City of Duvall
Shoreline Master Program Update
Cumulative Impacts Assessment

Ecology Grant No. G100025
April 2012, Updated November 2012

Table of Contents

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

The City of Duvall is updating its Shoreline Master Program (SMP) consistent with state guidelines (WAC Chapter 173-26). Under the shoreline guidelines, local jurisdictions are required to evaluate and consider cumulative impacts of reasonably foreseeable future development in the shorelines of the state (WAC 173-26-186(8)(d)). This report assesses the cumulative impacts of development in the shoreline that would result from development and activities over time under the provisions contained in the Draft Shoreline Master Program (SMP) (dated June, 2011).

The City of Duvall is located in northeastern King County along the eastern shoreline of the Snoqualmie River. The total length of Snoqualmie River shoreline within the municipal boundary of the City is approximately 1.5 miles. The provisions of the Shoreline Master Program apply to all shorelines of the state, all shorelines of statewide significance and shorelands as defined in RCW 90.58.030.

The Draft Duvall SMP (2012) provides standards and procedures to evaluate individual uses or developments for their potential to impact shoreline resources on a case-by-case basis through the permitting process. The purpose of evaluating cumulative impacts is to ensure that, when implemented over time, the proposed SMP goals, policies and regulations will achieve no net loss of shoreline ecological functions from current "baseline" conditions. Baseline conditions were established and described in the Final Shoreline Inventory and Characterization Report prepared by ESA (2010). The following graphic provides a visual description of the role of the SMP update in achieving no net loss.

Figure 1. Achieving No Net Loss of Ecological Functions

Source: Washington State Department of Ecology

The guidelines state that, "to ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs shall contain policies, programs, and regulations that address adverse cumulative impacts and fairly allocate the burden of addressing cumulative impacts among development opportunities. Evaluation of such cumulative impacts should consider:

- Current circumstances affecting the shorelines and relevant natural processes;
- Reasonably foreseeable future development and use of the shoreline; and
- Beneficial effects of any established regulatory programs under other local, state, and federal laws."[1]

This cumulative impacts assessment uses these three considerations as a framework for evaluating the potential long-term impacts on shoreline ecological functions and processes that may result from development or activities under the proposed SMP over time. This assessment considers current circumstances; reasonably foreseeable future development and use; potential effects of development under the proposed SMP provisions; restoration planning and other federal, state, and local programs. Based on this information, an assessment is made as to whether the ecological functions in the shoreline are likely to remain at current levels, improve or be degraded. If conditions are likely to remain or improve, "no net loss" is achieved.

1 WAC 173-26-286(8)(d)

2.0 EXISTING CONDITIONS

The Shoreline Inventory and Characterization Report (ESA, 2010) identifies existing conditions and evaluates the ecological functions and processes in the City's shoreline planning area. Conditions identified in the Inventory and Characterization Report are summarized in this chapter.

2.1 Watershed and WRIA Context

The City of Duvall is located with the Snoqualmie Watershed (Inventory and Characterization Map 1), a significant drainage of the Snohomish Basin, known as Water Resource Inventory Area (WRIA) 7. The Snoqualmie Watershed is located predominantly within the borders of King County, with the lower portion of the River and watershed extending into Snohomish County downstream of Duvall.

The mainstem Snoqualmie River forms in the headwaters of the Snoqualmie North, Middle, and South Forks to the southeast of the City. From Duvall, the mainstem Snoqualmie River extends upstream south and east through unincorporated King County as well as the City of Carnation, the community of Fall City, and (above Snoqualmie Falls) the Cities of Snoqualmie and North Bend (Map 1).

Immediately downstream (north) of Duvall, Cherry Creek drains to the mainstem from the east. Cherry Creek is the lowest significant tributary, and the only significant tributary that drains areas of the City. The mainstem of Cherry Creek never passes into the City or UGA; non-shoreline tributaries to Cherry Creek drain the northeastern portion of the City.

See Section 3.1 (Watershed and Regional Overview) of the Inventory and Characterization Report for more information.

The Snoqualmie River continues north from Duvall for approximately nine miles before joining together with the Skykomish River; downstream of the convergence, the rivers together are named the Snohomish River. The Snohomish River drains to Puget Sound at Everett. The WRIA 7 system drains 1,856 square miles located in both Snohomish and King Counties (Snohomish County, 2006).

The region has a temperate, maritime climate. Winters are cool and wet, while there is typically a drought period in the summer and early fall. The climate is influenced by Puget Sound to the west and the Cascade Mountains to the east. Average annual precipitation ranges from approximately 30 inches near Puget Sound to 90 inches in the Cascade foothills, with the area surrounding Duvall averaging nearly 50 inches.

Higher human population densities in the Snoqualmie River watershed are focused within and around Duvall, Carnation, Fall City, Snoqualmie and North Bend. Outside of these urban growth areas, the Snoqualmie River valley consists primarily of agricultural production districts, with surrounding portions of the watershed including rural areas, forest production districts, and open space areas (preserved lands) (King County DDES, 2009).

2.2 Physical and Biological Characterization

Channel Form and Bank Conditions: The Snoqualmie River through the City is incised into the alluvial valley. During normal flows, the river is a low energy system characterized as a glide stream environment with a

relatively slow flow rate and no pooling or riffle area (ESA Adolfson, 2009 – *Draft McCormick Park Reconnaissance and Opportunities and Constraints Assessment*, included as Appendix C).

The Snoqualmie River riparian corridor is characterized by a steep bank (due to the incised river) backed generally by a narrow deciduous forest corridor. The bank is vegetated with herbaceous trees and shrub species, with Himalayan blackberry as the dominant (invasive) shrub growing along most of the bank. The forested community ranges from 20 to 30 feet wide from the bank in the south-end open space area to 50 to 150 feet wide within portions of McCormick Park and Taylor's Landing.

Floodplain, Floodway, and Channel Migration Areas: During significant flood events, the Snoqualmie River engages much of the valley including the majority of the City's shoreline area. Local records of flood events indicate that the floodplain, extending through the south-end open space area into the developed portion of McCormick Park, is engaged, at least partially, in 50 percent of years. An interpretive flood pole in McCormick Park documents flood events over the last half-century, with detailed documentation over the last 20 years.

For more information, see Section 5.1.1 (Physical and Biological Characterization) of the Inventory and Characterization Report.

