

UNIVERSITY PLACE SHORELINE MASTER PROGRAM UPDATE

Cumulative Impact Analysis and No Net Loss Report

Ecology Grant #G1000034
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Chapter 1 Introduction

1.1 Background and Purpose

The City of University Place (City) is conducting a comprehensive Shoreline Master Program (SMP) update with the assistance of a grant administered by the Washington State Department of Ecology (Ecology) (SMA Grant No. G1000034). According to Substitute Senate Bill (SSB) 6012, passed by the 2003 Washington State Legislature, cities and counties are required to update their SMPs consistent with the state Shoreline Management Act (SMA), Revised Code of Washington (RCW) 90.58 and its implementing guidelines, Washington Administrative Code (WAC) 173-26.

University Place City Council has recently reviewed its updated SMP. They considered the Planning Commission Recommended Draft SMP (University Place Planning and Development Services, dated June 19, 2013). The City Council approved the updated SMP on October 21, 2013, without further changes. Along with the SMP (to be codified as University Place Municipal Code [UPMC] Title 18), the locally approved update includes amendments to Zoning regulations (UPMC Title 19), Critical Areas regulations (UPMC Title 17) and the Comprehensive Plan (land use element and shoreline element). A final step of the SMP update process is to evaluate the locally approved program in light of the requirements of the 2003 shoreline guidelines for cumulative impacts.

The purpose of this report is to evaluate the “cumulative impacts” of future development and to verify that the policies and regulations included in the City’s SMP are adequate to achieve “no net loss” of shoreline ecological functions. The SMA requires the City to evaluate cumulative impacts of “reasonably foreseeable future development” throughout shoreline jurisdiction with the following considerations:

- (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 (WAC 173-26-186.8(d)).*

In addition, the cumulative impact analysis should address:

... the effect on the ecological functions of the shoreline that are caused by unregulated activities, development and uses exempt from permitting, effects such as the incremental impact of residential bulkheads, residential piers, or runoff from newly developed properties. Accordingly, particular attention should be paid to policies and regulations that address platting or subdividing of property, laying of utilities, and mapping of streets that establish a pattern for future development that is to be regulated by the master program (WAC 173-26-201(3)(d)(iii)).

The Shoreline Guidelines establish the standard of no net loss of shoreline ecological functions as one of the central tenets of shoreline management.

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 among development opportunities (WAC 173-26-186.8(d)).

No net loss assumes that some impacts may occur but that adequate measures are in place within the overall shoreline master program to offset them such that the post development conditions are no worse overall than pre-development conditions. The challenge is in maintaining shoreline functions while allowing appropriate new development. Success requires due diligence to ensure that new developments are located and designed to avoid and minimize impacts to shoreline ecological functions.

This report assesses the cumulative impacts that would result from development and activities in the shoreline over time under the provisions contained in the locally approved SMP (October 2013). This report also describes how the City will achieve no net loss through the adoption and implementation of the Draft SMP. This report was completed in accordance with Tasks 3.6 and 4.3 of the City's grant agreement with Ecology.

1.2 Planning Versus Project Level Assessments

According to the SMA guidelines, the assessment of cumulative impacts occurs at both the planning stage (when the master program is being developed) and at the site development stage. The guidelines suggest that impacts of commonly occurring and planned development should be assessed at the planning stage "without reliance on an individualized cumulative impacts analysis." In contrast, developments that have unforeseeable or uncommon impacts, which cannot be reasonably identified at the time of SMP development, should be evaluated via the permitting processes to ensure that all impacts are addressed and that there is no overall loss of ecological function after mitigation (WAC 173-26-201(3)(d)(iii)). Therefore, this report provides a planning level assessment of the potential cumulative impacts that would result from use and development within the shoreline jurisdiction into the foreseeable future.

1.3 Area of Shoreline Analysis

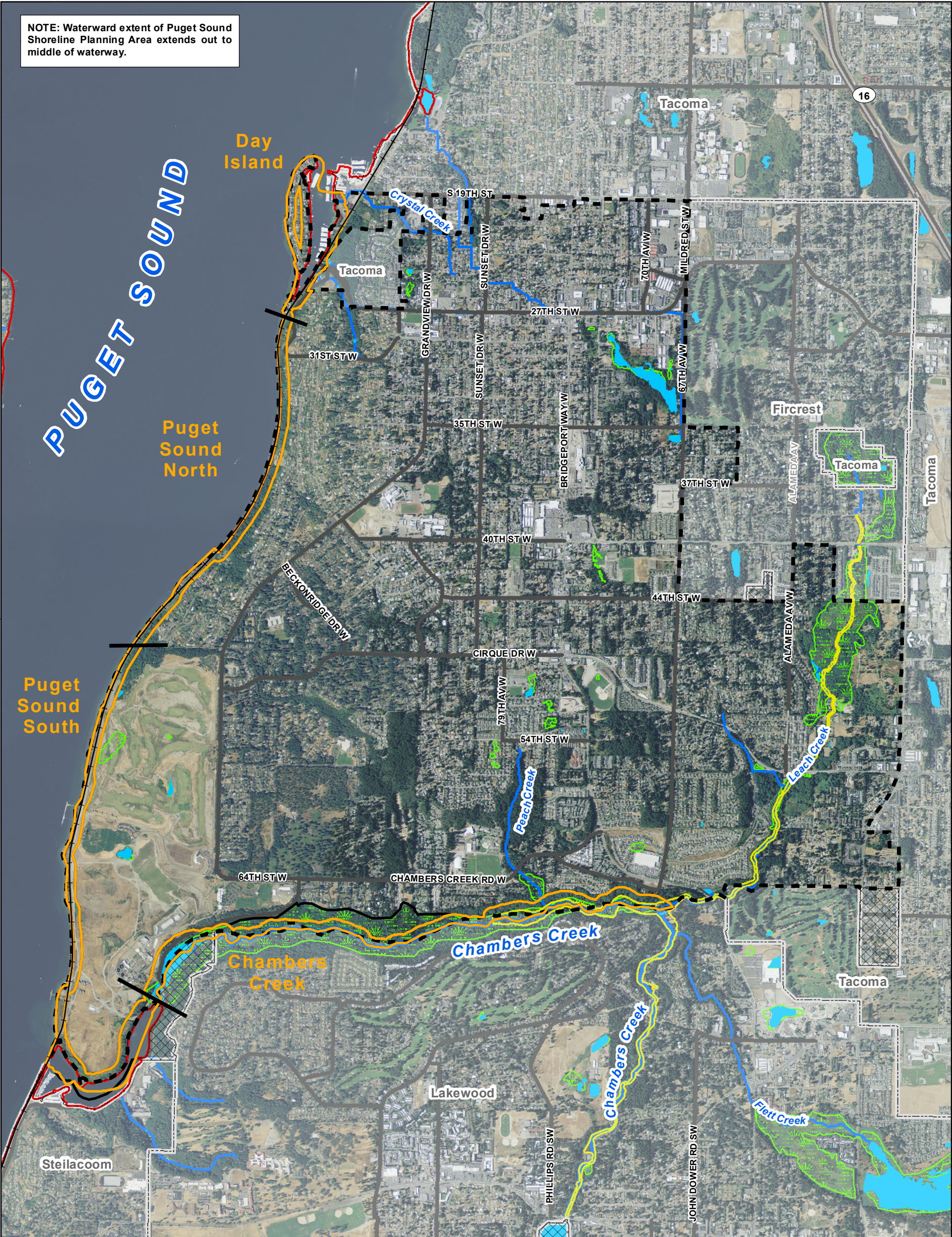
This analysis is limited to the cumulative impacts of reasonably foreseeable future development in areas subject to SMA jurisdiction. These are areas that meet the criteria for 'shorelines of the state' and associated shorelands as described in the Inventory and Characterization Report (ICR) (ESA Adolfson, 2011). In University Place, this includes Chambers Creek along the southern City limits, and the Puget Sound shoreline extending from the City limits along the northern shoreline of Chambers Bay north to the City border with Tacoma. In general, shoreline jurisdiction for these shorelines includes:

- Submerged lands waterward of the ordinary high water mark (OHWM) on Puget Sound and Chambers Bay within City jurisdiction;
- Lands within 200 feet of the OHWM of the Puget Sound shoreline within the City's municipal limits;
- All areas of the 100-year floodplains currently mapped by the Federal Emergency Management Agency (FEMA) that are associated with the above areas; and

- All mapped wetlands that lie adjacent and contiguous to the areas above (i.e., associated wetlands).

This area covers a total of approximately 8.6 linear miles within the City limits (5.9 miles of marine shoreline, 2.7 miles of the Chambers Creek shoreline) (Figure 1-1). The shoreline planning area (SPA) encompasses approximately 314 acres landward of the OHWM. The SPA extends out to the center of Puget Sound and therefore includes several hundred additional acres waterward of the OHWM (tidal and subtidal areas). For the purposes of the Inventory and Characterization Report (ESA Adolfson, 2011), the City's shoreline planning area was organized into four distinct segments or "reaches":

- Day Island reach (64.9 acres including lagoon and landward of OHWM, 1.7 miles),
- Puget Sound North reach (40.7 acres landward of OHWM, 1.6 miles),
- Puget Sound South reach (86.9 acres landward of OHWM, 2.6 miles), and
- Chambers Creek reach (121.21 acres landward of OHWM, 2.7 miles).



SHORELINE MASTER PROGRAM UPDATE: CITY OF UNIVERSITY PLACE

Figure 1-1: Shoreline Planning Areas

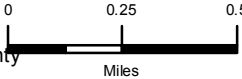


SMA Grant No. G1000034

Legend

- Shoreline Planning Area (Including ELW)
- Reach Breaks
- Marine Shoreline
- Streams
- Railroads
- Major Roads

- Waterbodies
- Wetlands
- Floodway
- Unincorporated Pierce County
- City Limits (Other)



SOURCE: ESA Adolfson, 2009;
FEMA, 2007; Pierce County, 2007, 2009;
NAIP (USDA), 2009 (Aerial) .

G:\NATURAL SCIENCES\2009\209468_UniversityPlaceSMP\05_Graphics_GIS_Modeling\GISMxd\UP Map Folio\Shoreline_Planning_Area.mxd (ATR; 6/29/2011)

This map depicts the approximate location and extent of areas subject to the SMP. The actual extent of shoreline jurisdiction requires a site-specific evaluation to identify the ordinary high water line and any associated wetlands. Wetland locations are approximate and based on existing County inventory; additional wetlands may be present that are not shown on the map and some of the areas shown as wetland may not meet the wetland criteria. This map makes no claim as to whether wetlands are associated with the shoreline or not.

Reach areas and breaks were based broadly on physical distinctions along the shoreline, the level of ecological functions provided by each segment, as well as existing land uses and zoning. The Day Island reach is assessed separately due to the physically distinct separation of the island area from the rest of the shoreline, as well as the unique ecological environment and aquatic / marina uses between the island and the adjacent mainland.

The remaining length of the City's marine shoreline is divided into two segments, with land use being the primary distinction between the Puget Sound North reach (residential) and Puget Sound South reach (publicly owned Chambers Creek Properties facilities and open space). The Burlington Northern Santa Fe (BNSF) Railroad corridor generally backs the beaches along both shorelines; however, existing uses and associated riparian cover landward of the railroad (and, in some places on the waterward side) vary between the two reaches. The Puget Sound South reach also extends along the northern shoreline of Chambers Bay. The Chambers Creek shoreline was characterized as one reach due to the common physical, biological, and land use characteristics throughout.

Chapter 2 Current Shoreline Condition

The Shoreline Inventory and Characterization Report (ICR) (ESA Adolfson, 2011) identifies existing conditions and evaluates the ecological functions and processes in the City's shoreline jurisdiction. Conditions identified in the ICR are summarized in this chapter. No significant changes to the shoreline have occurred since the ICR was finalized.

2.1 Watershed and WRIA Context

This section summarizes general ecological conditions and key ecosystem processes that occur within the watershed surrounding University Place, within the Chambers-Clover Watershed. Ecosystem-wide conditions are detailed in Chapter 3 of the ICR. Although the focus of the SMP update, in general, is on conditions within the shoreline planning area of the City, the state shoreline guidelines (WAC 173-26-201) require local jurisdictions to look beyond the SMA jurisdictional boundaries to "assess the ecosystem-wide processes to determine their relationship to ecological functions present within the jurisdiction."

The City of University Place lies entirely within the Chambers Creek – Clover Creek Watershed, Water Resource Inventory Area (WRIA) 12. WRIA 12 encompasses approximately 115,000 acres within the Puget Lowland ecoregion of Pierce County, Washington (Ecology, 2006). Elevations throughout the basin are generally at or within several hundred feet of sea level. Streams in WRIA 12 are low gradient, with underlying topography consisting of rolling glacial outwash and till plains. Sub-basins within WRIA 12 include Clover Creek/Steilacoom, American Lake, Chambers Bay, and Tacoma West. Spanaway and American Lakes are the major lakes within the basin.

The nearshore portion of WRIA 12 extends from approximately the Thea Foss waterway, around Point Defiance, south to the edge of the Nisqually Delta. This region is characterized by high-energy currents through the relatively deep and narrow passes and is somewhat distinct from the rest of the Pierce County nearshore as this area is part of the Central Puget Sound Basin. Although the shoreline reach from the Nisqually Delta to Point Defiance is highly urbanized and constrained by the presence of the BNSF Railroad line along the shore, this area does contain several small pocket estuaries. These estuaries provide some juvenile salmonid support and water quality functions. Partial constrictions from roads, bridges, and fill in tidal wetlands all affect these pocket estuaries to some extent (Redman et al., 2005).

Land use and land cover throughout most of WRIA 12 is highly modified with human development and use activities. Common land uses include urbanized areas, moderate density residential, and open space areas within the lower part of WRIA 12, as well as rural residential and agricultural land uses in the upper watershed (see ICR Maps 9 and 10 for land use patterns within University Place). The presence of vast forest and mineral resources within the City and surrounding area resulted in early shoreline modifications (large piers and barge facilities) and other significant changes in land use and land cover over the past 150 years. These changes are primarily the result of the conversion of forest and prairie to either agricultural uses (primarily in the upper watershed, to the east of the City) or urban lands. This shift in land use and forested cover included the development of transportation (railways and roadways) and utility infrastructure that extends throughout the City and WRIA 12.

2.2 Nearshore Physical Conditions

2.2.1. Day Island

The Day Island reach is at the northwestern corner of the City of University Place, and totals 64.9 acres. Day Island is actually no longer disconnected from the adjacent mainland, with a narrow strip of land linking the south end of the 'island' (see Photo 4-1 and oblique shoreline photos in ICR). Current land use within the Day Island reach is mainly moderate to low density residential (throughout Day Island). Marina shoreline uses are present at the northeast end of the island and along the entire western facing inner (mainland) shoreline.

This reach is characterized by a low, highly modified bank fronted by a narrow mix of sand and gravel beach. The modified bank consists of bulkheads fronting residential properties, which extend up both the east and west shorelines of Day Island, and bulkheads associated with the marina properties. Numerous residential piers and marina piers extend from the Day Island reach shorelines. The intertidal and subtidal areas likely provide habitat for numerous species of shellfish and fishes. Nearshore habitat is likely used by forage fish, rockfish, and other nearshore fishes, although use by all of these species is not mapped along the reach. Chinook salmon and bull trout, both federally listed threatened fish species, may occur in the offshore waters. The shoreline of the Day Island reach is 90 to 100% modified along all northern and western facing segments, and 21 to 59% modified along a 1,600-foot segment of east facing shoreline on Day Island.

The geomorphic shoretypes encompassed within the Day Island SPA include a barrier beach waterward of a barrier lagoon embayment, both of which have incurred considerable modification (see Appendix B for photos of the Day Island shoreline). The entire west facing shore of the barrier beach is armored and numerous groins visibly impair transport of littoral sediment. The sheltered lagoon shore located landward of the barrier includes a small stream known to support coastal cutthroat trout (*Oncorhynchus mykiss*). The western shore of the embayment has slightly less armoring but is heavily modified by extensive filling and dredging and many overwater structures. The beaches within the lagoon are narrow and generally composed of sand and fine sediment.

2.2.2. Puget Sound North

The Puget Sound North reach extends from the south end of Day Island to the north end of the Chambers Bay Golf Course, totaling 40.7 acres (see Photo 4-2, below, and oblique shoreline photos in the ICR). The Puget Sound North reach is generally characterized as a narrow sand and gravel beach fronting the BNSF Railroad right-of-way. In the southern half of the reach, the Sunset Beach residential community stretches along the shoreline to the west of the railroad for approximately 1,500 feet. Although single-family residential zoning and Comprehensive Plan designations extend throughout the Puget Sound North area, outside of Sunset Beach the existing land uses are generally characterized by the railroad corridor (ranging from 30 to 60 feet wide) and the undeveloped, steep slope open spaces to the east of the corridor. These undeveloped, forested steep slopes are largely disconnected from the shoreline by the railroad. The modified bank consists of riprap armoring for the railroad berm, as well as a series of bulkheads fronting residential properties along Sunset Beach.

