions and information gathered from multiple sources. Nonetheless, exhaustive scientific information about shoreline conditions and restoration options is cost prohibitive at this stage. Additionally, restoration is at times experimental. Monitoring must be an aspect of all restoration projects. Information from monitoring studies will help demonstrate what restoration is most successful. Generally, conservation of existing natural areas is the least likely to result in failure. Alternatively, enhancement (as opposed to complete restoration of functions), has the highest degree of uncertainty.

This Restoration Plan does not provide a comprehensive scientific index of restoration opportunities that allows the City to objectively compare opportunities against each other. If funding was available, restoration opportunities could be ranked by which opportunities are expected to have the highest rates of success, which address the most pressing needs, and other factors. Funding could also support a long-term monitoring program that evaluates restoration over the life of the SMP (as opposed to independent monitoring for each project).

City planning staff is encouraged to track all land use and development activity, including exemptions, within shoreline jurisdiction, and may incorporate actions and programs of the other departments as well. A report may be assembled that provides basic project information, including location, permit type issued, project description, impacts, mitigation (if any), and monitoring outcomes as appropriate. Examples of data categories might include square feet of non-native vegetation removed, square feet of native vegetation planted or maintained, reductions in chemical usage to maintain turf, linear feet of eroding stream bank stabilized through plantings, or linear feet of shoreline armoring removed. The report would also outline implementation of various programs and restoration actions (by the City or other groups) that relate to watershed health.

The staff report may be assembled to coincide with Comprehensive Plan updates and may be used, in light of the goals and objectives of the Shoreline Master Program, to determine whether implementation of the SMP is meeting the basic goal of no net loss of ecological functions relative to the baseline condition established in the Inventory and Analysis Report. In the long term, the City should be able to demonstrate a net improvement in the City of Port Angeles' shoreline environment.

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