The 1 percent annual chance (100-year) floodplain and floodway area has recently been mapped for Duvall, and throughout the Snoqualmie River (FEMA Preliminary DFIRM, November 2010). In the Duvall vicinity the preliminary DFIRMs show an approximate 100-year flood elevation of 51 feet NAVD 88 (FEMA, 2010). The mapped floodplain extends to the edge of the Snoqualmie valley through the City, including the Snoqualmie River / Cherry Creek associated floodplain at the north end of the City within Dougherty Farmstead.

The floodway extends from the river to the Snoqualmie Valley Trail through the wide, southern half of the City's shoreline, and narrows through the vicinity of Depot Village / Taylor's Landing reach along the north edge of the City (see Map 4 and Figures 5-2, 5-4, and 5-6 in the Inventory and Characterization Report).

Tributary Streams and Associated Wetlands: The lower reaches of Thayer and Coe-Clemons Creeks, which together drain the majority of the City's geography, extend across the shoreline planning area.

Wetlands within Duvall's Snoqualmie River floodplain are limited to areas that receive surface and shallow subsurface flow from the tributary channels. Several small wetlands located on the slope above the Snoqualmie valley, immediately west of Main Street, receive shallow groundwater from hillside seeps (Inventory and Characterization Map 3). Much of the shoreline area is dominated by relatively coarse soils that allow for rapid infiltration and percolation, which prevents development of wetland conditions. Some of the McCormick Park area appears to have finer surface deposits, which result in perched water tables supporting several large depressional wetlands. Likewise, depressional wetlands are mapped within the floodplain within and around Dougherty Farmstead at the north end of the City.

Wetlands are associated with these two tributary streams, with flows of both The vegetation across all of the wetlands is similar, consisting of primarily herbaceous communities dominated by common velvetgrass, cattail, and soft rush. Reed canarygrass is a dominant invasive species throughout all of the palustrine emergent wetland areas. Limited areas of scrub/shrub and forest communities occur on the edges of wetland areas. Shrub and tree communities are dominated by red alder and black cottonwood, salmonberry, vine maple, and willow

species with an understory of soft rush, trailing blackberry, giant horsetail, skunk cabbage and lady fern. Himalayan blackberry is the primary invasive species in these areas, although Japanese knotweed also occurs.

Fish and Wildlife Use and Habitat: The Snoqualmie River through City (as well as downstream and upstream) supports several salmonid species, including Chinook salmon (federally listed as threatened), coho salmon, chum salmon, pink salmon, sockeye salmon, bull trout/Dolly Varden (federally listed as threatened), and steelhead (federally listed as threatened) (Inventory and Characterization Map 5). For all of these species, the mainstem river is used as a migratory corridor and habitat for juvenile rearing and outmigration (WDFW, 2010, Snohomish Salmon Recovery Forum, 2005). Due to the incised channel and lack of habitat complexity and/or significant overhanging vegetation, spawning habitat in the River is limited within the City.

Rearing habitat for Chinook and coho salmon has been somewhat degraded by the reduction in accessible floodplain area due to channelization of tributary streams and historical shoreline armoring. Mapped use of tributary streams within the City's shoreline area is limited to the presence / migration of coho salmon within Coe-Clemons and Thayer Creeks (Inventory and Characterization Map 5).

Priority wildlife habitats mapped in the shoreline planning area of the Snoqualmie River and the associated floodplain include wetlands and riparian zones. The wetlands, open water areas, and shoreline trees provide foraging and nesting habitats for priority species such as waterfowl, bald eagle, bats, great blue heron, and pileated woodpecker. Beaver, mountain beaver, rabbit, skunk, black-tailed deer, black bear, and numerous other bird, resident fish, and amphibian species are assumed to use the south-end open space area.

2.3 Land Use and Public Access

Existing Land Use: The eastern Snoqualmie River floodplain was primarily used for agricultural activities though the first half of the 1900s. Currently, Duvall shoreline area is largely publicly owned open space and park lands, with limited development other than impervious surface trails, some of which additionally serve as access roads for utility maintenance and open space restoration activities.

The most significant trail throughout the City's shoreline area is the Snoqualmie Valley Trail, a regionally significant facility linking Duvall with Fall City and beyond. The trail is built on the historic railroad corridor on a fill berm elevated 8 to 12 feet above the adjacent floodplain (Inventory and Characterization Map 8b); the trail currently terminates Taylor's Landing Park.

Construction of the historic railroad corridor through the floodplain significantly altered the interaction of the river and the floodplain during overbank flood events. The floodway is now constricted between the river and the railroad corridor. The railroad corridor berm also separates floodplain wetland areas that were historically linked, and constricts tributary streams to culverts and bridge crossings.

Other significant uses of the City's shoreline area include utility corridors throughout, as well as the Depot Village residential community and Duvall park-and-ride facility extending between Depot Park and Taylor's Landing, both to the east of the railroad tracks. Existing utilities are known to include stormwater outfall corridors, a wastewater outfall corridor, a gas main under the river at Woodinville—Duvall Road, and high-voltage overhead electrical corridors.

Shoreline Environment and Zoning Designations: The current SED for most of Duvall's shoreline area is designated Conservancy, with the Riverside Village zoning area (existing Depot Village development) designated Urban (City of Duvall, 1974).

For more information, see Section 5.1.3, Figure 1-1 (current SEDs) and Map 6 within the Inventory and Characterization Report

The zoning designations, established by DMC 14.10, establish a Public Facility designation for the entire area to the west of the Snoqualmie Valley Trail. To the east of the trail, zoning is established based on existing or planned land uses fronting Main Street. Many of these areas are also zoned Public Facility. Other designations included Mixed Use, Light Industrial, a small area of Midtown, and Riverside Village. With the exception of developed areas of the Riverside Village subarea, existing primary uses associated and consistent with these zoning designations to the east of the trail corridor do not extend west into the floodplain and shoreline environment.

Existing Public Access: The large majority of the Duvall shoreline area is publicly owned recreation and open space and is generally accessible to the public for active uses (shoreline access, picnics and gatherings, wading, swimming, boating) and passive uses (walking / dog walking, horse / equestrian uses, wildlife observation, meditation) (Inventory and Characterization Map 7). The Snoqualmie Valley Trail is owned and managed by King County Parks. Specifics of existing public access areas and facilities are provided in the reach summaries in the Inventory and Characterization (see Section 5.2).

***Shoreline Modifications*:** The Snoqualmie River shoreline area through the City was modified through historic land clearing and decades of agricultural use (Inventory and Characterization Map 8b). Although certified levees were never constructed within the south-end open space area, land clearing and historical shoreline armoring occur along much of the river corridor[2]. King County Eastside Heritage Center historic photos include a 1955 picture of automobiles being used as shoreline armoring along the banks of the Snoqualmie River in Duvall (Photo 1). There is no current evidence of automobiles or other foreign debris used to stabilize the river shoreline.