The intertidal and subtidal areas likely provide habitat for numerous species of shellfish and fishes, including documented surf smelt spawning habitat. Nearshore habitat is also likely used by sand lance, rockfish, and other nearshore fishes, although use by all of these species has not been documented along the reach. Chinook salmon and bull trout, both federally listed threatened fish species, may occur in the offshore waters. The shoreline of the Puget Sound North reach is 90 to 100% modified.

The Puget Sound North SPA is composed mostly of bluff and steep slope backed beaches that historically supplied sediment to the nearshore (see oblique photos of the shoreline area in the ICR). The entire shore of the reach is armored by either the BNSF revetment or residential shoreline armoring structures. Therefore, sediment derived from the erosive bluffs no longer feeds the local beaches. Landslides continue to occur within this reach of shore; however, BNSF typically removes the colluvium from the site to enable rail operation. A narrow sand and gravel beach is located waterward of the rail revetment. Additional armoring material that has fallen from the rail revetment buries the upper beach in several locations.

A single barrier beach is found in the southern portion of the reach along Sunset Beach. This area is entirely armored and several groins, docks and other overwater structures also occur. Many of these structures infringe on the beach, resulting in the direct burial of documented sand lance spawning habitat. The deposition and transport of sediment are likely also degraded as a result of these structures. Minimal upper intertidal or backshore habitats are found in this reach due to the abundance of infringing shore modifications.

2.2.3. Puget Sound South (including Chambers Bay)

The Puget Sound South reach extends from the north end of the Chambers Bay Golf Course to the dam and spillway at the head of Chambers Bay (Maps 2 and 12 in the ICR). The shoreline area includes 86.9 acres. The Puget Sound South reach includes the shoreline along Puget Sound fronting the Pierce County owned and operated Chambers Creek Properties, and the northern shoreline of Chambers Bay (Photos 4-3 and 4-4 in the ICR). Bluff backed beaches are the predominant shoreform in this reach outside of the Chambers Bay estuary. Bluff areas throughout the backshore have been highly modified, both by the BNSF Railroad corridor, which parallels the beach, and a long history of intensive land uses, including gravel mining, throughout the Chambers Creek Properties. Current land uses behind the railroad corridor include the golf course, other park uses and open space within the Chambers Creek Properties, and the Chambers Creek Regional Wastewater Treatment Plant. Treated wastewater discharges offshore from the shoreline to Puget Sound. Two large piers remain on the Puget Sound shoreline, both related to historic gravel operations.

The intertidal and subtidal areas likely provide habitat for numerous species of shellfish and fishes, including documented surf smelt spawning habitat. Nearshore habitat is also likely used by sand lance, rockfish, and other nearshore fishes, although use by these species is not mapped along the reach. Chinook salmon, a federally listed threatened fish species, as well as other salmonid species are likely to use the offshore waters for foraging. The shoreline of the Puget Sound South reach is significantly modified by riprap associated with the railroad through portions of the reach, although there are areas of functioning bluffs. The Chambers Bay shoreline is minimally modified.

Bluff backed beaches are the predominant shoreform in Puget Sound South SPA outside of the Chambers Bay barrier estuary. Many of these bluffs were historic feeder bluffs that supplied sediment to miles of down-drift shore to the north. These bluffs are no longer able to deliver sediment to the beach due to the BNSF rail revetment. In addition, historic uses of the site (open gravel mining) greatly modified the overall topography of the site and the bluff areas (Photo 4-5 and shoreline oblique photos in the ICR).

Several large fill areas have also contributed to changes to the historic character of this reach. Prior to the construction of the BNSF bridge and causeway, the tide channel that marks the entrance to Chambers Bay was located further landward and was associated with a single barrier that extended northwest across the embayment from the southern shore. The sheltered conditions created by the causeway reduced wave exposure and wave induced erosion along the northern shore, which altered local littoral sediment transport patterns and sediment supply. Further north, fill material likely derived from the gravel quarry has contributed to the formation of two artificial shoreforms that were historically bluff backed beaches prior to the placement of fill (Simenstad et al., 2009). These fill areas have largely “naturalized” and in many cases provide some of the only backshore or marine riparian habitat in this highly altered reach of shore.

Sand lance spawning has been documented and several salmonids are known to utilize the Chambers Bay nearshore for migration including coastal cutthroat, Chinook (*Oncorhynchus tshawytscha*), chum (*Oncorhynchus keta*) and steelhead (*Oncorhynchus mykiss*). Coho are also known to spawn within the reach (*Oncorhynchus kisutch*).

2.2.4. Chambers Creek

The Chambers Creek reach within the City of University Place extends along the right (northern) bank of the lower 2.65 miles of the stream. Chambers Creek is surrounded mainly by undeveloped riparian forest, which is protected as the Chambers Creek Canyon Park. This park also extends into Lakewood along the stream's left bank. Landward of the park within University Place existing uses are primarily low to moderate density single-family residential development. A dam and spillway are located at the mouth of Chambers Creek, where the stream flows into Chambers Bay.

There is extensive salmonid use of lower Chambers Creek, although anadromous fish production in the Chambers-Clover Creek Watershed is relatively low and has been below historic levels for a number of years. Several priority habitat areas are associated with Chambers Creek. These habitats include urban natural open space in the form of candidate open space and Puyallup steep slopes; a large waterfowl concentration area; Chambers Creek riparian corridor habitat; an open lagoon; and estuaries associated with the Chambers Creek confluence. A bald eagle nest has been recorded approximately 500 feet southeast of the westernmost segment of Chambers Creek.

Chambers Creek is formed from the outlet of Steilacoom Lake. The creek flows 4.0 miles north and west down a narrow ravine where it is joined by Flett and Leach Creeks, before discharging to Puget Sound through Chambers Bay (Ecology, 1995). Clover Creek is the primary stream within the upper portion of WRIA 12, and drains to Steilacoom Lake. In addition to the upper basin flows from Clover Creek via the lake, Flett and Leach Creeks are the two primary tributaries of Chambers Creek. Leach Creek drains the southeast portion of the City and flows generally from north to south from a large headwater wetland complex. An additional primary tributary that flows through University Place to Chambers Creek is Peach

Creek, converging with Chambers Creek approximately 0.5 miles downstream of the Leach Creek confluence. The full length of Chambers Creek is 4 miles, with the lower 2.65 miles flowing along the south boundary of the City of University Place.

Most of the Chambers Creek SPA consists of wetlands, with hillside seeps and riverine wetlands common within the ravine, based on GIS data (ESA Adolfson, 2008). Aerial photos and National Wetland Inventory data indicate significant areas of riverine wetland surrounding and immediately upstream of the Chambers Bay dam impoundment.

2.3 Habitat and Species Use

2.3.1. Day Island

The City's critical areas regulations identify the following areas as Fish and Wildlife Habitat Areas (FWHAs) in the Day Island reach:

- Areas which have a primary association with federally listed endangered, threatened or candidate species and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term; and
- Areas that have been documented by the Washington Department of Fish and Wildlife (WDFW) as habitat for state listed endangered or threatened species; and
- Streams identified as such by the City, including Crystal Creek and Day Creek within the reach area.

In addition to Crystal and Day Creeks, all Puget Sound waters are regulated as FWHAs by the City (UPMC 17.25). Standards require completion of a Habitat Assessment to identify specific habitats; when FWHAs occur in the area of a proposed project, a Habitat Management Plan is required by UPMC 17.25.025. Standards also specifically call out "Habitat Protection for the Puget Sound", requiring use of critical areas standards and other regulations (including the SMP and other City, state, and federal environmental protections) to protect Puget Sound habitat (UPMC 17.25.035).

WDFW maintains priority habitats and species information for Washington State, including the status of species as threatened or endangered. Priority habitats identified on WDFW maps along the Day Island reach marine shorelines include lagoons and estuaries¹ (WDFW, 2009a). Although the Day Island Lagoon is highly modified by adjacent shoreland and overwater development, the area still provides some habitat for waterfowl, shorebirds, fish, and other aquatic organisms (AAI, 1999).

According to WDFW priority habitats and species data (WDFW, 2009a), the vicinity of Day Island is associated with multiple priority habitats, including:

¹ Lagoons and estuaries are tidal habitats in which marine water is at least occasionally diluted by freshwater runoff from the land. Within lagoons, salinity may be periodically increased above that of the open ocean by evaporation. These areas are usually semi-enclosed by land but maintain free flowing, partly obstructed, or sporadic access to open marine waters.

- Urban natural open space, including the University Place shoreline to the south (detailed in the Puget Sound North reach inventory);
- Lagoons and Estuaries; and
- Bald eagle nesting in vicinity of the Day Island reach (on Fox Island).

Based on WDFW streamnet data (WDFW, 2009b) and the 1998 City Biological Resources Inventory (AAI, 1999), the Day Island SPA supports the following fish species and habitats:

- Potential forage fish spawning habitat;
- Critical habitat for federally listed salmonids, including Chinook and coho;
- Demersal groundfish / bottom-dwelling fish habitat;
- Pelagic groundfish; and
- Sand lance larvae.

Marine Intertidal and Subtidal Habitats

Within the Day Island SPA, the dominant intertidal habitats include backshore lagoons (in the area between Day Island and the mainland), sand and gravel beaches, and kelp beds. The nearshore areas of Puget Sound typically consist of narrow intertidal and shallow subtidal margins along the deep waters of the Sound. These margins are important migratory routes for salmon, waterfowl, and shorebirds, and serve as rearing areas for juvenile to adult salmonids and their prey, as spawning areas for forage fish, and as habitat for intertidal and subtidal shellfish and algae production.

Eelgrass beds are documented with the Tacoma shoreline area immediately north of Day Island, and patchy areas of eelgrass are expected to occur along the Day Island shoreline, especially near the mouth of Crystal Creek. Eelgrass beds are found in shallow subtidal areas and provide feeding and rearing habitat for a large number of marine organisms.

ShoreZone Inventory data from the Washington Department of Natural Resources (WDNR) document continuous kelp or patchy floating kelp (bull kelp, *Nereocystis*) and non-floating kelp (*Laminaria*) in portions of the SPA (WDNR, 2001). Kelp provides habitat for many fish species, including rockfish and salmonids, provides potential spawning substrate for herring, and buffers the shoreline from waves and currents, among other functions.

The Titlow Beach Marine Preserve (Marine Protected Area) is located immediately north of Day Island along Tacoma's marine shoreline. The reserve was first designated in 1992 to conserve and provide high value intertidal and subtidal habitat to forage fish, groundfish species, shellfish, and salmonids. The reserve is a popular recreational dive location for divers interested in observing marine intertidal and subtidal habitat (Murray and Ferguson, 1998).

2.3.2. Puget Sound North

The City's critical areas regulations identify the following areas as Fish and Wildlife Habitat Areas (FWHAs) in the Puget Sound North reach:

- Areas which have a primary association with federally listed endangered, threatened or candidate species and which, if altered, may reduce the likelihood that the species will maintain and reproduce over the long term; and
- Areas that have been documented by WDFW as habitat for state listed endangered or threatened species; and
- Streams identified as such by the City (none within the Puget Sound North reach).

All Puget Sound waters are regulated as FWHAs by the City (UPMC 17.25) as described above in Section 2.3.1.

WDFW maintains priority habitats and species information for Washington State, including the status of species as threatened or endangered. Priority habitats identified on WDFW maps along the Puget Sound North marine shorelines include urban natural open space (UNOS) and estuarine zones (WDFW, 2009a). UNOS areas may provide habitat for priority species, including breeding and foraging, and may function as a corridor connecting other priority habitats. UNOS areas are also mapped where they are isolated remnants of natural habitats larger than 10 acres and surrounded by urban development. UNOS areas within the Puget Sound North reach include the undeveloped steep slopes between the BNSF Railroad corridor and the residential development at the top of the slopes.

WDFW data (WDFW, 2009a) indicate the Puget Sound North SPA is associated with multiple priority habitats, including:

- Urban natural open space; and
- Bald eagle nesting in vicinity of the Puget Sound North reach (on Fox Island).

According to WDFW streamnet data (WDFW, 2009b) and the 1998 City Biological Resources Inventory (AAI, 1999), the Puget Sound North SPA supports the following fish species and habitats:

- Potential forage fish spawning habitat;
- Critical habitat for federally listed salmonids, including Chinook and coho;
- Demersal groundfish / bottom-dwelling fish habitat;
- Pelagic groundfish; and
- Sand lance larvae.

Marine Intertidal and Subtidal Habitats

Along the Puget Sound North shoreline, the dominant intertidal habitats include sand and gravel beaches, patchy eelgrass beds, and kelp beds. The nearshore areas are typically characterized by narrow intertidal and shallow subtidal margins along the deep waters of the Sound. These margins are important migratory routes for salmon, waterfowl, and shorebirds, and serve as rearing areas for juvenile to adult salmonids and their prey, as spawning areas for forage fish, and support for intertidal and subtidal shellfish and algae production.

Eelgrass beds are mapped as patchy through the northern two-thirds of the Puget Sound North shoreline's subtidal area. Eelgrass beds are found in shallow subtidal areas and provide feeding and rearing habitat for a large number of marine organisms.

The WDNR ShoreZone Inventory data document continuous kelp or patchy floating kelp (bull kelp, *Nereocystis*) and non-floating kelp (*Laminaria*) in portions of the Puget Sound North shoreline (WDNR, 2001). Kelp provides habitat for many fish species, including rockfish and salmonids, provides potential spawning substrate for herring, and buffers the shoreline from waves and currents, among other functions.

2.3.3. Puget Sound South

Puget Sound waters are regulated as FWHAs by the City as described in Section 2.3.1 above. Within the Puget Sound South reach, the dominant intertidal habitats include sand and gravel beaches, patchy eelgrass beds, and patchy kelp beds.

Priority habitats identified on WDFW maps along the Puget Sound South SPA marine shorelines include urban natural open space (UNOS) and estuarine zones (lagoons) (WDFW, 2009a). UNOS areas may provide habitat for priority species, including breeding or foraging, and may function as a corridor connecting other priority habitats. UNOS areas are also mapped where they are isolated remnants of natural habitats larger than 10 acres and surrounded by urban development. UNOS areas within the Puget Sound South reach include the undeveloped steep slopes between the BNSF Railroad corridor and developed areas to the east at the northernmost extent of the reach, as well as open space areas along the Chambers Bay shoreline. . . Lagoons are mapped throughout significant portions of the Chambers Bay shoreline. The area provides significant habitat for waterfowl, shorebirds, fish (including salmonids), and other aquatic organisms (AAI, 1999).

WDFW data (WDFW, 2009a) indicate the Puget Sound South SPA is associated with multiple priority habitats, including:

- Urban natural open space;
- Lagoons; and
- Bald eagle nesting in vicinity of the Puget Sound South reach (on Fox Island).

According to WDFW streamnet data (WDFW, 2009b) and the 1998 City Biological Resources Inventory (AAI, 1999), the Puget Sound South SPA supports the following fish species and habitats:

- Potential forage fish spawning habitat;
- Critical habitat for federally listed salmonids, including Chinook and coho;
- Demersal groundfish / bottom-dwelling fish habitat;
- Pelagic groundfish; and
- Sand lance larvae.

Marine Intertidal and Subtidal Habitats

Within the Puget Sound South SPA, the dominant intertidal habitats include the estuary and intertidal lagoon areas of Chambers Bay, sand and gravel beaches, and kelp beds. The nearshore areas of Puget Sound are characterized by narrow intertidal and shallow subtidal margins along the deep waters of the Sound. These margins are important migratory routes for salmon, waterfowl, and shorebirds, and serve as rearing areas for juvenile to adult salmonids and their prey, as spawning areas for forage fish, and for intertidal and subtidal shellfish and algae production.

Eelgrass beds are not reported or inventoried within the Puget Sound South shoreline subtidal area, but scattered patches of eelgrass may occur. Eelgrass beds are found in shallow subtidal areas and provide feeding and rearing habitat for a large number of marine organisms.

WDNR ShoreZone Inventory data document continuous kelp or patchy floating kelp (bull kelp, *Nereocystis*) and non-floating kelp (*Laminaria*) in portions of the reach's shoreline area (WDNR, 2001). Kelp provides habitat for many fish species, including rockfish and salmonids, provides potential spawning substrate for herring, and buffers the shoreline from waves and currents, among other functions.

2.3.4. Chambers Creek

The City's critical areas regulations identify Chambers Creek as a Fish and Wildlife Habitat Area (FWHA).

Chambers Creek is also associated with several WDFW priority species and habitats. Fish species distribution maps (WDFW, 2009b) indicate that fall Chinook are present in a segment of the stream adjacent to Puget Sound, spawning habitat for coho is present throughout the creek, and presence of summer chum and winter steelhead is documented throughout the creek.

Critical habitat for Puget Sound steelhead has not yet been designated. The Puget Sound/Strait of Georgia coho salmon is a species of concern, and therefore, does not have critical habitat designated. Puget Sound Chinook salmon and the summer chum do not have critical habitat designated within Chambers Creek.

Several priority habitat areas are associated with Chambers Creek. These habitats include urban natural open space; a large waterfowl concentration area; Chambers Creek riparian corridor habitat; an open lagoon; and estuaries associated with the Chambers Creek confluence with Puget Sound. A bald eagle nest has been recorded approximately 500 feet southeast of the westernmost segment of Chambers Creek.

According to WDFW Streamnet data (WDFW, 2009b) Chambers Creek supports the following fish species:

- Cutthroat trout;
- Fall Chinook;
- Summer chum;
- Winter steelhead; and
- Coho.

Anadromous fish production in the Chambers-Clover Creek Watershed is relatively low and has been below historic levels for a number of years. Many factors contribute to these low levels, including seasonal flooding, low summer flows, unstable streambeds, physical barriers, poor water quality, and spawning habitat destruction (Ecology, 1995).

Chinook within the Chambers-Clover Creek Watershed had a historic average abundance of 2,100. Today WDFW operates a fish ladder and trap at the head of the tidewater to prevent Chinook passage upstream. Coho within the Chambers-Clover Creek Watershed had a historic average abundance of 12,200, which has declined to a current average abundance of 700 (Pierce County, 2005c).

Adult salmonids migrate upstream through the Chambers Creek estuary throughout the year. Pacific salmon species (e.g., Chinook, chum, and coho) migrate upstream during late summer, fall, and early winter, while steelhead trout migrate in both winter and summer runs (Ecology, 1995). Migrating salmon aggregate near the mouth of Chambers Creek during July and August before migrating during the months of September through January (Ecology, 1995).

2.4 Land Use and Public Access

Current land uses within the City's marine shoreline areas are primarily characterized by the BNSF Railroad right-of-way (ROW) fronting Puget Sound, and residential development on Day Island. The shoreline areas of Chambers Bay and Chambers Creek have less development. Portions of Chambers Creek have wide, relatively undisturbed riparian corridors along both sides of the stream. Additional significant uses include public recreation (a public access bridge on Chambers Creek Properties, and access to Chambers Creek east of the dam) and limited areas of shoreline-related commercial properties. Single-family residential uses extend into the shoreline area landward of the BNSF Railroad ROW.

The BNSF Railroad is one of the predominant uses along the City's Puget Sound marine shoreline. Shoreline modification (riprap) extends along the waterward edge of the improved ROW throughout most of the jurisdiction; the double-track railroad corridor ranges from 30 to 60 feet wide. Between BNSF-owned properties within the shoreline area and the railroad ROW, approximately 29% of the City's marine shoreline area is controlled by the BNSF Railroad (Figure 2-1). The BNSF Railroad corridor is a regional and national freight and transportation corridor. Continued operation and maintenance of the railroad corridor is anticipated indefinitely.

Public ROW and utilities (32%) and residential use (18%) are also significant uses within the marine shoreline area. Public ROWs are primarily improved roadways; however, several unimproved ROWs

extend into shoreline jurisdiction (primarily running perpendicular to the shoreline through vegetated areas along the BNSF Railroad). Parks and open space occupy approximately 8%, and marinas 9%, of the marine shoreline area.

Approximately 89% of the area within the City's freshwater shoreline area (Chambers Creek) is publicly owned. Current land uses are primarily open space and park land owned by the City or Pierce County and public ROW (Figure 2-2). Existing residential use occupies 6% of the freshwater shoreline area. Land use and public access for each of the reaches described in the ICR are summarized below.

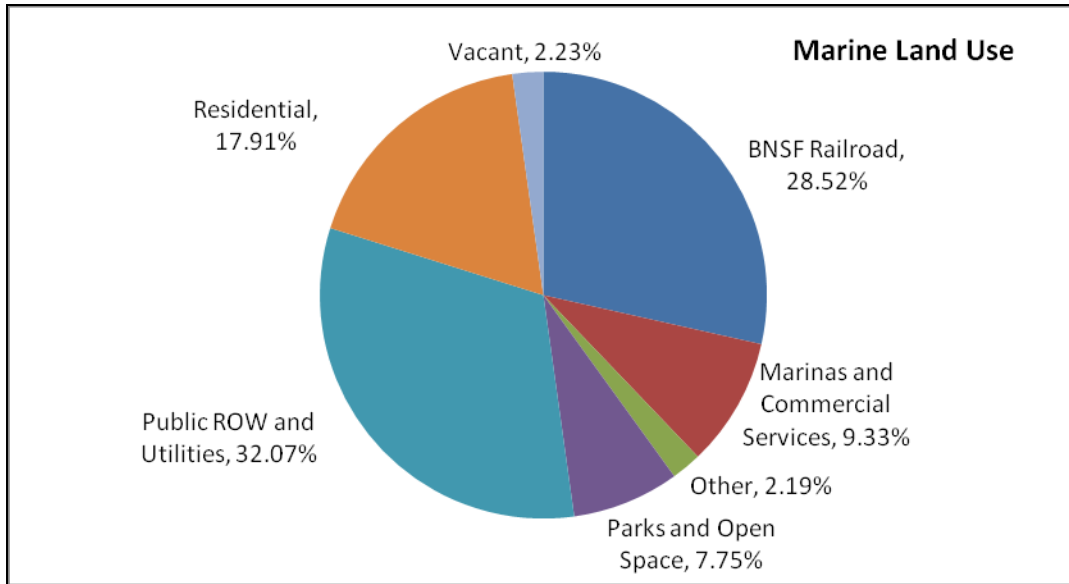


Figure 2-1. Predominant Uses within the University Place Marine Shoreline Area

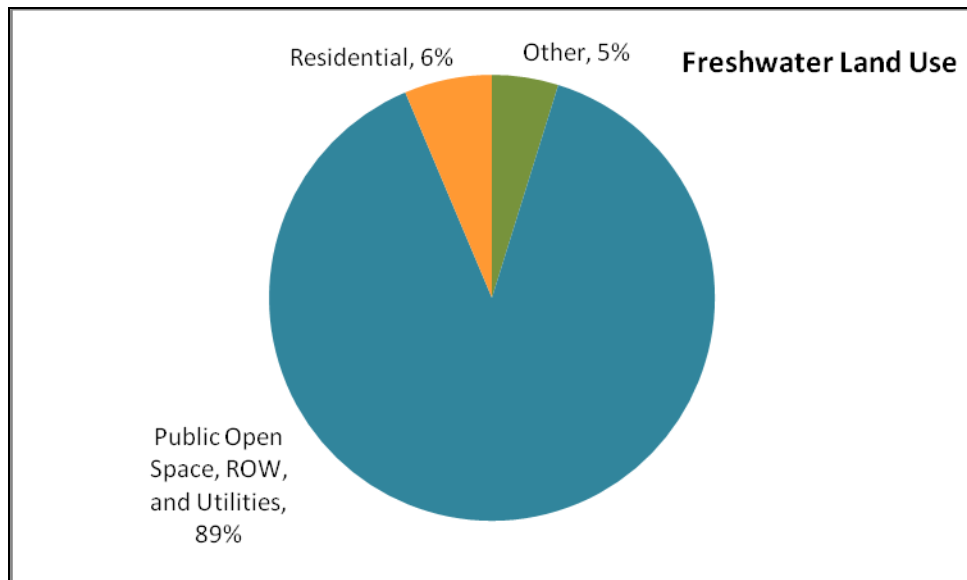


Figure 2-2. Predominant Uses within the University Place Freshwater Shoreline Area

2.4.1. Day Island

The general land use pattern in the City's Day Island SPA is a mix of moderate density single-family residential development along Day Island and the southern spit, and marina and boatyard uses along the mainland shoreline. The BNSF Railroad ROW extends along the entire length of the mainland shoreline through the reach.

Impervious surface coverage in the Day Island SPA is moderate to high in areas of development. In addition, lawns make up a significant portion of the shoreline area, and are mapped as pervious despite their semi-impervious characteristics.

There are no City, County or state parks within the City's Day Island SPA. Day Island has three public access points on the west side of the island, shown as green stars on Map 13 of the ICR report. Access points are characterized as narrow, unpaved street end ROWs. Pathways provide shoreline access between adjacent residential uses.

Two additional locations on the east side of the island, at the end of the 19th Street ROW (central portion of the island) and along the shoreline near the Day Island Yacht Harbor (north end of the island) were identified in the ICR as potential public access sites. Both of these potential locations have been encroached upon by private entities and are not currently accessible for public access (Boers, 2010).

2.4.2. Puget Sound North

The Puget Sound North reach is dominated by the BNSF Railroad ROW extending along the entire length of the shoreline. Moderate density single-family residential development is common in the shoreline area behind the BNSF and roadway ROWs. Historical shoreline oblique photos show that the existing levels of land use and shoreline modification were established well over 40 years ago throughout much of the reach, consistent with longstanding development of the core of University Place in the late 1800s and early 1900s.

There are no City, County or state parks, or allowed public access points within the City's Puget Sound North SPA.

2.4.3. Puget Sound South

The City's Puget Sound South reach is dominated by the BNSF Railroad ROW extending along the entire length of the shoreline abutting Puget Sound outside Chambers Bay. Low to moderate activity recreational development (golf course and public access trails) extends throughout the shoreline area behind the BNSF ROW.

Extensive park and open space areas are located within the City's Puget Sound South shoreline area. These are part of the Pierce County owned and operated Chambers Creek Properties, and include the Chambers Bay Golf Course, multi-use playfield areas, open space areas (Chambers Creek Properties South Area), and pedestrian and bicycle trails (Pierce County, 2007). The properties provide extensive visual access to the marine shoreline and one public access point. At the North Dock site, a pedestrian overpass over the BNSF railroad was completed in 2010. This pedestrian bridge has opened up several

miles of beach to the public. Additional access is planned for and anticipated at the South Dock site, although design and timing of this project has not been determined (Boers, 2010; Pierce County, 2007).

2.4.4. Chambers Creek

The general land use pattern in Chambers Creek SPA is largely open space, both publicly owned in Chambers Creek Canyon Park (part of the Chambers Creek Properties) and in undeveloped areas associated with large residential properties. A few residential lots extend into the ravine and overlap the SPA. Three of these lots, located toward the east end of the Chambers Creek SPA, are undeveloped.

Water-oriented uses within the Chambers Creek SPA include the Chambers Bay Dam and spillway facility (at mouth of creek), a water-dependent use, and minimal development within the Chambers Creek Canyon Park. Development within the park includes water-enjoyment uses, characterized by pedestrian and bike trails and limited access points to the river.

The majority of the Chambers Creek SPA is publicly owned park and open space lands. Public access to the Chambers Creek Canyon, owned by Pierce County as part of the Chambers Creek Properties, is limited. Public access is provided by Kobayashi Park, located off of Bridgeport Way at the upper extent of the stream within University Place.

The City's Parks, Recreation and Open Space Plan identifies additional development of the Chambers Creek Canyon area as a goal, although suggesting that development would be limited to nature trails and other low-impact facilities (City of University Place, 2009).

Chapter 3 Reasonably Foreseeable Future Development and Use

This chapter describes land use trends and plans in and near the Puget Sound shoreline and Chambers Creek shoreline of University Place. Reasonably foreseeable future development has been estimated based upon local knowledge, permit history, development trends and anticipated projects known by the City. No build-out analysis was conducted to determine future development trends.

3.1 Shoreline Development Trends

A query of the City planning database showed that 11 development activities requiring a shoreline substantial development permit (SSDP) have occurred since 2004. Many of the most substantial projects requiring permits were associated with the Chambers Creek Properties, including golf course improvements; fencing, grading and replanting at a BNSF railroad crossing; north dock, fishing pier and mooring float at Chambers Creek Properties Pier; and fencing along BNSF Railroad at Chambers Creek Properties.

If the projects associated with the Chambers Creek Properties are separated, only four SSDPs were issued in the last six years, including:

- a public storm system repair;
- one residential short plat (creating 4 single family lots);
- one private pier/ramp/dock; and
- minor improvements/repairs to the yacht harbor and the yacht club within the Day Island reach.

Shoreline use in terms of new development within the marine shoreline area has been quite limited outside of the Chambers Creek Properties (Boers, 2010).

3.2 Anticipated Future Development and Use

As documented earlier in the reach inventories, the City's marine shoreline is generally developed with uses that are expected to continue into the future. Development trends over the last 10-plus years further verify the minimal amount of new shoreline uses expected within the City in the shoreline area. Significant development and land use change activities have occurred over the last decade within the Chambers Creek Properties, including development of the Chambers Bay Golf Course and substantial projects at the wastewater treatment facility. Although additional projects are anticipated on the Chambers Creek Properties, much of the significant redevelopment has already occurred. The majority of anticipated future work will occur outside of shoreline jurisdiction, with potential future public access improvements that could extend into shoreline areas. Specifically, anticipated parks enhancements will facilitate further access to Puget Sound South reach shorelines over the BNSF Railroad, but significant development of open space areas along Chambers Bay is not planned for by the County or anticipated. Anticipated projects within the Chambers Creek Properties do not include new in-water construction or new over-water structures.

Maintenance and repair of the railroad ROW is expected. Upkeep activities are also expected to occur at the Chambers Creek Properties (including the golf course and wastewater treatment facility) and within improved publicly owned ROWs (including those roadways providing access to Day Island and the adjacent mainland shoreline).

For areas outside of the Chambers Creek Properties the primary uses within University Place are not expected to change significantly within the anticipated future. There is an established pattern in the two residential communities to the west of the BNSF Railroad – Day Island and Sunset Beach. Detailed subarea zoning regulations establish side yard and rear yard (applied to the yard facing the shoreline) setbacks for these communities (UPMC 19.55.030 and 19.55.040); these regulations were developed to allow for continued residential use at existing levels of intensity while ensuring that increases in intensity or changes in use will not occur. Subarea zoning regulations will still be applicable after the updated SMP is fully adopted; however, shoreline vegetation conservation area and shoreline setback standards included in the updated SMP will supersede the subarea rear yard setbacks where the SMP setbacks are more restrictive.

Tear-down and redevelopment of older homes in these existing residential communities has occurred, and is expected to continue into the future. Many of the lots contain small homes built decades ago that are likely candidates for rebuilding. Since incorporation in 1995, University Place has permitted on average 1 to 2 “tear-down” residential redevelopments a year, mostly on Day Island. In some cases portions of existing homes have been retained and substantially added onto rather than a complete demolition. Whether through complete demolition or substantial addition, changes to impervious surface, landscaping and other improvements have been associated with the residential redevelopment in the past.

Development patterns landward of the BNSF Railroad ROW are also largely established, with most development likely to occur as minor maintenance, repair, and remodel of existing structures. Existing residential lots on the upland side of the BNSF Railroad generally have newer and larger homes that are not candidates for redevelopment.

Subdivision potential is limited. Along Puget Sound, there are roughly two dozen parcels that could be subdivided on the basis of acreage. However, all of these are located on the landward (upland) side of the BNSF tracks and only a small portion of each lot is located within the shoreline area. These tend to be steeply sloping areas where physical constraints and critical area regulations would preclude most development. Properties located on Day Island and Sunset Beach are too small to be subdivided.

There are no plats in any portion of the shoreline area being processed or considered currently.

3.3 Potential Use Conflicts

The SMA requires local jurisdictions to identify potential conflicts between current and projected development trends and SMA objectives. Potential conflicts in this context are focused on competing planning priorities inherent in the overall SMA policy intent, such as the preference for water-dependent uses and for ecological protection. Potential conflicts may also address conflicts between SMA policy objectives and other interests or regulatory requirements affecting shoreline resources.

The City and County (through Chambers Creek Properties planning) have previously identified a desire to visually and functionally enhance Puget Sound shoreline access within University Place for the benefit of the public. Given the existing intensity of development and location of the railroad tracks along the marine shoreline, adding additional public access while maintaining or improving shoreline ecological functions could prove challenging. Achieving both of these objectives is likely in areas of the Chambers Creek Properties that are not fronted by the BNSF railroad corridor, including the Chambers Bay shoreline and along Chambers Creek just upstream of the dam.