2 The riparian corridor along the Snoqualmie River throughout McCormick Park, and much of the River reach upstream and downstream of the City, is characterized by a gradual and relatively narrow berm elevated +2 to +5 feet above the surrounding floodplain. The berms are natural formations (fluvial levees) created by rapid sediment deposition during flood events. While modification and expansion (heightening) of fluvial levees during past human development was common in many locations along the river corridor, there is no record of levee structures, informal or otherwise, built along the Snoqualmie within Duvall.

Photo 1. Car bodies used as shoreline armoring along the banks of the Snoqualmie River in Duvall, noted by source as an Army Corps of Engineers project (King County, 2010).

The south-end open space shoreline area contains a narrow forested riparian corridor, another result of historic agricultural uses. In 2006 the Stilly Snohomish Fisheries Enhancement Task Force completed a series of riparian restoration projects, planting native plants along the shoreline (ESA Adolfson, 2009).

Other modifications to the Snoqualmie River within the south end of McCormick Park are limited to several piped outfalls. A comprehensive assessment of shoreline outfalls is underway in the City, being completed by the Public Works department. Stormwater outfalls and the wastewater treatment plant outfall (two discharge points) are known to be located with McCormick Park, with additional facilities to the north along the Riverside Village area. The treatment plant outfall was constructed in the 1990s with updates completed in 2001, and enters the river below normal low flow water levels. The locations of known stormwater outfalls, as well as wastewater outfalls, are included on Inventory and Characterization Map 12.

.

3.0 REASONABLY FORESEEABLE FUTURE DEVELOPMENT AND USE

Ecology Shoreline Guidelines (WAC 173-26) require that the City "address the cumulative impacts on shorelines ecological functions that would result from future shoreline development and uses that are reasonably foreseeable." (WAC 173-26-201(3)(d)(iii)). The following section provides an assessment of reasonably foreseeable future development for the Duval shoreline planning area. Generally, the planning horizon for this analysis is 20 years.

3.1 Shoreline Development Trends

The City has issued fewer than four shoreline substantial development permits in the last decade, and very few exempt shoreline development projects have occurred during this timeframe. The large majority of the shoreline area is publicly owned; as such private development has been extremely limited. Permits have been issued for relatively small parks development projects involving enhancement of upland (non-shoreline) facilities, and for construction of utility easements (primarily stormwater) through the shoreline environment.

3.2 Anticipated Future Development and Use

Parks and open space planning within publicly owned lands are the most significant and likely anticipated future development and use. Areas of active park use and recreation within the shoreline planning area are maintained with trails, lawn, benches, picnic tables, and interpretive signage. Depot Park provides additional community meeting space and wildlife viewing platforms, and Taylor's Landing provides direct access to the Snoqualmie River via a boat ramp. The City has undertaken significant planning for parks, trails, and open space areas for public recreation improvement along the shoreline (EDAW / AECOM, 2008). Projects and improvements to McCormick Park, Depot Park, and Taylor's Landing are identified in the City's Parks, Trails and Open Space Plan, including refurbishment and development of water dependant uses, specifically boat launches and other recreational access facilities. None of these water dependent projects are anticipated or planned for the near future.

In addition to active parks areas, there are significant City and County owned open space areas within the Duvall shoreline planning area. Duvall has prioritized conservation and restoration of publicly owned shoreline areas and has undertaken comprehensive stream habitat restoration planning (Herrera, 2002) and is implementing several mitigation /restoration projects within the shoreline planning area (ESA Adolfson, 2009).

Outside of publicly owned parks and open space areas, the most significant existing land use is within the Riverside Village zoning subarea. The Comprehensive Plan establishes the subarea as a linear strip between the Snoqualmie Valley Trail and the mixed uses associated with the Main Street corridor immediately to the east. Specific land use plan and zoning standards are used for planning and permitting development within this area (Map 6, DMC 14.24). Although Riverside Village (currently supporting the Depot Village mobile home park) is only partially within the shoreline planning area, redevelopment of this area under the Riverside Village zoning district standards could substantially change and intensify land use patterns. Redevelopment of the Riverside Village shoreline planning area is not anticipated within the near-term future.

Limited utility uses of the shoreline planning area are anticipated in the near future. Land use changes to the east, and in limited instances west, of Main Street NE are expected. Although subdivision and development will primarily be outside of the shoreline planning area, the proximity of land uses to the river would allow for additional discharge of treated stormwater.

Duvall Public Works maintains the municipal wastewater effluent conveyance and outfall. No expansions or changes to this facility are anticipated within the next decade.

Anticipated uses would not result in clearing and permanent displacement of existing native vegetation. Any new impervious surfaces would be primarily non-pollution generating (trails). Redevelopment within the Riverside Village and Taylor's Landing areas would result in enhanced stormwater treatment for existing pollution generating impervious surfaces. Near-term anticipated shoreline use would not result in any new shoreline modification or overwater structures. See discussion of protective provisions, below, for additional detail on how the proposed SMP will ensure no net loss, and likely improvement, of shoreline ecological functions as anticipated future development occurs within the Duvall shoreline planning area.

4.0 PROTECTIVE PROVISIONS OF THE PROPOSED SMP

The following section identifies policies and regulations from the Draft SMP that, along with provisions from the draft Restoration Plan, will help to protect and enhance functions over time.

4.1 Shoreline Environment Designations

The assignment of Shoreline Environmental Designations (SEDs) is one of the key tools for regulating shoreline uses to achieve the policy goals of the SMA and those developed for the City's Draft SMP. The proposed SMP establish a system to classify shoreline areas into specific SEDs. The purpose of a shoreline environment designation system is to provide a uniform basis for applying policies and use regulations within distinctly different shoreline areas. Generally, environment designations are based on biological and physical capabilities and limitations of the shoreline, existing and planned development patterns, and a community's vision or objectives for its future development.

The current Duvall SMP establishes two shoreline designations:

1. Conservancy – applied to the majority of the City's shoreline areas, including all areas of McCormick Park, Depot Park, and Taylor's Landing.
2. Urban – applied to the Riverside Village zoning area, which extends across the Depot Village area in the central portion of the City's river frontage.