Chapter 4 Changes to Shoreline Environment Designations and Regulations

4.1 Changes to Shoreline Environment Designations

University Place currently manages shorelines under the Shoreline Master Program adopted in 2000 (referred to as “current SMP” in this report; adopted as a separate document by reference under UPMC Title 18). The current SMP implements the goals and policies of the City of University Place Shoreline Management Element (Chapter 9) contained in the University Place Comprehensive Plan (University Place, 2004), and establishes shoreline regulations. The existing SMP applies three environment designations (Shoreline Residential, Conservancy, and Conservancy Low) to the City shoreline, whereas the locally approved SMP (also referred to as the “new SMP” in this report) provides a total of five environment designations to further differentiate between the distinct uses and environments along the Chambers Creek, Chambers Bay, and Puget Sound shorelines.

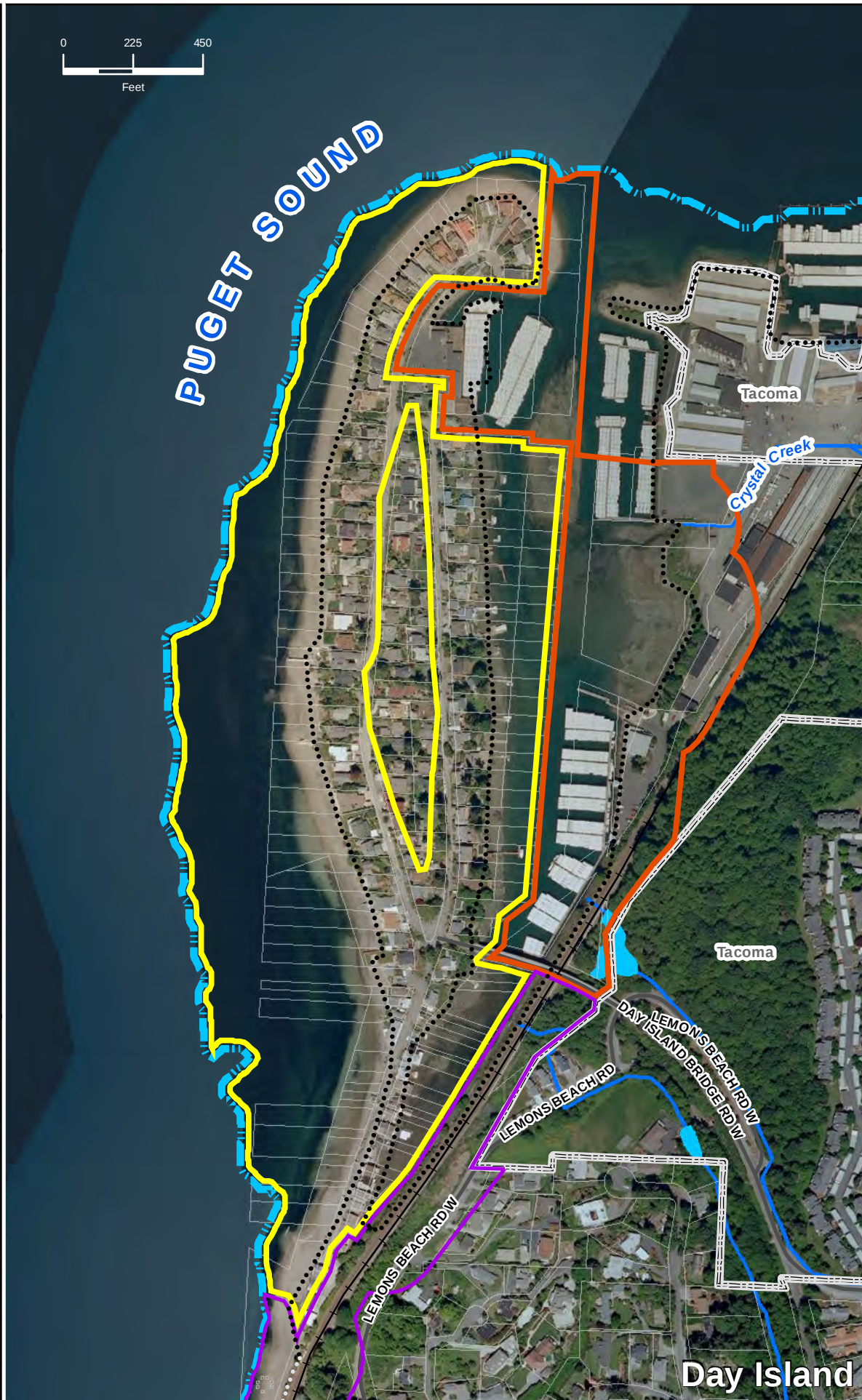
The proposed SMP includes the following shoreline environment designations or SEDs (Figures 4-1 and 4-2):

1. Marine Deepwater Environment
2. Day Island Medium Intensity Environment
3. Shoreline Residential Environment
4. Urban Conservancy Environment
5. Natural Environment

The purpose of the environment designations and the criteria used to determine where they apply within the shoreline planning area are discussed below.

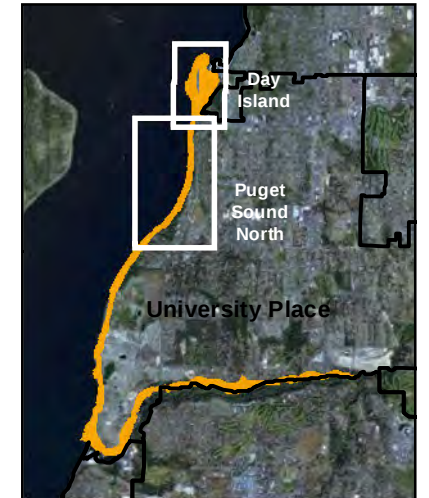
4.1.1. Marine Deepwater Environment

The purpose of the Marine Deepwater environment designation is to protect and manage the unique characteristics and resources of the areas waterward of the intertidal shoreline. The City will apply the Marine Deepwater designation to marine waters and underlying submerged land that is waterward of the point 10 feet below the mean lower low water line (MLLW) and out to the center of the waterway (Figures 4-1 and 4-2). Although not a designation described in the WAC, the Marine Deepwater environment has been established by the City to address concerns with activities that are anticipated to occur only in deep marine water such as dredging and installation of mooring buoys.



SHORELINE MASTER PROGRAM UPDATE: CITY OF UNIVERSITY PLACE

Shoreline Environment Designations (SED) Puget Sound North & Day Island



Legend

- Shoreline Environment Designation
 - Day Island Medium Intensity
 - Natural
 - Shoreline Residential
 - Urban Conservancy
- Marine Deep Water (Extends from -10 ft MLLW to Middle of Waterway)
- OHWM (DNR)
- OHWM (Adjusted Based on Ecology Site Visit July 25, 2012)
- 10ft MLLW (Approx)
- City Limits
- Unincorporated Pierce County
- Parcels
- Shoreline Planning Area
- Streams
- Waterbodies
- Railroads
- Major Roads

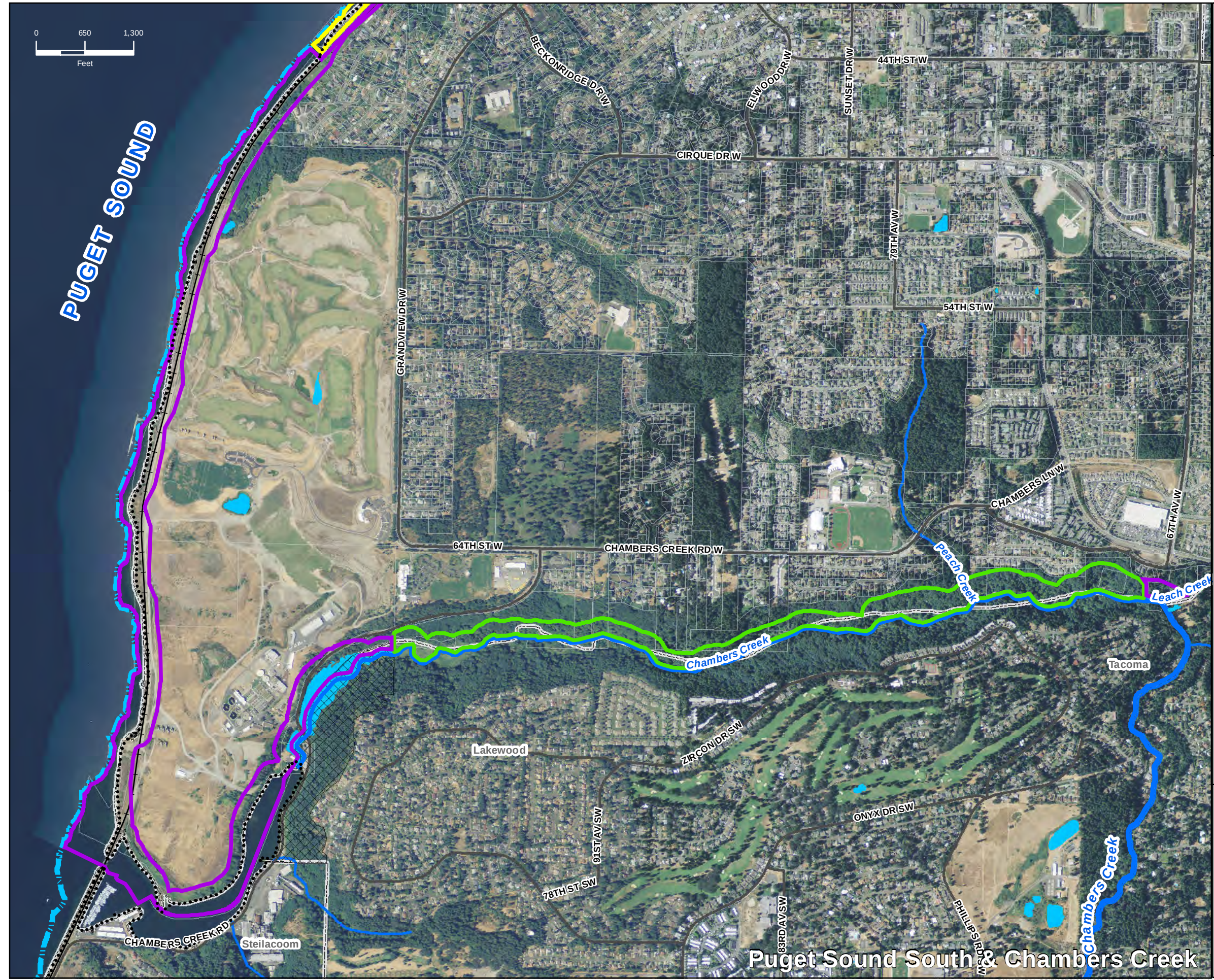


SOURCE: ESA Adolfson, 2009, 2011; Pierce County, 2007; WDNR, 2000, 2003, 2006, 2007; WA Dept. of Ecology, 2002, 2012; NAIP (USDA), i-cubed, 2009 (Aerial)

Figure 4-1

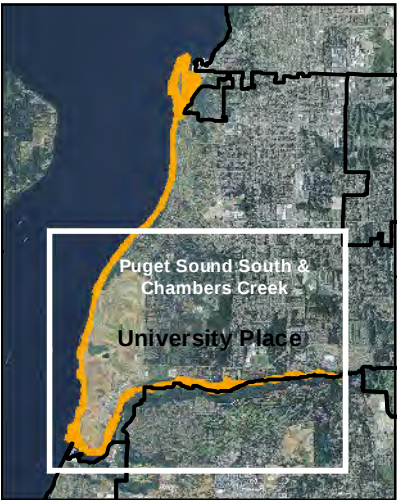


SMA Grant No. G1000034



SHORELINE MASTER
PROGRAM UPDATE:
CITY OF UNIVERSITY PLACE

Shoreline Environment
Designations (SED)
Puget Sound South &
Chambers Creek



Legend

Shoreline Environment Designation

- Day Island Medium Intensity
- Natural
- Shoreline Residential
- Urban Conservancy

Marine Deep Water
(Extends from -10 ft MLLW
to Middle of Waterway)

- OHWM (DNR)
- 10ft MLLW (Approx)
- City Limits
- Unincorporated Pierce County
- Parcels
- Shoreline Planning Area
- Streams
- Waterbodies
- Railroads
- Major Roads



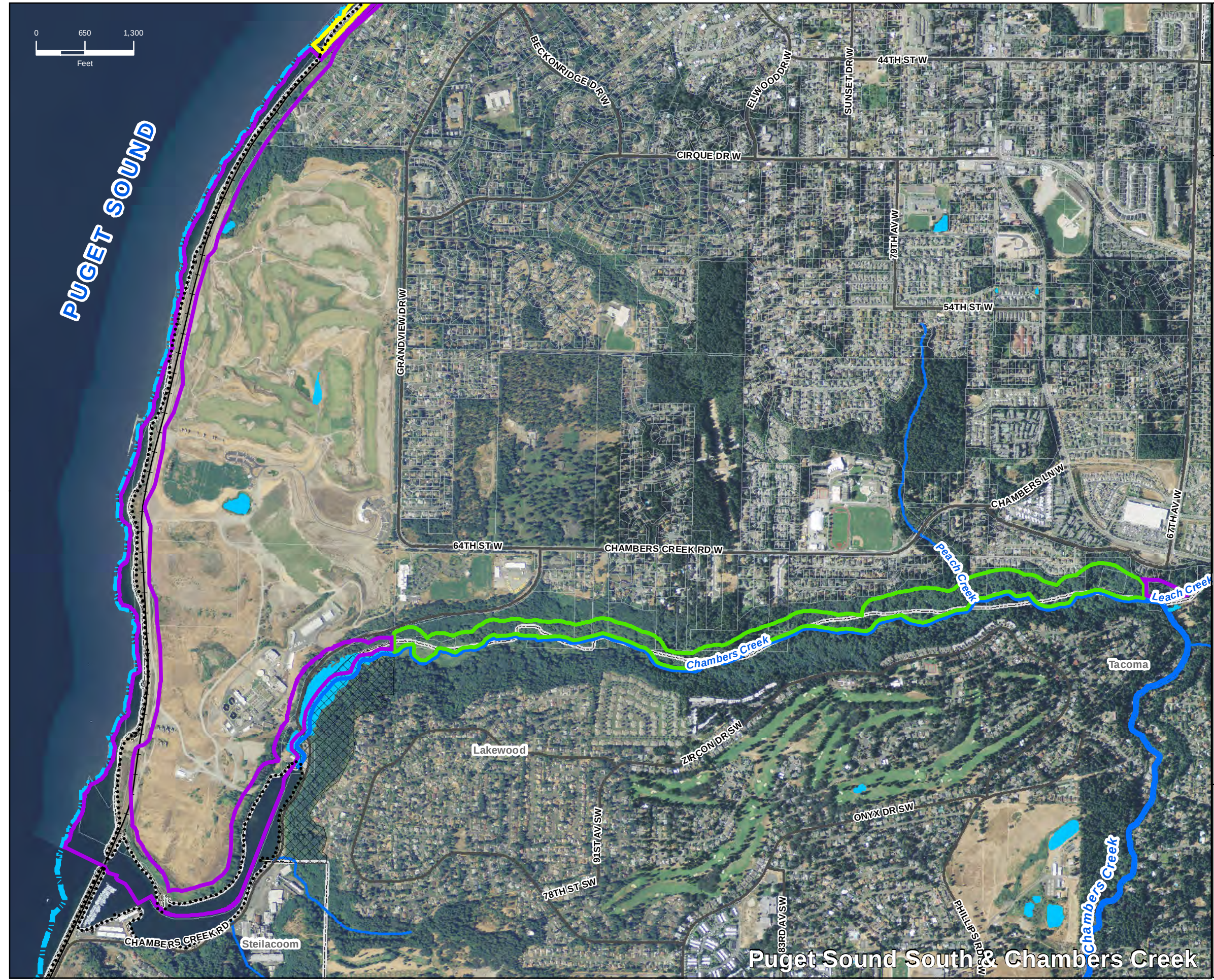
SOURCE: ESA Adolfson, 2009, 2011; Pierce
County, 2007; WDNR, 2000, 2003,
2006, 2007; WA Dept. of Ecology, 2002;
NAIP (USDA), 2009 (Aerial)

Figure 4-2

ESA Adolfson

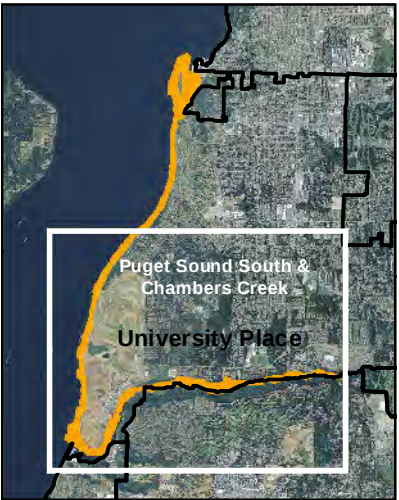
University Place
WASHINGTON

SMA Grant No. G1000034



SHORELINE MASTER
PROGRAM UPDATE:
CITY OF UNIVERSITY PLACE

Shoreline Environment
Designations (SED)
Puget Sound South &
Chambers Creek



- Legend**
- Shoreline Environment Designation
- Day Island Medium Intensity
 - Natural
 - Shoreline Residential
 - Urban Conservancy

- Marine Deep Water
(Extends from -10 ft MLLW
to Middle of Waterway)
- OHWM (DNR)
- 10ft MLLW (Approx)
- City Limits
- Unincorporated Pierce County
- Parcels
- Shoreline Planning Area
- Streams
- Waterbodies
- Railroads
- Major Roads

SOURCE: ESA Adolfson, 2009, 2011; Pierce
County, 2007; WDNR, 2000, 2003,
2006, 2007; WA Dept. of Ecology, 2002;
NAIP (USDA), 2009 (Aerial)

Figure 4-2



SMA Grant No. G1000034

4.1.2. Day Island Medium Intensity Environment

The purpose of the Day Island Medium Intensity environment designation is to accommodate marinas, yacht clubs with boat moorage and related facilities and activities, water-oriented commercial, transportation, and light industrial use, and moderate density residential uses within mixed use projects, while protecting existing ecological functions and restoring ecological functions in areas that have previously been degraded.