The Draft SMP includes four designations tailored to five distinct environments of the Snoqualmie River, as well as a separate designation applied to all Snoqualmie River aquatic areas:

- **South McCormick Park Passive Recreation and Conservancy:** The SED is assigned to publicly owned and adjoining privately owned areas within the McCormick Park shoreline area that are set aside for conservation and low intensity purposes. The purpose of the SED is to protect those shoreline areas in the McCormick Park area that are relatively free of human influence or that include intact or minimally degraded shoreline functions intolerant of intense development. These areas require that only very low intensity uses be allowed in order to maintain the ecological functions and ecosystem-wide processes.
- **Public Recreation – Applied to North McCormick Park, Taylor's Landing, and the area of Dougherty Farmstead within shoreline jurisdiction (located east of SR 202 with no river frontage):** This SED, as applied for both public parks and adjacent areas, is appropriate for shoreline areas that provide existing public recreational access to the shoreline area and shoreline, including water-dependent recreation access, and retain desirable riparian characteristics such as minimal bank armoring, associated wetlands and tributary channels, and/or well developed streamside vegetation. These areas can accommodate planned urban recreational development that is compatible with floodplain and floodway hazards and maintaining or restoring ecological functions.
- **Riverside Village**: This SED is assigned to those areas of the City's shorelines that are characterized predominantly by existing and planned moderate density development, have moderately or highly impaired ecological functions and are not exposed to shoreline related hazards such as floodways and channel migration, and/or are planned and zoned for mixed use development. The purpose of the SED is to accommodate a variety of development and uses within Duvall's Snoqualmie River shoreline extending north from McCormick Park to the NE Woodinville-Duvall Road Bridge, consistent with the Comprehensive Plan, with WAC 173-26 and this Program.

- **Dougherty Farmstead Conservancy:** The SED is assigned to publicly owned and adjoining privately owned floodplain areas within and adjacent to Dougherty Farmstead that are set aside for conservation and low intensity purposes. The purpose of the designation is to protect shoreline-associated floodplain and wetland areas at the northern edge to the City that are relatively free of human influence and include intact or minimally degraded shoreline functions intolerant of intense development. These areas require that only very low intensity uses be allowed in order to maintain the ecological functions provided.

The environment designation system is used to tailor management to protect and ensure no net loss of existing functions occurring in different areas of the City's Snoqualmie River shoreline, while providing allowances for uses that are respectively compatible with each shoreline environment.

4.2 Major Changes to Use Regulations in the Proposed SMP

The proposed SMP includes policies and regulations that require allowed uses achieve "no net loss" of shoreline functions. This is achieved through implementation of development standards, mitigation requirements and other regulatory provisions. The proposed SMP includes numerous changes to the shoreline policies and development regulations that encourage shoreline conservation and prohibit uses and activities that would cause adverse impact to shoreline functions and processes. Policies and regulations are also provided to limit new uses and developments that would be incompatible with the floodway and channel migration hazards associated with the Snoqualmie River. The most significant changes proposed relate to standards for allowed uses and shoreline modifications (and prohibitions on non-compatible uses) and incorporation of critical areas and stream buffers. These changes are discussed in the sections that follow.

4.2.1 DETAILED STANDARDS FOR SHORELINE USE AND SHORELINE MODIFICATION

The proposed draft SMP provides detailed standards for allowed shoreline uses and shoreline modifications that are not provided by the City's existing SMP. The few development activities that occurred under the existing SMP often necessitated approval as shoreline conditional uses, with no specific standards provided to ensure compatibility with shoreline areas, as well as minimization and mitigation for impacts to ensure no net loss of ecological function. The proposed SMP relies on General Shoreline standards (Chapter 4), Shoreline Modification standards (Chapter 5), and Use Specific standards (Chapter 6) to set baseline standards and inform permit review for all future shoreline development activities. General use regulations (Chapter 4) establish entirely new limits on impervious surface coverage; for example, only 10 percent of the area of each lot of record within the South McCormick Park environment can be covered with impervious materials (see Draft SMP Table 2). The proposed SMP provides allowances for increasing impervious surface limits; however such increases are capped and can only occur when Snoqualmie River riparian restoration is provided.

Specific measures of the proposed SMP relevant to protection of ecological processes and functions are detailed in Chapter 5 of this Assessment.

4.2.2 SENSITIVE AREAS PROTECTION

The proposed draft SMP adopts the existing sensitive areas standards (DMC 14.42) and applies those protections to the City's shorelines. The sensitive areas code includes protections for wetlands and streams in the form of restrictions on direct impacts, buffers, and standards for limited uses within buffers and assurances that development outside of buffers does not result in indirect impacts (hydrologic impacts, for example). Wetland buffers range in size from 50 to approximately 300 feet depending on wetland type and habitat

functions (DMC 14.42.210). Stream buffers range in size from 50 to 150 feet (DMC 14.42.320). Performance based buffers are established for specific stream reaches (both within shoreline jurisdiction and throughout the City – including all reaches of the Snoqualmie River, Coe-Clemons Creek and Thayer Creek within shoreline jurisdiction) that identify restoration and conservation actions to be included as part of mitigation for adjacent development. Sensitive areas standards ostensibly limit potential for alterations to streams and wetlands and ensure that adjacent development activities provide buffers and include other management measures to avoid and mitigate for adverse impacts. Specific wetland buffer use allowances included in the sensitive areas ordinance were modified or removed within the proposed draft SMP, including allowances for wetland buffer reduction and use of buffer areas for certain stormwater management facilities. Additionally, the buffer area for the Snoqualmie River within the South McCormick Park environment is increased by 50 feet to encompass all areas within 200 feet of ordinary high water.

Sensitive areas regulations also establish management strategies to ensure protection of other fish and wildlife habitats, geologically hazardous areas, and aquifer recharge and wellhead protection areas.

4.2.3 RESTORATION OPPORTUNITIES

In addition to the application of shoreline environment designation and use regulations, the Draft SMP includes a Shoreline Restoration Plan (City of Duvall, 2011). Key restoration programs and actions are identified in the plan for the City's Snoqualmie River shoreline area. The restoration plan identifies projects, programs, and plans that are or would be implemented through the Town's existing efforts, including the comprehensive plan, sensitive areas regulations, and storm and surface water utility. The plan also identifies projects and programs being implemented by regional agencies, Tribes, and conservation groups.