The new SMP applies the Day Island Medium Intensity designation to lands that currently support a mix of uses related to commerce, industry, transportation or navigation, and recreation; or are suitable and planned for medium-intensity water-oriented uses. The designation is applied to the northeastern shoreline of Day Island and along the western facing inner (mainland) shoreline to the north of Day Island Bridge Road W. This includes an existing commercial marina on Day Island, an existing commercial marina and a yacht club east of Day Island on the mainland, and all intertidal areas up to the -10 MLLW line.

4.1.3. Shoreline Residential Environment

The purpose of the Shoreline Residential environment designation is to accommodate residential development and accessory structures, given that such development will occur consistent with the SMP. Additional purposes include providing public access and recreational uses along the shoreline.

The new SMP applies the Shoreline Residential designation to land that currently supports predominantly single-family or multifamily residential development or is planned and/or platted for residential development. This includes residential communities on Day Island and at Sunset Beach (Figure 4-1). The Shoreline Residential designation extends out to include all adjacent intertidal areas up to the -10 MLLW line.

4.1.4. Urban Conservancy Environment

The purpose of the Urban Conservancy environment designation is to protect and restore relatively undeveloped or unaltered shorelines to maintain open space, floodplains, or habitat, while allowing a variety of compatible uses including residential development. The new SMP applies the designation to shorelines that retain important ecological functions, even if partially altered. These shorelines are suitable for low intensity development, uses that are a combination of water-related or water-enjoyment uses, or uses that allow substantial numbers of people access to the shoreline. The designation applies to most of the marine shoreline along the Puget Sound North and South reaches, Chambers Bay, a small portion of Chambers Creek upstream of the existing dam, and the Kobayashi Park property on the east end of Chambers Creek. Along marine shorelines, the designation extends out to include all adjacent intertidal areas up to the -10 MLLW line. Along Chambers Creek, the designation extends to include all areas waterward of ordinary high water mark within the City.

The Urban Conservancy designation is applied to lands that are appropriate and planned for development that is compatible with maintaining or restoring the ecological functions of the area, and that are generally

not suitable for water-dependent uses. Any of the following characteristics could apply to Urban Conservancy designated shorelands:

- Suitable for water-related or water-enjoyment uses;
- Contains open space, floodplain or other sensitive areas that should not be more intensively developed;
- Retains ecological restoration potential and/or important ecological functions even if partially developed; or
- Retains development potential that is compatible with ecological restoration.

4.1.5. Natural Environment

The purpose of the Natural environment designation is to protect those shoreline areas that are relatively free of human influence or that include intact or minimally degraded shoreline functions intolerant of human use. These “natural” systems require that only very low intensity uses be allowed in order to maintain the ecological functions and ecosystem-wide processes. Consistent with state SMA policies for the Natural environment, the City’s Shoreline Restoration Plan includes planning for restoration of degraded shorelines within this designation.

The Natural designation applies to the portion of Chambers Creek upstream of the Section 28/29 boundary line (Township 20 North, Range 2 East), excluding Kobayashi Park, as shown on Figure 4-2. The Natural designation extends to include all areas waterward of ordinary high water mark within the City. The riparian vegetation and meander zone of the creek are in a relatively undisturbed condition upstream of the section boundary and are mostly protected within publicly owned park land.

The Natural designation is applied to lands where any of the following characteristics apply:

- Ecologically intact and performing important, irreplaceable functions that would be damaged by human activity;
- Representative of unique ecosystems / geologic types that are of particular interest; or
- Unable to support new development or uses without significant adverse impacts to ecological functions or risk to human safety.

4.2..Changes to Development Standards and Use Regulations

The University Place locally approved SMP (to comprehensively update existing Title 18) updates the shoreline development regulations to encourage conservation and prohibit activities that would adversely impact shoreline processes and functions. The new SMP is generally more protective than the current SMP. The new SMP provides policies and regulations for allowed uses and shoreline modifications intended to manage appropriate uses while protecting and improving ecological functions.

Construction of breakwaters and hard shoreline stabilization require a conditional use permit in all shoreline environment designations (SEDs) (not allowed in Natural environment). Soft stabilization measures are encouraged and must be considered first before structural measures are allowed. The new SMP includes provisions to retain existing native vegetation landward of the OHWM to help stabilize shorelines and maintain habitat functions. Overwater nonresidential structures are limited to water-dependent uses, public access, or ecological restoration; multiple use or expansion of existing piers instead of construction of new structures is preferred. Shoreline residential development must protect water quality and shoreline vegetation, control erosion, and in some instances provide for replanting after construction. Enhancement of the shoreline buffer, identified in the SMP as the “vegetation conservation area” (VCA), is required whenever expansion into the standard VCA width is necessary for the development project. When new home construction or expansion would not alter the standard VCA, restoration is not required. Projects to restore and enhance shoreline habitats are encouraged.

Other provisions in the new SMP are protective of water quality and hydrologic functions (18.25.120 – Water Quality, 18.25.030 – Flood Hazard Reduction, as well as other specific shoreline use standards). Education, site planning and maintenance are intended to minimize the need for chemical fertilizers, pesticides, and herbicides. In most instances, new development will be required to connect to sanitary sewer systems (18.25.120.C.1.). Use of wood treated with creosote or pentachlorophenol is prohibited for any application where it could come in contact with water (18.25.120.C.5.). The use of pervious materials and other low impact development techniques is encouraged to reduce stormwater runoff.

The new SMP establishes a new system of shoreline setbacks and vegetation conservation areas to protect shoreline functions and associated riparian functions. The existing SMP provides a uniform setback of 35 feet from the OHWM, and in some areas is actually a zero-foot setback or established as the setback of existing structures (18.54.050.C.). The new SMP includes SED-specific shoreline buffers, required as a “vegetation conservation area” (VCA), and an additional minimum 10-foot building setback from the landward edge of the VCA (new SMP – Table 18.30.B).

The VCA is 25 feet wide for the Day Island Medium Intensity and Shoreline Residential SEDs, 40 feet wide for the Urban Conservancy SED, and 150 feet wide for the Natural SED (the 150-foot VCA is applicable to Chambers Creek). For certain highly constrained existing lots (Day Island South Spit parcels, Sunset Beach parcels, and other Day Island properties meeting specific criteria) VCA requirements do not apply (locally adopted SMP 18.25.100.C.1.b.). In these areas, existing development and lot patterns are highly constrained, with little potential for enhancement of marine riparian vegetation. The new SMP also includes minimum building and structure setbacks from the OHWM for non-water dependent uses. In some instances, the OHWM setback for these uses is larger or significantly larger than the width of the VCA combined with the VCA building setback. For example, the OHWM setback for residential development along the Puget Sound Marine shoreline (Urban Conservancy SED) is 125 feet. The VCA width in this location is 40 feet, plus a 10 foot building setback.

In addition to new requirements for establishing VCAs and shoreline setbacks, the new SMP identifies other development standards for each environment designation. Lot coverage (impervious surface) maximums are identified for Day Island Medium Intensity and Shoreline Residential environments,

including incentives for limited impervious surface limit increases with enhancement of the adjacent VCA (Table 18.30.B). No lot coverage / impervious surface limits are specified for Urban Conservancy and Natural environments, where the known extent of wetlands, steep slopes, and other critical areas will highly limit any potential for significant development in the future.

New development standards also include maximum densities (number of dwelling units per acre) for all shoreline designations. For Shoreline Residential, Urban Conservancy and Natural environments, maximum density is identified as 4 to 6 dwelling units per acre (Table 18.30.B). This maximum density is generally based on the limits allowed by underlying zoning (which are consistent across much of the City's shoreline area). This would suggest future residential development at densities inconsistent with the purpose and designation criteria for Natural and Urban Conservancy areas. As noted by Table 18.30.B. footnotes 14 and 15, however, this maximum density is based on the R1 zoning that occur on existing platted lots on the northern edge of the Chambers Creek Canyon (freshwater shoreline) and throughout marine shoreline areas designated Urban Conservancy. Developed portions of these properties are located predominantly outside of shoreline jurisdiction, but several have undeveloped areas that extend downslope into shoreline jurisdiction. Development on these lots must be consistent with Critical Areas Ordinance (CAO) standards for geologic hazards, which require buffers and buffer setbacks from the top of the steep slopes that are mapped continuously along the Chambers Creek corridor and along much of the marine shoreline (landward of the BNSF railroad corridor along the Puget Sound; UPMC 17.15.055, incorporated into the SMP by reference). Any new development or subdivision on these lots would occur to the north (landward) of steep slopes, generally outside of shoreline jurisdiction.

Further, the locally approved SMP prohibits any new subdivision from occurring within Natural designated shoreline areas (Table 18.30.B note 15). For these reasons, development at the maximum densities specified in Table 18.30.B is not anticipated to occur with Natural designated shoreline areas, and will generally not occur within Urban Conservancy designated areas.

As with the current SMP, the new SMP integrates CAO standards for the protection of geologically hazardous areas, aquifer recharge areas, fish and wildlife habitats, flood hazards, and wetlands that are associated with shorelines (UPMC Title 17). As part of the SMP update, specific sections of the CAO have been updated to limit exemptions that could apply within shoreline jurisdiction (UPMC 17.10.035 – General Exemptions and UPMC 17.35.030 – Wetlands Exemptions). The wetland categorization system is updated to provide consistency with Ecology guidance, including the Washington State Wetland Rating System for Western Washington (Hruby, Annotated Version August 2006, Ecology Publication # 04-06-025). Wetland mitigation replacement ratios have also been updated to improve consistency with best available science and Ecology guidance (UPMC 17.35.045, Table 4); and updated mitigation requirements increase expectations for compensation, wherever wetland impacts are allowed.

Extensive review and revision throughout the SMP update process is reflected in the locally approved SMP. The following analysis was initially completed in June 2012, and has been updated to reflect changes made to address input from Ecology, City Council, City Planning Commission, SMP Update Citizen Advisory Committee, University Place citizen comment, and comments from other interested parties.

4.3 Changes to the Treatment of Nonconforming Uses and Structures

Much of the shoreline development in University Place predates the adoption of the current SMP (in 2000) by many years. The current SMP provides for nonconforming uses and structures in shoreline areas. However, new policies and regulations included in the locally approved SMP are intended to increase protection of shoreline ecological functions over the long term.

Under the new SMP, structures or uses that were legally established but that do not now conform to the City's zoning code, or are nonconforming with regard to the use regulations in the proposed SMP, may continue as long as they do not increase or expand in their nonconformity. There is no allowance for expansion within the required vegetation conservation area (VCA), VCA setback, or shoreline setback.

For existing non-conforming lots, the new SMP provides allowance for development when lot size would prevent development consistent with applicable shoreline setback requirements. The allowance for development on nonconforming lots must follow variance criteria, and any allowed development must be located as far landward as possible from the ordinary high water mark (18.15.070.D).

Locally adopted SMP Chapter 18.25.100.C.6. provides allowance for nonconforming uses (as well as water-dependent uses) related to VCAs. Where proposed nonconforming or water-dependent development cannot provide a VCA due to the nature of the use or activity, the development proposal is required to provide an equivalent area of vegetation elsewhere on the property or off-site if no on-site alternative is available. Similarly, Chapter 18.25.100.D.6 provides allowance for nonconforming single-family residential properties that cannot provide the full width of the VCA plus additional 10-foot VCA building setback.

Chapter 5 Restoration Planning

During the SMP update process, the City developed a Shoreline Restoration Plan that provides recommendations for restoring University Place shorelines as well as a framework under which shoreline restoration can be successfully achieved (ESA, June 2012). The Restoration Plan was developed consistent with state guidelines established in WAC 173-26-201, including identification of ways to restore or enhance those functions and processes that have been impaired (as identified in the 2011 Inventory and Characterization). In the context of the SMP, planning for shoreline restoration includes establishing goals and policies, working cooperatively with other regional entities, and supporting restoration through other regulatory and nonregulatory programs.

The Restoration Plan includes a detailed list of potential restoration opportunities within each reach (Restoration Plan Section 4.2.2). The identified restoration opportunities are provided at a conceptual level for planning purposes only, and could be implemented in the future by the City or partners on a voluntary basis as funding becomes available.

Key programmatic restoration opportunities were developed in the Restoration Plan based on existing ecological impairments and relevant management issues identified in the Inventory and Characterization. The opportunities summarized below are organized by the themes as included in the Restoration Plan.

- **Education and Incentives:**

- Educate property owners about proper vegetation/landscape maintenance to promote shore stabilization and protect water quality.
- Encourage low impact development practices.
- Educate property owners about the negative impacts of shore armoring and overwater structures; encourage soft shore protection where shore protection is unavoidable.
- Educate boaters about proper waste disposal methods, anchoring techniques, and other best boating practices (minimizing habitat damage / water quality contamination).
- Where shorelines have been modified, provide incentives to encourage redevelopment activities that restore shoreline functions and habitat.

- **Planning and Coordination:**

- Match mitigation, including off-site and compensatory mitigation, to appropriate restoration and enhancement activities as identified in salmon recovery, watershed management plans and the SMP Restoration Plan.
- Coordinate SMP restoration with other projects prioritized in WRIA 12.
- Improve water quality to provide safe water for swimming by coordinating with Tacoma-Pierce County Health Department and University Place Public Works – Surface Water Management.

- **Infrastructure:**

- Inspect, maintain, and repair leaking or unauthorized septic systems to prevent nutrient and bacteria loading in streams and bays. Where possible, public sewer systems should be installed to replace on-site septic systems.
- Retrofit stormwater systems using low impact development (LID) strategies.

- **Marine Nearshore:**

- Develop beach nourishment or landslide side-casting program along shore with rail revetment.
- Preserve existing marine riparian areas, and restore where possible.
- Preserve existing upper beach areas waterward of BNSF ROW. Enhance marine riparian vegetation where adequate area is available.
- Remove armoring and bulkheads from publicly owned marine sites including parks, wherever feasible.
- Design overwater structures to allow light penetration (aquatic habitat).
- Encourage removal of creosote pilings, docks or other contaminants or derelict structures from the nearshore environment.
- Treat stormwater before it enters intertidal areas, particularly runoff from impervious surfaces/parking lots.

- **Freshwater (Chambers Creek):**

- Continue to protect and conserve stream riparian areas and native vegetation.
- Eradicate invasive plant species, and provide educational materials to reduce human-derived vectors of invasive species introduction.
- Treat stormwater before it enters riparian areas, tributary streams, and associated wetlands, particularly runoff from impervious surfaces/parking lots.

In addition to the above identified programmatic opportunities and site-specific opportunities listed in Section 4.2.2 of the Restoration Plan, Chambers Bay has been targeted as a candidate restoration site by the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP, 2011). Conceptual planning for restoration options within Chambers Bay has focused on improvements to the estuarine environment, riparian habitat, and connection with Chambers Creek. Conceptual options have included Chambers Bay Dam removal, significant modifications to public infrastructure and private development, and restoration of tributary streams. No specific restoration projects associated with PSNERP conceptual planning are anticipated in the near future.

Chapter 6 Beneficial Effects of Any Established Regulatory Programs under Other Local, State, and Federal Laws

The City's SMP is meant to be consistent with and work in conjunction with several City, state and federal programs and planning documents to protect the functions and values of shoreline resources and protect the health and safety of City residents. These programs include, but are not limited to, the following.