4.2.4 BENEFICIAL EFFECTS OF ESTABLISHED REGULATORY PROGRAMS UNDER OTHER LOCAL, STATE, AND FEDERAL LAWS

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 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 Duvall Municipal Code (DMC) also play a major role in how shorelines are managed. These include:

- **DMC Title 14 – Unified Development Regulations:**
    - **Chapter 14.10 Zoning** – Establishes zoning districts and regulates land use in the City of Duvall, including the shorelines.
    - **Chapter 14.40 Tree Protection** – Establishes regulations and standards aimed at preserving, maintaining and protecting the visual appearance and natural wooded character of the City of Duvall through protection of existing trees.
    - **Chapter 14.42 Sensitive Areas Regulations** – This Chapters, which establishes policies, regulations and land use controls to protect critical areas (wetlands, streams, fish and wildlife habitat geologic hazards, aquifer recharge, and wellhead protection areas), is incorporated directly into the proposed SMP and integrated with other SMP protection strategies.

- **Chapter 14.60 SEPA** – Establishes procedures and policies to implement the State Environmental Policy Act (SEPA). All non-exempt City actions require environmental review under SEPA.

- **Chapter 14.84 Floodplain Regulations** – Establishes policies, regulations and land use controls to promote public health, safety and general welfare; reduce the annual cost of flood insurance; and minimize public and private losses due to flood conditions in specific areas.

- **DMC Title 9, Chapter 9.06 Storm Drainage Utility** – Establishes policies and regulations for the comprehensive management of surface and stormwater for land use proposals and development projects that could have impacts related to water quality, erosion, clearing and grading activities, flood hazard zones, or critical areas.

The SMA requires local governments and state agencies to review their plans, regulations, and ordinances that apply to areas adjacent to shoreline jurisdiction and modify those plans, regulations, and ordinances so they "achieve a consistent use policy" in conformance with the Act and the SMP[3]. This means that the Town's comprehensive plan and development regulations must be consistent with the SMP overall. The Town's 2001 SMP was prepared specifically to ensure consistency with the Town's Comprehensive Plan, which was revised at roughly the same time. The Town did not adopt separate shoreline goals. Rather it adopted the general goals statements from the Comprehensive Plan that cover the seven use elements required by the SMP Guidelines.

4.2.5 STATE AND FEDERAL PROGRAMS

Local development proposals most commonly trigger requirements for state or federal permits when they impact wetlands or streams; potentially affect fish and wildlife listed under the federal Endangered Species Act (ESA); result in over one acre of clearing and grading; affect the floodplain or floodway; or involve in water or over water activities. As with local requirements, state and federal regulations may apply throughout the city, but regulated resources are common within the City's shoreline jurisdiction. These regulations, as they apply in the City as well as in upstream areas of King County, also work in concert with the SMP to protect ecosystem processes at a watershed scale.

The state and federal regulations affecting shoreline-related resources include, but are not limited to:

Hydraulic Project Approval (HPA). Under the State Hydraulic Code (RCW 75.20), an HPA is required for any construction activity in or near the waters of the state, including Puget Sound. The program is administered by the Washington State 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 Dredge and Fill Requirements. Section 404 of the Federal Clean Water Act (33 USC 1344) regulates the discharge of dredged or fill material into waters of the U.S. Any project that proposes

3 RCW 90.58.340

discharging dredged or fill material into the waters of the United States, including special aquatic sites such as wetlands (non-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.

State Water Pollution Control Act. The Washington State Department of Ecology regulates state water quality standards through the State Water Quality Pollution Control Act (RCW 90.48). State regulations include wetlands considered to be isolated under the Clean Water Act.

Clean Water Act Section 401 Water Quality Certification. Applicants receiving a section 404 permit from the U.S. Army Corp of Engineers, 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 Washington Department of Ecology (Ecology). Issuance of a certification means that Ecology anticipates that the applicant's project will comply with state water quality standards, including the state's Water Pollution Control Act (RCW 90.48), and other aquatic resource protection requirements under Ecology's authority.

Federal Endangered Species Act (ESA). All federally funded projects or projects that require federal permits, must comply with the federal Endangered Species Act (7 USC 136). Projects that have the potential to directly or indirectly impact species listed as endangered or threatened (including several species in Puget Sound) are subject to approval by the U.S. Fish and Wildlife Service (USFWS) or the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries).

Section 10 Rivers and Harbors Act (Permit for Work in Navigable Waters). Under the Rivers and Harbors Act, the Corps has jurisdiction in all navigable waters of the U.S (33 USC 403). Any work in, over, or under navigable waters must apply for a Section 10 permit, which prohibits the obstruction or alteration of navigable waters.

5.0 ASSESSMENT OF CUMULATIVE IMPACTS

5.1 Current and Future Performance of Shoreline Ecological Functions

The assessment of cumulative impacts considers the impacts of reasonably foreseeable future development on existing conditions and then assesses whether the provisions of the proposed Draft SMP will, at the least, maintain shoreline functions at their present condition. Chapter 2 describes the existing performance of shoreline functions along Duvall's shorelines as described in the Shoreline Inventory and Characterization report (ESA, 2011). Reasonably foreseeable future developments in the shoreline and their potential impacts are identified in Chapter 3.0. Chapter 4 and Table 1 identify the protective measures of the policies and regulations in the Draft Master Program and potential restoration opportunities. Based on this information, a conclusion is drawn as to whether the conditions of shoreline functions will improve remain the same or degrade over time.

Table 1 identifies the current conditions of key shoreline functions: hydrology, water quality and Habitat. It identifies reasonably foreseeable development and protective policies, regulations and restoration opportunities. Based on this information an assessment of the future condition of each functions is provided.

Table 1 Protective Measures and restoration Opportunities

Current Performance Shoreline Inventory and Characterization Report - ESA Adolfson, 2010	SMP Provisions Protection or Restoration Protection = Proposed SMP regulations (with reference to SMP section number) Restoration = Final Draft Restoration Plan Policy	Future Performance
Ecological Process / Function: Hydrology, including flow regime, sediment transport, and floodplain interaction. WAC 173-26-201(3)(d)(i)(C)		
The Snoqualmie River along its entire extent through the City is incised into the alluvial valley; during normal flows, the river is a low energy system (characterized as glide stream environment with relatively slow flow rate). During significant flood events, the Snoqualmie River engages much of the valley, including most of the City's shoreline area. The floodway (approximately representative of the high and fast flowing portion of the floodplain) is variable depending on shoreline environment. Tributary hydrologic conditions also vary: • South McCormick Park and North McCormick Park –floodway extends from the river to the Snoqualmie Valley Trail (floodway confined by Trail fill corridor); multiple tributary channels and riparian wetlands exist, with substantial alteration from historic channelization and flow alterations (barriers, culverts) associated with trail fill corridors. • Riverside Village, Taylor's Landing and north to City limits – floodway is a narrow corridor constricted by largely natural topography; no tributary streams, largely intact wetland hydrology within Dougherty Farmstead wetlands.	**Protection** Boating facilities (SMP 6.2): • A maximum of one boat launch ramp permitted in Taylor's Landing Park (location of existing City launch ramp); hand launch facility permitted within McCormick Park (SMP 3.3, Table 1). • Launch facilities prohibited within South McCormick Park, Riverside Village, and Dougherty Farmstead environments (SMP 3.3, Table 1). • Dry boat storage is only allowed within Public Recreation environments with a CUP, and is only allowed for hand launch-able watercraft and when a public use (SMP 3.3, Table 1). • SMP 6.2, Regulations 3 and 4 provide detailed review and development criteria to ensure impacts are mitigated to the maximum extent for any allowed boating facilities. Dredging and Dredge Material Disposal (Section 5.3) • Dredging and dredge material disposal is permitted as a CUP (SMP 3.3, Table 1). • Dredging waterward of the OHWM is allowed only in support of a publically sponsored or City approved ecological restoration or enhancement project (including approved mitigation projects) that improves shoreline ecological functions and process, or as part of a bio-engineered shoreline stabilization project. (SMP 5.3.2-1) • All proposals for dredging and dredged material disposal must include all feasible mitigation measures to protect freshwater habitats and to minimize adverse environmental impacts, including turbidity, nutrient releases, heavy metals, sulfides, organic material or toxic substances, dissolved oxygen depletion, disruption of food chains, loss of benthic productivity and disturbance of fish runs and important localized biological communities. (SMP 5.3.2-2) Flood Control Works/Flood Hazard Reduction (SMP 4.5) • Levees are prohibited throughout the City (SMP 3.3, Table 1). • Flood curtains and/or flood wall protections are permitted for allowed uses to the east of the Snoqualmie Valley Trail corridor (SMP 3.4. Table 1). Instream Structures • Instream structures are permitted as a CUP within tributary streams, however are prohibited within the Snoqualmie River (SMP 3.3, Table 1). • In-stream structures, where allowed, are only permitted when associated with an adopted watershed management plan, surface water management plan or restoration plan; all in-stream structures must be designed by a licensed proffesional engineer with relevant experience, and must be designed to allow for fish passage and minimize the need for structural shoreline stabilization. (SMP 5.4.2-1,2, 3, and 5) • Natural in-stream features (snags, uprooted trees, or stumps) are to be left in place unless they are actually causing bank erosion, safety hazards, or higher flood stages. Removal shall be done in coordination with Washington Department of Fish and Wildlife. (SMP 5.4.2-4) Fill, Excavation, Ditching, Clearing and Grading (SMP 5.2) • Fill is permitted as a CUP within the floodway only in association with an allowed use (and only when associated with a restoration project within the South McCormick Park and Dougherty Farmstead environments, and when consistent with DMC 14.84 – Floodplain Regulations). Fill is permitted outside the floodway only in association with an allowed use (SMP 3.3, Table 1 and SMP 5.2.2-3 and 4). Fill is only allowed when necessary to accommodate the allowed development (SMP 5.2.2-2) • All allowed fill, excavation, ditching, clearing and grading activities must comply with the provisions of DMC 10.12 (Best Management Practices for Construction and Site Development) and 9.06 (Storm Drainage Utility Code). (SMP 5.2.2-1) • Fill waterward of the floodway is permitted for: publicly sponsored and/or approved ecological restoration or enhancement projects (including mitigation projects) that involve removal of shoreline armoring or shoreline vegetation enhancement; bio-engineered shoreline stabilization projects, including bio-engineered shoreline stabilization associated with private residential developments; and publicly sponsored non-restoration projects that provide public access or improve access to the	**No Change or Potential Improvement** Wetland habitat will be protected from development through the sensitive areas requirements in the Draft SMP. Riparian and bank conditions along the mainstem Snoqualmie River and tributary streams will be maintained and enhanced as restoration actions occur.

Current Performance Shoreline Inventory and Characterization Report - ESA Adolfson, 2010	SMP Provisions Protection or Restoration Protection = Proposed SMP regulations (with reference to SMP section number) Restoration = Final Draft Restoration Plan Policy	Future Performance
	shoreline for a substantial number of people. (SMP 5.2.2-6) • Fills must not be located where shoreline stabilization would be necessary (SMP 5.2.2-8). • Fill, excavation, clearing and/or grading is permitted only where it is demonstrated that alternatives are not feasible, and that the action will not adversely alter natural drainage and current patterns or significantly reduce floodwater capacities (SMP 5.2.2-7); unavoidable impacts of filling, excavation, clearing and/or grading shall be mitigated as required by the SMP and WAC 173-26-201(2) (SMP 5.2.2-10). • A temporary erosion and sediment control (TESC) plan shall be provided for all proposed filling, excavation, clearing and grading activities (SMP 5.2.2-9). Mining • Mining is a prohibited use. (SMP 6.1-1, Table 1) Shoreline Stabilization (SMP 5.1) • Hard shoreline armoring is primarily permitted only with a CUP, except in the Public Recreation shoreline environments where hard armoring is permitted when incorporating ecological design components. (SMP 3.3, Table 1 and SMP 5.1.2-3) • Hard shoreline armoring is prohibited within the Aquatic environment. (SMP 3.3, Table 1) • Soft-armoring is permitted within all shoreline environments. (SMP 3.3, Table 1) • Replacement of an existing structure is permitted only if it serves to protect an existing primary structure from erosion, when specific standards are met to ensure no additional loss and/or improvements to ecological functions (SMP 5.1.2-5). • New development shall be located and designed to avoid the need for future shoreline stabilization to the extent feasible. (SMP 5.1.2-2) **<u>Restoration</u>** Restoration Policy 1. The City should continue to encourage and facilitate cooperative restoration and enhancement programs between local, state and federal public agencies, tribes, non-profit organizations, and landowners. Restoration Policy 2. The City should continue to implement approved restoration plans to facilitate the restoration of impaired ecological functions through a variety of techniques, including seeking restoration partners, incentives for projects that incorporate restoration components, and securing available restoration grants and funding. Restoration Policy 3. The City should formalize and expand a public outreach and education program for property owners adjacent to the shoreline to promote shoreline-friendly practices. *See also Restoration Policies 4, 5, 8, and 12 – 15, listed elsewhere in this table.*	

Current Performance Shoreline Inventory and Characterization Report - ESA Adolfson, 2010	SMP Provisions Protection or Restoration Protection = Proposed SMP regulations (with reference to SMP section number) Restoration = Final Draft Restoration Plan Policy	Future Performance
Ecological Process / Function: Water Quality, including retention of particulates, nutrient cycling, pathogens, delivery movement, and loss. WAC 173-26-201(3)(d)(i)(C)		

<table>
<tr><th>Current Performance
Shoreline Inventory and Characterization Report - ESA Adolfson, 2010</th><th>SMP Provisions
Protection or Restoration
Protection = Proposed SMP regulations (with reference to SMP section number)
Restoration = Final Draft Restoration Plan Policy</th><th>Future Performance</th></tr>
<tr>
<td>Primary water quality concerns include:

• Surface water temperature within tributary streams (especially within shoreline jurisdiction);
• Fecal coliform levels within the River (likely primarily from agricultural uses outside of Duvall; and the potential for elevated levels of key nutrients, including phosphorus and nitrogen).