6.1 City Programs and Planning Documents

6.1.1. University Place Comprehensive Plan and Municipal Code

The City's SMP works in concert with the Comprehensive Plan and a variety of other regulatory plans and programs to manage shoreline resources and regulate development near the shoreline. The Comprehensive Plan, adopted in 1998 and last amended in 2004, establishes the general land use pattern and provides an overall vision for growth and development for areas inside and outside shoreline jurisdiction. Various sections of the University Place Municipal Code (UPMC) also play a major role in how shorelines are managed. These include the following:

- **UPMC Title 19 – Zoning.** Establishes zoning districts and regulates land use in the City including all shoreline areas.
- **UPMC Title 17 Division II - SEPA.** Establishes procedures and policies to implement the State Environmental Policy Act (SEPA). All non-exempt City actions require environmental review under SEPA.
- **UPMC Title 17 Division I – Critical Areas.** Establishes policies, regulations and land use controls to protect critical areas, including streams, wetlands, critical aquifer recharge areas, flood hazard areas, geologic hazards, and fish and wildlife habitat areas consistent with the state's Growth Management Act (GMA).
- **UPMC Chapters 12.15 and 13.25 – Storm Drainage and Surface Water Management.** Establishes policies and regulations for the comprehensive management of surface and stormwater and erosion control. The City has adopted the King County Surface Water Design Manual. The City recently developed a Stormwater Management Program consistent with Phase II NPDES requirements (City of University Place, 2008), and is in the process of developing an Operations and Maintenance Program to formalize management and maintenance of the City's stormwater systems.
- **UPMC Chapter 14.15 – Flood Damage Prevention.** Establishes regulations restricting development and specifying design standards for areas of special flood hazard, including coastal flood areas.
- **UPMC Title 15 – Parks and Recreation.** Establishes provisions and policies for management of parks within the City, including regulations specifying prohibited uses.

6.2 Pierce County's Chambers Creek Properties Plan

The Chambers Creek Properties is a 928-acre area that is owned and managed by Pierce County, although the majority of the area lies within the jurisdiction of University Place. The area extends along Chambers Creek and Chambers Bay within the City, and along the Puget Sound South reach shoreline area (from the mouth of Chambers Creek to the Sunset Beach area).

As planned for and documented in the 2007 Chambers Creek Properties Master Site Plan (Pierce County, 2007), over the last 13 years extensive redevelopment has occurred. Originally adopted in 1997, the Master Site Plan was updated and adopted on February 27, 2007. The Plan, developed by the County in collaboration with University Place, Steilacoom, Lakewood, and other regional agencies, laid a framework for development and set out policies to oversee site development. While not a regulatory document, the Plan was adopted by the County. Similar to how all development within University Place must be consistent with the City's Comprehensive Plan, all development throughout the Chambers Creek Properties must occur consistent with the Master Site Plan. For areas of the Chambers Creek Properties within the City's shoreline jurisdiction, the Plan includes very little potential for future development; outside of improvements to visual and physical public access along the Puget Sound and Chambers Bay shorelines, no other new development is planned.

6.3 State and Federal Regulations

As stated in WAC 173-27, it is the intent of the SMA to provide for integration of the shoreline permit into a consolidated environmental review and permit process. In achieving this goal, the shoreline policies and regulations contained in the updated SMP will also have to work in concert with several state and federal permitting programs that relate to shorelines. These include the following:

- **Hydraulic Project Approval (HPA).** The HPA program applies to any construction activity in or near the waters of the state. The program is administered by the Washington Department of Fish and Wildlife (WDFW). All applicable projects are required to submit permit applications to show that construction is done in a manner to prevent damage to the state's fish, and shellfish, and their habitats.
- **Clean Water Act Section 404 Permit.** Section 404 of the federal Clean Water Act (USC 1394) regulates the discharge of dredged or fill material into waters of the United States. Any project that proposes discharging dredged or fill material into the waters of the United States, including special aquatic sites such as wetlands (not isolated), must get a Section 404 permit. The U.S. Army Corps of Engineers (Corps) can authorize activities by a standard individual permit, letter-of-permission, nationwide permit, or regional permit. The Corps makes the determination on what type of permit is needed.
- **Clean Water Act Section 401 Water Quality Certification.** Applicants receiving a Section 404 permit from the Corps, a Coast Guard permit or license from the Federal Energy Regulatory Commission (FERC), are required to obtain a Section 401 water quality certification from the Department of Ecology (Ecology). Issuance of a certification means that Ecology anticipates that the applicant's project will comply with state water quality standards and other aquatic resource protection requirements under Ecology's authority.

- **Washington State Water Pollution Control Act.** All projects affecting surface waters in the state, including those that are not subject to the federal Clean Water Act Sections 404/401, must still comply with the provisions of the state's Water Pollution Control Act (RCW 90.48).
- **Federal Endangered Species Act.** All projects that have the potential to directly or indirectly impact wildlife species listed as endangered or threatened are subject to environmental review by the U.S. Fish and Wildlife Service (USFWS) or the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries). Chinook are listed as threatened.
- **Rivers and Harbors Act Section 10 Permit.** The Corps has jurisdiction in all navigable waters of the state. Any work in, over, or under navigable waters of the U.S must apply for a Section 10 permit. The purpose of Section 10 permitting is to prohibit the obstruction or alteration of navigable waters of the U.S.

Chapter 7 Current and Future Performance of Shoreline Ecological Functions

Table 7-1 describes the existing level of shoreline ecological functions within the shorelines of University Place as described in the Inventory and Characterization Report (ICR) (ESA Adolfson, 2011).

Regulations from the locally approved SMP that protect ecological functions are identified. The future performance of ecological functions is then assessed based on the type and amount of expected development in the shoreline, the level of protection the proposed SMP regulations provide, and restoration policies and opportunities. Specific opportunities for restoration are outlined in the Restoration Plan.

The current performance of shoreline ecological functions is ranked “low”, “moderate”, and “high” depending on the level of alteration. Table 7-1 summarizes the information provided in the ICR; the full report should be evaluated for additional detail regarding existing conditions within the City’s shoreline jurisdiction.

Future performance of shoreline ecological functions is ranked “reduction,” “no change,” or “improvement” depending on the expected changes from existing conditions within the planning horizon of the updated SMP. Based on this assessment, the cumulative actions taken over time in accordance with the proposed SMP were reviewed and a determination made as to whether they will result in a net loss of shoreline ecological functions compared to existing baseline conditions.

Table 7-1. Assessment of Current and Future Shoreline Ecological Functions - University Place

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
Hydrology	WAC 173-26-201(3)(d)(i)(C)		
Puget Sound Marine Shoreline • Attenuation of wave energy • Surface and shallow groundwater movement through riparian and backshore zones • Freshwater input / Distributary channel and tidal channel formation and maintenance (estuarine zones only)	Protection: Mining, forest practices, agriculture prohibited throughout shoreline jurisdiction; commercial and industrial development is limited to the Day Island Medium Intensity environment (where non-water oriented industrial use requires a CUP) (Table 18.30.A). New overwater residential development is prohibited (18.30.130.C.6.) The use of hard shoreline stabilization armoring is limited; soft shore bank stabilization techniques are encouraged as a first alternative (18.35.020 and 18.35.070.B. -1. and -4.). New shoreline uses and development, including subdivisions, must be located and designed to eliminate the need for shoreline stabilization (18.35.070.B.1). New hard shoreline stabilization structures require a CUP in all environments, and are prohibited in the Natural environment (Table 18.35). Soft stabilization, where determined and documented as necessary, is permitted in all environments. Fill and dredging require a CUP in all marine shoreline environments (Table 18.35). Repair or replacement of existing shoreline stabilization is allowed if necessary to protect existing structures and achieve no net loss (18.35.070.D. -2. and -3.). New moorage facilities, including docks (piers, ramps, floats) and mooring buoys are only permitted when associated with a water-dependent use, including water-dependent public access; all new moorage facilities must implement mitigation to achieve no net loss (18.35.050.B) Jetties, groins, breakwaters, and weirs are prohibited in the Natural shoreline environment, and require a CUP in all other environments (Table 18.35). Residential development and accessory structures must not require new structural shore or slope defense measures and must retain and protect natural vegetation (18.30.130). Setbacks are required from the top of steep slopes or bluffs (SMP 18.35.080). Restoration - Site specific opportunities include (See Restoration Plan Figure 2 / Table 5 for additional detail; restoration site numbers as included in the Plan are noted below, with numbering not representative of prioritization): • Debris removal / stream restoration at mouth of Crystal Creek (site 1) • Removal of derelict / harmful shoreline armoring and modifications – obstructions to sediment transport (Day Island; sites 2-4, 6, and 7) • Beach nourishment along BNSF corridor in targeted locations (Puget Sound North and South – general opportunity, see dotted yellow line Figure 2)	<u>Day Island Reach: Low</u> Shoreline hardening (e.g., bulkheads and revetments) has resulted in less overall wave attenuation than in the pre-disturbance condition. Existing development of the shoreline – including both armoring and changes in land cover through the riparian zone – has altered water movement functions, and disconnected the shoreline from associated sediment supply inputs.	<u>Day Island Reach:</u> No change or minor improvement expected. New regulations encouraging soft structural shoreline stabilization should result in localized improvement in wave attenuation over time. Existing shore condition is highly altered, with hard stabilization and lack of riparian vegetation associated with existing residential development and bulkheads. While significant change is not anticipated, new regulations will require and/or encourage soft structural stabilization options and establishment and/or protection of native vegetation as limited redevelopment occurs.
		<u>Puget Sound North Reach: Low</u> Shoreline armoring for the BNSF railroad along most of reach and residential bulkheads at Sunset Beach have reduced wave attenuation. Existing development of the shoreline – including both armoring and fill through riparian and backshore zones associated with the BNSF corridor – has altered water movement processes.	<u>Puget Sound North Reach:</u> No change expected. Because of the presence of the railroad through the reach, riparian zones have been disconnected from the shoreline and hydrologic processes have been altered. This condition is unlikely to change since the railroad is unlikely to be removed during the planning horizon of this plan (20 years). Conditions on future projects, policies to keep refuse off the beach, and vegetation requirements may limit further loss of function if adhered to.

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
	• Beach culvert removal (Puget Sound North – site 11) • Targeted armoring removal (Puget Sound North – site 9) • Remove derelict shoreline structures (including armoring, dock), enhance riparian habitat - targeted along Chambers Creek Property Puget Sound shoreline (Puget Sound South – sites 12-14) • Estuarine marsh expansion (Chambers Bay – general opportunity, see dotted red line on Figure 2) • Riparian enhancement, particularly along southernmost shore (Chambers Bay – general opportunity, see dotted green line on Figure 2) Programmatic opportunities include: educating shoreline property owners about low impact development techniques, as well as the negative impacts of shoreline armoring. Developing beach nourishment / landslide side-casting programs along BNSF rail corridor. Preserving and enhancing upper beach areas waterward of BNSF armoring. Removing armoring and bulkheads, derelict vessels, creosote pilings, and other derelict structures. Coordinating SMP restoration with regional partners, including WRIA 12 planning efforts. Retrofitting deficient storm-water systems (City wide) to improve water detention and treatment.	<u>Puget Sound South Reach: Low to Moderate</u> Shoreline armoring for the BNSF railroad along most of this reach has reduced wave attenuation. A portion of the southern half of this reach maintains a moderately wide beach area, showing higher function in this area. Existing development of the shoreline – including both armoring and fill through riparian and backshore zones associated with the BNSF corridor – has altered water movement processes. Changes in land cover along the Chambers Bay shoreline have reduced hydrologic functions, however they remain in better condition through this reach due to lack of shoreline armoring. Freshwater input and channel formation / maintenance processes are altered within Chambers Bay, the major estuary within the City. The Dam at the mouth of Chambers Creek is the primary alteration.	<u>Puget Sound South Reach:</u> Improvement expected. Modest improvement in wave attenuation expected through restoration efforts related with removal of old docks associated with past gravel mining activity. In Chambers Bay, shoreline riparian zones may be restored through completion of Chambers Creek Properties park improvements. Enhancement of riparian areas and the shoreline would improve water movement processes. Puget Sound restoration efforts have identified comprehensive Chambers Bay / Chambers Creek estuary restoration as a priority project for Puget Sound recovery; dam removal or other significant removal of alterations within the Bay could dramatically improve hydrologic functions.

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
Chambers Creek • Bank Stability • Groundwater and tributary inputs • Flow regime • Floodplain connectivity	SEE ABOVE - Many specific provisions applicable to Chambers Creek Natural and Urban Conservancy designations are detailed above in marine shoreline summary. <u>Additional protections specific to Chambers Creek:</u> Chambers Creek is designated primarily as a Natural shoreline environment and strict limits have been placed on allowable uses and activities (SMP 18.30.040). Most shoreline modifications are prohibited within the Natural environment (hard stabilization, fill – except for ecological restoration projects, dredging, weirs), Limited areas at the downstream and upstream extent within the City are designated Urban Conservancy, due to existing and desired recreational and transportation uses, In addition to outright prohibited and highly limited uses (noted in marine shoreline summary, above), new single-family residential development requires a conditional use permit within the Natural environment (Table 18.30.A). Multi-family development is prohibited in both Natural and Urban Conservancy environments. Vegetation conservation requirements (18.25.100.C) and integrated CAO protections for wetlands, tributary streams and steep slopes will ensure protection of intact riparian hydrologic functions. Natural environments require 150 foot vegetation conservation area with additional 10 foot structure setback. Urban Conservancy environments require 40 foot vegetation conservation area with additional minimum 10 foot structure setback; residential structures must be setback 125 feet from OHWM within the Urban Conservancy designation. Uses allowed within the vegetation conservation area are limited primarily to public recreational access, educational facilities and interpretive sites, ecological restoration, permitted water-dependent uses, and necessary transportation facilities (18.25.100.D). <u>Restoration</u> –_Site specific and general restoration opportunities include (See Restoration Plan page 32 for details): • Increase of riparian forest cover and habitat diversity. Existing conditions generally high; restoration should identify and implement site-specific opportunities to enhance riparian conditions, with projects focused on improving habitat structure and diversity. • Improve stormwater detention and treatment in contributing basins through facility retrofits and development (largely outside of shoreline jurisdiction).	<u>Chambers Creek: Moderate to High</u> The existing forested riparian corridor along Chambers Creek is primarily within public land and is protected from significant development. Bank stabilization functions are expected to be moderate to high due to the presence of wood debris and the lack of development in the creek meander zone.	<u>Chambers Creek:</u> No change or moderate improvement expected. Chambers Creek is largely protected from development and alteration as publically managed open space. The major opportunity for improvement to Chambers Creek would occur through dam removal at the mouth – dam removal is unlikely in the near-term, however has been targeted as a priority action for Puget Sound restoration.

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
Sediment Generation and Transport			
Puget Sound Marine Shoreline - Sediment delivery from coastal bluffs and streams. - Sediment transport	Protections: Shoreline Uses: Mining, agriculture, forest practices, solid waste disposal / transfer sites are all prohibited throughout shoreline jurisdiction (Table 18.30A) Commercial and Industrial use only permitted in Day Island Medium Intensity SED, limited primarily to water-oriented use (Table 18.30A) Aquaculture only permitted for activities that recover native populations. (Table 18.30A) Recreational uses limited to those that are water-oriented (Table 18.30.A) General provisions – Water Quality standards (18.25.120): Stormwater consistency with NPDES permit requirements and implementation of King County Surface Water Design Manual (C.3) Requirement for use of all available BMPs during and after construction for all shoreline development (C.4) Breakwaters, jetties, groins, and weirs: The SMP regulations (18.35.080) highly limit use of these structures: Jetties and breakwaters only allowed as integral component of water-dependent use such as marina (only within Day Island SED); Extensive limits and development criteria to minimize impacts. Transportation Facilities: New or expanded facilities – minimum width necessary, as far landward as possible (SMP 18.30.140.C.1) Need for shoreline location must be demonstrated, all necessary BMPs must be included to protect shoreline ecological functions (C.2.) Other Provisions: Pervious paving materials and other BMPs encouraged for reducing impervious surfaces and surface water runoff (SMP 18.30.130.B.9.). Setbacks are required from the top of steep slopes or bluffs (SMP Table 18.30.B). New development should be located and designed to avoid the need for future shoreline stabilization. Soft shoreline structural stabilization measures are encouraged and must be considered first before structural measures are allowed (SMP 18.35.070). Restoration: Site specific opportunities include (See Restoration Plan Figure 2 / Table 4 for additional detail, with restoration site numbers depicted on Figure 2 noted below): - Improvements at mouth of Crystal Creek (site 1) - Cement pier removal or partial (Day Island – site 2)	<u>Day Island Reach: Moderate to Low</u> No steep slopes or bluffs occur in this reach. Nearshore sediment transport is interrupted along the western facing shoreline of Day Island by existing groins extending from residential lots. Existing groins are common along this shoreline, extending along property lines between almost every western facing residential lot. Sediment transport within inner Day Island shorelines are modified by existing overwater structures and dredged channels.	<u>Day Island Reach:</u> No change expected. SMP regulations prohibit new breakwaters and jetties when associated with shoreline residential lots. There is little potential for new or expanded shoreline stabilization or new residential groins, as almost all lots are built and already have these structures. Any allowance for new stabilization, new groins, or other new stabilization that could influence sediment transport would have to evaluate impacts to sediment transport processes and identify and use alternatives with less impacts to ecological functions, where feasible. Given existing high level of build-out, significant replacement or expansion is not anticipated; when replacement of existing shoreline modifications does occur, it would have to meet new SMP requirements for protection of shoreline ecological functions (including sediment transport). There must also be “demonstrated need to protect principal uses or structures from erosion caused by currents, tidal action, or waves.”
		<u>Puget Sound North Reach: Low</u> BNSF revetment blocks movement of sediment from erosive bluffs to local beaches. Waterward of the revetment, there are no impairments to sediment transport along the marine shoreline except at Sunset Beach (shoreline residential community). In this area, there are groins extending along property lines between almost every residential lot.	<u>Puget Sound North Reach:</u> No change expected. The presence of the BNSF Railroad along the Puget Sound shoreline largely limits any potential for significant improvement. Similar to Day Island’s west facing shoreline, there is little potential for new or expanded shoreline modification given the existing level of build-out. Replacement of existing groins has to meet criteria, including protection of shoreline ecological functions. See Day Island reach summary (above) for additional detail.

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
<i>continued</i> Puget Sound Marine Shoreline - Sediment delivery from coastal bluffs and streams. - Sediment transport	- Removal of other derelict / harmful shoreline armoring and modifications (Day Island – sites 3 and 4) - Beach nourishment along BNSF corridor in targeted locations (Puget Sound North and South – general opportunity, see dotted yellow line Figure 2) - Targeted armoring removal (Puget Sound North – site 9) - Remove derelict shoreline structures (including armoring, dock) and pilings, enhance riparian habitat - targeted along Chambers Creek Property Puget Sound shoreline (Puget Sound South – sites 12-15) - Estuarine marsh expansion (Chambers Bay – general opportunity, see dotted red line Figure 2) - Riparian enhancement, particularly along southernmost shore (Chambers Bay – general opportunity, see dotted green line Figure 2) Programmatic opportunities include: educating shoreline property owners about low impact development techniques, as well as the negative impacts of shoreline armoring and vegetation removal. Developing beach nourishment / landslide side-casting programs along BNSF rail corridor. Preserving and enhancing upper beach areas waterward of BNSF armoring. Removing armoring and bulkheads, derelict vessels, and other derelict structures from the nearshore. Coordinating SMP restoration with regional partners, including WRIA 12 planning efforts. Retrofitting deficient storm-water systems (City wide) to improve water detention and treatment.	<u>Puget Sound South Reach: Moderate</u> BNSF revetment blocks movement of sediment from erosive bluffs to local beaches, except within Chambers Bay where the railroad is located on a trestle. No existing impairments to sediment transport, except for fill associated with the BNSF railroad trestle at the head of Chamber Bay.	<u>Puget Sound South Reach:</u> No change expected on the Puget Sound portion of this reach due to the presence of the BNSF Railroad (blocking sediment delivery) and SMP prohibition on shoreline modifications that would impair sediment transport. No change or moderate improvement expected on the Chambers Bay portion of the reach. Preservation of existing sediment delivery within Chambers Bay: Steep slope setbacks should maintain the existing connections between bluffs and the nearshore along the unarmored shoreline of Chambers Bay, and should help maintain existing potential sediment inputs to the near shore. Changes to infrastructure (Chambers Creek Dam at the east end of the Bay and the BNSF railroad trestle at the west end of the Bay) are not anticipated. These impairments to sediment transport will remain for the foreseeable future; however the new SMP prohibits any future shoreline modifications that would further impair sediment transport.

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
Chambers Creek • Sediment input • Sediment transport	SEE ABOVE – Many specific provisions applicable to Chambers Creek Natural and Urban Conservancy designations are detailed above in marine shoreline summary. Additional protections specific to Chambers Creek: Natural Shoreline designation along majority of Chambers Creek limits uses and future development; while more uses are allowed by Urban Conservancy designation, the sorts of new uses (commercial, industrial, high intensity residential) and modifications (hard stabilization) that could affect existing functions are not allowed (Tables 18.30.A and 18.30.B; Table 18.35). Vegetation conservation areas required – see “Hydrology” response for Chambers Creek, above. Recreation is the primary existing use, with some potential for additional recreation development. Recreation use regulations require that only non-intensive recreation activities that do not involve construction or structures occur in “fragile and unique shoreline areas with valuable ecological functions” (18.30.120.D.). Recreation development activities must also preserve or enhance native shoreline vegetation (restoration required if degraded or not present). Restoration –_Site specific and general restoration opportunities include (See Restoration Plan page 32 for details): • Increase of riparian forest cover and habitat diversity. Existing conditions generally high; restoration should identify and implement site-specific opportunities to enhance riparian conditions, with projects focused on improving habitat structure and diversity. • Improve stormwater detention and treatment in contributing basins through facility retrofits and development (largely outside of shoreline jurisdiction).	Chambers Creek Reach: Moderate to Low In tributary streams (Leech Creek and others) and Chambers Creek reaches upstream of the City's shoreline jurisdiction, natural sediment input functions are altered by surrounding development. Stormwater runoff from impervious surfaces has changed hydrologic conditions, resulting in stream erosion. Within freshwater shoreline jurisdiction upstream of Chambers Creek Dam, sediment input and transport functions remain relatively intact. Steep slopes and riparian wetlands remain largely unaltered, and the entire riparian corridor is protected as public open space. Sediment supply from Chambers Creek is cut off from Chambers Bay estuary and Puget Sound shoreline by Chambers Creek Dam. The railroad partially blocks the mouth of Chambers Creek pocket estuary, creating sheltered conditions that have changed sediment supply and transport patterns.	Chambers Creek Reach: No change expected. No change expected in sediment delivery between creek and the bay unless dam is removed. Plans for dam removal have not developed past the conceptual stage; dam removal is not anticipated within the foreseeable future.

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
Water Quality			
Puget Sound Marine Shoreline - Wetland removal of pollutants through sedimentation and adsorption - Riparian removal of pollutants - Delivery, movement, and loss or removal of nutrients, pathogens, and toxicants; storage of phosphorus and removal of nitrogen and toxins through sedimentation and adsorption	Protections: Shoreline Uses: Mining, agriculture, forest practices, solid waste disposal / transfer sites are all Prohibited throughout shoreline jurisdiction (Table 18.30A) Commercial and Industrial use only permitted in Day Island Medium Intensity SED, limited primarily to water-oriented use (Table 18.30A, 18.30.080.E and 18.30.100.C). Non-water oriented commercial and industrial uses (where allowed by SMP criteria) would require a 60 foot setback, to be used for a water-oriented use, public access, or shoreline restoration. Aquaculture only permitted for activities that recover native populations (commercial aquaculture is prohibited). (18.30.060.C. and Table 18.30A) Recreational uses limited to those that are water-oriented, except when one of the specific criteria listed in 18.30.120.F is met. (Table 18.30.A) General provisions – Water Quality standards (18.25.120): Highly limits any new uses utilizing on-site sewage systems (C.1.) Stormwater consistency with NPDES permit requirements and implementation of King County Surface Water Design Manual (C.3) Requirement for use of all available BMPs during and after construction for all shoreline development (C.4) Prohibition on wood treated with creosote or pentachlorophenol for in-water work (C.5.; structures that come in contact with water must use materials that will not adversely affect WQ / aquatic plants and animals (C5. And C.6.) Marinas: The SMP regulations (18.30.070) require marinas to be operated to protect water quality and public health: Live-aboard vessels are prohibited; Marinas shall provide restrooms and solid waste receptacles to accommodate marina users, and shall have facilities and established procedures for the discharge of solid waste or sewage, other than discharge into the water; Marinas shall provide pump-out, holding and/or treatment facilities for sewage contained on boats or vessels; Marina operators shall post all regulations pertaining to handling and disposal of waste, sewage, fuel and oil or toxic materials where they can be easily read by all users; and Marinas shall have facilities and established procedures for the containment and recovery of spilled petroleum or toxic products. Transportation Facilities: New or expanded facilities – minimum width necessary, as far landward as possible (SMP 18.30.140.C.1) Need for shoreline location must be demonstrated, all necessary BMPs must be included to protect shoreline ecological functions (C.2.) Other Provisions: Pervious paving materials and other BMPs encouraged for reducing impervious surfaces and surface water runoff (SMP 18.30.130.B.9.).	<u>Day Island Reach: Low</u> According to the 2008 Washington State Water Quality Assessment (Ecology, 2009), the Day Island shoreline is listed as a category 5 (303(d))water for PCBs.	<u>Day Island Reach:</u> No change in 303(d) listing or water quality expected. New regulations regarding marina operations and education expected to result in improved water quality over time. There is no significant change expected for highly degraded riparian condition or existing shoreline use for residential properties. The Shoreline Restoration Plan encourages voluntary restoration and education regarding best practices for landscaping and maintenance near the shoreline; however significant improvement in water quality from these efforts is not anticipated.
		<u>Puget Sound North Reach: Low</u> Residential development and BNSF railroad within contributing basin may affect water quality. Moderate to high level of impervious surface in this reach.	<u>Puget Sound North Reach:</u> Marginal improvement expected. Retrofitting stormwater management measures and educational efforts could improve function by reducing pollutant loading. Stormwater infrastructure retrofit actions are anticipated due to NPDES requirements for the City. As along the Day Island shorelines, there is no significant change expected for highly degraded riparian condition or existing shoreline use for Sunset Beach residential properties. The Shoreline Restoration Plan encourages voluntary restoration and education regarding best practices for landscaping and maintenance near the shoreline; however significant improvement in water quality from these efforts is not anticipated.

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
<i>continued</i> Puget Sound Marine Shoreline - Wetland removal of pollutants through sedimentation and adsorption - Riparian removal of pollutants Delivery, movement, and loss or removal of nutrients, pathogens, and toxicants; storage of phosphorus and removal of nitrogen and toxins through sedimentation and adsorption	Restoration: Site specific opportunities include (See Restoration Plan Figure 2 / Table 4 for additional detail, with restoration site numbers depicted on Figure 2 noted below): - Improvements / daylighting at mouth of Crystal Creek (site 1) - Removal of derelict / harmful shoreline armoring and modifications (Day Island – sites 3 and 4) - Beach nourishment along BNSF corridor in targeted locations (Puget Sound North and South – general opportunity, see dotted yellow line Figure 2) - Beach culvert removal (Puget Sound North – site 11) - Removal of derelict shoreline structures (including armoring, dock) and pilings, enhancement of riparian habitat - targeted along Chambers Creek Property Puget Sound shoreline (Puget Sound South – sites 12-15) - Estuarine marsh expansion (Chambers Bay – general opportunity, see dotted red line Figure 2) - Riparian enhancement, particularly along southernmost shore (Chambers Bay – general opportunity, see dotted green line Figure 2) Programmatic opportunities include: educating shoreline property owners about low impact development techniques, best practices for landscaping and yard maintenance; educating boat owners on proper waste disposal methods, anchoring techniques, and other best boating practices to minimize habitat damage and prevent water quality contamination. Removing creosote pilings, and other derelict structures. Coordinating SMP restoration with regional partners, including WRIA 12 planning efforts. Retrofitting deficient storm-water systems (City wide) to improve water detention and treatment.	<u>Puget Sound South Reach: Low</u> BNFS railroad may affect water quality and Chambers Creek, which drains to the bay, has a history of water quality issues. Although low levels of impervious surface along the Chambers Creek Properties likely reduce stormwater runoff.	<u>Puget Sound South Reach:</u> No change in water quality expected. Stormwater retrofits and enforcement of stormwater management standards throughout the Chambers Creek watershed will likely improve Chambers Creek and Chambers Bay water quality. These changes are anticipated within the City due to NPDES compliance requirements. There is very low potential for other new development or significant redevelopment within this reach – especially impervious surfaces or other new uses that would negatively impact water quality. Any new development would have to meet water quality requirements, including provisions in the new SMP, and would require establishment of a vegetation conservation area.

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
Chambers Creek - Wetland removal of pollutants through sedimentation and adsorption - Riparian removal of pollutants - Delivery, movement, and loss or removal of nutrients, pathogens, and toxicants; storage of phosphorus and removal of nitrogen and toxins through sedimentation and adsorption	SEE ABOVE – Many specific provisions applicable to Chambers Creek Natural and Urban Conservancy designations are detailed above in marine shoreline summary. Additional protections specific to Chambers Creek: Natural Shoreline designation along Chambers Creek limits uses and future development (Tables 18.30.A and 18.30.B). Vegetation conservation areas required – see “Hydrology” response for Chambers Creek, above. Restoration –_Site specific and general restoration opportunities include (See Restoration Plan page 32 for details): - Increase of riparian forest cover and habitat diversity. Existing conditions generally high; restoration should identify and implement site-specific opportunities to enhance riparian conditions, with projects focused on improving habitat structure and diversity. - Improve stormwater detention and treatment in contributing basins through facility retrofits and development (largely outside of shoreline jurisdiction).	Chambers Creek Reach: Moderate to High Development within contributing basin and loss of headwater wetlands negatively affects WQ. However, much of the riparian area around Chambers Creek is protected and provides important WQ functions. Headwater wetlands around Leach Creek improve WQ functions, as do wetland / riparian areas within Chambers Creek’s floodplain elevation. According to the 2008 Washington State Combined Water Quality Assessment (Ecology, 2008), Chambers Creek has the following 303(d) listings: -Category 5 listing for impaired WQ: fecal coliform; -Category 4A listing for copper; -Two Category 2 listings (pH & temperature) -Ten Category 1 listings (ammonia-N, arsenic, copper, dissolved oxygen, lead, mercury, pH, total PCBs, zinc, and temperature).	Chambers Creek Reach: Improvement expected. Conservation potential is high for the Leach Creek headwater wetlands and the Chambers Creek riparian corridor, due to CAO protections and corridor’s public ownership. There is moderate potential to restore a more natural rainfall to runoff relationship within the City of University Place. Retrofitting stormwater management measures could improve function by reducing flashiness of storm flows and reducing pollutant loading.
Habitat			
Puget Sound Marine Shorelines - Estuarine habitat; sub-tidal and intertidal mudflats and salt marshes provide transition habitat between fresh and salt water environments. - Shoreline habitat for wildlife; vegetation provides structure for invertebrates, birds, amphibians, reptiles, and mammals. - Source and delivery of LWD.	Protections: Aquaculture only permitted for activities that recover native populations. (Table 18.30A) New moorage, excluding docks accessory to single family residences, should be permitted only when it can be demonstrated that there is a specific need to support a water-dependent or public access use (SMP 18.35.050). Jetties and breakwaters are limited to water-dependent uses (SMP 18.35.080). The SMP encourages multiple use or expansion of existing piers instead of construction of new structures. (SMP 18.35.060). Shoreline residential development must protect shoreline vegetation, control erosion, and provide for replanting after construction (SMP 18.30.130). Dredging for water-dependent uses and/or essential public facilities only when necessary and when significant ecological impacts are minimized and mitigation is provided. (SMP 18.35.030). Projects to restore and enhance shoreline habitats are encouraged (SMP 18.35.060). The SMP includes provisions to retain existing native vegetation in the shoreline area and restore vegetation impacted by development activities. (SMP 18.30.40). New development standards for docks and piers are designed to reduce impacts to the intertidal habitat (SMP 18.30.070)	Day Island Reach: Moderate Dominant intertidal habitats include backshore lagoons, sand and gravel beaches, and kelp beds. Although the Day Island lagoon is highly modified by adjacent shoreland and overwater development, the area still provides some habitat for waterfowl, shorebirds, fish, and other aquatic organisms. The nearshore areas on the west side of Day Island have narrow intertidal and shallow subtidal margins along the deep waters of the Sound. These margins are important migratory routes for salmon, waterfowl, and shorebirds, and serve as rearing areas for juvenile to adult salmonids and their prey, as spawning areas for forage fish, and for intertidal and subtidal shellfish and algae production. The Day Island SPA supports the following	Day Island Reach: No change in habitat function expected. Changes in shoreline use are not anticipated, as existing uses (water-dependent marina uses and residential uses) are fully built-out and consistent with the City’s Comprehensive Plan. Limited localized improvement could occur as redevelopment occurs (requirements for riparian vegetation conservation); however it is unknown how much redevelopment will happen. Even where it does, the potential for habitat improvement is limited (due to constrained existing parcel patterns).