The mainstem reach extending through and upstream of the City has been listed on the Ecology 303(d) list as a Category 4(a) water for fecal coliform for more than a decade. A Category 4(a) listing indicates that tested levels have been in excess of water quality standards and that a total maximum daily load (TMDL) plan is in place to maintain or improve water quality within the listed water.

Forest cover within the City's Snoqualmie River shoreline area, including the 50 to 100 foot riparian area along the river, is significantly reduced due to historic land clearing for agricultural activities. Depressional wetlands with significant storage capacity occur primarily in the South McCormick Park, North McCormick Park, and Dougherty Farmstead shoreline environments; wetlands provide an environment for chemical and biotic mechanisms that improve water quality.</td>
<td><u>Protection</u>

SED specific standards for impervious lot coverage (SMP Table 2):
<table><tr><th></th><th>South McCormick Park</th><th>N. McCormick Public Recreation / Taylor's Landing</th><th>Riverside Village</th></tr><tr><td>Max. Impervious Surface Coverage</td><td>10%</td><td>25%</td><td>60%</td></tr></table>Maximum impervious surface coverage may be increased in the South McCormick Park, North McCormick Park, Riverside Village, and Taylor's Landing shoreline environments when Snoqualmie shoreline restoration is provided consistent with Section 4.1 of this Program. (SMP 3.4, Table 2 and SMP 4.1.2-3)

Water quality (SMP 4.8)
• Shoreline use and development is required to use the AKART approach to prevent, control, and treat stormwater in order protect and maintain surface and ground water quantity and quality in accordance with the City's stormwater management and erosion control regulations (DMC 9.06) as well as the City's critical aquifer recharge area provisions of the critical areas code (DMC 14.42). (SMP 4.7.2-1)
• All materials that may come in contact with water are required to be composed of non-toxic materials, such as untreated wood, concrete, approved plastic composites or steel, that will not adversely affect water quality or aquatic plants or animals. (SMP 4.7.2-2)

Fill, Excavation, Ditching, Clearing and Grading (SMP 5.2)
• Fill, clearing and grading is a permitted use only in association with an allowed use (SMP 3.3, Table 1).
• Fill materials must be clean sand, gravel, soil, rock or similar material. Use of polluted dredge spoils and sanitary fill is prohibited. (SMP 5.2.2-1, incorporating DMC 10.12 (Best Management Practices for Construction and Site Development) and 9.06 (Storm Drainage Utility Code)
• An erosion and sedimentation control program is required for fill, clearing and grading. (SMP 5.2.2-9)

Dredging and Dredge Material Disposal (SMP 5.3)
• Projects shall include mitigating measures to minimize impacts such as turbidity, release of nutrients, heavy metals, sulfides, organic materials or toxic substances, and depletion of oxygen. (SMP 5.3.2-2)

Transportation and Parking (6.7)
• Parking as an accessory to an allowed use is permitted only within Public Recreation and Riverside Village environments, and is prohibited in other environments. (SMP 3.3, Table 1)

<u>Restoration</u>

Restoration Policy 4. The City should continue to manage stormwater consistent with DMC 9.06, the City's stormwater management and erosion control regulations and the Comprehensive Plan.

Restoration Policy 5. The City should promote the use of low impact development techniques through incentives, permit requirements, and adopted City plans and policies.</td>
<td>Likely Improvement

Water quality will likely not be degraded by new development (both within shoreline jurisdiction, and more significantly throughout the contributing, upslope area of the City) since applicants would be required to meet stormwater management standards and develop an erosion and sedimentation control program.

Restoration activities occurring within the Snoqualmie River floodplain should enhance wetland areas, improving associated water quality functions.</td>
</tr>
</table>