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
<i>continued</i> Puget Sound Marine Shorelines • Estuarine habitat; sub-tidal and intertidal mudflats and salt marshes provide transition habitat between fresh and salt water environments. • Shoreline habitat for wildlife; vegetation provides structure for invertebrates, birds, amphibians, reptiles, and mammals. Source and delivery of LWD.	Restoration: Site specific opportunities include (See Restoration Plan Figure 2 / Table 4 for additional detail, with restoration site numbers depicted on Figure 2 noted below): • Improvements / daylighting at mouth of Crystal Creek (site 1) • Cement pier removal or partial (Day Island – site 2) • Removal of other derelict / harmful shoreline armoring and modifications (Day Island – sites 3 and 4) • Beach nourishment along BNSF corridor in targeted locations (Puget Sound North and South – general opportunity, see dotted yellow line Figure 2) • Removal of debris and derelict structures from vacant lots (Puget Sound North – site 8) • Beach culvert removal (Puget Sound North - site 11) • Targeted armoring removal (Puget Sound North –site 9) • Removal of derelict shoreline structures (including armoring, dock) and pilings, enhancement of riparian habitat - targeted along Chambers Creek Property Puget Sound shoreline (Puget Sound South – sites 12-15) • Estuarine marsh expansion (Chambers Bay – general opportunity, see dotted red line Figure 2) • Riparian enhancement, particularly along southernmost shore (Chambers Bay – general opportunity, see dotted green line Figure 2) Programmatic opportunities include: educating shoreline property owners about low impact development techniques, best practices for landscaping and yard maintenance; educating boat owners on proper waste disposal methods, anchoring techniques, and other best boating practices to minimize habitat damage and prevent water quality contamination; Where shorelines have been modified, provide incentives to encourage redevelopment activities to include salmonid habitat restoration. Preserving and enhancing upper beach areas waterward of BNSF armoring. Removing armoring and bulkheads, derelict vessels, creosote pilings, and other derelict structures. Coordinating SMP restoration with regional partners, including WRIA 12 planning efforts.	fish species (AAI, 1999): • Potential forage fish spawning habitat • Critical habitat for ESA listed salmonids, including Chinook and coho. • Demersal groundfish / bottom-dwelling fish habitat • Pelagic groundfish • Sand lance larvae	
		<u>Puget Sound North Reach: Low</u> Development and armoring (primarily railroad riprap) has eliminated marine riparian vegetation in most areas. Intact forest on slopes is separated from shorelines by the railroad, which limits wildlife movement. Removal of mature trees from riparian areas and bluffs has significantly reduced source of LWD to the nearshore system.	<u>Puget Sound North Reach:</u> No change in habitat function expected. Due to the continued presence of the railroad and the bulkheads on Sunset Beach area, no change in wildlife habitat function expected in this reach. New regulations are expected to prevent further degradation of habitat on the private parcels of Sunset Beach.
		<u>Puget Sound South Reach: Low</u> Development and armoring (primarily railroad riprap) has eliminated marine riparian vegetation in most areas. Intact forested areas on slopes are separated from shorelines by the railroad, which limits wildlife movement. Removal of mature trees from riparian areas and bluffs has significantly reduced source of LWD to the nearshore system. Estuarine habitat in Chambers Bay present but limited by dredging, presence of dam and spillway across mouth of Chambers Creek. Intact riparian corridor along Chambers Creek is disconnected from estuarine and marine shorelines by the dam and by Chambers Creek Road.	<u>Puget Sound South Reach:</u> No change expected. No change in habitat functions anticipated for areas fronting the Puget Sound (BNSF railroad corridor and associated revetment limit potential for riparian enhancement). Within Chambers Bay, Pierce County's Master Site Plan identifies shoreline areas primarily as open space. Riparian enhancement is identified for these areas, and will occur as the County continues to implement development consistent with the plan. Although still at a conceptual level, the plans to remove the dam near the mouth of Chambers Creek would restore freshwater and saltwater connections and improve wildlife habitat functions within the bay and in the stream. Dam removal is not anticipated within foreseeable future.

Process: Function	Beneficial SMP Provisions	Current Performance of Function	Future Performance of Function with Regulations and Restoration
Chambers Creek • Sources and delivery of LWD • Native plant communities, especially within riparian zone (structure for invertebrates, birds, amphibians, reptiles, and mammals) • Organic inputs • Habitat connectivity • Stream / floodplain interaction	SEE ABOVE – Many specific provisions applicable to Chambers Creek Natural and Urban Conservancy designations are detailed above in marine shoreline summary. Additional protections specific to Chambers Creek: Natural Shoreline designation along Chambers Creek limits uses and future development (Tables 18.30.A and 18.30.B). Vegetation conservation areas required – see “Hydrology” response for Chambers Creek, above. Restoration –_Site specific and general restoration opportunities include (See Restoration Plan page 32 for details): • Increase of riparian forest cover and habitat diversity. Existing conditions generally high; restoration should identify and implement site-specific opportunities to enhance riparian conditions, with projects focused on improving habitat structure and diversity. • Control of invasive weeds. Should be completed in coordination with watershed-wide efforts (especially for Japanese knotweed), and should use native plant installation and establishment as a primary strategy.	<u>Chambers Creek Reach: Moderate to High</u> Chambers Creek is surrounded mainly by undeveloped riparian forest, which is protected as the Chambers Creek Canyon Park. A dam and spill way is located at the mouth of Chambers Creek, where the stream flows into Chambers Bay. There is extensive salmonid use of lower Chambers Creek, although anadromous fish production in the Chambers-Clover Creek watershed is relatively low and has been below historic levels for a number of years.	<u>Chambers Creek Reach:</u> Improvement Expected Although still at a conceptual level, the plans to remove the dam near the mouth of Chambers Creek would restore freshwater and saltwater connections and improve wildlife habitat functions within the bay and in the stream. Dam removal is not anticipated within foreseeable future. There is moderate potential to restore a more natural rainfall to runoff relationship within the City of University Place. Retrofitting stormwater management measures could reduce flashiness of storm flows and reduce pollutant loading, which would improve in-stream fish habitat.

Chapter 8 Summary of Cumulative Impacts and No Net Loss

The existing conditions and ecologic functions described in the ICR report (ESA Adolfson, 2011) and summarized in Chapter 2 of this report describe a shoreline environment that is a mix of highly functioning natural areas (Chambers Creek reach) to low / moderately functioning urbanized areas (BNSF railway corridor, Sunset Beach and Day Island). Past and ongoing uses in University Place's marine shorelines have altered shoreline functions. The BNSF railway has led to shoreline modifications that have disconnected the water from the coastal bluffs and altered natural hydrological processes. Residential development on Day Island and at Sunset Beach has also altered natural riparian and nearshore hydrological process. In both instances, these uses have resulted in loss of riparian vegetation, which has altered habitats.

With the possible exception of mixed use redevelopment within Day Island Medium Intensity areas on the mainland side of the Day Island lagoon, the likelihood of further development in any of the City's shoreline areas is low. Shoreline Residential areas of Day Island, for example, have reached nearly full build-out conditions and only redevelopment is likely. Chambers Creek shorelines are located within publicly owned open space parkland, and future development potential is therefore low. However, there are several significant opportunities for restoration of wildlife habitat within the shorelines of University Place.

The locally approved SMP was developed to, at a minimum, achieve no net loss of ecological functions by maintaining shoreline functions at the baseline level established in the Inventory and Characterization Report. As limited amounts of redevelopment and public infrastructure improvements occur, the SMP will accomplish this through several means:

- Establishing a system of shoreline environment designations as a tool to implement shoreline use regulations and development standards;
- Providing a new system of shoreline setbacks and vegetation conservation areas, differentiated by environment designation and allowed use, to protect shoreline functions and associated riparian functions;
- Maintaining and improving protections for critical areas by integrating updated regulations for associated wetlands, fish and wildlife habitats, geological hazards, and other areas into the SMP so that impacts from development on these areas are avoided. The critical area regulations effectively preclude development on marine bluffs and on steep slopes throughout the City's shoreline;
- Inclusion of updated use regulations and development standards for shoreline development that preserve ecological functions;
- Requiring mitigation sequencing to assure that impacts are avoided, minimized and compensated for; and
- The City's authority to condition shoreline development projects to ensure that they do not individually or collectively result in a net loss of shoreline functions.

The cumulative impacts analysis shows that comprehensive updates to the SMP would maintain shoreline functions such as hydrology, water quality, and habitat over time. Conclusions on the future performance of these key shoreline functions are summarized as follows:

Hydrology: Hydrology is likely to be unchanged and has the potential for improvement in the lower reaches of Chambers Creek and within Chambers Bay. Large scale restoration of Chambers Bay through removal of the Chambers Creek Dam (at the mouth of the creek) would significantly improve hydrologic functions (water movement and related sediment movement) in these areas.

Because of the presence of the railroad along the entire Puget Sound shoreline of the City, as well as historical modifications associated with the Chambers Creek Properties and pockets of small lot residential development fronting the railroad, coastal bluffs and intact marine vegetation have been disconnected from the shoreline and hydrologic processes have been altered. This condition is unlikely to change since the railroad is unlikely to be removed during the planning horizon of this plan (20 years). Shoreline armoring may be removed or ‘softened’ through replacement at Day Island and/or Sunset Beach, although this would only occur during redevelopment or voluntarily.

Water Quality: Water quality is likely to remain unchanged or improved in all shoreline districts. Regulations would limit any additional impacts to wetlands, and any impacts would be mitigated. SMP policies and regulations encourage the use of LID techniques, addressing nonpoint-source pollution. New development compliance – required throughout University Place – with the City’s storm and surface water regulations (UPMC Title 12) will play a significant role in maintain water quality functions and achieving no net loss.

Habitat: Habitat elements such as riparian vegetation, large woody debris and organic contributions have been altered throughout the City’s marine shorelines. Alternatively, much of the Chambers Creek shoreline provides high quality habitat, although connectivity to Chambers Bay is altered by the dam. Based on the current altered condition along the marine shorelines, and uniform protection of the Chambers Creek shoreline jurisdiction within publicly owned open space parkland, no further loss of this function is expected. In Chambers Bay and at the mouth of Chambers Creek there is a potential for improvement over time. Provisions of the locally approved SMP require that impacts to vegetation functions must be mitigated to achieve no net loss. The SMP requires a new system of shoreline setbacks and vegetation conservation areas (VCAs). Where riparian conditions are intact (typically Conservancy and Natural shoreline environments), VCA widths are imposed to ensure protection of existing natural vegetation. On Day Island where existing conditions are degraded, allowances for expansion of existing residences into the standard VCA width will trigger requirements for enhancement (except for the highly constrained areas of Day Island South Spit and Sunset Beach, where there is no potential for enhancement). This approach will require protection of riparian conditions where intact and enhancement in highly degraded areas where some potential for riparian improvement remains. In addition, standard shoreline setbacks are established for all shoreline environments for all allowed uses. The Shoreline Restoration Plan also identifies restoration opportunities across the City’s marine and freshwater shorelines.

Based on anticipated low levels of foreseeable future development in University Place's shorelines, the protective provisions of the updated SMP – and with the expected implementation of restoration actions by the City and the continued implementation of on-going state, tribal and federal programs – net loss of shoreline ecological functions from existing baseline conditions is not anticipated.

To continue the trend toward improvement of shoreline ecological functions and decrease the likelihood of potential net loss, the City should ensure enforcement of updated SMP provisions as limited shoreline development occurs, educate / encourage existing property owners / users on low impact development techniques and best practices for shoreline use, and seek out opportunities to implement significant restoration opportunities identified in the Restoration Plan.

Chapter 9 References

- Adolfson Associates, Inc. (AAI). 1999. Shoreline Master Program Development - Inventory of Shoreline Area, Task 2. Prepared for the City of University Plan.
- Boers, J. Personal communication with Michael Muscari on June 4, 2010. Regarding public access sites.
- Ecology (Washington State Department of Ecology). 2010. SMP Handbook – Chapter 17, Cumulative Impacts Analysis. Updated May 27, 2010.
- ESA Adolfson. 2008. Pierce County Shoreline Master Program Update Project: Shoreline Restoration Plan. Prepared for Pierce County Planning and Land Services Department. Pierce County, WA.
- ESA Adolfson. June 2011. University Place Shoreline Master Program Update – Shoreline Inventory and Characterization Report. April 2010, revised June 2011.
- ESA. June 2012. University Place Shoreline Master Program Update – Shoreline Restoration Plan. Prepared for City of University Place.
- Murray, M.R. and L. Ferguson. 1998. The Status of Marine Protected Areas in Puget Sound. Volume II: MPA Site Profiles & Appendices. Prepared for the Puget Sound/Georgia Basin International Task Force Work Group on Marine Protected Areas. June 1998. Available: <http://www.psat.wa.gov/shared/volume2/intro.html>
- Pierce County. 1996. Chambers Creek Properties Master Site Plan Draft Environmental Impact Statement Volume 1. Department of Public Works and Utilities, Department of Parks and Recreation Services. November 5, 1996.
- Pierce County. 2005. Salmon Habitat Protection and Restoration Strategy, WRIA-10 Puyallup Watershed and WRIA-12 Chambers/Clover Creek Watershed. June 23, 2005.
- Pierce County. 2007. Chambers Creek Properties Master Site Plan. Department of Public Works and Utilities, Department of Parks and Recreation Services. Originally adopted August 19, 1997, update adopted February 27, 2007.
- PSNERP. 2011 - Puget Sound Nearshore Ecosystem Restoration Project Strategic Restoration Conceptual Engineering — Final Design Report. March 2011. http://www.pugetsoundnearshore.org/technical_papers/cdr/Duguala%20FINAL%20CDR%20with%20Intro.pdf
- Puget Sound Partnership. 2009. Puget Sound Action Agenda (Action Agenda). Updated May 27, 2009. Olympia, Washington. Available at: http://www.psp.wa.gov/aa_action_agenda.php
- Redman, S., D. Myers, and D. Averill, eds. (2005). Regional Nearshore and Marine Aspects of Salmon Recovery in Puget Sound. Shared Strategy for Puget Sound. June 28, 2005.
- Simenstad, C. A., M. Ramirez, J. Burke, M. Logsdon, H. Shipman, C. Tanner, C. Davis, J. Fung, P. Bloch, K. Fresh, D. Myers, E. Iverson, A. Bailey, P. Schlenger, C. Kiblinger, P. Myre, W. Gerstel, and A. MacLennan. 2009. Historic Change of Puget Sound Shorelines: Puget Sound Nearshore Ecosystem Project Change Analysis. Puget Sound Nearshore Report No. 2009-XX,

Published by Washington Department of Fish and Wildlife, Olympia, Washington, and U.S. Army Corps of Engineers, Seattle, Washington.

University Place. 2008. University Place Comprehensive Plan. University Place, Washington

University Place. 2010. University Place Municipal Code (UPMC). Available at City website.

University Place. 2011. First Draft Shoreline Master Program. June 2011

Washington Department of Fish and Wildlife (WDFW). 2009a. Priority Habitats and Species database information.

Washington Department of Fish and Wildlife (WDFW). 2009b. SalmonScape data. Olympia, Washington. Available: <http://wdfw.wa.gov/mapping/salmonscape/index.html>

Washington State Department of Ecology (Ecology). 1979. Coastal Zone Atlas of Washington: Volume 7, Pierce County; Publication No. DOE 77-21-7.

Washington State Department of Ecology (Ecology). 1992. Shoreline Aerial Photos. Available: <http://apps.ecy.wa.gov/shorephotos/index.html>

Washington State Department of Ecology (Ecology). 1995. Chambers - Clover Creek Watershed Initial Assessment. Washington State Department of Ecology, Publication #95-157, Olympia, Washington. Available: <http://www.ecy.wa.gov/biblio/95157.html>

Washington State Department of Ecology (Ecology). 2006. Washington's Water Quality Management Plan to Control Nonpoint Sources of Pollution Volume 1: Water Quality Summaries for Watersheds in Washington State. June 2006. Publication Number 06-10-039. Prepared by: Bill Hashim, Washington State Department of Ecology Water Quality Program. Available: <http://www.ecy.wa.gov/pubs/0610039/>.

Washington State Department of Ecology (Ecology). Digital Coastal Atlas. Shorelands and Environmental Assistance Program. Available: http://apps.ecy.wa.gov/website/coastal_atlas/viewer.htm

Washington State Department of Natural Resources (WDNR). 2001. Washington State ShoreZone Inventory, Nearshore Habitat Program, Washington State Department of Natural Resources. Olympia, Washington. Available: <http://www2.wadnr.gov/nearshore/>