Current Performance Shoreline Inventory and Characterization Report - ESA Adolfson, 2010	SMP Provisions Protection or Restoration Protection = Proposed SMP regulations (with reference to SMP section number) Restoration = Final Draft Restoration Plan Policy	Future Performance
	Restoration Policy 6. The City should continue to require effective erosion/sedimentation controls for construction in shoreline areas. Restoration Policy 7. The City should discourage the use of fertilizers and herbicides, both within the shoreline and throughout the City.	
Ecological Process / Function: LWD, Organics and Habitat, including maintenance of characteristic plant communities and sources of large woody debris (LWD). WAC 173-26-201(3)(d)(i)(C)		
Forest cover within the City's Snoqualmie River shoreline area, including the 50 to 100 foot riparian area along the river, is significantly reduced due to historic land clearing for agricultural activities. Depressional wetlands with significant storage capacity occur primarily in the South McCormick Park, North McCormick Park, and Dougherty Farmstead shoreline environments; wetlands and associated tributary streams provide significant fish and wildlife habitat within the City's shoreline area. Degredation to these associated habitats is documented in the Inventory and Characterization. The Snoqualmie River supports salmonid species including Chinook salmon (federally listed as threatened), coho salmon, chum salmon, pink salmon, sockeye salmon, bull trout/Dolly Varden (federally listed as threatened), and steelhead (f ederally listed as threatened). The mainstem river is used as a migratory corridor and habitat for juvenile rearing and outmigration. Due to the incised channel and lack of habitat complexity and/or significant overhanging vegetation, spawning habitat in the River is limited. Rearing habitat for Chinook and coho salmon has been degraded by the reduction in accessible floodplain area due to channelization of tributary streams and historical shoreline armoring. Mapped use of tributary streams within the	**Protection** SED specific standards for riparian zone (Snoqualmie River buffer standard): **South McCormick Park** / **N. McCormick Public Recreation / Taylor's Landing** / **Riverside Village** Minimum Riparian Zone: 200 feet (additional 50 feet beyond SAO) / Consistent with SAO / West of existing SVT The Minimum Riparian Zone is proposed as the area landward of the Snoqualmie River OHWM to be maintained / enhanced with native riparian vegetation. (SMP 3.4, Table 2 and SMP 4.1.2-3) SED specific standards for impervious lot coverage: See standards detailed in Water Quality column – provide standards to ensure limitations on development footprint and impact, maximizing opportunity for maintenance of Snoqualmie River shoreline and shoreland habitats. Vegetation Conservation (SMP 4.7) • To conserve and maintain shoreline vegetation, shoreline use and development shall comply with the buffer and habitat conservation areas standards established in the Sensitive Areas Code (DMC 14.42); shoreline uses and developments must also comply with the City's setback standards established in DMC 14.10 (zoning district regulations); landscaping regulations in DMC 14.38; tree protection in DMC 14.40; and storm drainage utility and erosion control regulations in DMC 9.06. • Proponents of all new shoreline uses or developments must maintain existing native shoreline vegetation to the maximum extent practicable. • A shoreline permit or written statement of exemption shall not mandate, nor guarantee removal of vegetation for the purpose of providing unobstructed horizontal or lateral visibility of the water or any specific feature near or far. • Vegetation conservation standards shall not limit or restrict the removal of hazard tree or non-native noxious weeds provided removal is consistent with landscaping regulations in DMC 14.38; tree protection in DMC 14.40; storm drainage utility and erosion control regulations in DMC 9.06 and sensitive areas regulations in DMC 14.42. • Permitted maintenance of Figure 2 designated utility corridors within the shoreline area shall include mowing and removal of volunteer vegetative growth. Environmental Protection and Sensitive Areas (SMP 4.4) • Impacts to sensitive areas must be mitigated. (SMP 4.3.2-1) • A proponent of any new shoreline use or development shall mitigate adverse environmental impacts whether or not the use/development requires a shoreline substantial development permit or is exempt from a shoreline permit. The mitigation sequence prescribed in WAC 173-26-201(2) shall be used in mitigating impacts from shoreline uses and development. (SMP 4.3.2-3) **Restoration** Restoration Policies 1 through 3. *Listed above in discussion of restoration focused on hydrologic functions.*	**Likely Improvement** Establishing a riparian management zone for non-water-dependent uses will result in the protection of existing vegetation and habitat resulting in no change and long term improvement of LWD recruitment and other riparian habitat functions. Incorporation of the Sensitive Areas regulations will ensure protection of existing associated wetland and tributary stream habitats. Restoration of these habitats will occur over time consistent with the Shoreline Restoration Plan.

Current Performance Shoreline Inventory and Characterization Report - ESA Adolfson, 2010	SMP Provisions Protection or Restoration Protection = Proposed SMP regulations (with reference to SMP section number) Restoration = Final Draft Restoration Plan Policy	Future Performance
City's shoreline area is limited to the presence / migration of coho salmon within Coe-Clemons and Thayer Creeks.	Restoration Policy 8. The City should require that all new shoreline development and/or uses retain existing native shoreline buffer vegetation, with the overall purpose of protecting and maintaining functions and processes. . Restoration Policy 9. The City should ensure that vegetation conservation and management in shoreline areas include removal of non-native invasive plant species and noxious weeds as needed to facilitate establishment of stable native plant communities. Restoration Policy 10. The City should require that large woody debris be left in stream corridors to enhance wildlife habitat and shoreline ecological functions, except where it threatens personal safety or public infrastructure such as bridge pilings, roads or flood control structures. Restoration Policy 11. The City should ensure that native shoreline vegetation be integrated with bioengineering to stabilize streambanks and minimize erosion. Restoration Policy 12. The City should require that vegetation clearing be limited to the minimum necessary to accommodate shoreline uses/development. Restoration Policy 13. The City should preserve, enhance, and/or protect critical areas in shoreline jurisdiction for their ecological functions and values, as well as their aesthetic, scenic, and educational qualities. Restoration Policy 14. The City should continue to require that development provide a level of protection to critical areas within the shoreline that achieves no net loss of ecological functions, with project specific and cumulative impacts considered in assessing the potential for net loss of ecological functions. Restoration Policy 15. The City's implementation of the SMP, including the integrated Sensitive Area Code, should ensure that shoreline ecological functions are maintained or improved in the long term.	

5.2 Preliminary Conclusions

As noted throughout, the types of existing and future development in the City's shoreline area are severely limited because of the hazards associated with the Snoqualmie River floodplain – including channel migration hazards and designated floodway. Therefore, when reasonably foreseeable shoreline developments are considered together with the policies and regulations in the Draft SMP and other beneficial plan and programs, it is concluded that there would likely be no loss of ecological functions from the level established in the Shoreline Inventory and Characterization Report (ESA, 2010 – updated 2011). Conclusions on the future performance of the key shoreline functions are summarized as follows:

This conclusion is based on an assessment of the three factors identified in the Ecology guidelines for evaluating cumulative impacts:

- Current circumstances affecting the shorelines and relevant natural processes;
- Reasonably foreseeable future development and use of the shoreline; and
- Beneficial effects of any established regulatory programs under other local, state, and federal laws.

In concert with implementation of restoration actions in the city, the regulatory provisions of the Draft SMP (July 2011) would serve to maintain or improve the overall condition of shoreline resources. The proposed SMP provides a new system of shoreline environment designations that establishes more uniform management of the City's shoreline. The updated development standards and regulation of shoreline modifications provides more protection for shoreline processes. The updated standards and regulations are more restrictive of activities that would result in adverse impacts to the shoreline environment. The restoration planning effort, when developed, would provide the City with opportunities to improve or restore ecological functions that have been impaired as a result of past development activities. In addition, the proposed SMP is meant to compliment several city, county, state and federal efforts to protect shoreline functions and values.

6.0 REFERENCES

Environmental Science Associates (ESA). Final Draft Shoreline inventory and Characterization Report. Prepared for the City of Duvall. Updated 2011.

Environmental Science Associates (ESA). Preliminary Draft Shoreline Restoration Plan. Prepared for the City of Duvall. August 2011.

Stanley, S., S. Grigsby, T. Hruby, and P. Olson. 2009. Puget Sound Watershed Characterization Project: Description of Methods, Models and Analysis. Washington State Department of Ecology. Publication #10-06-005. Olympia, WA.

City of Duvall. 2006. City of Duvall Comprehensive Plan. Duvall, Washington.

City of Duvall. 2011. Preliminary Draft Shoreline Master Program. Prepared by ESA. July, 2011.